Semiannual water column monitoring report

February – July 1999

Massachusetts Water Resources Authority

Environmental Quality Department
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SEMIANNUAL WATER COLUMN MONITORING REPORT

February – July 1999

Submitted to

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EXECUTIVE SUMMARY

The Massachusetts Water Resources Authority (MWRA) has collected water quality data in Massachusetts and Cape Cod Bays for the Harbor and Outfall Monitoring (HOM) Program since 1992. This monitoring is in support of the HOM Program mission to assess the potential environmental effects of the relocation of effluent discharge from Boston Harbor to Massachusetts Bay. The data are being collected to establish baseline water quality conditions and ultimately to provide the means to detect significant departure from that baseline. The surveys have been designed to evaluate water quality on both a high-frequency basis for a limited area in the vicinity of the outfall site (nearfield) and a low-frequency basis over an extended area throughout Boston Harbor, Massachusetts Bay, and Cape Cod Bay (farfield). This semi-annual report summarizes water column monitoring results for the nine surveys conducted from February through July 1999.

The winter to spring transition in Massachusetts and Cape Cod Bays is usually characterized by a series of physical, biological, and chemical events: seasonal stratification, the winter/spring phytoplankton bloom, and nutrient depletion. This was generally the case in 1999 with the onset of stratification in April, very high chlorophyll concentrations during the winter/spring period and surface waters depleted in nutrients from May through July.

The first three surveys of 1999 (February through March) were conducted prior to the onset of stratification. The water column was well mixed and relatively high concentrations of nutrients were measured. Nutrient concentrations generally decreased from February to March coincident with increasing chlorophyll concentrations and elevated primary production rates. The high nearfield chlorophyll concentrations observed during the winter of 1998 had remained elevated into the winter/spring period of 1999. Primary production at the nearfield stations was relatively high during this period reaching values of >2000 mg C m^{-2} d^{-1}, which is comparable to winter/spring blooms observed during previous baseline monitoring years. The phytoplankton community was a mixed assemblage dominated by microflagellates and chain forming centric diatoms. The pennate diatom, *Pseudo-nitzschia pungens*, which includes both non-toxic *P. pungens* and domoic-acid-producing *P. multiseries*, was observed throughout Massachusetts Bay in early February.

In April, the onset of stratification was observed at the deeper nearfield, offshore and boundary stations. The shallow Harbor, coastal and Cape Cod Bay stations, however, remained well mixed. In early April, nutrient concentrations at the boundary and northern offshore area stations were relatively high and comparable to the values observed in late February. By mid-April and early May, nutrient concentrations had decreased to low levels in the nearfield and southern offshore area stations. The winter/spring bloom reduced nutrient concentrations in the surface waters from February to April and with the onset of stratification nutrient concentrations in the surface waters were depleted throughout much of the region by late April/early May.

The high chlorophyll concentrations observed throughout the Bays during the first three surveys continued to be present in April and reached maxima during this survey in the nearfield and offshore areas. The mean chlorophyll concentration (5.08 μgL^{-1}) for winter/spring of 1999 was greater than any previous winter/spring mean obtained for the nearfield during the baseline-monitoring period. It also exceeded the chlorophyll threshold value (4.76 μgL^{-1}) that had been calculated as the 95th percentile of the baseline winter/spring distribution for 1992 to 1998. None of the other threshold values that have been developed were exceeded during the first half of 1999.

By June, a strong density gradient was observed throughout the Bays except for Boston Harbor stations, which remained homogeneous due to tidal mixing. The establishment of seasonal stratification led to nutrient depleted conditions in the surface waters and ultimately to an increase in nutrient concentrations in bottom waters due to the seasonal increase in rates of respiration and remineralization of organic

matter. Between the April and June surveys, there was a sharp decline in bottom water DO throughout the Bays of 1-3 mgL^{-1}. The trend of declining bottom water DO concentrations following the establishment of stratification and the cessation of the winter-spring bloom is typical. The large decline that was observed, however, may be an indication that DO utilization may be occurring more rapidly and achieve lower concentration in 1999 compared to previous baseline years.

Total zooplankton abundance increased from February through June when extraordinary numbers of zooplankton were observed in the nearfield and Boston Harbor. An astonishing maximum value of >500 x 10^3 animals m^{-3} in Boston Harbor was the highest zooplankton abundance recorded for the entire 1992-1999 baseline. Zooplankton assemblages during the first half of 1999 were comprised of typical taxa, but levels of *Acartia* spp. were unusually low, possibly due to drought, and contributions of meroplankton such as bivalve and gastropod veligers and polychaete larvae were unusually high.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

[Note: These appendices are not available on-line. To obtain a printed copy, please call the Environmental Quality Department at (617) 788-4700.]

1.0 INTRODUCTION

1.1 Program Overview

The Massachusetts Water Resources Authority (MWRA) has implemented a long-term Harbor and Outfall Monitoring (HOM) Program for Massachusetts and Cape Cod Bays. The objective of the HOM Program is to (1) test for compliance with NPDES permit requirements; (2) test whether the impact of the discharge on the environment is within the bounds projected by the SEIS; and (3) test whether change within the system exceeds the Contingency Plan thresholds. A detailed description of the monitoring and its rationale is provided in the Effluent Outfall Monitoring Plan developed for the baseline period and the post discharge monitoring plan (MWRA, 1997a).

To help establish the present water quality conditions with respect to nutrients, water properties, phytoplankton and zooplankton, and water-column respiration and productivity, the MWRA conducts baseline water quality surveys in Massachusetts and Cape Cod Bays. The surveys have been designed to evaluate water quality on both a high-frequency basis for a limited area (nearfield) and a low-frequency basis for an extended area (farfield). The nearfield stations are located in the vicinity of the outfall site (Figure 1-1) and the farfield stations are located throughout Boston Harbor, Massachusetts Bay, and Cape Cod Bay (Figure 1-2). The stations for the farfield surveys have been further separated into regional groupings according to geographic location to simplify regional data comparisons. This semi-annual report summarizes water column monitoring results for the nine surveys conducted from February through July 1999 (Table 1-1).

Table 1-1. Water Quality Surveys for WF991-WN999 February to July 1999

Survey #	Type of Survey	Survey Dates
WF991	Nearfield/Farfield	February 2 – 8
WF992	Nearfield/Farfield	February 23 – 28
WN993	Nearfield	March 20
WF994	Nearfield/Farfield	April 1 – May 6[a]
WN995	Nearfield	April 29[b] & May 5
WN996	Nearfield	May 12
WF997	Nearfield/Farfield	June 14 – 19
WN998	Nearfield	July 7
WN999	Nearfield	July 20

[a] Due to severe weather, the WF994 survey was completed over the course of six days in April and May – nearfield samples were collected April 11th and farfield samples were collected April 1, 6, 11, 26, and May 6.
[b] Productivity samples were collected on April 29 prior to postponement of survey due to weather conditions.

Initial data summaries, along with specific field information, are available in individual survey reports submitted immediately following each survey. In addition, nutrient data reports (including calibration information, sensor and water chemistry data), plankton data reports, and productivity and respiration data reports are each submitted five times annually. Raw data summarized within this or any of the other reports are available from MWRA in hard copy and electronic formats.

1.2 Organization of the Semi-Annual Report

The scope of the semi-annual report is focused primarily towards providing an initial compilation of the water column data collected during the reporting period. Secondarily, integrated physical and biological results are discussed for key water column events and potential areas for expanded discussion in the annual water column report are recommended. The report first provides a summary of the survey and laboratory methods (Section 2). The bulk of the report, as discussed in further detail below, presents results of water column data from the first nine surveys of 1999 (Sections 3-5). Finally, the major findings of the semi-annual period are summarized in Section 6.

Section 3 data are provided in data summary tables. The summary tables include the major numeric results of water column surveys in the semi-annual period by survey. A description of data selection, integration information, and summary statistics are included with that section.

Sections 4 (Results of Water Column Measurements) and 5 (Productivity, Respiration, and Plankton Results) include preliminary interpretation of the data with selected graphic representations of the horizontal and vertical distribution of water column parameters in both the farfield and nearfield. The horizontal distribution of physical parameters is presented through regional contour plots. The vertical distribution of water column parameters is presented using time-series plots of averaged surface and bottom water column parameters and along vertical transects in the survey area (Figure 1-3). The time-series plots utilize average values of the surface water sample (the "A" depth, as described in Section 3), and the bottom water collection depth (the "E" depth). Examining data trends along four farfield transects (Boston-Nearfield, Cohassett, Marshfield and Nearfield-Marshfield), and one nearfield transect, allows three-dimensional analysis of water column conditions during each survey. One offshore transect (Boundary) enables analysis of results in the outer most boundary of the survey area during farfield surveys.

Results of water column physical, nutrient, chlorophyll, and dissolved oxygen data are provided in Section 4. Survey results were organized according to the physical characteristics of the water column during the semi-annual period. The timing of water column vertical stratification, and the physical and biological status of the water column during stratification, significantly effects the temporal response of the water quality parameters, which provide a major focus for assessing effects of the outfall. This report describes the horizontal and vertical characterization of the water column during pre-stratification stage (WF991 – WN993), and then further delineates processes occurring during the early stratification stage (WF994 – WN999). Time-series data are provided for the entire semi-annual period for clarity and context of the data presentation.

Productivity, respiration, and plankton measurements, along with corresponding discussion of chlorophyll and dissolved oxygen results, are provided in Section 5. Discussion of the biological processes and trends during the semi-annual period is included in this section. A summary of the major water column events and unusual features of the semi-annual period is presented in Section 6. References are provided in Section 7.

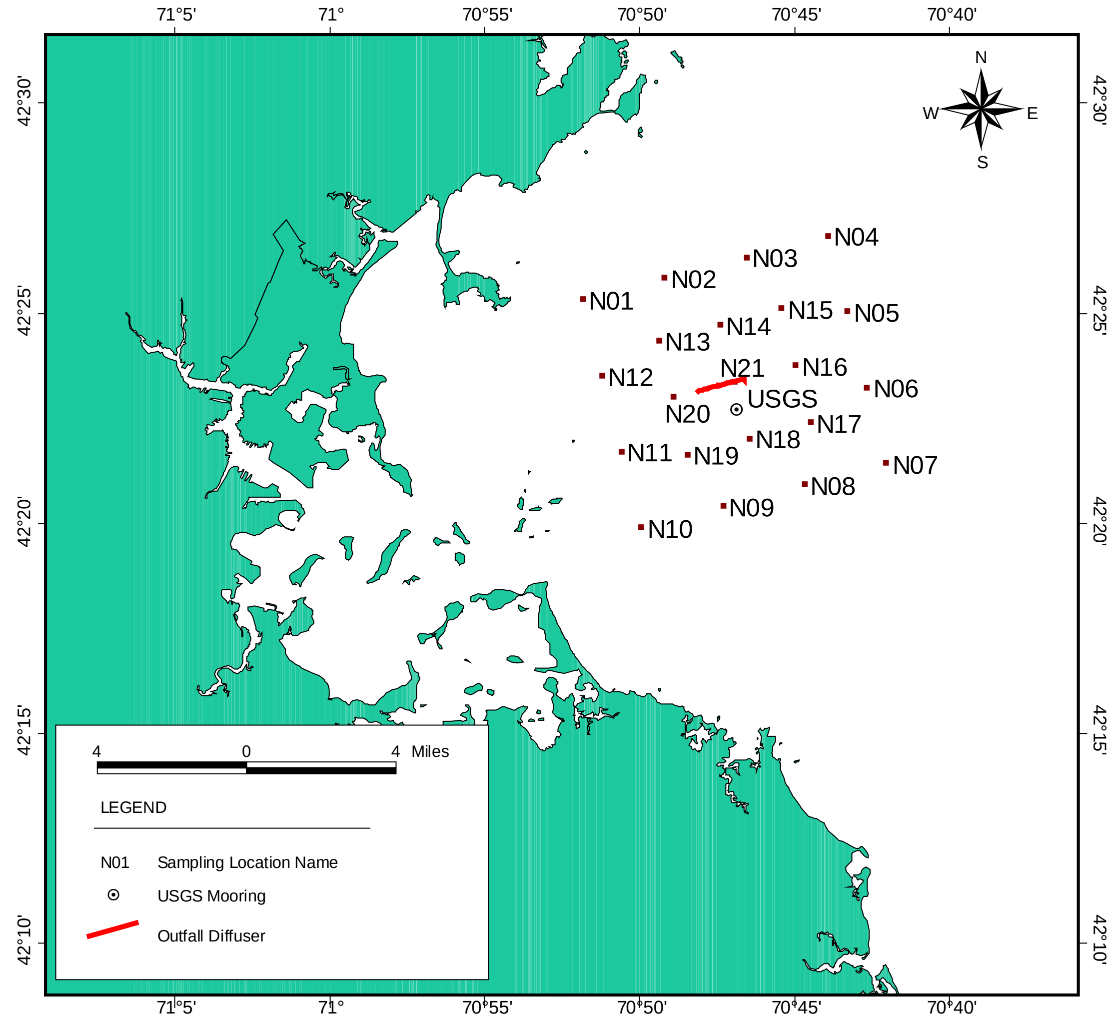


Figure 1-1. Locations of MWRA Offshore Outfall, Nearfield Stations and USGS Mooring

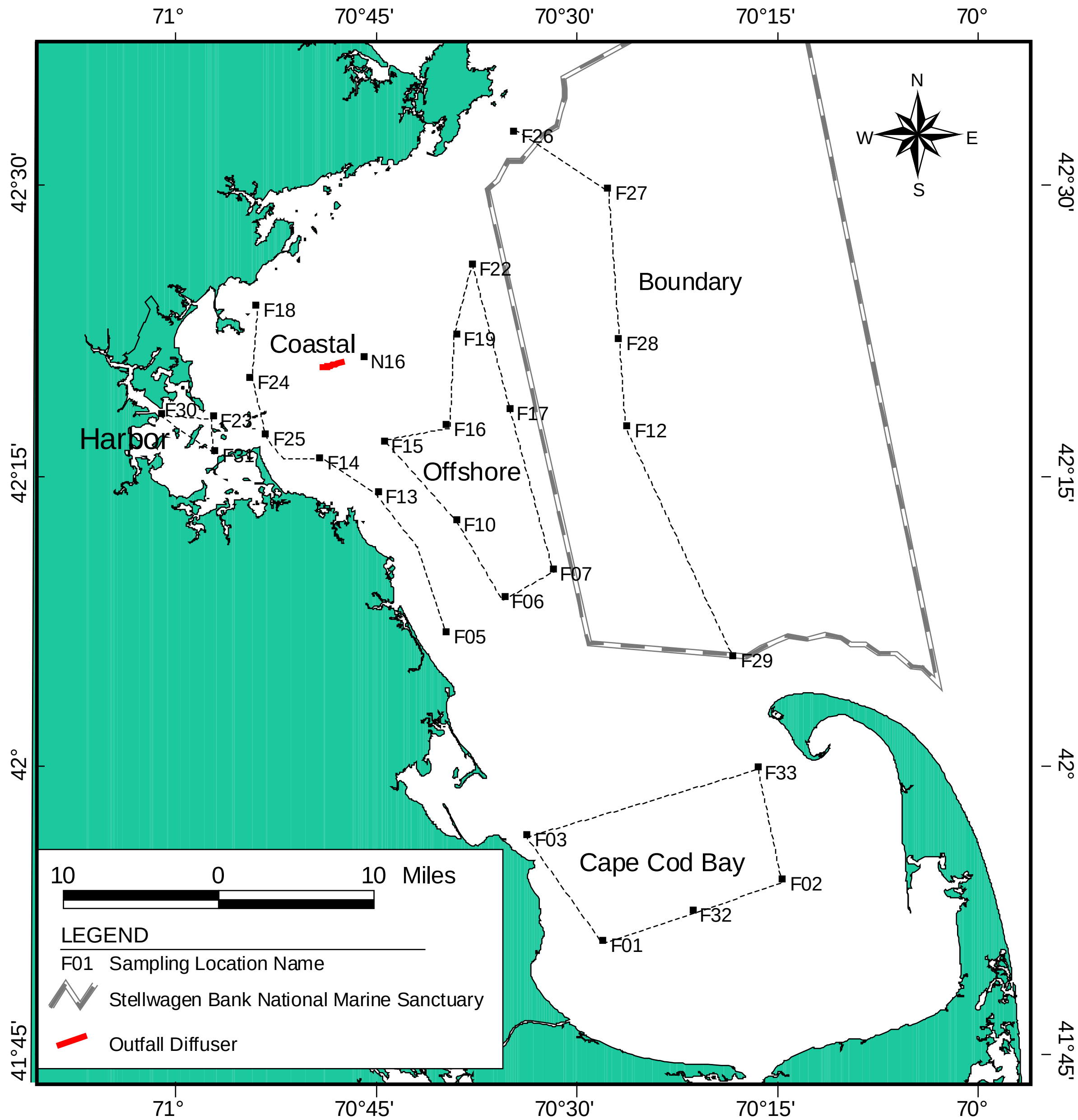


Figure 1-2. Locations of Farfield Stations

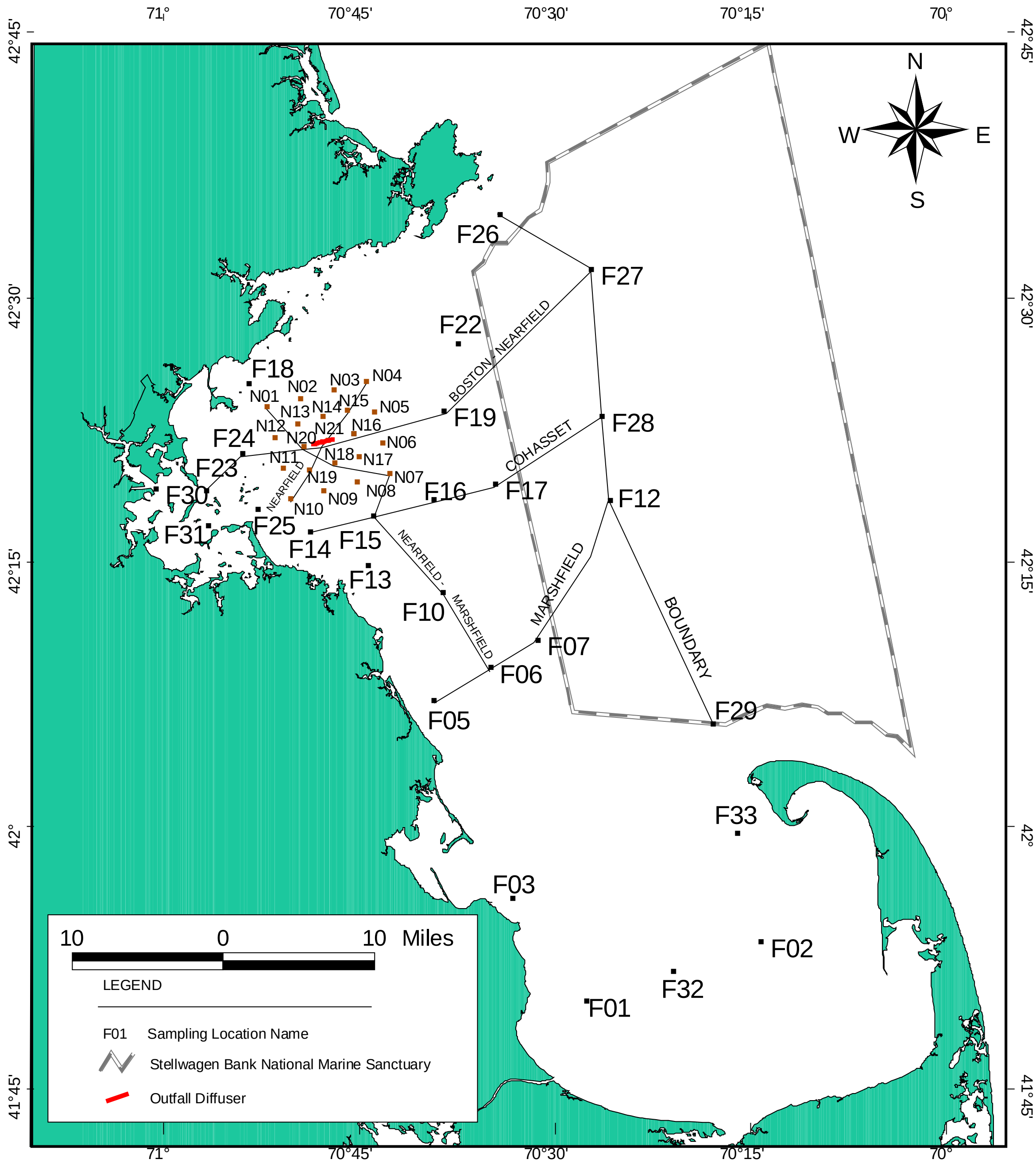


Figure 1-3. Location of Stations Selected for Vertical Transect Graphics Showing Transect Name

2.0 METHODS

This section describes general methods of data collection and sampling for the first nine water column monitoring surveys of 1999. Section 2.1 describes data collection methods, including survey dates, sampling platforms, and analyses performed. Section 2.2 describes the sampling schema undertaken, and Section 2.3 details specific operations for the first 1999 semi-annual period. Specific details of field sampling and analytical procedures, laboratory sample processing and analysis, sample handling and custody, calibration and preventative maintenance, documentation, data evaluation, and data quality procedures are discussed in the Water Quality Monitoring CW/QAPP (Albro *et al*., 1998). Details on productivity sampling procedures and analytical methods are also available in Appendix A.

2.1 Data Collection

The farfield and nearfield water quality surveys for 1999 represent a continuation of the baseline water quality monitoring conducted from 1992 – 1998. The monitoring program has been improved over the years as more data have been collected and evaluated. In 1998, two Cape Cod Bay stations (F32 and F33) were added to better capture the winter/spring variability in zooplankton abundance and species in these Right whale feeding grounds. During the first three farfield surveys of 1999, these two stations were again sampled for zooplankton and hydrographic (CTD) properties.

Water quality data for this report were collected from the sampling platforms *R/V Aquamonitor, F/V Isabel S, and F/V Christopher Andrew.* Continuous vertical profiles of the water column and discrete water samples were collected using a CTD/Go-Flo Bottle Rosette system. This system includes a deck unit to control the system, display *in situ* data, and store the data, and an underwater unit comprised of several environmental sensors, including conductivity, temperature, depth, dissolved oxygen, transmissometry, irradiance, and fluorescence. These measurements were obtained at each station by deploying the CTD; in general, one cast was made at each station. Water column profile data were collected during the downcast, and water samples were collected during the upcast by closing the Go-Flo bottles at selected depths, as discussed below.

Water samples were collected at five depths at each station, except at stations F30, F31, F32, and F33. Stations F30 and F31 are shallow and require only three depths while only zooplankton samples are collected at F32 and F33. These depths were selected during CTD deployment based on positions relative to the pycnocline or subsurface chlorophyll maximum. The bottom depth (within 5 meters of the sea floor) and the surface depth (within 3 meters of the water surface) of each cast remained constant and the mid-bottom, middle and mid-surface depths were selected to represent any variability in the water column. In general, the selected middle depth corresponded with the chlorophyll maximum and or pycnocline. When the chlorophyll maximum occurred significantly below or above the middle depth, the mid-bottom or mid-surface sampling event was substituted with the mid-depth sampling event and the “mid-depth” sample was collected within the maximum. In essence, the “mid-depth” sample in these instances was not collected from the middle depth, but shallower or deeper in the water column in order to capture the chlorophyll maximum layer. These nomenclature semantics result from a combination of field logistics and scientific relevance. In the field, the switching of the “mid-depth” sample with the mid-surface or mid-bottom was transparent to everyone except the NAVSAM operator who observed the subsurface chlorophyll structure and marked the events. The samples were processed in a consistent manner and a more comprehensive set of analyses were conducted for the surface, mid-depth/chlorophyll maximum, and bottom samples.

Samples from each depth at each station were collected by subsampling from the Go-Flo bottles into the appropriate sample container. Analyses performed on the water samples are summarized in

Table 2-1. Samples for dissolved inorganic nutrients (DIN), dissolved organic carbon (DOC), total dissolved nitrogen (TDN) and phosphorus (TDP), particulate organic carbon (POC) and nitrogen (PON), biogenic silica, particulate phosphorus (PP), chlorophyll *a* and phaeopigments, total suspended solids (TSS), urea, and phytoplankton (screened and rapid assessment) were filtered and preserved immediately after obtaining water from the appropriate Go-Flo bottles. Whole water phytoplankton samples (unfiltered) were obtained directly from the Go-Flo bottles and immediately preserved. Zooplankton samples were obtained by deploying a zooplankton net overboard and making an oblique tow of the upper two-thirds of the water column but with a maximum tow depth of 30 meters. Productivity samples were collected from the Go-Flo bottles, stored on ice and transferred to University of Rhode Island (URI) employees. Incubation was started no more that six hours after initial water collection at URI's laboratory. Respiration samples were collected from the Go-Flo bottles at four stations (F19, F23, N04, and N18). Incubations of the dark bottles were started within 30 minutes of sample collection. The dark bottle samples were maintained at a temperature within 2°C of the collection temperature for five to seven days until analysis.

2.2 Sampling Schema

A synopsis of the sampling schema for the analyses described above is outlined in Tables 2-1, 2-2, and 2-3. Station designations were assigned according to the type of analyses performed at that station (see Table 2-1). Productivity and respiration analyses were also conducted at certain stations and represented by the letters P and R, respectively. Table 2-1 lists the different analyses performed at each station. Tables 2-2 (nearfield stations) and 2-3 (farfield stations) provide the station name and type, and show the analyses performed at each depth. Station N16 is considered both a nearfield station (where it is designated as type A) and a farfield station (where it is designated a type D). Stations F32 and F33 are occupied during the first three farfield surveys of each year and collect zooplankton samples and hydrocast data only (designated as type Z).

Table 2-1. Station Types and Numbers (Five Depths Collected Unless Otherwise Noted)

Station Type	**A**	**D**	**E**	**F**	**G[1]**	**P**	**R**	**Z**
Number of Stations	**5**	**8**	**26**	**3**	**2**	**3**	**4**	**2**
Analysis Type								
Dissolved inorganic nutrients (NH_4, NO_3, NO_2, PO_4, and SiO_4)	•	•	•	•	•	•		
Other nutrients (DOC, TDN, TDP, PC, PN, PP, Biogenic Si)[1]	•	•			•	•		
Chlorophyll [1]	•	•			•	•		
Total suspended solids [1]	•	•			•	•		
Dissolved oxygen	•	•		•	•	•		
Phytoplankton, urea [2]		•			•	•		
Zooplankton[3]		•			•	•		•
Respiration [1]						•	•	
Productivity, DIN						•		

[1]Samples collected at three depths (bottom, mid-depth, and surface)
[2]Samples collected at two depths (mid-depth and surface)
[3]Samples collected at the surface

2.3 Operations Summary

Changes in the 1999 sampling schema from prior monitoring years included the addition of the two new zooplankton stations started in 1998 in Cape Cod Bay. The stations were sampled during the first three farfield surveys (WF991, WF992, and WF994). Field operations for water column sampling and analysis during the first semi-annual period were conducted as described above. Deviations from the CW/QAPP for nearfield surveys WN993, WN996, and WF997 had no effect on the data. Principal deviations for surveys WF991, WF992, WF994, WN995, WN998, and WN999 are described below. For additional information about a specific survey, the individual survey reports may be consulted.

During the farfield/nearfield survey in early February (WF991), the respiration samples were allowed to rise to 20° C over a two-day period after being returned to the laboratory. The temperature was corrected upon discovery and the incubation finished. Date are qualified as suspect.

Mid-surface water was not collected at stations F01 and F25 during farfield/nearfield survey WF992 due to Go-Flo bottle problems brought on by the freezing weather.

Due to weather and electronic equipment problems, it took 36 days to complete the farfield/nearfield survey in April (WF994). The Nearfield samples were collected on two separate days (April 7^{th} and April 11^{th}). Productivity samples were collected and analyzed from the April 7^{th} cruise but were not re-sampled on April 11^{th}.

Due to weather problems, the nearfield survey WN995 was started April 29^{th} and finished on May 6^{th}. Productivity samples were collected and analyzed from the April 29^{th} cruise. All parameters except productivity were sampled on May 6^{th}.

No primary productivity was collected from the bottom depth at station N18 for the nearfield survey WN998 due to a misfired Go-Flo bottle.

During the WN999 survey in July, the primary productivity samples were filtered through the 102-µm mesh zooplankton net due to the absence of the 300-µm mesh filtration funnel. Additional whole water sample was collected from the chlorophyll maximum depth to be used as a reference for the 102-µm mesh filtered sample.

Table 2-2. Nearfield Water Column Sampling Plan (3 Pages)

Nearfield Water Column Sampling Plan

Station ID	Depth (m)	Station Type	Depths	Total Volume at Depth (L)	Number of 9-L GoFlos	Dissolved Inorganic Nutrients	Dissolved Organic Carbon	Total Dissolved Nitrogen and Phosphorous	Particulate Organic Carbon and Nitrogen	Particulate Phosphorous	Biogenic silica	Chlorophyll a	Total Suspended Solids	Dissolved Oxygen	Rapid Analysis Phytoplankton	Whole Water Phytoplankton	Screened Water Phytoplankton	Zooplankton	Urea	Respiration	Photosynthesis by carbon-14	Dissolved Inorganic Carbon
			Protocol Code			IN	OC	NP	PC	PP	BS	CH	TS	DO	RP	WW	SW	ZO	UR	RE	AP	IC
			Volume (L)			1	0.1	0.1	1	0.6	0.3	0.5	1	1	4	1	4	1	0.1	1	1	1
			1_Bottom	8.5	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
N01	30	A	3_Mid-Depth	10	2	2	1	1	2	2	2	2	2	1								
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	8.5	2	1	1	1	2	2	2	1	2	1								
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N02	40	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N03	44	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	15.5	2	1	1	1	2	2	2	1	2							6	1	1
			2_Mid-Bottom	4.5	1	1						1		1							1	1
N04	50	D+	3_Mid-Depth	22.1	2	2	1	1	2	2	2	2	2			1	1		1	6	1	1
		R+	4_Mid-Surface	4.5	1	1						1		1							1	1
		P	5_Surface	20.6	2	1	1	1	2	2	2	1	2			1	1		1	6	1	1
			6_Net Tow															1				
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N05	55	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N06	52	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	10.5	2	1	1	1	2	2	2	1	2	3								
			2_Mid-Bottom	2.5	1	1						1		1								
N07	52	A	3_Mid-Depth	10	2	2	1	1	2	2	2	2	2	1								
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	10.5	2	1	1	1	2	2	2	1	2	3								
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N08	35	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																

Nearfield Water Column Sampling Plan

Station ID	Depth (m)	Station Type	Depths	Total Volume at Depth (L)	Number of 9-L GoFlos	Dissolved Inorganic Nutrients	Dissolved Organic Carbon	Total Dissolved Nitrogen and Phosphorous	Particulate Organic Carbon and Nitrogen	Particulate Phosphorous	Biogenic silica	Chlorophyll a	Total Suspended Solids	Dissolved Oxygen	Rapid Analysis Phytoplankton	Whole Water Phytoplankton	Screened Water Phytoplankton	Zooplankton	Urea	Respiration	Photosynthesis by carbon-14	Dissolved Inorganic Carbon
			Protocol Code			IN	OC	NP	PC	PP	BS	CH	TS	DO	RP	WW	SW	ZO	UR	RE	AP	IC
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N09	32	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	8.5	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
N10	25	A	3_Mid-Depth	10	2	2	1	1	2	2	2	2	2	1								
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	8.5	2	1	1	1	2	2	2	1	2	1								
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N11	32	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N12	26	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N13	32	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N14	34	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N15	42	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	8.5	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
N16	40	A	3_Mid-Depth	10.2	2	2	2	2	2	2	2	2	2	1								
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	8.5	2	1	1	1	2	2	2	1	2	1								
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N17	36	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																

Nearfield Water Column Sampling Plan

Station ID	Depth (m)	Station Type	Depths	Total Volume at Depth (L)	Number of 9-L GoFlos	Dissolved Inorganic Nutrients	Dissolved Organic Carbon	Total Dissolved Nitrogen and Phosphorous	Particulate Organic Carbon and Nitrogen	Particulate Phosphorous	Biogenic silica	Chlorophyll a	Total Suspended Solids	Dissolved Oxygen	Rapid Analysis Phytoplankton	Whole Water Phytoplankton	Screened Water Phytoplankton	Zooplankton	Urea	Respiration	Photosynthesis by carbon-14	Dissolved Inorganic Carbon
			Protocol Code			IN	OC	NP	PC	PP	BS	CH	TS	DO	RP	WW	SW	ZO	UR	RE	AP	IC
			1_Bottom	15.5	2	1	1	1	2	2	2	1	2							6	1	1
		D+	2_Mid-Bottom	4.5	1	1						1		1							1	1
N18	30	R+	3_Mid-Depth	26.1	3	1	1	1	2	2	2	2	2		1	1	1		1	6	1	2
		P	4_Mid-Surface	4.5	1	1						1		1							1	1
			5_Surface	20.6	2	1	1	1	2	2	2	1	2			1	1		1	6	1	1
			6_Net Tow															1				
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N19	24	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
			1_Bottom	8.5	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
N20	32	A	3_Mid-Depth	10	2	2	1	1	2	2	2	2	2	1								
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	8.5	2	1	1	1	2	2	2	1	2	1								
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
N21	34	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1																
				Totals		111	22	22	42	42	42	42	42	33	1	4	4	2	4	36	10	11
Blanks A									1	1	1	1	1									

Table 2-3. Farfield Water Column Sampling Plan (3 Pages)

Farfield Water Column Sampling Plan

Station ID	Depth (m)	Station Type	Depths	Total Volume at Depth (L)	Number of 9-L GoFlos	Dissolved Inorganic Nutrients	Dissolved Organic Carbon	Total Dissolved Nitrogen and	Particulate Organic Carbon	Particulate Phosphorous	Biogenic silica	Chlorophyll a	Total Suspended Solids	Dissolved Oxygen	Secchi Disk Reading	Whole Water Phytoplankton	Screened Water Phytoplankton	Zooplankton	Urea	Respiration	Photosynthesis by carbon-14	Dissolved Inorganic Carbon
			Protocol Code			IN	OC	NP	PC	PP	BS	CH	TS	DO	SE	WW	SW	ZO	UR	RE	AP	IC
			Volume (L)			1	0.1	0.1	1	0.3	0.3	0.5	1	1	0	1	4	1	0.1	1	1	1
			1_Bottom	7.9	2	1	1	1	2	2	2	1	2	3								
			2_Mid-Bottom	2.5	1	1						1		1								
F01	27	D	3_Mid-Depth	14	2	1	1	1	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	13	2	1	1	1	2	2	2	1	2	3	1	1	1		1			
			6_Net Tow															1				
			1_Bottom	7.9	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
F02	33	D	3_Mid-Depth	15	2	2	1	1	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	13	2	1	1	1	2	2	2	1	2	1	1	1	1		1			
			6_Net Tow															1				
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F03	17	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F05	18	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	7.9	2	1	1	1	2	2	2	1	2	3								
			2_Mid-Bottom	2.5	1	1						1		1								
F06	35	D	3_Mid-Depth	15	2	2	1	1	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	13	2	1	1	1	2	2	2	1	2	3	1	1	1		1			
			6_Net Tow															1				
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F07	54	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F10	30	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	4	1	1								1								
			2_Mid-Bottom	2	1	1								1								
F12	90	F	3_Mid-Depth	2	1	1								1								
			4_Mid-Surface	2	1	1								1								
			5_Surface	4	1	1								1	1							
			1_Bottom	7.9	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
F13	25	D	3_Mid-Depth	15	2	2	1	1	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	13	2	1	1	1	2	2	2	1	2	1	1	1	1		1			

Farfield Water Column Sampling Plan

Station ID	Depth (m)	Station Type	Depths	Total Volume at Depth (L)	Number of 9-L GoFlos	Dissolved Inorganic Nutrients	Dissolved Organic Carbon	Total Dissolved Nitrogen and	Particulate Organic Carbon	Particulate Phosphorus	Biogenic silica	Chlorophyll a	Total Suspended Solids	Dissolved Oxygen	Secchi Disk Reading	Whole Water Phytoplankton	Screened Water Phytoplankton	Zooplankton	Urea	Respiration	Photosynthesis by carbon-14	Dissolved Inorganic Carbon
			Protocol Code			IN	OC	NP	PC	PP	BS	CH	TS	DO	SE	WW	SW	ZO	UR	RE	AP	IC
			6_Net Tow															1				
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F14	20	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F15	39	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F16	60	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F17	78	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F18	24	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	7	2	1														6		
			2_Mid-Bottom	2	1	1								1								
F19	81	F+R	3_Mid-Depth	7	2	1														6		
			4_Mid-Surface	2	1	1								1								
			5_Surface	7	2	1									1					6		
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F22	80	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	18	3	1	1	1	2	2	2	1	2							6	1	1
			2_Mid-Bottom	8.5	1	1						1		1							1	2
F23	25	D+R+P	3_Mid-Depth	24	3	1	1	1	2	2	2	2	2			1	1		1	6	1	1
			4_Mid-Surface	7.5	1	1						1		1							1	1
			5_Surface	23	3	1	1	1	2	2	2	1	2		1	1	1		1	6	1	1
			6_Net Tow															1				
			1_Bottom	7.9	2	1	1	1	2	2	2	1	2	3								
			2_Mid-Bottom	2.5	1	1						1		1								
F24	20	D	3_Mid-Depth	14	2	1	1	1	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	13	2	1	1	1	2	2	2	1	2	3	1	1	1		1			
			6_Net Tow															1				
			1_Bottom	9.9	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
F25	15	D	3_Mid-Depth	15	2	2	1	1	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								

Farfield Water Column Sampling Plan

Station ID	Depth (m)	Station Type	Depths	Total Volume at Depth (L)	Number of 9-L GoFlos	Dissolved Inorganic Nutrients	Dissolved Organic Carbon	Total Dissolved Nitrogen and	Particulate Organic Carbon	Particulate Phosphorous	Biogenic silica	Chlorophyll a	Total Suspended Solids	Dissolved Oxygen	Secchi Disk Reading	Whole Water Phytoplankton	Screened Water Phytoplankton	Zooplankton	Urea	Respiration	Photosynthesis by carbon-14	Dissolved Inorganic Carbon
			Protocol Code			IN	OC	NP	PC	PP	BS	CH	TS	DO	SE	WW	SW	ZO	UR	RE	AP	IC
			5_Surface	15	2	1	1	1	2	2	2	1	2	3	1	1	1		1			
			6_Net Tow															1				
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F26	56	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	7.9	2	1	1	1	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
F27	108	D	3_Mid-Depth	15	2	2	1	1	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	13	2	1	1	1	2	2	2	1	2	1	1	1	1		1			
			6_Net Tow															1				
			1_Bottom	1	1	1																
			2_Mid-Bottom	1	1	1																
F28	33	E	3_Mid-Depth	1	1	1																
			4_Mid-Surface	1	1	1																
			5_Surface	1	1	1									1							
			1_Bottom	2	1	1								1								
			2_Mid-Bottom	2	1	1								1								
F29	66	F	3_Mid-Depth	2	1	1								1								
			4_Mid-Surface	2	1	1								1								
			5_Surface	2	1	1								1	1							
			1_Bottom	9.9	2	1	1	1	2	2	2	1	2	3								
			3_Mid-Depth	14	2	1	1	1	2	2	2	2	2	1		1	1		1			
F30	15	G	5_Surface	15	2	1	1	1	2	2	2	1	2	3	1	1	1		1			
			6_Net Tow															1				
			1_Bottom	9.9	2	1	1	1	2	2	2	1	2	3								
			3_Mid-Depth	14	2	1	1	1	2	2	2	2	2	1		1	1		1			
F31	15	G	5_Surface	15	2	1	1	1	2	2	2	1	2	3	1	1	1		1			
			6_Net Tow															1				
F32	30	Z	5_Surface												1							
			6_Net Tow															1				
F33	30	Z	5_Surface												1							
			6_Net Tow															1				
			1_Bottom	8.1	2	1	2	2	2	2	2	1	2	1								
			2_Mid-Bottom	2.5	1	1						1		1								
N16	40	D	3_Mid-Depth	15	2	2	2	2	2	2	2	2	2	1		1	1		1			
			4_Mid-Surface	2.5	1	1						1		1								
			5_Surface	13	2	1	1	1	2	2	2	1	2	1	1	1	1		1			
			6_Net Tow															1				
					otals	132	35	35	66	66	66	62	66	76	28	22	22	13	22	36	5	6
			Blanks B						1	1	1	1	1									
			Blanks C						1	1	1	1	1									
			Blanks D						1	1	1	1	1									

3.0 DATA SUMMARY PRESENTATION

Data from each survey were compiled from the final HOM Program 1999 database and organized to facilitate regional comparisons between surveys, and to allow a quick evaluation of results for evaluating monitoring thresholds (Table 3-1 Method Detection Limits, Survey Data Tables 3-2 through 3-10). Each table provides summary data from one survey. A discussion of which parameters were selected, how the data were grouped and integrated, and the assumptions behind the calculation of statistical values (average, minimum, and maximum), is provided below. Individual data summarized in this report are available from MWRA either in hard copy or electronic format.

The spatial pattern of data summary follows the sample design over major geographic areas of interest in Massachusetts Bay, Cape Cod Bay, and Boston Harbor (Section 3.1). Compilation of data both horizontally by region and vertically over the entire water column was conducted to provide an efficient way of assessing the status of the regions during a particular survey. Maximum and minimum values are provided because of the need to assess extremes of pre-outfall conditions relative to criteria being developed for contingency planning purposes (MWRA, 1997b).

Regional compilations of nutrient and biological water column data were conducted first by averaging individual laboratory replicates, followed by field duplicates, and then by station visit within a survey. Prior to regional compilation of the sensor data, the results were averaged by station visit. Significant figures for average values were selected based on precision of the specific data set. Detailed considerations for individual data sets are provided in the sections below.

3.1 Defined Geographic Areas

The primary partitioning of data is between the nearfield and farfield stations (Figures 1-1 and 1-2). Farfield data were additionally segmented into five geographic areas: stations in Boston Harbor (F23, F30, and F31), coastal stations (F05, F13, F14, F18, F24, F25), offshore stations (F06, F07, F10, F15, F16, F17, F19, and F22), boundary region stations (F12, F26, F27, F28, F29), and Cape Cod Bay stations (F01, F02, and F03; and F32 and F33 as appropriate). These regions are shown in Figure 1-2.

The data summary tables include data derived from all of the station data collected in each region. Average, maximum, and minimum values are reported from the cumulative horizontal and vertical dataset as described for each data type below.

3.2 Sensor Data

Six CTD profile parameters provided in the data summary tables include temperature, salinity, density (σ_t), fluorescence (chlorophyll a), transmissivity, and dissolved oxygen (DO) concentration. Statistical parameters (maximum, minimum, and average) were calculated from the sensor readings collected at five depths through the water column (defined as A-E). These depths were sampled on the upcast of the hydrographic profile. The five depth values, rather than the entire set of profile data, were selected to reduce the statistical weighting of deep-water data at the offshore and boundary stations. Generally, the samples were collected in an even depth-distributed pattern. The mid-depth sample (C) was typically located at the subsurface fluorescence (chlorophyll) peak in the water column, depending on the relative depth of the chlorophyll maximum. Details of the collection, calibration, and processing of CTD data are available in the Water Column Monitoring CW/QAPP (Albro *et al*., 1998), and are summarized in Section 2.

Following standard oceanographic practice, patterns of variability in water density are described using the derived parameter sigma-t ($\sigma_{t,}$), which is calculated by subtracting 1,000 kg/m^3 from the recorded density. During this semi-annual period, density varied from 1021.9 to 1025.9, meaning σ_t varied from 21.9 to 25.9.

Fluorescence data were calibrated using concomitant extracted chlorophyll *a* data from discrete water samples collected at a subset of the stations (see CW/QAPP or Tables 2-1, 2-2, 2-3). The calibrated fluorescence sensor values were used for all discussions of chlorophyll in this report. The concentrations of phaeopigments are included in the summary data tables as part of the nutrient parameters.

In addition to DO concentration, the derived percent saturation was also provided. Percent saturation was calculated prior to averaging station visits from the potential saturation value of the water (a function of the physical properties of the water) and the calibrated DO concentration (see CW/QAPP).

Finally, the derived beam attenuation coefficient from the transmissometer ("transmittance") was provided on the summary tables. Beam attenuation is calculated from the natural logarithm of the ratio of light transmission relative to the initial light incidence, over the transmissometer path length, and is provided in units of m^{-1}.

3.3 Nutrients

Analytical results for dissolved and particulate nutrient concentrations were extracted from the HOM database, and include: ammonia (NH_4), nitrite (NO_2), nitrate + nitrite (NO_3+NO_2), phosphate (PO_4), silicate (SiO_4), biogenic silica (BSI), dissolved and particulate organic carbon (DOC and POC), total dissolved and particulate organic nitrogen (TDN and PON), total dissolved and particulate phosphorous (TDP and PP), and urea. Total suspended solids (TSS) data are provided as a baseline for total particulate matter in the water column. Dissolved inorganic nutrients (NH_4, NO_2, No_3+NO_2, PO_4, and SiO_4) were measured from water samples collected from each of the five (A-E) depths during CTD casts. The dissolved organic and particulate constituents were measured from water samples collected from the surface (A), mid-depth (C), and bottom (E) sampling depths (see Tables 2-1, 2-2, and 2-3 for specific sampling depths and stations).

3.4 Biological Water Column Parameters

Four productivity parameters have been presented in the data summary tables. Areal production, which is determined by integrating the measured productivity over the photic zone, and chlorophyll-specific areal production is included for the productivity stations (F23 representing the Harbor, and N04 and N18, representing the nearfield). Because areal production is already depth-integrated, averages were calculated only among productivity stations for the two regions sampled. The derived parameters α (gC[gChla]$^{-1}$h^{-1}[μEm^{-2}s^{-1}]$^{-1}$) and Pmax (gC[gChla]$^{-1}$h^{-1}) are also included. The productivity parameters are discussed in detail in Appendix A.

Respiration rates were averaged over the respiration stations (the same Harbor and nearfield stations as productivity, and additionally one offshore station [F19]), and over the three water column depths sampled (surface, mid- and bottom). The respiration samples were collected concurrently with the productivity samples. Detailed methods of sample collection, processing, and analysis are available in the CW/QAPP (Albro *et al*., 1998).

3.5 Plankton

Plankton results were extracted from the HOM database and include whole water phytoplankton, screened phytoplankton, and zooplankton. Phytoplankton samples were collected for whole-water and screened measurements during the water column CTD casts at the surface (A) and mid-depth (C) sampling events. As discussed in Section 2.1, when a subsurface chlorophyll maximum is observed, the mid-depth sampling event is associated with this layer. The screened phytoplankton samples were filtered through 20-µm Nitrex mesh to retain and concentrate larger dinoflagellate species. Zooplankton samples were collected by oblique tows using a 102-µm mesh at all plankton stations. Detailed methods of sample collection, processing, and analysis are available in the CW/QAPP (Albro *et al*., 1998).

Final plankton values were derived from each station by first averaging analytical replicates, then averaging station visits. Regional results were summarized for total phytoplankton, total centric diatoms, nuisance algae (*Alexandrium tamarense, Phaeocystis pouchetii,* and *Pseudo-nitzschia pungens*), and total zooplankton (Tables 3-2 through 3-10).

Results for total phytoplankton and centric diatoms reported in Tables 3-1 through 3-10 are restricted to whole water surface samples. Results of the nuisance species *Phaeocystis pouchetii* and *Pseudo-nitzschia pungens* include the maximum of both whole water and screened analyses, at both the surface and mid-depth. Although the size and shape of both taxa might allow them to pass through the Nitex screen, both have colonial forms that in low densities might be overlooked in the whole-water samples. For *Alexandrium tamarense*, only the screened samples were reported.

3.6 Additional Data

Two additional data sources were utilized during interpretation of HOM Program semi-annual water column data. Temperature and chlorophyll a satellite images collected near survey dates were preliminarily interpreted for evidence of surface water events, including intrusions of surface water masses from the Gulf of Maine and upwelling (Appendix I). U.S. Geological Service continuous temperature and salinity data were collected from a mooring located between nearfield stations N21 and N18 (Figure 1-1). Hourly temperature and salinity data from the mid-depth (~20 m below surface) and near-bottom (1 m above bottom) are plotted in Figure 3-1. Chlorophyll a data from the MWRA Wetlab sensor mounted at mid-depth (~20 m below surface) on the nearfield USGS mooring are plotted in Figure 3-2.

Table 3-1. Method Detection Limits

Analysis	MDL
Dissolved ammonia (NH_4)	0.02 µM
Dissolved inorganic nitrate (NO_3)	0.01 µM
Dissolved inorganic nitrite (NO_2)	0.01 µM
Dissolved inorganic phosphorus (PO_4)	0.01 µM
Dissolved inorganic silicate (SIO_4)	0.02 µM
Dissolved organic carbon (DOC)	20 µM
Total dissolved nitrogen (TDN)	1.43 µM
Total dissolved phosphorus (TDP)	0.04 µM
Particulate carbon (POC)	5.27 µM
Particulate nitrogen (PON)	0.75 µM
Particulate phosphorus (PARTP)	0.04 µM
Biogenic silica (BIOSI)	0.32 µM
Urea	0.2 µM
Chlorophyll *a* and phaeophytin (EDL)	0.036 µg L^{-1}
Total suspended solids (TSS)	0.1 mg L^{-1}

Table 3-2. Combined Farfield/Nearfield Survey WF991 (Feb 99) Data Summary

		Farfield								
Region		Boundary			Cape Cod Bay			Coastal		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	3.63	4.97	4.17	2.74	3.31	3.00	2.91	3.43	3.10
Salinity	PSU	32.0	32.8	32.3	30.4	31.7	31.3	30.2	31.7	31.1
Sigma _T		25.4	25.9	25.6	24.2	25.2	24.9	24.1	25.2	24.7
Beam Attenuation	m-1	0.65	1.17	0.82	0.92	1.41	1.10	1.08	2.01	1.57
DO Concentration	mg/L	9.49	11.08	10.30	10.81	11.50	11.08	10.86	11.82	11.18
DO Saturation	PCT	92.1	104.3	97.9	98.8	106.4	101.6	99.1	109.5	102.6
Fluorescence	ug/L	0.41	22.08	6.06	3.03	7.07	5.88	0.02	10.04	4.21
Chlorophyll a	ug/L	1.24	2.61	1.97	0.32	4.51	2.05	0.77	3.79	1.86
Phaeopigment	ug/L	0.51	0.78	0.64	0.22	1.16	0.70	0.48	1.24	0.82
Nutrients										
NH4	uM	0.45	1.63	0.73	0.17	3.16	1.87	0.37	11.68	4.22
NO2	uM	0.14	0.25	0.20	0.05	0.35	0.22	0.26	0.51	0.35
NO2+NO3	uM	3.20	10.26	7.70	0.39	8.81	5.43	6.94	11.77	9.03
PO4	uM	0.86	1.22	1.04	0.65	1.16	0.94	0.82	1.36	1.10
SIO4	uM	2.08	8.62	5.38	1.15	6.98	4.75	3.74	10.68	6.84
BIOSI	uM	2.40	3.30	2.97	2.50	4.60	3.47	0.90	6.00	3.83
DOC	uM	141.9	160.0	152.0	138.7	225.5	171.2	158.7	419.5	241.1
PPO4	uM	0.10	0.11	0.10	0.11	0.26	0.19	0.20	0.40	0.28
POC	uM	13.80	21.80	17.17	21.40	68.50	33.92	18.30	35.50	24.33
PON	uM	2.06	3.04	2.46	2.69	16.40	6.02	2.49	4.88	3.66
TDN	uM	18.1	18.9	18.5	9.9	23.2	16.8	19.9	31.9	26.7
TDP	uM	1.15	1.20	1.18	0.61	1.15	0.90	1.12	1.40	1.24
TSS		1.99	3.00	2.61	1.87	5.78	3.86	2.86	6.12	4.84
Urea	uM	0.10	0.20	0.15	0.10	0.40	0.23	0.10	1.00	0.45
Productivity										
Alpha	ALPHA									
Pmax	mgCm-3h-1									
Areal Production	mgCm-2d-1									
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1									
Respiration	uM/hr									
Plankton										
Total Phytoplankton	E6CELLS/L	0.526	0.540		0.719	1.180		0.455	0.755	
Centric diatoms	E6CELLS/L	0.106	0.130		0.229	0.669		0.049	0.307	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	0.130	0.181		0.008	0.077		0.012	0.187	
Total Zooplankton	ind/m3	14190.0	14190.0		10707.9	32332.7		9984.6	22899.6	

ND – Not detected in sample

Table 3-2. Combined Farfield/Nearfield Survey WF991 (Feb 99) Data Summary (continued)

Region		Harbor			Offshore			Nearfield		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	2.64	3.08	2.95	3.43	5.12	4.05	2.91	4.84	3.67
Salinity	PSU	29.4	31.0	30.4	31.0	32.6	31.9	31.4	32.5	31.9
Sigma _T		22.7	24.7	24.1	24.7	25.8	25.3	25.0	25.7	25.3
Beam Attenuation	m-1	1.51	2.54	1.89	0.69	1.31	1.00	0.96	1.56	1.24
DO Concentration	mg/L	10.66	11.32	10.99	9.27	12.00	10.61	9.32	12.05	10.99
DO Saturation	PCT	96.6	103.5	99.9	90.1	112.0	100.2	90.1	112.6	102.8
Fluorescence	ug/L	0.16	0.16	0.16	0.05	5.60	1.97	0.05	8.84	4.56
Chlorophyll a	ug/L	0.45	2.03	1.16	2.34	4.03	3.45	0.66	7.04	3.63
Phaeopigment	ug/L	0.37	1.08	0.66	0.31	0.99	0.77	0.20	1.69	0.91
Nutrients										
NH4	uM	5.86	14.31	9.18	0.49	2.75	1.19	0.24	2.54	0.90
NO2	uM	0.38	0.54	0.46	0.17	0.30	0.23	0.17	0.27	0.21
NO2+NO3	uM	8.89	14.06	10.74	5.31	12.04	8.08	4.10	8.32	5.76
PO4	uM	1.12	1.30	1.20	0.88	1.40	1.07	0.73	1.15	0.85
SIO4	uM	7.88	15.81	10.62	2.90	11.52	5.85	2.19	9.18	4.27
BIOSI	uM	3.20	6.50	4.38	3.70	4.80	4.13	1.50	6.40	4.70
DOC	uM	163.3	325.0	218.2	150.5	399.8	249.5	133.6	393.5	209.2
PPO4	uM	0.24	0.55	0.38	0.18	0.28	0.22	0.08	0.42	0.26
POC	uM	20.30	43.00	29.26	20.30	23.70	21.47	7.66	37.40	26.05
PON	uM	3.06	6.09	4.26	3.35	3.82	3.56	1.22	6.10	4.29
TDN	uM	13.2	41.6	32.8	13.9	17.5	15.7	13.1	32.3	17.2
TDP	uM	1.16	1.47	1.35	0.95	1.07	0.99	0.81	1.19	0.95
TSS		2.37	13.21	6.15	2.93	4.57	3.78	2.19	6.27	3.69
Urea	uM	0.40	0.90	0.62	NA	NA	NA	0.10	0.20	0.15
Productivity										
Alpha	ALPHA	0.03	0.06	0.05				0.02	0.15	0.10
Pmax	mgCm-3h-1	4.66	9.15	7.17				0.24	19.09	11.50
Areal Production	mgCm-2d-1	242.80	242.80	242.80				730.40	1185.20	957.80
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	233.60	233.60	233.60				252.10	348.20	300.15
Respiration	uM/hr	NA	NA	NA				NA	NA	NA
Plankton										
Total Phytoplankton	E6CELLS/L	0.378	0.926		0.372	0.377		0.573	0.720	
Centric diatoms	E6CELLS/L	0.063	0.162		0.084	0.106		0.163	0.364	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	0.034	0.076		0.054	0.054		0.029	0.160	
Total Zooplankton	ind/m3	4667.5	18739.6		22631.9	22631.9		19060.6	36813.8	

ND – Not detected in sample

Table 3-3. Combined Farfield/Nearfield Survey WF992 (Feb 99) Data Summary

		Farfield								
Region		Boundary			Cape Cod Bay			Coastal		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	2.45	4.45	3.52	2.37	2.93	2.68	2.08	2.79	2.55
Salinity	PSU	31.2	32.6	32.1	30.6	31.6	31.0	30.8	31.7	31.4
Sigma _T		24.9	25.9	25.5	24.4	25.2	24.7	24.6	25.3	25.0
Beam Attenuation	m-1	0.74	1.25	0.93	1.26	2.81	2.01	1.43	2.73	1.90
DO Concentration	mg/L	9.60	12.16	11.07	11.23	11.78	11.52	11.58	12.82	12.09
DO Saturation	PCT	92.0	110.8	103.3	101.8	107.2	104.5	104.4	116.8	109.6
Fluorescence	ug/L	0.25	10.62	4.01	0.95	5.48	3.13	0.54	16.94	8.27
Chlorophyll a	ug/L	3.04	4.55	3.73	1.39	6.78	3.92	2.51	16.12	6.34
Phaeopigment	ug/L	0.68	1.16	0.94	0.42	2.09	1.23	0.92	3.56	1.56
Nutrients										
NH4	uM	0.22	1.95	0.71	0.29	1.78	0.95	0.09	4.68	1.47
NO2	uM	0.11	0.20	0.16	0.02	0.18	0.10	0.01	0.27	0.11
NO2+NO3	uM	3.18	9.16	6.48	0.12	2.76	1.40	0.07	4.06	1.58
PO4	uM	0.60	1.23	0.89	0.49	0.87	0.65	0.36	0.79	0.57
SIO4	uM	1.45	8.27	5.25	0.54	1.81	0.96	0.99	6.17	2.56
BIOSI	uM	4.00	5.20	4.60	6.30	7.50	6.77	3.10	7.30	5.13
DOC	uM	138.4	197.3	159.7	198.6	554.6	358.7	152.4	362.3	193.4
PPO4	uM	0.17	0.29	0.22	0.20	0.38	0.28	0.34	0.84	0.55
POC	uM	13.50	24.00	18.97	32.80	49.80	39.00	29.80	58.80	40.77
PON	uM	2.51	3.89	3.35	4.56	7.64	6.19	4.64	9.29	6.73
TDN	uM	16.0	61.5	32.2	12.4	16.1	14.6	10.1	23.9	16.1
TDP	uM	0.83	1.26	1.05	0.56	0.84	0.68	0.50	0.96	0.74
TSS	ug L-1	2.07	4.47	3.31	3.20	9.27	5.83	1.97	5.79	4.18
Urea	uM	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20	0.18
Productivity										
Alpha	ALPHA									
Pmax	mgCm-3h-1									
Areal Production	mgCm-2d-1									
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1									
Respiration	uM/hr									
Plankton										
Total Phytoplankton	E6CELLS/L	0.94	1.29		1.45	1.53		1.07	2.53	
Centric diatoms	E6CELLS/L	0.57	0.94		0.90	1.08		0.69	2.00	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	0.009	0.057		0.021	0.094		0.015	0.046	
Total Zooplankton	ind/m3	34354.2	34354.2		12408.9	27458.1		41633.7	67712.0	

ND – Not detected in sample

Table 3-3. Combined Farfield/Nearfield Survey WF992 (Feb 99) Data Summary (continued)

Region		Harbor			Offshore			Nearfield		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	2.08	2.28	2.18	2.62	4.55	3.40	2.13	3.70	2.98
Salinity	PSU	30.1	31.3	30.7	31.4	32.6	32.0	30.9	32.2	31.8
Sigma _T		24.1	25.0	24.5	25.0	25.8	25.5	24.7	25.6	25.3
Beam Attenuation	m-1	1.96	7.13	4.66	0.76	1.59	1.09	1.04	3.22	1.67
DO Concentration	mg/L	11.54	11.72	11.62	8.94	12.32	11.20	10.38	12.09	11.59
DO Saturation	PCT	103.3	105.1	103.9	85.7	113.1	104.1	97.4	111.5	106.5
Fluorescence	ug/L	0.07	5.84	2.82	0.18	12.92	4.16	0.01	10.29	6.17
Chlorophyll a	ug/L	1.75	8.43	4.13	2.71	4.25	3.67	1.22	8.49	5.06
Phaeopigment	ug/L	0.71	7.07	2.92	0.63	0.91	0.80	0.38	3.48	1.35
Nutrients										
NH4	uM	3.79	20.02	8.97	0.25	3.96	1.05	0.25	5.64	0.73
NO2	uM	0.01	0.31	0.13	0.05	0.21	0.13	0.06	0.22	0.14
NO2+NO3	uM	0.86	5.08	2.51	0.63	9.17	4.12	0.95	7.07	3.75
PO4	uM	0.57	1.12	0.81	0.47	1.32	0.81	0.48	1.10	0.74
SIO4	uM	1.80	6.32	3.49	0.71	9.17	2.92	1.75	6.40	3.65
BIOSI	uM	4.40	19.30	10.23	2.70	3.10	2.90	4.30	10.10	6.76
DOC	uM	153.3	660.4	258.6	155.4	216.0	176.3	131.6	262.5	176.3
PPO4	uM	0.51	1.48	0.87	0.14	0.51	0.27	0.13	0.59	0.32
POC	uM	29.30	92.50	50.27	21.90	24.80	23.07	22.20	49.40	36.74
PON	uM	4.90	12.36	7.54	3.78	4.51	4.14	3.87	8.36	6.19
TDN	uM	14.5	40.8	26.7	12.4	15.7	14.6	12.1	25.0	16.3
TDP	uM	0.72	1.42	1.01	0.81	0.88	0.84	0.70	1.06	0.84
TSS	ug L-1	5.22	23.59	10.72	1.85	4.87	3.26	2.65	10.73	5.19
Urea	uM	0.20	0.30	0.23	0.10	0.30	0.20	0.10	0.30	0.20
Productivity										
Alpha	ALPHA	0.15	0.19	0.17				0.13	0.31	0.22
Pmax	mgCm-3h-1	18.59	23.10	21.03				13.43	33.11	24.63
Areal Production	mgCm-2d-1	783.30	783.30	783.30				1523.60	2148.60	1836.10
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	240.10	240.10	240.10				483.50	497.30	490.40
Respiration	uM/hr	0.10	0.17	0.13	0.04	0.07	0.05	0.07	0.11	0.09
Plankton										
Total Phytoplankton	E6CELLS/L	1.15	1.60		0.57	1.03		1.15	1.69	
Centric diatoms	E6CELLS/L	0.70	1.14		0.36	0.81		0.89	1.27	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	0.018	0.032		0.031	0.047		0.021	0.046	
Total Zooplankton	ind/m3	13029.7	21817.4		23395.0	23395.0		214.9	72343.3	

ND – Not detected in sample

Table 3-4. Nearfield Survey WF993 (Mar 99) Data Summary

		Nearfield		
Region				
Parameter	Unit	Min	Max	Avg
In Situ				
Temperature	C	2.55	3.53	2.91
Salinity	PSU	31.4	32.1	31.7
Sigma _T		25.0	25.5	25.2
Beam Attenuation	m-1	0.76	1.12	0.91
DO Concentration	mg/L	10.38	11.91	11.39
DO Saturation	PCT	96.1	110.0	104.4
Fluorescence	ug/L	1.10	9.18	4.90
Chlorophyll a	ug/L	0.34	6.49	2.44
Phaeopigment	ug/L	0.08	0.90	0.44
Nutrients				
NH4	uM	0.18	2.74	0.63
NO2	uM	0.01	0.22	0.16
NO2+NO3	uM	3.93	9.25	6.20
PO4	uM	0.44	1.03	0.72
SIO4	uM	3.60	10.39	6.02
BIOSI	uM	1.90	3.80	2.84
DOC	uM	142.7	406.0	201.5
PPO4	uM	0.09	0.33	0.23
POC	uM	1.40	39.30	21.19
PON	uM	0.27	7.21	3.85
TDN	uM	12.1	31.4	18.5
TDP	uM	0.82	1.34	0.99
TSS	ug L-1	1.02	7.00	3.45
Urea	uM	0.06	0.29	0.20
Productivity				
Alpha	ALPHA	0.021	0.080	0.042
Pmax	mgCm-3h-1	1.38	6.65	4.19
Areal Production	mgCm-2d-1	573.0	1124.1	848.6
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	506.1	536.7	521.4
Respiration	uM/hr	0.02	0.07	0.04
Plankton				
Total Phytoplankton	E6CELLS/L	1.04	1.33	
Centric diatoms	E6CELLS/L	0.75	1.02	
Alexandrium tamarense	CELLS/L	ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	0.005	0.010	
Total Zooplankton	ind/m3	30381.0	32547.5	

ND – Not detected in sample

Table 3-5. Combined Farfield/Nearfield Survey WF994 (Apr 99) Data Summary

		Farfield								
Region		Boundary			Cape Cod Bay			Coastal		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	3.14	5.07	3.83	3.76	5.41	4.54	4.99	9.36	7.08
Salinity	PSU	29.6	32.6	31.7	31.1	31.7	31.4	30.2	30.7	30.4
Sigma _T		23.4	25.9	25.2	24.5	25.2	24.9	23.4	24.3	23.8
Beam Attenuation	m-1	0.55	1.43	0.79	1.24	1.70	1.36	0.56	1.83	1.20
DO Concentration	mg/L	10.04	12.97	11.19	11.29	12.07	11.66	9.67	12.84	11.15
DO Saturation	PCT	93.1	123.8	105.1	105.8	114.7	111.1	101.5	124.6	111.8
Fluorescence	ug/L	0.27	7.86	1.78	1.37	10.29	6.34	0.02	11.15	4.55
Chlorophyll a	ug/L	0.66	2.41	1.48	3.59	9.70	6.10	2.05	10.88	5.93
Phaeopigment	ug/L	0.27	0.75	0.42	0.22	1.40	0.74	0.59	1.64	1.09
Nutrients										
NH4	uM	0.06	1.94	0.76	2.54	2.69	2.62	0.14	4.48	1.77
NO2	uM	0.02	0.25	0.16	0.00	0.06	0.02	0.01	0.30	0.10
NO2+NO3	uM	0.30	12.13	7.82	0.01	0.25	0.08	0.02	4.93	1.35
PO4	uM	0.26	1.13	0.87	0.14	0.36	0.24	0.19	0.54	0.38
SIO4	uM	2.60	13.67	8.93	0.29	2.36	0.88	3.22	8.43	5.89
BIOSI	uM	1.80	2.00	1.93	0.70	6.60	4.30	2.00	7.20	4.87
DOC	uM	165.8	382.1	243.6	153.1	416.6	258.7	177.0	380.9	269.1
PPO4	uM	0.06	0.21	0.14	0.28	0.42	0.38	0.23	0.79	0.45
POC	uM	10.10	27.60	18.50	35.00	58.90	46.77	22.60	53.00	39.22
PON	uM	1.91	4.31	3.18	4.77	6.94	6.09	3.86	9.14	6.70
TDN	uM	12.5	19.1	15.5	8.1	17.7	11.1	12.8	38.0	17.8
TDP	uM	0.42	0.85	0.67	0.46	0.93	0.61	0.24	0.98	0.64
TSS	ug L-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Urea	uM	0.15	0.15	0.15	0.06	0.25	0.15	0.15	3.02	1.32
Productivity										
Alpha	ALPHA									
Pmax	mgCm-3h-1									
Areal Production	mgCm-2d-1									
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1									
Respiration	uM/hr									
Plankton										
Total Phytoplankton	E6CELLS/L	0.57	0.61		1.03	3.42		0.70	2.08	
Centric diatoms	E6CELLS/L	0.03	0.08		0.44	2.71		0.20	1.10	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	ND	ND		0.00	0.01		0.00	0.01	
Total Zooplankton	ind/m3	16389.9	16389.9		5473.8	20050.9		11818.3	115340.7	

NA – Not available due to sample loss ND – Not detected in sample

Table 3-5. Combined Farfield/Nearfield Survey WF994 (Apr 99) Data Summary (continued)

Region		Harbor			Offshore			Nearfield		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	5.77	6.60	6.20	3.09	8.85	5.43	3.18	6.94	4.82
Salinity	PSU	28.3	30.5	29.9	30.2	32.5	31.2	30.3	32.1	31.0
Sigma _T		22.2	24.0	23.5	23.4	25.8	24.6	23.8	25.5	24.5
Beam Attenuation	m-1	1.90	2.47	2.15	0.51	1.48	0.83	0.68	2.24	1.35
DO Concentration	mg/L	11.61	12.41	12.05	9.80	12.71	10.84	10.07	13.47	11.96
DO Saturation	PCT	113.4	122.6	118.4	90.6	120.9	105.4	93.5	131.8	114.6
Fluorescence	ug/L	5.81	10.19	7.92	0.32	15.10	4.94	0.25	18.55	7.99
Chlorophyll a	ug/L	1.70	13.37	9.42	0.11	0.89	0.44	0.63	13.75	6.15
Phaeopigment	ug/L	0.45	2.77	1.71	0.13	0.48	0.33	0.22	3.33	1.21
Nutrients										
NH4	uM	0.73	6.99	3.20	0.12	3.78	1.40	0.07	4.70	1.32
NO2	uM	0.00	0.37	0.13	0.01	0.26	0.12	0.00	0.24	0.10
NO2+NO3	uM	0.56	6.02	2.11	0.01	9.75	3.97	0.01	10.58	2.89
PO4	uM	0.18	0.49	0.35	0.17	1.09	0.61	0.13	1.09	0.54
SIO4	uM	1.10	3.72	1.92	3.54	16.01	8.94	0.84	14.73	7.63
BIOSI	uM	7.20	8.80	7.98	0.50	1.20	0.80	0.60	8.00	3.63
DOC	uM	165.7	379.0	269.5	260.7	416.8	338.8	148.8	407.2	272.6
PPO4	uM	0.76	1.02	0.87	0.12	0.16	0.14	0.08	0.80	0.34
POC	uM	44.50	72.20	58.37	12.70	20.20	16.17	12.30	96.70	47.10
PON	uM	6.86	12.14	10.06	2.32	3.97	2.94	2.24	13.43	6.95
TDN	uM	8.2	26.7	15.4	10.0	11.2	10.6	6.1	29.6	14.9
TDP	uM	0.21	0.86	0.54	0.52	0.55	0.54	0.34	1.27	0.75
TSS	ug L-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Urea	uM	0.06	0.71	0.34	0.01	0.34	0.18	0.15	0.34	0.25
Productivity										
Alpha	ALPHA	0.36	0.53	0.44				0.09	0.22	0.16
Pmax	mgCm-3h-1	43.60	58.20	48.14				4.20	27.90	16.58
Areal Production	mgCm-2d-1	2914.80	2914.80	2914.80				1646.60	2176.30	1911.45
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	251.40	251.40	251.40				328.50	822.30	575.40
Respiration	uM/hr	NA	NA	NA	0.09	0.17	0.13	NA	NA	NA
Plankton										
Total Phytoplankton	E6CELLS/L	1.53	2.99		0.42	0.65		0.83	3.03	
Centric diatoms	E6CELLS/L	0.77	1.80		0.01	0.04		0.06	1.04	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	ND	ND		ND	ND		ND	ND	
Total Zooplankton	ind/m3	4075.3	14663.7		195972.4	195972.4		5832.0	112792.5	

NA – Not available due to sample loss ND – Not detected in sample

Table 3-6. Nearfield Survey WF995 (May 99) Data Summary

		Nearfield		
Region				
Parameter	Unit	Min	Max	Avg
In Situ				
Temperature	C	4.08	9.49	7.04
Salinity	PSU	30.2	32.1	30.8
Sigma _T		23.3	25.5	24.1
Beam Attenuation	m-1	0.53	1.64	0.72
DO Concentration	mg/L	8.74	12.41	10.71
DO Saturation	PCT	83.0	123.4	108.1
Fluorescence	ug/L	0.17	8.48	1.15
Chlorophyll a	ug/L	0.08	14.62	1.78
Phaeopigment	ug/L	0.08	2.83	0.70
Nutrients				
NH4	uM	0.26	4.70	1.59
NO2	uM	0.01	0.40	0.15
NO2+NO3	uM	0.02	9.42	2.27
PO4	uM	0.20	1.44	0.56
SIO4	uM	3.80	14.81	9.29
BIOSI	uM	0.50	3.40	1.61
DOC	uM	198.7	406.0	308.6
PPO4	uM	0.12	0.38	0.19
POC	uM	12.40	54.70	21.10
PON	uM	2.28	8.86	3.70
TDN	uM	6.6	20.2	12.5
TDP	uM	0.48	1.17	0.61
TSS		NA	NA	NA
Urea	uM	0.11	0.43	0.21
Productivity				
Alpha	ALPHA	0.012	0.284	0.068
Pmax	mgCm-3h-1	1.14	14.43	5.04
Areal Production	mgCm-2d-1	254.4	736.8	495.6
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	511.1	828.2	669.7
Respiration	uM/hr	0.14	0.76	0.50
Plankton				
Total Phytoplankton	E6CELLS/L	0.33	0.63	
Centric diatoms	E6CELLS/L	0.02	0.05	
Alexandrium tamarense	CELLS/L	ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	0.003	0.003	
Total Zooplankton	ind/m3	73693.0	74107.5	

NA – Data not available due to sample loss
ND – Not detected in sample

Table 3-7. Nearfield Survey WN996 (May 99) Data Summary

		Nearfield		
Region				
Parameter	Unit	Min	Max	Avg
In Situ				
Temperature	C	3.87	12.46	8.35
Salinity	PSU	30.1	32.0	30.9
Sigma _T		22.7	25.4	24.0
Beam Attenuation	m-1	0.54	2.33	0.93
DO Concentration	mg/L	9.18	12.20	10.53
DO Saturation	PCT	86.7	136.7	109.7
Fluorescence	ug/L	0.01	15.65	2.36
Chlorophyll a	ug/L	0.03	13.97	2.95
Phaeopigment	ug/L	0.11	2.04	0.82
Nutrients				
NH4	uM	0.14	4.03	1.13
NO2	uM	0.01	0.29	0.09
NO2+NO3	uM	0.01	8.26	1.58
PO4	uM	0.01	1.12	0.43
SIO4	uM	0.25	13.71	4.51
BIOSI	uM	1.30	5.90	3.20
DOC	uM	159.0	307.2	230.5
PPO4	uM	0.10	0.81	0.31
POC	uM	10.30	96.70	35.41
PON	uM	1.90	9.36	4.68
TDN	uM	5.16	16.11	9.68
TDP	uM	0.24	1.15	0.57
TSS	ug L-1	NA	NA	NA
Urea	uM	0.18	0.60	0.40
Productivity				
Alpha	ALPHA	0.00	0.07	0.04
Pmax	mgCm-3h-1	0.69	5.63	3.59
Areal Production	mgCm-2d-1	813.1	960.8	887.0
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	1114.5	1397.9	1256.2
Respiration	uM/hr	0.18	0.35	0.25
Plankton				
Total Phytoplankton	E6CELLS/L	1.06	1.50	
Centric diatoms	E6CELLS/L	0.37	0.90	
Alexandrium tamarense	CELLS/L	ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	ND	ND	
Total Zooplankton	ind/m3	116554.6	123422.5	

NA – Data not available due to sample loss
ND – Not detected in sample

Table 3-8. Combined Farfield/Nearfield Survey WF997 (Jun 99) Data Summary

Region		Farfield								
		Boundary			Cape Cod Bay			Coastal		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	4.24	16.82	9.67	5.24	18.66	11.31	8.38	15.78	13.33
Salinity	PSU	31.2	32.3	31.7	30.9	31.9	31.4	31.2	31.7	31.4
Sigma _T		22.6	25.6	24.3	22.0	25.2	23.8	22.9	24.6	23.5
Beam Attenuation	m-1	0.59	2.80	0.99	0.71	3.08	1.27	0.77	1.63	1.08
DO Concentration	mg/L	8.65	10.89	9.40	7.34	10.15	8.60	8.07	9.23	8.69
DO Saturation	PCT	82.6	115.7	101.2	71.4	107.2	96.1	87.6	110.6	101.0
Fluorescence	ug/L	0.13	10.94	3.60	0.43	11.11	3.99	0.14	9.09	3.53
Chlorophyll a	ug/L	0.13	3.63	1.45	0.66	3.75	2.64	0.90	5.87	2.75
Phaeopigment	ug/L	0.12	1.83	0.83	0.17	1.45	1.01	1.07	2.25	1.69
Nutrients										
NH4	uM	0.33	6.95	2.15	0.36	3.90	1.58	0.21	9.13	2.07
NO2	uM	0.03	0.38	0.19	0.01	0.46	0.13	0.02	0.36	0.16
NO2+NO3	uM	0.04	10.16	3.19	0.02	5.09	1.40	0.08	2.16	0.98
PO4	uM	0.17	1.29	0.64	0.12	1.11	0.52	0.27	0.93	0.58
SIO4	uM	1.00	12.33	4.20	1.22	16.25	6.32	2.67	7.66	5.27
BIOSI	uM	0.10	3.30	1.20	0.60	3.60	1.90	0.90	3.20	2.04
DOC	uM	145.5	196.1	178.7	165.9	236.0	201.3	143.4	263.1	204.7
PARTP	uM	0.09	0.33	0.18	0.15	0.38	0.26	0.19	0.74	0.35
POC	uM	13.92	42.25	25.42	16.08	53.17	33.90	16.58	36.50	27.93
PON	uM	2.09	6.17	4.16	2.69	5.25	3.91	2.98	6.71	5.22
TDN	uM	11.7	23.9	15.9	10.1	19.7	13.8	12.1	28.1	19.5
TDP	uM	0.44	1.39	0.84	0.40	1.29	0.88	0.65	1.30	1.04
TSS		NA	NA	NA	NA	NA	NA	NA	NA	NA
Urea	uM	0.54	0.59	0.57	0.45	0.72	0.58	0.45	0.80	0.57
Productivity										
Alpha	ALPHA									
Pmax	mgCm-3h-1									
Areal Production	mgCm-2d-1									
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1									
Respiration	uM/hr									
Plankton										
Total Phytoplankton	E6CELLS/L	0.35	0.36		0.66	1.28		0.51	1.31	
Centric diatoms	E6CELLS/L	0.003	0.004		0.058	0.518		0.016	0.150	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	ND	ND		0.0172	0.0172		0.0021	0.0021	
Total Zooplankton	ind/m3	76692.2	76692.2		124849.8	140174.2		94828.8	368794.0	

NA – Data not available due to sample loss ND – Not detected in sample

Table 3-8. Combined Farfield/Nearfield Survey WF997 (Jun 99) Data Summary (continued)

Region		Harbor			Offshore			Nearfield		
Parameter	Unit	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
In Situ										
Temperature	C	14.04	16.39	15.12	4.30	16.61	9.75	5.63	17.09	11.22
Salinity	PSU	30.5	31.3	31.1	31.2	32.3	31.7	31.2	32.0	31.6
Sigma _T		22.2	23.3	22.9	22.7	25.6	24.3	22.6	25.2	24.0
Beam Attenuation	m-1	1.34	2.74	2.05	0.58	1.25	0.74	0.56	1.55	0.77
DO Concentration	mg/L	7.97	8.51	8.16	8.21	10.64	9.12	8.14	10.05	9.12
DO Saturation	PCT	95.9	101.1	98.2	79.9	114.1	98.3	87.5	112.8	101.2
Fluorescence	ug/L	4.54	19.95	8.96	0.29	12.55	4.15	0.00	11.96	2.92
Chlorophyll a	ug/L	3.00	17.41	8.64	0.85	2.35	1.54	0.23	3.65	1.66
Phaeopigment	ug/L	1.27	5.15	2.83	0.56	1.70	1.38	0.05	1.95	0.98
Nutrients										
NH4	uM	2.74	13.14	8.67	0.17	6.58	1.39	0.08	5.43	1.18
NO2	uM	0.23	0.46	0.36	0.02	1.23	0.21	0.01	0.45	0.15
NO2+NO3	uM	1.49	3.24	2.30	0.01	10.92	2.52	0.02	3.92	1.05
PO4	uM	0.69	1.14	0.96	0.27	1.25	0.67	0.04	0.93	0.49
SIO4	uM	6.13	8.15	7.15	1.14	13.31	4.34	0.79	9.11	3.81
BIOSI	uM	2.20	5.10	3.81	0.50	1.50	1.00	0.10	2.30	0.84
DOC	uM	151.3	240.5	182.5	172.7	189.2	181.0	118.3	326.7	187.0
PARTP	uM	0.39	1.03	0.70	0.17	0.25	0.20	0.07	0.45	0.18
POC	uM	31.58	74.67	51.62	14.17	24.25	19.72	6.55	32.67	19.42
PON	uM	5.51	12.71	9.42	2.81	4.39	3.42	1.41	5.96	3.71
TDN	uM	10.0	30.2	21.0	10.0	14.8	12.6	7.1	31.8	13.1
TDP	uM	0.42	1.53	1.14	0.84	1.04	0.96	0.42	1.54	0.82
TSS		NA	NA	NA	NA	NA	NA	NA	NA	NA
Urea	uM	0.45	3.88	1.11	0.63	3.18	1.91	0.36	0.54	0.45
Productivity										
Alpha	ALPHA	0.138	0.248	0.202				0.013	0.065	0.035
Pmax	mgCm-3h-1	33.70	68.80	47.14				0.71	5.37	2.75
Areal Production	mgCm-2d-1	2851.0	2851.0	2851.0				544.0	675.0	609.5
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	293.9	293.9	293.9				421.9	431.2	426.6
Respiration	uM/hr	0.13	0.26	0.20	0.03	0.22	0.10	0.03	0.11	0.08
Plankton										
Total Phytoplankton	E6CELLS/L	0.98	1.63		0.28	0.36		0.18	0.78	
Centric diatoms	E6CELLS/L	0.062	0.603		0.009	0.025		0.002	0.021	
Alexandrium tamarense	CELLS/L	ND	ND		ND	ND		ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND		ND	ND		ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	0.0015	0.0015		ND	ND		ND	ND	
Total Zooplankton	ind/m3	96000.0	518481.0		75100.2	75100.2		120523.9	201240.3	

NA – Data not available due to sample loss ND – Not detected in sample

Table 3-9. Nearfield Survey WF998 (Jul 99) Data Summary

		Nearfield		
Region				
Parameter	Unit	Min	Max	Avg
In Situ				
Temperature	C	5.92	17.84	9.94
Salinity	PSU	30.9	32.0	31.8
Sigma _T		22.4	25.2	24.3
Beam Attenuation	m-1	0.56	2.28	0.89
DO Concentration	mg/L	7.74	11.05	9.12
DO Saturation	PCT	78.4	136.5	98.9
Fluorescence	ug/L	0.19	7.45	1.60
Chlorophyll a	ug/L	0.24	7.23	1.91
Phaeopigment	ug/L	0.39	2.07	1.12
Nutrients				
NH4	uM	0.05	2.70	1.09
NO2	uM	0.01	0.35	0.16
NO2+NO3	uM	0.02	5.97	2.02
PO4	uM	0.24	0.97	0.66
SIO4	uM	1.11	10.19	5.11
BIOSI	uM	0.10	3.70	1.05
DOC	uM	141.6	414.2	199.6
PARTP	uM	0.08	0.82	0.28
POC	uM	9.00	72.10	30.53
PON	uM	1.31	8.86	4.40
TDN	uM	8.4	19.7	11.7
TDP	uM	0.54	1.19	0.84
TSS		NA	NA	NA
Urea	uM	0.36	0.63	0.5075
Productivity				
Alpha	ALPHA	0.006	0.073	0.033
Pmax	mgCm-3h-1	0.54	9.47	3.99
Areal Production	mgCm-2d-1	937.6	1124.7	1031.2
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	434.6	665.3	550.0
Respiration	uM/hr	0.03	0.18	0.08
Plankton				
Total Phytoplankton	E6CELLS/L	0.34	0.95	
Centric diatoms	E6CELLS/L	0.01	0.31	
Alexandrium tamarense	CELLS/L	ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	ND	ND	
Total Zooplankton	ind/m3	46007.5	164778.4	

NA – Data not available due to sample loss
ND – Not detected in sample

Table 3-10. Nearfield Survey WN999 (Jul 99) Data Summary

		Nearfield		
Region				
Parameter	Unit	Min	Max	Avg
In Situ				
Temperature	C	6.37	20.09	10.84
Salinity	PSU	31.1	32.0	31.8
Sigma _T		21.9	25.2	24.2
Beam Attenuation	m-1	0.57	2.01	0.93
DO Concentration	mg/L	8.05	13.84	9.38
DO Saturation	PCT	82.5	141.8	102.4
Fluorescence	ug/L	0.02	18.90	2.58
Chlorophyll a	ug/L	0.19	10.02	2.59
Phaeopigment	ug/L	0.14	1.33	0.65
Nutrients				
NH4	uM	0.10	3.05	1.08
NO2	uM	0.01	0.42	0.18
NO2+NO3	uM	0.02	6.19	1.90
PO4	uM	0.13	1.04	0.62
SIO4	uM	0.62	16.31	4.55
BIOSI	uM	0.20	4.40	1.48
DOC	uM	137.7	393.9	254.0
PARTP	uM	0.09	0.90	0.34
POC	uM	7.88	112.00	36.41
PON	uM	1.31	9.57	4.62
TDN	uM	9.5	30.4	15.3
TDP	uM	0.32	1.16	0.79
TSS		NA	NA	NA
Urea	uM	0.16	0.79	0.36
Productivity				
Alpha	ALPHA	0.015	0.073	0.042
Pmax	mgCm-3h-1	0.44	9.39	4.14
Areal Production	mgCm-2d-1	1128.9	1219.1	1174.0
Chlorophyll Specific Areal Production	mgC(mg Chla)-1m-2d-1	697.1	806.6	751.9
Respiration	uM/hr	0.01	0.17	0.07
Plankton				
Total Phytoplankton	E6CELLS/L	0.18	0.81	
Centric diatoms	E6CELLS/L	0.001	0.21	
Alexandrium tamarense	CELLS/L	ND	ND	
Phaeocystis pouchetiii	CELLS/L	ND	ND	
Psuedo-nitzschia pungens	E6CELLS/L	ND	ND	
Total Zooplankton	ind/m3	78846.0	112640.0	

NA – Data not available due to sample loss
ND – Not detected in sample

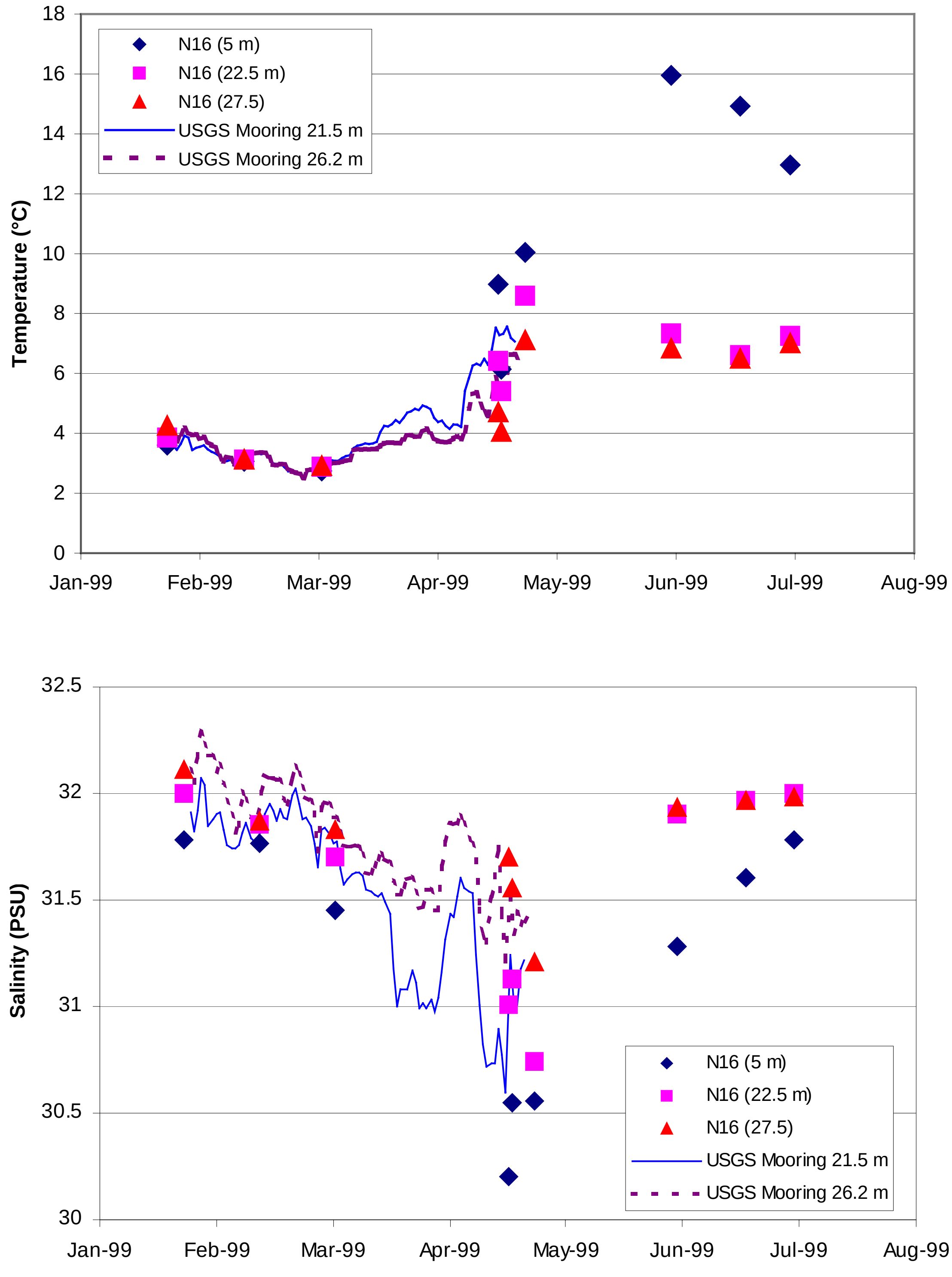


Figure 3-1. USGS Temperature and Salinity Mooring Data from 20 Meters Below Surface and 1 Meter Above Bottom

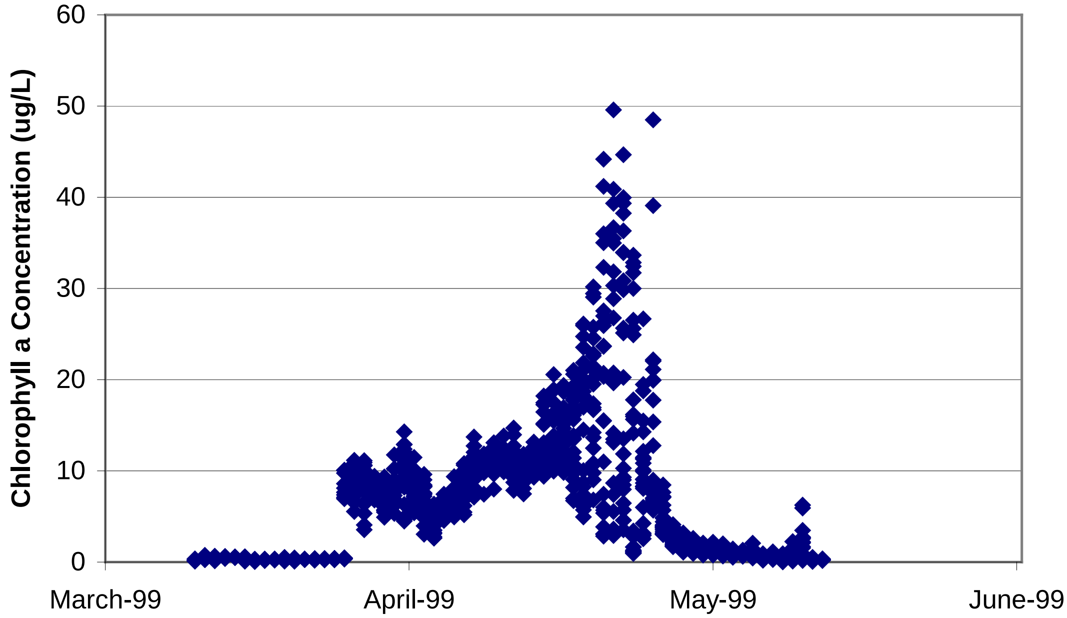


Figure 3-2. MWRA Preliminary Wetlab Chlorophyll a Data (at ~20 m depth)

4.0 RESULTS OF WATER COLUMN MEASUREMENTS

Data presented in this section are organized by type of data and survey. Physical data, including temperature, salinity, density, and beam attenuation are presented in Section 4.1. Nutrients, chlorophyll a, and dissolved oxygen are discussed in Section 4.2. Finally a summary of the major results of water column measurements (excepting biological measurements) is provided in Section 4.3.

Four of the nine surveys conducted during the semi-annual period were combined farfield/nearfield surveys. The first two combined surveys in early and late February (WF991 and WF992) were conducted prior to stratification of the water column. The onset of stratification was observed during the April combined survey (WF994) as shallow Harbor, coastal and Cape Cod Bay stations were still well mixed and the deeper nearfield, offshore and boundary stations were stratified. The last combined survey (WF997) was conducted in June and strong density gradient was observed throughout the Bays except for Boston Harbor stations, which remained well mixed due to tidal flushing. Data collected during the farfield surveys were evaluated for trends in regional water masses throughout the Boston Harbor, Massachusetts Bay and Cape Cod Bay. The variation of regional surface water properties is presented using contour plots of surface water parameters derived from the surface (A) water sample. Classifying data by regions allows comparison of the horizontal distribution of water mass properties over the farfield area.

The April combined survey WF994 took over a month to complete. Data for a majority of the stations, however, were collected between April 1st and April 11th including all data from the Cape Cod Bay, boundary, nearfield and Harbor areas (Figure 1-3). The data collected on April 26th and May 6th were from eight stations (N16F, F05, F06, F07, F10, F13, F14 and F19) in the offshore and coastal areas. The data evaluation presented in this section focuses on the data collected during the first two weeks in April though all data have been included in the representative graphics.

The vertical distribution of water column parameters is presented in the following sections along three farfield transects (Boston-Nearfield, Cohassett and Marshfield) in the survey area and one transect across the Nearfield (Figure 1-3). Examining data trends along transects provides a three-dimensional perspective of water column conditions during each survey. Nearfield surveys were conducted more frequently than farfield surveys allowing better temporal resolution of the changes in water column parameters and the onset of stratification. In addition to the nearfield vertical transect (Figure 1-3), vertical variability in nearfield data is examined and presented by comparing surface and bottom water concentrations (A and E depths) and by plotting individual parameters with depth in the water column. A complete set the surface contour maps, vertical transect plots and parameter scatter plots is provided in Appendices B, C and D, respectively.

4.1 Physical Characteristics

4.1.1 Temperature\Salinity\Density

The timing of the annual setup of vertical stratification in the water column is an important determinant of water quality, primarily because of the trend towards continuously decreasing dissolved oxygen in bottom water in the summer and early fall. The pycnocline, defined as a narrow water depth interval over which density increases rapidly, is caused by a combination of freshwater input during spring runoff and warming of surface water in the summer. Above the pycnocline the surface water is well mixed, and below the pycnocline density increases more gradually. As indicated above, the surface and bottom water density data collected during the combined surveys show that the onset of seasonal stratification had begun in the nearfield and offshore waters by the time of the April survey. For the purposes of this report, the water column is stratified when the difference between surface and bottom water density is greater than 1.0 sigma-t units. Using this definition, the water column was stratified by mid-April (Figure 4-1). The density profiles indicate that the pycnocline was developing across the eastern nearfield by late March (WN993) (Figure 4-2).

4.1.1.1 Horizontal Distribution

In early February (WF991), surface water temperatures were fairly uniform (3.5°C ± 1°C) across the entire farfield/nearfield area. The surface water temperatures ranged from 2.64°C at station F23 in the Harbor to 4.23°C at boundary station F12. In general, there was an inshore to offshore increase in temperatures and colder water in Cape Cod Bay compared to Massachusetts Bay (Figure 4-3). An inshore to offshore increase in surface water salinity was also observed during WF991. Salinity ranged between 29.4 and 32.3 PSU (Figure 4-4). Lower salinity values were observed within the Harbor and at the coastal stations along the south shore. Higher salinity values were found at the offshore and boundary stations. The higher salinity measurements were concomitant with the higher surface temperature along the boundary transect.

Surface water temperatures had cooled slightly by late February (WF982) and continued to be uniform (2.8°C ± 0.8°C) throughout the farfield/nearfield area ranging from 2.08°C at Harbor station F23 to 3.49°C at offshore station F17. The distribution of minimum and maximum surface temperatures followed the general trend of increasing temperatures from the coastal to the offshore waters. A similar pattern was observed for surface salinity data with the lowest surface salinity being observed at Harbor station F30 and the highest at boundary station F28.

By early April (WF984), surface water temperature had increased (5.4°C ± 1.2°C) and there was a decreasing temperature gradient from inshore to offshore (Figure 4-5). In early April, the highest surface temperature was observed at Harbor station F30 (6.60°C) and the lowest at boundary station F28 (4.15°C). By late April and early May, surface temperatures in the coastal and offshore waters had increased 9.0°C ± 0.5°C. Surface salinity values increased from inshore to offshore (Figure 4-6) with the minimum at Harbor station F30 (28.26 PSU) and the maximum at boundary station F28 (31.66 PSU). In early April, lower surface salinity was observed at the stations off of Cape Ann (F26 and F27) and into northern Massachusetts Bay (F22) and is indicative of the spring freshet of lower salinity surface waters from the Gulf of Maine and rivers to the north. Significant amounts of precipitation were measured at Boston's Logan airport from January to late March and flow in the Merrimack River increased over this time period reaching maximum flows in late March and early April (Figure 4-7). The Charles River flow peaked in February and declined thereafter.

The changes that were observed in surface temperatures and salinity from February (WF991 and WF992) to April (WF994) are indicative of the onset of seasonal stratification. By examining the temperature-salinity (T-S) plots, there is a clear change in the relationship between these two parameters between WF991 and WF994 (Figure 4-8). In early February, the trend within each of the regions was that increasing temperatures were concurrent with increasing salinity. The surface waters were generally cooler and less saline than bottom waters and thus the density gradient was not significant. By early April, this trend had reversed and higher temperatures were concomitant with lower salinity. In general, during this survey, surface waters were warmer and less saline. Bottom waters were cooler and more saline. The warmer and more saline waters that were observed in late April and early May at the southern coastal and offshore stations are clearly evident in the T-S plots suggesting that stratification intensified over the course of the month.

During the June farfield/nearfield survey (WF997), surface water temperature across the farfield region varied by 4.5°C (Figure 4-9). The highest temperature was observed in Cape Cod Bay

(18.66°C at station F02) and the lowest temperature was found at boundary station F29 (14.06°C). Surface water temperatures in the nearfield and offshore areas were relatively consistent at 16°C ± 1.0°C. Surface water salinity was also very consistent between all areas with the lowest salinity observed in the Harbor (30.49 PSU at station F30). Outside of the Harbor surface salinity was observed in the range of 31.2 to 31.4 PSU throughout the Bays (Figure 4-10).

The relatively constant surface salinity that was observed in June is consistent with the fact that there was very limited precipitation from late March through late June 1999. National Weather Service data for Boston (Logan Airport) indicate that below normal precipitation was recorded for the area from March through June. These 'drought' conditions in the New England region resulted in relatively high salinity in the coastal waters during this time period. The effect of the drought on salinity in the Harbor and coastal waters and the potential biological ramifications will be evaluated in more detail in the annual water column report.

4.1.1.2 Vertical Distribution

Farfield. The water column was well mixed throughout the region during the winter and early spring of 1999. Generally, there was a decrease in both surface and bottom water density over the course of this period throughout the farfield area (Figure 4-11). The water column was well mixed during each of the areas during the two February surveys. During the April/May survey (WF994), stratified conditions ($\Delta\sigma_t \geq 1.0$) were observed at the boundary and offshore stations. The development of stratification at these stations was primarily driven by a decrease in surface salinity (Figure 4-12), as surface and bottom water temperatures remained relatively unchanged during the first three combined surveys (Figure 4-13). By June (WF997), surface water temperatures had increased by ~10°C throughout the Bays and the offshore, boundary and Cape Cod Bay areas were strongly stratified ($\Delta\sigma_t > 2.0$). At the coastal stations, the water column was less strongly stratified ($\Delta\sigma_t$ ~1.0). The Harbor remained well mixed though June.

The seasonal establishment of stratified conditions was also clearly illustrated in the vertical contour plots of temperature, salinity, and sigma-T for the Boston-Nearfield, Cohassett, and Marshfield transects (Appendix C). In February (WF991), there was little variation in these parameters over the water column, though as shown in the transect plots for σ_t, there was an increase in density from inshore to offshore (Figure 4-14). In April (WF994), the physical characteristics of the water column indicated the onset of seasonal stratification with an increase in the density gradient between the surface and bottom waters (Figure 4-15). By June (WF997), a strong pycnocline had developed throughout the region (Figure 4-16). The onset of stratification in the spring is usually related to a freshening of the surface waters and then as the surface temperatures increase the density gradient or degree of stratification increases. Such was the case in the spring of 1999 as shown in Figure 4-17 the freshening of the surface layer was coincident with the decrease in surface density and the onset of stratification. By June the temperature gradient between surface and bottom waters (Figure 4-18) was clearly driving the density gradient that was observed. A complete set of farfield transect plots of physical water properties is provided in Appendix C.

Nearfield. The onset of stratification can be observed more clearly from the data collected in the nearfield area. The nearfield surveys are conducted on a more frequent basis and thus provide a more detailed picture of the physical characteristics of the water column. As illustrated in Figure 4-19, the water column was well mixed in late February, exhibited a slight density gradient in March (WN993) and had begun to stratify by early April (WF994). By mid-May (WN996) there was a strong density gradient ($\Delta\sigma_t$ ~2) between the surface and bottom waters in the nearfield area. A very strong density gradient ($\Delta\sigma_t$ >2) was observed across the nearfield in June and the nearfield water column remained stratified through the rest of this reporting period (see Figure 4-1). The physical characteristics that led to the establishment of stratified conditions are detailed below.

The gradient between surface and bottom water salinity remained relatively weak (<0.5 PSU) until the early April (Figure 4-20). In April (WF994), surface salinity decreased by ~ 1 PSU across the nearfield and remained ≤ 30.5 PSU through May before returning to ~31.5 PSU in June and July. Meanwhile, bottom salinity remained relatively constant (31.5 – 32.0 PSU) over the entire time period except at the Harbor influenced stations. The decrease in surface salinity in early April resulted from fresh water input to the coastal waters and the freshet from the Gulf of Maine (see Figure 4-6). The resulting salinity gradient that developed initiated the onset of stratification.

The nearfield water column was well mixed with respect to temperature (Figure 4-21) during the first three surveys of 1999. The temperature gradient between surface and bottom waters in the nearfield was also negligible in April when only a 1-2 °C gradient was observed. By early May (WN995), surface water temperature increased to 9 °C while bottom water temperature stayed around 5 °C across the nearfield. At the inner nearfield stations (N10 and N11), surface and bottom water temperatures were similar (~9°C) during WN995 likely because of a combination of storm and tidal mixing. The gradient between surface and bottom waters continued to increase after the establishment of seasonal stratification resulting in a stronger density gradient in May and June. Nearfield surface water temperatures continued to increase reaching a maximum of 17 to 20 °C by late July. The average bottom water temperature remained relatively stable (6-9°C) after establishment of stratified conditions.

4.1.2 Transmissometer Results

Water column beam attenuation was measured along with the other *in situ* measurements at all nearfield and farfield stations. The transmissometer determines beam attenuation by measuring the percent transmission of light over a given path length in the water. The beam attenuation coefficient (m^{-1}) is indicative of particulate concentration in the water column. The two primary sources of particles in coastal waters are biogenic material (plankton or detritus) or suspended sediments. Beam attenuation data is often evaluated in conjunction with fluorescence data to ascertain source of the particulate materials (phytoplankton versus detritus or suspended sediments).

In early February (WF991) surface water beam attenuation ranged from 2.25 m^{-1} at station F30 located in the north Harbor to 0.68 m^{-1} at Boundary station F12 in Stellwagen Basin. There was a decrease from inshore to offshore with elevated values being observed in the Harbor and coastal waters. The gradient decreased across the nearfield and offshore (Figure 4-22). The relatively high beam attenuation values in the nearfield were coincident with elevated chlorophyll concentrations. During the second farfield survey in late February (WF992), surface water beam attenuation in Massachusetts Bay exhibited a sharper decrease in values away from the Harbor (6.11 m^{-1} at F23 to 0.82 m^{-1} at station F12). This evident in the vertical contour of beam attenuation along the Boston-Nearfield transect (Figure 4-23). The high beam attenuation values observed at station F23, coastal stations F18, F24 and F25, and the western nearfield were concomitant with very high surface water fluorescence values. At the boundary stations, the correspondence between beam attenuation (<1.2 m^{-1}) and fluorescence (2.5 to 8.0 $\mu g\ l^{-1}$) was not very strong perhaps due to the lack of the Harbor detrital and suspended sediment signal.

During the April and June farfield/nearfield surveys (WF984 and WF987), beam attenuation in the surface water exhibited a similar decrease in values from inshore to offshore stations and was indicative of an increase in water clarity away from Boston Harbor. In April, the highest surface water beam attenuation values were found at the Harbor stations (2.47 m^{-1} at F23) and values decreased with distance from the Harbor. In June, high surface water beam attenuation values were again observed at the Harbor stations (2.74 m^{-1} at F30) and very low values were found throughout the nearfield and further offshore (0.6 to 0.8 m^{-1}), which was coincident with very low surface water fluorescence.

The clear inshore to offshore horizontal gradient of decreasing beam attenuation away from Boston Harbor can also be seen over the water column along the Boston-Nearfield transect (Figure 4-23). Prior to stratification (WF991 and WF992), elevated beam attenuation values were observed over the entire water column from Harbor station F23 to the middle of the nearfield. Even once seasonal stratification had been established, the influence of the Harbor could be observed over much of the water column at coastal station F24 and into the western nearfield.

4.2 Biological Characteristics

4.2.1 Nutrients

Nutrient data were preliminarily analyzed using x/y plots of nutrient depth distribution, nutrient/nutrient relationships, and nutrient/salinity relationships (Appendix D). As with the physical characteristics, surface water contour maps (Appendix B) and vertical contours from select transects (Appendix C) were also produced from the nutrient data to illustrate the spatial variability of these parameters.

The nutrient data for February to July 1999 represent a return to a more typical progress of seasonal events in the Massachusetts and Cape Cod Bays in comparison to the data collected during the first semiannual period of 1998. Maximum nutrient concentrations were observed in early February when the water column was well mixed and biological uptake of nutrients was limited. The winter/spring 'bloom' reduced nutrient concentrations in the surface waters from February to April. With the onset of stratification, nutrient concentrations in the surface waters were depleted throughout much of the region by late April/early May. Seasonal stratification led to the persistent nutrient depleted conditions in the surface waters and ultimately to an increase in nutrient concentrations in bottom waters due to increased rates of respiration and remineralization of organic matter. The Harbor signal of elevated nutrient concentrations (especially ammonium) was observed throughout this time period.

4.2.1.1 Horizontal Distribution

During this semi-annual period, the highest nutrient concentrations were consistently measured at the Harbor and Harbor influenced coastal and nearfield stations. Dissolved inorganic nutrients were generally at a maximum in surface waters during the first winter survey (WF991). As seen during the fall/winter of 1998 at station F23 near the Deer Island Harbor discharge, ammonium concentrations remained elevated with respect to other stations and compared to previous baseline monitoring years. By late February (WF992), nutrient concentrations had decreased throughout the region with the highest concentrations still observed in the Harbor and lowest in Cape Cod Bay. In April (WF994), unusual patterns in surface nutrient concentrations were observed due to the month long duration of the survey. Interestingly, the pattern when evaluated based on date of sample collection reveals that April was not only a dynamic month weather wise (hence the long survey), but it also was a period of increasing biological production and utilization of nutrients. Nutrient concentrations at the Cape Cod Bay, boundary and northern offshore area stations (April 1^{st} and 6^{th}) were relatively high (excepting Cape Cod Bay stations) and comparable to the values observed in late February. By mid-April and early May, nutrient concentrations had decreased to relatively low levels in the nearfield and southern offshore area stations (except for silicate, which remained elevated). By June (WF997), nutrients had decreased to relatively low concentrations (nitrate at or near detection limits) throughout the region except in Boston Harbor and near Harbor coastal stations.

In early February (WF991), the highest nutrient values were found in or near Boston Harbor (Dissolved inorganic nitrogen (DIN) = 28.37 µM, Nitrate (NO_3) = 13.52 µM and Silicate (SIO_4) = 15.81 µM at station F23; Phosphate (PO_4) = 1.36 µM at coastal station F24). The lowest concentrations were observed in Cape Cod Bay at station F02 (DIN = 0.75 µM; NO_3 = 0.33 µM; SIO_4 = 1.15 µM; PO_4 = 0.65 µM). Nutrient concentrations generally decreased outside of the Harbor and away from the coast as shown for DIN in Figure 4-24. The low nutrient concentrations at station F02 coincided with elevated chlorophyll concentrations and phytoplankton abundance (centric diatoms dominant) and suggest the winter-spring bloom occurred earlier in Cape Cod Bay than Massachusetts Bay, as is the usual pattern. The phytoplankton abundance, though relatively high in comparison to other coincident data, did not achieve abundances that indicate an actual phytoplankton bloom was occurring. The very low concentrations of nitrate and silicate, however, suggest that a bloom event may have occurred prior to this early February survey. Ammonium concentrations in Boston Harbor continued the trend of abnormally high concentrations that had been observed during the fall/winter of 1998.

During the late February survey (WF992), the nutrient pattern was similar to WF991 with high concentrations in the Harbor and along the south shore and decreasing offshore. In general, surface water nutrient concentrations had decreased since early February, but were still replete throughout the region. Ammonium concentrations in the Harbor remained elevated with a maximum concentration at station F30 of 20.02 µM. A very sharp gradient in NH_4 was seen between the Harbor stations and the adjacent coastal stations (Figure 4-25). High chlorophyll concentrations at these Harbor-influenced coastal stations suggest that the strong gradient resulted from biological utilization of NH_4 as it was flushed from the Harbor (see Section 4.2.2.1 for discussion).

In early April (WF994), the spatial pattern persisted with high concentrations in the Harbor, a general decrease in concentrations from inshore to offshore, and lower concentrations in Cape Cod Bay. Due to the month long duration of the survey, however, unusual patterns in surface nutrient concentrations were observed. Nutrient concentrations at the Cape Cod Bay, boundary and northern offshore area stations (sampled on April 1st and 6th) remained relatively high and comparable to the values observed in late February. By mid-April and early May, nutrient concentrations had decreased to relatively low levels in the nearfield and southern offshore area stations (except for silicate, which remained elevated). This pattern was most striking in the NO_3 concentrations, which are presented in Figure 4-26. The low NO_3 (and PO_4) concentrations observed in the nearfield on April 11th were coincident with elevated chlorophyll concentrations and highest production rates observed during this semiannual period. A similar pattern was not observed for SiO_4 due to the dominance of the phytoplankton assemblage by microflagellates and dinoflagellates rather than diatoms. Nutrient concentrations remained low in Cape Cod Bay due to a sustained presence of an abundant phytoplankton assemblage dominated by centric diatoms.

In June (WF997), the highest concentrations were once again found in Boston Harbor (DIN = 13.1, NH_4 = 10.44 µM; NO_3 = 2.25 µM; SIO_4 = 7.51 µM at station F23). Nutrient concentrations outside the Harbor and Harbor influenced coastal stations were very low. The lowest nutrient concentrations were observed at stations in the nearfield (DIN = 0.04 µM, NH_4 = 0.01 µM, and SIO_4 = 1.00 µM at N11; NO_3 = 0.01 µM at N20; PO_4 = 0.10 µM at N05). The low surface water nutrient concentrations found throughout Massachusetts and Cape Cod Bays were coincident with low surface chlorophyll concentrations. This pattern is typical of the stratified, summer conditions that had developed in the Bays by June.

4.2.1.2 Vertical Distribution

Farfield. The vertical distribution of nutrients was evaluated using vertical contours of nutrient data collected along three transects in the farfield: Boston-Nearfield, Cohassett, and Marshfield (Figure 1-3; Appendix C). During the first combined farfield/nearfield survey in early February (WF991), the transect contours indicate that the water column was replete with nutrients. There was an inshore/offshore gradient of decreasing nutrient concentration and little variation over depth for each of the nutrients. This pattern was most pronounced for the NH_4 data that, as expected, clearly showed the Harbor/coastal signal (Figure 4-27). By late February (WF992), nutrient concentrations had decreased in the upper water column, but were still replete along each of the three transects. The inshore/offshore gradients remained more intense than the vertical gradients for each of the nutrients.

By April (WF994), the vertical nutrient distribution had begun to change. There was still a clear inshore/offshore decrease in surface water nutrient concentrations, but NO_3 and PO_4 concentrations had become depleted in the surface waters along both the Boston-Nearfield and Marshfield transects (Figure 4-28). This pattern is deceiving given that the survey was conducted over the course of a month. For instance along the Boston-Nearfield transect stations F27 and F24 were sampled on April 6th, the entire nearfield and station F23 on April 11th and station F19 on April 26th and the three inshore stations along the Marshfield transect were sampled May 6th. Taken in the context of when the stations were sampled, it is clear that NO_3 and PO_4 had become depleted in the surface waters of the nearfield and southern Massachusetts Bay by mid-April to early May. This depletion in nutrients was coincident with elevated chlorophyll concentrations and high rates of primary production and typically occurs following a winter-spring bloom and the onset of stratification (biological uptake and physical barriers to deep-water sources of nutrients).

During the final combined farfield/nearfield survey for this semiannual period, nutrient levels in the surface waters at the non-Harbor-influenced stations were depleted. Ammonium concentrations still exhibited a strong Harbor/coastal signal with a dominant inshore/offshore horizontal gradient of decreasing concentrations. There was a strong vertical gradient for NO_3, PO_4, and SiO_4 along each of the transects with very low concentrations above the pycnocline (~20 m) and replete concentrations below (see Appendix C). A subsurface maximum in chlorophyll was observed at the pycnocline along each of these transects.

Nutrient-salinity plots are useful in distinguishing water mass characteristics and in examining regional linkages between water masses (Appendix D). Dissolved inorganic nitrogen (DIN) plotted as a function of salinity for each of the combined surveys illustrates the transition from winter to summer conditions that was evident for each of the nutrients. During the early February survey, the DIN-salinity plot exhibited a negative correlation between DIN and salinity (Figure 4-29a). This relationship is indicative of winter conditions when the water column is not stratified and the Harbor and coastal waters are a source of low salinity, nutrient rich waters. By late February (WF992), the winter signature was still present with decreasing DIN concentrations with increasing salinity at the Harbor, coastal and western nearfield stations, but there also appears an increase in DIN concentrations at high salinity values (Figure 4-29b). Though stratification had not yet developed, an increase in nutrient uptake in the offshore surface waters led to a small vertical gradient in DIN with lower concentrations in the lower salinity surface waters and higher concentrations at depth. This survey was conducted during the initiation of the transition period between winter and summer biogeochemical conditions. By April, the summer relationship between DIN and salinity was evident in the nearfield data, but due to the length of the survey and the continued influence of elevated concentrations in the Harbor the relationship was obscured (Figure 4-30a). In June (WF997), elevated DIN concentrations were still found at lower salinity in the Harbor and Harbor influenced stations, but the summer conditions in the rest of Massachusetts and Cape Cod Bays was clearly evident (Figure 4-30b). The low DIN concentrations at intermediate salinity represent the surface waters throughout the Bays where biological activity has consumed DIN from both horizontal (Harbor/coastal) and vertical (bottom waters) sources.

Nearfield. In previous sections, the transition from winter to summer physical and nutrient characteristics was discussed. For the nearfield, the transition from winter to summer nutrient regimes can be demonstrated by examining the variations in surface and bottom water NO_3 and SiO_4 concentrations. In Figures 4-31 and 4-32, surface and bottom water NO_3 and SiO_4 concentrations from five nearfield stations representing the four corners (N01, N04, N07, and N10) and the center (N21) of the nearfield were plotted for each of the nine surveys conducted this period. The highest surface water NO_3 concentrations were observed during the first combined survey in February and generally decreased over the course of this period. During the first three surveys (February and March), there was little variation in NO_3 between the surface and bottom waters at each station and the nearfield waters were replete with respect to these nutrients. By April, however, NO_3 concentrations had become depleted and perhaps nutrient limiting in the nearfield surface waters while remaining replete at depth (≥5 µM; Figure 4-31). Nearfield surface waters remained depleted in NO_3 through July.

Surface and bottom water silicate concentrations generally increased from February to early May (Figure 4-32). There was a sharp decrease in surface SiO_4 between the early May (WN995) and mid-May (WN996) surveys from about 5-10 µM to 1-2 µM. This rapid change in SiO_4 concentrations was coincident with an increase in phytoplankton abundance that resulted from a dramatic increase in centric diatoms between the two surveys (see Appendix F). Silicate concentrations remained relatively low in the nearfield surface waters through July.

The relationship of nutrients to salinity in the nearfield followed the trend discussed above for the whole region (see Appendix D). The relationships between nutrients and salinity in the nearfield followed a rather smooth transition from winter to summer condition. In early February, nutrient concentrations decreased with increasing salinity. The nearfield began transitioning between winter and summer nutrient conditions by late February and mid-March. From April through June, nutrients decreased in the surface waters leading to a direct correlation between nutrient concentrations and salinity. In June, DIN concentrations were relatively low over the entire water column and salinity range. By July, nutrient concentrations in the bottom more saline waters had increased due to the remineralization of nutrients from organic matter at depth. The nutrient-salinity plots exhibited the typical summer relationship of increasing nutrient concentrations with increasing salinity (and depth) and the lower salinity surface waters being depleted or nearly depleted of nutrients.

An examination of the nutrient-nutrient plots showed that surface waters were generally depleted in DIN relative to PO_4 and SiO_4 in the nearfield for the entire semi-annual period (Appendix D). The DIN:PO_4 ratio was less than the Redfield value of 16 at all of the nearfield stations for the entire semiannual period. From April through July, the nearfield waters were depleted in DIN versus PO_4 and SiO_4. The data indicate that nutrient limitation due to the lack of NO_3 and NH_4 occurred throughout most of the nearfield from April through July.

4.2.2 Chlorophyll A

Chlorophyll concentrations (based on *in situ* fluorescence measurements) were relatively high during the first three surveys, high throughout the two Bays in April and generally decreased over the remainder of the period although high subsurface maxima were observed through July. The high chlorophyll concentrations in the nearfield during the winter/spring period of 1999 were a continuation of the elevated concentrations observed in late 1998 (Figure 4-33). The mean chlorophyll concentration for the nearfield for winter/spring (February through April) of 1999 was 5.08 μgL^{-1}, which is greater than any previous winter/spring mean obtained for the nearfield during the baseline monitoring period. The 1999 winter/spring mean exceeded the chlorophyll threshold value of 4.76 μgL^{-1} that had been calculated as the 95^{th} percentile of the baseline winter/spring distribution for 1992 to 1998. The elevated chlorophyll concentrations observed during the 1998/1999 winter period will be evaluated in more detail in the annual water column report for 1999.

It is interesting that although the nearfield winter/spring chlorophyll concentrations were unprecedented for the baseline monitoring program phytoplankton abundance was generally lower than previous winter/spring periods. This may have been because the abundant taxa were large cells (*Ceratium* spp.) and chain forming diatoms (*Chaetoceros* spp.) that may not be adequately captured by bottle sampling or had higher per cell chlorophyll values than dominant species in previous years. The high abundance of *Chaetoceros socialis* and *Chaetoceros* chains was also noted by researchers using a video plankton recorder to quantify plankton in the Bays in late February 1999 (Davis and Gallager, 1999). The disconnect between the high chlorophyll concentrations and elevated productivity and relatively low phytoplankton abundance will be a topic of discussion in the 1999 annual water column report.

Maximum chlorophyll values for the Boundary area were observed in early February (WF991). In Cape Cod Bay, elevated values were seen from February to June with the maximum observed in June. Coastal stations also exhibited high chlorophyll maximum values during each of the surveys with the highest levels observed in late February. The nearfield and offshore areas followed similar patterns with relatively high concentrations observed during each survey with maximum and highest survey mean concentrations observed in April. Boston Harbor concentrations increased from low values (<1.0 μgL^{-1}) in early February to high values in June (20 μgL^{-1} maximum). The seasonal patterns in chlorophyll that were observed in 1999 are typical for the Bays and Boston Harbor.

4.2.2.1 Horizontal Distribution

Surface chlorophyll concentrations were relatively high throughout the region during the first three combined surveys of 1999 (Figures 4-34, 35 and 36). In early February (WF991), surface chlorophyll values were high in the nearfield (3-6 μgL^{-1}) and Cape Cod Bay (6-7 μgL^{-1}), but the highest value was found at boundary station F27 (13.46 μgL^{-1}). Surface chlorophyll concentrations were generally low ($\leq$ 1 μgL^{-1}) in Boston Harbor, in coastal waters and in the offshore waters south of the nearfield (Figure 4-34). By late February, surface chlorophyll concentrations in these coastal waters and the western nearfield had increased with the maximum concentration of 15.34 μgL^{-1} found at station F18 (Figure 4-35). This increase corresponded with a doubling of phytoplankton abundance, which was primarily due to a large increase in the abundance of centric diatoms (see Section 5.3.1). These elevated surface chlorophyll concentrations were also coincident with a very strong gradient in DIN (primarily NH_4) outside of the Harbor, which was due to the biological drawdown of nitrogenous nutrients in this area. Surface chlorophyll concentrations decreased to the east across the nearfield and offshore and were still relatively low in Boston Harbor and had decreased in Cape Cod Bay.

During the April survey (WF994), surface chlorophyll concentrations were relatively high in Boston Harbor, coastal and nearfield waters. Low concentrations were generally found in the offshore, boundary and Cape Cod areas (Figure 4-36). Microflagellate abundance had increased significantly and had become the dominant phytoplankton in the nearfield by April perhaps accounting for the increase in surface (and subsurface) chlorophyll concentrations. By June (WF997), the phytoplankton assemblage throughout the farfield was dominated by microflagellates and the regional pattern in surface chlorophyll had changed substantially. The chlorophyll concentrations at the Boston Harbor and near-Harbor coastal stations were relatively high ranging from 3 μgL^{-1} at station F14 to 20 μgL^{-1} at station F30. Surface chlorophyll concentrations decreased sharply further offshore from 1-2.4 μgL^{-1} in the western nearfield to <1 throughout the rest of Massachusetts and Cape Cod Bays. This was coincident with a very strong inshore to offshore decrease in nutrient concentrations and nitrogenous nutrient depletion in the surface waters throughout the Bays. The sharp inshore to offshore decrease in surface chlorophyll concentrations had been observed in the nearfield in mid-May and was also observed during the two July surveys.

4.2.2.2 Vertical Distribution

Farfield. The chlorophyll concentrations over the water column were examined along the three east/west farfield transects (Figure 1-3) to compare the vertical distribution of chlorophyll across the region. In early February (WF991), surface chlorophyll concentrations along the Cohassett and Marshfield transects were relatively low (<1 μgL^{-1}) and increased to 1-3 μgL^{-1} at depths of 5 to 30 m. Along the Boston-Nearfield transect, surface chlorophyll values reached a maximum of 5-7 μgL^{-1} in the western nearfield and coastal waters and decreased inshore to the Harbor and offshore through the nearfield. Higher concentrations of 7-9 μgL^{-1} were found in the subsurface waters of the western nearfield. By late February, surface and subsurface chlorophyll concentrations at coastal station F24 had increased to >13 μgL^{-1} and ranged from 5-11 μgL^{-1} in the western nearfield (Figure 4-37). Subsurface chlorophyll concentrations of 5-9 μgL^{-1} were seen across the nearfield out to Stellwagen Basin (station F19). A subsurface maximum of >13 μgL^{-1} was also observed at station F15 along the Cohassett transect with a subsurface layer (3-7 μgL^{-1}) extending inshore to station F14 and offshore to station F17.

Due to the timing of sampling during the April survey, it is difficult to interpret the vertical transects for this survey as some of the stations along each transect were collected more than a month apart. Therefore, the transects have been evaluated based on segments that were collected concomitantly. In early April, there was a significant bloom in chlorophyll across the nearfield with subsurface concentrations of >13 μgL^{-1} and similar subsurface concentrations were found at station F15 along the Cohassett transect. The nearfield subsurface bloom extended into the coastal and Harbor areas with chlorophyll concentrations of 7-9 μgL^{-1} being observed. Elevated subsurface chlorophyll concentrations of 7-9 μgL^{-1} were also seen extending offshore from station F15 to station F17. Lower concentrations (<5 μgL^{-1}) were seen over the water column along the Marshfield transect to the south, which was sampled the same day (May 6th).

Chlorophyll concentrations had decreased along the transects by the June survey (WF997). The patterns along the transects showed the typical progression to summer conditions with elevated chlorophyll concentrations near sources of nutrients – Boston Harbor and deep bottom waters below the pycnocline (Figure 4-38). Surface chlorophyll concentrations in the Harbor and coastal waters along the Boston-Nearfield transect ranged from 7-9 μgL^{-1}. Subsurface chlorophyll maxima were observed across the nearfield and out to boundary station F27 that was closely associated with the pycnocline at 20 to 30 m (see Figure 4-16). Chlorophyll concentrations in this layer increased from 5-7 μgL^{-1} in the nearfield to 11-13μgL^{-1} at station F19 and >13 μgL^{-1} at station F27. Subsurface maximum chlorophyll layers were also observed along the Cohassett and Marshfield transects. At stations where phytoplankton samples were collected (stations F24, F24, F06, F27 and N16), there was a notable difference in the phytoplankton assemblages associated with the high surface chlorophyll concentrations in the Harbor and coastal areas and the subsurface chlorophyll maximum that was observed along each of the transects. At stations F23 and F24, total phytoplankton abundances were 2 to 3 times higher and diatoms and cryptomonads made up a significant portion of the phytoplankton assemblage. Samples collected from the nearfield, offshore and boundary stations were overwhelmingly dominated by microflagellates during the June survey.

Nearfield. The vertical distribution of chlorophyll was examined along a transect from the southwest corner to the northeast corner of the nearfield area (see Figure 1-3). The southwest corner, station N10, often exhibits a Harbor chlorophyll signal while an offshore chlorophyll signal is more often observed at the northeast corner, station N04. Chlorophyll concentrations were relatively high during the first four surveys of 1999 (Figure 4-39). In early February, surface concentrations ranged from 3-5 μgL^{-1} in the western nearfield to <1 μgL^{-1} in the northeast corner at stations N15 and N04 where subsurface chlorophyll maxima (5-7 μgL^{-1}) were observed. By late February, subsurface chlorophyll concentrations had increased to 7-9 μgL^{-1} across most of the nearfield and remained low (<1 μgL^{-1}) in surface waters in the northeast corner. During the March survey (WN993), surface chlorophyll concentrations were low (<1-3 μgL^{-1}) across most of the nearfield transect and subsurface maxima (5-13 μgL^{-1}) were located deeper in the water column. Phytoplankton data collected from stations N14 and N18 indicate that total abundance and the abundance (and dominance) of centric diatoms increased progressively from early February to March resulting in a concurrent increase in chlorophyll (see Section 5.3.1). The surface and mid-depth phytoplankton abundances were similar in March so it is likely that the elevated chlorophyll concentrations at depth were due to an increase in chlorophyll per cell in response to decreasing light at depth in the well-mixed water column.

The highest chlorophyll concentrations of this semiannual period were observed during the April survey (Figure 4-39). Chlorophyll concentrations in the subsurface maximum layer were >13 μgL^{-1} across most of the nearfield transect. Surface chlorophyll concentrations were high at station N10 (>13 μgL^{-1}) and decreased sharply to <1 μgL^{-1} at station N21 and the eastern nearfield. This was coincident with a very strong inshore to offshore decrease in nutrient concentrations. With the onset of stratification, the winter-spring bloom had depleted nutrients (especially NO_3) in the nearfield surface waters. The availability of nutrients at depth led to the subsurface chlorophyll maximum that was located just above the pycnocline. Phytoplankton abundances in the nearfield chlorophyll maximum samples were almost double that of the surface samples (stations N04, N18 and N16). As would be expected, the elevated chlorophyll concentrations and phytoplankton abundance were concomitant with high production rates during the April survey.

Preliminary chlorophyll data from the MWRA Wetlabs instrument (moored at ~20 m depth near the center of the nearfield area) were comparable (10-13 μgL^{-1}) to the nearfield data that were collected on April 11th. The continuous mooring data indicated that chlorophyll concentrations increased in the nearfield following the survey to 20-50 μgL^{-1} (see Figure 3-2). These data will be reviewed and presented in more detail in the 1999 annual water column report.

By early May, chlorophyll concentrations had decreased to <3 μgL^{-1} over almost all of the nearfield transect (Figure 4-40). There was an equally severe decrease observed in phytoplankton abundance from 2-3 million cells L^{-1} to ~0.5 million cells L^{-1}. Higher chlorophyll concentrations (5-7 μgL^{-1}) were found in the deeper bottom waters at stations N15 and N04, which may have been associated with plankton that had settled out of the water column after the senescence of the bloom. Elevated chlorophyll concentrations were also seen in the surface waters at station N10. By mid-May, the surface chlorophyll concentrations at the Harbor influenced western nearfield stations had increased to 9-11 μgL^{-1} while concentrations remained low further offshore along the transect. By June and into July, the typical summer chlorophyll pattern was observed in the nearfield. Elevated surface chlorophyll concentrations at the Harbor influenced western nearfield stations and subsurface chlorophyll maxima across the rest of the nearfield that are associated with the pycnocline and the nutrients available from the deeper waters.

4.2.3 Dissolved Oxygen

Spatial and temporal trends in the concentration of dissolved oxygen (DO) were evaluated for the entire region (Section 4.2.3.1) and for the nearfield area (Section 4.2.3.2). Due to the relative importance of identifying low DO conditions, bottom water DO minima were examined for the water sampling events. The minimum measured DO concentration was 7.74 mgL^{-1} in the nearfield in July (WN998). Regionally, a DO concentration minimum of 7.34 mgL^{-1} was observed in Cape Cod Bay in June (WF997). DO concentrations were within the range of values observed during previous years though the bottom water concentration in June 1999 was significantly lower than that observed in 1998. Due to the higher concentration of organic matter transferred to the bottom following the winter/spring bloom in 1999, the lower bottom water DO concentrations are not surprising and the trend may continue through the remainder of 1999. The June bottom water DO concentration has traditionally been used as an indicator of DO minimum concentrations in September/October. This early warning indicator could be used to alleviate or at least heighten awareness about potentially harmful bottom water DO conditions that could occur in the fall.

4.2.3.1 Regional Trends of Dissolved Oxygen

The DO of bottom waters was compared between areas and over the course of the four combined surveys. A time series of the average bottom water DO concentration for each area is presented in Figure 4-41a. Average bottom water DO concentrations ranged from 8 to 12 mgL^{-1}. Bottom water DO concentrations remained relatively constant from early February through April. Lower concentrations were consistently observed at the deeper boundary and offshore areas over this period. Between the April and June surveys, there was a sharp decline in bottom water DO throughout the Bays. In Boston Harbor and Cape Cod Bay, bottom water DO concentrations declined by more than 3 mgL^{-1}. Declines of 1.5-2 mgL^{-1} were found in the other areas. The trend of declining bottom water DO concentrations following the establishment of stratification and the cessation of the winter-spring bloom is typical for the Bays. The large decline that was observed, however, may be an indication that DO utilization may be occurring more rapidly and achieve lower concentration in 1999 compared to previous baseline years.

The trend of decreasing DO in the bottom waters was also apparent in the DO %saturation data (Figure 4-41b). In general, DO %saturation increased in each of the areas from early February to April when the highest average DO % saturation was observed. Bottom waters were supersaturated during this time period in the Boston Harbor, Cape Cod Bay and the coastal areas and slightly undersaturated in the deep waters of the boundary and offshore areas. The bottom waters were undersaturated with respect to DO in June in all of the areas with average values ranging from about 85% to 98% saturation.

In February, the spatial distribution of DO generally exhibited an inshore to offshore trend of decreasing DO concentrations along the three regional transects (Appendix C). There was also a decrease in DO with depth. By April, the nearfield bloom led to high DO concentrations in the surface layer and seasonal stratification led to lower DO concentrations in the bottom waters along each of the transects. In June, DO concentrations had decreased throughout the water column and reached relatively low levels (8-9 mgL^{-1}) in the bottom waters (Figure 4-42). Elevated DO concentrations (10-11 mgL^{-1}) were coincident with subsurface chlorophyll maxima along each of the transects (see Figure 4-38).

4.2.3.2 Nearfield Trends of Dissolved Oxygen

Dissolved oxygen concentrations and percent saturation values for both the surface and bottom waters of the 21 nearfield stations were averaged and plotted for each of the nearfield surveys. From February to April, the average surface and bottom water DO concentrations for the nearfield area generally ranged from 10.5-12 mgL^{-1} (Figure 4-43a). A maximum average concentration of 13 mgL^{-1} was observed in the surface waters in April that was coincident with elevated chlorophyll concentrations and high primary production. Following the April survey, DO concentrations decreased in both the surface and bottom waters reaching average concentrations in June and July of about 8 to 9 mgL^{-1}.

There was little variation in average DO %saturation for the surface and bottom waters for the first three surveys of 1999 ranging from 100 to 110 %saturation (Figure 4-43b). With the onset of stratification in April (WF994), the gradient between surface and bottom water DO %saturation began to increase. Surface waters became supersaturated (average >125 %saturation) due to the increased production and phytoplankton and the bottom waters remained unchanged from the previous surveys. Following the April survey, DO %saturation values generally decreased. Although surface waters remained supersaturated, bottom waters decreased to 85 %saturation by July.

In February, the water column was well mixed and DO concentrations were consistent across the nearfield (Figure 4-44). By April, large vertical gradients in DO concentration were observed because of a combination of physical and biological factors. The nearfield water column was becoming stratified separating the biological and chemical processes of the surface and bottom waters. In the surface water, the increase in DO concentrations was concomitant with an increase in chlorophyll concentrations, phytoplankton abundance and production rates. These processes were restricted to the surface water, however and the bottom water DO concentrations remained unchanged. In June and July, the nearfield water column had become strongly stratified. By late July (WN999) DO concentrations remained high in the subsurface chlorophyll maximum layer while in the bottom waters respiration rates had increased and reduced DO concentrations to less than 8 mgL^{-1} in at some stations.

4.3 Summary of Water Column Results

- The onset of stratification was observed during the April combined survey at the boundary and offshore stations. The development of stratification at these stations was primarily driven by a decrease in surface salinity, as surface and bottom water temperatures remained relatively unchanged. By June, surface water temperatures had increased by ~10°C throughout the Bays and a strong density gradient was observed throughout the Bays except for Boston Harbor stations, which remained well mixed due to tidal flushing.
- In the nearfield, the water column had begun to stratify in April and by mid-May there was a strong density gradient between the surface and bottom waters in the nearfield area, which continued to intensify through July.
- The nutrient data for February to July 1999 represented a return to a more typical progress of seasonal events in the Massachusetts and Cape Cod Bays in comparison to the data collected during the first semiannual period of 1998.
  - Maximum nutrient concentrations were observed in early February when the water column was well mixed and biological uptake of nutrients was limited.
  - The winter/spring 'bloom' reduced nutrient concentrations in the surface waters from February to April
  - With the onset of stratification in April, nutrient concentrations in the surface waters were depleted throughout much of the region by late April/early May.
  - Seasonal stratification led to persistent nutrient depleted conditions in the surface waters and ultimately to an increase in nutrient concentrations in bottom waters due to increased rates remineralization of organic matter.
- The Harbor signal of elevated nutrient concentrations (especially ammonium) was observed throughout this time period.
- The trend of high chlorophyll concentrations in the nearfield that had been observed in late 1998 continued into the winter/spring period of 1999.
- The mean chlorophyll concentration for the nearfield for winter/spring was higher than any previous winter/spring mean obtained for the nearfield during the baseline monitoring period and exceeded the winter/spring chlorophyll threshold value of 4.76 μgL^{-1}.
- The unprecedented nearfield winter/spring chlorophyll concentrations were not directly reflected in the phytoplankton data. This may have been because the abundant taxa were large cells and chain forming diatoms that may not be adequately captured by bottle sampling or had higher per cell chlorophyll values than dominant species in previous years.
- High chlorophyll concentrations were observed throughout Massachusetts and Cape Cod Bays from February to April and remained relatively high in June. Boston Harbor concentrations increased from low values in early February to high values in June. The seasonal patterns in chlorophyll that were observed in 1999 are typical for the Bays and Boston Harbor.
- DO concentrations in 1999 were within the range of values observed during previous years and followed the typical trends:

- In February, the water column was well mixed and DO concentrations were high and consistent across the region.
  - By April, vertical gradients in DO concentration were observed because the water column was becoming stratified separating the biological and chemical processes of the surface and bottom waters.
  - In the surface waters, increases in chlorophyll concentrations, phytoplankton abundance and production rates led to increased DO concentrations.
  - Due to stratification, these processes were restricted to the surface water and bottom water DO concentrations remained unchanged.
  - In June and July, the nearfield water column had become strongly stratified.
  - DO concentrations remained high in the subsurface chlorophyll maximum layer.
  - In the bottom waters, increased respiration rates reduced DO concentrations to less than 8 mgL^{-1} at some stations.
- The trend of declining bottom water DO concentrations following the establishment of stratification and the cessation of the winter-spring bloom is typical for the Bays. The large decline that was observed, however, may be an indication that DO utilization may be occurring more rapidly and achieve lower concentration in 1999 compared to previous baseline years.

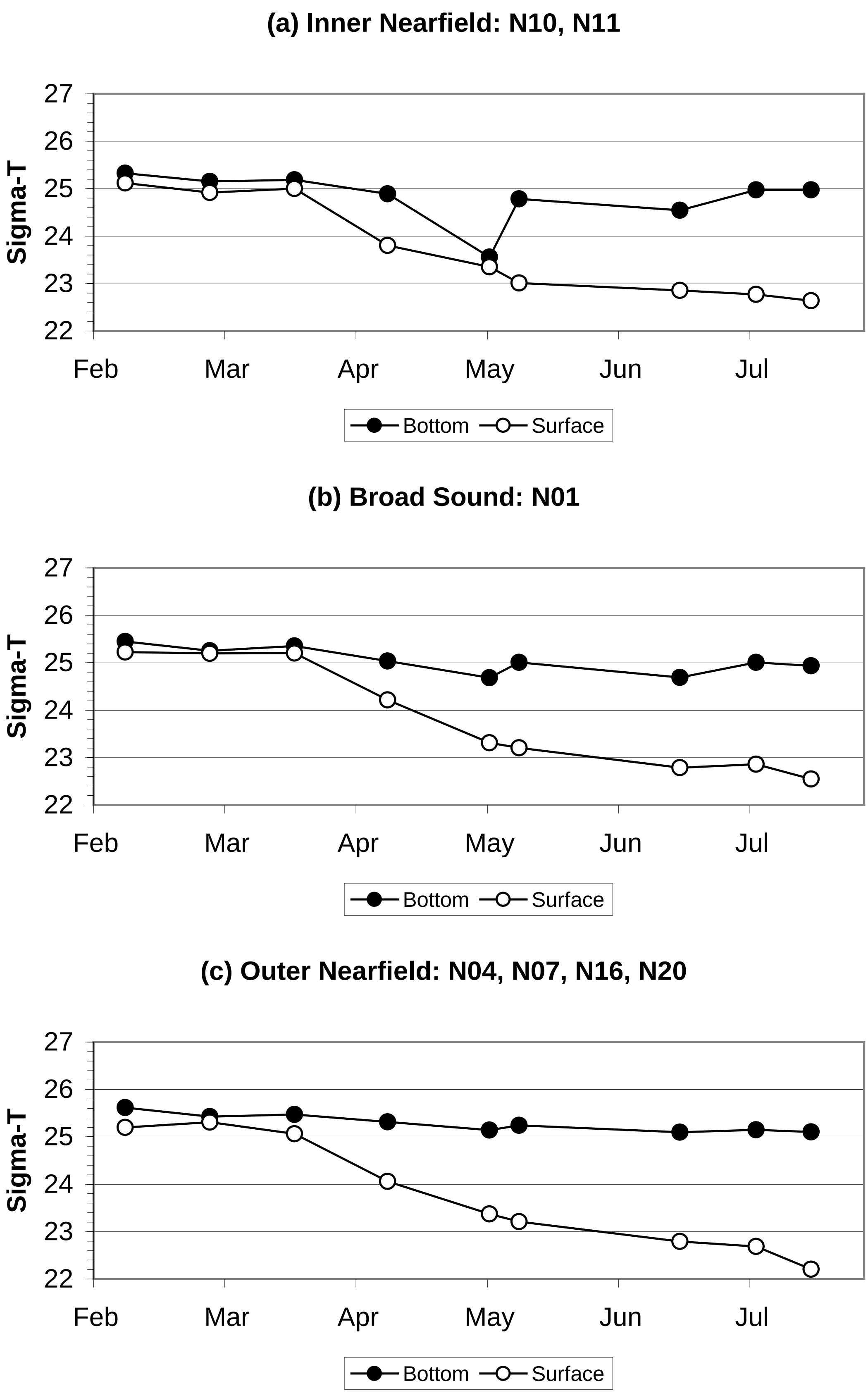


Figure 4-1. Time-Series of Average Surface and Bottom Water Density (σ_t) in the Nearfield

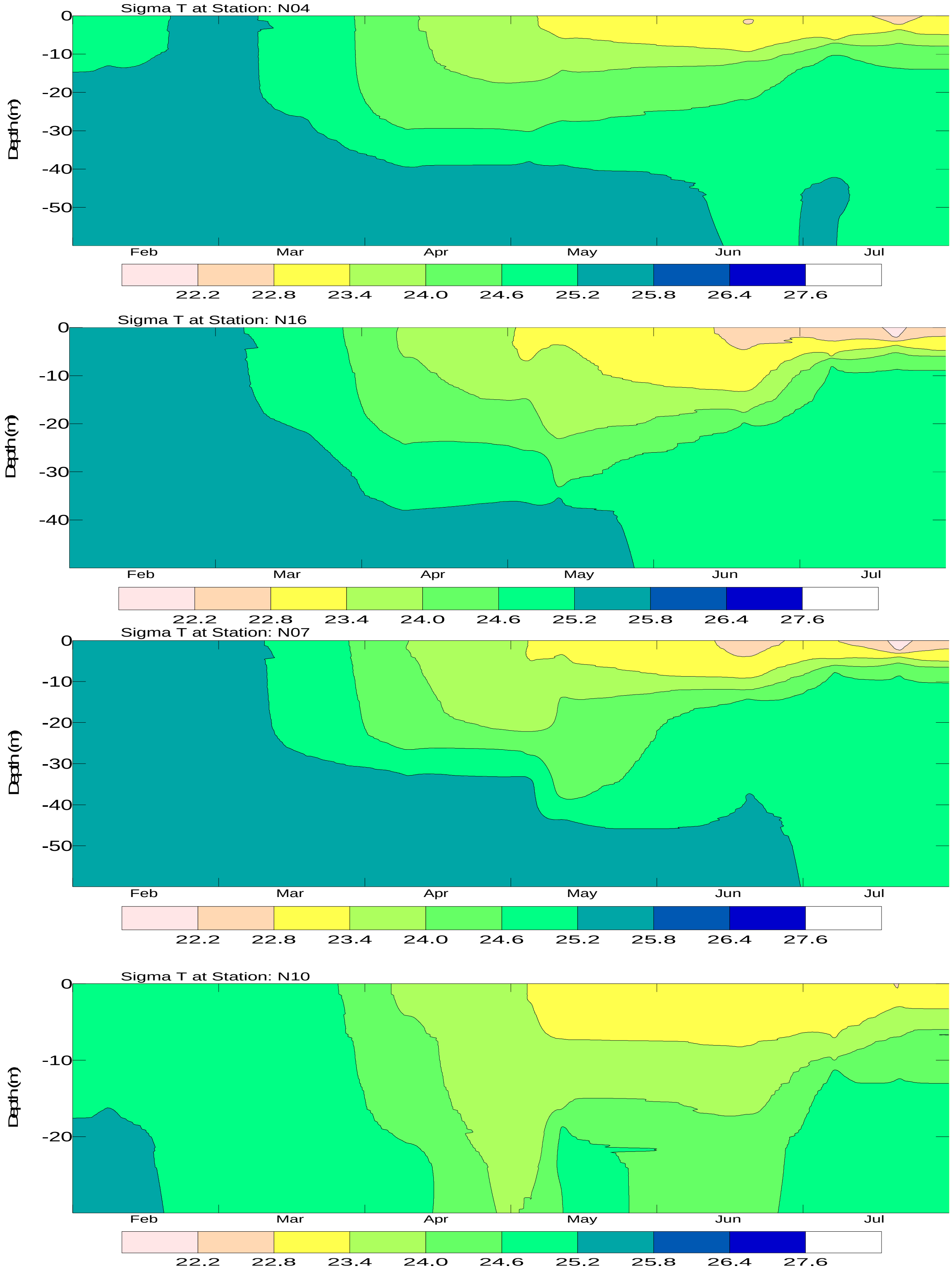


Figure 4-2. Sigma-T Nearfield Depth vs. Time Contour Profiles for Surveys WF991 through WN999

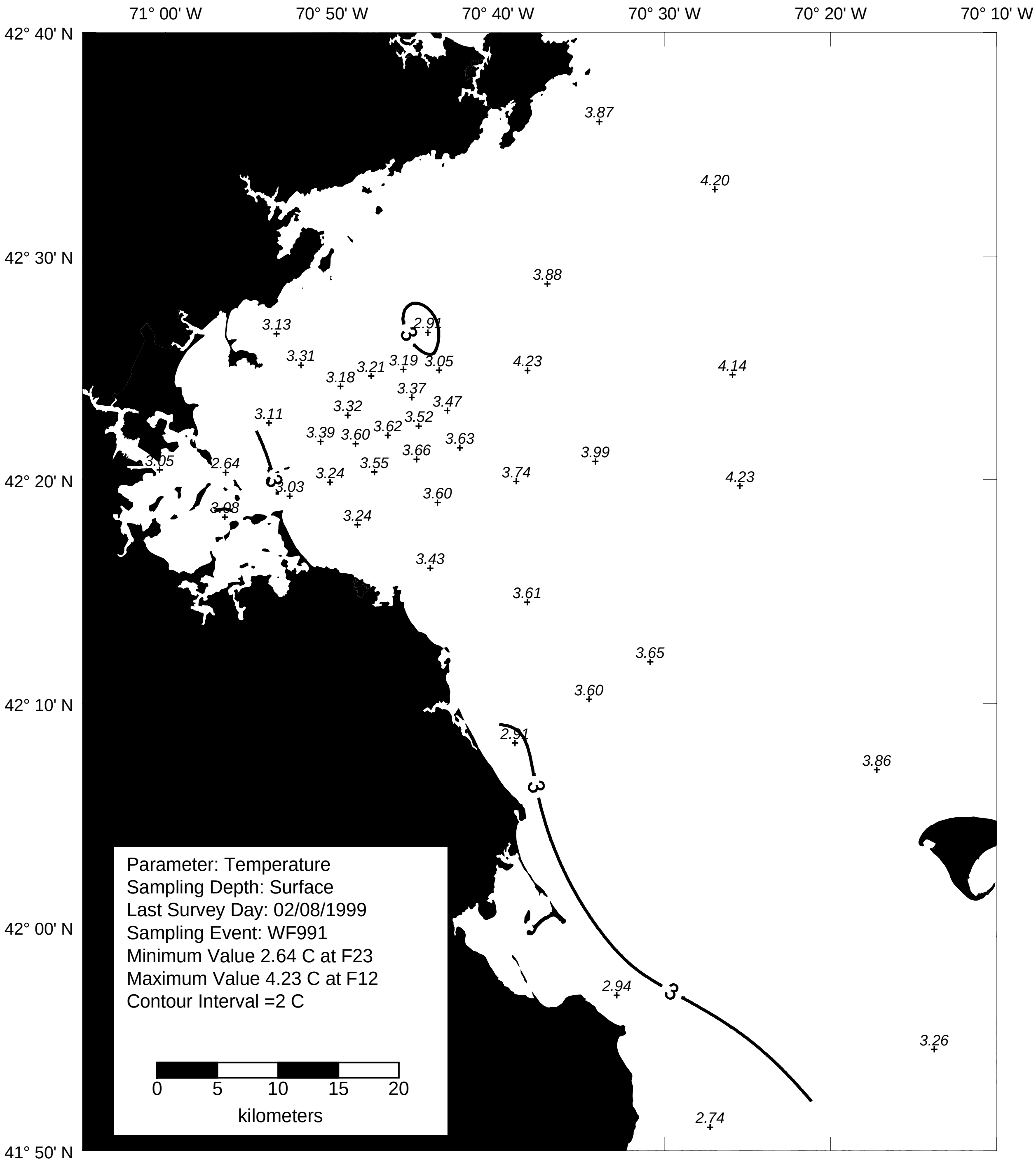


Figure 4-3. Temperature Surface Contour Plot for Farfield Survey WF991 (Feb 99)

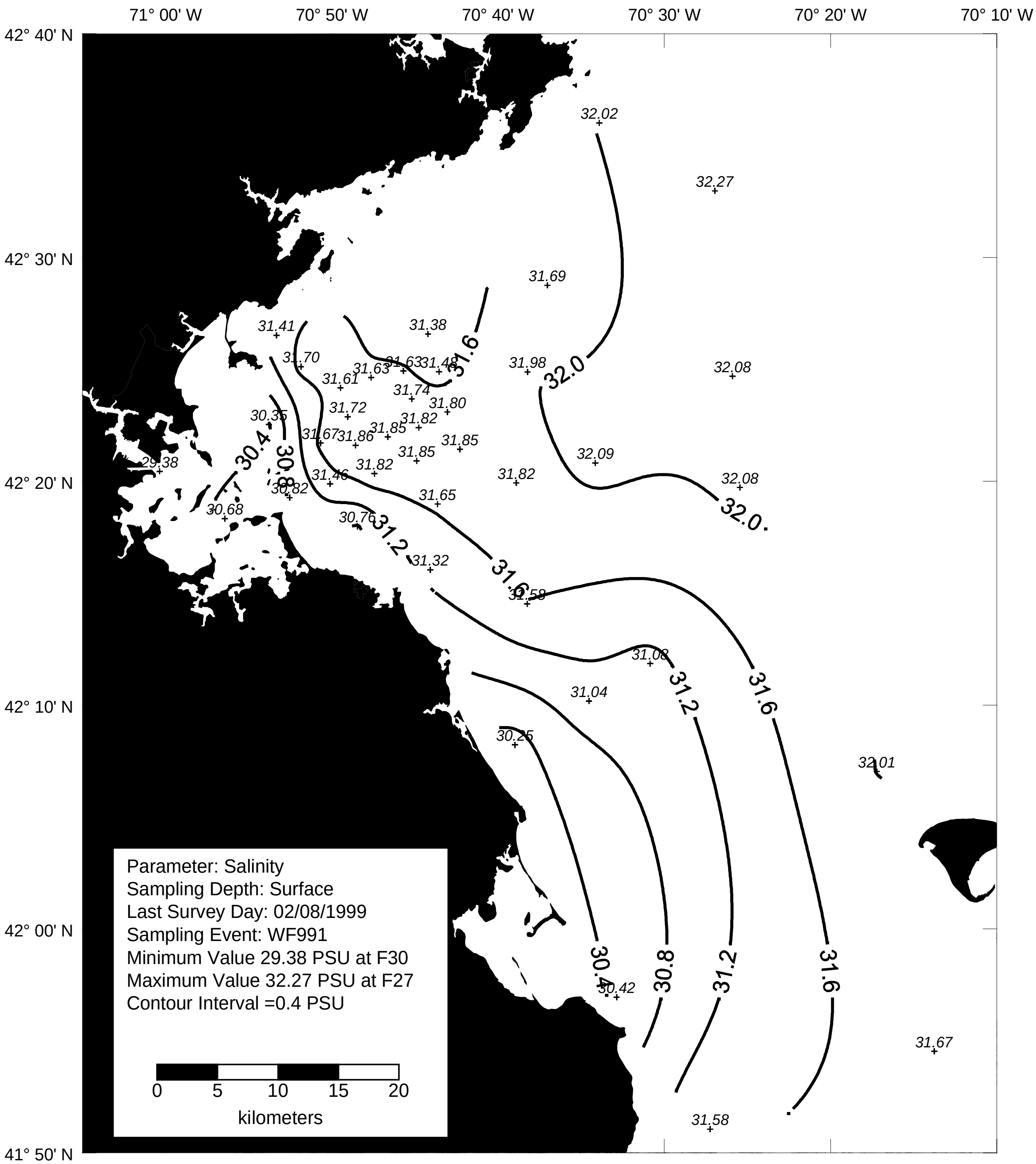


Figure 4-4. Salinity Surface Contour Plot for Farfield Survey WF991 (Feb 99)

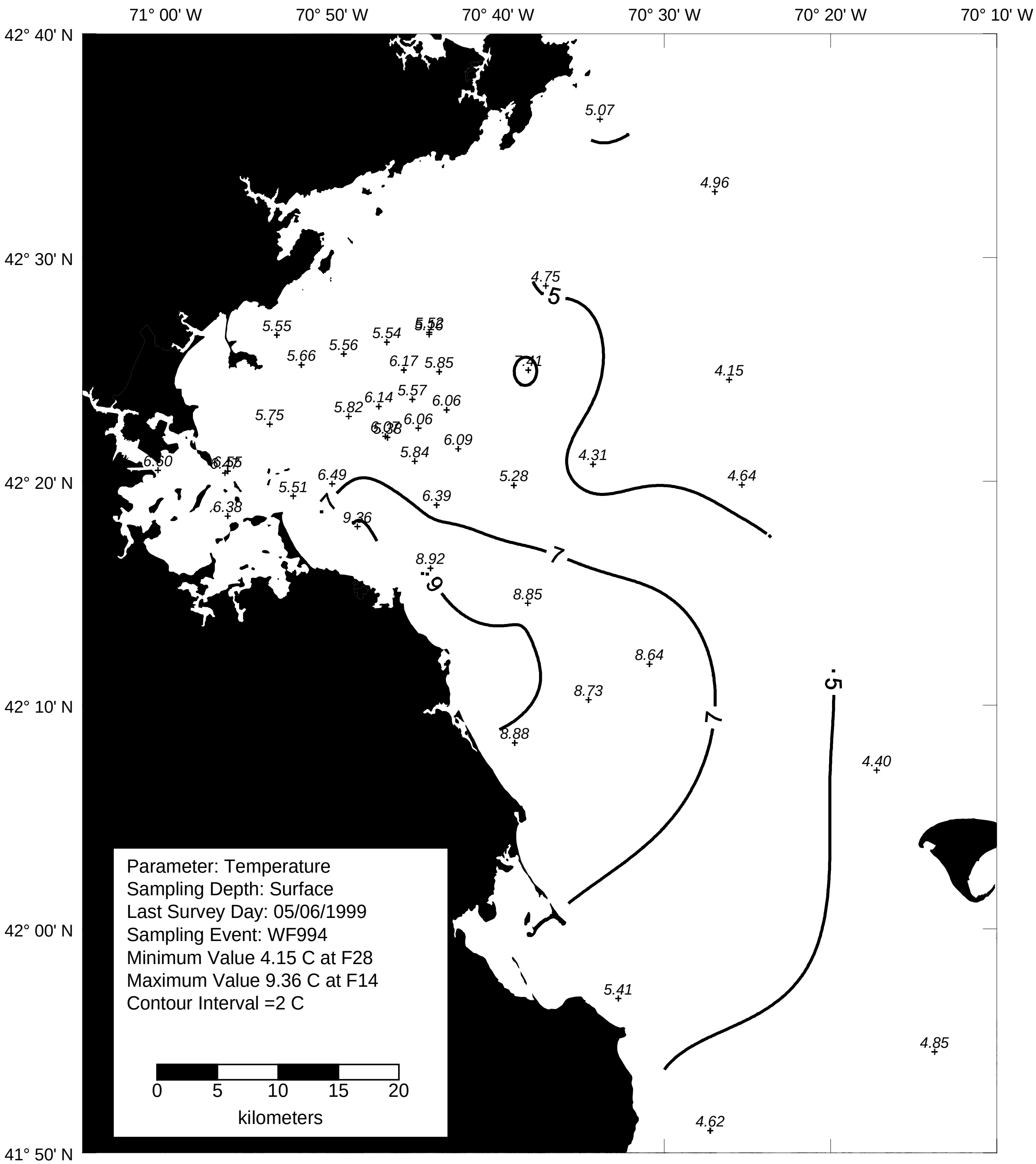


Figure 4-5. Temperature Surface Contour Plot for Farfield Survey WF994 (Apr 99)

Note: All data from the Cape Cod Bay, boundary, nearfield and Harbor areas were collected between April 1st and April 11th (see Figure 1-3). Southern coastal and offshore stations (N16F, F05, F06, F07, F10, F13, F14 and F19) were sampled on April 26th and May 6th.

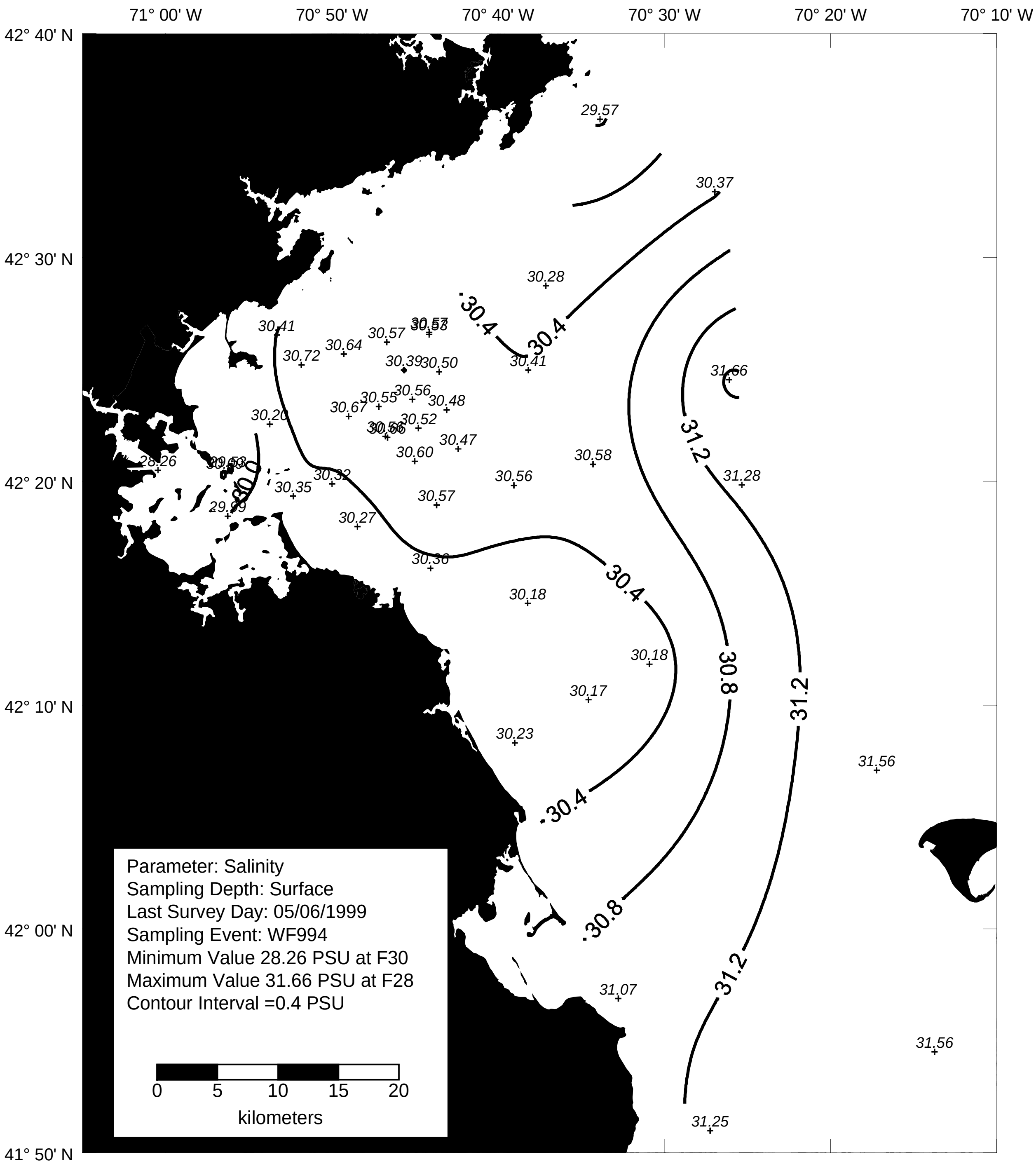


Figure 4-6. Salinity Surface Contour Plot for Farfield Survey WF994 (Apr 99)

Note: see Figure 4-5 for sample collection information.

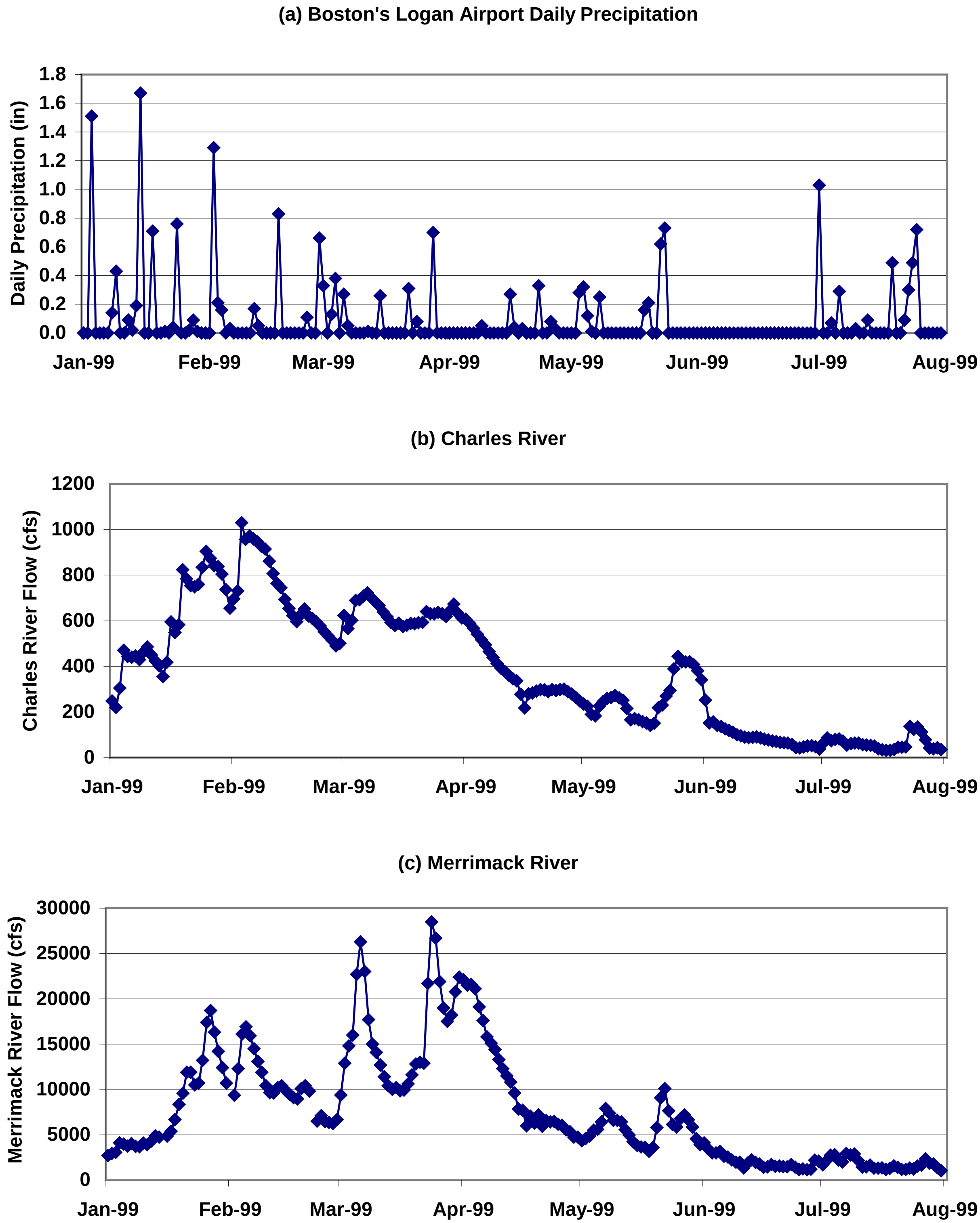
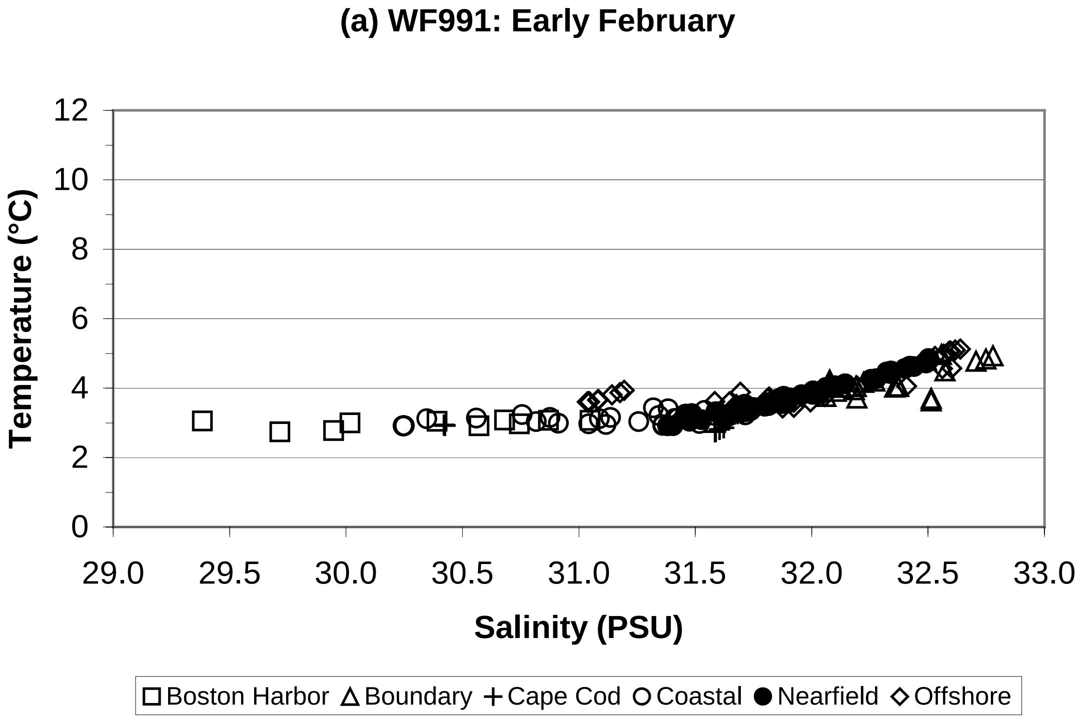


Figure 4-7. Precipitation at Logan Airport and River Discharges for the Charles and Merrimack Rivers



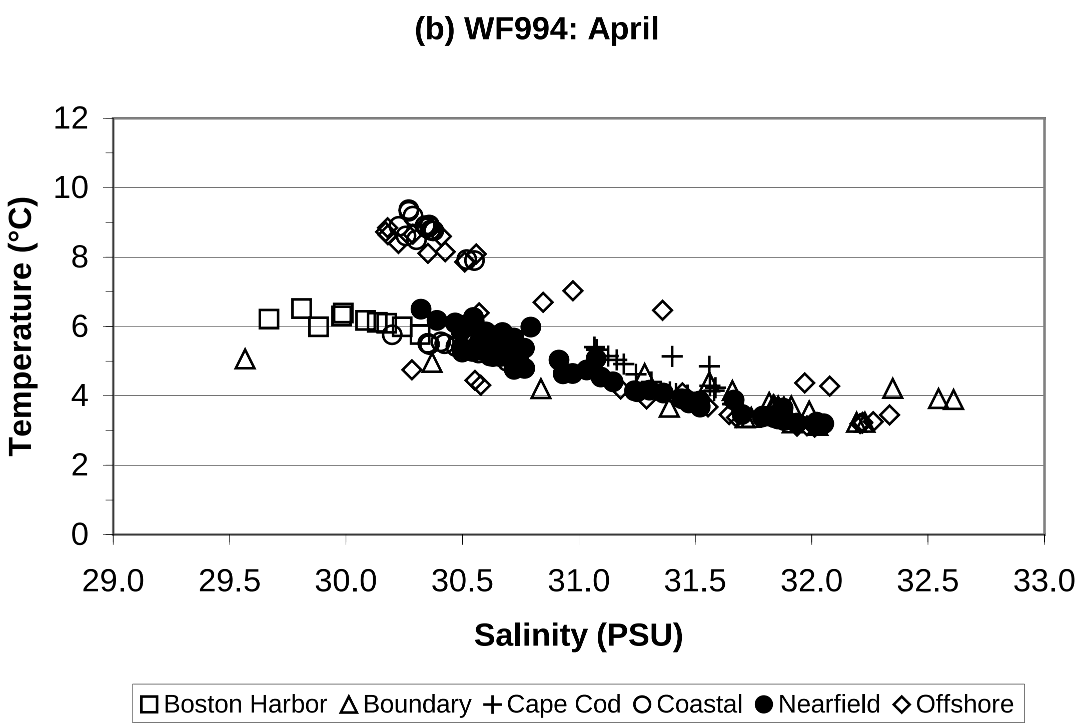


Figure 4-8. Temperature/Salinity Distribution for All Depths during WF991 (Feb 99) and WF994 (Apr 99) Surveys

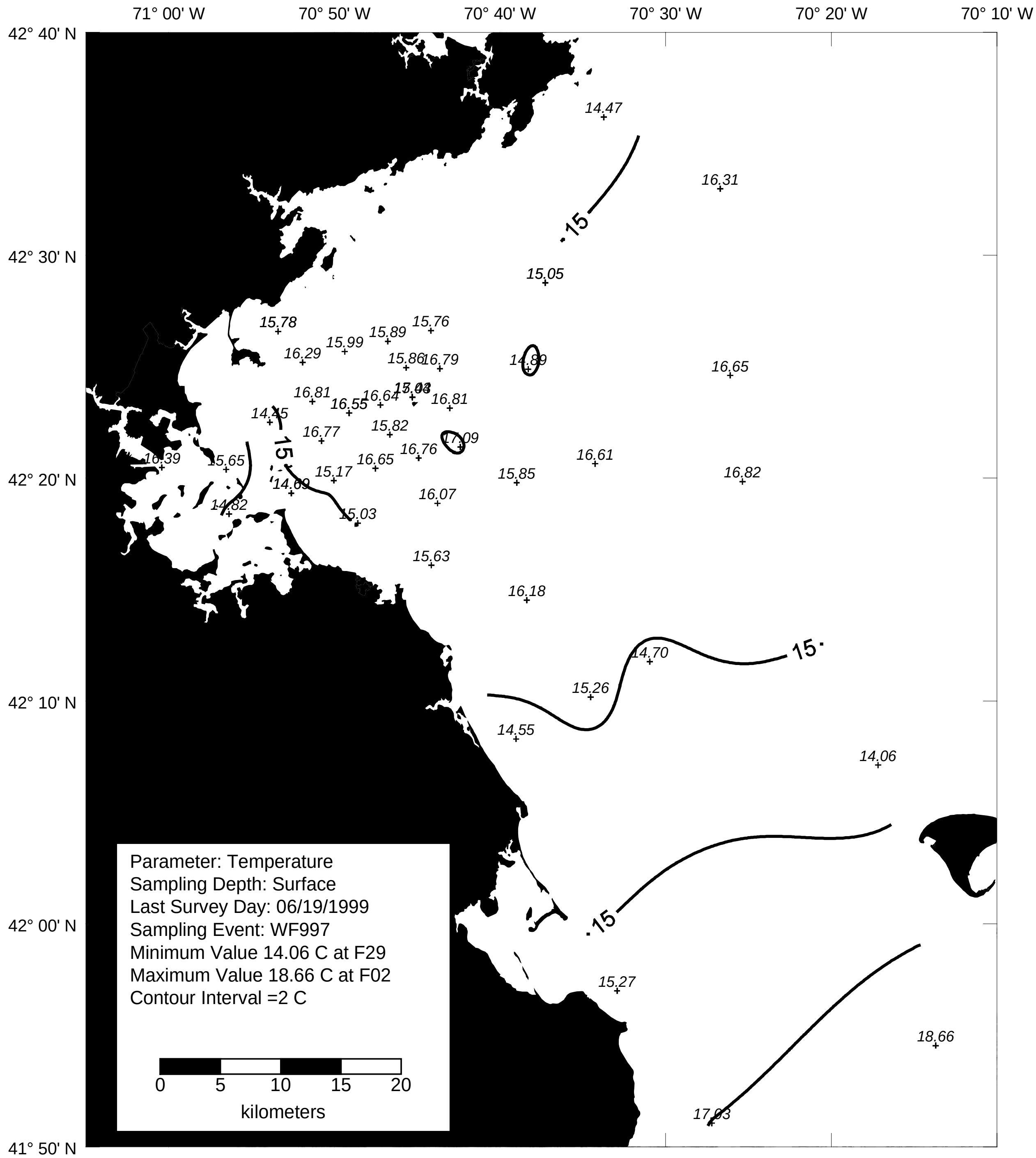


Figure 4-9. Temperature Surface Contour Plot for Farfield Survey WF997 (Jun 99)

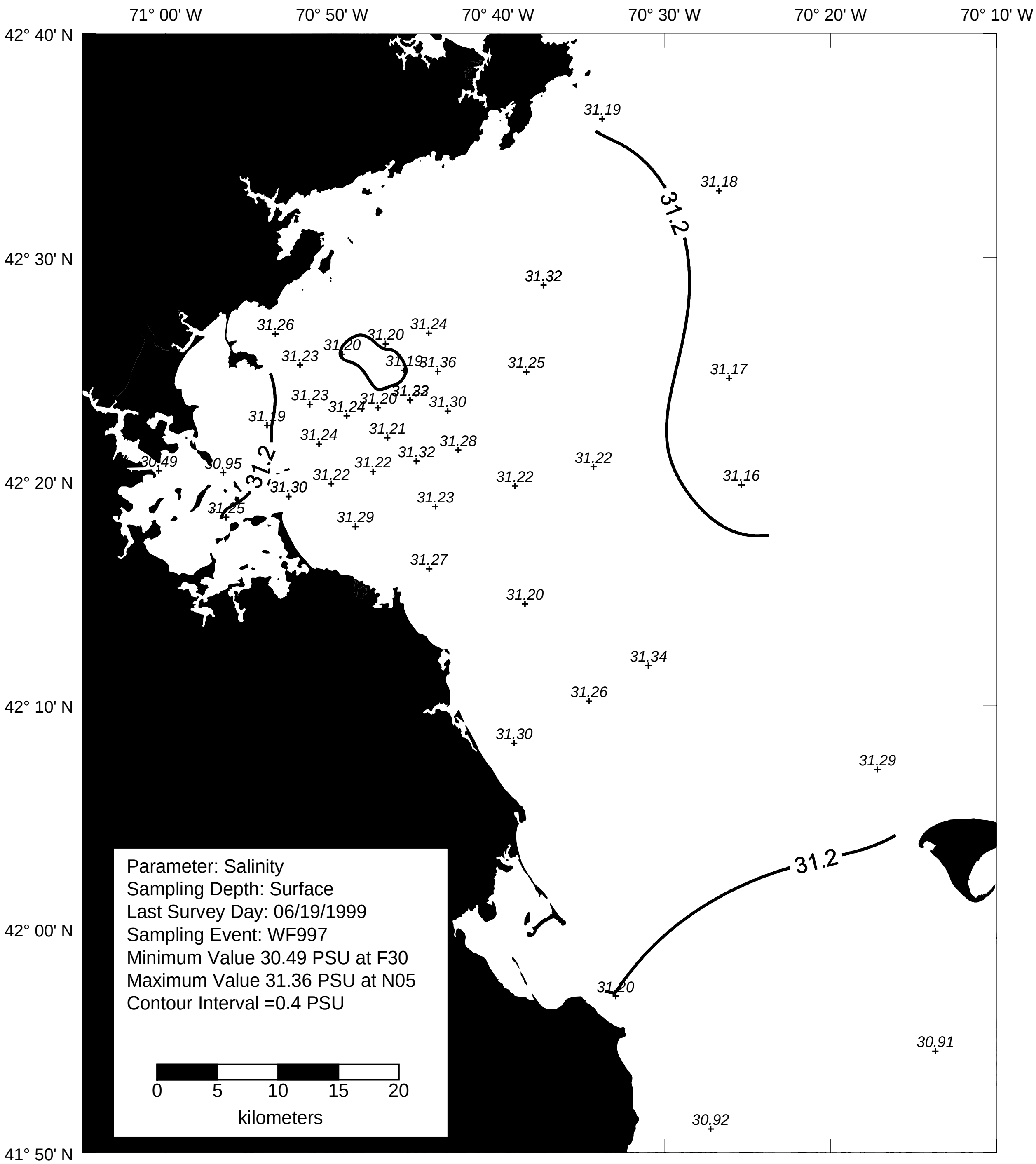


Figure 4-10. Salinity Surface Contour Plot for Farfield Survey WF997 (Jun 99)

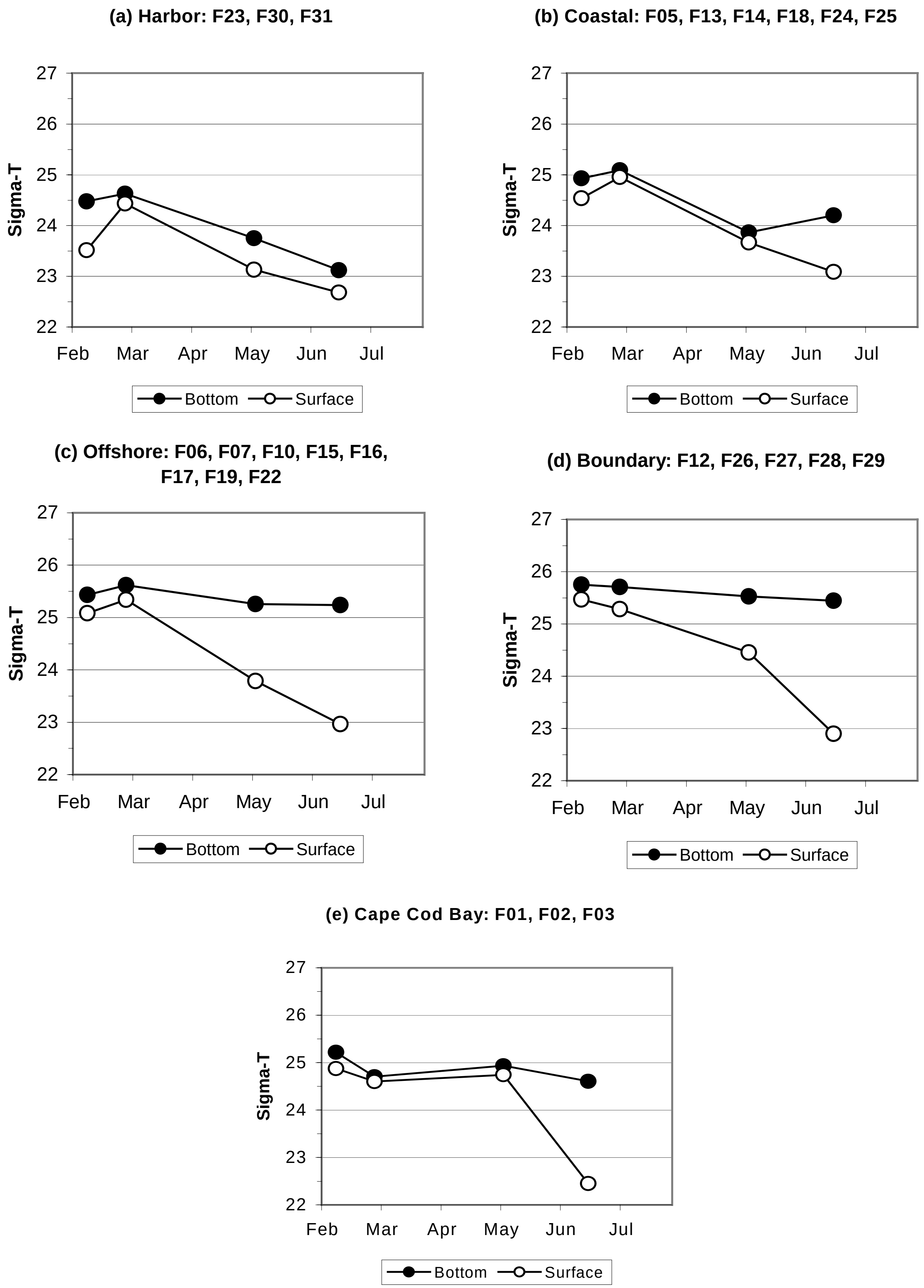


Figure 4-11. Time-Series of Average Surface and Bottom Water Density (σ_T) in the Farfield

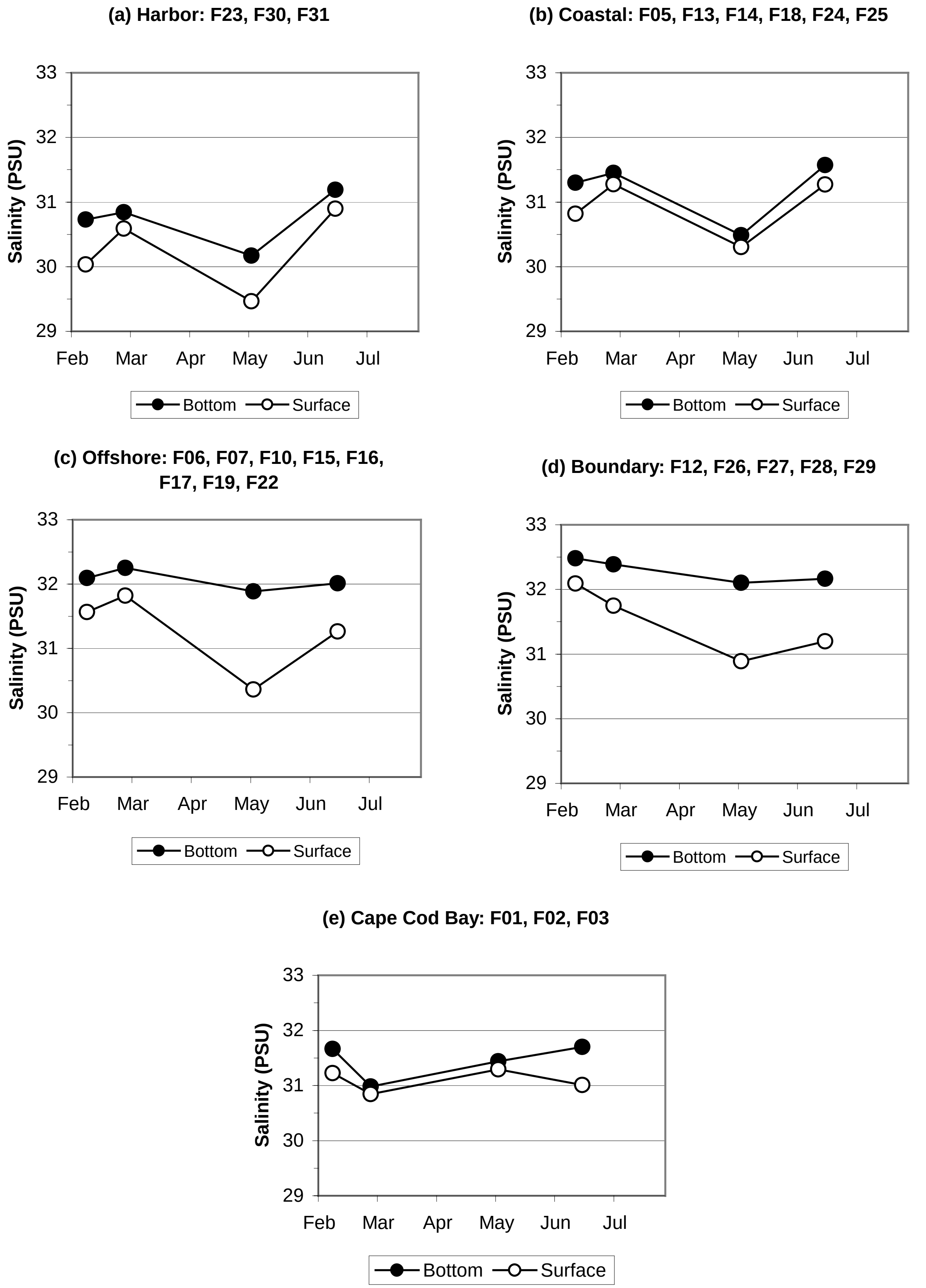


Figure 4-12. Time-Series of Average Surface and Bottom Water Salinity (PSU) in the Farfield

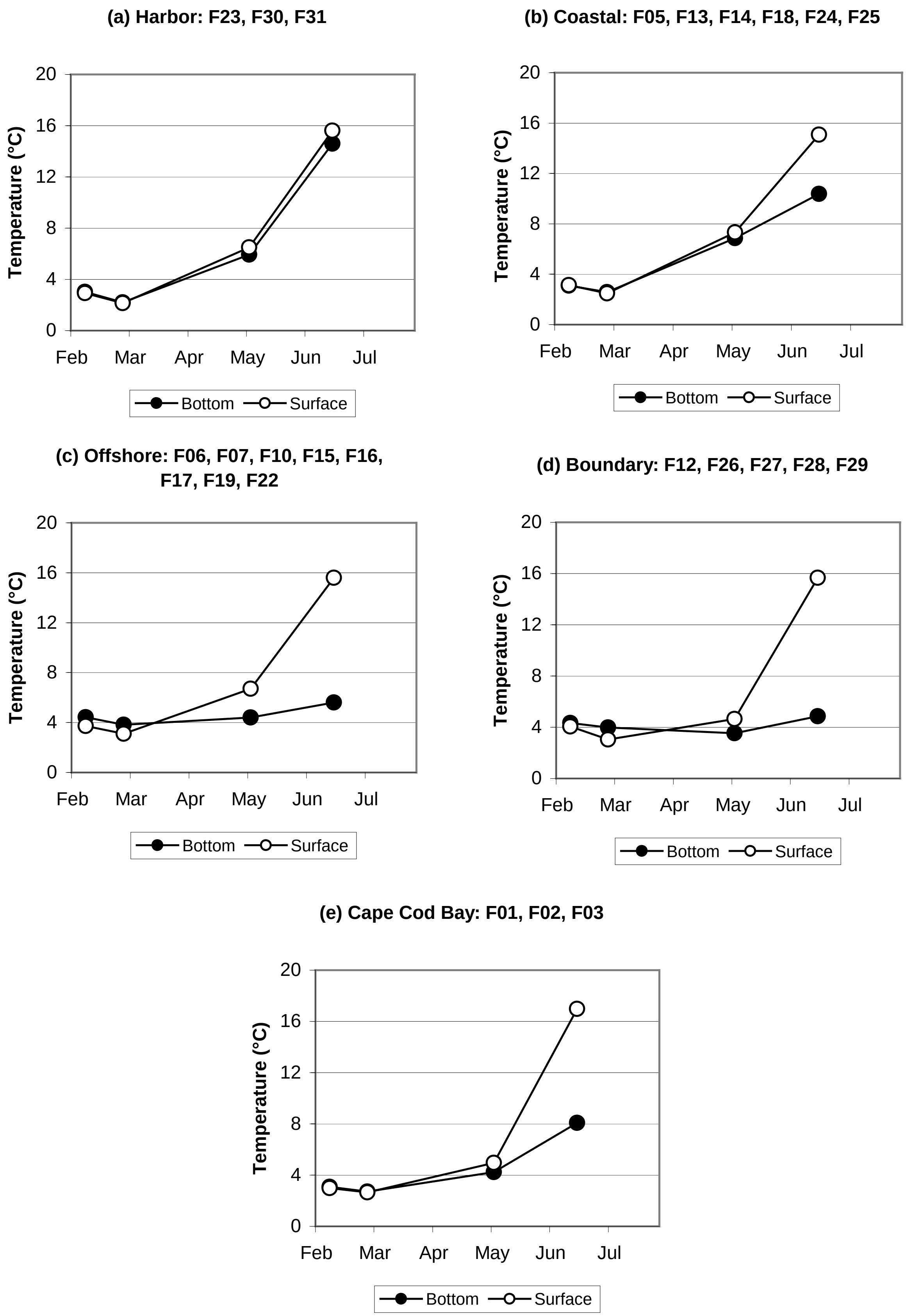


Figure 4-13. Time-Series of Average Surface and Bottom Temperature in the Farfield

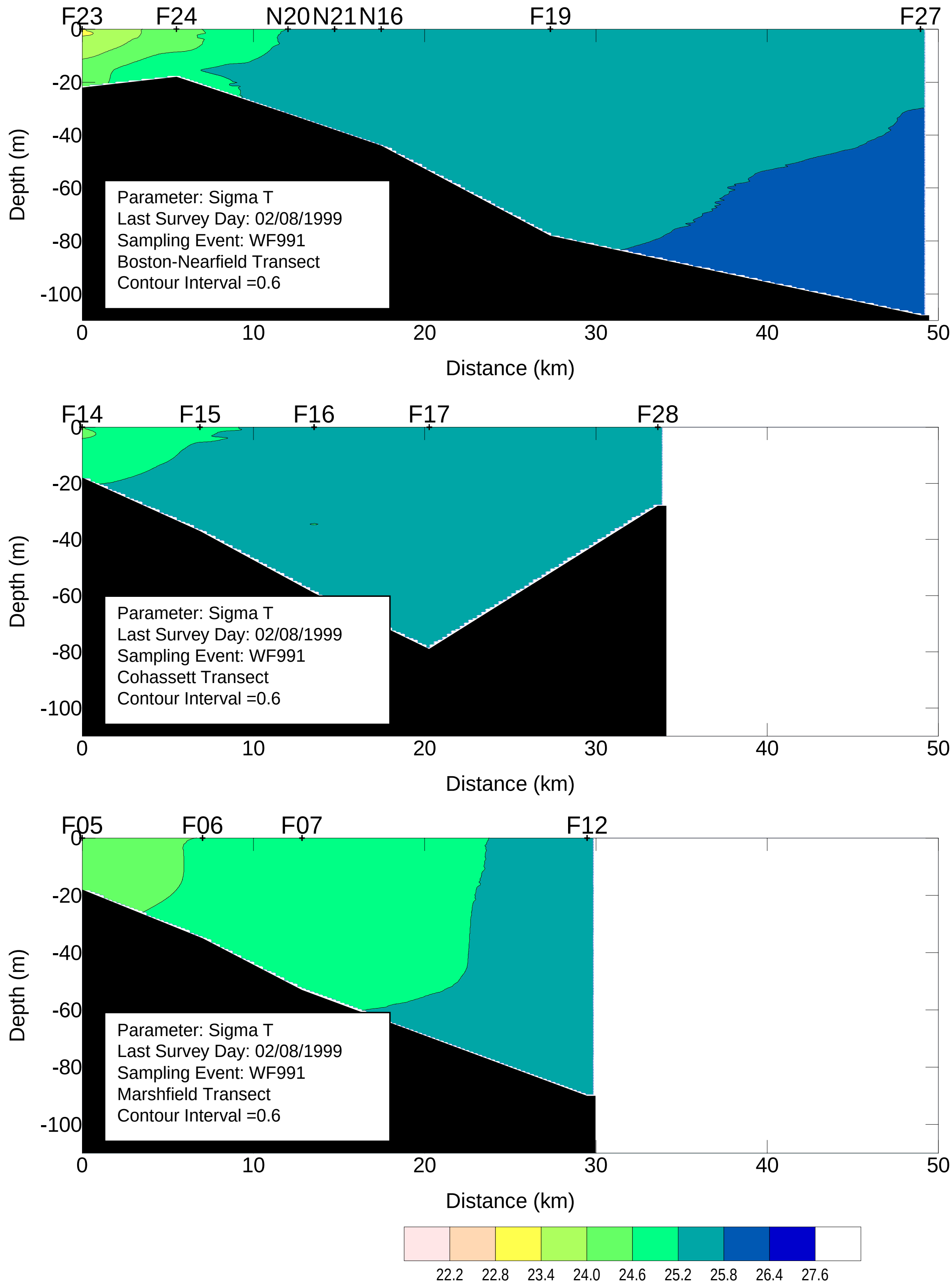


Figure 4-14. Sigma-T Vertical Transects for Farfield Survey WF991 (Feb 99)

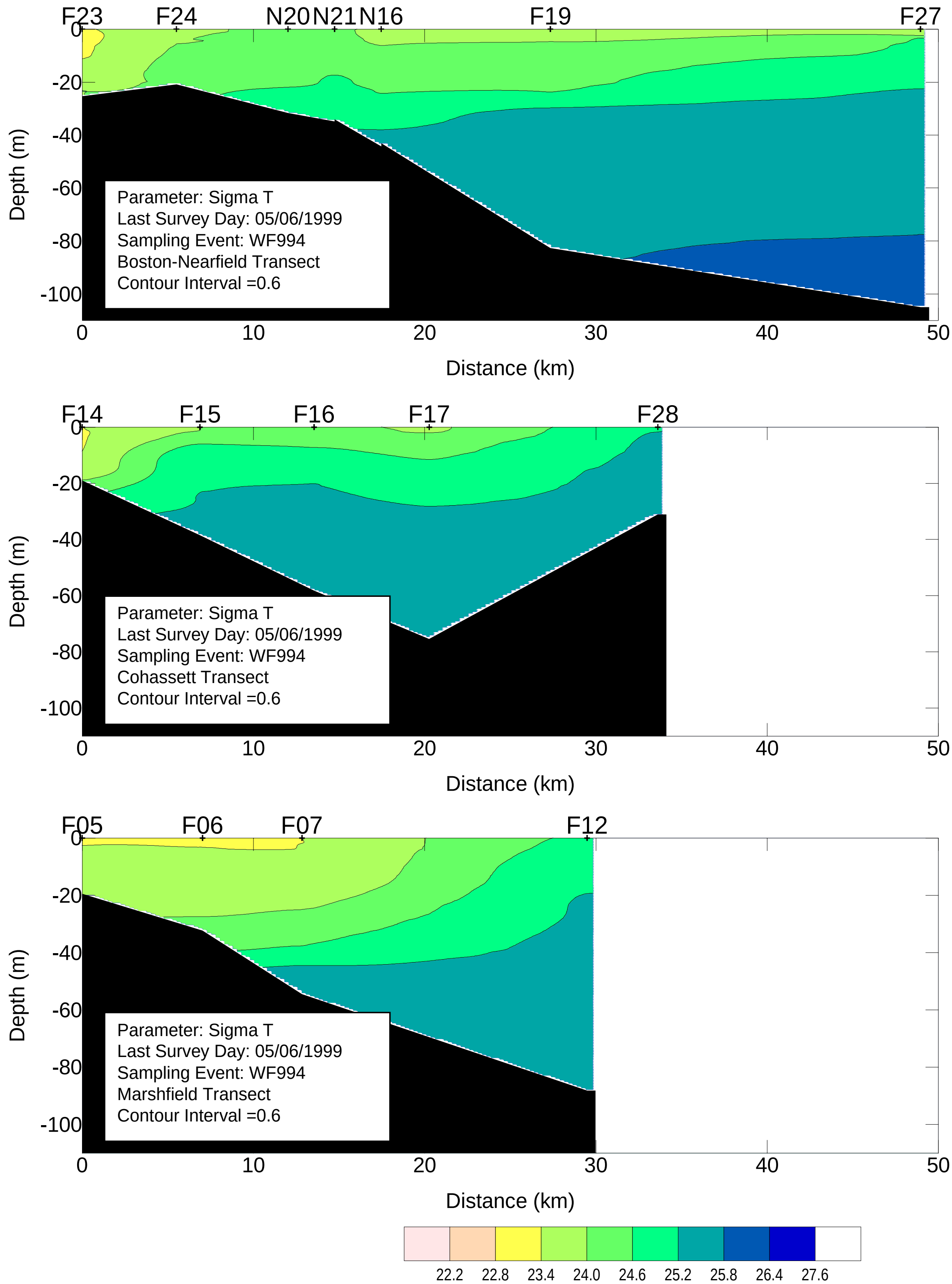


Figure 4-15. Sigma-T Vertical Transect for Farfield Survey WF994 (Apr 99)

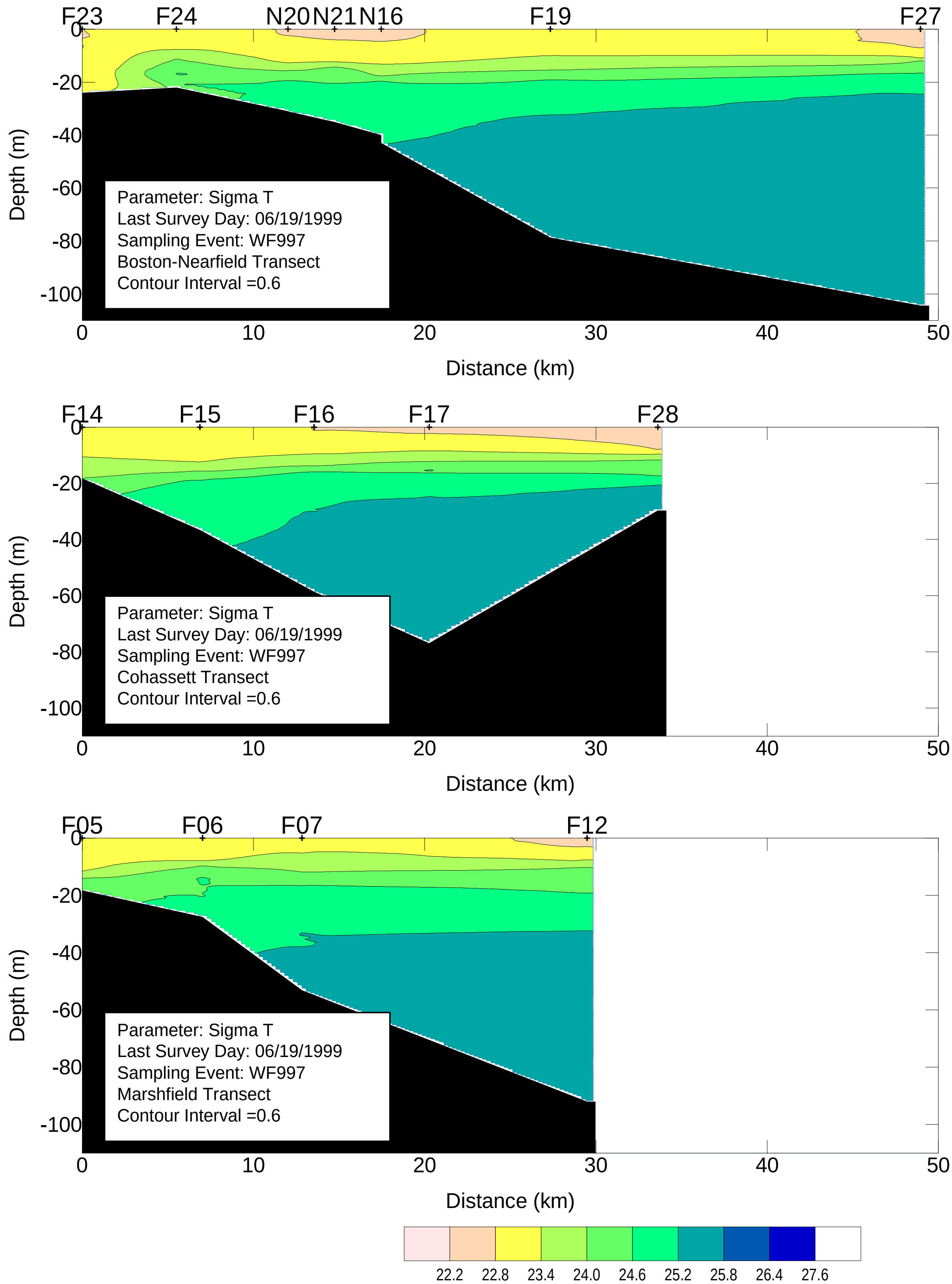


Figure 4-16. Sigma-T Vertical Transect for Farfield Survey WF997 (Jun 99)

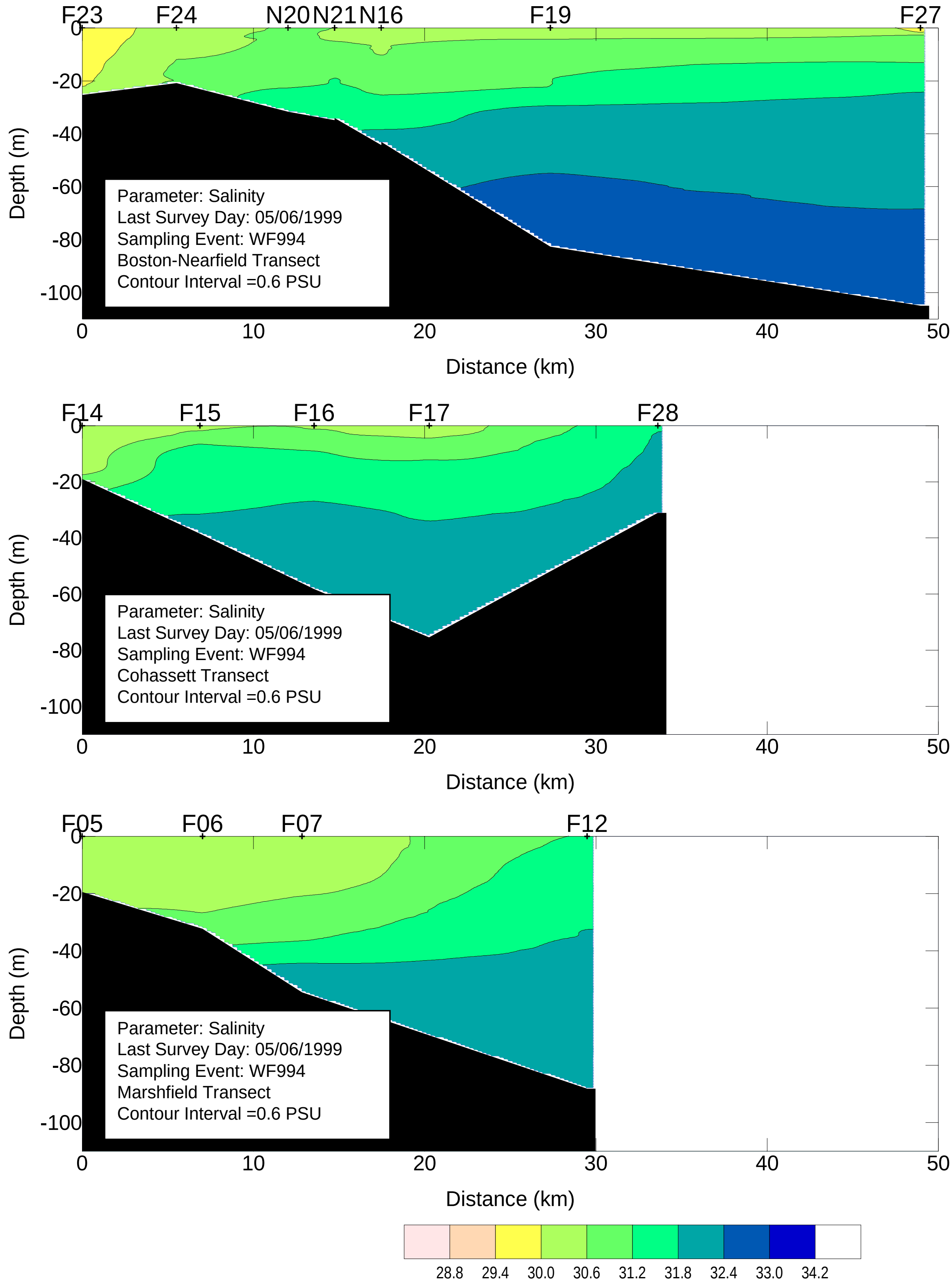


Figure 4-17. Salinity Vertical Transect for Farfield Survey WF994 (Apr 99)

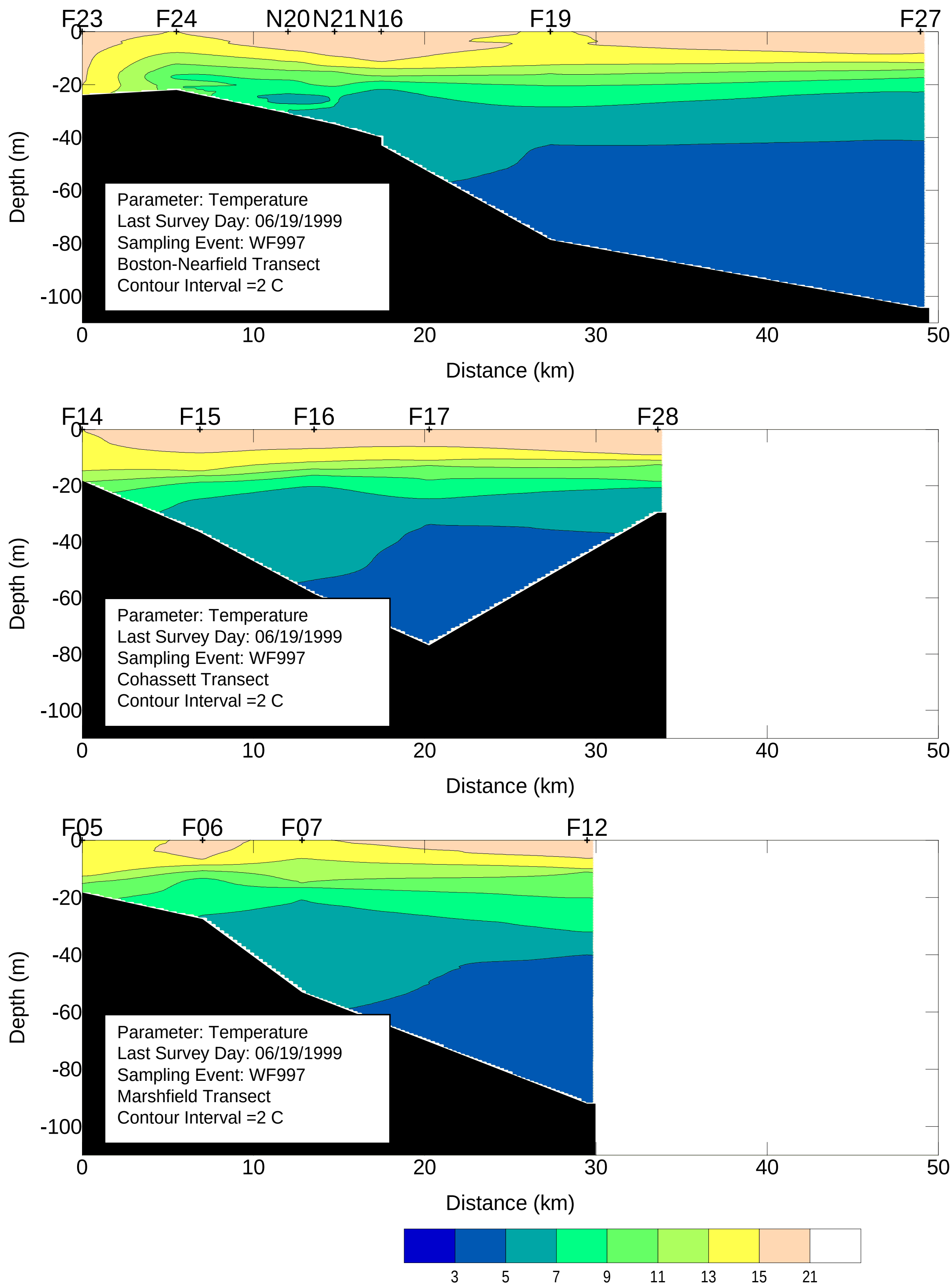


Figure 4-18. Temperature Vertical Transect for Farfield Survey WF997 (Jun 99)

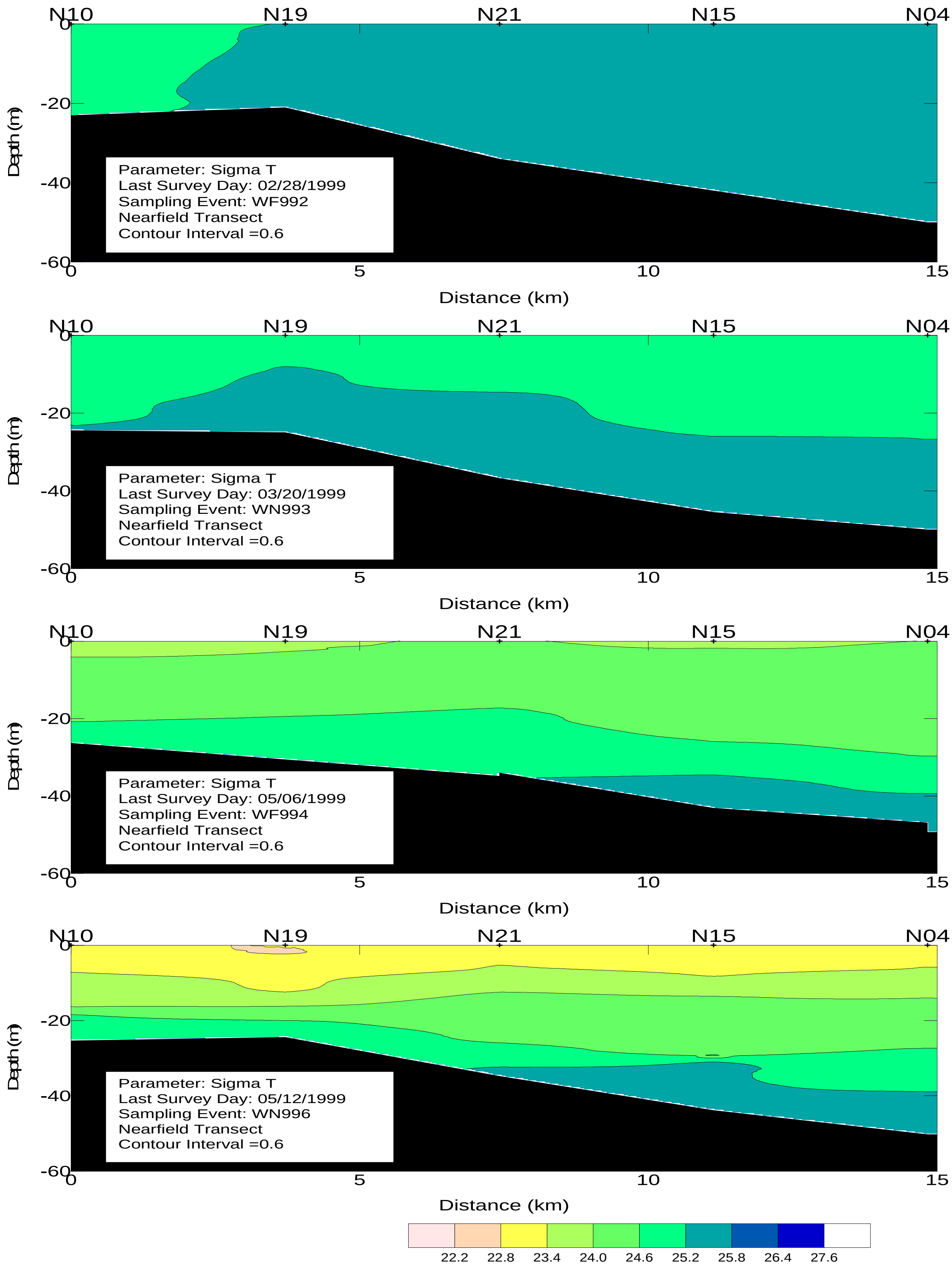


Figure 4-19. Sigma-T Vertical Nearfield Transects for Survey WF992, WN993, WF994 and WN996

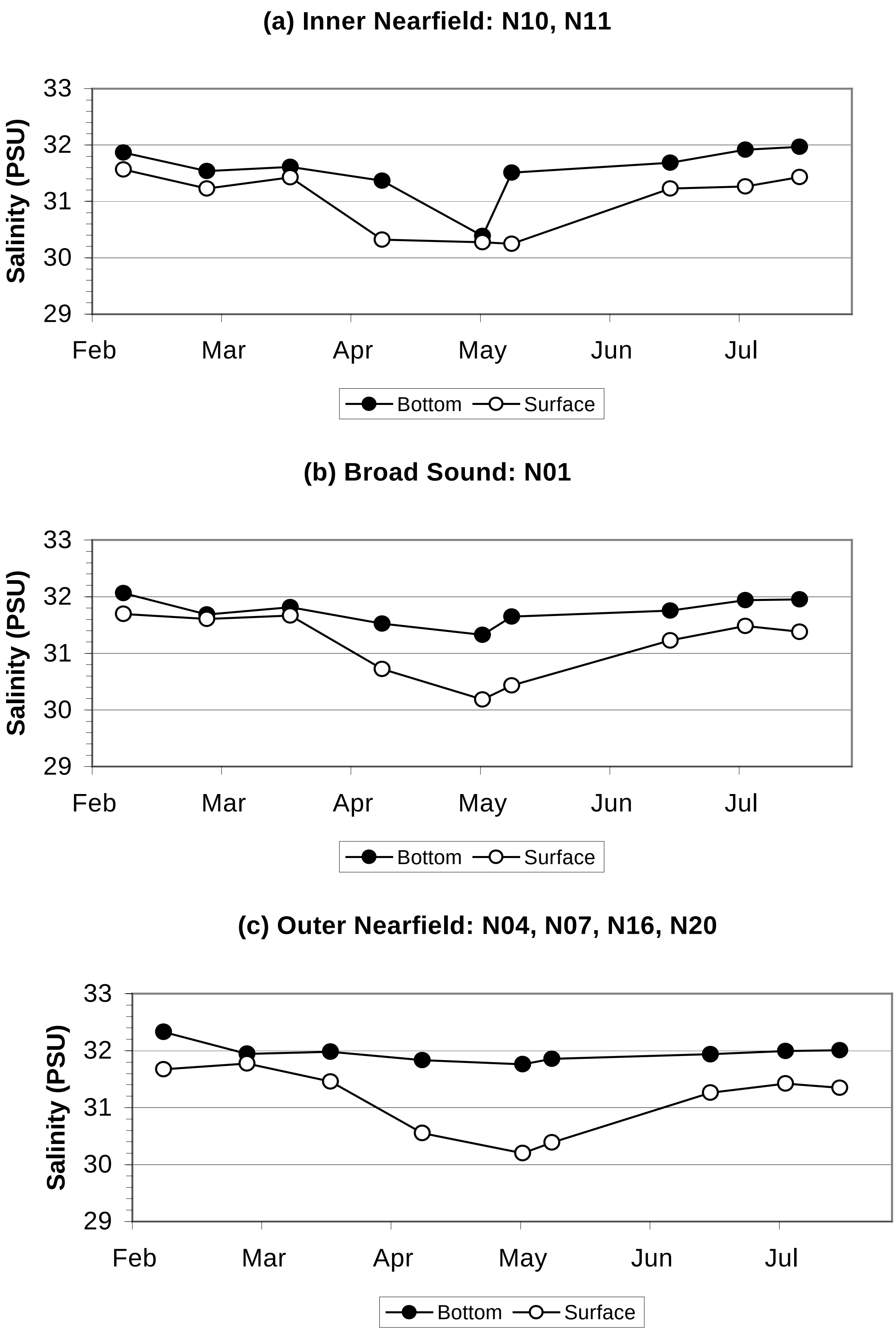


Figure 4-20. Time-Series of Average Surface and Bottom Salinity (PSU) in the Nearfield

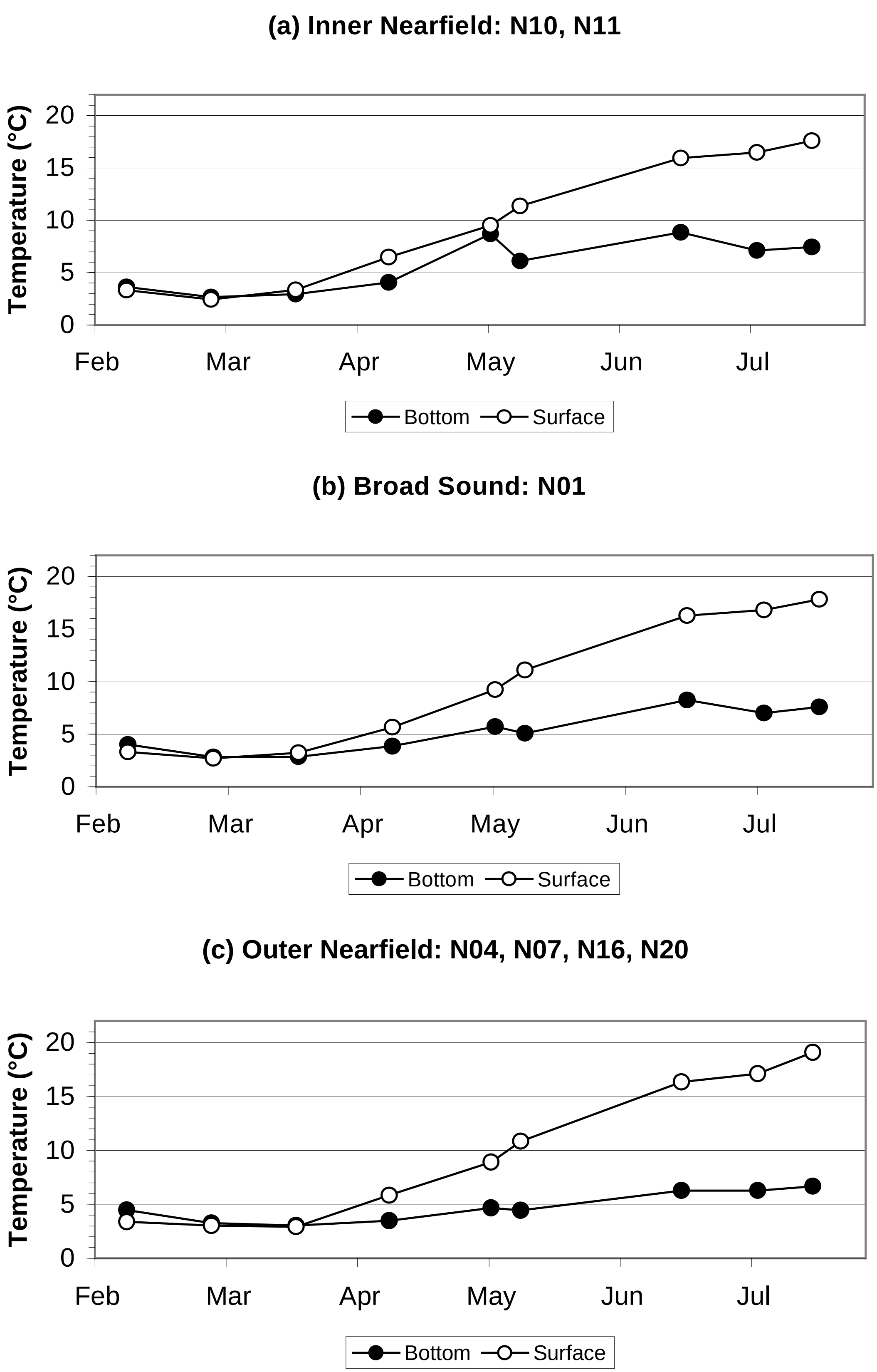


Figure 4-21. Time-Series of Average Surface and Bottom Temperature (°C) in the Nearfield

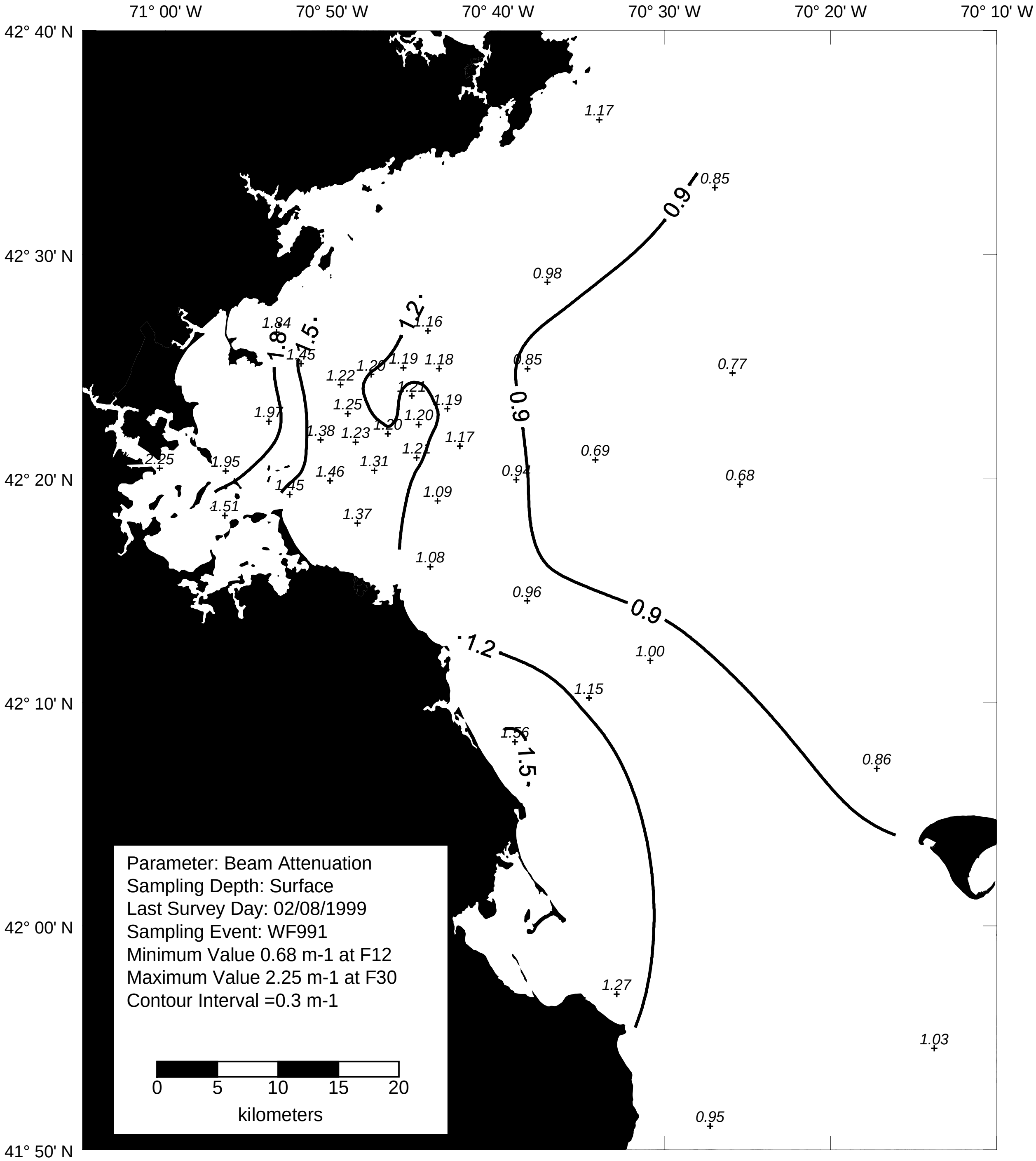


Figure 4-22. Beam Attenuation Surface Contour Plot for Farfield Survey WF991 (Feb 99)

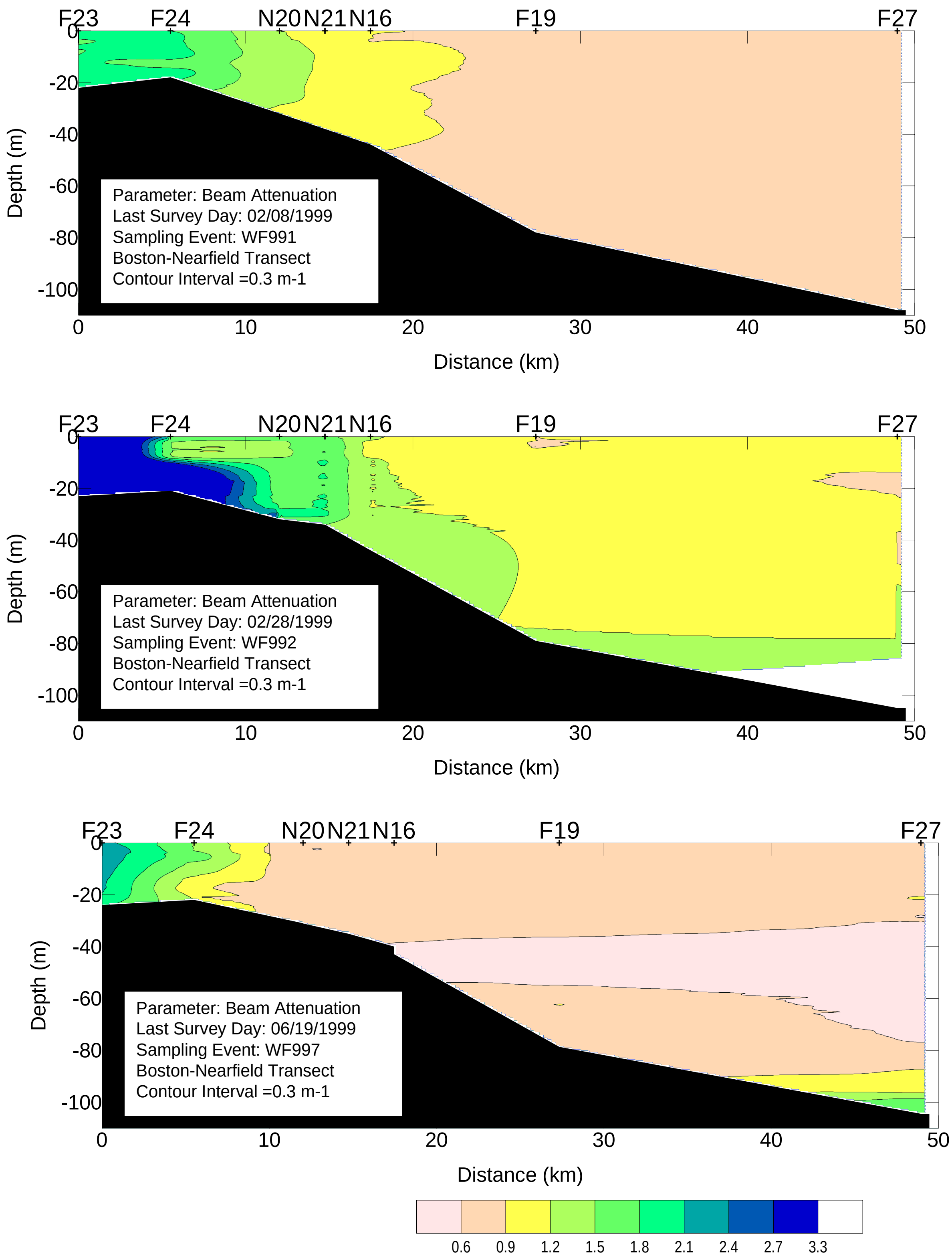


Figure 4-23. Beam Attenuation Vertical Boston-Nearfield Transects for Surveys WF991, WF992, and WF997

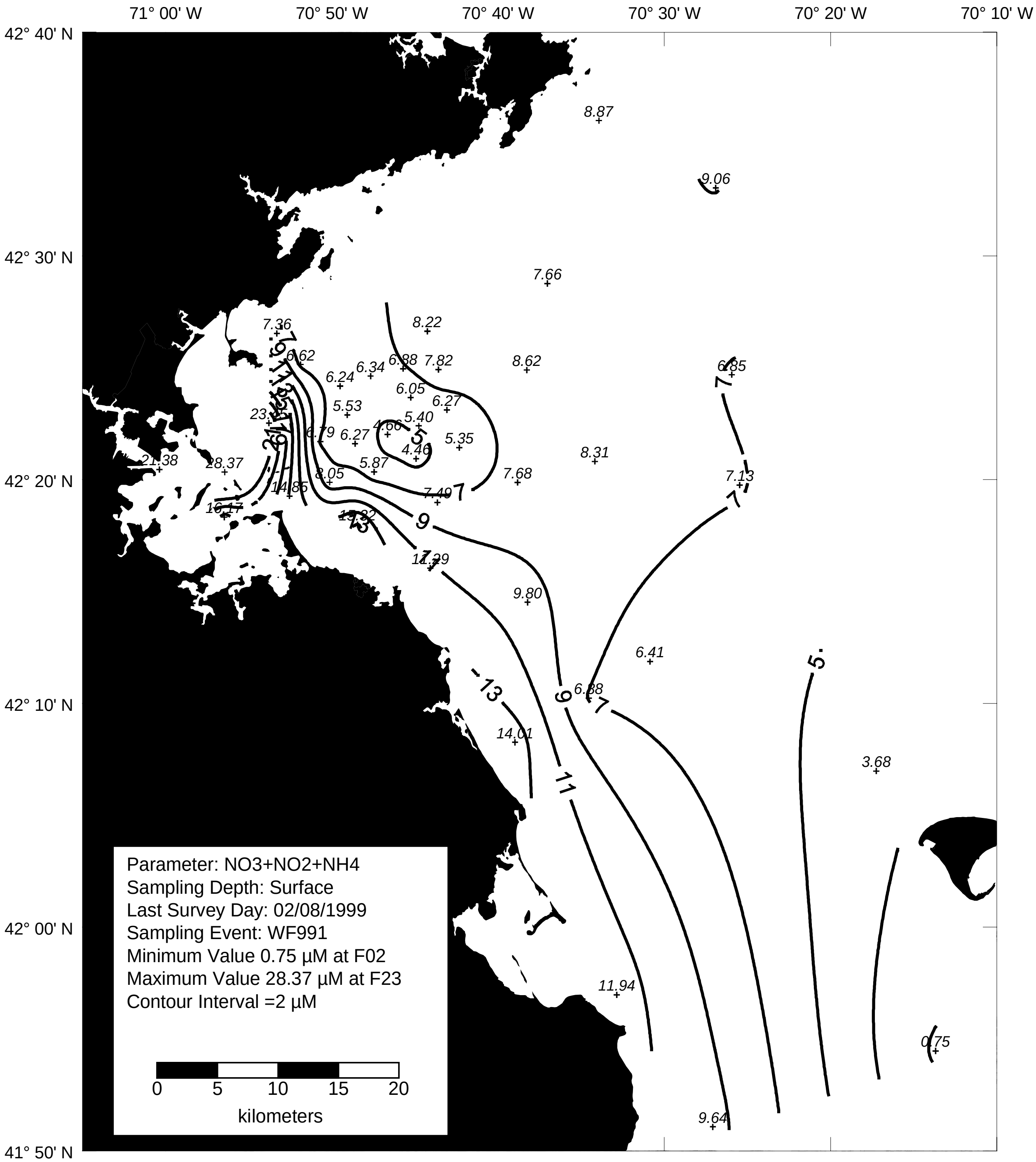


Figure 4-24. DIN Surface Contour Plot for Farfield Survey WF991 (Feb 99)

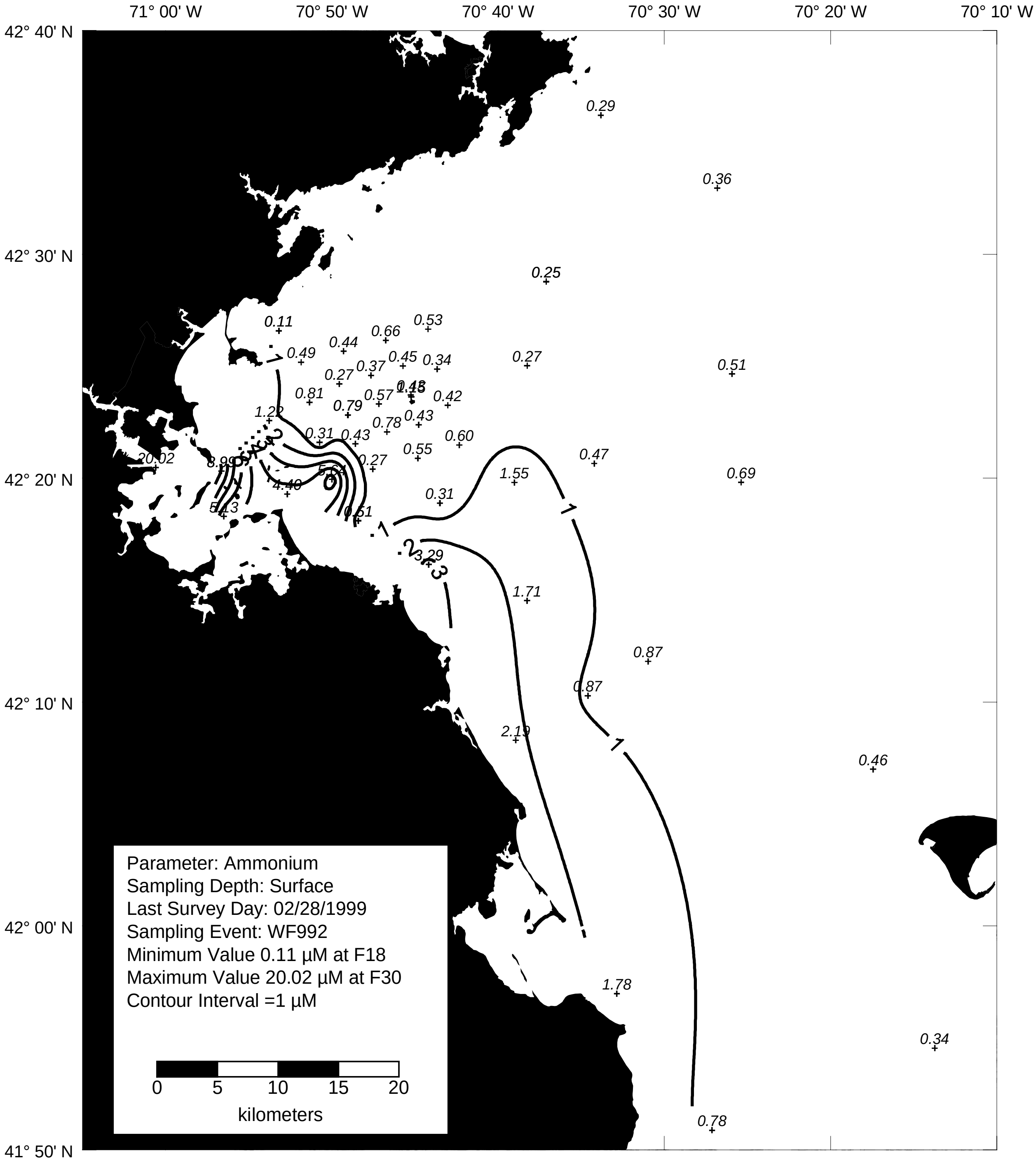


Figure 4-25. Ammonium Surface Contour Plot for Farfield Survey WF992 (Feb 99)

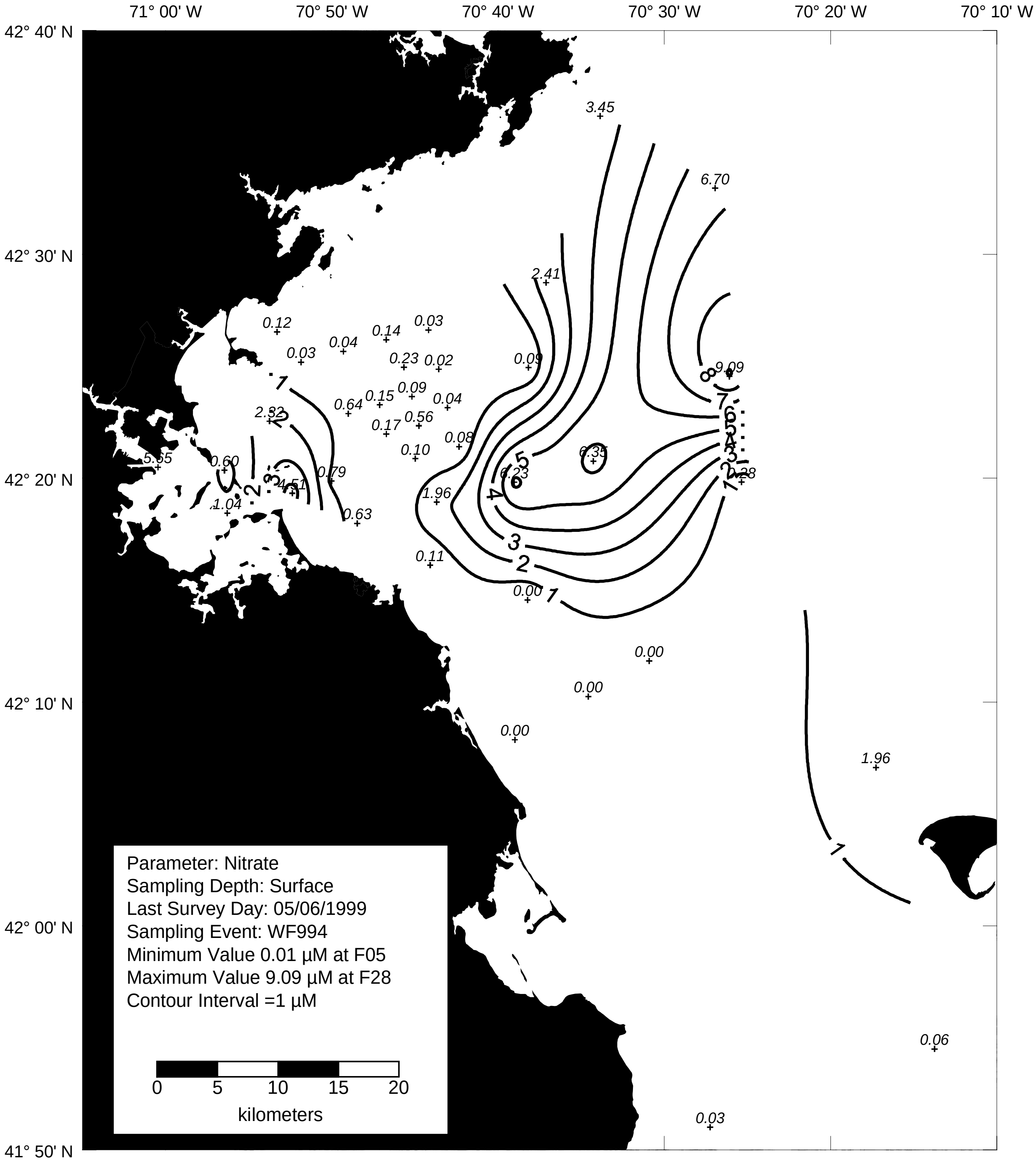


Figure 4-26. Nitrate Surface Contour Plot for Farfield Survey WF994 (Apr 99)

Note: see Figure 4-5 for sample collection information.

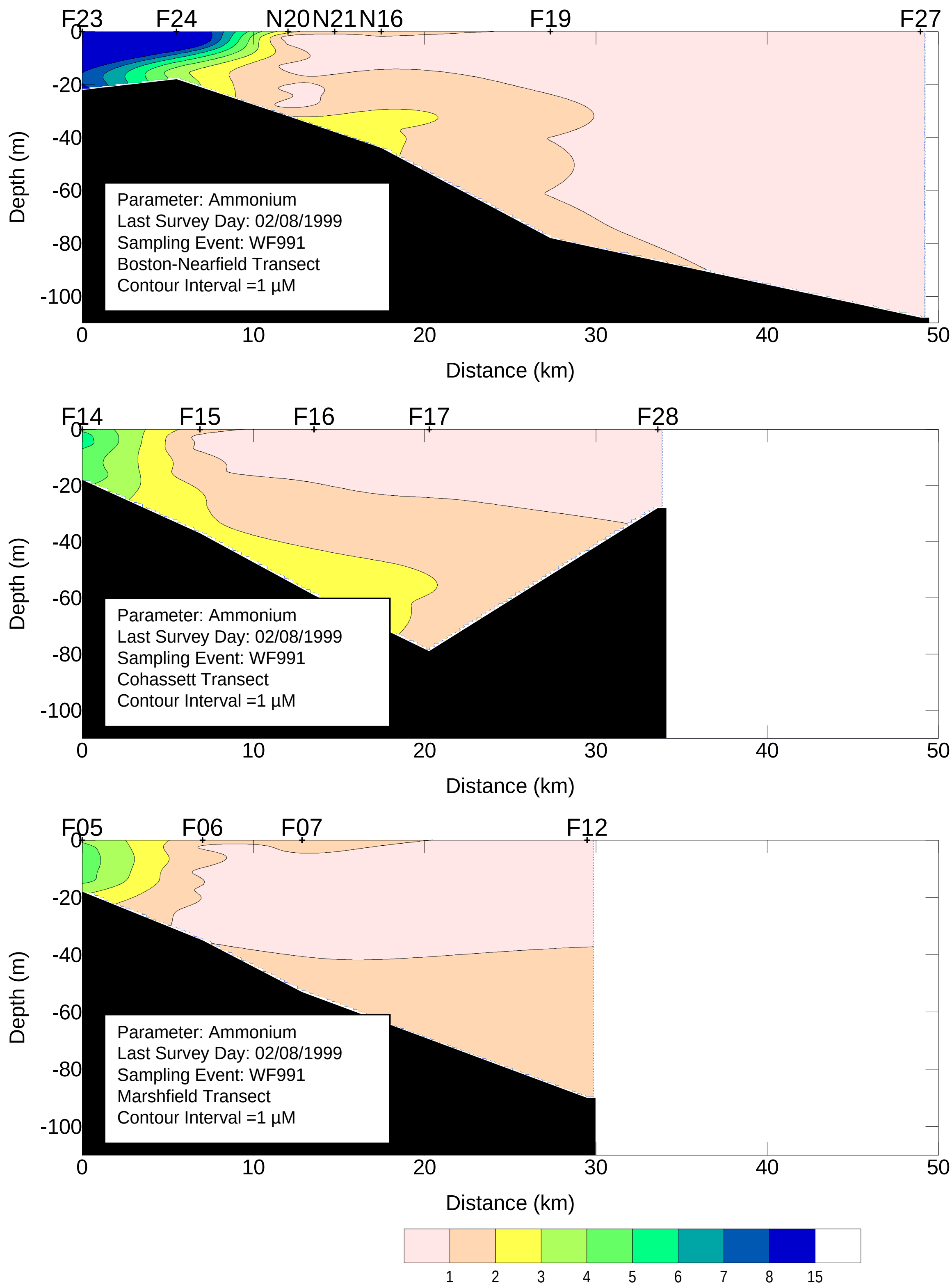


Figure 4-27. Ammonium Vertical Transect for Farfield Survey WF991 (Feb 99)

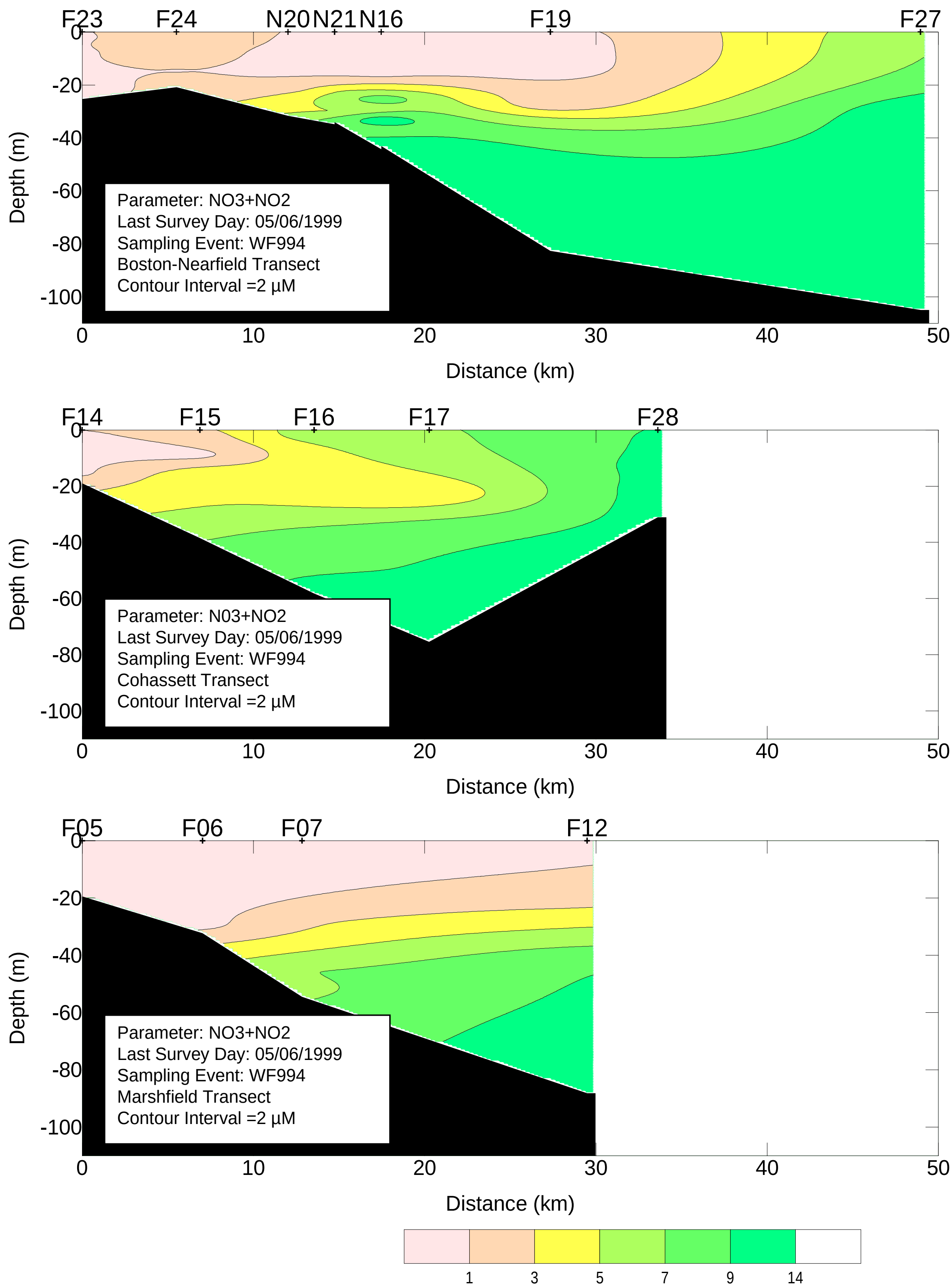
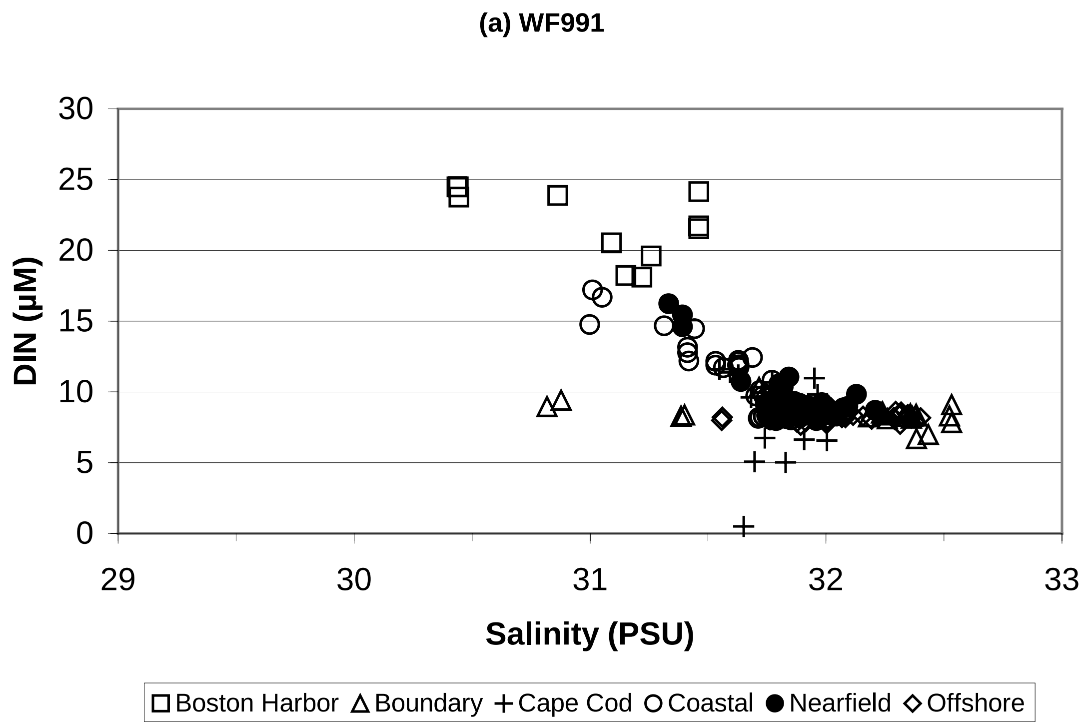


Figure 4-28. Nitrate Plus Nitrite Vertical Transect Plots for Farfield Survey WF994 (Apr 99)



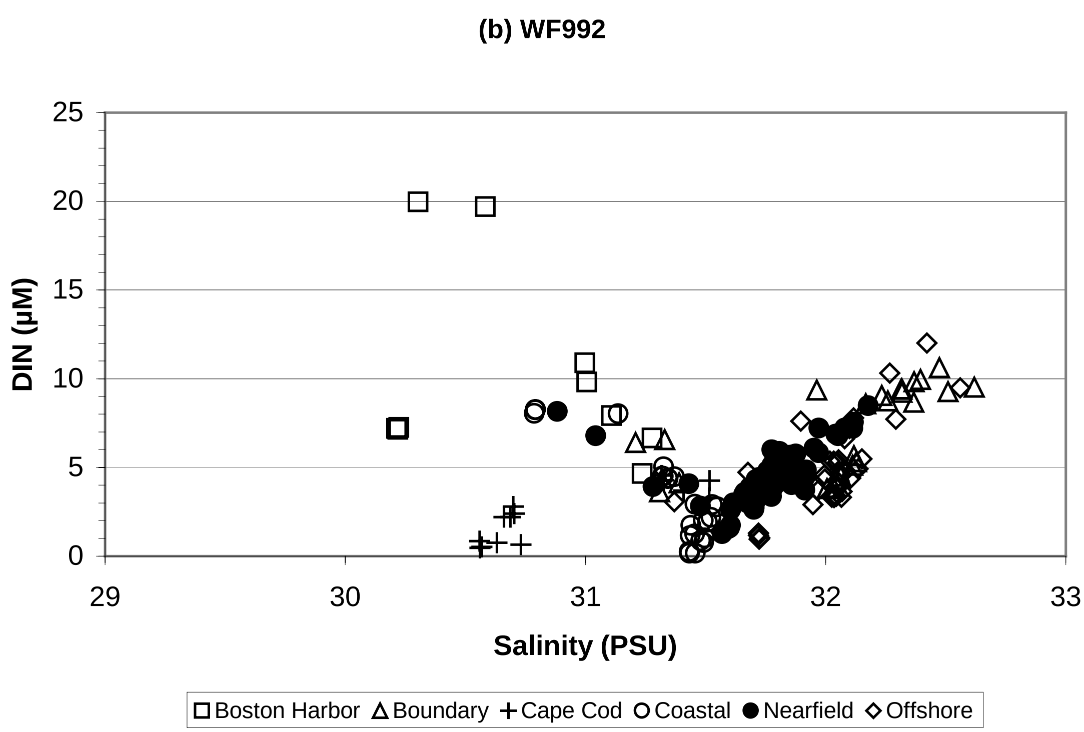
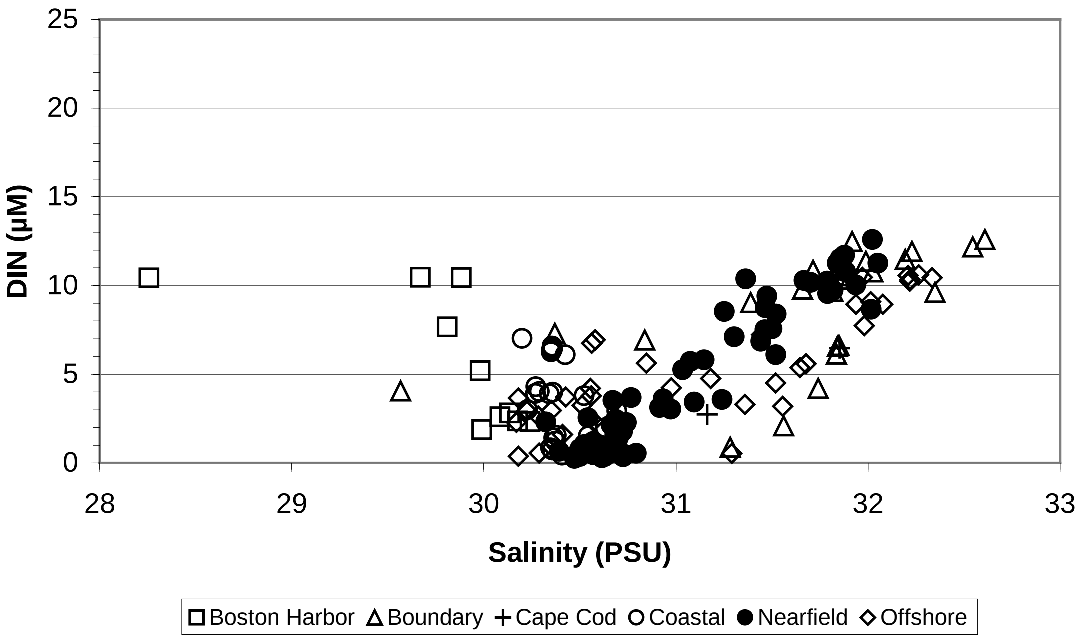


Figure 4-29. DIN vs. Salinity for All Depths during Farfield Surveys WF991 and WF992

(a) WF994



(b) WF997

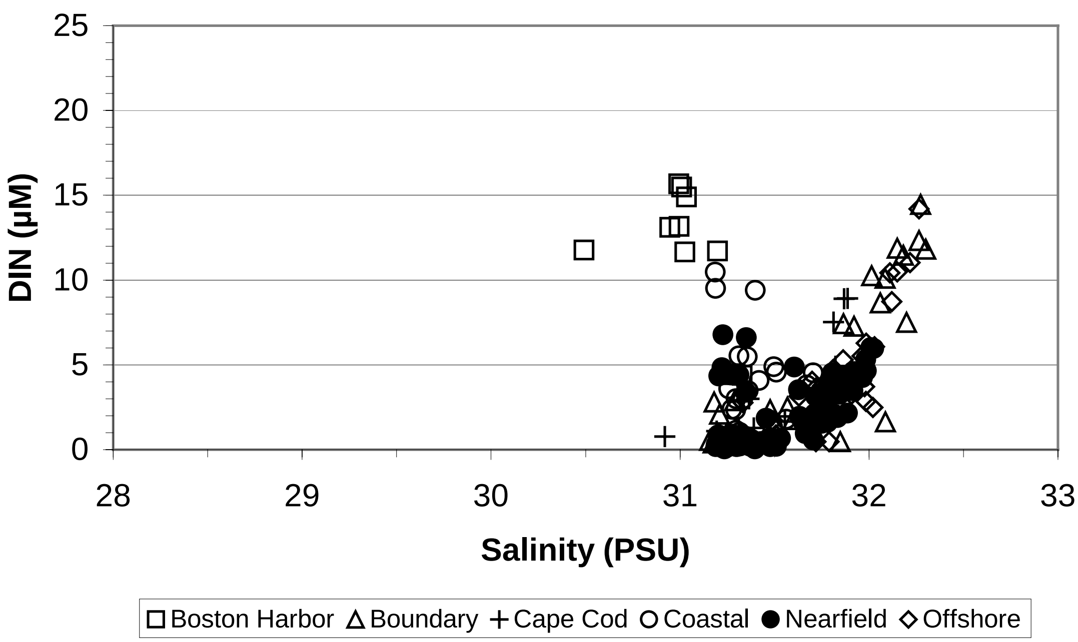


Figure 4-30. DIN vs. Salinity for All Depths during Farfield Surveys WF994 and WF997

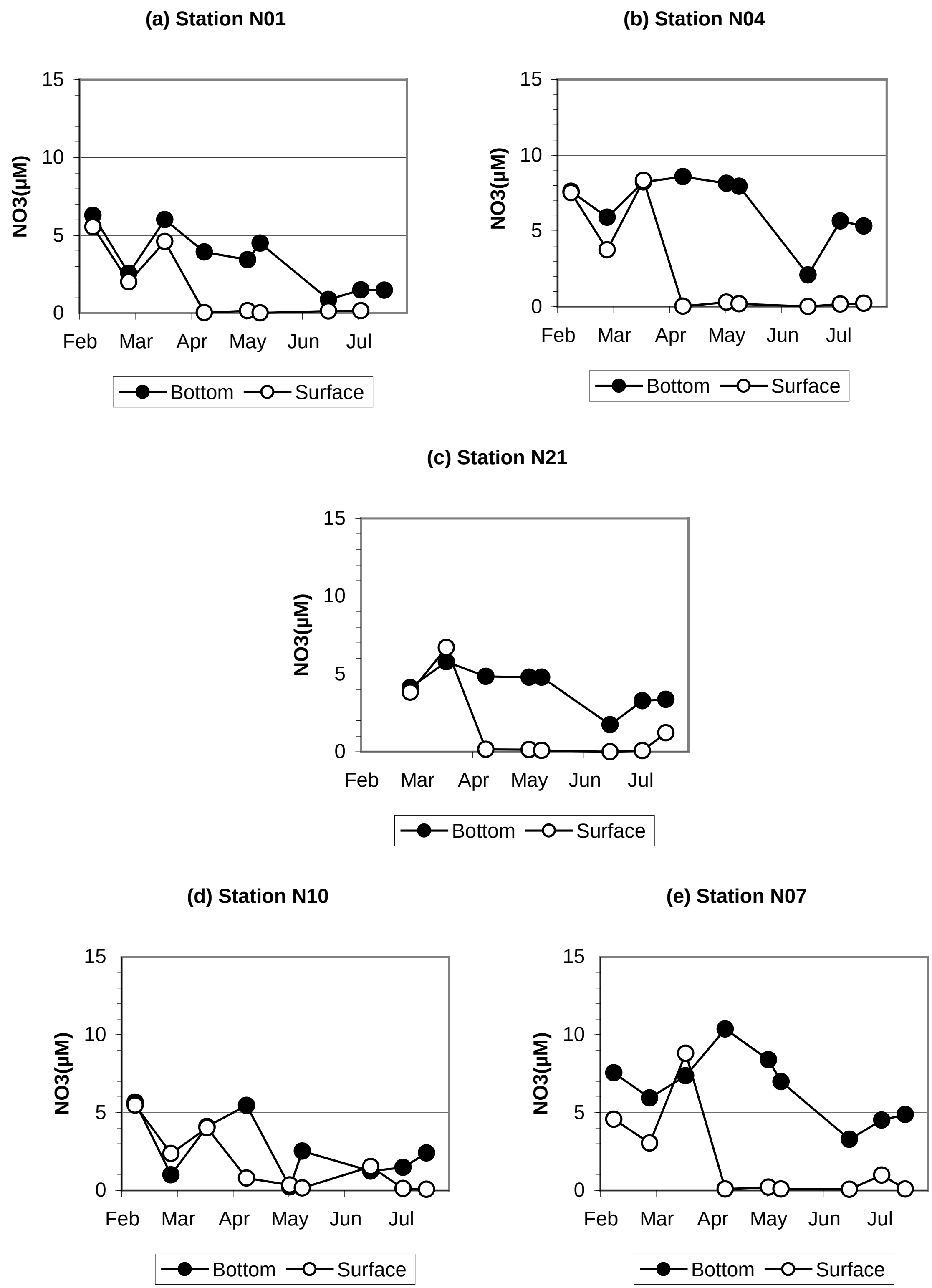


Figure 4-31. Time-Series of Surface and Bottom Water Nitrate Concentration in Five Nearfield Stations

Note: The arrangement of the figures on this page mimic the relative positions of the stations.

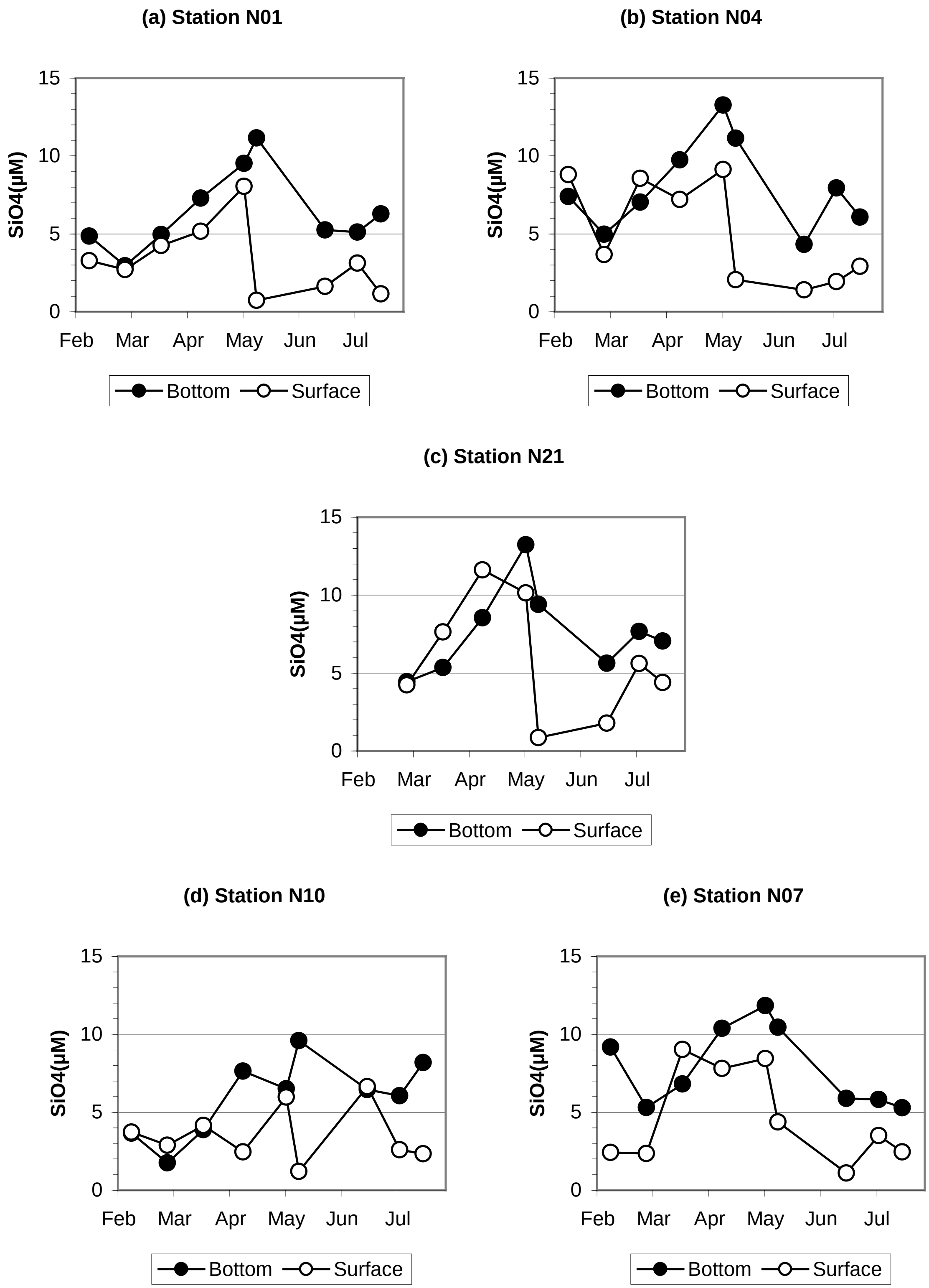


Figure 4-32. Time-Series of Surface and Bottom Water Silicate Concentration in Five Nearfield Stations

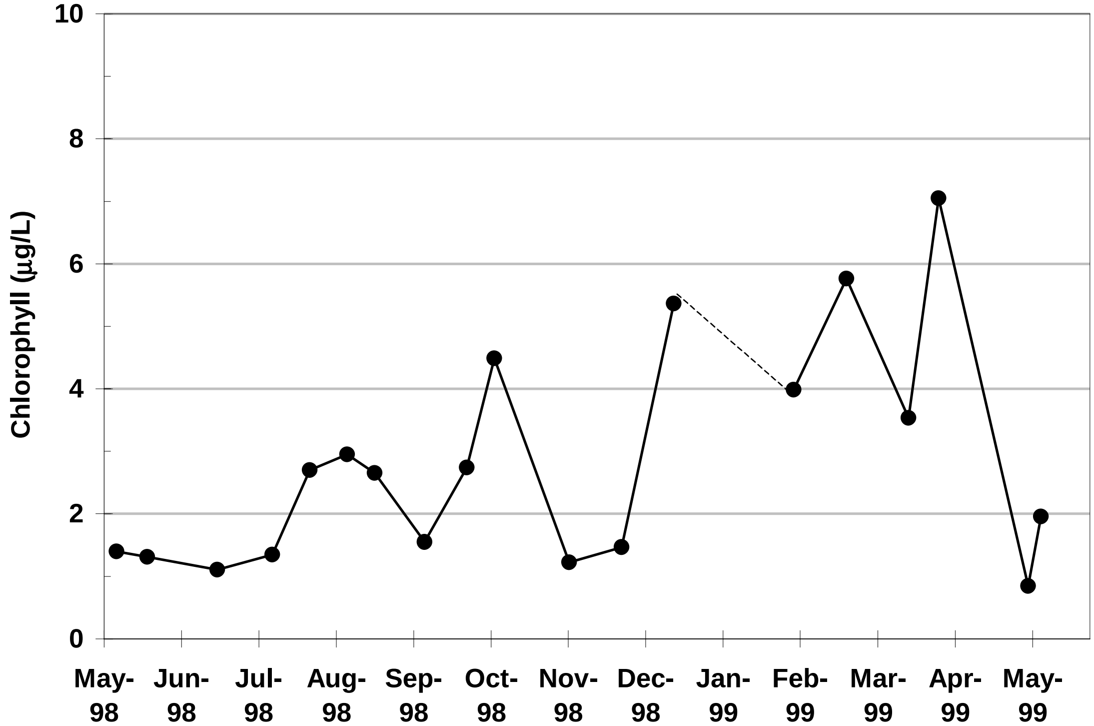


Figure 4-33. Average Nearfield Chlorophyll a Data May 1998 through May 1999

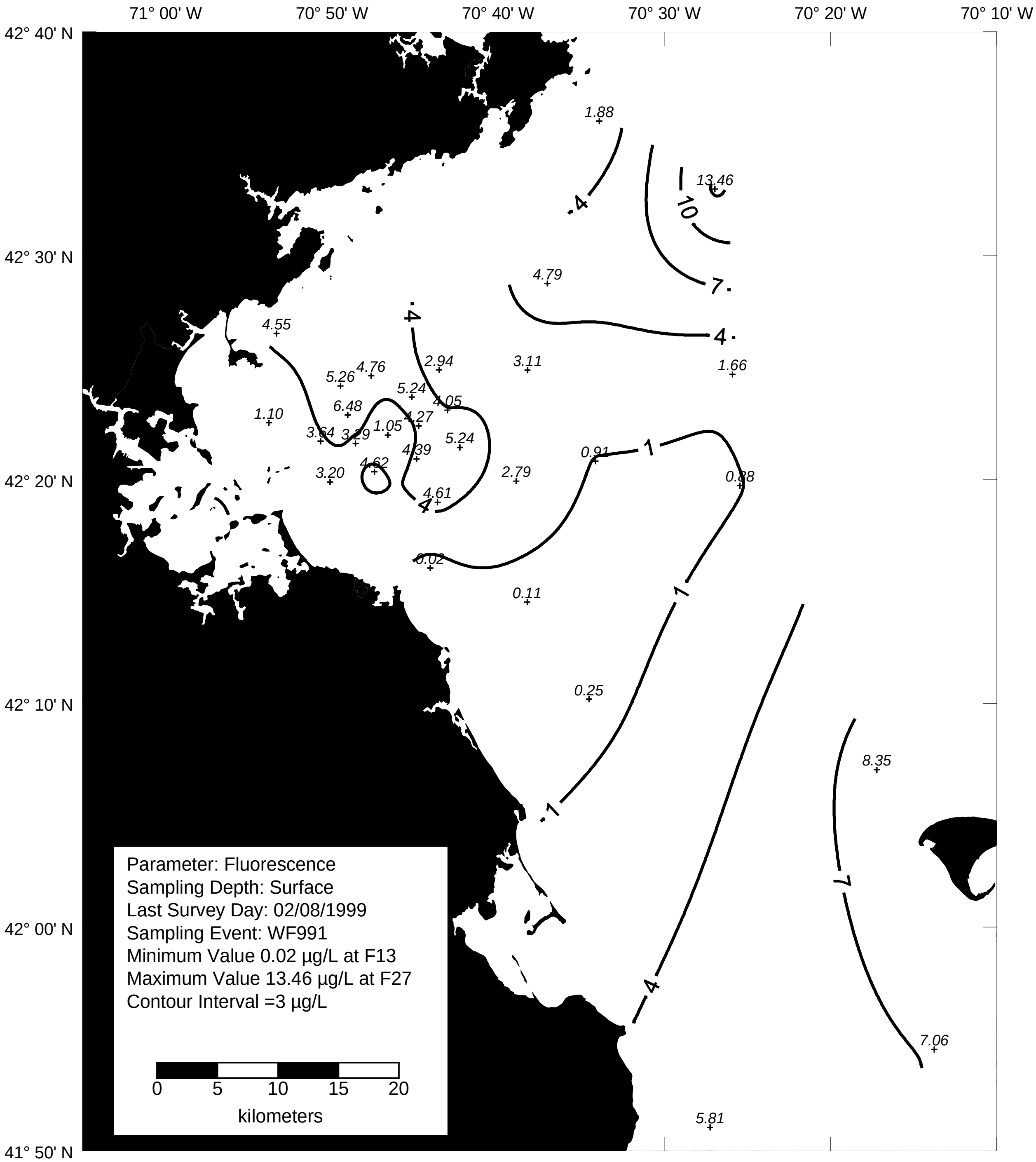


Figure 4-34. Fluorescence Surface Contour Plot for Farfield Survey WF991 (Feb 99)

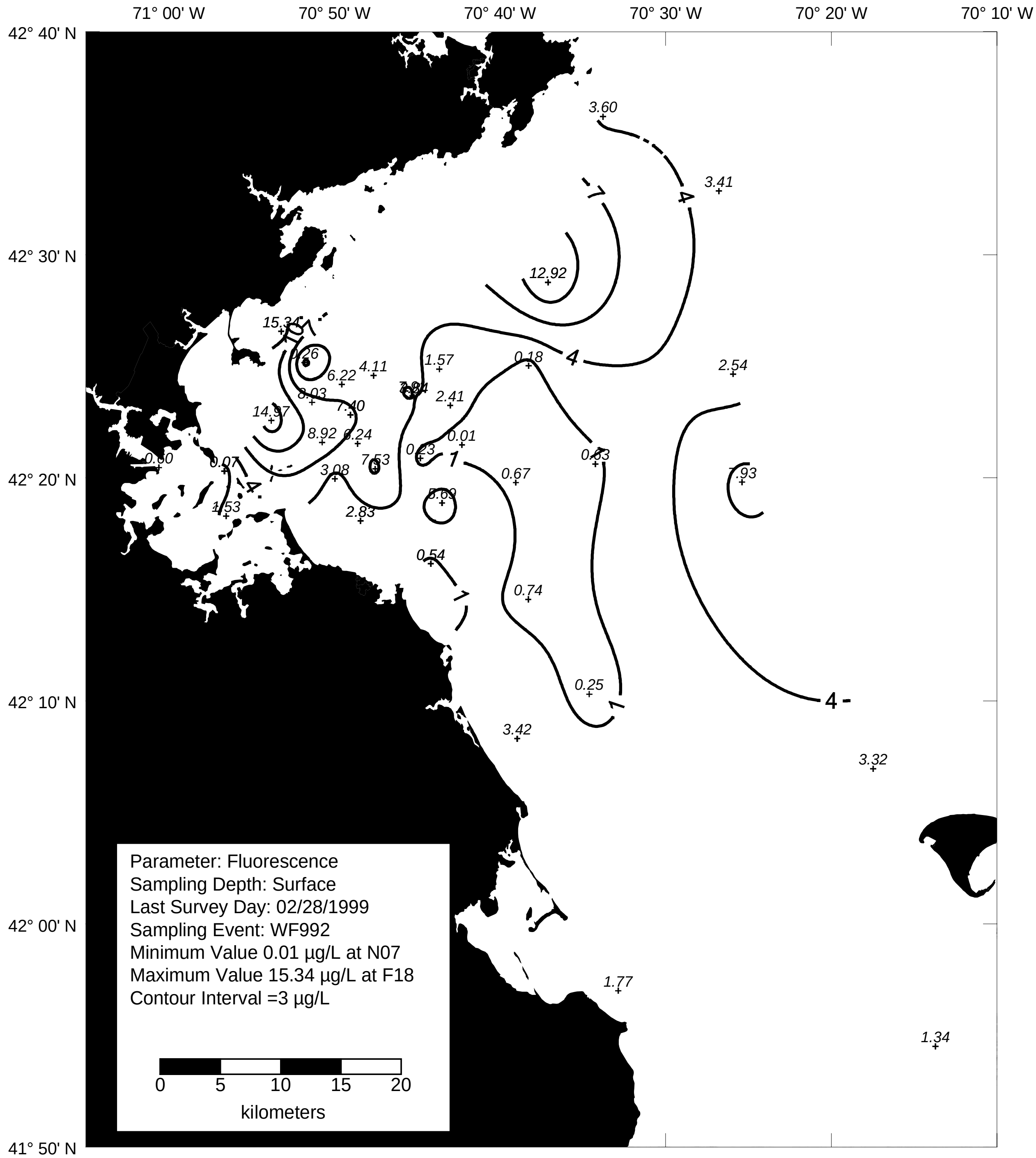


Figure 4-35. Fluorescence Surface Contour Plot for Farfield Survey WF992 (Feb 99)

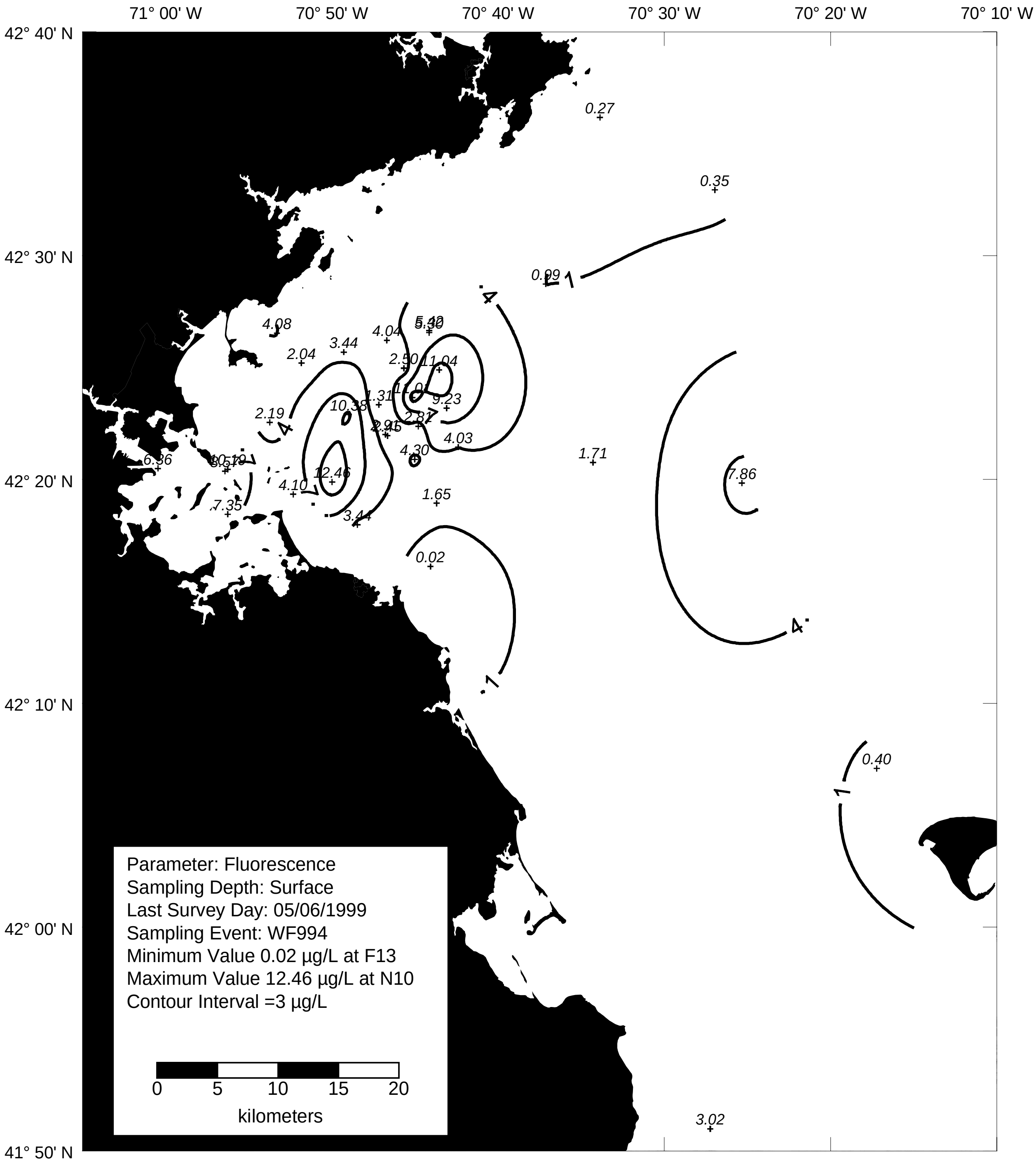


Figure 4-36. Fluorescence Surface Contour Plot for Farfield Survey WF994 (Apr 99)

Note: see Figure 4-5 for sample collection information.

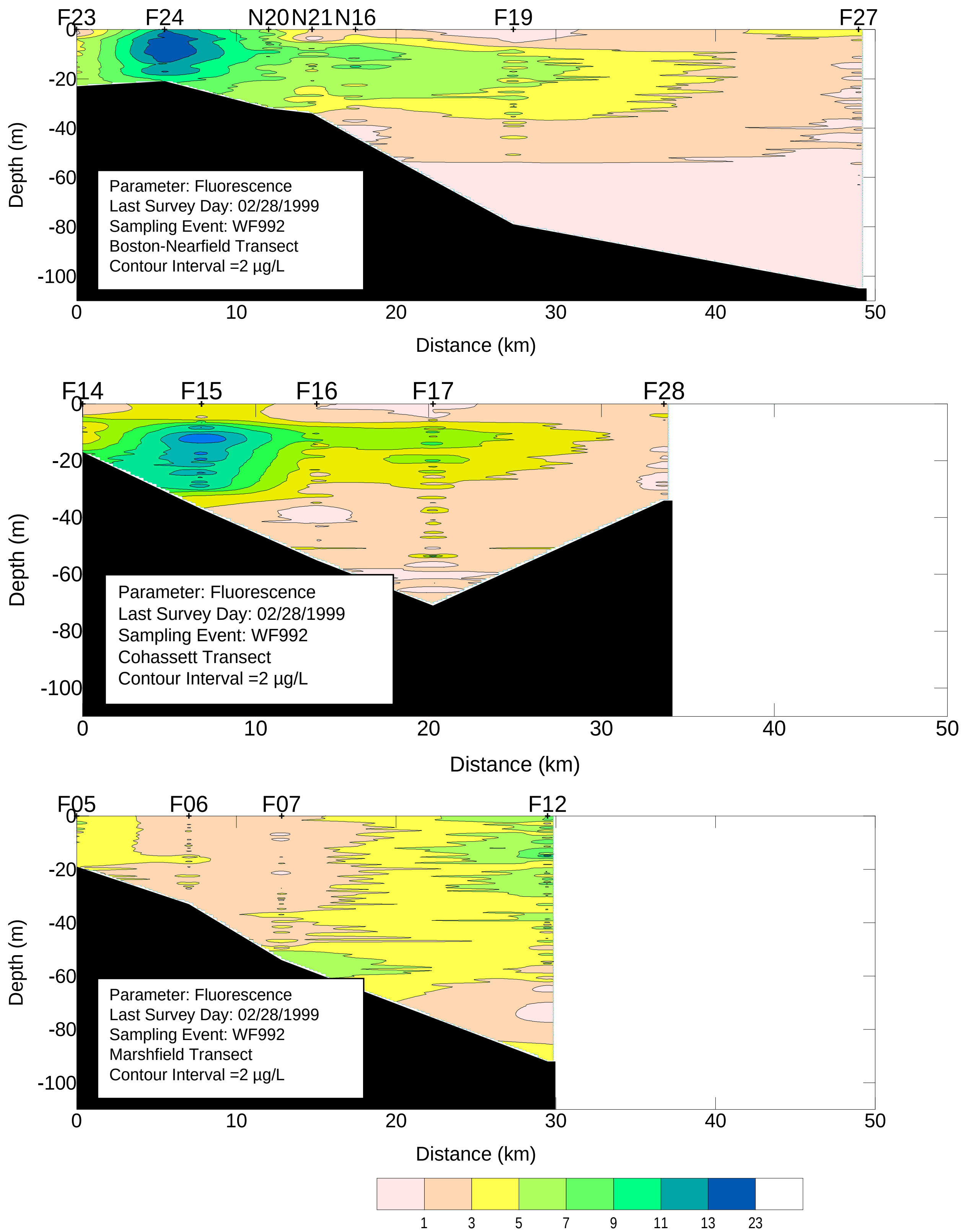


Figure 4-37. Fluorescence Vertical Transect Plots for Farfield Survey WF992 (Feb 99)

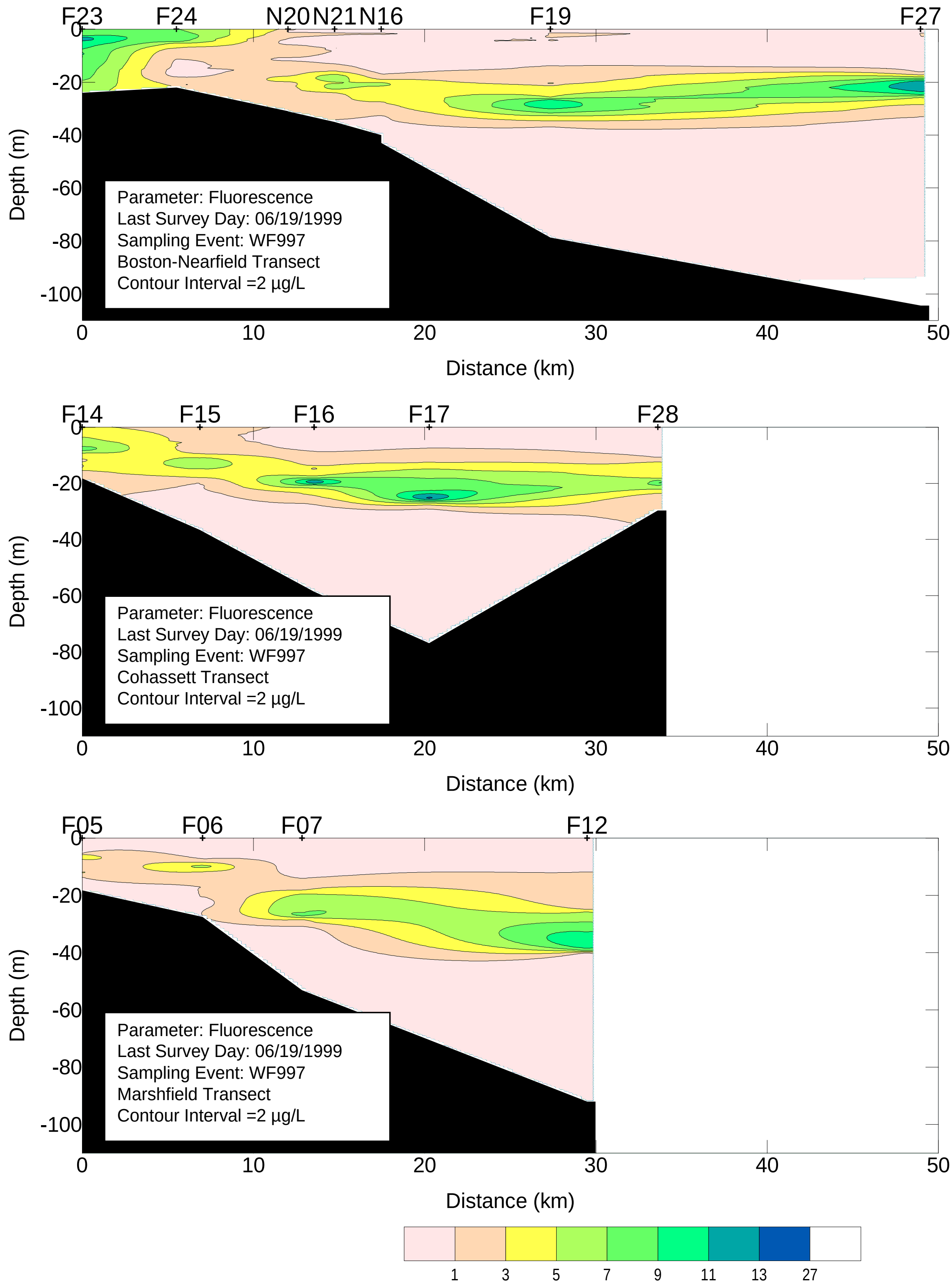


Figure 4-38. Fluorescence Vertical Transect Plots for Farfield Survey WF997 (Jun 99)

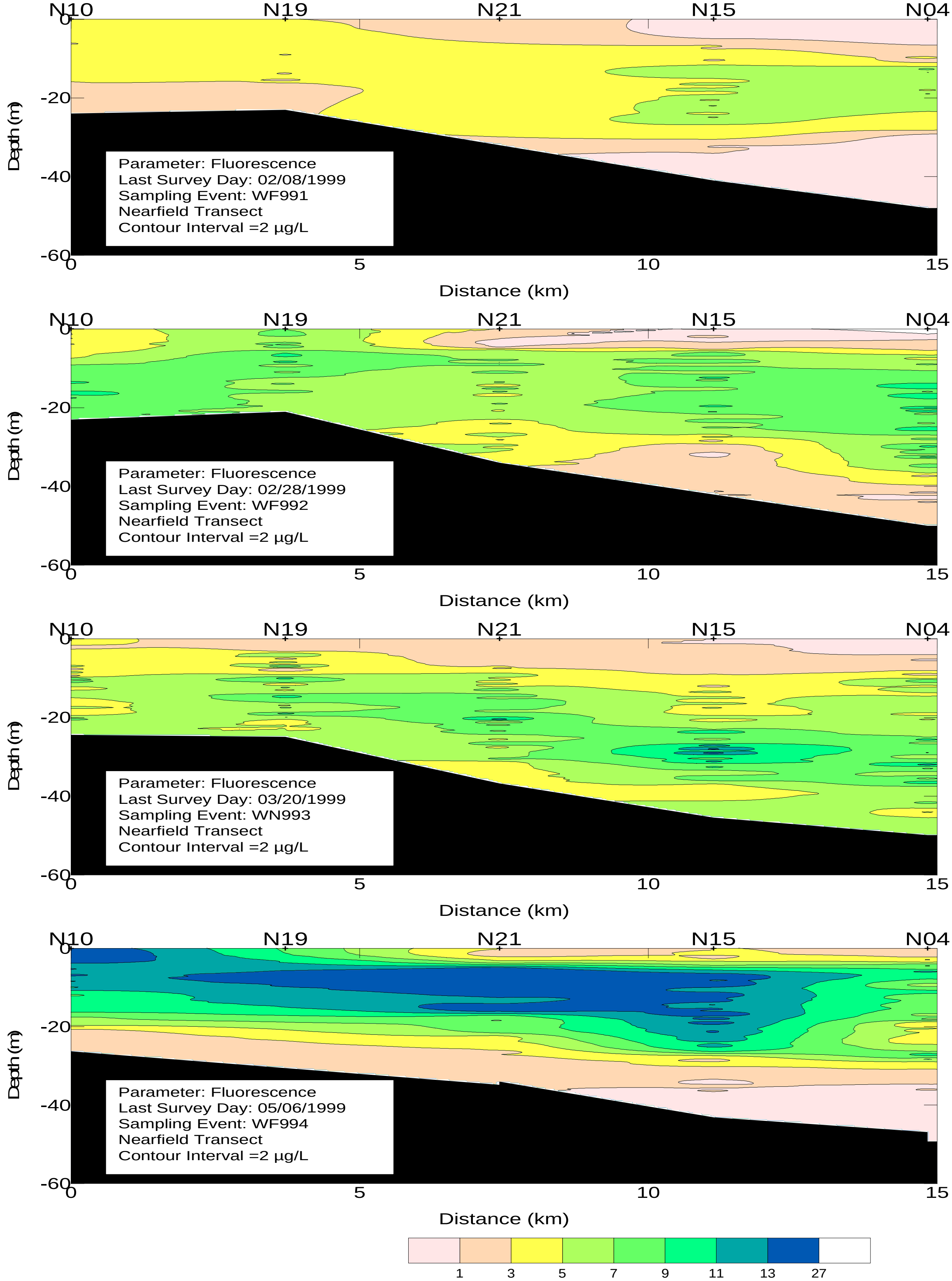


Figure 4-39. Fluorescence Vertical Nearfield Transect Plots for Surveys WF991 through WF994

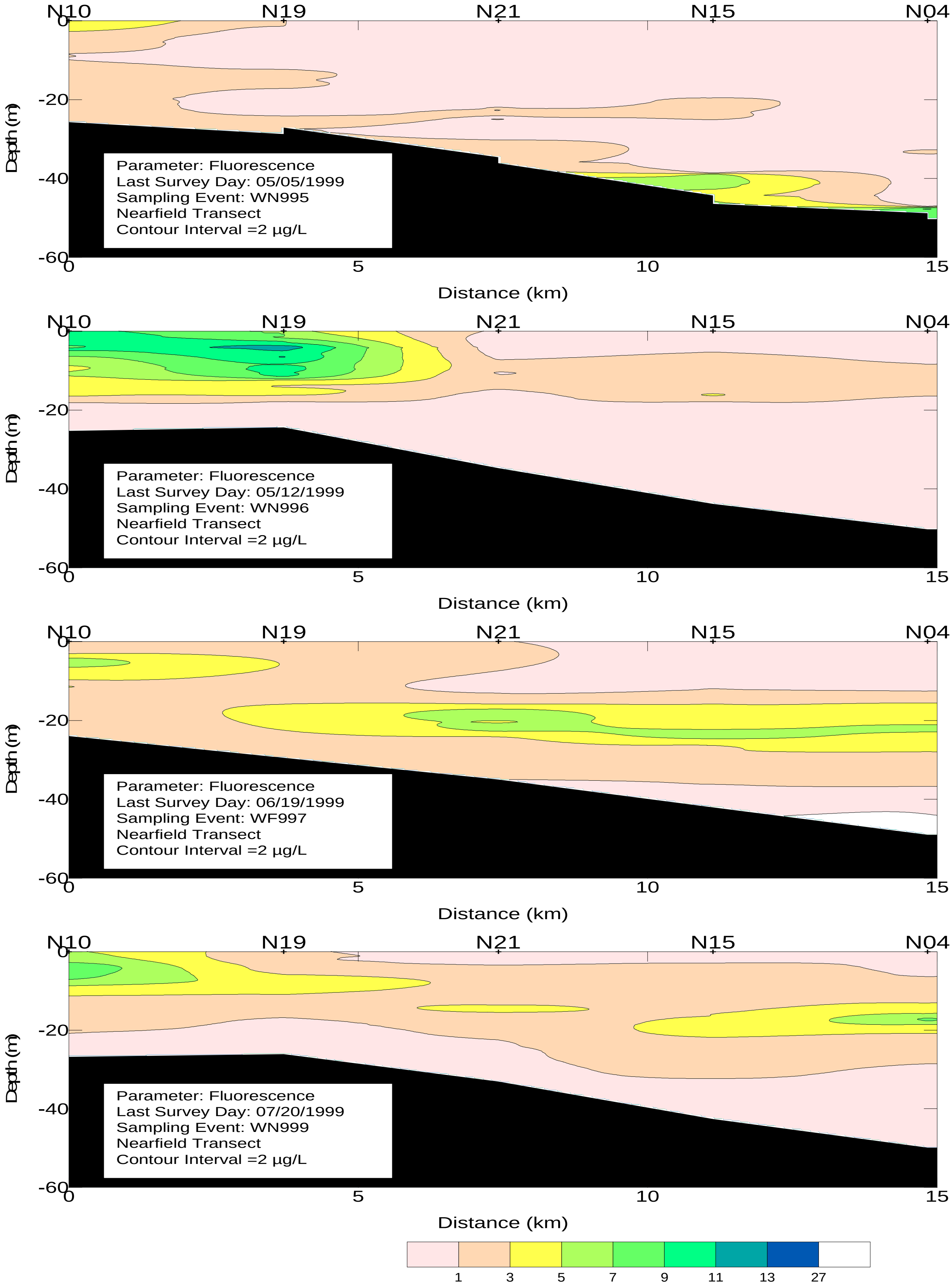


Figure 4-40. Fluorescence Vertical Nearfield Transect Plots for Surveys WN995 through WF997, and WN999

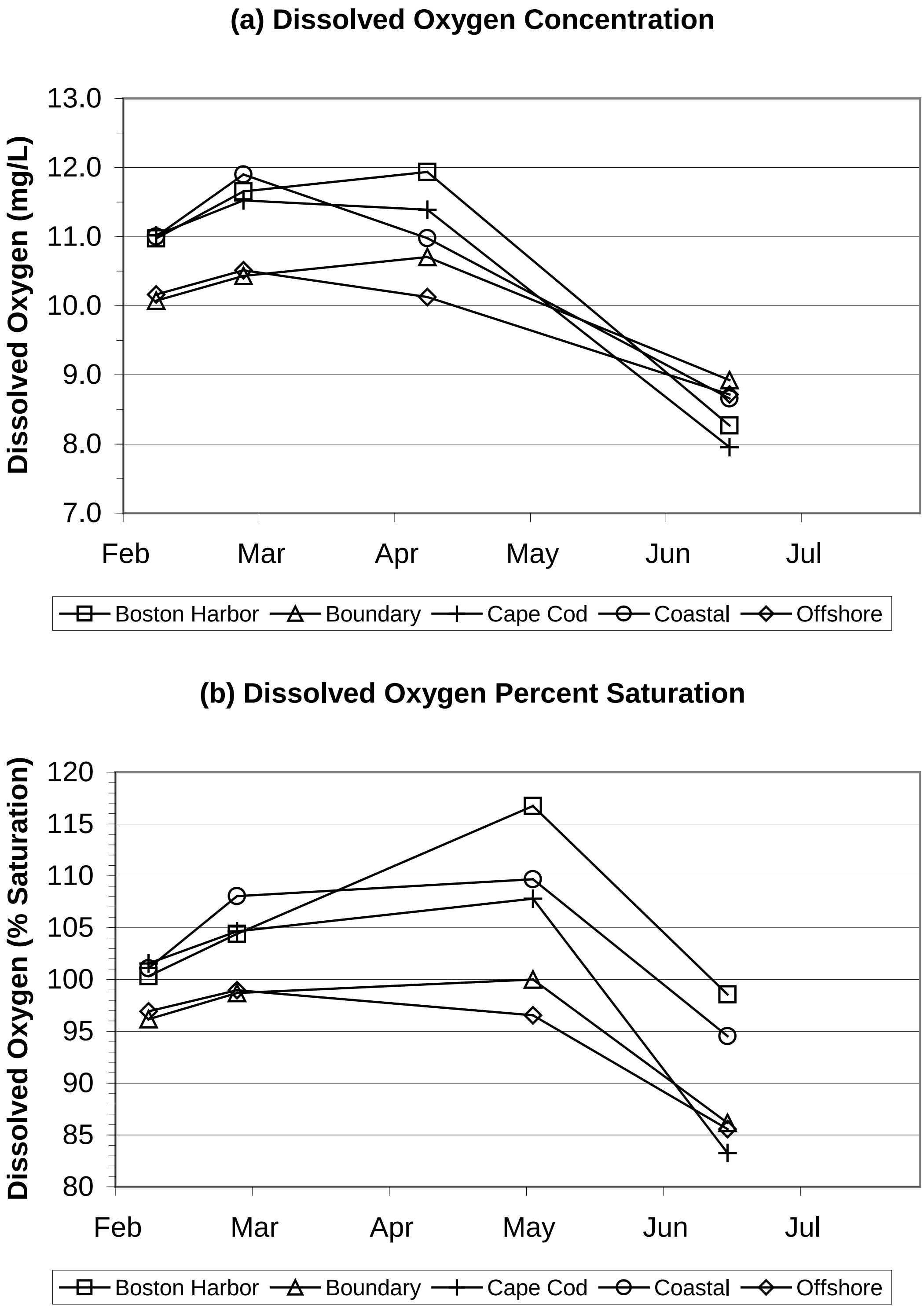


Figure 4-41. Time-Series of Bottom Water Average DO Concentration and Percentage Saturation in the Farfield

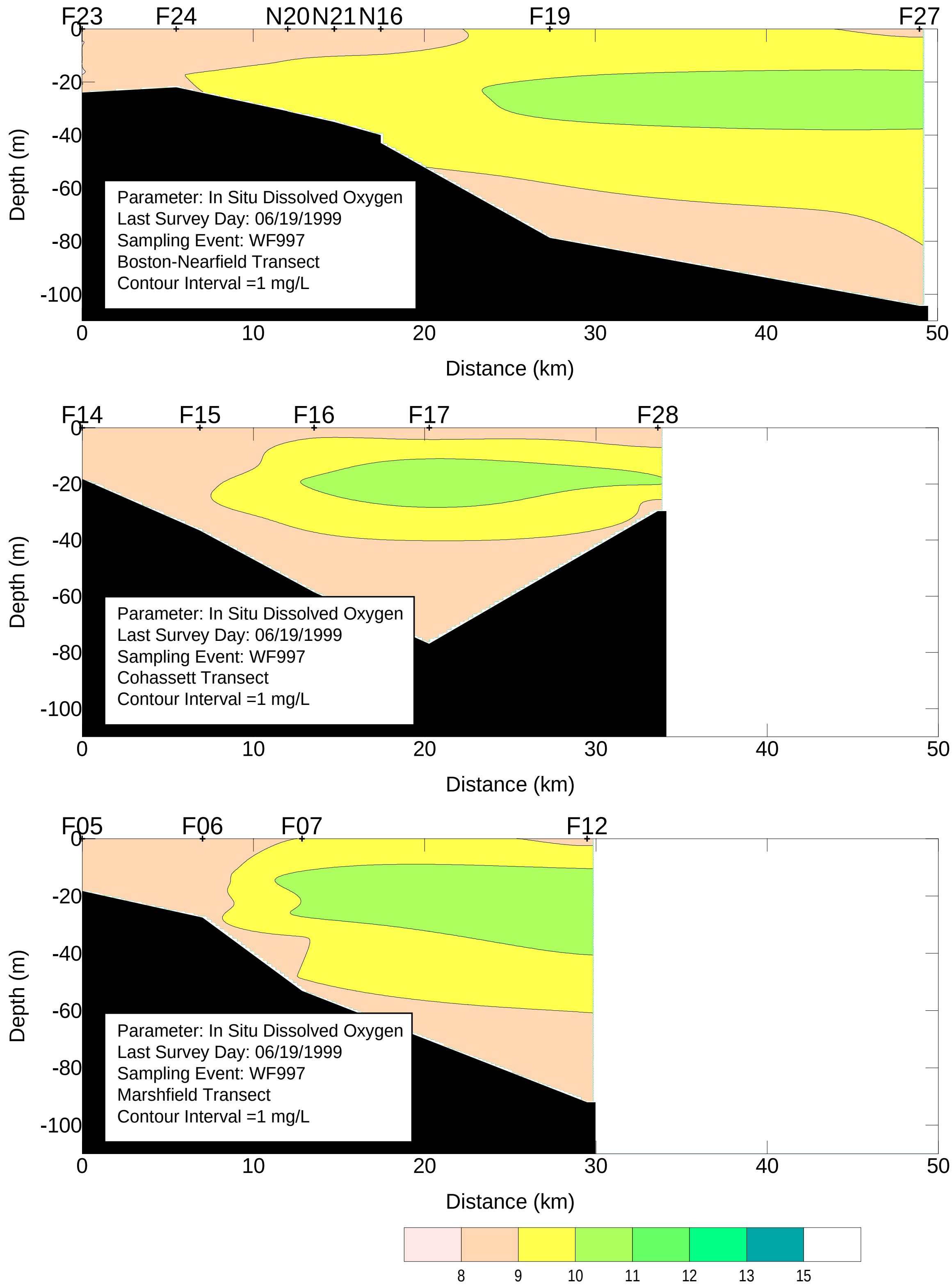


Figure 4-42. Dissolved Oxygen Vertical Transects for Survey WF997 (Jun 99)

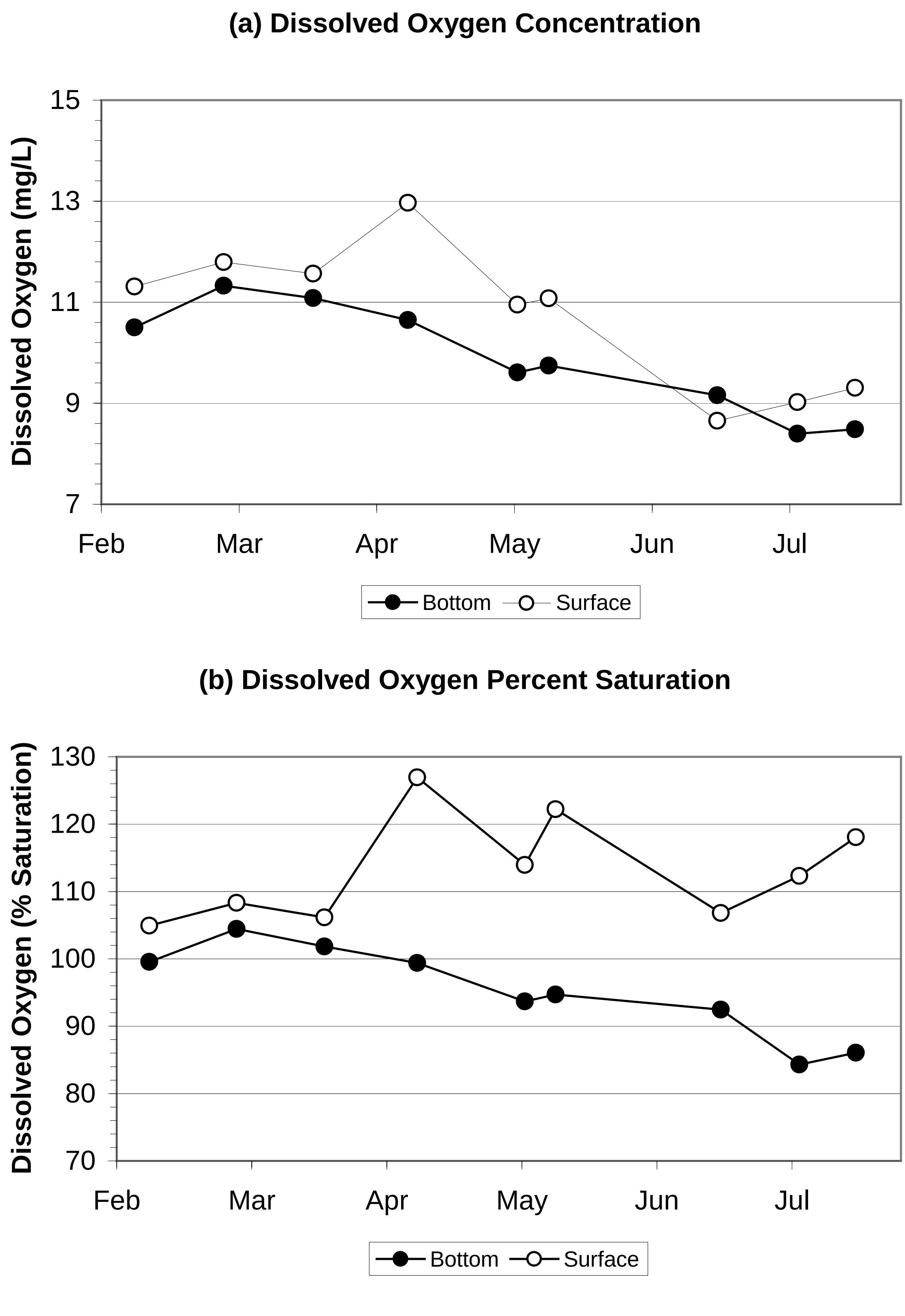


Figure 4-43. Time-Series of Bottom and Surface Average DO Concentration and Percentage Saturation in the Nearfield

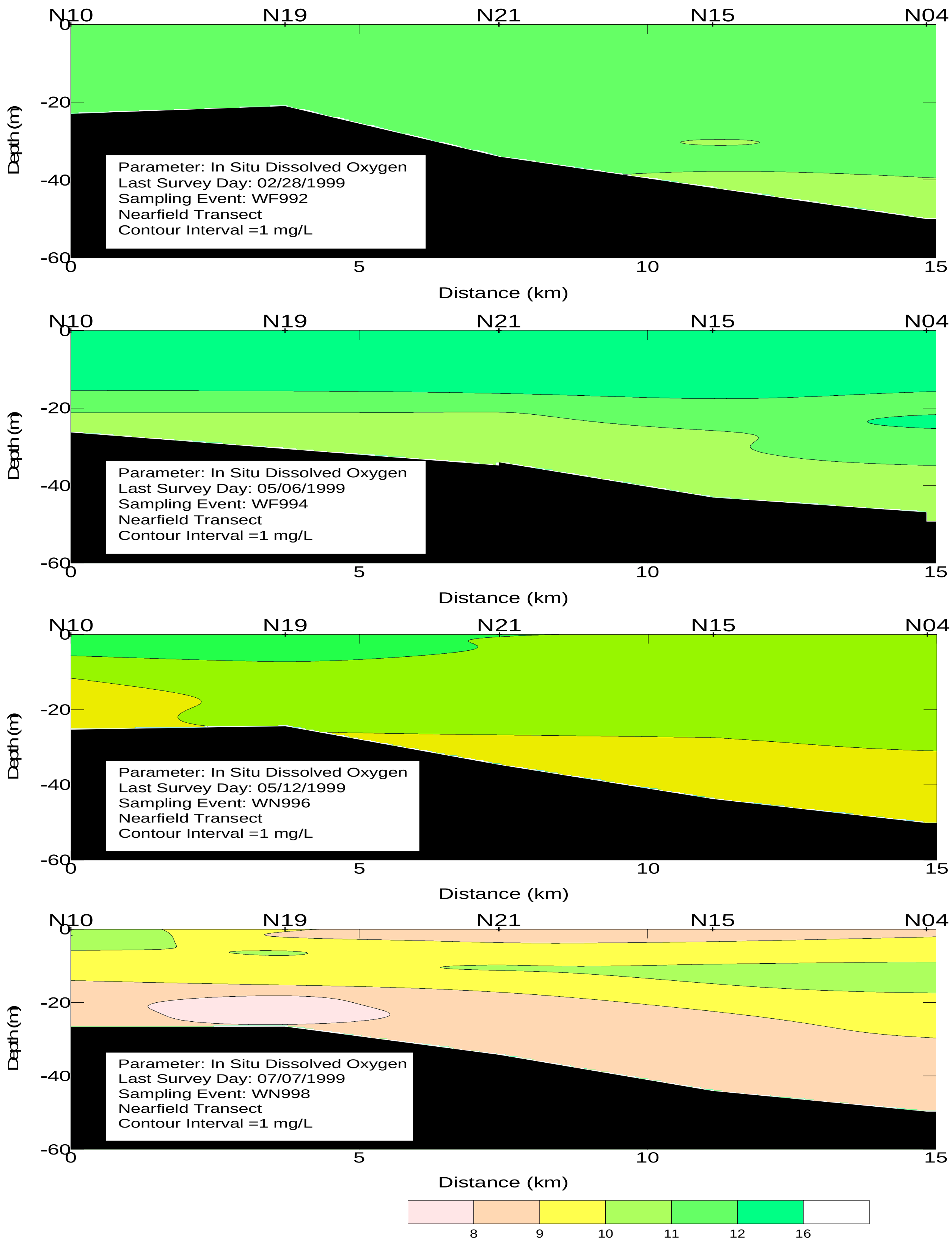


Figure 4-44. Dissolved Oxygen Vertical Nearfield Transects for Surveys WF992, WF994, WN996, and WN998

5.0 PRODUCTIVITY, RESPIRATION, AND PLANKTON RESULTS

5.1 Productivity

Primary production measurements were taken at two nearfield stations (N04, N18) and one farfield station (F23) near the entrance of Boston Harbor. All three stations were sampled on February 7, 1999 (WF991), February 27, 1999 (WF992), April 7, 1999 (WF994) and June 19, 1999 (WF997). N04 and N18 were additionally sampled on March 30, 1999 (WN993), April 29, 1999 (WN995), May 12, 1999 (WN996), July 7, 1999 (WN998), and July 20, 1999 (WN999). Samples were collected at five depths throughout the euphotic zone. Production was determined by measuring ^{14}C at varying light intensities as summarized below and in Appendix A.

In addition to samples collected from the water column, productivity calculations also utilized light attenuation data from a CTD-mounted 4π sensor, and incident light time-series data from a 2π irradiance sensor located on Deer Island, MA. After collection of the productivity samples, they were returned to the Marine Ecosystems Research Laboratory (MERL) in Rhode Island and incubated in temperature controlled incubators. The resulting photosynthesis versus light intensity (P-I) curves (Figure 5-1 and comprehensively in Appendix E) were used, in combination with light attenuation and incident light information, to determine hourly production at 15-min intervals throughout the day for each sampling depth.

For this semi-annual report, areal production (mg C m^{-2} d^{-1}) and chlorophyll-specific areal production (mgC mg Chl^{-1} d^{-1}) are presented (Figures 5-2 and 5-3). Areal productions are determined by integrating measured productivity (and chlorophyll-specific productivity) over the depth interval. Chlorophyll-specific productivity for each depth was first determined by normalizing productivity by measured chlorophyll *a*. Productivity and chlorophyll-specific productivity for each depth are also presented as contour plots (Figures 5-4, 5-5, 5-6 and 5-7).

5.1.1 Areal Production

Areal production at the nearfield stations (N04, N18) was similar throughout the semi-annual sampling period (February 7 - July 20, 1999) (Figure 5-2). Areal production at the two sites was relatively high (> 700 mg C m^{-2} d^{-1}) during the initial cruise on February 7, 1999 (WF991). Values increased at both sites to major production peaks by February 27, 1999 (WF992), decreased somewhat during the third cruise (WN993) then increased again to a second peak on April 7, 1999 (WF994). At both stations the timing and extent of the blooms in production were similar. The dominant bloom at station N04 occurred on February 27, 1999 (WF992) with a peak production of 2147 mg C m^{-2} d^{-1}. Station N18 did not reach its maximum value at this time but was characterized by an obvious peak in production (> 1500 mg $Cm^{-2}d^{-1}$). The situation was reversed for the second production peak on April 7, 1999. Areal production reached ~1650 mg C m^{-2} d^{-1} at station N04 while the peak production for N18 of 2176 mg C m^{-2} d^{-1} was reached at this time. Areal production declined at both stations N04 and N18 on April 29, 1999 (WN995). The minimum observed production (~250 mg C m^{-2} d^{-1}) for the nearfield sites was recorded at station N18 during this sampling cruise. Production increased to greater than 800 mg C m^{-2} d^{-1} at stations N04 and N18 by May (WN996) and remained somewhat elevated (~550 - 1300 mg C m^{-2} d^{-1}) throughout July (WF997 to WN999). The patterns observed at the nearfield sites were consistent with patterns seen in chlorophyll distributions (Section 4.2.2).

Boston Harbor (station F23) displayed a different productivity pattern in comparison with the nearfield sites. At the Boston Harbor productivity/respiration station (F23), areal production was relatively low (~250 mg C m^{-2} d^{-1}) during the initial cruise (February 7, 1999). Areal production increased somewhat to ~800 mg C m^{-2} d^{-1} by February 27 (WF992). Areal production reached a maximal value of 2915 mg C m^{-2} d^{-1} at station F23 during the April survey (WF994) and remained at a similarly high value

(2851 mg C m^{-2} d^{-1}) during the June survey (WF997). The production data are in agreement with the chlorophyll data, which indicated that a phytoplankton bloom occurred during this period.

In contrast to 1998, areal production in 1999 followed patterns typically observed in prior years. Distinct winter-spring phytoplankton blooms were observed at both nearfield stations during the sampling period (Figure 5-2). In general, nearfield stations are characterized by the occurrence of a winter-spring bloom. The winter-spring blooms observed at nearfield stations in 1995-1997 generally reached values of 1000 to 4000 mg C m^{-2} d^{-1}, with blooms typically lasting 2-3 months. The bloom in 1999 reached peak values of >2000 mg C m^{-2} d^{-1} and lasted from February through April and represents a return to expected patterns following the somewhat unusual cycle observed last year. The absence of a winter-spring phytoplankton bloom during 1998, a major change in the seasonal productivity pattern relative to other years for the nearfield region was not repeated in 1999.

In general, the Boston Harbor site (station F23) exhibits a gradual pattern of increasing areal production from winter through summer rather than the distinct winter-spring peaks observed at the nearfield sites. In 1999 the pattern for station F23 conformed to this description. Production values increased gradually from February through June (Figure 5-2). During 1995-1997, peak areal productions at station F23 ranged from 2000 to 5000 mg C m^{-2} d^{-1} in June-July. The peak areal productions observed in April-June 1999 (2851 - 2914 mg C m^{-2} d^{-1}) at station F23 were similar to peak values observed in previous years. The productivity cycle at station F23 in 1999, which was aberrant in 1998, represented a return to more typical conditions.

5.1.2 Chlorophyll-Specific Production

Chlorophyll-specific areal production was very similar at both nearfield sites (stations N04 and N18) over time (Figure 5-3). Chlorophyll-specific areal production was relatively low at the start of the sampling period then gradually increased at both stations until the seasonal maxima were reached during the mid-May survey (WN996). Seasonal maxima were greater than 1100 mg C mg chl a^{-1} d^{-1}. Following these peak values chlorophyll-specific areal production decreased to less than 450 mg C mg Chl a^{-1} d^{-1} in June 1999 (WF997) then gradually climbed till the end of the sampling period. By comparison chlorophyll-specific rates at the Harbor station F23 did not exceed 300 mg C mg Chl a^{-1} d^{-1} throughout the sampling cycle (Figure 5-3).

Chlorophyll-specific production is an approximate measure for the efficiency of production and frequently reflects nutrient conditions at the sampling sites. The distribution of chlorophyll-specific production indicates that the efficiency of production was high relative to the amount of biomass present at the nearfield stations. At both stations N04 and N18 the peak chlorophyll-specific production occurred well after the cessation of the winter-spring production peak. By contrast, efficiency of production was low at the Harbor site relative to biomass availability.

5.1.3 Vertical Trends in Production

The spatial and temporal distribution of production and chlorophyll-specific production on a volumetric basis were summarized by showing contoured production over the sampling period (Figures 5-4 to 5-7). Chlorophyll-specific productions (daily production normalized to chlorophyll concentration at each depth) were calculated to compare production with chlorophyll concentrations. Chlorophyll-specific production can be used as an indicator of the optimal conditions necessary for photosynthesis.

The peaks in areal productivity reported during late February and early April at station N04 were concentrated in the surface water (Figure 5-4). At station N18, the initial productivity peak was also confined to surface waters (<5 m) but the secondary bloom in early April was distributed throughout the water column (Figure 5-5). At the two nearfield stations, surface productions tended to decrease following the spring peak values but increased again in July. For both stations N04 an N18, the highest production values observed (>200 mg C m^{-3} d^{-1}) occurred at the surface on February 27, 1999. Peak production values tended to be correlated with the occurrence of the highest chlorophyll *a* measurements.

A subsurface (10-20 m) productivity maximum was measured at station N18 on June 19, 1999 (WF997). A subsurface production maximum was also observed at station N04 during the June 19, 1999 survey, however the peak depth of occurrence was observed at ~ 12 m (Figures 5-4 and 5-5). Subsurface productivity maxima tended to occur at both station N04 and N18 during June and July 1999. The productivity pattern at specified depths observed in 1999 was similar to that observed in prior years. At station N04 productivity >10 mg m^{-3} d^{-1} was rarely observed at depths >20 m. At station N18 productivity as high as 40 mg C m^{-3} d^{-1} was recorded from depths of 20 m with values from 10-30 mg C m^{-3} d^{-1} frequently observed here. Productivity in the Harbor was largely restricted to the upper 10 m of the water column.

Chlorophyll-specific productions at N04 and N18 were also concentrated in the upper portions of the water column (Figures 5-6 and 5-7). Peak chlorophyll-specific productions occurred early in the sampling season at station N04 and somewhat later at station N18. The efficiency of photosynthesis decreased slightly as the season progressed. When the efficiency of photosynthesis is high but not reflected in higher phytoplankton biomass (measured as total chlorophyll *a*) it suggest that other processes (such as predation by zooplankton) are important in controlling the patterns observed.

5.2 Respiration

Respiration measurements were made at the same nearfield (N04, N18) and farfield (F23) stations as productivity and at an additional station in Stellwagen Basin (F19). All four stations were sampled during each of the combined farfield/nearfield surveys and stations N04 and N18 were also sampled during the five nearfield surveys. Respiration samples were collected from three depths (surface, mid-depth, and bottom) and were incubated in the dark at *in situ* temperatures for 8±1 days.

Both respiration (in units of $\mu MO_2\,hr^{-1}$) and carbon-specific respiration ($\mu MO_2\,\mu MC^{-1}\,hr^{-1}$) rates are presented in the following sections. Carbon-specific respiration was calculated by normalizing respiration rates to the coincident particulate organic carbon (POC) concentrations. Carbon-specific respiration rates provide a relative indication of the biological availability (labile) of the particulate organic material for microbial degradation.

5.2.1 Water Column Respiration

Due to electrical problems with the incubators in February (WF991), there are only three sets of respiration data for the farfield stations (F23 and F19). The data for the April survey (WF994) have been qualified in the database as suspect because incubator temperatures increased to ~10°C for 24 to 48 hours. The *in situ* temperatures for the WF994 respiration samples were 5.0 ± 2.0 °C. The increase in incubator temperature to 10 °C for a short time period probably had a negligible effect on the respiration rates for these samples and the data have been included in this report. The evaluations of the temporal trends are focused on the nearfield area where data are available over the whole February to July time period.

During the surveys conducted in February (WF992) and March (WN993), respiration rates were generally low in the nearfield area (<0.10 $\mu MO_2\,hr^{-1}$) and comparable over depth (Figure 5-8). By April (WF994), respiration rates had increased 2 to 4-fold in the nearfield (0.1 to 0.4 $\mu MO_2\,hr^{-1}$) and similar increases were observed at Harbor station F23 and less significant increases at offshore station F19. Respiration rates reached a maximum for the time period in the nearfield in early May (WN995) with rates at station N18 ranging from 0.5 to 0.8 $\mu MO_2\,hr^{-1}$ with the highest rate observed in the mid-depth waters. Respiration rates were lower at station N04, but had continued to increase from the levels observed during the April survey (WF994). The increase in respiration rates in April was coincident with the peak production values observed for the winter-spring bloom. By early May, the senescent bloom may have fueled the high respiration rates that were observed as the readily available labile organic material was degraded. Respiration rates during this time period were generally higher in the surface and mid-depth waters where the temperatures were warmer and higher rates of primary production were observed.

By mid-May (WN996), respiration rates had decreased to 0.2 to 0.35 $\mu MO_2\ hr^{-1}$ in the nearfield and they continued to decrease into June reaching rates of ≤ 0.10 $\mu MO_2\ hr^{-1}$. The only exception was an increase in respiration in the surface water at station N04 to ~0.65 $\mu MO_2\ hr^{-1}$, which was coincident with an increase in surface water respiration at offshore station F19 (0.20 $\mu MO_2\ hr^{-1}$). In the Harbor, respiration rates had decreased from the maximum levels observed in April, but were generally higher than those observed at the three other stations. Respiration rates remained relatively low (<0.20 $\mu MO_2\ hr^{-1}$) during the July surveys with the highest values being observed in the surface waters at station N18.

5.2.2 Carbon-Specific Respiration

Carbon-specific respiration accounts for the effect of variations in the size of the particulate organic carbon (POC) pool have on respiration. Differences in carbon-specific respiration result from variations in the quality of the available particulate organic material or from environmental conditions such as temperature. Particulate organic material that is more easily degraded (more labile) will result in higher carbon-specific respiration. In general, newly produced organic material is the most labile. Water temperature is the main physical characteristic that controls the rate of microbial oxidation of organic material – the lower the temperature the lower the rate of oxidation. When stratified conditions exist, the productive, warmer surface and/or mid-depth waters usually exhibit higher carbon-specific respiration rates and bottom waters have lower carbon-specific respiration rates due to both lower water temperature and lower substrate quality due to the degradation of particulate organic material during sinking.

There was a general increase in POC concentrations from February to April and then a decrease from April to July (Figure 5-9), which is consistent with the pattern observed in chlorophyll over this time period. POC concentrations were relatively high (20-40 µMC) in the nearfield during the first two surveys and generally higher in the surface and mid-depth waters. By March (WN993), POC concentrations had decreased to ~20 µMC at the two nearfield stations (slightly higher in the surface water at station N18). POC concentrations at the Harbor station increased significantly during the month of February from ~30 µMC in early February (WF991) to 50-90 µMC in late February (WF992). The carbon-specific respiration rates were low (<0.005 $\mu MO_2\ \mu MC^{-1}\ hr^{-1}$) at all three stations during this time period (Figure 5-10). This suggests that the very high POC concentrations that were measured at station F23 in late February were probably due to degraded or detrital material transported from the Harbor or other coastal areas rather than labile organic material.

In April (WF994), POC concentrations had increased at both nearfield stations to approximately 40-55 µMC (lower in the deeper bottom water at station N04). These elevated concentrations were coincident with high chlorophyll concentrations and high production rates. Nearfield carbon-specific respiration rates increased with the increasing availability of labile organic material in April, but did not reach maximum values until early May (WN995). At Harbor station F23, POC concentrations remained higher than the nearfield concentrations in April and into June (40-70 µMC), but carbon-specific respiration rates were low throughout this period ≤ 0.005 $\mu MO_2\ \mu MC^{-1}\ hr^{-1}$.

POC concentrations decreased to ~20 µMC at the nearfield stations by early May (WN995) coincident with significant decreases in chlorophyll concentration and production rates due to the senescence of the winter-spring bloom. Carbon-specific respiration rates, however, increased considerably and reached maximum rates over the water column for this time period at station N18 (0.035-0.045 $\mu MO_2\ \mu MC^{-1}\ hr^{-1}$). The increase in carbon-specific respiration rates at station N18 may have been due to the presence of a more labile pool of POC, but is more likely due to elevated concentrations of dissolved organic carbon, which reached a maximum (>400 µMC) during this period in early May.

The POC concentrations remained relatively low during the mid-May (WN996) and June (WF997) surveys at both nearfield stations. This was concomitant with lower carbon-specific respiration at station N18 and during the mid-May survey at station N04. In June, however, the carbon-specific respiration rate in the surface water at N04 reached a station maxima of 0.035 μMO_2 μMC^{-1} hr^{-1}. POC concentrations varied from 10 to 50 μMC in the nearfield during the July surveys, but carbon-specific respiration remained low (≤0.007 μMO_2 μMC^{-1} hr^{-1})

5.3 Plankton Results

Plankton samples were collected on each of the nine surveys conducted during this reporting period. Phytoplankton and zooplankton samples were collected at two stations during each nearfield survey and at 11 stations during the farfield surveys. During the first three farfield surveys of 1999 (WF991, WF992, and WF994), zooplankton samples were collected at two additional stations in Cape Cod Bay (F32 and F33). Phytoplankton samples included both whole-water and 20 μm-mesh screened samples, from the surface and subsurface chlorophyll maximum depths. Zooplankton samples were collected by vertical/oblique tows with 102 μm-mesh nets. Methods of sample collection and analyses are detailed in Albro *et al*. (1998).

In this section, the seasonal trends in plankton abundance and regional characteristics of the plankton assemblages are evaluated. Total abundance and relative abundance of major taxonomic group are presented for each phytoplankton and zooplankton community. Tables in the appendices provide data on cell densities and relative abundance for all dominant plankton species (>5% abundance): Appendix F – whole water phytoplankton, Appendix G – 20-μm screened phytoplankton, and Appendix H – zooplankton.

5.3.1 Phytoplankton

5.3.1.1 Seasonal Trends in Total Phytoplankton Abundance

Total phytoplankton abundances in nearfield whole water samples (surface and subsurface mid-depths) were variable from February through May (Table 5-1). Total abundances at the surface varied between approximately 0.5 –2.0 x 10^6 cells l^{-1} at station N18 (Figure 5-11a), station N16 (Figure 5-11b) and station N04 (Figure 5-11c). Total abundances at mid-depth were also <2 x 10^6 cells l^{-1} from February to May, with the exception of survey WF994 on April 11, when abundances at stations N18 and N04 reached 3 x 10^6 cells l^{-1} (Figure 5-12). Total phytoplankton abundance declined in the nearfield in June and July to levels < 1.0 x 10^6 cells l^{-1} (Figures 5-11 and 5-12).

Total phytoplankton abundance in farfield whole water samples (surface and subsurface mid-depths) showed similar low abundances in February with levels generally < 1 x 10^6 cells l^{-1} during Survey WF991 (Figure 5-13), and values generally between 1-2 x 10^6 cells l^{-1} during Survey WF992 (Figure 5-14). By April to early May (Survey WF994) abundances still had not increased above the 1-2 x 10^6 cells l^{-1} level, except at 4 mid-depth stations (F01, F31, N04 and N18) where abundances were around 3 x 10^6 cells l^{-1} in comparison to the 2 x 10^6 cells l^{-1} or less at the other stations (Figure 5-15). By June (Survey WF997) phytoplankton abundance had actually declined, with levels < 1.6 x 10^6 cells l^{-1} at all stations, and levels < 1.0 x 10^6 cells l^{-1} at most stations (Figure 5-16).

Total abundances of dinoflagellates, silicoflagellates and protozoans in 20 μm-mesh-screened water samples were considerably lower than those recorded for total phytoplankton in whole-water samples, due to the screening technique which selects for larger, albeit rarer cells. Nonetheless, similar seasonal increases, though of different taxa, were recorded. Dinoflagellates in nearfield and farfield screened phytoplankton samples were generally at levels < 10^3 cells l^{-1} from February through early May, increasing to values of <2 to >3 x 10^3 cells l^{-1} from mid-May through July (Table 5-2). These increases in

screened phytoplankton abundance largely reflected a sustained bloom of the dinoflagellates *Ceratium fusus* and *Ceratium tripos*, and other species of this genus from February through July.
Perhaps the singular phytoplankton event of this period was the bloom of *Ceratium furca /C. tripos/* C. *longipes* which continued from the previous year, and exhibited sustained increases from February through July. The chlorophyll and production data indicated that a sustained winter-spring bloom occurred from February to April of 1999. This was not clearly represented in the phytoplankton abundance data. The winter-spring increases in *Ceratium* spp. and presence of chain forming *Chaetoceros* spp. in relatively high numbers may have led to this seeming discrepancy. Ancillary evidence (zooplankton tows and samples loaded with green algal material) suggests that these phytoplankton species may not have been adequately accounted for due to the methods employed in sampling the phytoplankton. Video plankton recorder data (Davis and Gallager, 2000) also suggests that the long chains of *Chaetoceros* may have been underestimated during this period. This discrepancy will be evaluated in more detail in the annual report for 1999.

Table 5-1. Nearfield and Farfield Averages and Ranges of Abundance (10^6 Cells L^{-1}) of Whole-Water Phytoplankton

Survey	Dates (1999)	Nearfield Mean	Nearfield Range	Farfield Mean	Farfield Range
WF991	2/2 – 2/8	0.650	0.573 - 0.720	0.652	0.372 - 1.180
WF992	2/23 – 2/28	1.479	1.155 - 1.685	1.387	0.574 - 2.528
WN993	3/20	1.173	1.037 - 1.334	NA	NA
WF994	4/1 to 5/6*	2.016	0.831 - 3.029	1.565	0.424 - 3.420
WN995	5/5	0.460	0.327 - 0.628	NA	NA
WN996	5/12	1.294	1.056 - 1.498	NA	NA
WF997	6/14 – 6/19	0.383	0.180 - 0.776	0.935	0.275 - 1.630
WN998	7/7	0.556	0.345 - 0.954	NA	NA
WN999	7/20	0.393	0.178 - 0.811	NA	NA

NA- Data not available because the farfield stations were not sampled during this survey.

*Due to severe weather, the WF994 survey was completed over the course of six days in April and May – nearfield plankton samples were collected April 11th and farfield plankton samples were collected April 1, 6, 11, 26, and May 6.

Table 5-2. Nearfield and Farfield Average and Ranges of Abundance (Cells L^{-1}) for >20 μM-Screened Phytoplankton

Survey	Dates (1999)	Nearfield Mean	Nearfield Range	Farfield Mean	Farfield Range
WF991	2/2 – 2/8	651	378 - 770	381	112 - 996
WF992	2/23 – 2/28	496	351 - 547	387	102 - 973
WN993	3/20	641	523 - 705	NA	NA
WF994	4/1 to 5/6*	341	84 - 605	398	93 - 1034
WN995	5/5	631	584 - 728	NA	NA
WN996	5/12	2387	1833 - 2950	NA	NA
WF997	6/14 – 6/19	2171	828 - 3517	2798	275 - 18735
WN998	7/7	2134	1541 - 2709	NA	NA
WN999	7/20	1874	740 - 3570	NA	NA

NA- Data not available because the farfield stations were not sampled during this survey.

*Due to severe weather, the WF994 survey was completed over the course of six days in April and May – nearfield plankton samples were collected April 11th and farfield plankton samples were collected April 1, 6, 11, 26, and May 6.

5.3.1.2 Nearfield Phytoplankton Community Structure

Whole-Water Phytoplankton – From February to April (WF991, WF992, WN993, WN994), nearfield whole-water phytoplankton assemblages from both depths were dominated by unidentified microflagellates and centric diatoms (Figures 5-11 and 5-12). These dominant taxa included several species of the centric diatom genus *Chaetoceros* (*C. socialis, C. debilis*, and an unidentified species of this genus), as well as pennate diatoms of the diatom genus *Pseudo-nitzschia* (during WF991). By May (WN995, WN996) the above-mentioned taxa, as well as cryptomonads, the centric diatom *Skeletonema costatum*, and the dinoflagellate *Prorocentrum minimum* were dominant.

In June and July (WF997, WN998) there was overwhelming numeric dominance by microflagellates, with additional subdominant contributions by centric diatoms of the genus *Thalassiosira*, and another unidentified centric, probably also a species of *Thalassiosira*, during Survey WN999 in late July.

Based on analyses since 1992, the whole-water phytoplankton assemblage in the nearfield was typical for the first half of the year during non-*Phaeocystis* years in terms of taxonomic composition. However it was atypical in the respect that there was no large spring phytoplankton bloom (in abundance), and unlike the previous year when there was a continuous increase in phytoplankton abundance from winter through early summer, phytoplankton abundance actually declined somewhat in summer.

Screened Phytoplankton - During early February (WF991) nearfield screened samples were dominated by the thecate dinoflagellates *Ceratium furca, C. tripos*, *Dinophysis norvegica*, *Prorocentrum minimum*, and various species of the genus *Protoperidinium*. These same taxa dominated during late February (WF992) and late March (WN993), with additional contributions at various stations, by *C. longipes*, the silicoflagellate *Distephanus speculum* and the athecate dinoflagellate *Gyrodinium spirale.*

By April to early May (WF994 and WN995), *Ceratium longipes* had joined *C. fusus*, *C. tripos*, and *D. norvegica* as dominants, with subdominant contributions at some stations *from D. speculum*, *G. spirale, Protoperidinium depressum* and *P. pallidum*. From mid-May through July (WN996, WF997, WN998, WN999), dominance by *Ceratium longipes* and other congeners, particularly *C. tripos* and *C. furca*, continued, but the thecate dinoflagellates *Dinophysis norvegica* and an unidentified thecate dinoflagellate were subdominant.

In comparison with other years, the screened phytoplankton in the nearfield was typical for this time of year, with the bloom of *Ceratium tripos/longipes* as the major feature of the screened-water dinoflagellate assemblage.

5.3.1.3 Regional Phytoplankton Assemblages

Whole-Water Phytoplankton - During February (WF991, WF992), most farfield station assemblages were dominated at both depths by the same assemblages that dominated nearfield stations. These included unidentified microflagellates, diatoms of the genus *Chaetoceros* (*C. socialis, C. debilis, Chaetoceros* spp.), and *Pseudo-nitzschia pungens* (possibly also including *P. multiseries*). The latter diatom taxon was present throughout the farfield during WF991, but comprised only 5-6% of cells recorded, mainly in Cape Cod Bay, during WF992.

During WF994 (April-May) most farfield stations were dominated by unidentified microflagellates and the same assemblage of *Chaetoceros* spp. recorded for February. *Pseudo-nitzschia pungens* were no longer present in abundances comprising >5% of the total assemblage during this survey.

By WF997 assemblages at both depths at most farfield stations were dominated by microflagellates. However, in Boston Harbor and coastal waters there were subdominant contributions by cryptomonads and the diatoms *Thalassiosira rotula*, a small (< 10 μm) centric diatom, probably of the genus *Thalassiosira*, and *Skeletonema costatum*.

Whole-water phytoplankton assemblages at farfield stations were similar to those in the nearfield, in terms of composition, and absence of a clear spring phytoplankton bloom.

Screened Phytoplankton - In WF991 and WF992, 20 μm-screened surface phytoplankton samples from the farfield were dominated by the assemblages as those recorded for the nearfield. These included several species of the dinoflagellate genus *Ceratium* (*C. fusus, C. tripos*), *Dinophysis norvegica, Prorocentrum micans*, and several species of the genus *Protoperidinium*. During WF992, there were isolated patterns of dominance by other species at single stations, such as *Distephanus speculum* at station F13, and *Gyrodinium spirale* at station F30.

In WF994, surface and subsurface samples were overwhelmingly dominated by *Ceratium tripos*, and *C. fusus*, with increasing contributions by *C. longipes*. *Dinophysis norvegica, Gyrodinium spirale* and *Distephanus speculum* were subdominants at many stations.

Screened samples in WF997 were dominated by several species of the dinoflagellate genus *Ceratium* (*fusus, lineatum, longipes, tripos*) and *Dinophysis norvegica*, with subdominant contributions by other dinoflagellates such as *Protoperidinium pentagonium*, and *Prorocentrum minimum*.

Screened-water dinoflagellate assemblages at farfield stations were similar to those in the nearfield, particularly in terms of the sustained bloom of *Ceratium tripos/fusus/longipes*.

5.3.1.4 Nuisance Algae

There were no blooms of harmful or nuisance phytoplankton species in Massachusetts and Cape Cod Bays during February – July, 1999. Some species that have caused harmful blooms in previous years, such as *Phaeocystis pouchetii*, were unrecorded during this period. The toxic dinoflagellate *Alexandrium tamarense* was unrecorded, and potentially-toxic members of the genus *Pseudo-nitzschia* were only sporadically present in low numbers. There was an occurrence of "*Alexandrium* spp." that was not positively identified as *A. tamarense*, based upon a single cell in a single sample (WF994, station F01), at an abundance of 1.4 cells l^{-1}.

Pseudo-nitzschia pungens were found in 20 samples in WF991, and in 4 samples in WF992, but abundance values were < 187 x 10^3 cells l^{-1} (mean = 96 x 10^3 cells l^{-1}) during WF991 and < 94 x 10^3 cells l^{-1} (mean = 66 x 10^3 cells l^{-1}) during WF992. Other single cells of *Pseudo-nitzschia* sp., not identifiable as "*pungens*" because it was impossible to discern the extent of overlap of cells in chains (a diagnostic characteristic), were present at levels of < 72 x 10^3 cells l^{-1} (mean = 47 x 10^3 cells l^{-1}) during WF991.

Although the non-toxic species *P. delicatissima* can be identified with confidence, species reported as *P. pungens* could be either non-toxic *P. pungens*, or domoic-acid-producing *P. multiseries*, but it is impossible to distinguish the two without performing scanning electron microscopy counts on intercostal poroids on the underside of acid-washed thecae. *Pseudo-nitzschia pungens* and *Pseudo-nitzschia* spp. counts did not exceed the 5 x 10^5 cells l^{-1} threshold for domoic acid toxicity used in Canadian waters in the 31 samples where either *P. pungens* or *Pseudo-nitzschia* spp. were present in WF991 or WF992.

5.3.2 Zooplankton

5.3.2.1 Seasonal Trends in Total Zooplankton Abundance

Total zooplankton abundance at nearfield stations generally increased from February through June (WF991-WF997) with slight declines during WN998 and WN999 in July (Table 5-3, Figures 5-17 to 5-20). The values at nearfield of 100-200 x 10^3 animals m^{-3} recorded for WF997 (Fig. 5-20), were among the highest during the entire 1992-1999 baseline (Turner et al., 1999).

Total zooplankton abundance at farfield stations in February was low (over half of the stations < 20 x 10^3 animals m^{-3} in WF991 and 2/3 of the stations < 40 x 10^3 animals m^{-3} in WF992) (Figures 5-17 and 5-18). By April (WF994), total zooplankton abundance at farfield stations had generally increased, with values at two of the stations of 100-200 x 10^3 animals m^{-3} (Fig. 5-19). The spring-summer increase in farfield zooplankton abundance continued through June (WF997), with 9 of 13 values >100 x 10^3 animals m^{-3} and 5 of 13 values >200 x 10^3 animals m^{-3} (Figure 5-20). The astonishing maximum value exceeding 500 x 10^3 animals m^{-3} at station F30 in Boston Harbor (Figure 5-20) is the highest zooplankton abundance recorded for the entire 1992-1999 baseline (Turner et al., 1999).

Table 5-3. Nearfield and Farfield Average and Ranges of Abundance (10^3 Animals m^{-3}) for Zooplankton

Survey	Dates (1999)	Nearfield Mean	Nearfield Range	Farfield Mean	Farfield Range
WF991	2/2 – 2/8	29.2	19.1 - 36.8	16.9	4.7 - 32.3
WF992	2/23 – 2/28	41.6	0.2 - 72.3	28.4	12.4 - 67.7
WN993	3/20	31.5	30.4 - 32.5	NA	NA
WF994	4/1 to 5/6*	44.0	5.8 - 112.8	38.1	4.1 - 196.0
WN995	5/5	73.9	73.7 - 74.1	NA	NA
WN996	5/12	120.0	116.6 - 123.4	NA	NA
WF997	6/14 – 6/19	157.6	120.5 - 201.2	183.6	75.1 - 518.5
WN998	7/7	105.4	46.0 - 164.8	NA	NA
WN999	7/20	95.7	78.8 - 112.6	NA	NA

NA- Data not available because the farfield stations were not sampled during this survey.

*Due to severe weather, the WF994 survey was completed over the course of six days in April and May – nearfield plankton samples were collected April 11th and farfield plankton samples were collected April 1, 6, 11, 26, and May 6.

5.3.2.2 Nearfield Zooplankton Community Structure

During early February (WF991) the nearfield zooplankton assemblages (Figure 5-17) were dominated by gastropod veligers (39-61%, mean = 50%), copepod nauplii (21-35%, mean = 27%), and copepodites of *Oithona similis* (7-12%, mean = 10%).

In late February (WF992), the nearfield zooplankton (Figure 5-18) continued to be dominated by gastropod veligers (53-90%, mean = 75%), with lesser contributions by copepod nauplii and *Oithona similis* copepodites. A similar assortment was found in March (WN993) nearfield dominance by gastropod veligers (37-42%, mean = 40%) was shared with copepod nauplii (29-36%, mean = 33%), with lesser contributions by *Oithona similis* copepodites (9-10%) and *Oikopleura dioica* (6-11%).

At nearfield stations during April-May (WN994) zooplankton assemblages (Figure 5-19) were dominated by copepod nauplii (26-49%, mean = 34%) and copepodites of *Oithona similis* (26-31%, mean = 29%)

with lesser contributions at some stations by *Pseudocalanus* sp. copepodites, *Oikopleura dioica*, gastropod veligers and barnacle nauplii.

By May, during WN995 and WN996, nearfield zooplankton assemblages were dominated by copepod nauplii, comprising 42% and 31-61% during WN995 and WN996, respectively, with subdominance during these surveys of copepodites of *Oithona similis* (26-34% and 115-19%, respectively) and *Pseudocalanus* spp. (10-17% and 5-22%, respectively).

At nearfield stations during June (WF997), zooplankton assemblages (Figure 5-20) were dominated by bivalve veligers (32-46%, mean = 40%), copepodites of *Pseudocalanus* spp. (19-30%, mean = 24%), *Oithona similis* (11-12%), and copepod nauplii (7-13%, mean = 11%). Dominance by copepodites of *Oithona similis* and *Pseudocalanus* spp. and copepod nauplii continued through July (WN998 and WN999), with the contribution of bivalve veligers declining compared to June.

5.3.2.3 Regional Zooplankton Assemblages

Zooplankton assemblages at farfield stations during early February (WF991) were somewhat different from those in the nearfield (Figure 5-17). Rather than gastropod veligers as dominants, there was dominance by copepod nauplii (23-56%, mean = 41%) and *Oithona similis* copepodites (0-23%, mean = 12%). Barnacle nauplii comprised 6-43% (mean = 27%) of the animals counted at the six coastal and Harbor stations where they occurred (Figure 5-17).

In late February (WF992), however, dominance by copepod nauplii and *Oithona similis* copepodites had been supplanted by gastropod veligers, which comprised 14-80% (mean = 46%) of animals counted at the 10 of 12 farfield stations where they occurred (Figure 5-18). Copepod nauplii occurred at all 12 farfield stations, accounting for 11- 45% (mean = 27%) of animals present, whereas *Oithona similis* copepodites accounted for > 5% of the catch at only 8 of 12 farfield stations, comprising 7-12% (mean = 14%) at these stations.

In April-May during WF994 (Figure 5-19), copepod nauplii were dominant at all farfield stations (15-40%, mean = 27%), as were *Oithona similis* copepodites (6-41%, mean = 19%) at all stations except station F30, the most-inshore station in Boston Harbor. Gastropod veligers comprised 6-25% (mean = 16%) at only 7 farfield stations, clearly in decline from the levels of WF992. *Oikopleura dioica* comprised 8-20% (mean = 16%) at the 6 farfield stations where they comprised >5% of total animals counted.

During June (WF997) farfield zooplankton assemblages (Figure 5-20) were dominated by bivalve veligers at 9 of 10 stations (6-81%, mean = 36%). Copepod nauplii, were recorded at levels > 5% of total at only 6 stations (8-40%, mean = 17%), and copepodites of *Oithona similis* accounted for 6-14% (mean = 9%) of animals counted at 6 of 10 stations, and *Pseudocalanus* spp. comprised 9-24% (mean = 17%) at 7 of 10 stations. Copepodites of *Temora longicorni*s were sporadically recorded as 6 -15% of animals counted at various coastal, offshore, and boundary stations, but comprised 27% of total animals at station F31 in Boston Harbor. Large contributions by meroplankters were site-specific. Polychaete larvae were recorded in abundance for only stations F23 and F30 in Boston Harbor, but at those sites they accounted for 18 and 78% of animals, respectively. Similarly, gastropod veligers were recorded in abundance only at the two Cape Cod Bay stations (F01 & F02), but they comprised 15 and 66% of total animals, respectively, at those two stations.

An extremely interesting aspect of the farfield zooplankton distributions is the abnormally low abundance of *Acartia* spp. during the early part of 1999. Since *Acartia* spp. inhabit primarily low-salinity Harbor waters, their low abundance may reflect the prolonged drought in the mid-Atlantic and New England area from winter through mid summer of 1999. During WF991, *Acartia* spp. accounted for > 5% of the total zooplankton only at station F30, the innermost station in Boston Harbor. There, combined abundances of copepodites, females and males of *Acartia hudsonica* totaled only 754 m^{-3}. Copepodites and males of this species were sporadically recorded at 8 of 15 other stations, but at levels < 100 m^{-3}, and < 5% of total animals. During WF992, *Acartia* spp. never accounted for > 5% of totals, with maximal levels of 338 m^{-3} at station F23 in Boston Harbor. At 8 of 15 other stations, abundances were < 215 m^{-3}. During WF994, *Acartia* spp. were > 5% of total animals only at station F30 in Boston Harbor (6%, 844 copepods m^{-3}). They were sporadically recorded at 9 of 15 other stations, but never at abundances > 563 m^{-3}. These abundances are extremely low compared to those recorded at the same times of the year during previous years (Figure 5-21). By June (WF997) *Acartia* spp. abundance comprised > 5% of total zooplankton only at station F24 (6%, 5,678 copepodites m^{-3}), but *Acartia* spp. adults and copepodites were recorded at 7 additional Harbor, coastal and nearfield stations at combined abundances ranging from 237 to 7,777 copepods m^{-3}.

In summary, zooplankton assemblages during the first half of 1999 were comprised of taxa recorded for the same time of year in previous years, but levels of *Acartia* spp. were unusually low, possibly due to drought, and contributions of meroplankton such as bivalve and gastropod veligers and polychaete larvae were unusually high.

5.4 Summary of Water Column Biological Events

- Areal production at the nearfield stations was relatively high during the winter/spring of 1999 reaching values of >1500 mg C m^{-2} d^{-1} at both stations in late February and early April. Nearfield areal production declined in May and remained relatively low during the last four surveys.
- In contrast to 1998, areal production in 1999 followed patterns typically observed in prior years. Distinct winter-spring phytoplankton blooms were observed at both nearfield stations during the sampling period. The bloom in 1999 reached peak values of >2000 mg C m^{-2} d^{-1} and lasted from February through April and represents a return to expected patterns following the somewhat unusual cycle observed last year.
- The Harbor station F23 generally exhibits a gradual pattern of increasing areal production from winter through summer rather than the distinct winter-spring peaks observed at the nearfield sites. This was the case in 1999 for station F23 . Production values increased gradually from February through June Boston Harbor reaching values of >2500 mg C m^{-2} d^{-1} in April and June.
- In the nearfield, chlorophyll-specific areal production was relatively low at the start of the sampling period then gradually increased at both stations until the seasonal maxima were reached during the mid-May survey (>1100 mg C mg chl a^{-1} d^{-1}). Chlorophyll-specific production was relatively constant and low at the Boston Harbor station over this time period (<300 mg C mg chl a^{-1} d^{-1}).
- The distribution of chlorophyll-specific production indicates that the efficiency of production was high relative to the amount of biomass present at the nearfield stations, but low at the Harbor site.
- Respiration rates were generally low throughout the region (<0.10 μMO_2 hr^{-1}) in February and March, increased 2 to 4-fold in the nearfield by April (0.1 to 0.4 μMO_2 hr^{-1}) and reached a maximum for the time period in the nearfield in early May (0.5 to 0.8 μMO_2 hr^{-1} at station N18).
- The increase in respiration rates in April was coincident with the peak production values observed for the winter-spring bloom and the cessation of the bloom by early May fueled the high respiration rates as the readily available labile organic material was degraded.
- POC concentrations increased during the winter-spring bloom from February to April and then decreased from April to July consistent with the pattern observed in chlorophyll over this time period.
- By early May, significant decreases in POC and chlorophyll concentrations and production rates had occurred due to the senescence of the winter-spring bloom. Carbon-specific respiration rates, however, increased considerably and achieved maxima of 0.035-0.045 μMO_2 μMC^{-1} hr^{-1}, likely in response to elevated DOC concentrations.

- POC concentrations were considerably higher at Boston Harbor station F23 in comparison to the nearfield stations, but the carbon-specific respiration rates remained low ($\leq$0.005 $\mu MO_2\, \mu MC^{-1}\ hr^{-1}$) over this time period suggesting that the POC found in the Harbor was recalcitrant degraded or detrital material.
- Total phytoplankton abundances in nearfield surface whole water samples were variable from February through May, reached maxima of >3 million cells per liter in April and declined in numbers in June and July. A similar pattern was observed at the farfield stations.
- Whole-water phytoplankton assemblages were dominated by unidentified microflagellates and several species of the centric diatom genus *Chaetoceros*. This is typical for the first half of the year in terms of taxonomic composition, however, there was no clear spring phytoplankton bloom.
- Perhaps the singular phytoplankton event of this period was the bloom of *Ceratium furca /C. tripos/* C. *longipes* which continued from the previous year, and exhibited sustained increases from February through July.
- Chlorophyll and production data indicated that a sustained winter-spring bloom occurred from February to April of 1999. This was not clearly represented in the phytoplankton abundance data, but winter-spring increases in *Ceratium* spp. and presence of chain forming *Chaetoceros* spp. in relatively high numbers may have led to this seeming discrepancy.
- There were no blooms of harmful or nuisance phytoplankton species in Massachusetts and Cape Cod Bays during February – July, 1999. *Phaeocystis pouchetii*, and the dinoflagellate *Alexandrium tamarense* were not recorded. *Pseudo-nitzschia pungens* and *Pseudo-nitzschia* spp. counts in some samples exceeded 10^5 cells l^{-1} in WF991 and WF992, but were below the 5×10^5 cells l^{-1} threshold.
- Total zooplankton abundance generally increased from February through June. Nearfield counts of 100-200 x 10^5 animals m^{-3} during WF997 were among the highest for the entire 1992-1999 baseline and the astonishing maximum value of >500 x 10^3 animals m^{-3} at station F30 in Boston Harbor is the highest zooplankton abundance recorded for the entire 1992-1999 baseline.
- Zooplankton assemblages during the first half of 1999 were comprised of taxa recorded for the same time of year in previous years, but levels of *Acartia* spp. were unusually low, possibly due to drought, and contributions of meroplankton such as bivalve and gastropod veligers and polychaete larvae were unusually high.

WF991 **Station N04**

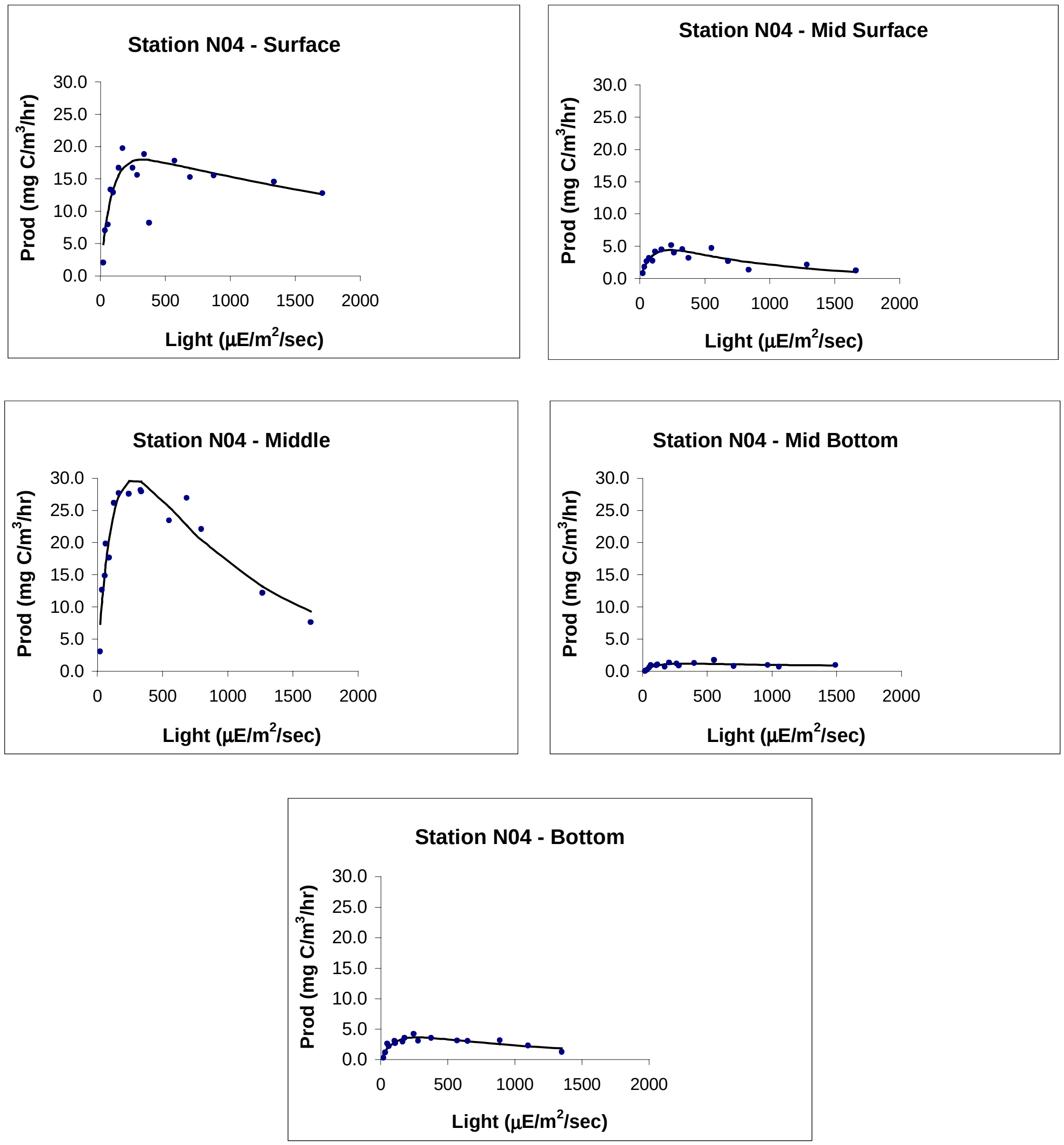


Figure 5-1. An Example Photosynthesis-Irradiance Curve From Station NO4 Collected in February 1999

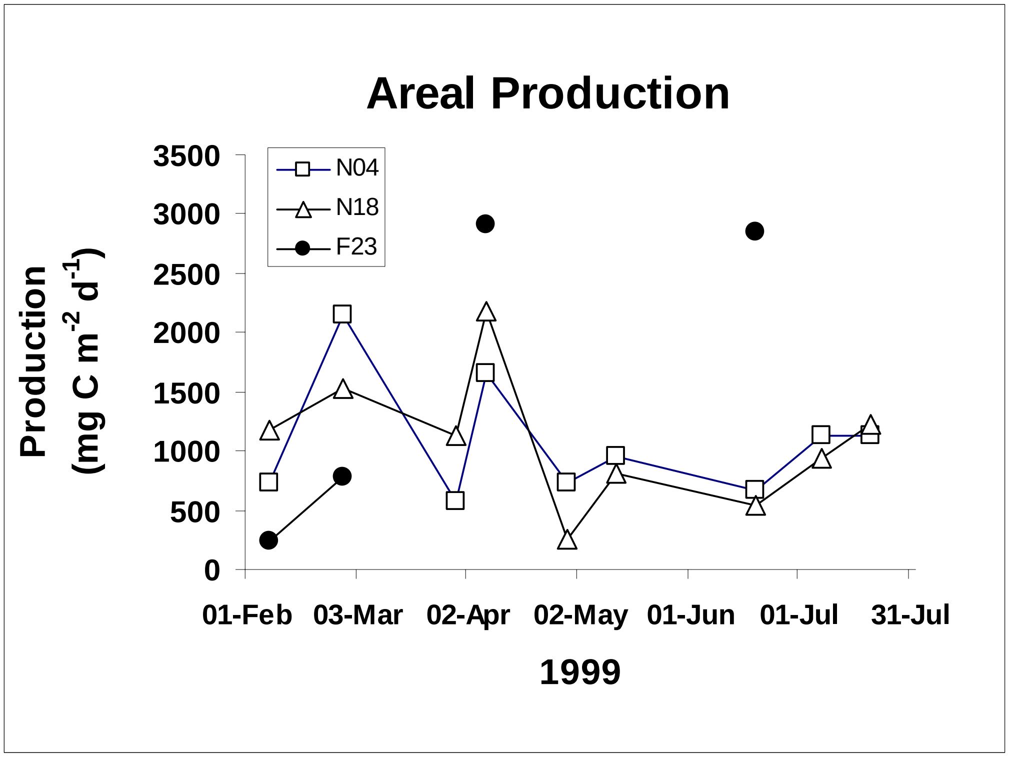


Figure 5-2. Time-Series of Areal Production (mgCm^{-2}d^{-1}) for Productivity Stations

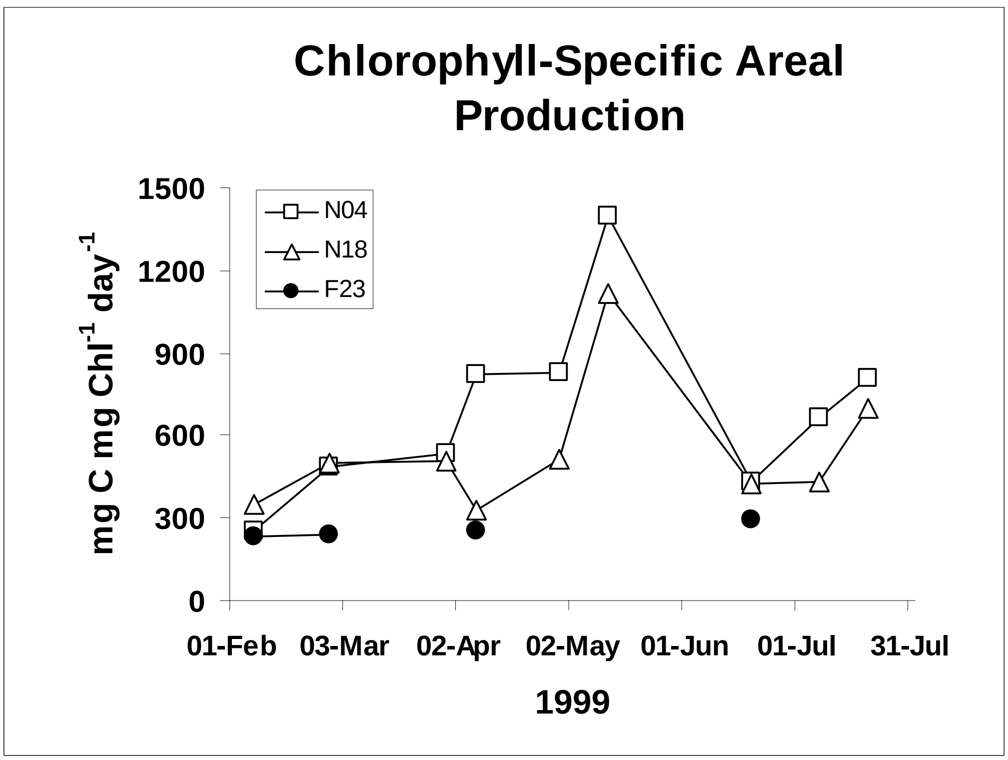


Figure 5-3. Time-Series of Chlorophyll-Specific Areal Production (mgCmgChl^{-1}d^{-1}) for Productivity Stations

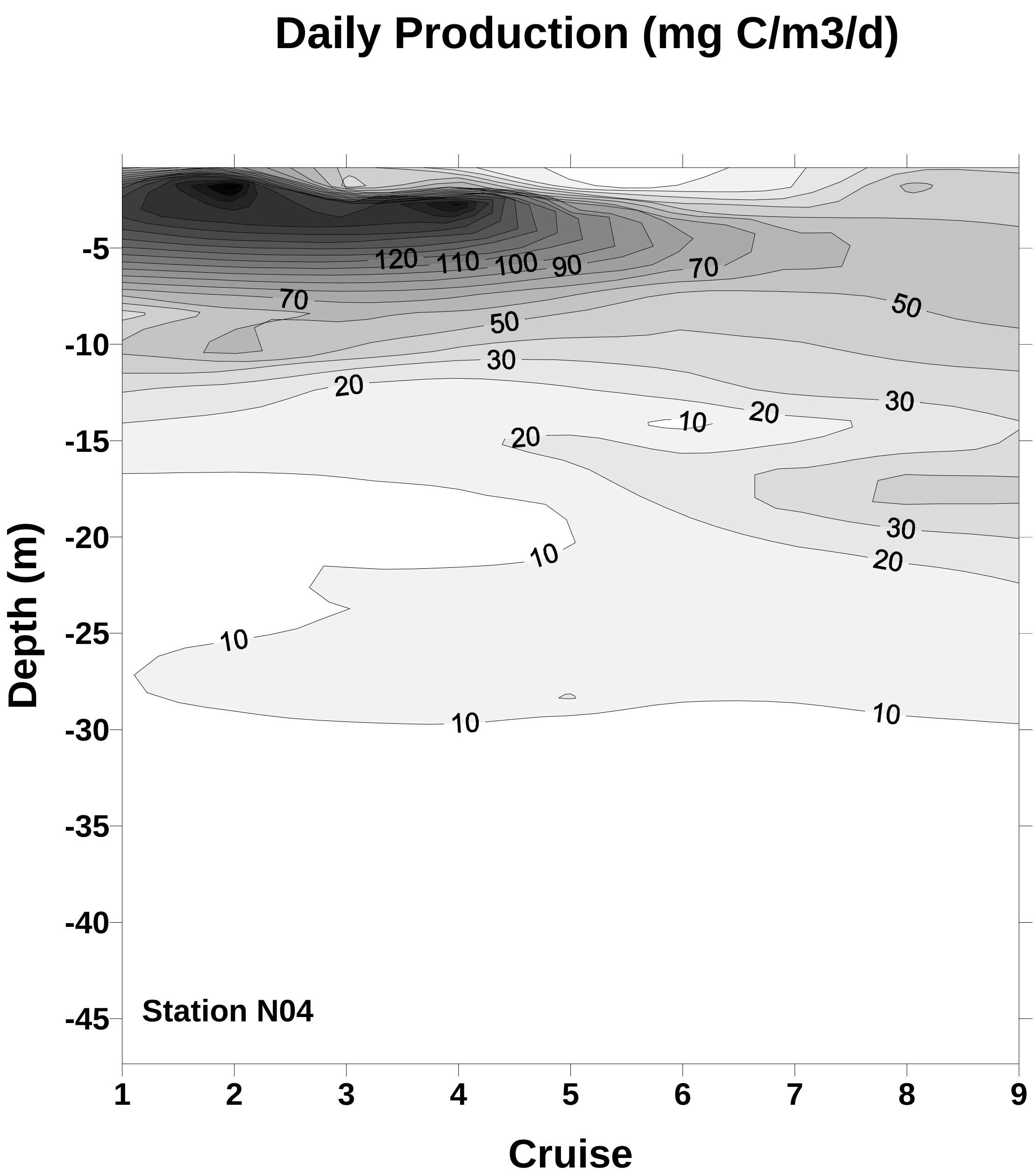


Figure 5-4. Time-Series of Contoured Daily Production ($mgCm^{-3}d^{-1}$) Over Depth at Station N04

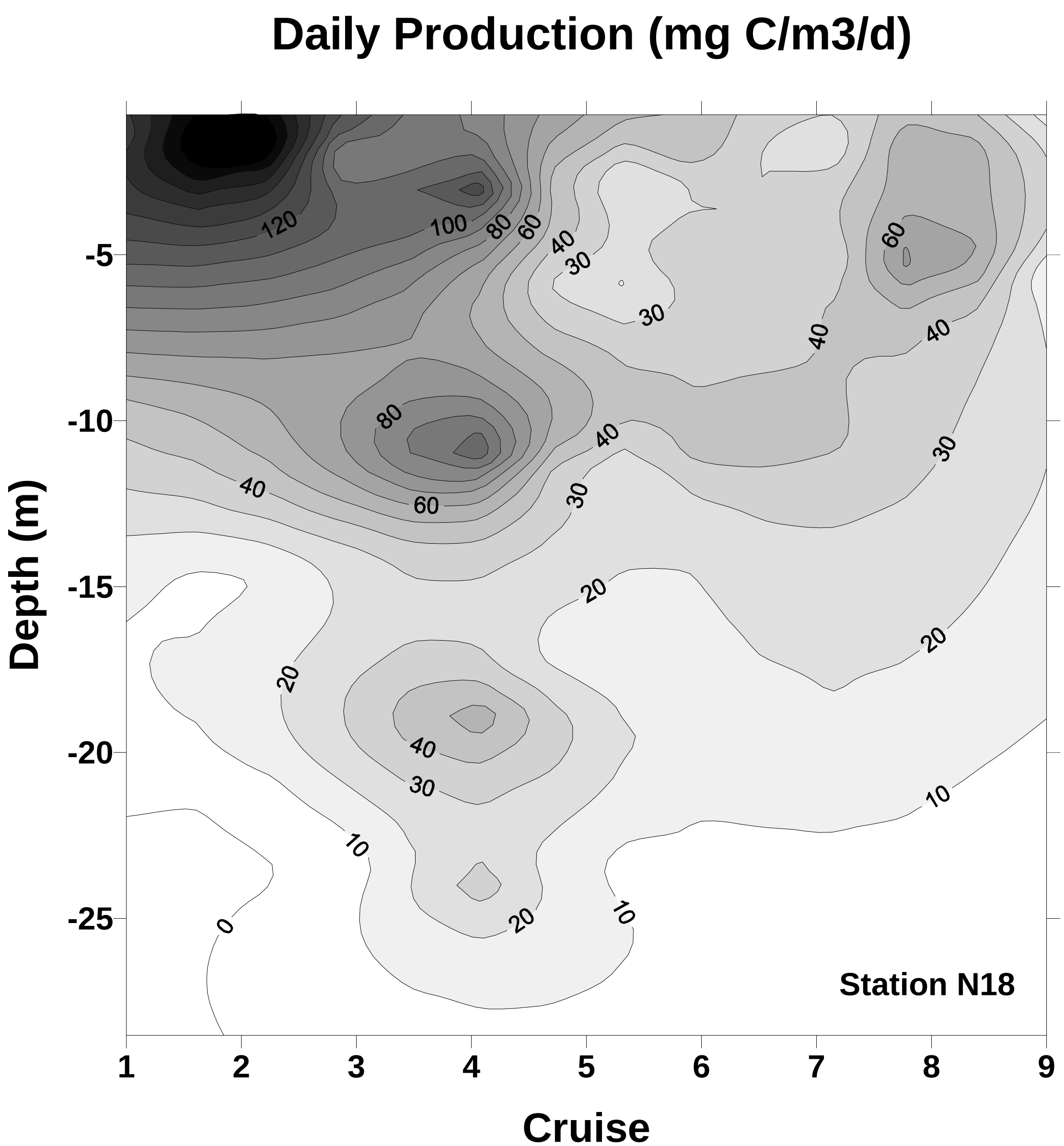


Figure 5-5. Time-Series of Contoured Daily Production ($mgCm^{-3}d^{-1}$) Over Depth at Station N18

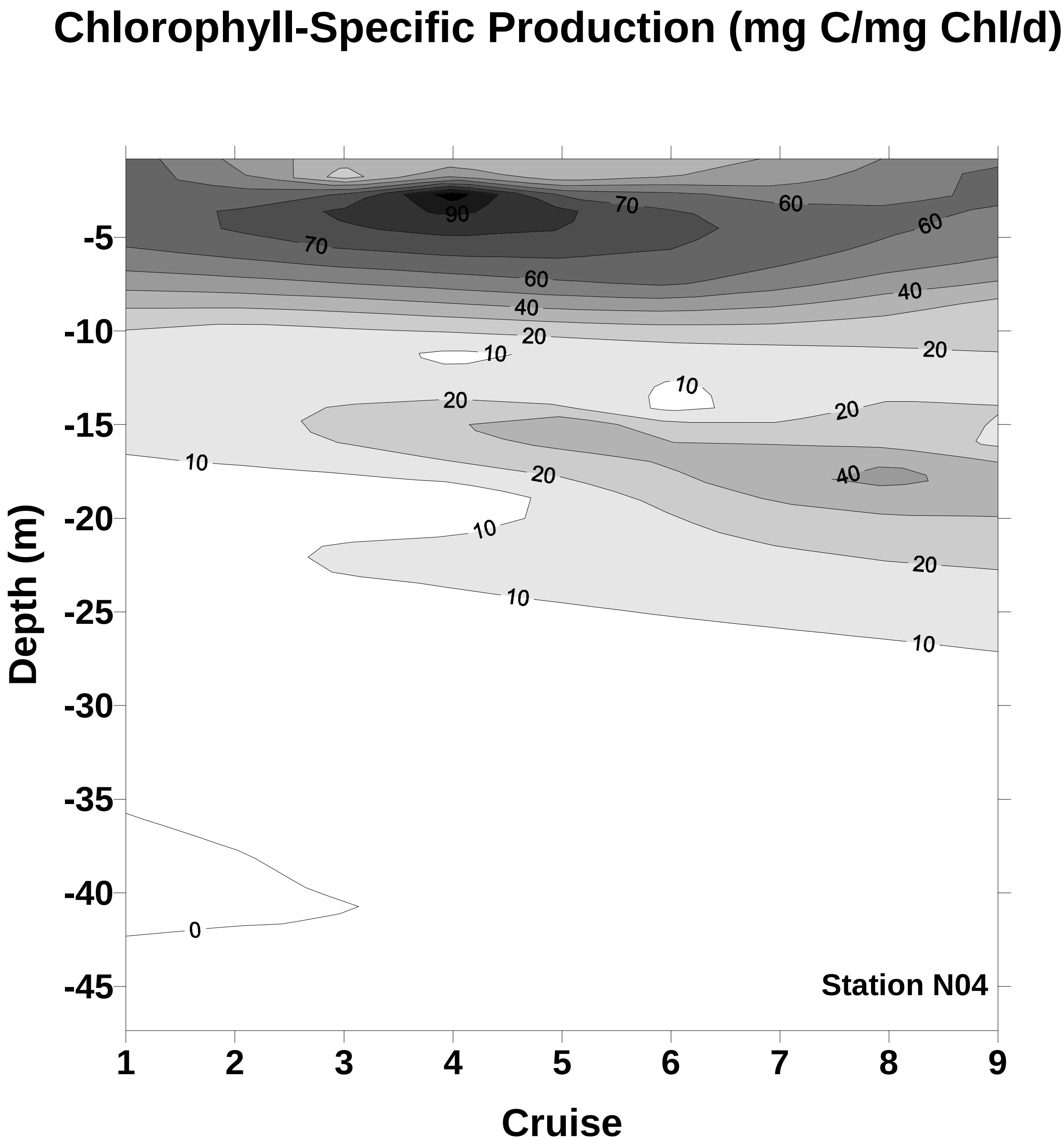


Figure 5-6. Time-Series of Contoured Chlorophyll-Specific Production ($mgCmgChl^{-1}d^{-1}$) at Station N04

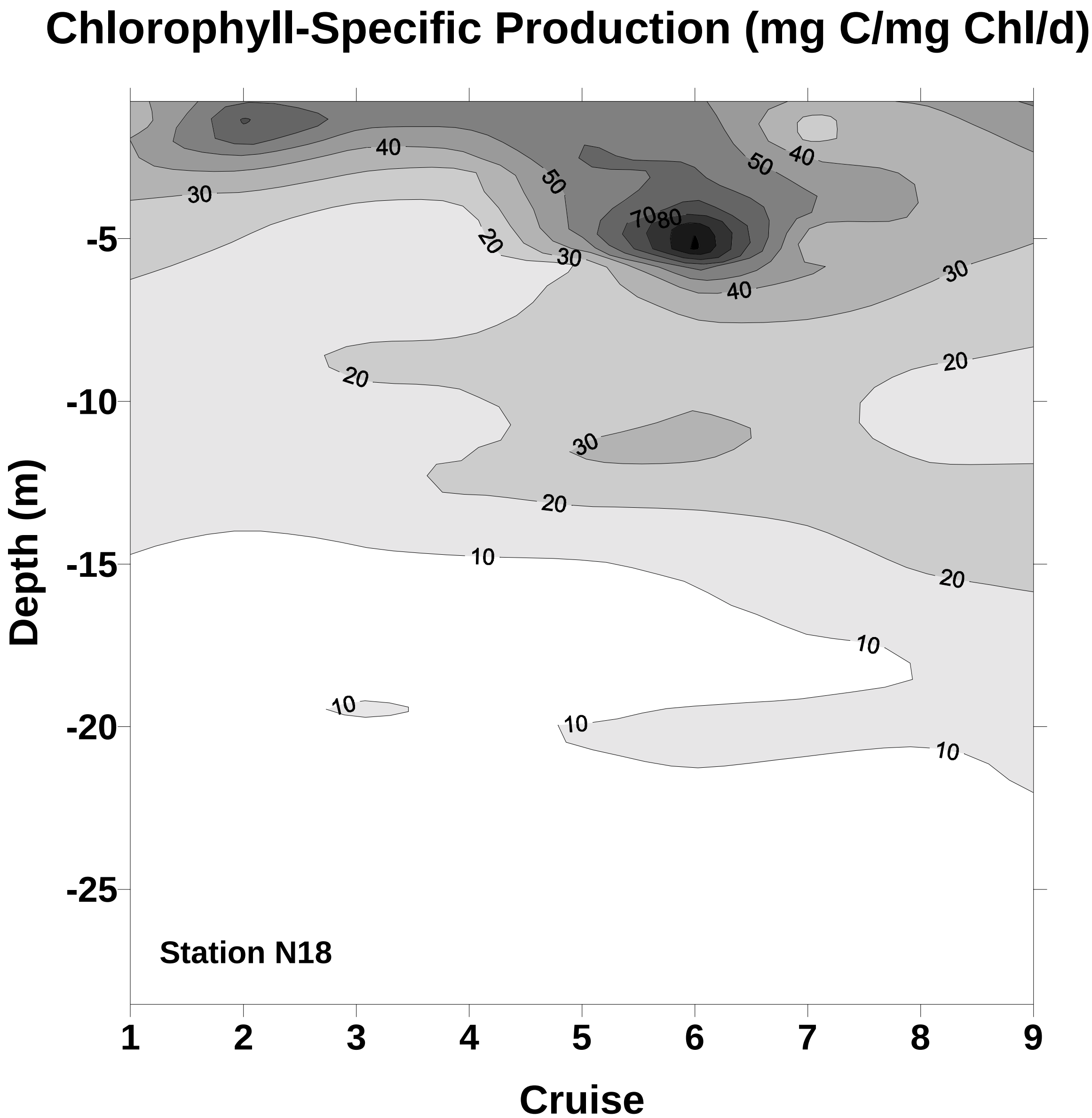


Figure 5-7. Time-Series of Contoured Chlorophyll-Specific Production ($mgCmgChl^{-1}d^{-1}$) at Station N18

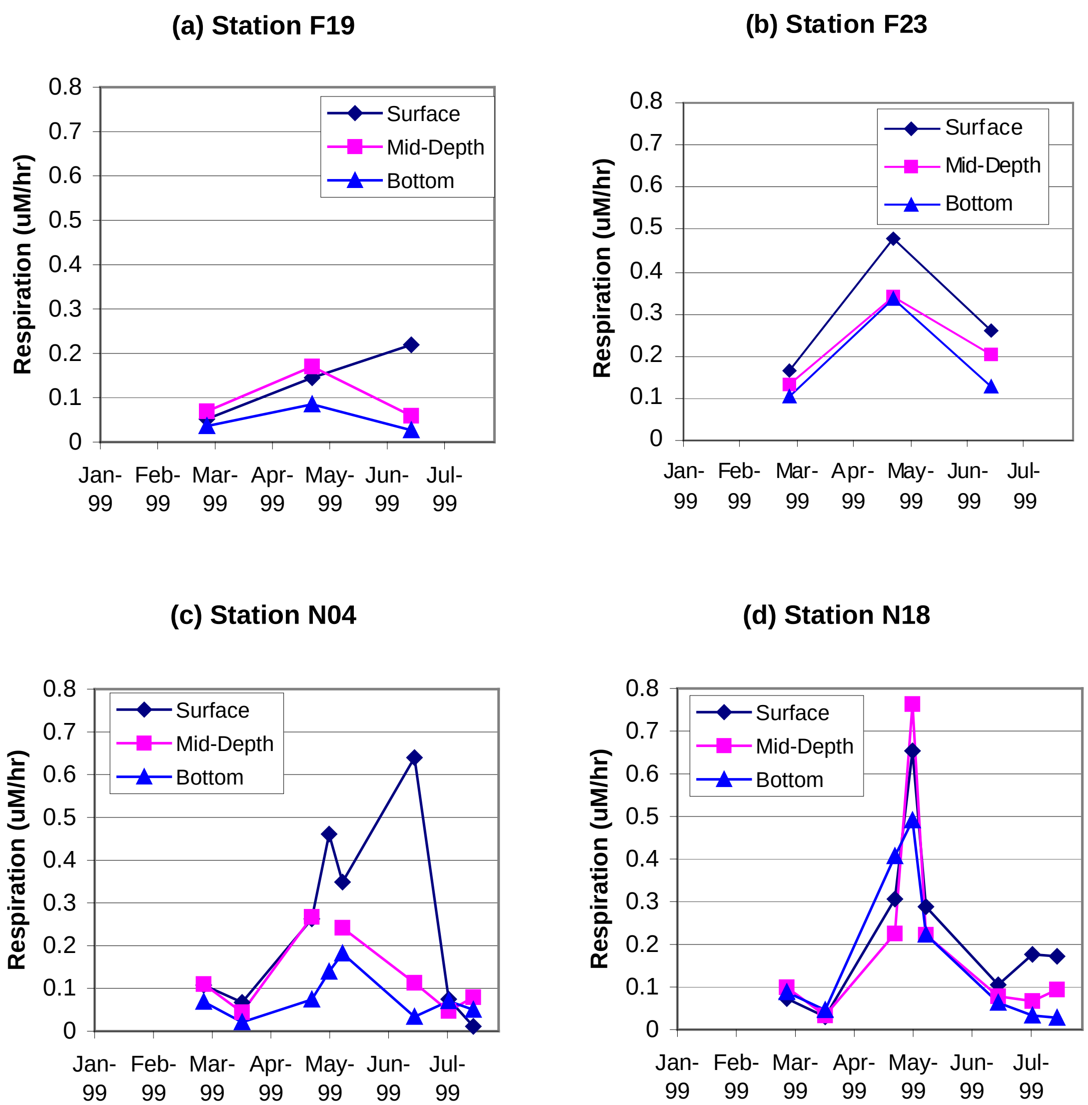


Figure 5-8. Time-Series Plots of Respiration Stations F19, F23, N04, and N18

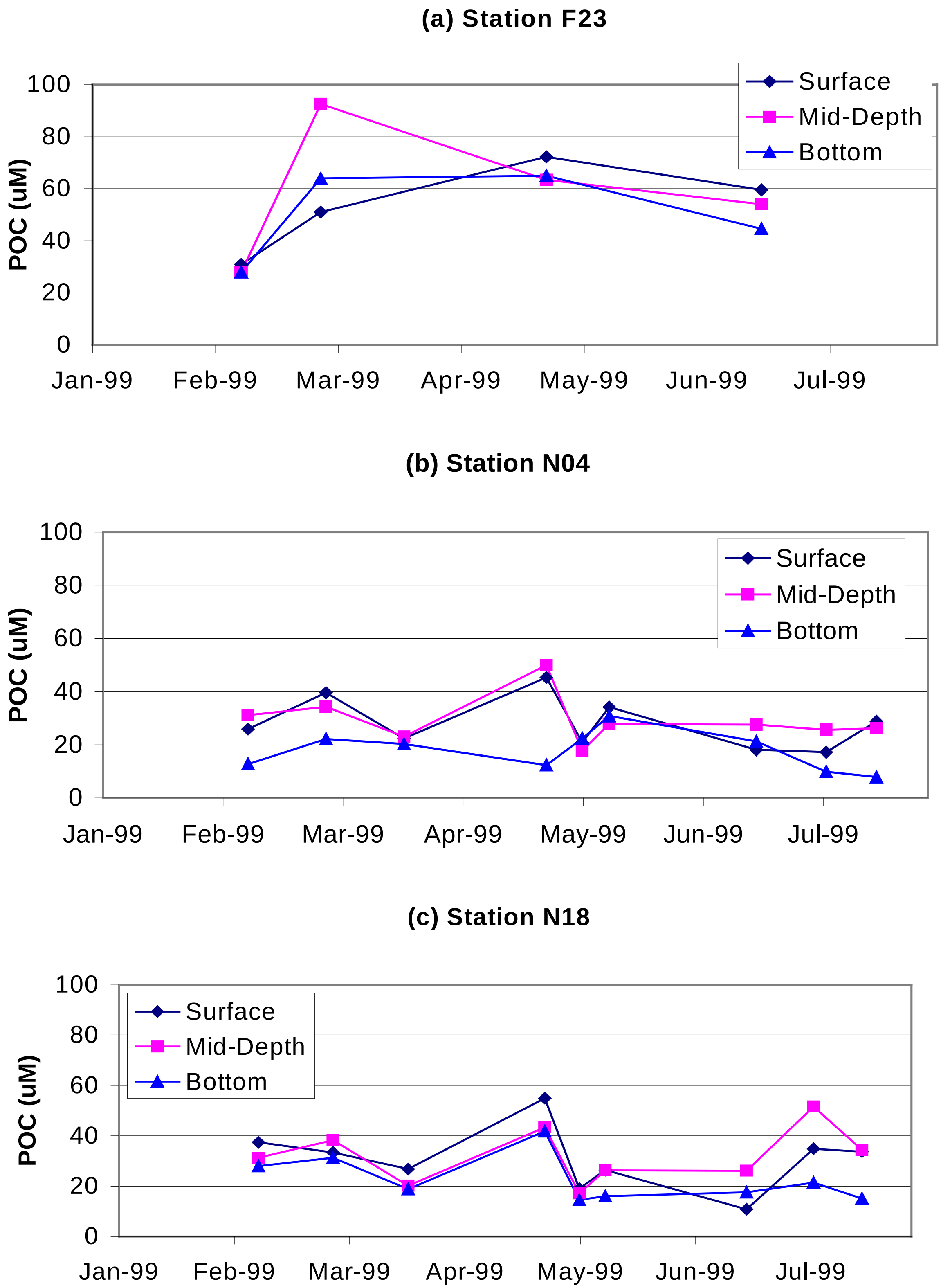


Figure 5-9. Time-Series Plots of POC at Stations F23, N04, and N18

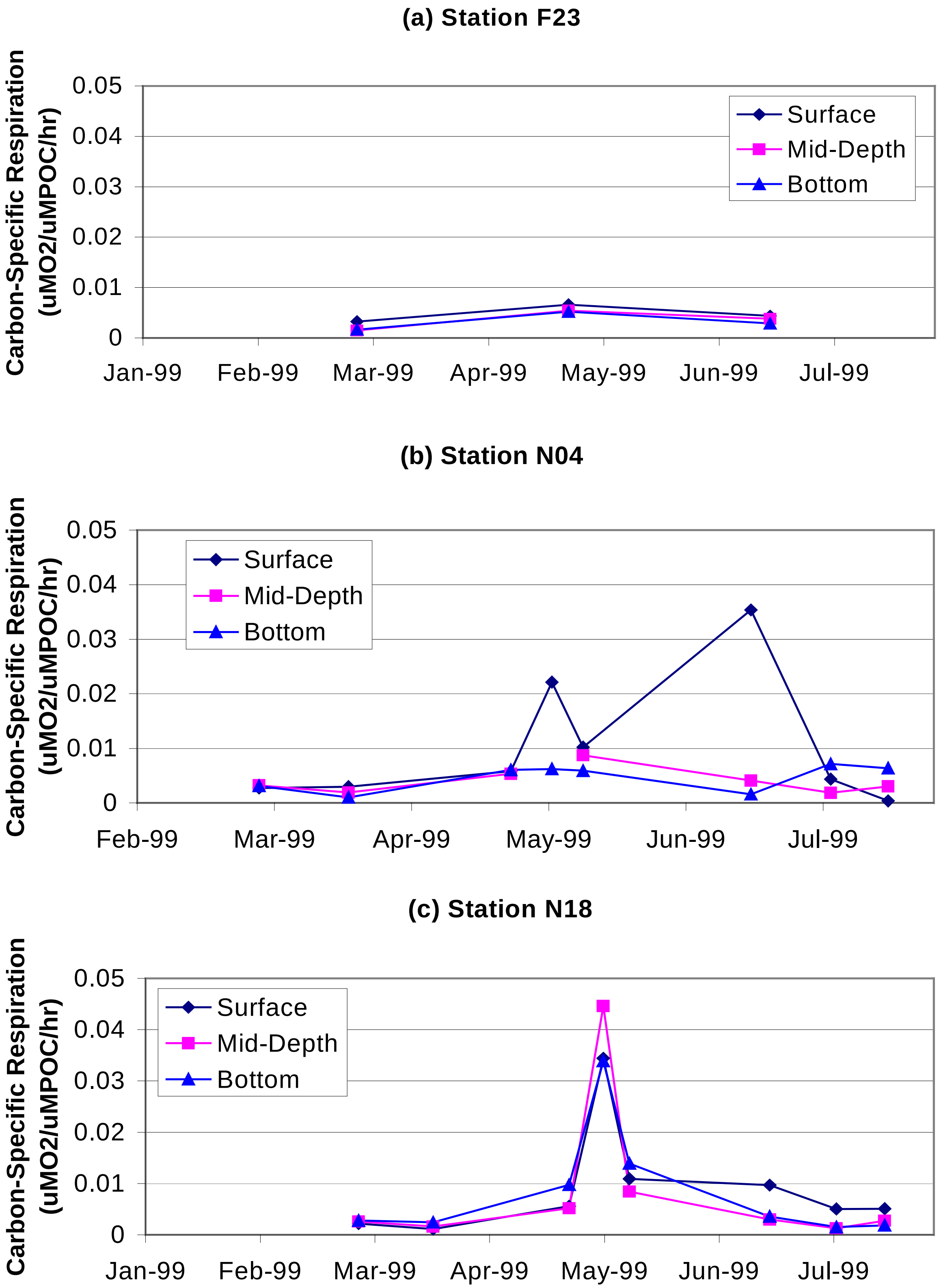


Figure 5-10. Time-Series Plots of Carbon-Specific Respiration at Stations F23, N04, and N18

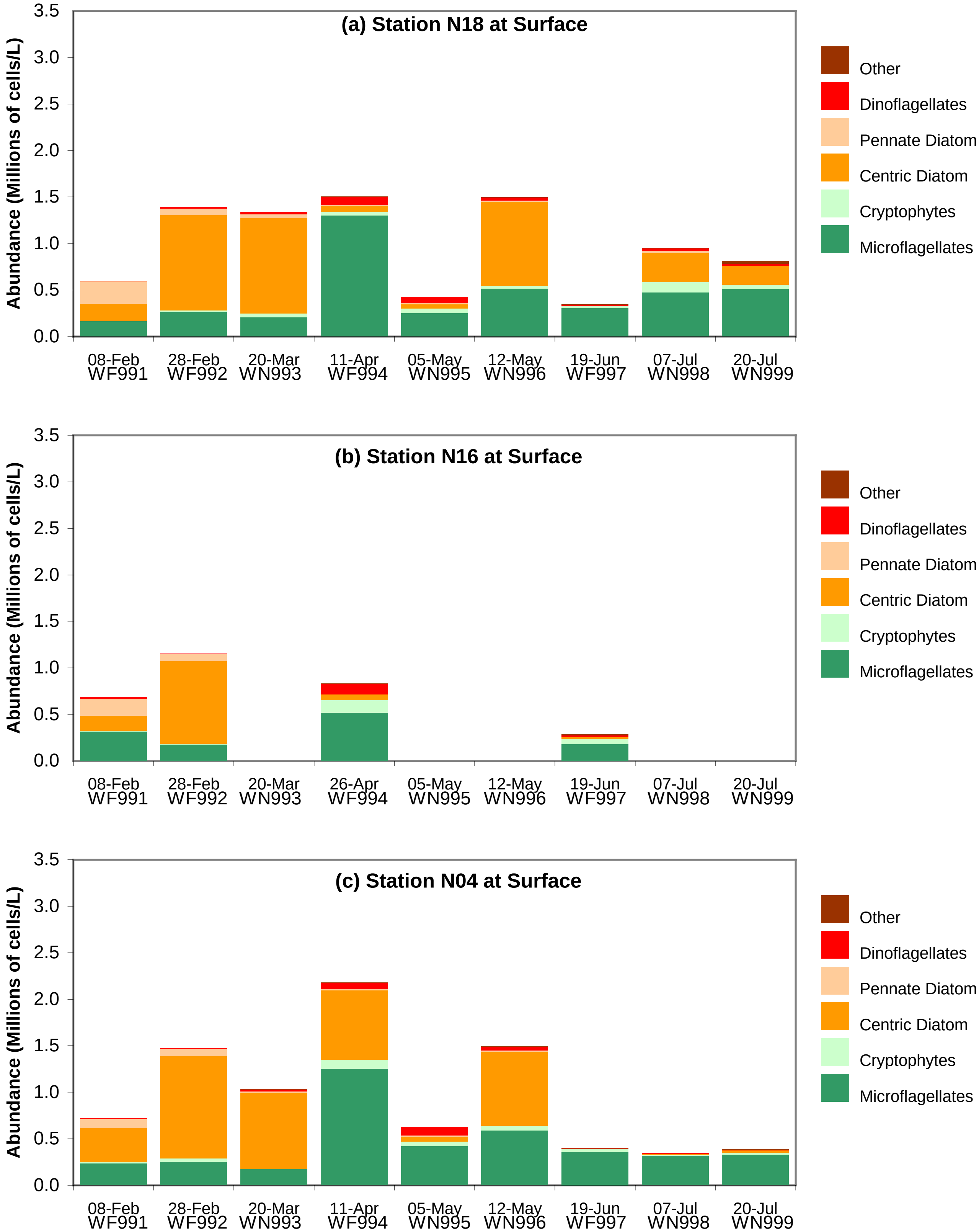


Figure 5-11. Phytoplankton Abundance by Major Taxonomic Group, Nearfield Surface Samples

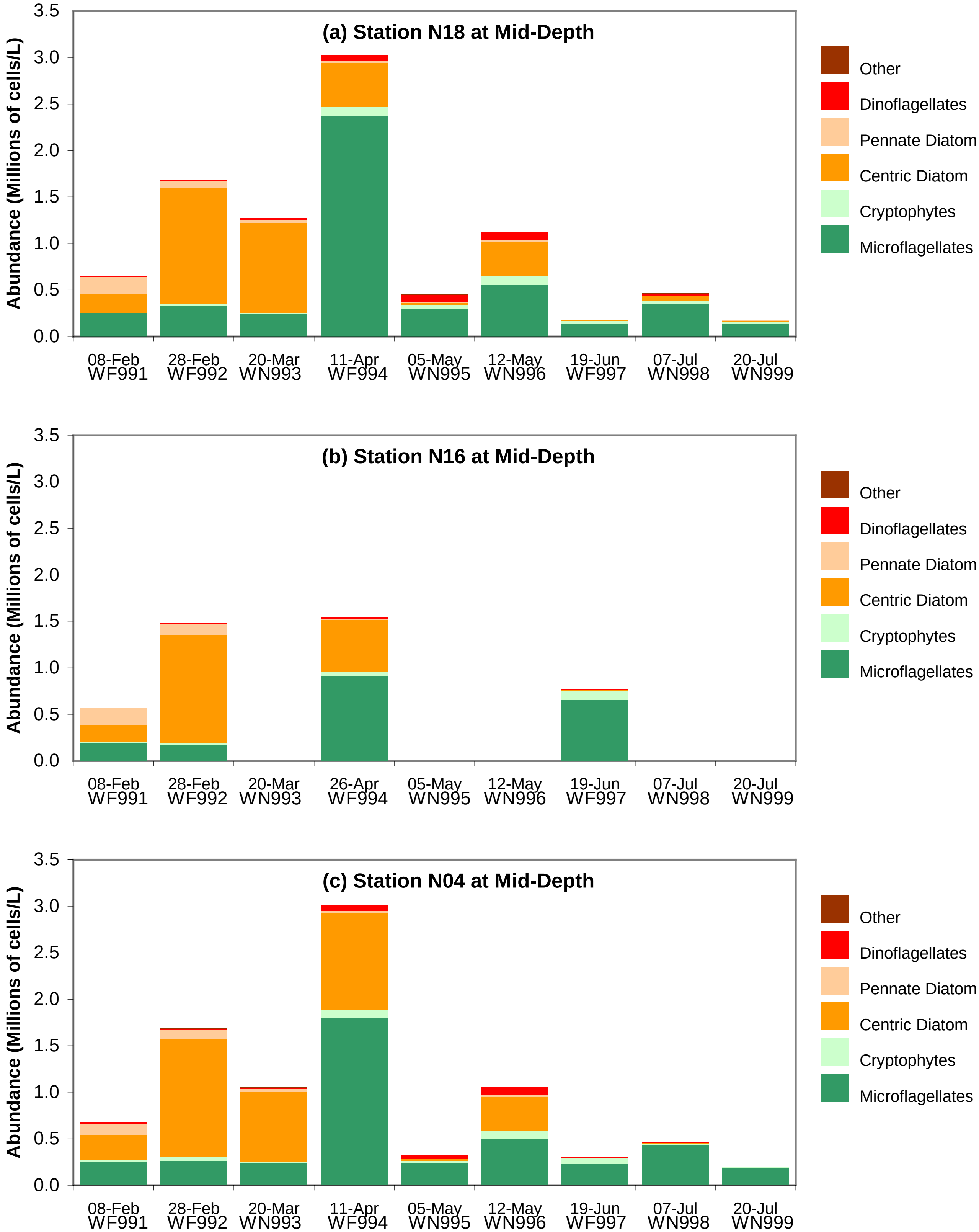


Figure 5-12. Phytoplankton Abundance by Major Taxonomic Group, Nearfield Mid-Depth Samples

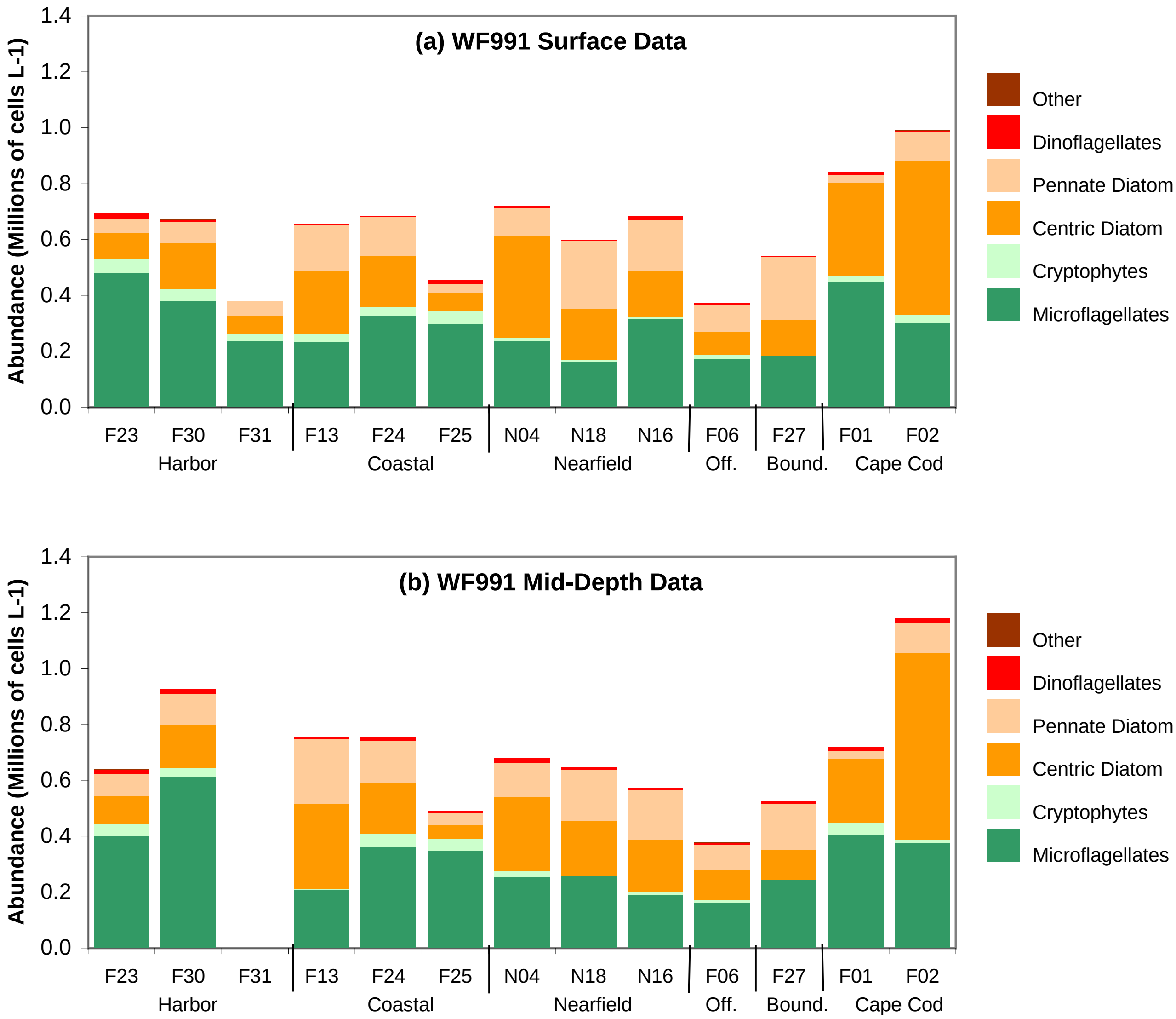


Figure 5-13. Phytoplankton Abundance by Major Taxonomic Group – WF991 Farfield Survey Results February 2 – 8, 1999

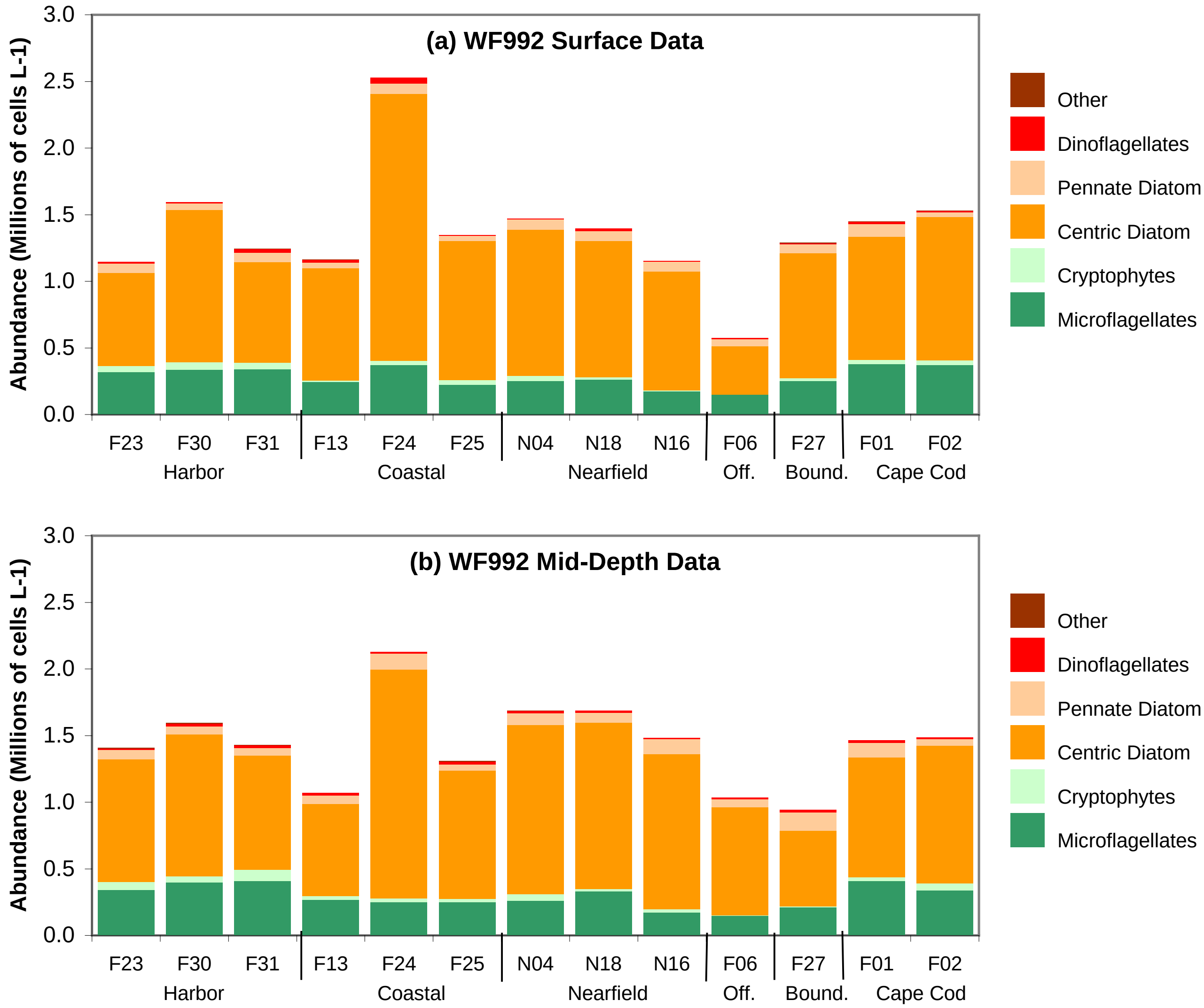
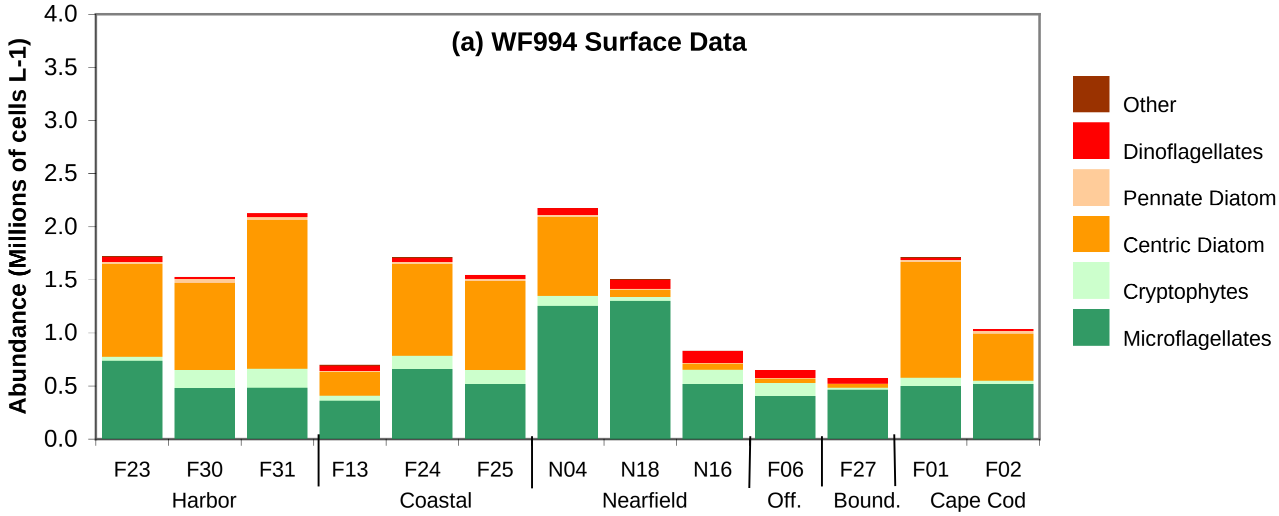


Figure 5-14. Phytoplankton Abundance by Major Taxonomic Group – WF992 Farfield Survey Results February 23 – 28, 1999



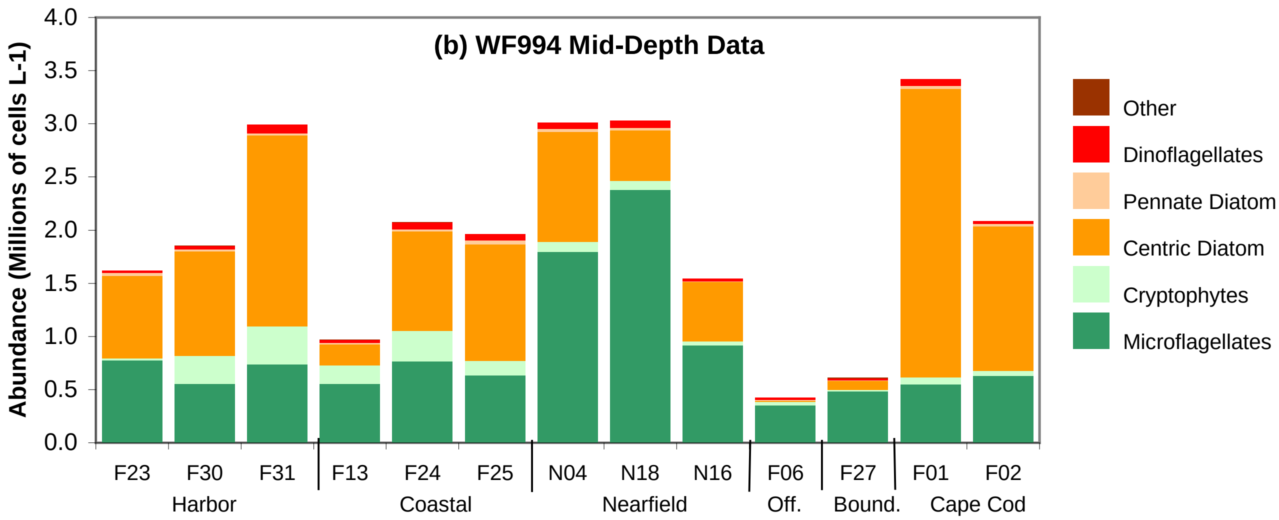
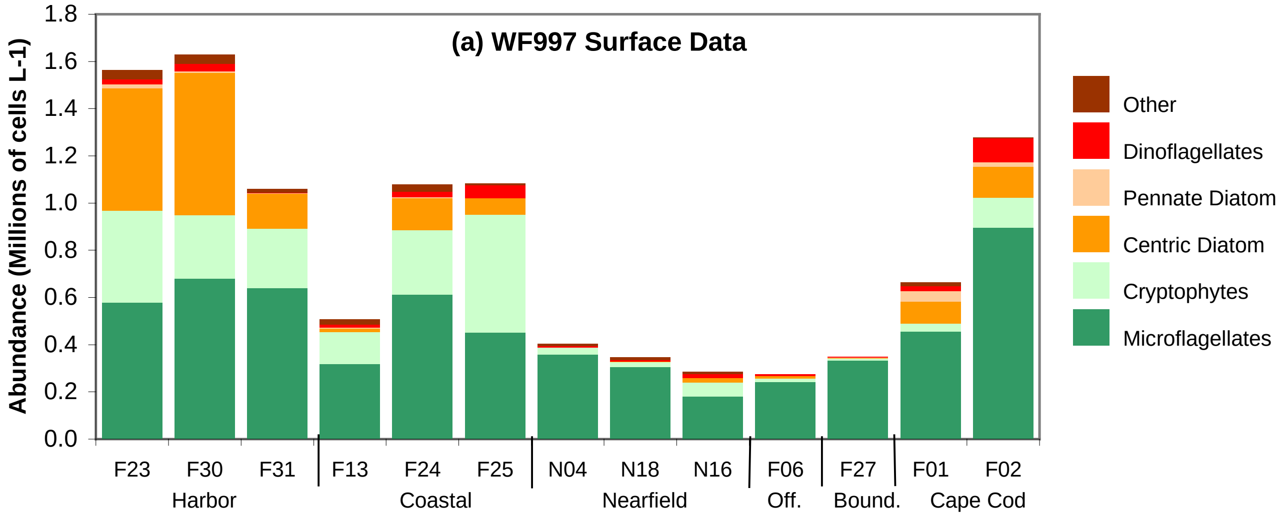


Figure 5-15. Phytoplankton Abundance by Major Taxonomic Group – WF994 Farfield Survey Results April 1 – May 6, 1999



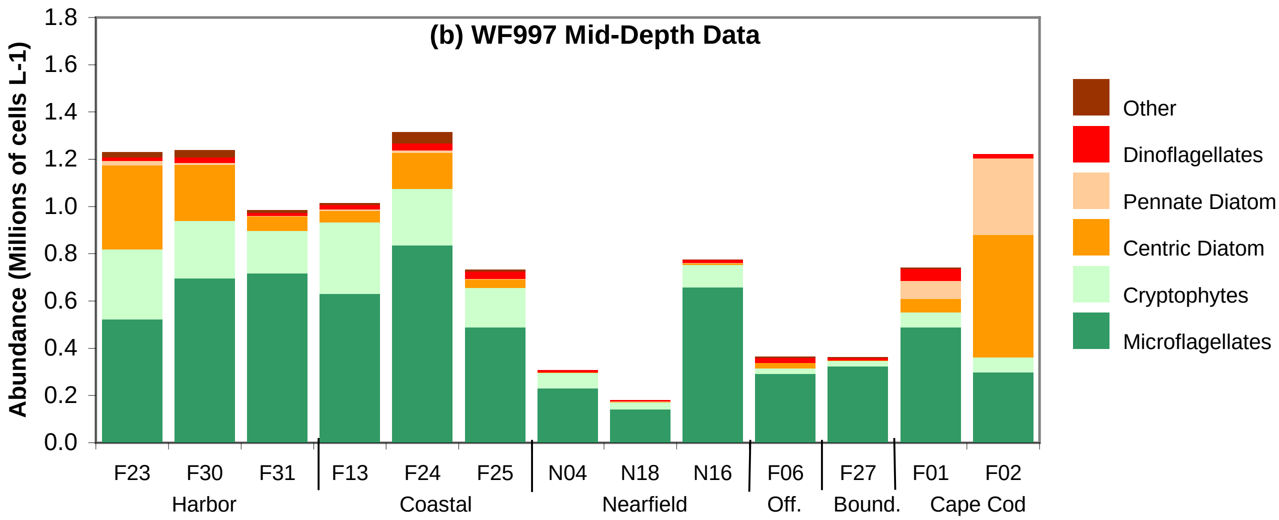


Figure 5-16. Phytoplankton Abundance by Major Taxonomic Group – WF997 Farfield Survey Results June 14 – 19, 1999

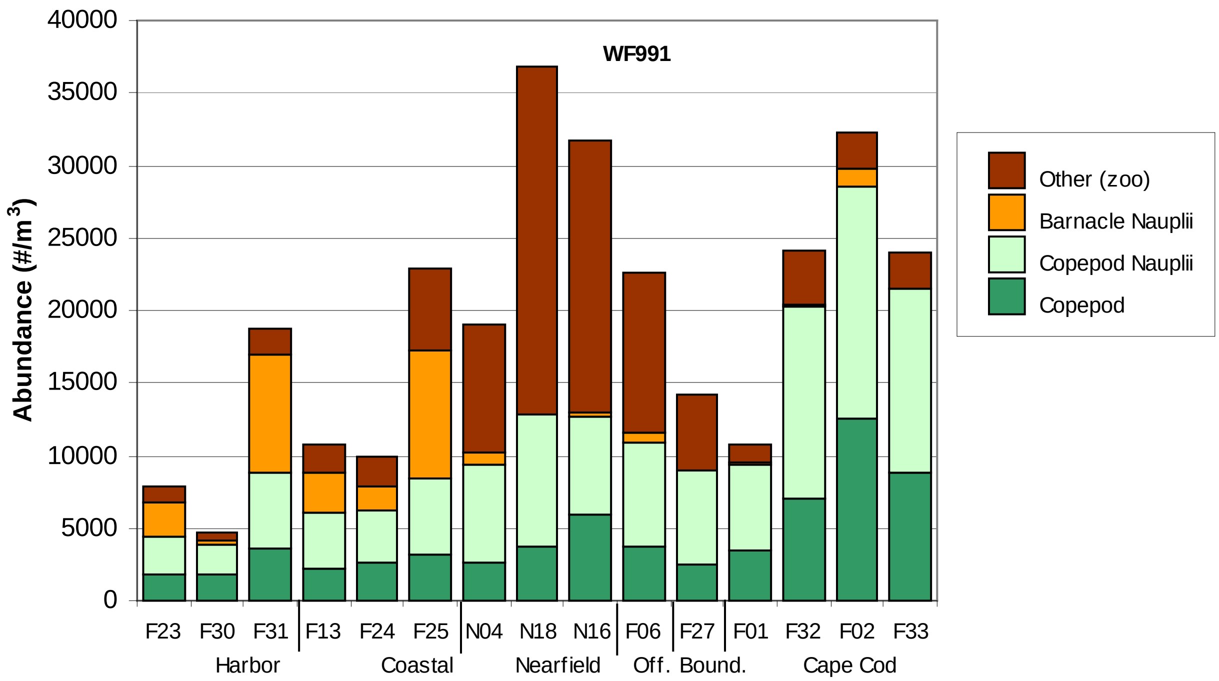


Figure 5-17. Zooplankton Abundance by Major Taxonomic Group – WF991 Farfield Survey Results February 2 – 8, 1999

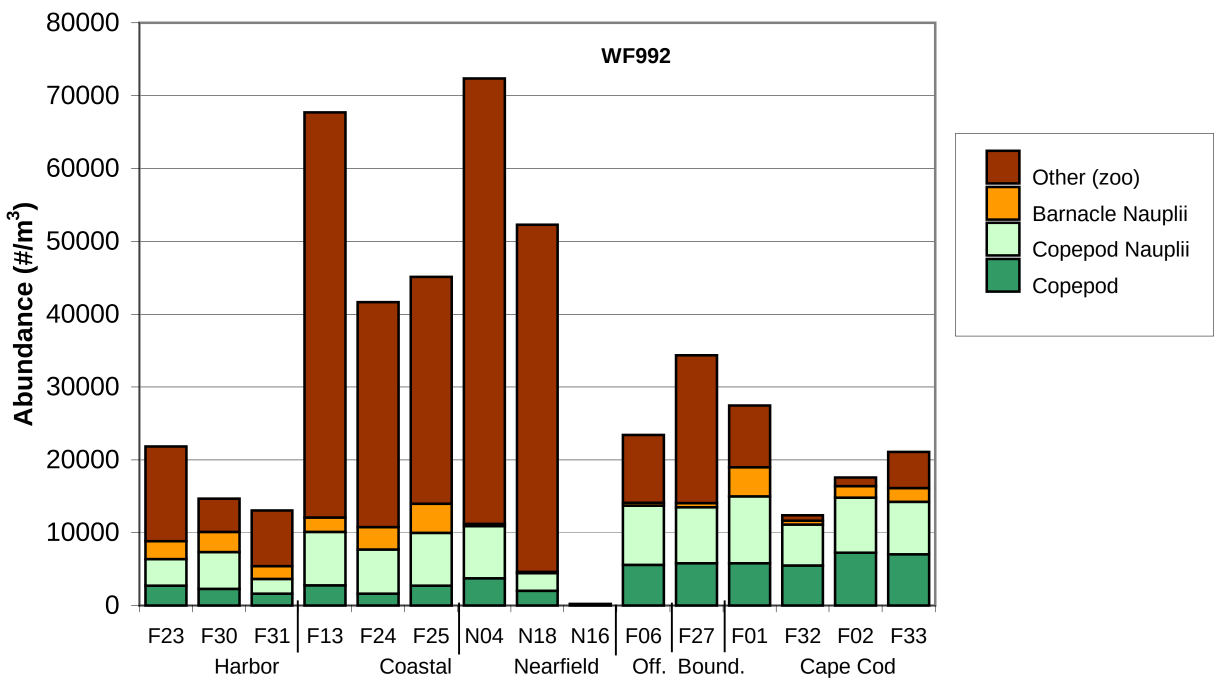


Figure 5-18. Zooplankton Abundance by Major Taxonomic Group – WF992 Farfield Survey Results February 23 – 28, 1999

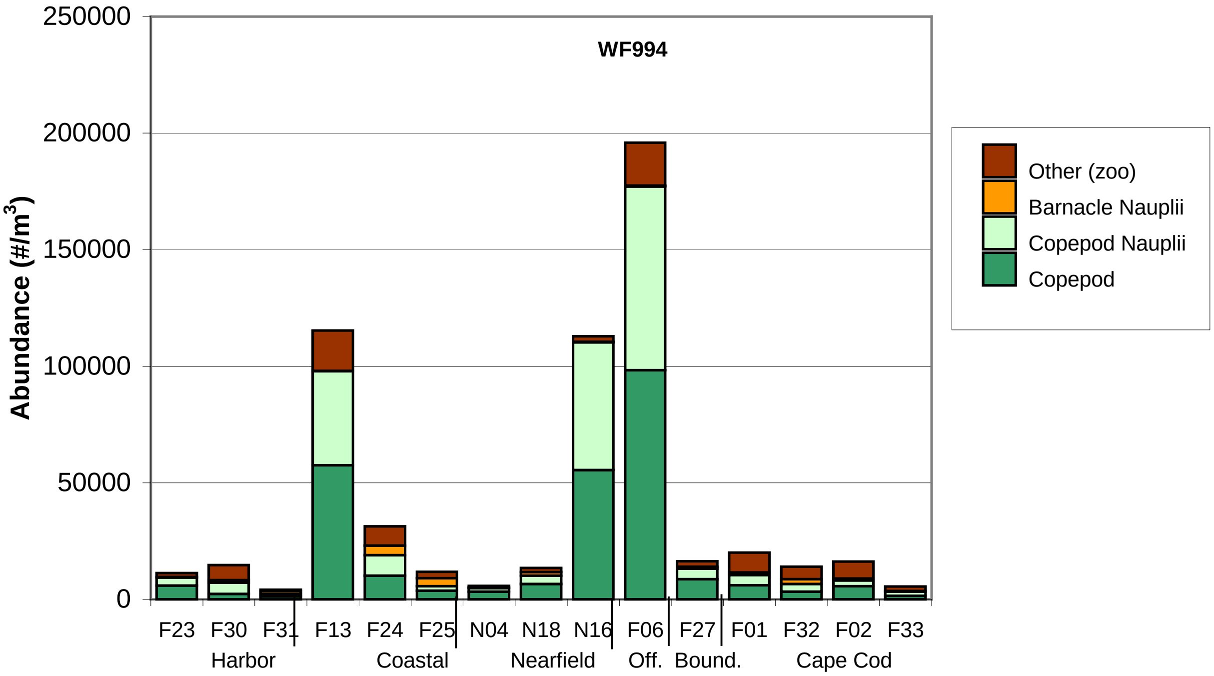


Figure 5-19. Zooplankton Abundance by Major Taxonomic Group – WF994 Farfield Survey Results April 1 – May 6, 1999

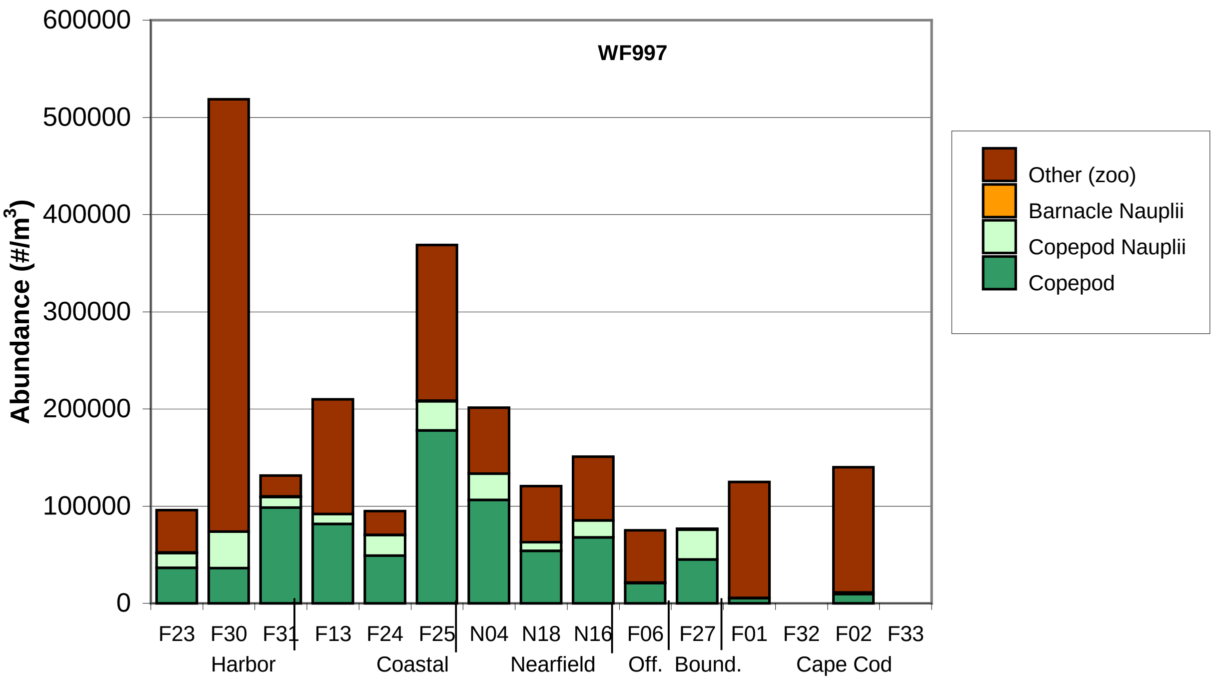


Figure 5-20. Zooplankton Abundance by Major Taxonomic Group – WF997 Farfield Survey Results June 14 – 19, 1999

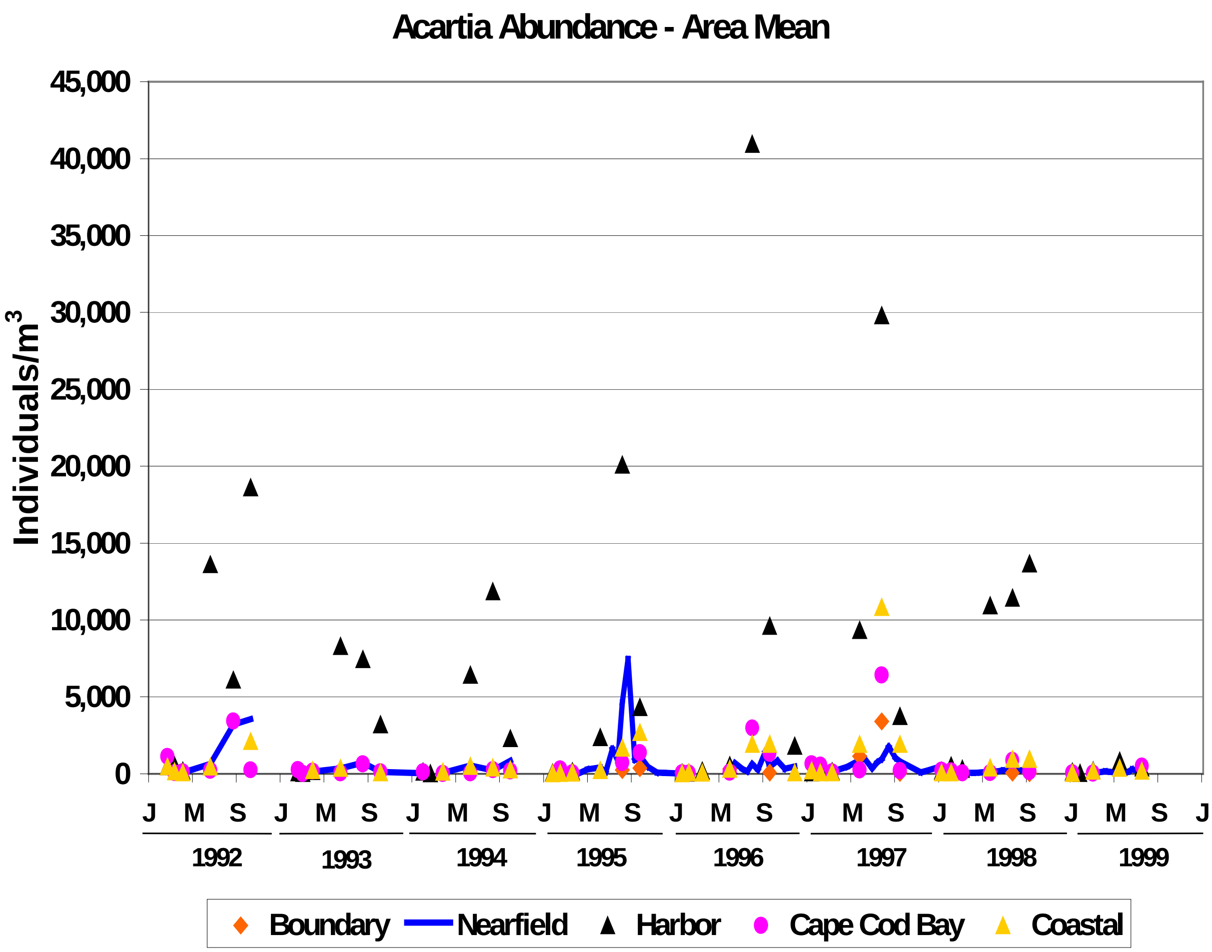


Figure 5—21. Average Acartia Abundance in the Farfield 1992 through 1999

6.0 SUMMARY OF MAJOR WATER COLUMN EVENTS

The winter to spring transition in Massachusetts and Cape Cod Bays is characterized by a typical series of physical, biological, and chemical events: seasonal stratification, the winter/spring phytoplankton bloom, and nutrient depletion. This was generally the case in 1999 with the onset of stratification in April, very high chlorophyll concentrations during the winter/spring period and surface waters depleted in nutrients from May through July. The winter/spring bloom characterized by high chlorophyll concentrations and elevated production rates was not fully represented by the phytoplankton data, which were relatively low in comparison to previous baseline years. This section presents a summary of these events and the integrated physical, biological, and chemical trends discussed in previous sections.

The first three surveys of 1999 (February through March) were conducted prior to the onset of stratification. The water column was well mixed and relatively high concentrations of nutrients were measured. Nutrient concentrations generally decreased from February to March coincident with increasing chlorophyll concentrations and elevated primary production rates. The high nearfield chlorophyll concentrations observed during the winter of 1998 had remained elevated into the winter/spring period of 1999. The phytoplankton community was a mixed assemblage dominated by microflagellates and chain forming centric diatoms (*Chaetoceros* spp.). The pennate diatom, *Pseudo-nitzschia pungens*, which includes both non-toxic *P. pungens* and domoic-acid-producing *P. multiseries*, was observed throughout Massachusetts Bay in early February.

The onset of stratification was observed during the April combined survey. At the deeper nearfield, offshore and boundary stations, the water column had begun to stratify while closer to shore the shallow Harbor, coastal and Cape Cod Bay stations remained well mixed. The onset of stratification in the spring is usually related to a freshening of the surface waters and then as the surface temperatures increase the density gradient or degree of stratification increases. Such was the case in the spring of 1999 as the freshening of the surface layer was coincident with the decrease in surface density and the onset of stratification at the offshore stations. By June the temperature gradient between surface and bottom waters was driving the density gradient that was observed throughout the Bays.

Due to the month long duration of the April combined survey, the data were evaluated over a wide spatial and temporal scale and unusual patterns were observed. The pattern in nutrient concentrations, when evaluated based on sample collection date, revealed that April was a period of increasing biological production and utilization of nutrients. In early April, nutrient concentrations at the boundary and northern offshore area stations were relatively high and comparable to the values observed in late February. By mid-April and early May, nutrient concentrations had decreased to low levels in the nearfield and southern offshore area stations. The winter/spring bloom reduced nutrient concentrations in the surface waters from February to April and with the onset of stratification nutrient concentrations in the surface waters were depleted throughout much of the region by late April/early May.

The high chlorophyll concentrations observed throughout the Bays during the first three surveys continued to be present in April and reached maxima during this survey in the nearfield and offshore areas. The high chlorophyll concentrations in the nearfield during the winter/spring period of 1999 were a continuation of the elevated concentrations observed in late 1998. The mean chlorophyll concentration (5.08 μgL^{-1}) for winter/spring of 1999 was greater than any previous winter/spring mean obtained for the nearfield during the baseline-monitoring period. It also exceeded the chlorophyll threshold value (4.76 μgL^{-1}) that had been calculated as the 95th percentile of the baseline winter/spring distribution for 1992 to 1998. Primary production at the nearfield stations was relatively high during the winter/spring of 1999 reaching values of >2000 mg C m^{-2} d^{-1}, which is comparable to previous winter/spring blooms. Although the nearfield winter/spring chlorophyll concentrations were unprecedented for the baseline-monitoring program, phytoplankton abundance was generally lower than previous winter/spring periods. This may have been because the abundant taxa were large cells (*Ceratium* spp.) and chain forming diatoms (*Chaetoceros* spp.) that may not be adequately captured by bottle sampling or had higher per cell chlorophyll values than dominant species in previous years.

By June, a strong density gradient was observed throughout the Bays except for Boston Harbor stations, which remained well mixed due to tidal flushing. The establishment of seasonal stratification led to nutrient depleted conditions in the surface waters and ultimately to an increase in nutrient concentrations in bottom waters due to increased rates of respiration and remineralization of organic matter. Between the April and June surveys, there was a sharp decline in bottom water DO throughout the Bays of 1-3 mgL^{-1}. The trend of declining bottom water DO concentrations following the establishment of stratification and the cessation of the winter-spring bloom is typical. The large decline that was observed, however, may be an indication that DO utilization may be occurring more rapidly and achieve lower concentration in 1999 compared to previous baseline years.

Chlorophyll concentrations, production rates and total phytoplankton abundance had decreased from the winter/spring bloom highs in Massachusetts and Cape Cod Bays, but the sustained bloom of *Ceratium furca /C. tripos/* C. *longipes* continued through July. In Boston Harbor, chlorophyll concentrations and production rates increased from low values in early February to high values in June. This seasonal pattern is typical for Boston Harbor, which generally exhibits a gradual pattern of increasing areal production from winter through summer rather than the distinct winter-spring peaks observed in the Bays. This was the case in 1999 as production values increased gradually from February through June reaching values of >2500 mg C m^{-2} d^{-1} in April and June.

Total zooplankton abundance also increased from February through June when extraordinary numbers of zooplankton were observed in the nearfield and Boston Harbor. An astonishing maximum value of >500 x 10^3 animals m^{-3} in Boston Harbor was the highest zooplankton abundance recorded for the entire 1992-1999 baseline. Zooplankton assemblages during the first half of 1999 were comprised of typical taxa, but levels of *Acartia* spp. were unusually low, possibly due to drought, and contributions of meroplankton such as bivalve and gastropod veligers and polychaete larvae were unusually high.

A number of topics were called out in this report that will be discussed in greater detail in the 1999 annual water column report including the following:

- Continued observation of high chlorophyll concentrations from late 1998 through winter/spring of 1999 – regional and local trends in chlorophyll and nutrients with additional data from Boston Harbor Monitoring Program and satellite imagery.
- 1999 winter/spring bloom observed in chlorophyll and production data, but not clearly characterized by phytoplankton abundance – regional trends in chlorophyll, production and phytoplankton with additional data from video plankton recorder survey and evaluation of species composition of phytoplankton assemblages during winter/spring (and fall) blooms for entire baseline period.
- Effect of drought conditions in New England region on physical and biological processes in Massachusetts Bay – interannual trends in salinity especially in the Harbor and coastal waters and the biological ramifications of changes in salinity (i.e. *Acartia* abundance)

LIST OF APPENDICES

[Note: These appendices are not available on-line. To obtain a printed copy, please call the Environmental Quality Department at (617) 788-4700.]

7.0 REFERENCES

Albro CS, Trulli HK, Boyle JD, Sauchuk SA, Oviatt CA, Zimmerman C, Turner JT, Borkman D, Tucker J. 1998. Combined work/quality assurance plan for baseline water column monitoring: 1998-2000. Boston: Massachusetts Water Resources Authority. Report ENQUAD ms-048. 121 p.

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APPENDIX A

Productivity Methods

METHODS

URI conducted a study of the reliability of using reduced sample volumes to measure primary productivity using ^{14}C. The study found that analyses using 5-mL samples could produce results that were comparable to analyses using larger sample volumes. A summary of the study is in Appendix E of the Combined work/quality assurance plan for baseline water quality monitoring: 1998-2000 (Albro *et. al.*, 1998).

URI also measured the effects of sample holding time and increased incubation time on measurements of primary productivity using the photosynthetrons at URI. The results, summarized below, show that sample analysis must begin within 6 h of sample collection and incubation between 0.5 h and 2 h produce comparable results.

Incubation Time	
Time (h)	Productivity (g/C/m^2/h)
0.5	0.195
1	0.207
1.5	0.182
2	0.212

Holding Time	
Time (h)	Productivity (g/C/m^2/h)
0	0.207
4	0.182
6	0.210
8	0.177

Based on the results of these tests the following method has been used to collect and analyze water samples for productivity.

Primary Analysis by ^{14}C – Field Procedures

From each of 5 depths at each productivity station, samples are obtained by filtration through 300-µm-mesh screen (to remove large zooplankton) from the Rosette sampling bottle into opaque 1-L polyethylene bottles. The bottles are rinsed twice prior to filling. The samples are then placed in a cooler and transferred to the URI laboratory within 5 hours of water sampling. Productivity samples are taken from the same bottles and depths as the other analyses.

Primary Analysis by ^{14}C – Laboratory Procedures

Under subdued green light, each depth is processed separately starting with the surface water sample. Each sample is mixed thoroughly and then poured into a repipette set to deliver 5 mL. The repipette is rinsed twice with sample prior to use. The delivery tip of the repipette is flushed three times and 5 mL of sample will be pipetted into 20 mL borosilicate vials. A total of 16 bottles (14-16 light bottles, 2 dark bottles) are filled for each depth. These vials are incubated in a light and temperature controlled incubator. Light bottles from each depth are incubated at 14 to 16 light intensities (250 w Tungsten-halogen lamps attenuated with neutral density filters, range 0 to 2000 µE m^{-2} s^{-1}) and all bottles are incubated within 2°C of the *in situ* temperature.

The 5 mL samples are incubated with 100 µL of 10 µCi/mL (1 µCi for 5 mL sample) Carbon-14 (^{14}C) stock solution. All vials are then placed in the incubator for two hours. Time and temperature are recorded at the start and end of the incubation period. The light intensity within the incubator is measured before and after the incubation period. Temperature is constantly monitored throughout the incubation period and the location of each vial in the incubator is recorded. Upon removal from the incubator, 100 µL of 0.05N HCl, is added to each vial. Vials will remain loosely capped while shaken overnight. The following morning 15 mL Ecolume is added to each vial, which is again loosely capped and shaken overnight. Two days following the cruise, vials are tightly capped and placed on the Beckman LS 3801 to be counted.

Calculation of Primary Production. Volume-specific primary production is calculated using equations similar to that of Strickland and Parsons (1972) as follows:

$$P(i) = \frac{1.05(DPM(i))DIC}{A_{sp}T}$$

$$P(d) = \frac{1.05(DPM(d))DIC}{A_{sp}T}$$

$$A_{sp} = DMP(sa) - DPM(back)$$

where:

$P(i)$ = primary production rate at light intensity i (μgC $L^{-1}h^{-1}$ or mgC $m^{-3}h^{-1}$)
$P(d)$ = dark production, (μgC $L^{-1}h^{-1}$ or mgC $m^{-3}h^{-1}$)
$DPM(i)$ = dpm in sample incubated at light intensity i
$DPM(d)$ = dpm in dark incubated sample
$DPM(back)$ = background dpm in vial containing only scintillation cocktail
$DPM(sa)$ = specific activity added to incubation samples (DPM)
T = incubation time (h)
DIC = concentration of dissolved inorganic carbon (μg/mL)

Table A-1 shows the frequency that primary productivity measurements and calculations are performed per vial, depth, station, and survey.

Table A-1. Measurement frequency for variables involved in calculation of primary production.

Measurement/ Calculation	Vial	Depth	Station	Survey
DPM(i)	✓			
P(i)	✓			
DIC		✓		
P(d)		✓		
DPM(d)		✓		
Asp			✓	
T			✓	
DPM(sa)			✓	
DPM(back)				✓

P–I curves. For each of the 5 depths for each photosynthesis station a P–I curve is obtained from the data P(I) = P(i)-P(d) vs. the irradiance (I, μE $m^{-2}s^{-1}$) to which the incubating sample is exposed. The P-I curves are fit via one of two possible models, depending upon whether or not significant photo-inhibition occurs. In cases where photoinhibition is evident the model of Platt *et al.* (1980) is fit (SAS 1985) to obtain the theoretical maximum production, and terms for light-dependent rise in production and degree of photoinhibition:

$$P(I) = P_{sb}(1 - e^{-a})e^{-b}$$

where:

$P(I)$ = primary production at irradiance I, corrected for dark fixation (P(i)-P(d))

P_{sb} = theoretical maximum production without photoinhibition

$a = \alpha I / P_{sb}$ and α is the initial slope, the light-dependent rise in production

$b = \beta I / P_{sb}$ and β is a term relaying the degree of photoinhibition

If ß is not significantly different from zero, an alternative model of Webb *et al.* (1974) is similarly fit to obtain the maximum production and the term for light-dependent rise in production:

$$P(I) = P_{\max}(1 - e^{-a'})$$

where:

$P(I)$ = primary production at irradiance I corrected for dark fixation (P(i)-P(d))

$P_{\max}$ = light saturated maximum production

$a' = \alpha I / P_{\max}$ and α is the initial slope the light-dependent rise in production

P_{max} and P_{sb} are not equivalent but they are mathematically related using the equation:

$$P_{max} = P_{sb}\,[\alpha/(\alpha+\beta)][\beta/(\alpha+\beta)]^{\beta/\alpha}$$

Light vs. Depth Profiles. To obtain a numerical representation of the light field throughout the water column averaged CTD light profiles (0.5 m intervals) are fit (SAS 1985) to an empirical sum of exponentials equation of the form:

$$I_Z = A_1 e^{-a_1 Z} + A_2 e^{-a_2 Z} + \ldots.$$

which is an expansion of the standard irradiance vs. depth equation:

$$I_Z = I_0 e^{-kZ}$$

where:

I_Z = light irradiance at depth Z

I_0 = incident irradiance ($Z = 0$)

k = extinction coefficient

$A_1, A_2 \ldots$ = factors relating to incident irradiance ($I_0 = A_1 + A_2 + \ldots$)

$a_1, a_2 \ldots$ = coefficients relating to the extinction coefficient ($k = a_1 + a_2 + \ldots$)

The expanded equation is used in most instances as spectral shifts, pigment layering and other factors result in deviation from the idealized standard irradiance vs. depth equation. The simplest form of the expanded equation is implemented to adequately model the light field, which in the large majority of cases is the sum of two exponentials.

Daily Incident Light Field. During normal CTD hydrocasts the incident light field is routinely measured via a deck light sensor at high temporal resolution. The average incident light intensity is determined for each of the CTD casts to provide, over the course of the photoperiod (12-hr period centered upon solar noon), a well resolved irradiance time series consisting of 12-17 data points. A 48-point time series (every 15 min) of incident is obtained from these data by linear interpolation. A similar time series of light data is collected at Deer Island, and is used as the photoperiod incident light (I_o) time series described below. The Deer Island data are collected using a 4 π sensor and the light intensity measured in the incubator is collected with a cosine sensor. The cosine values are converted to 4 π readings using an empirically determined equation:

$$4\pi = 17.58 + 1.0529\,(\cos) - 0.00008\,(\cos)^2$$

with both 4 π and cosine light intensity in units of $\mu E\ m^{-2}\ sec^{-1}$. The r^2 for the empirical equation is 0.99. The light data are converted prior to fitting the P-I curves.

Calculation of Daily Primary Production. Given the best fit parameters (P_{sb} or P_{max}, α, β) of the P-I curves obtained for each of the five sampling depths, the in situ light intensity (*i.e.*, I_z) at each depth determined from the sum of exponential fits on the in situ light field, and the photoperiod incident light (I_0) time series, it is possible to compute daily volumetric production for each depth. To do this at a given depth, hourly production is determined for the in situ light intensity computed for each 15 min interval of the photoperiod, using the appropriate P-I parameters and in situ irradiance. Daily production ($\mu g\ C\ L^{-1}\ d^{-1}$) is obtained by integration of the determined activity throughout the 12-hour photoperiod. An advantage of this approach is that seasonal changes in photoperiod length are automatically incorporated into the integral computation. For example, during winter months computed early morning and late afternoon production contributes minimally to whole day production, whereas during summer months the relative contribution during these hours is more significant. The investigator does not have to decide which factor to employ when converting hourly production to daily production. The primary assumption of the approach is that the P-I relationship obtained at the time of sample procurement (towards the middle of the photoperiod) is representative of the majority of production occurring during the photoperiod, which should be the case.

Calculation of Daily Areal Production. Areal production ($mg\ C\ m^{-2}\ d^{-1}$) is obtained by trapezoidal integration of daily volumetric production vs. depth down to the 1% light level.

Calculation of Chlorophyll-Specific Parameters. Chlorophyll-specific measures of the various parameters (including the P-I parameters) is determined by dividing by the appropriate chlorophyll term obtained from independent measurements.

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APPENDIX B

Surface Contour Plots – Farfield Surveys

Surface Contour Plots – Farfield Surveys

All contour plots were created using data from the surface bottle sample (A) Each plot is labeled with the survey number (WF991 through WN999), and parameter. The minimum and maximum value, and the station where the value was measured are provided for each plot, as well as the contour interval and parameter units.

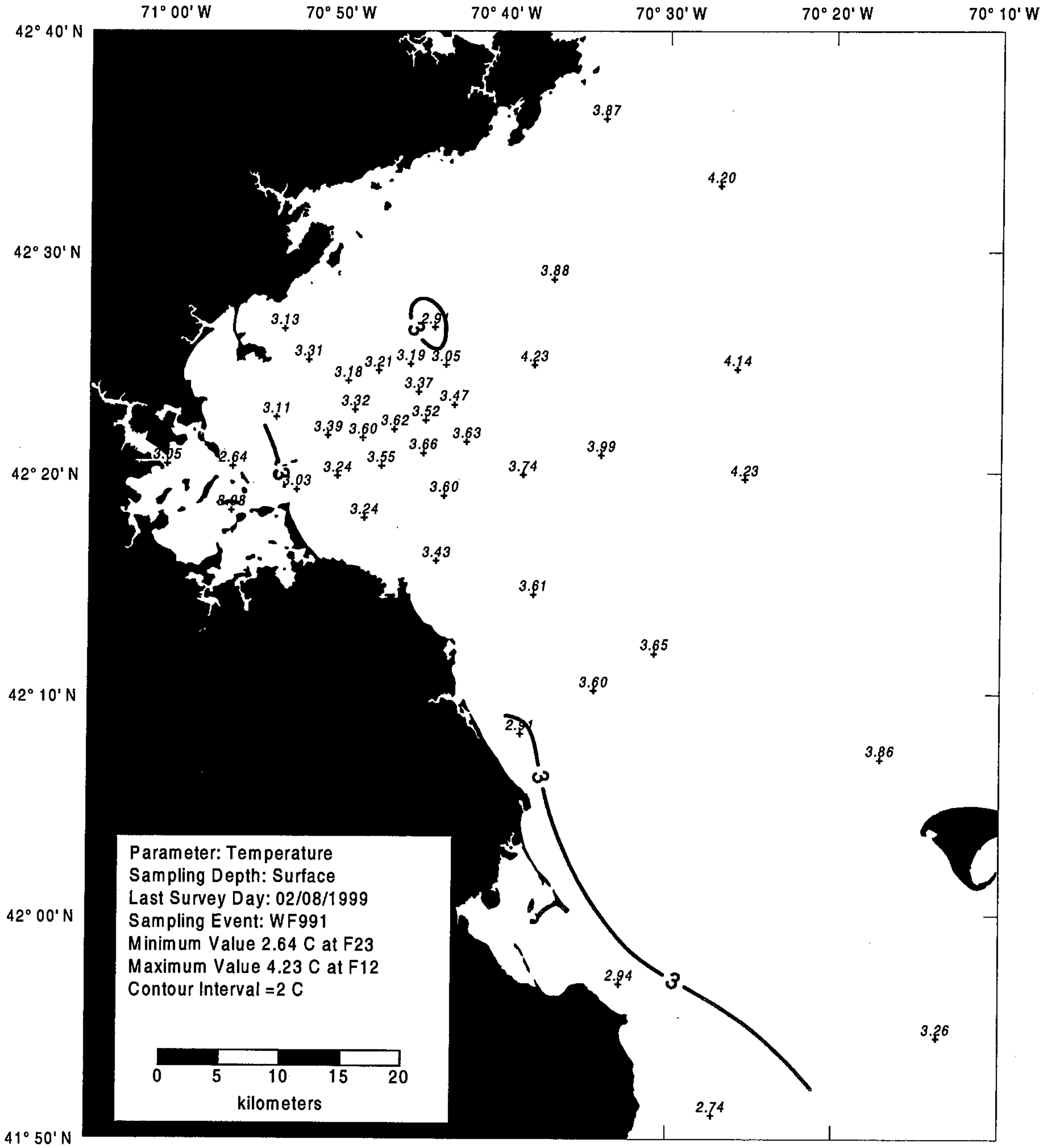


Figure B-1. Temperature Surface Contour Plot for Farfield Survey WF991 (Feb 99)

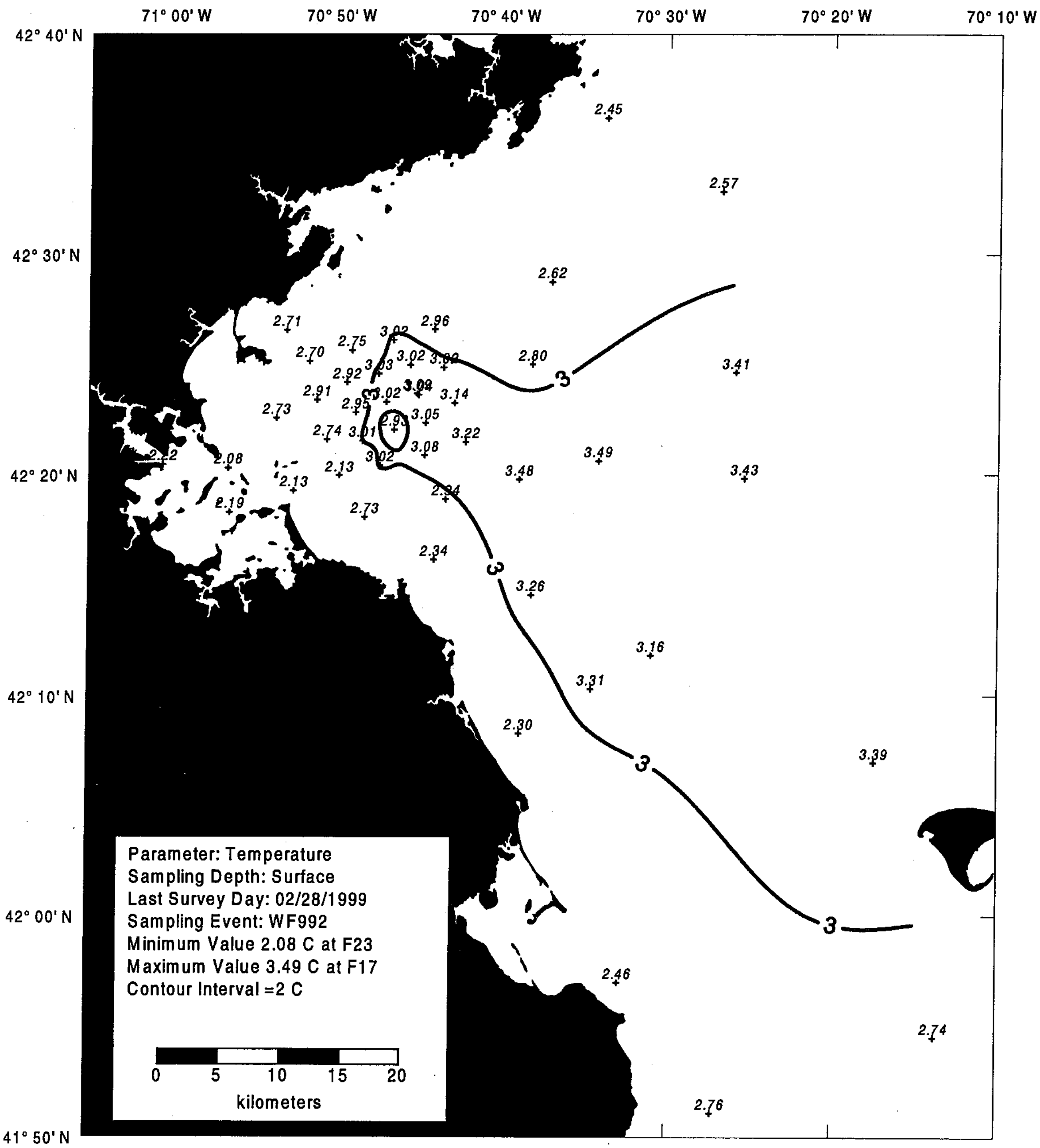


Figure B-2. Temperature Surface Contour Plot for Farfield Survey WF992 (Feb 99)

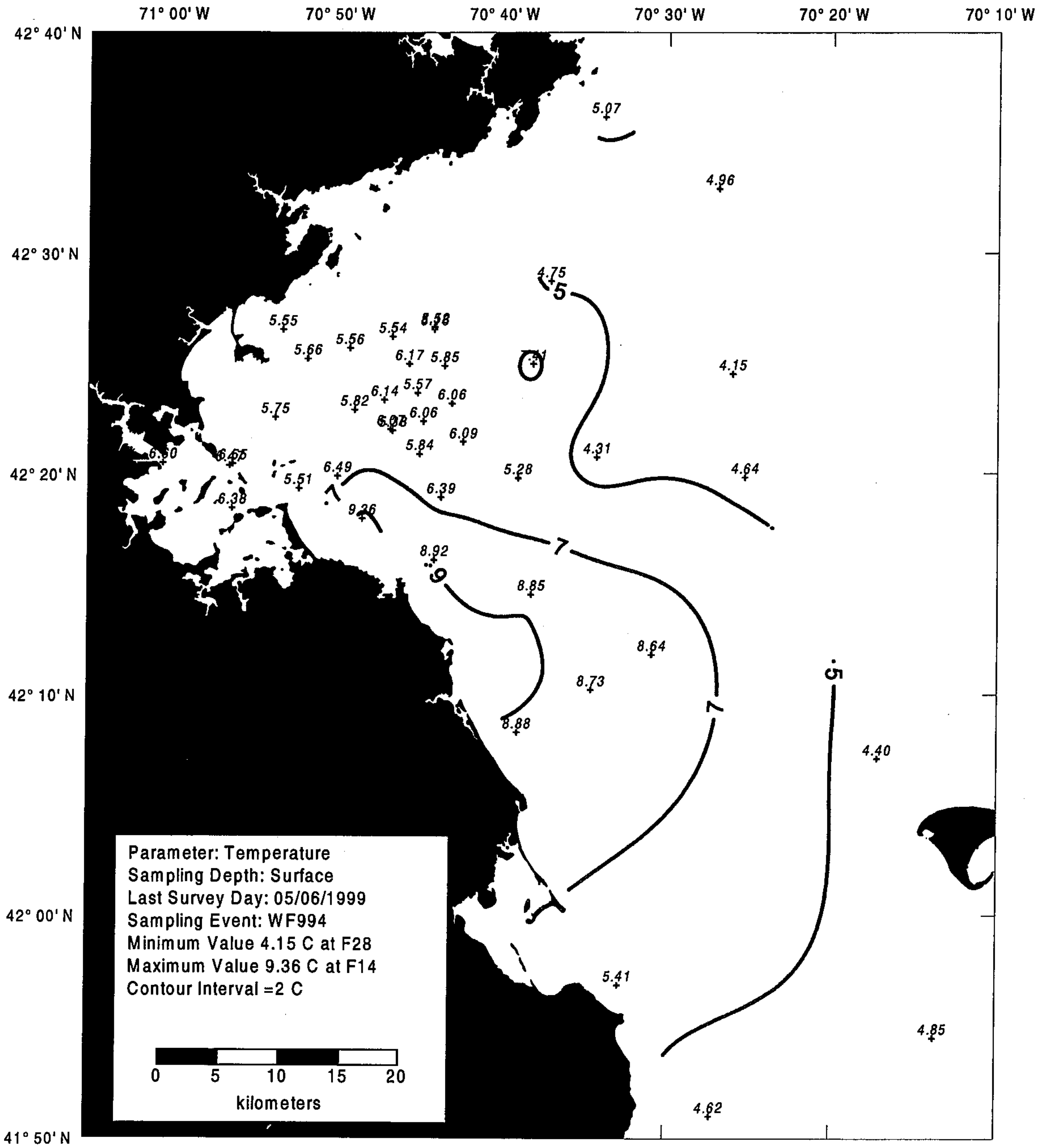


Figure B-3. Temperature Surface Contour Plot for Farfield Survey WF994 (Apr 99)

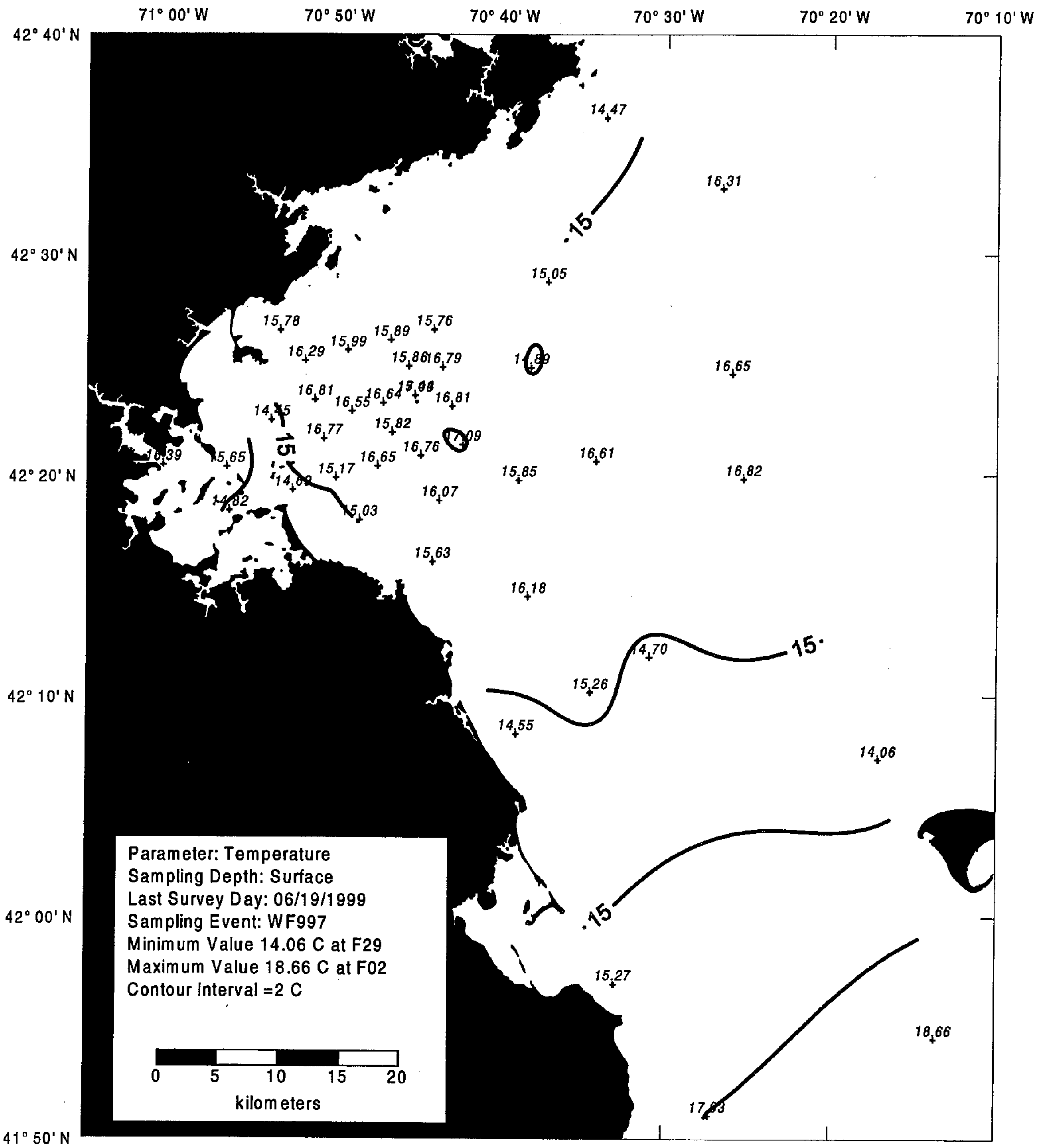


Figure B-4. Temperature Surface Contour Plot for Farfield Survey WF997 (Jun 99)

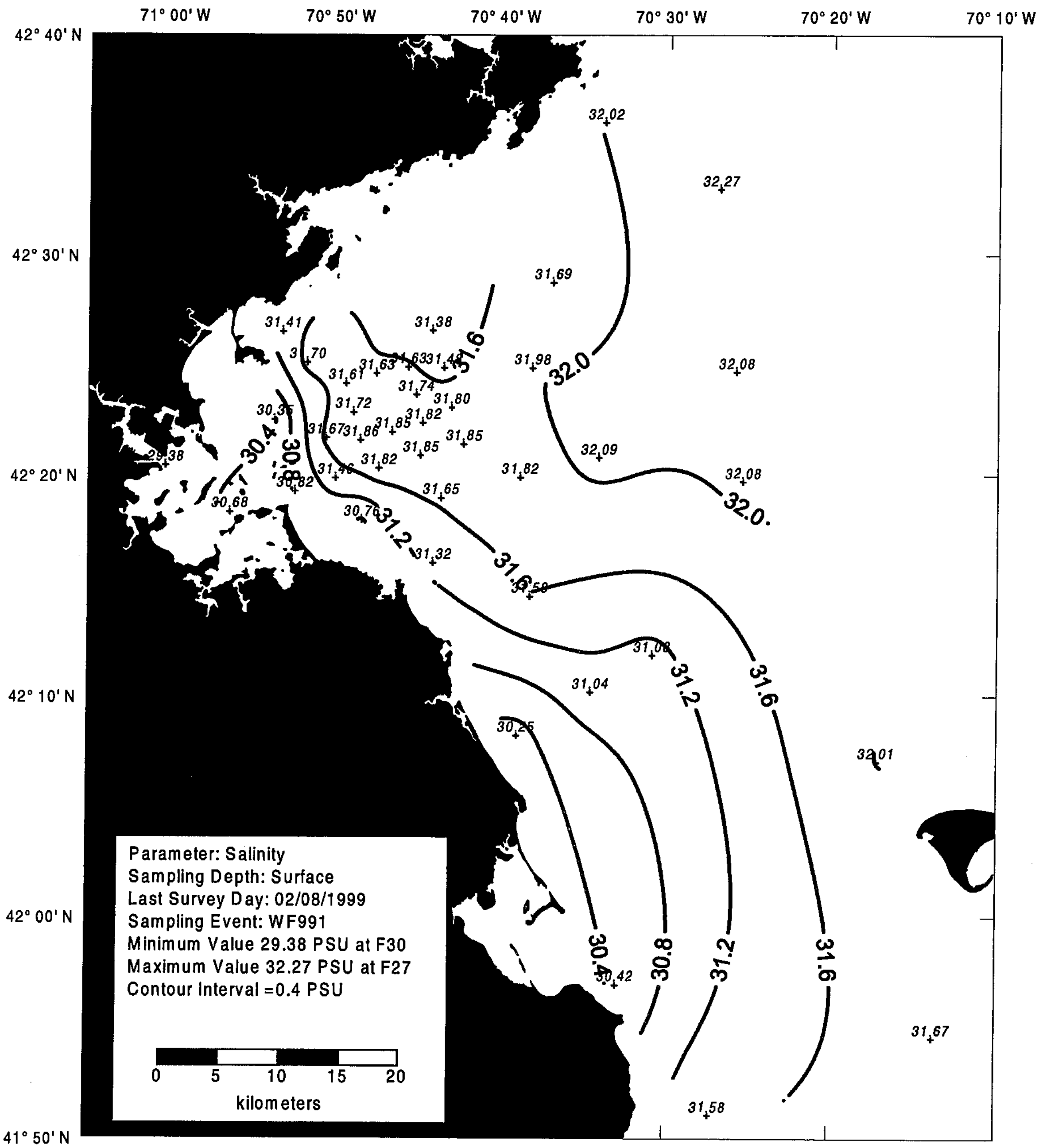


Figure B-5. Salinity Surface Contour Plot for Farfield Survey WF991 (Feb 99)

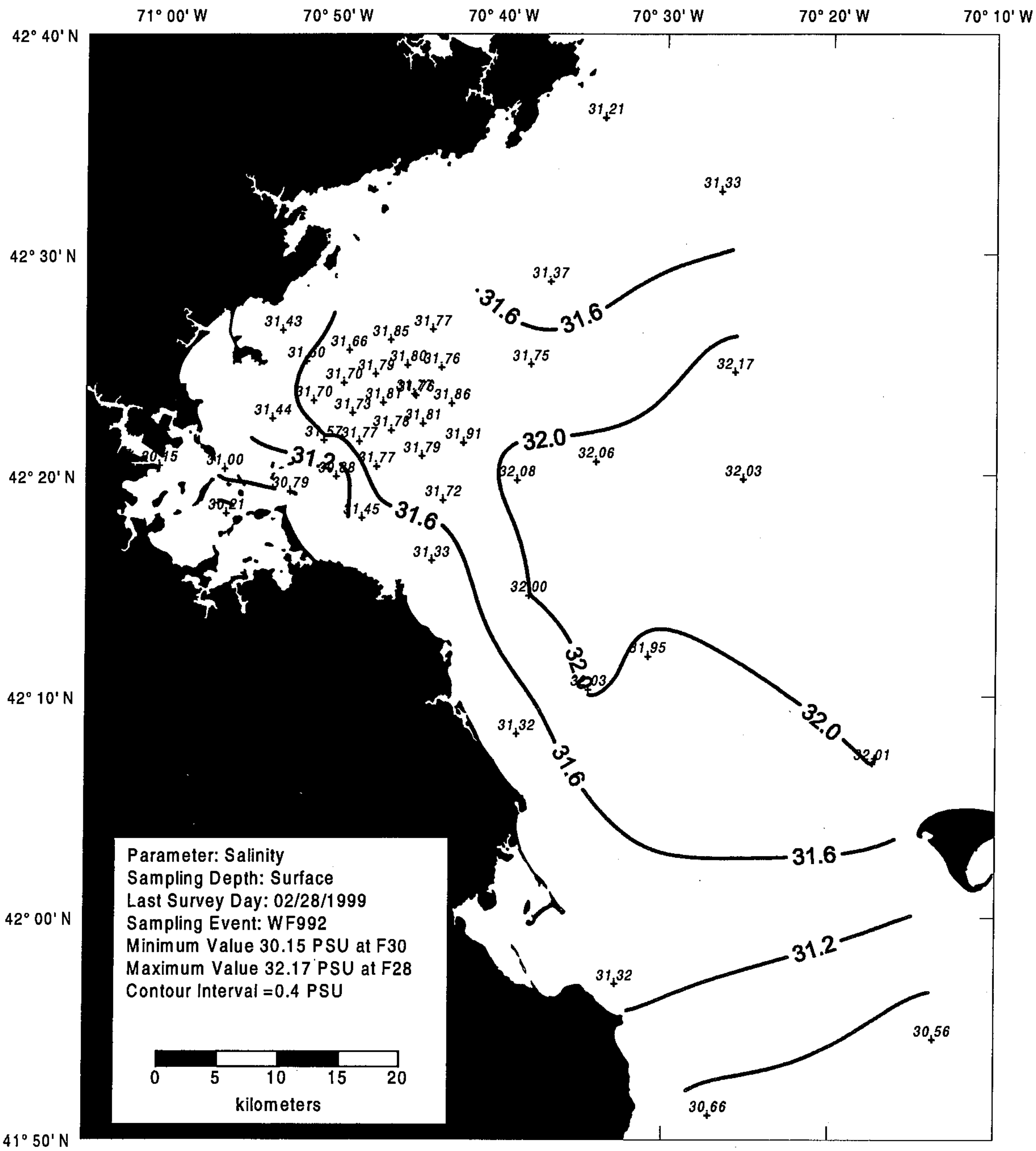


Figure B-6. Salinity Surface Contour Plot for Farfield Survey WF992 (Feb 99)

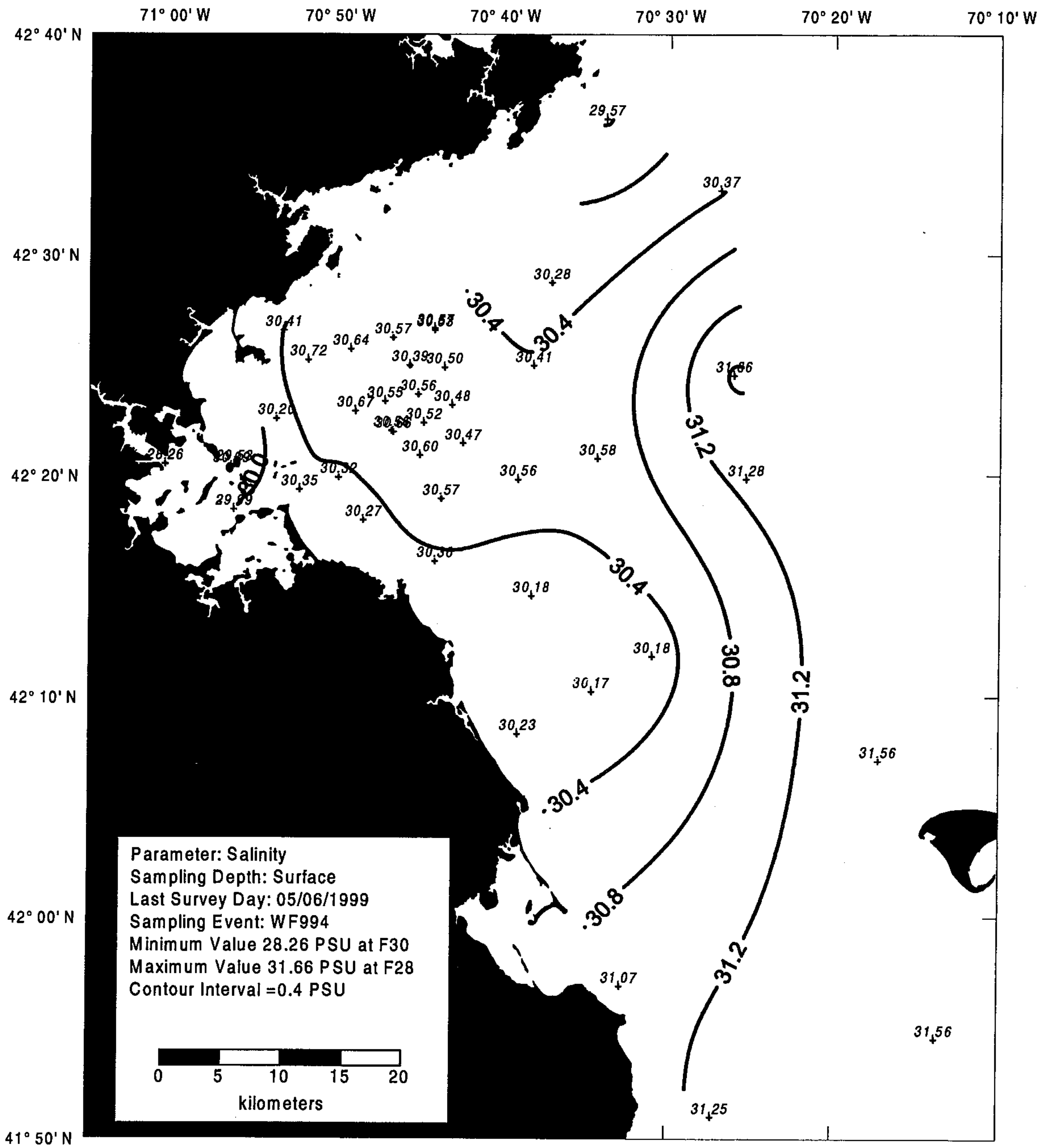


Figure B-7. Salinity Surface Contour Plot for Farfield Survey WF994 (Apr 99)

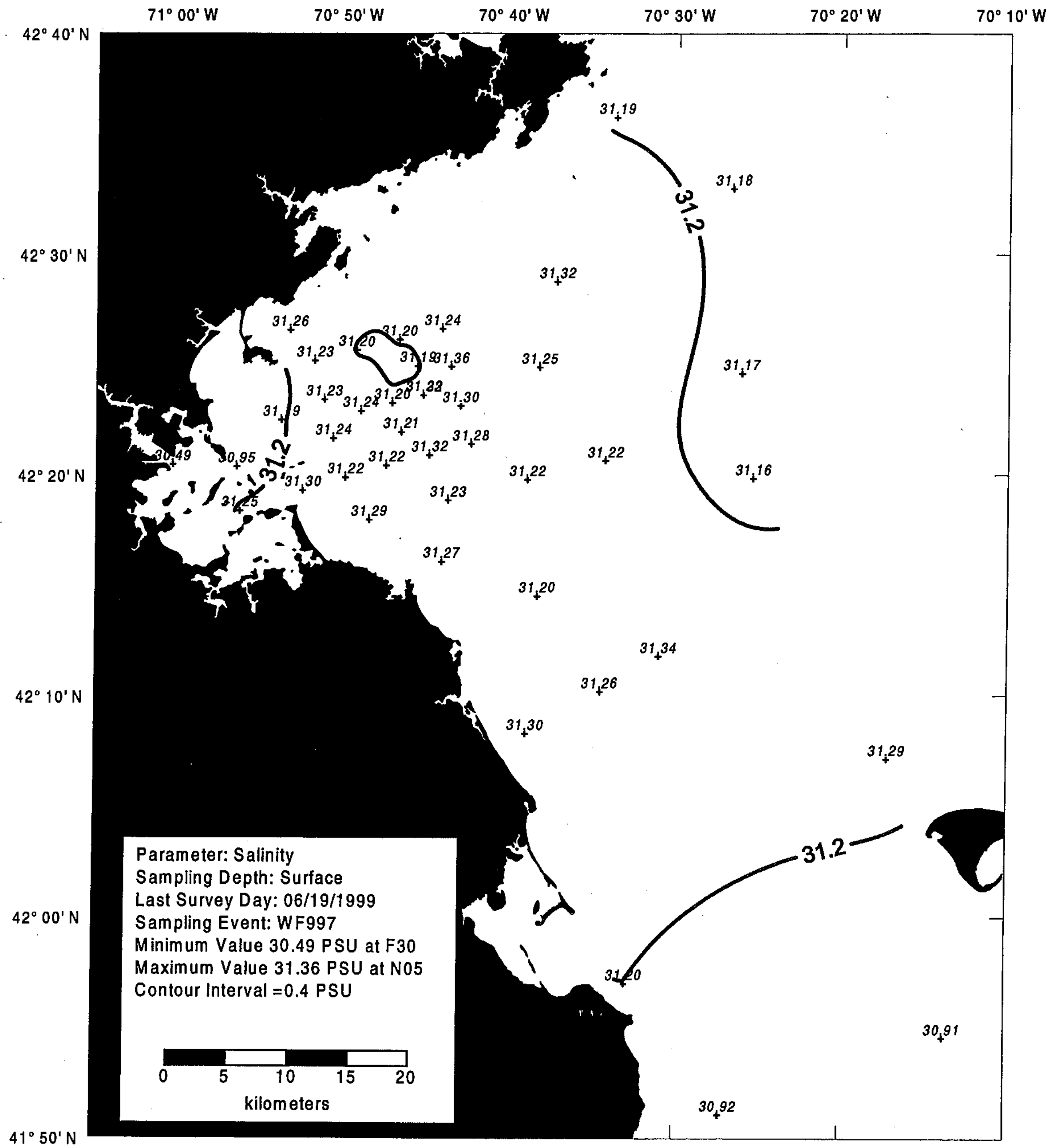


Figure B-8. Salinity Surface Contour Plot for Farfield Survey WF997 (Jun 99)

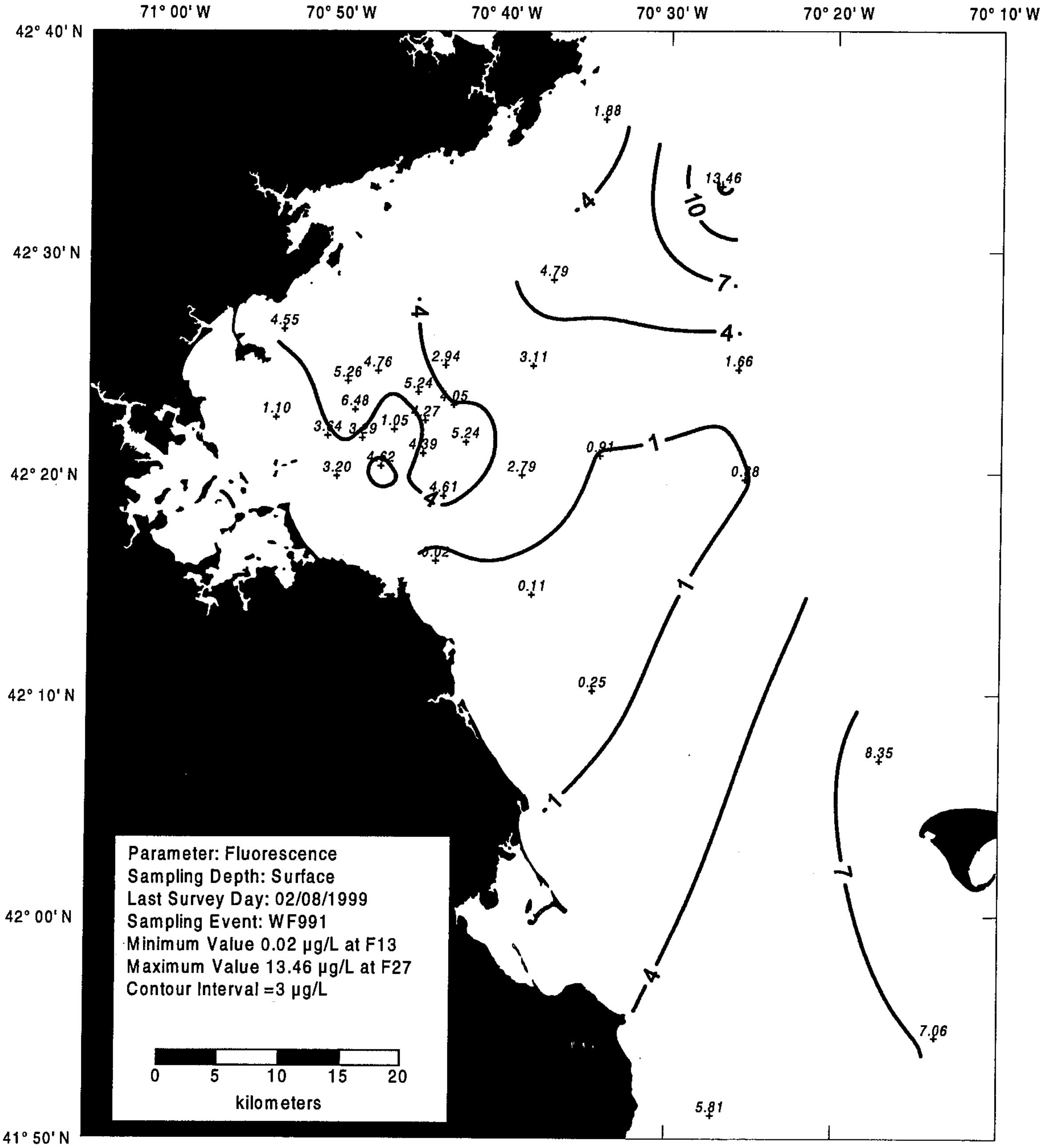


Figure B-9. Fluorescence Surface Contour Plot for Farfield Survey WF991 (Feb 99)

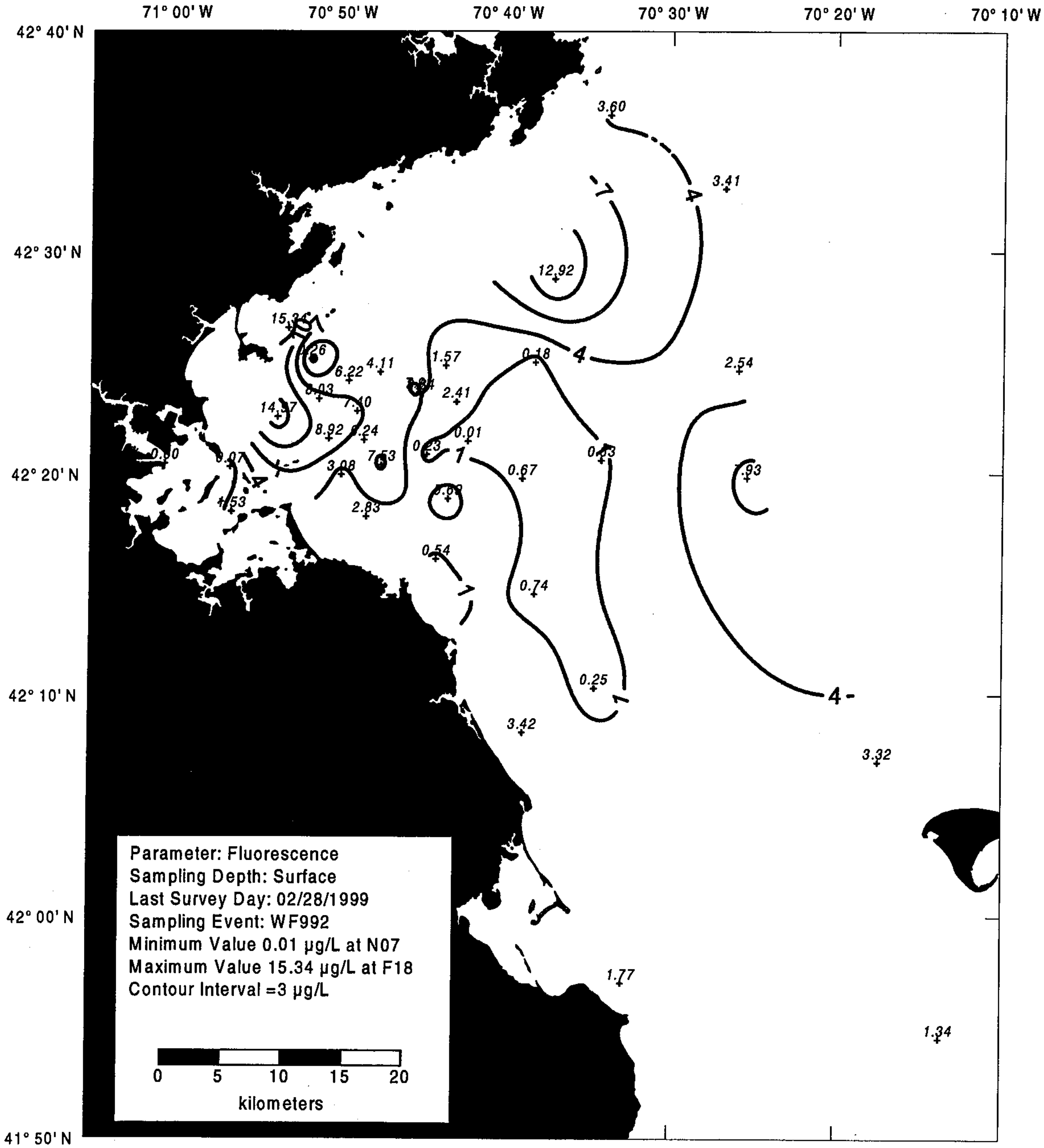


Figure B-10. Fluorescence Surface Contour Plot for Farfield Survey WF992 (Feb 99)

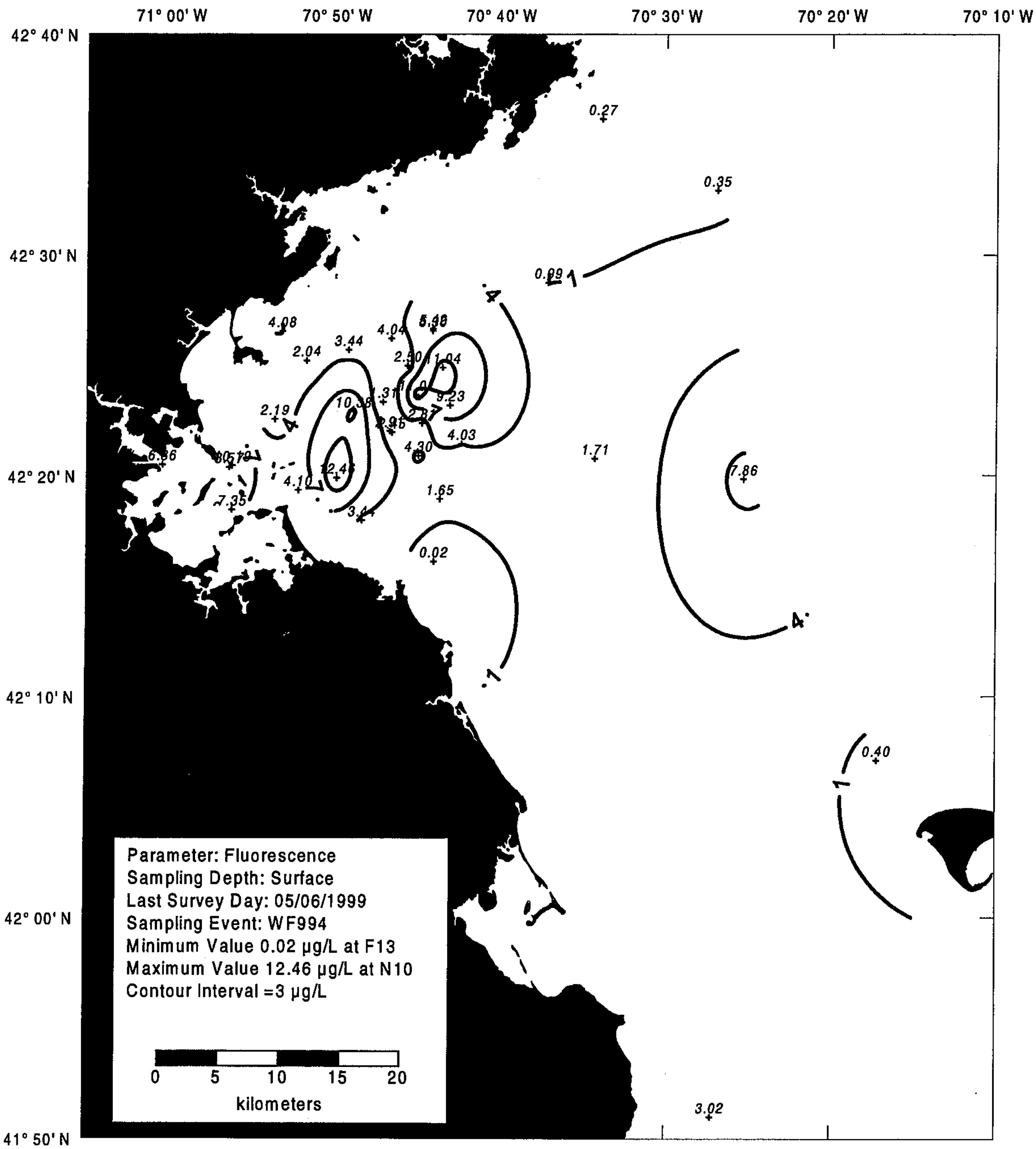


Figure B-11. Fluorescence Surface Contour Plot for Farfield Survey WF994 (Apr 99)

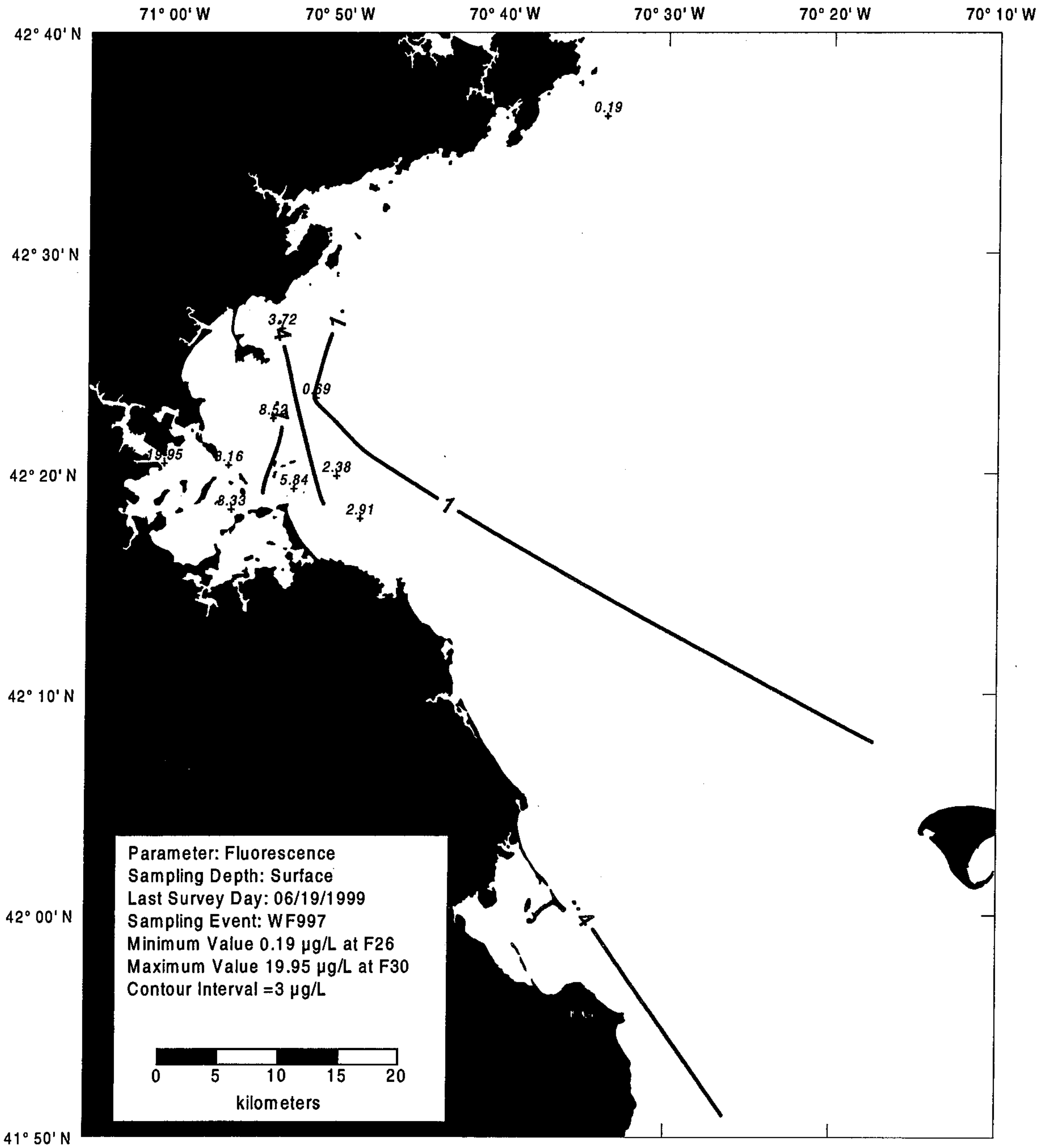


Figure B-12. Fluorescence Surface Contour Plot for Farfield Survey WF997 (Jun 99)

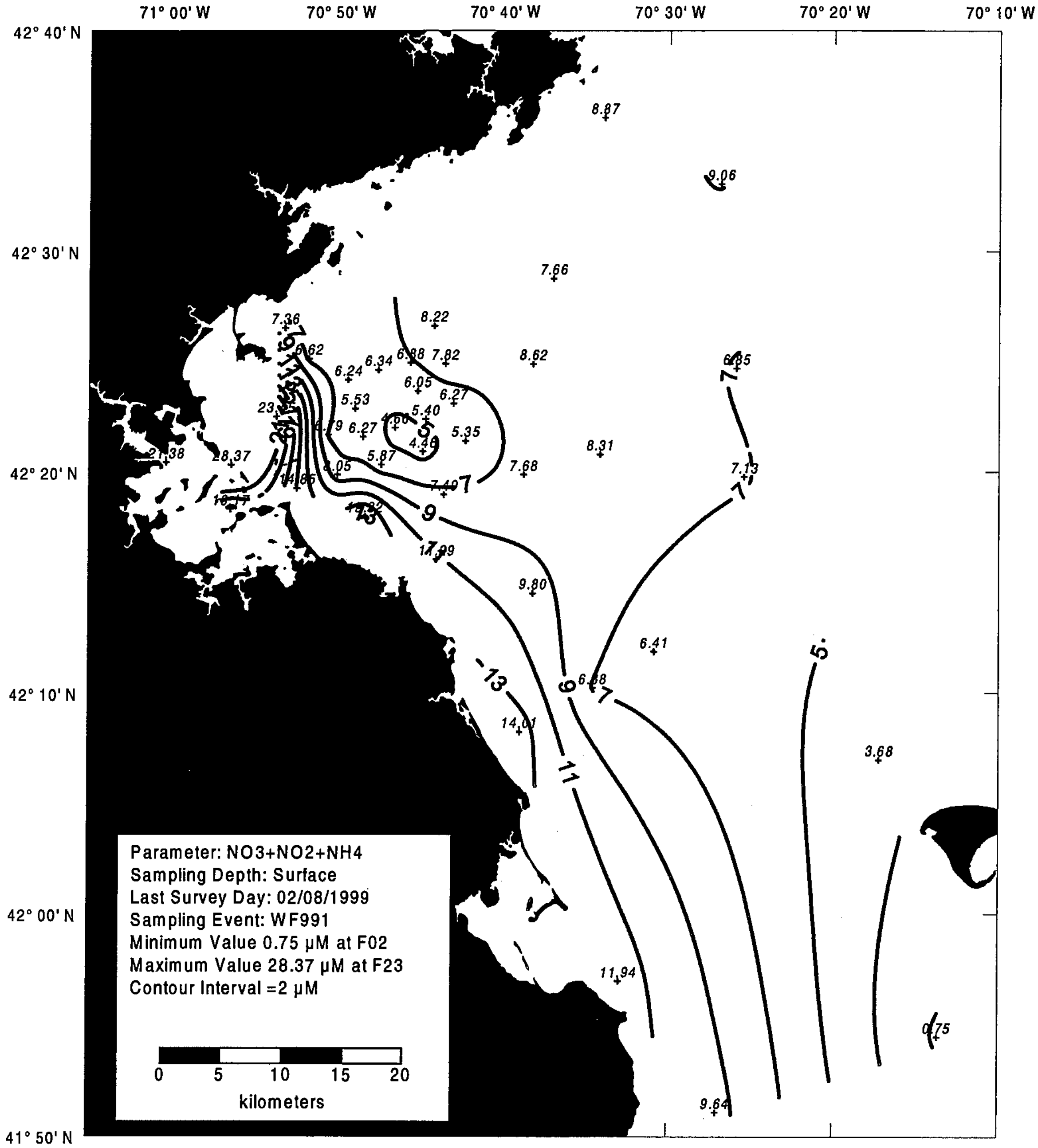


Figure B-13. DIN Surface Contour Plot for Farfield Survey WF991 (Feb 99)

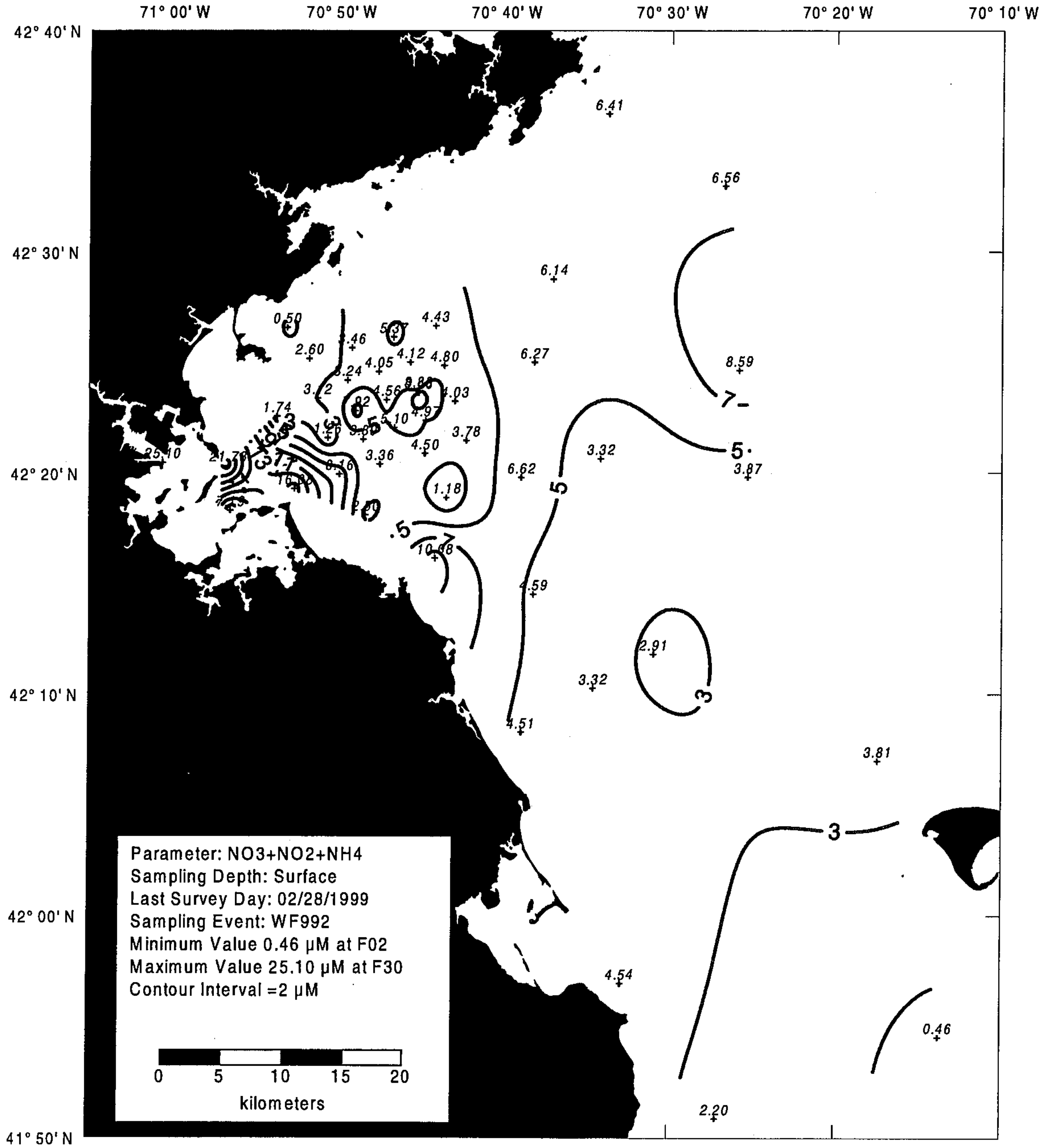


Figure B-14. DIN Surface Contour Plot for Farfield Survey WF992 (Feb 99)

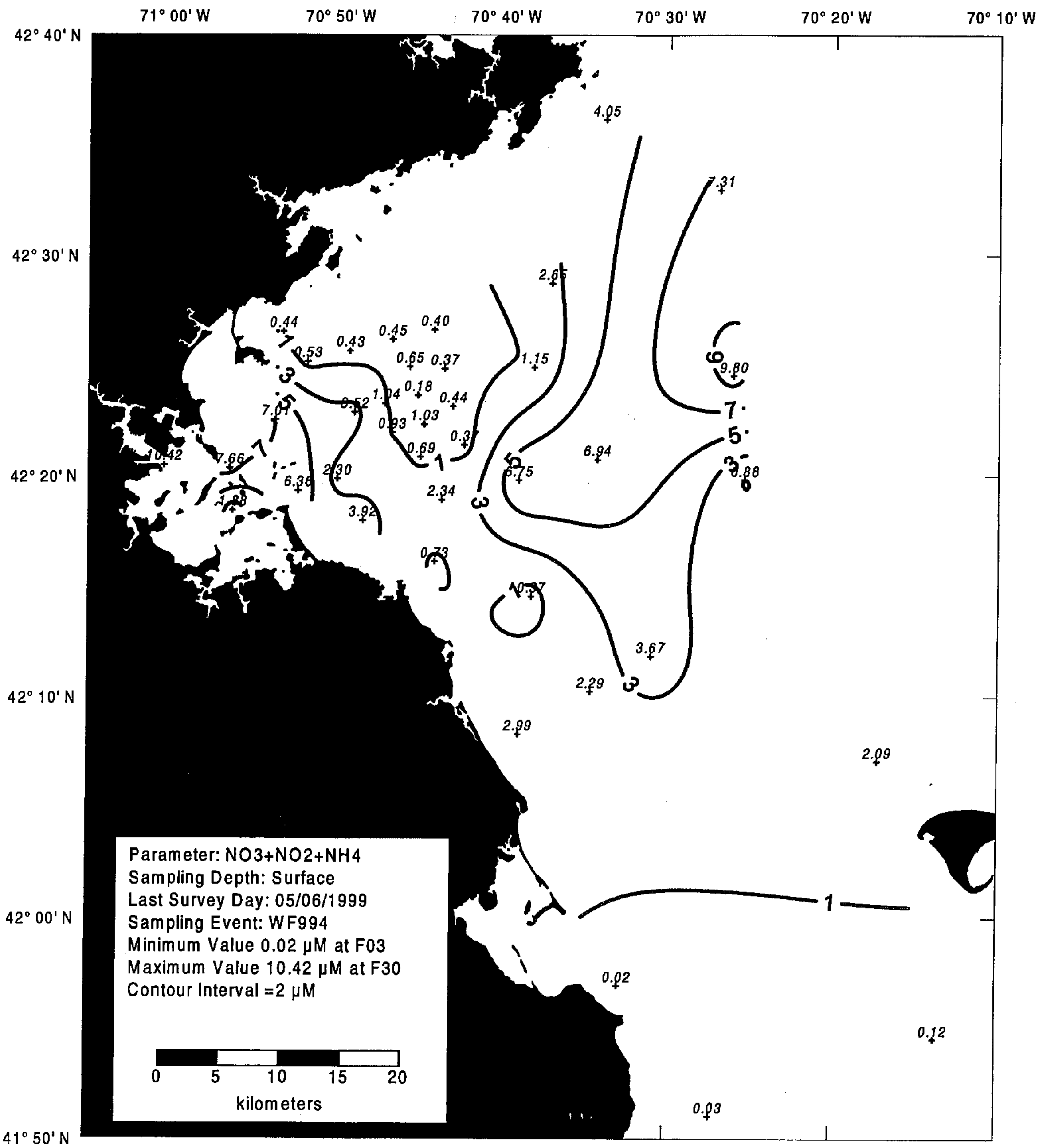


Figure B-15. DIN Surface Contour Plot for Farfield Survey WF994 (Apr 99)

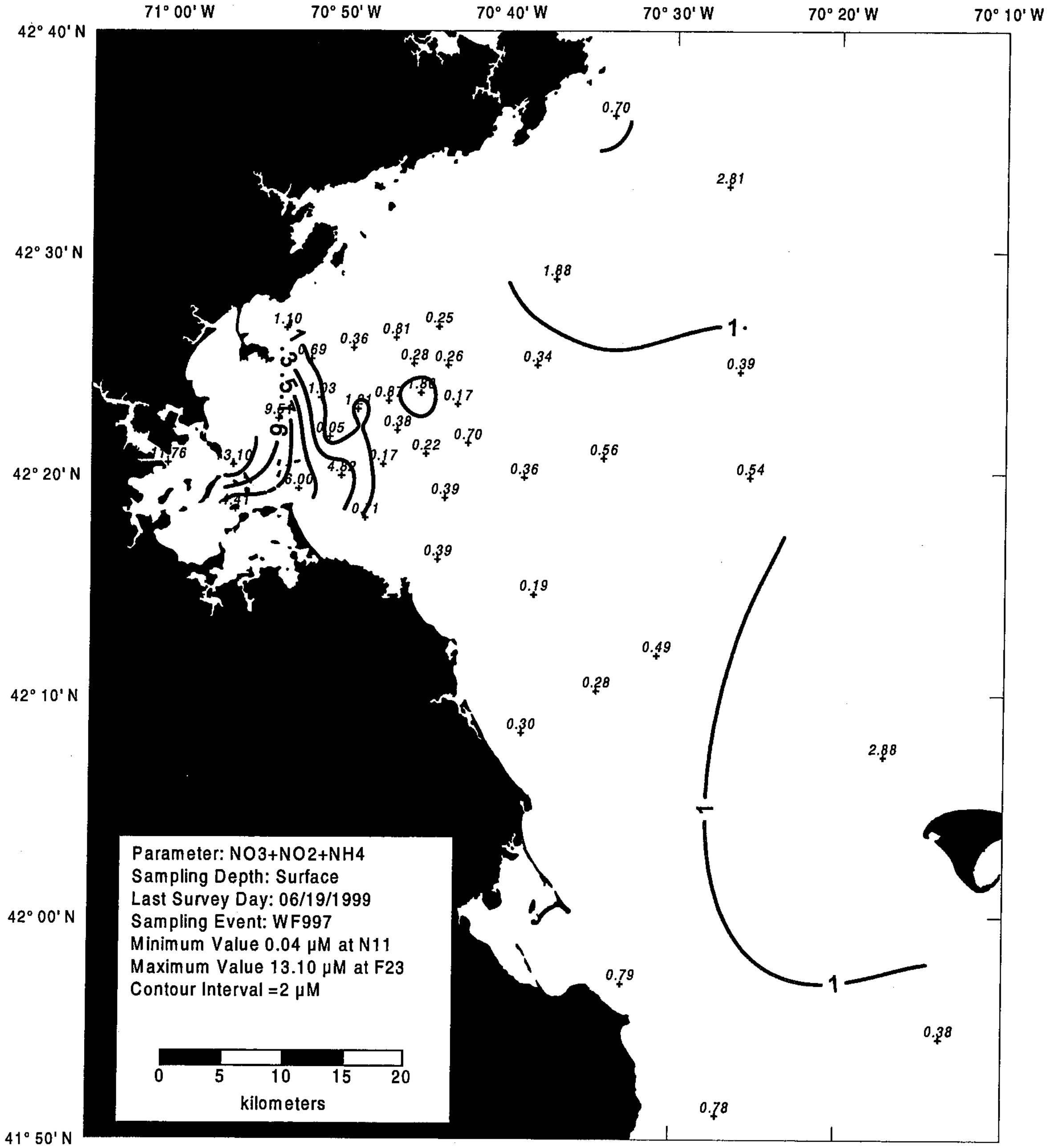


Figure B-16. DIN Surface Contour Plot for Farfield Survey WF997 (Jun 99)

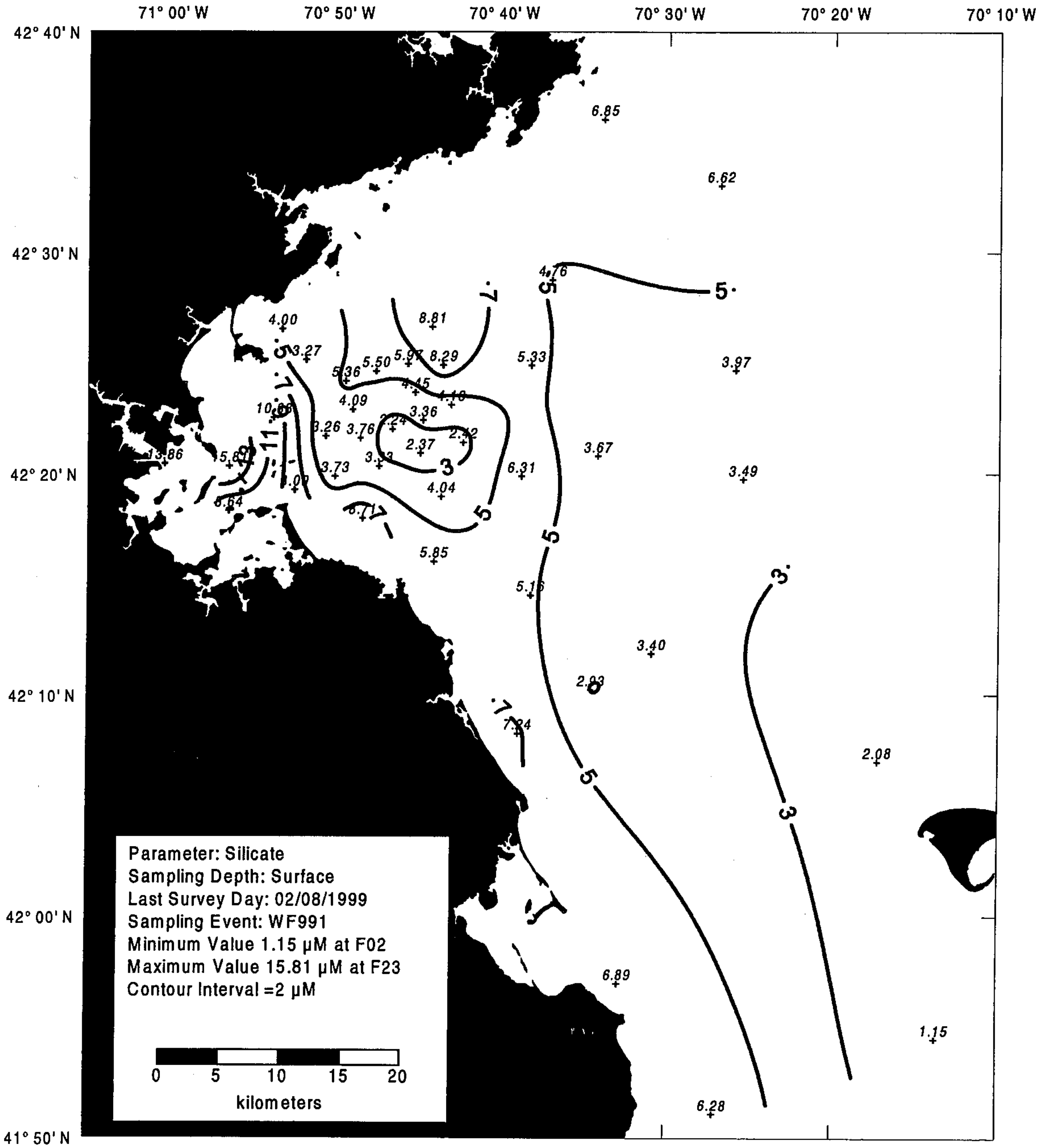


Figure B-17. Silicate Surface Contour Plot for Farfield Survey WF991 (Feb 99)

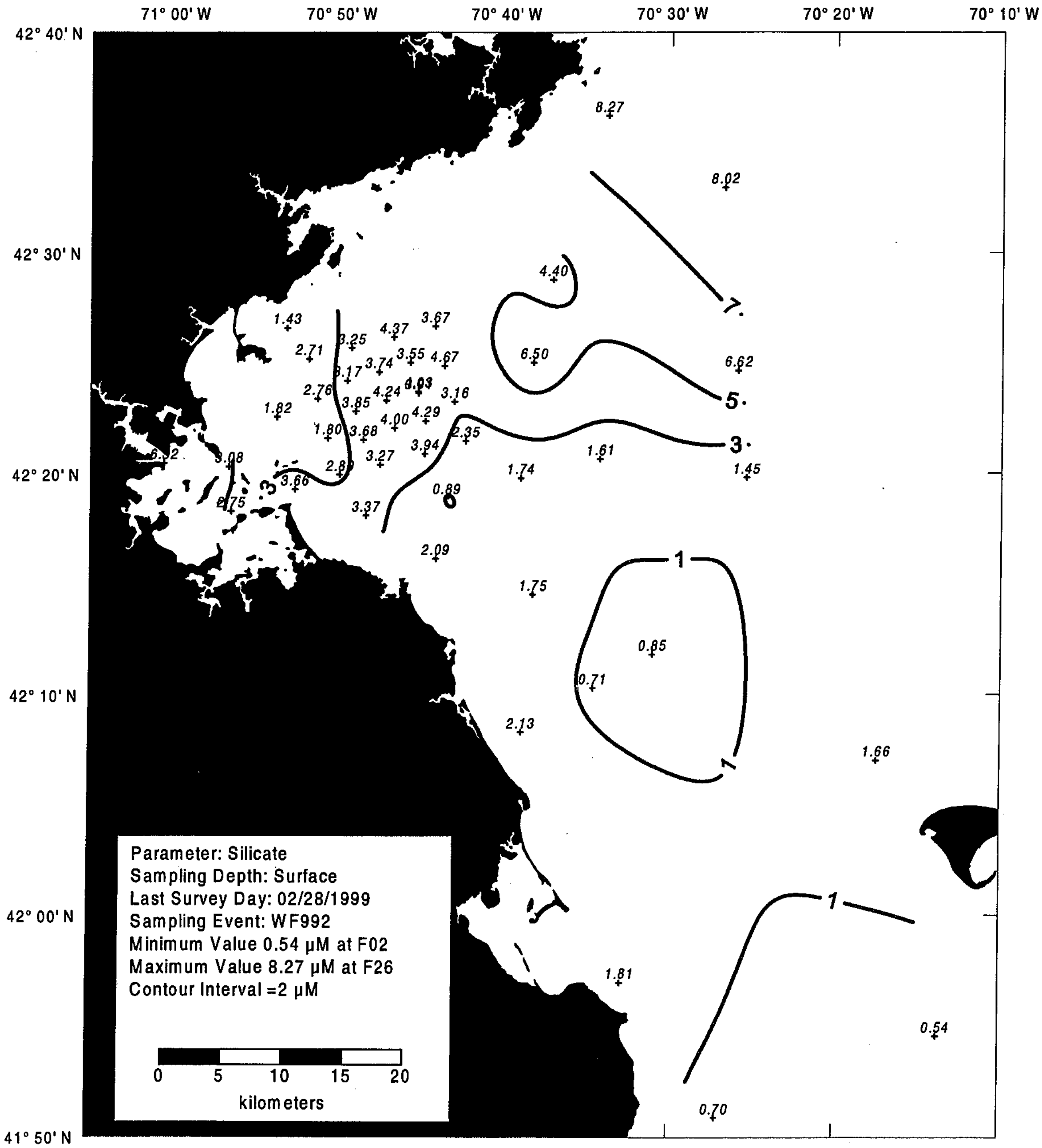


Figure B-18. Silicate Surface Contour Plot for Farfield Survey WF992 (Feb 99)

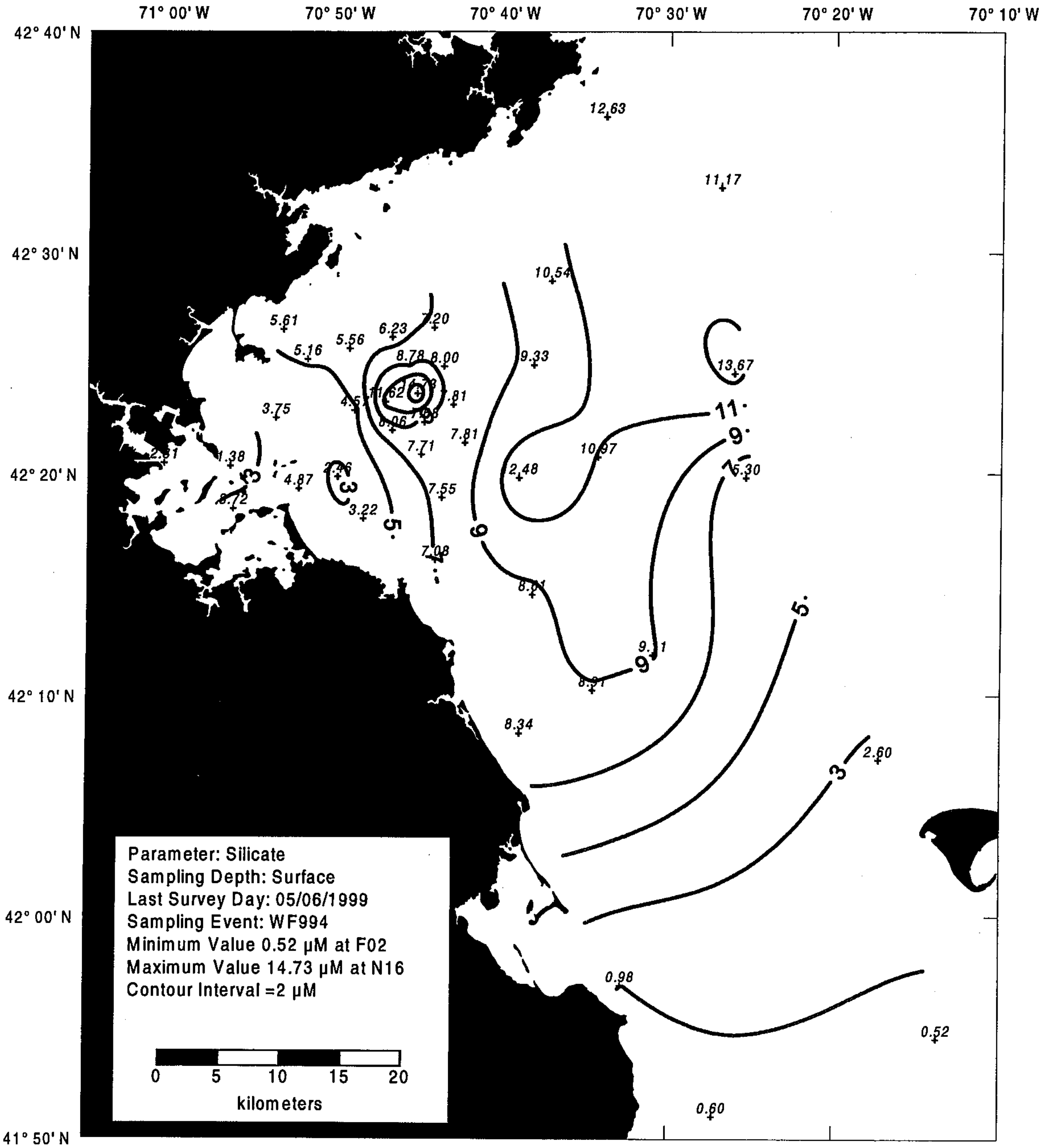


Figure B-19. Silicate Surface Contour Plot for Farfield Survey WF994 (Apr 99)

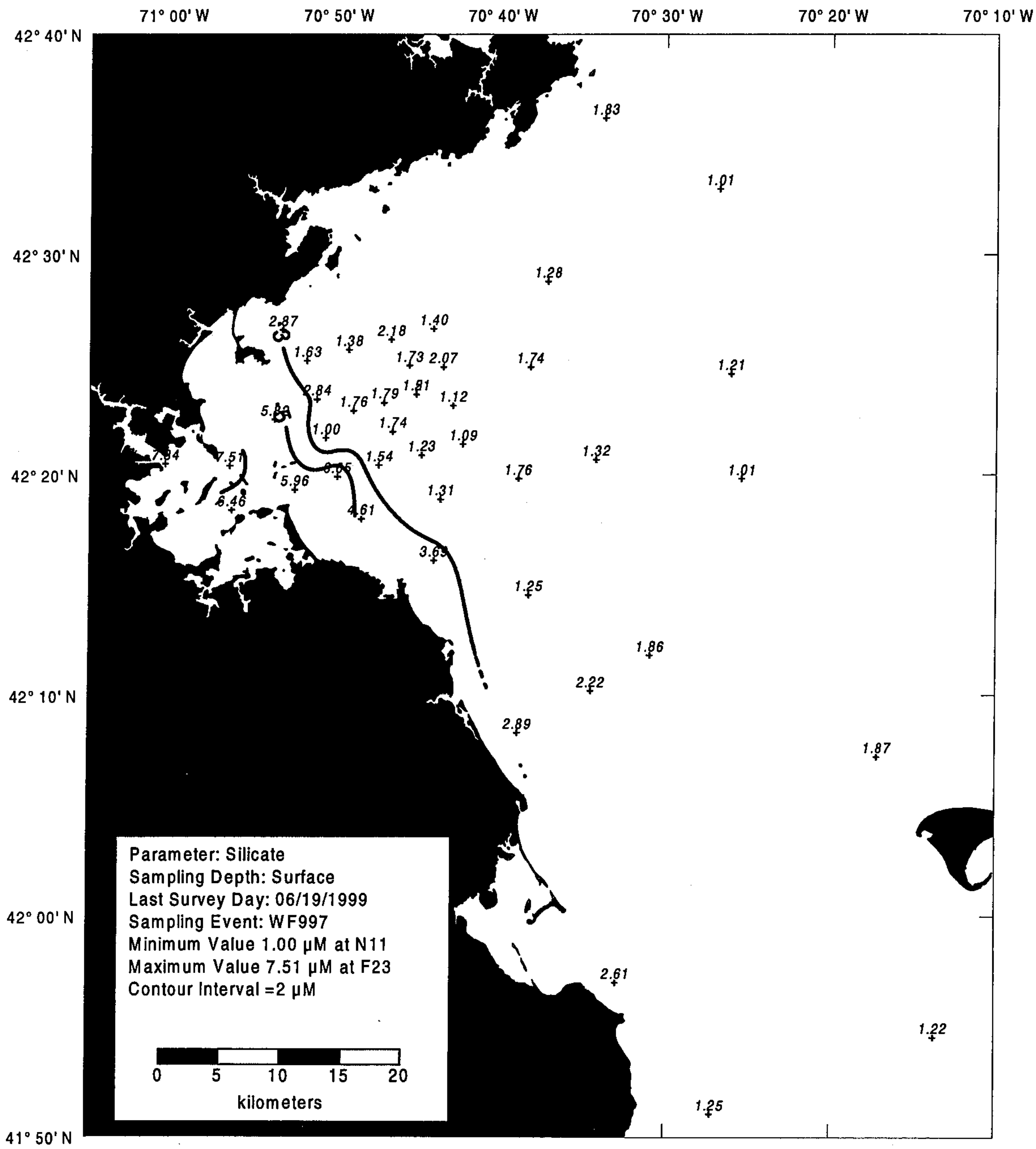


Figure B-20. Silicate Surface Contour Plot for Farfield Survey WF997 (Jun 99)

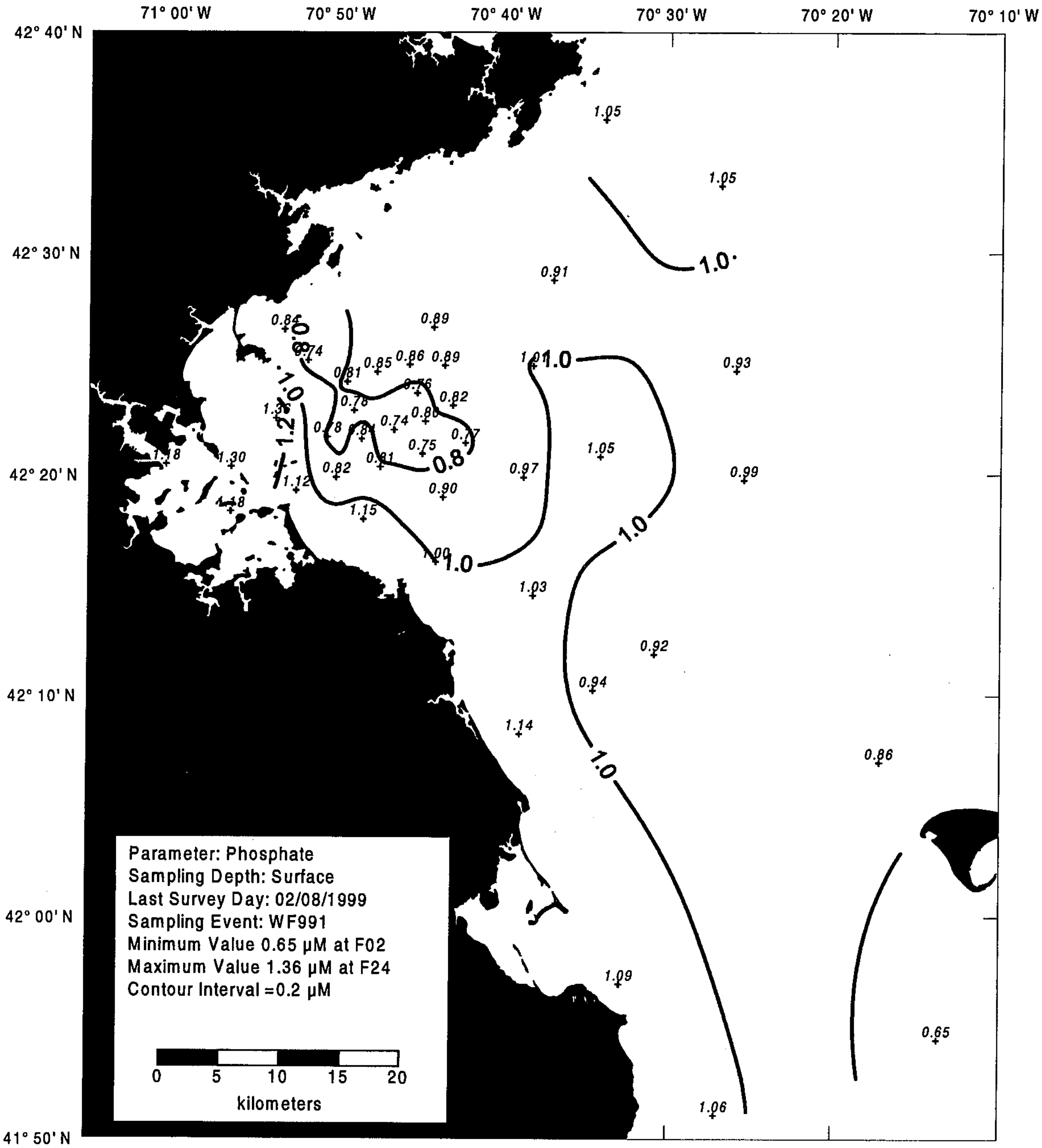


Figure B-21. Phosphate Surface Contour Plot for Farfield Survey WF991 (Feb 99)

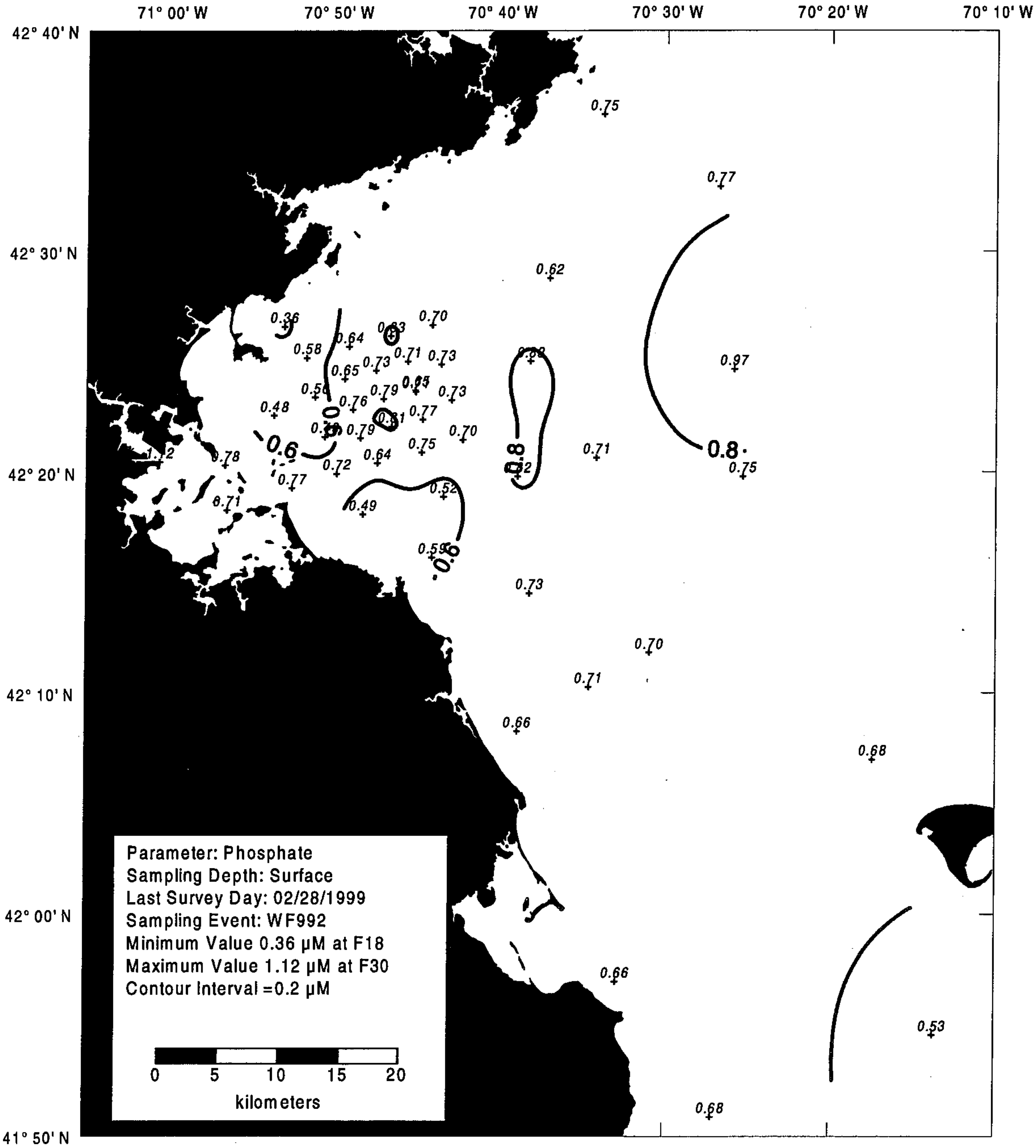


Figure B-22. Phosphate Surface Contour Plot for Farfield Survey WF992 (Feb 99)

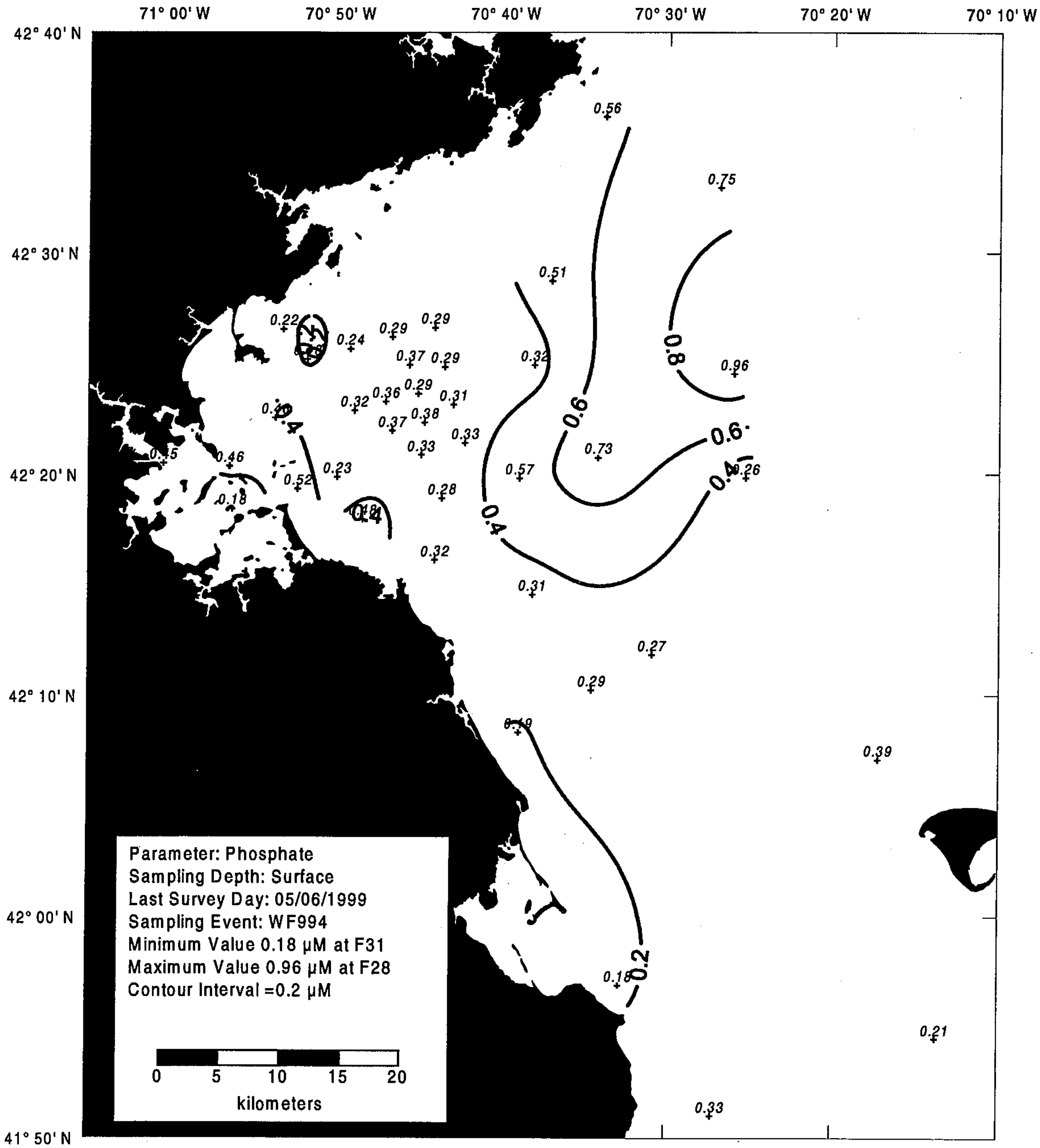


Figure B-23. Phosphate Surface Contour Plot for Farfield Survey WF994 (Apr 99)

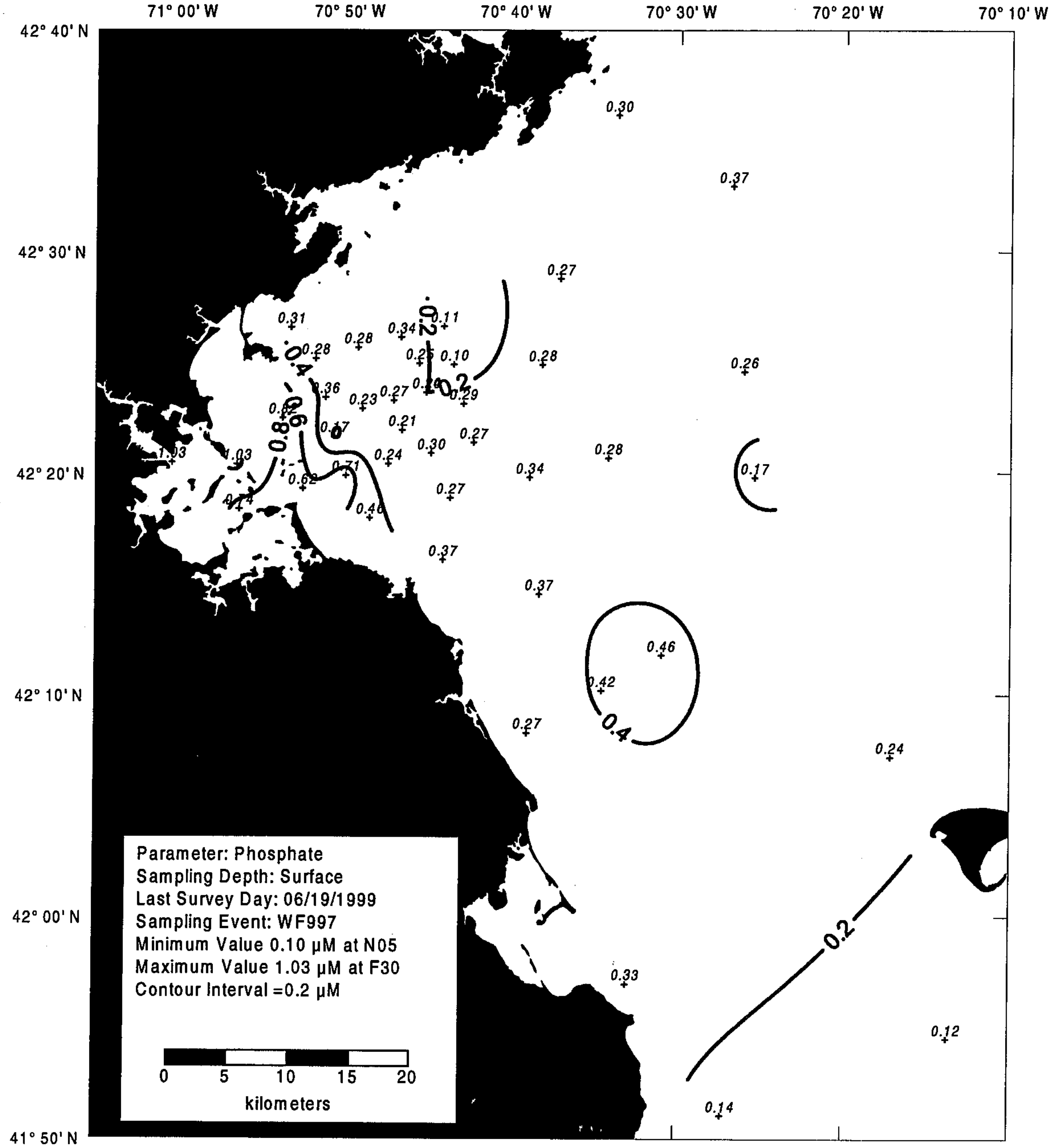


Figure B-24. Phosphate Surface Contour Plot for Farfield Survey WF997 (Jun 99)

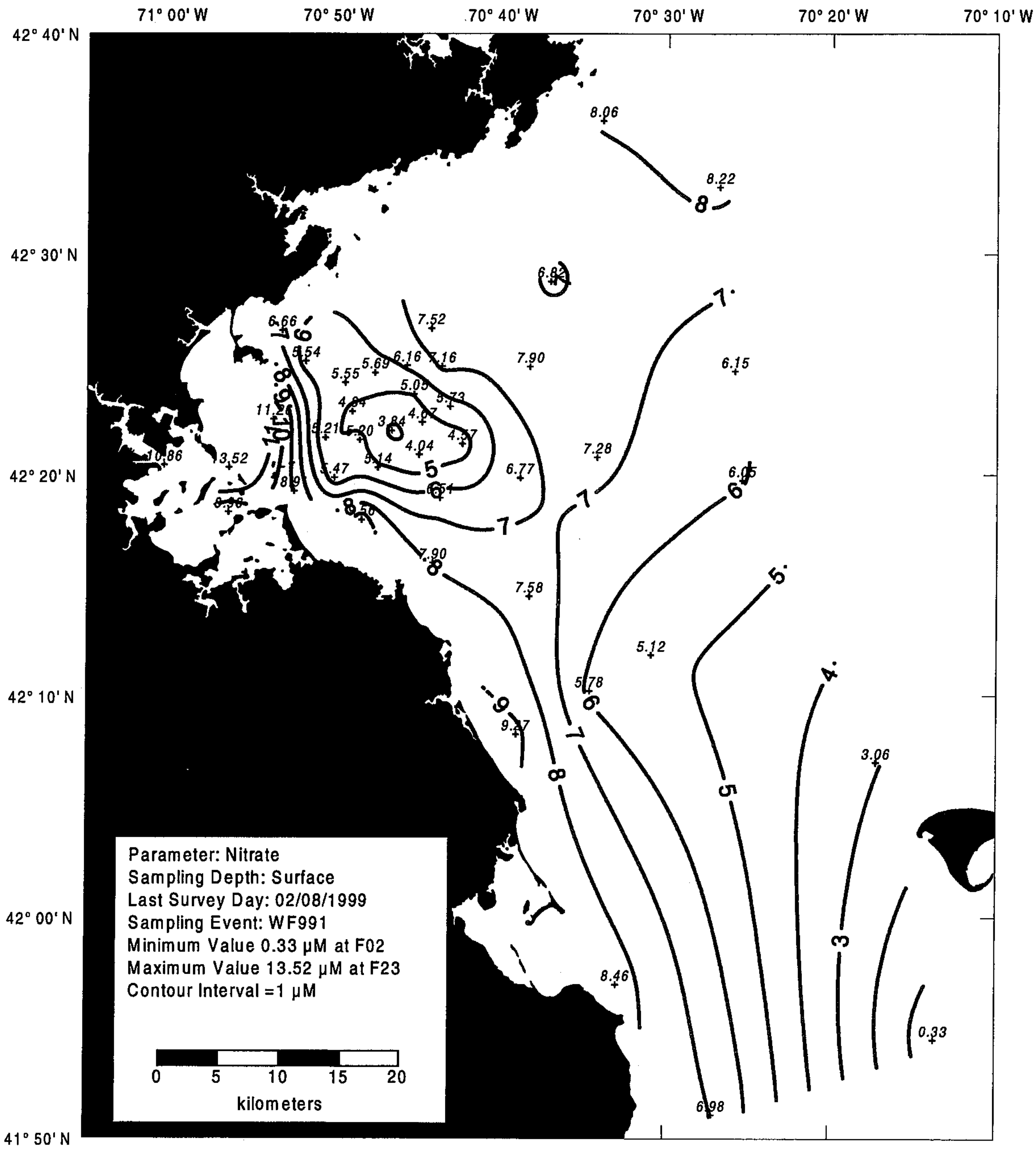


Figure B-25. Nitrate Surface Contour Plot for Farfield Survey WF991 (Feb 99)

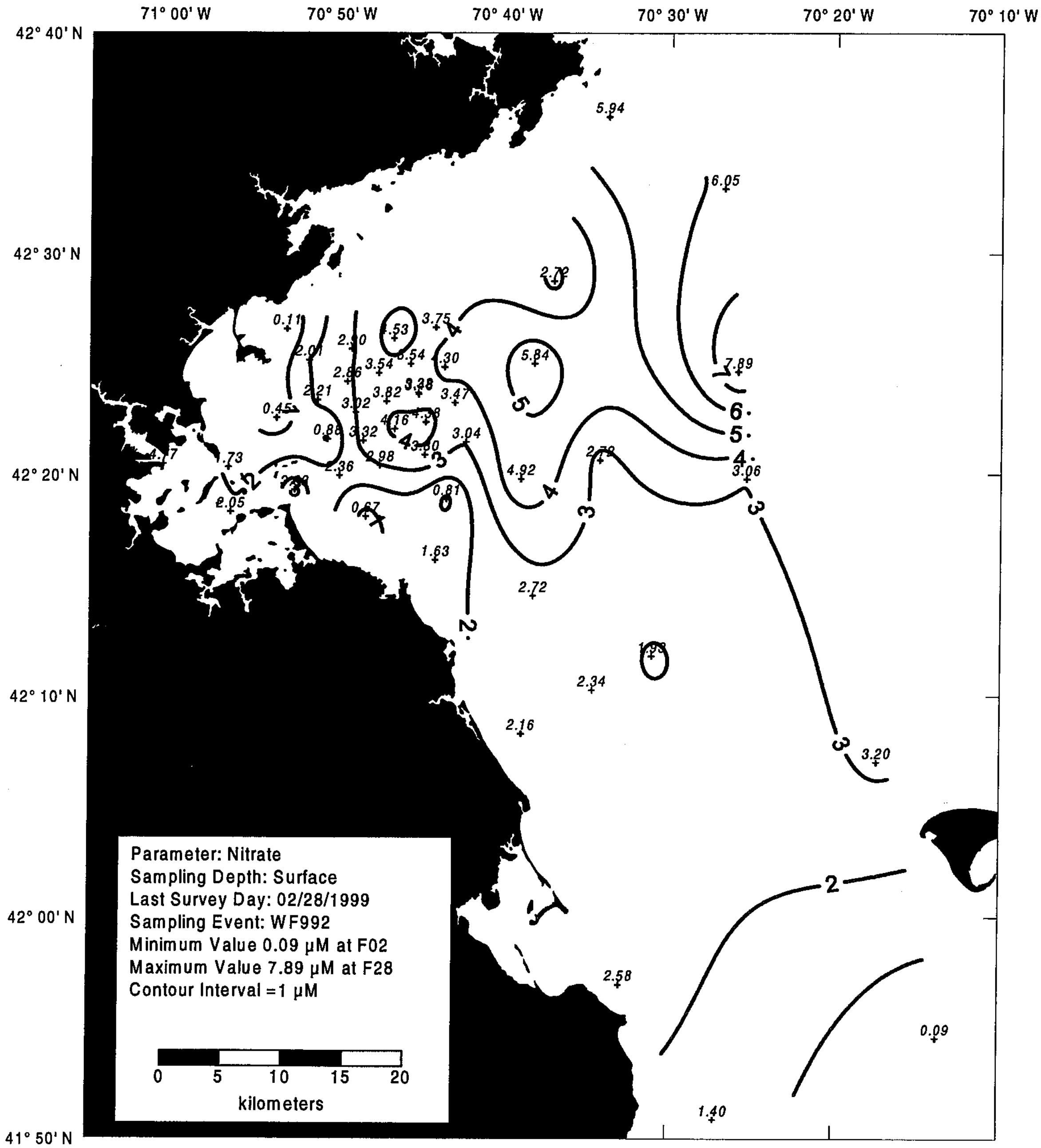


Figure B-26. Nitrate Surface Contour Plot for Farfield Survey WF992 (Feb 99)

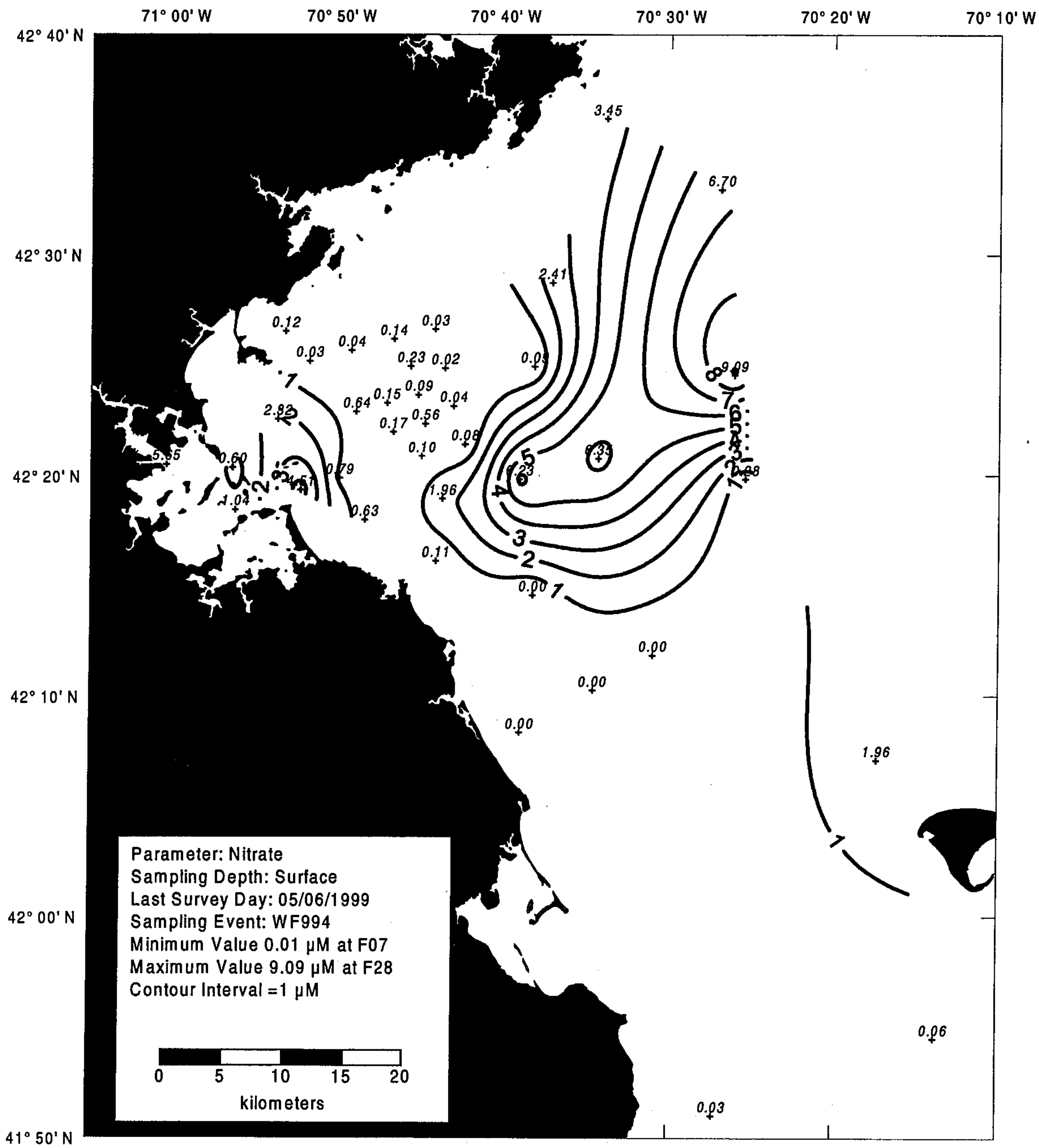


Figure B-27. Nitrate Surface Contour Plot for Farfield Survey WF994 (Apr 99)

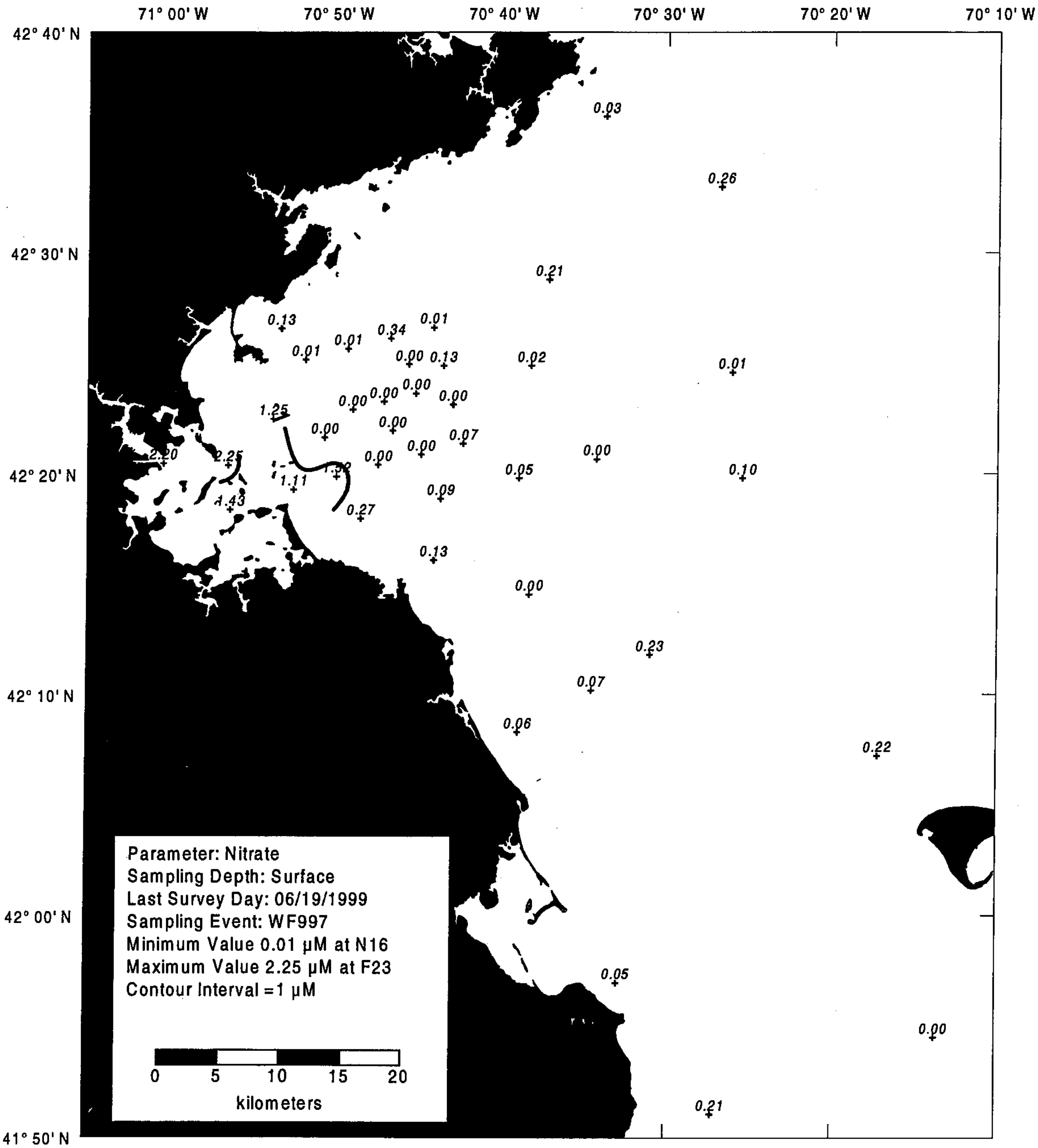


Figure B-28. Nitrate Surface Contour Plot for Farfield Survey WF997 (Jun 99)

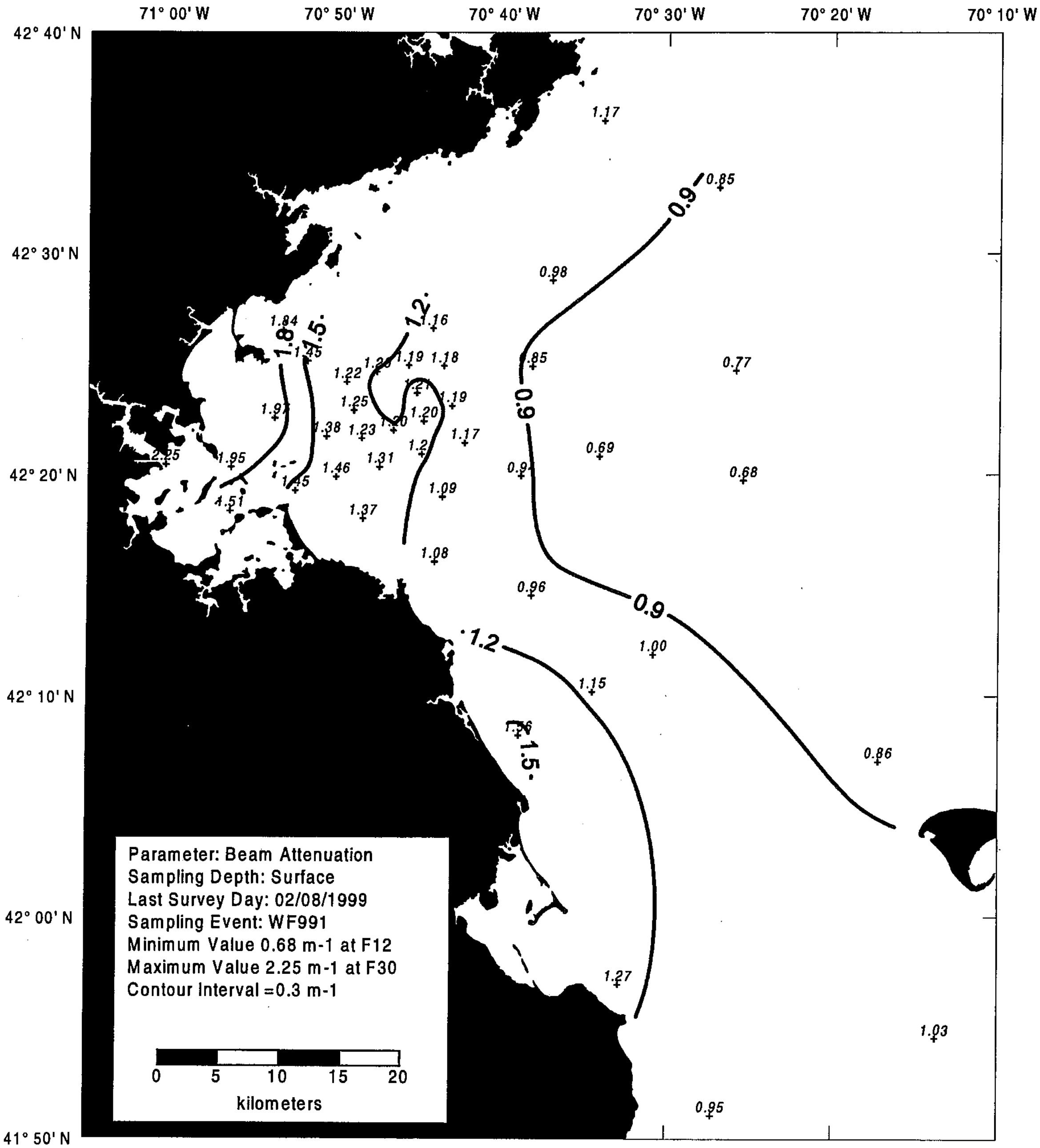


Figure B-29. Beam Attenuation Surface Contour Plot for Farfield Survey WF991 (Feb 99)

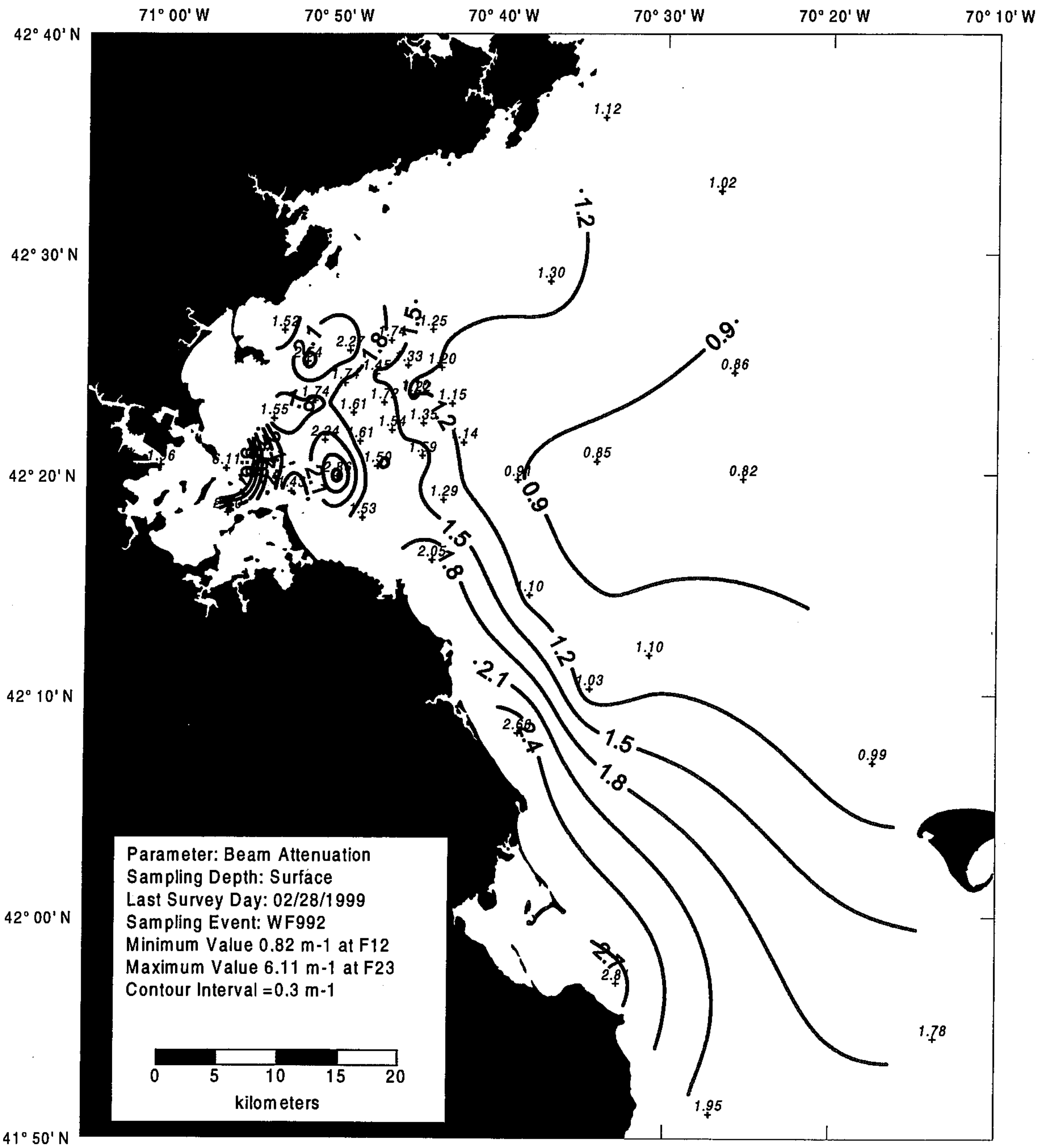


Figure B-30. Beam Attenuation Surface Contour Plot for Farfield Survey WF992 (Feb 99)

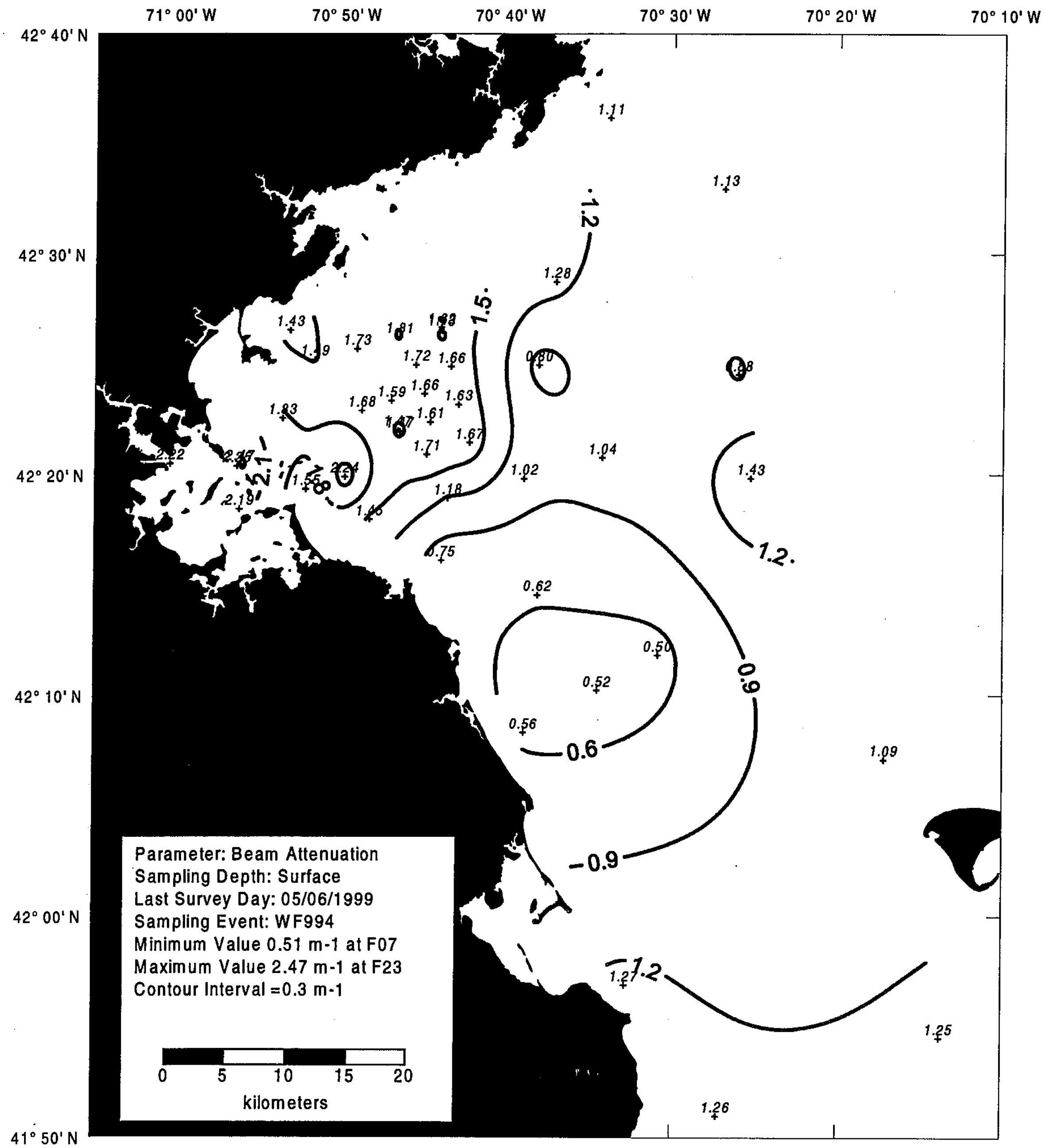


Figure B-31. Beam Attenuation Surface Contour Plot for Farfield Survey WF994 (Apr 99)

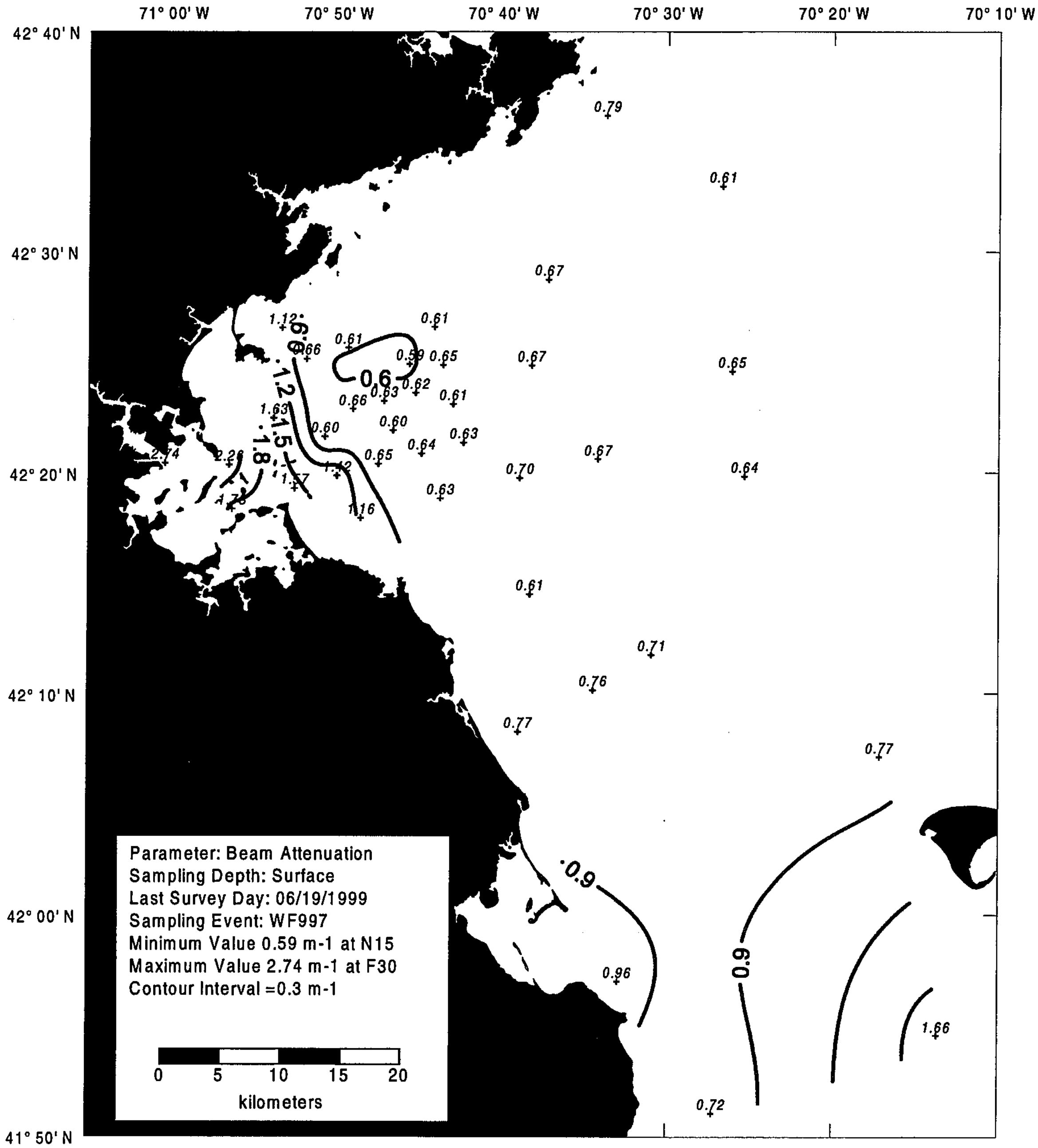


Figure B-32. Beam Attenuation Surface Contour Plot for Farfield Survey WF997 (Jun 99)

APPENDIX C

Transect Plots

Transect Plots – Farfield Surveys

Data were contoured relative to water depth and distance between stations as shown on the transects (Figure 1-3) Distances between stations and water depth at each station is shown on the transect. Water depth is labeled with negative values in meters, with zero depth at the sea surface. The depth to the seabed is shown by the solid shading at the bottom of each plot. Three transects (Boston-Nearfield, Cohasset, and Marshfield) are provided on each plot, as well as shaded contour levels on the scale bar at the bottom of the plot. Contour units are as noted on the plot. Each plot is labeled on the bottom left with the parameter, survey number, and last day of the survey date. The data used for the contours were based on high-resolution *in situ* hydrographic casts and individual data points as noted below.

Parameter	Data Used
Density (Sigma-T)	High-resolution *in situ* data
Temperature	High-resolution *in situ* data
Salinity	High-resolution *in situ* data
Transmissivity	High-resolution *in situ* data
Nitrate plus Nitrite	Individual data points based on discrete water column
Phosphate	Individual data points based on discrete water column
Silicate	Individual data points based on discrete water column
Ammonium	Individual data points based on discrete water column
Fluorescence	High-resolution *in situ* data
Dissolved Oxygen	High-resolution *in situ* data

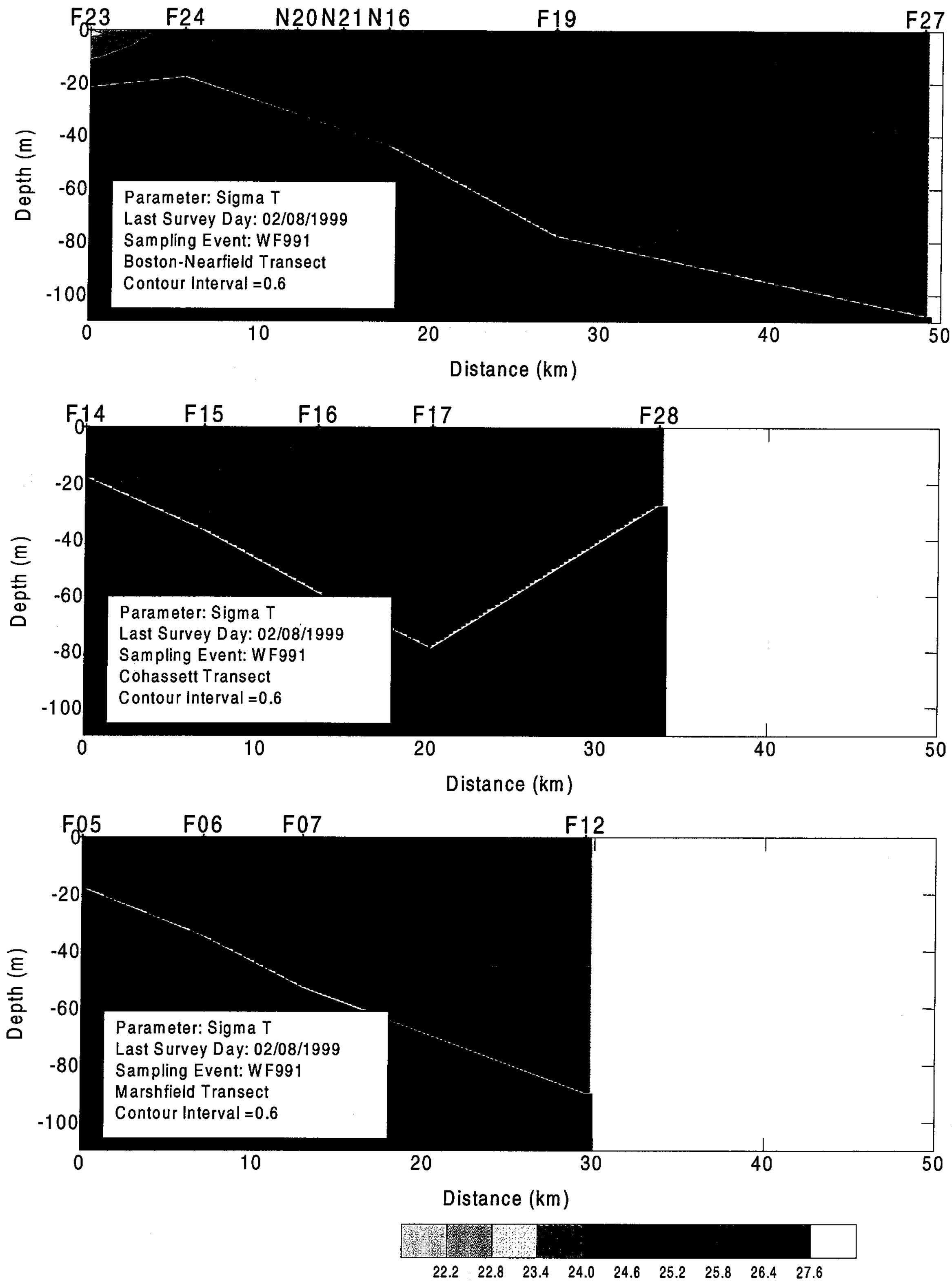


Figure C-1. Density Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)

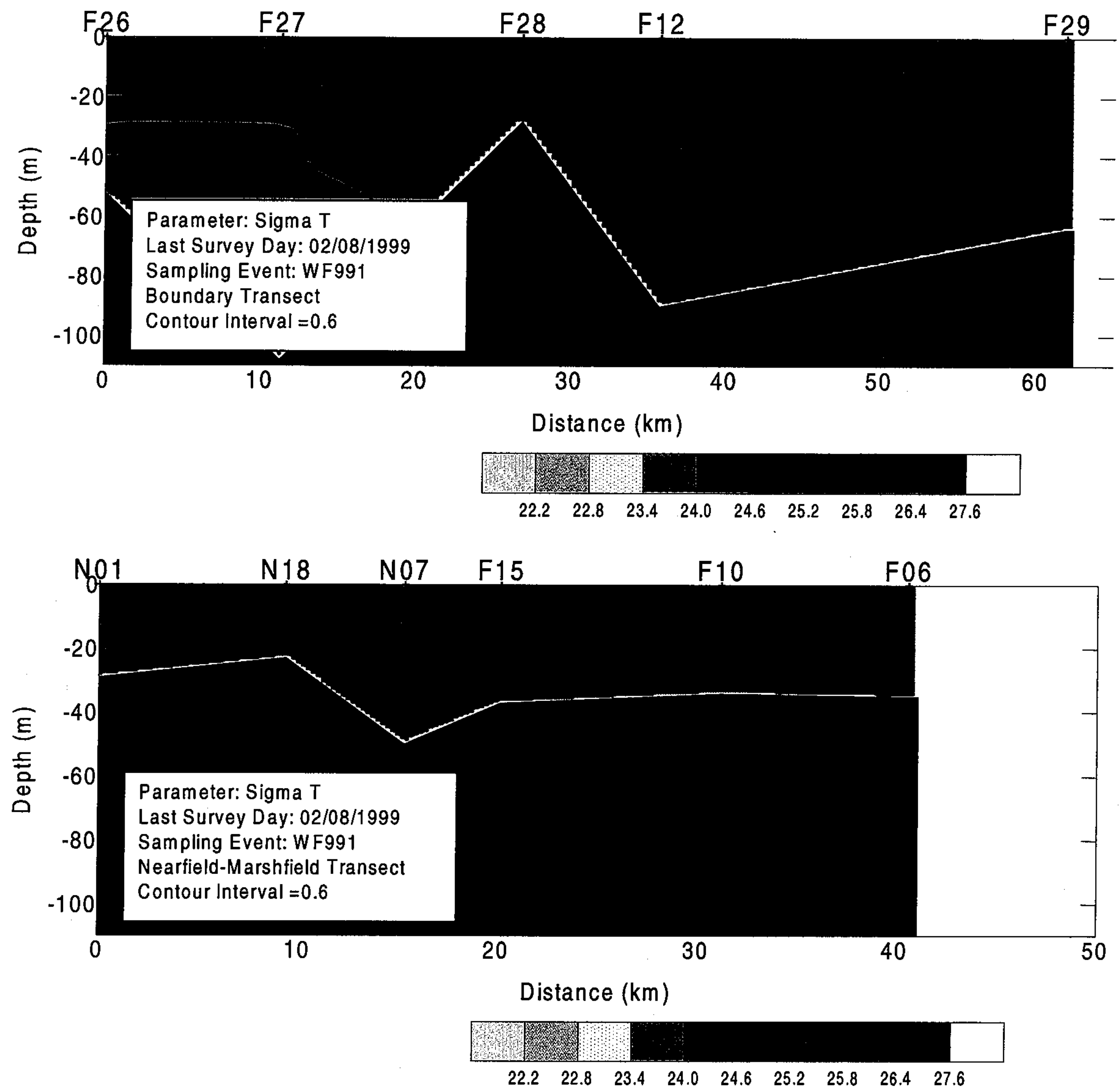


Figure C-2. Density Transect Plots (North - South) for Farfield Survey WF991 (Feb 99)

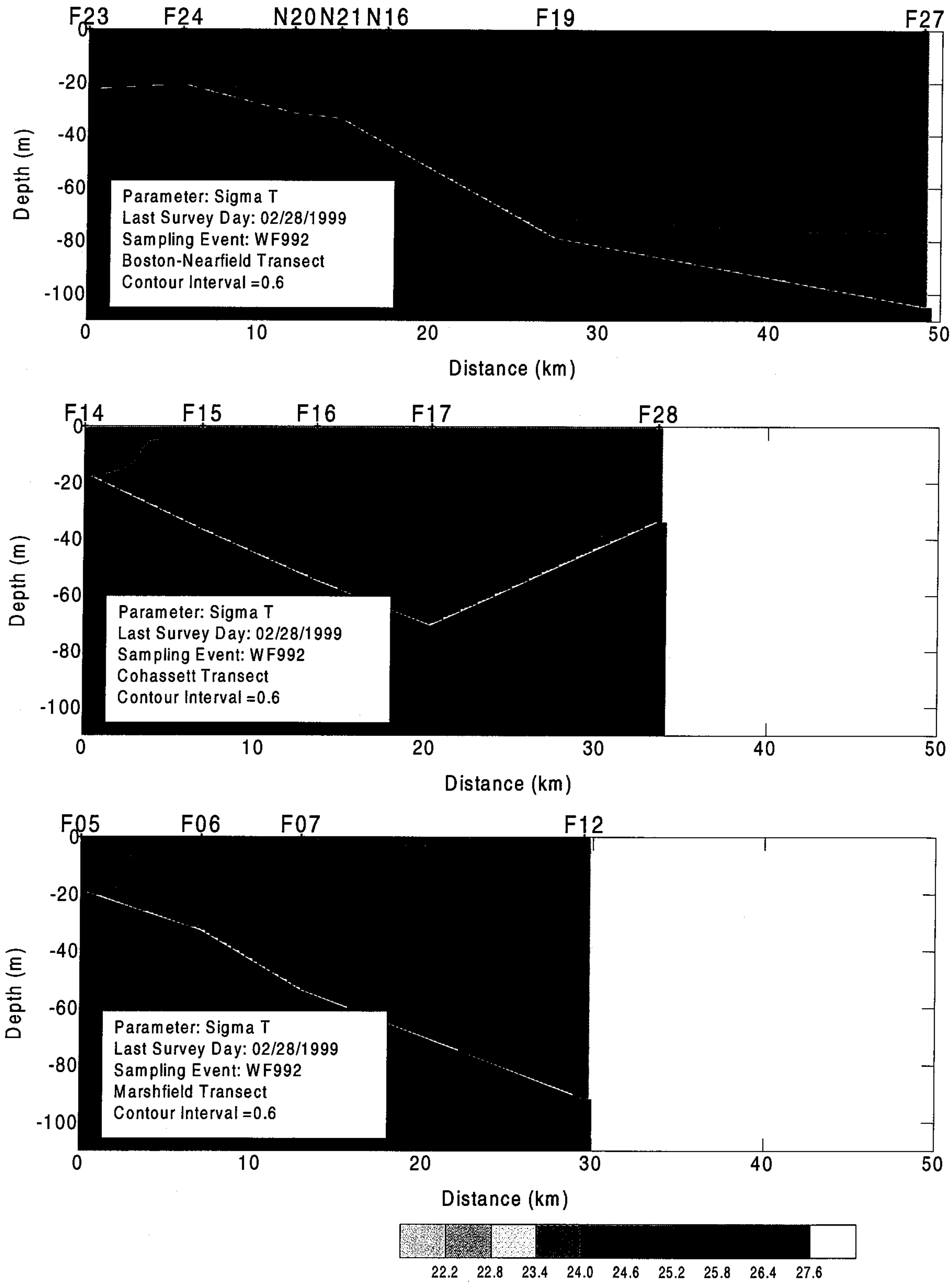


Figure C-3. Density Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

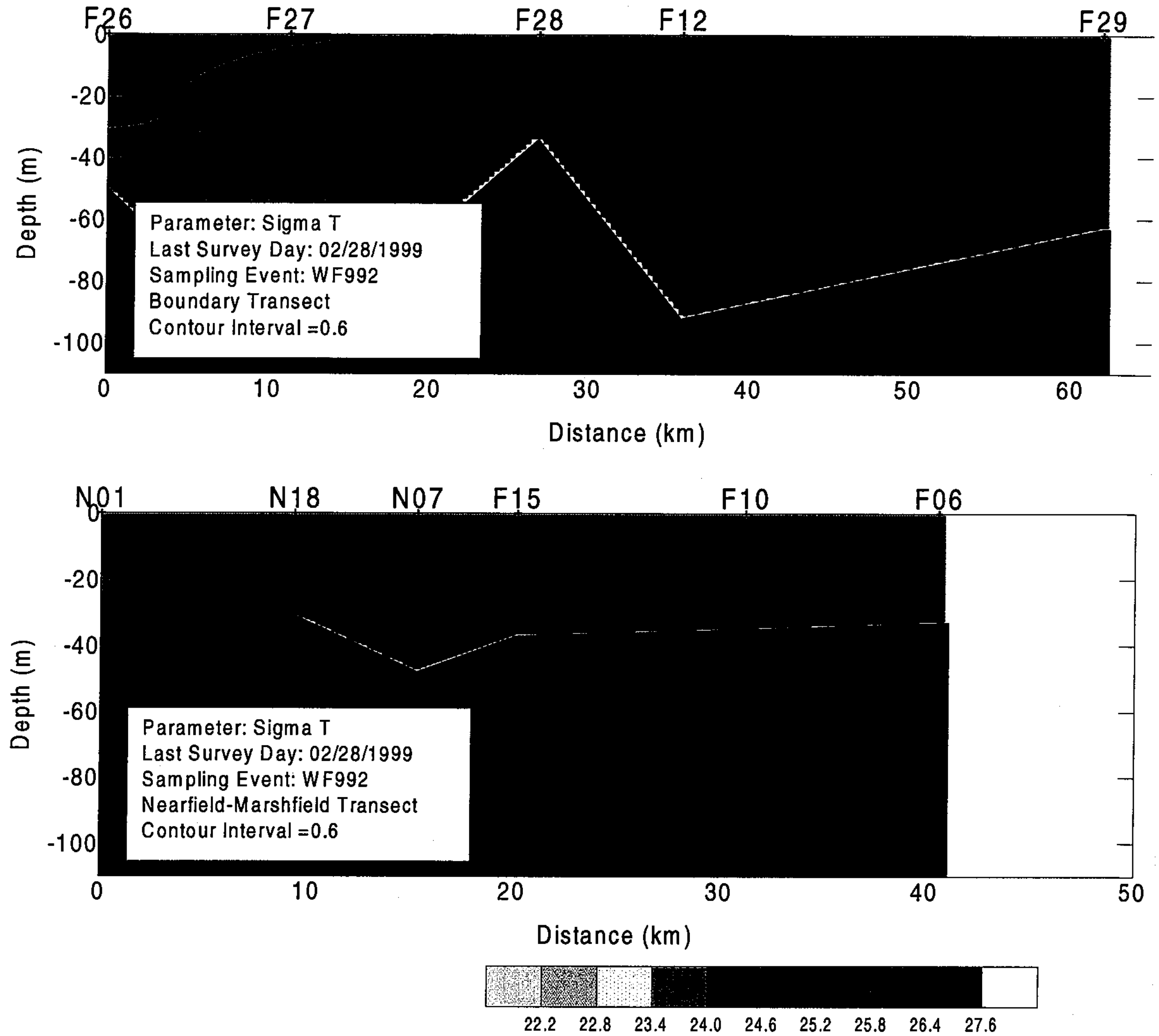


Figure C-4. Density Transect Plots (North - South) for Farfield Survey WF992 (Feb 99)

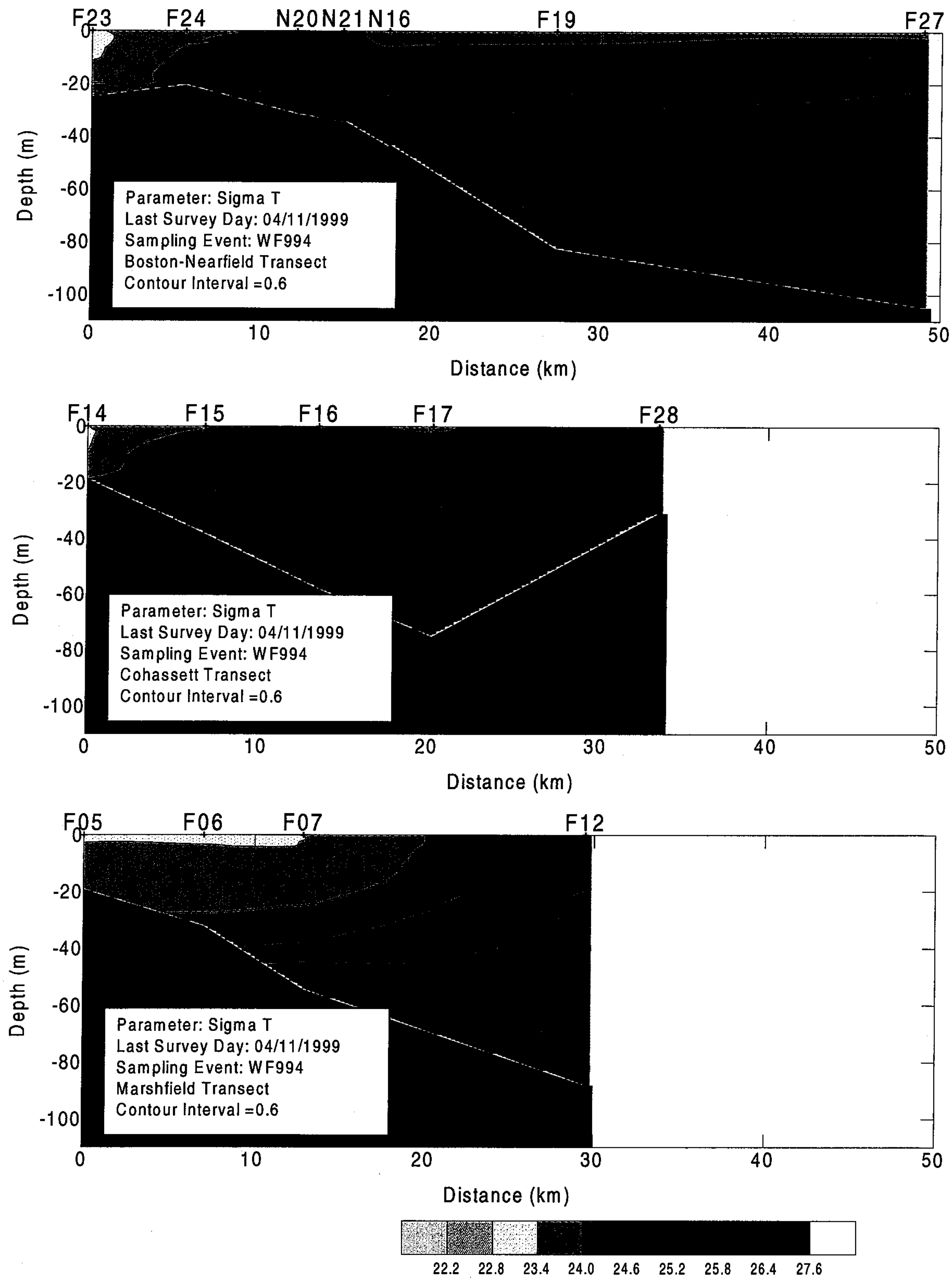
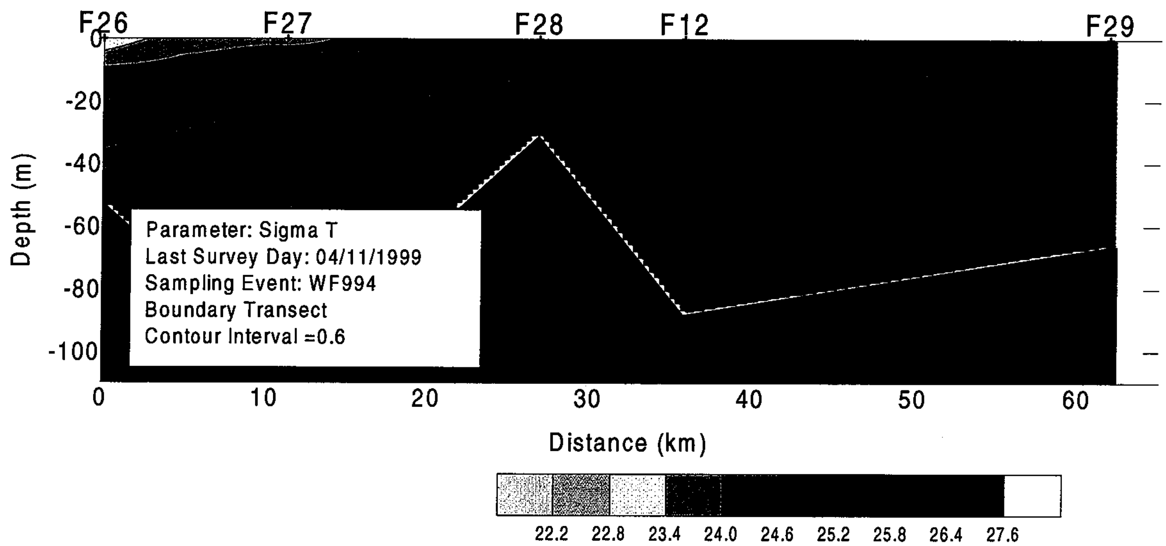


Figure C-5. Density Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)



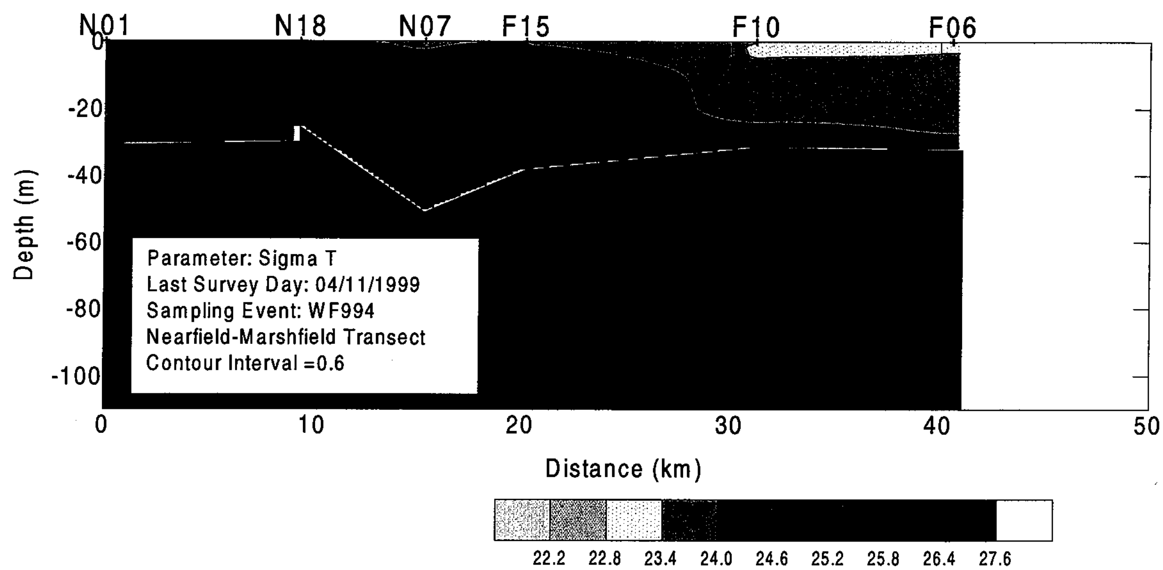


Figure C-6. Density Transect Plots (North - South) for Farfield Survey WF994 (Apr 99)

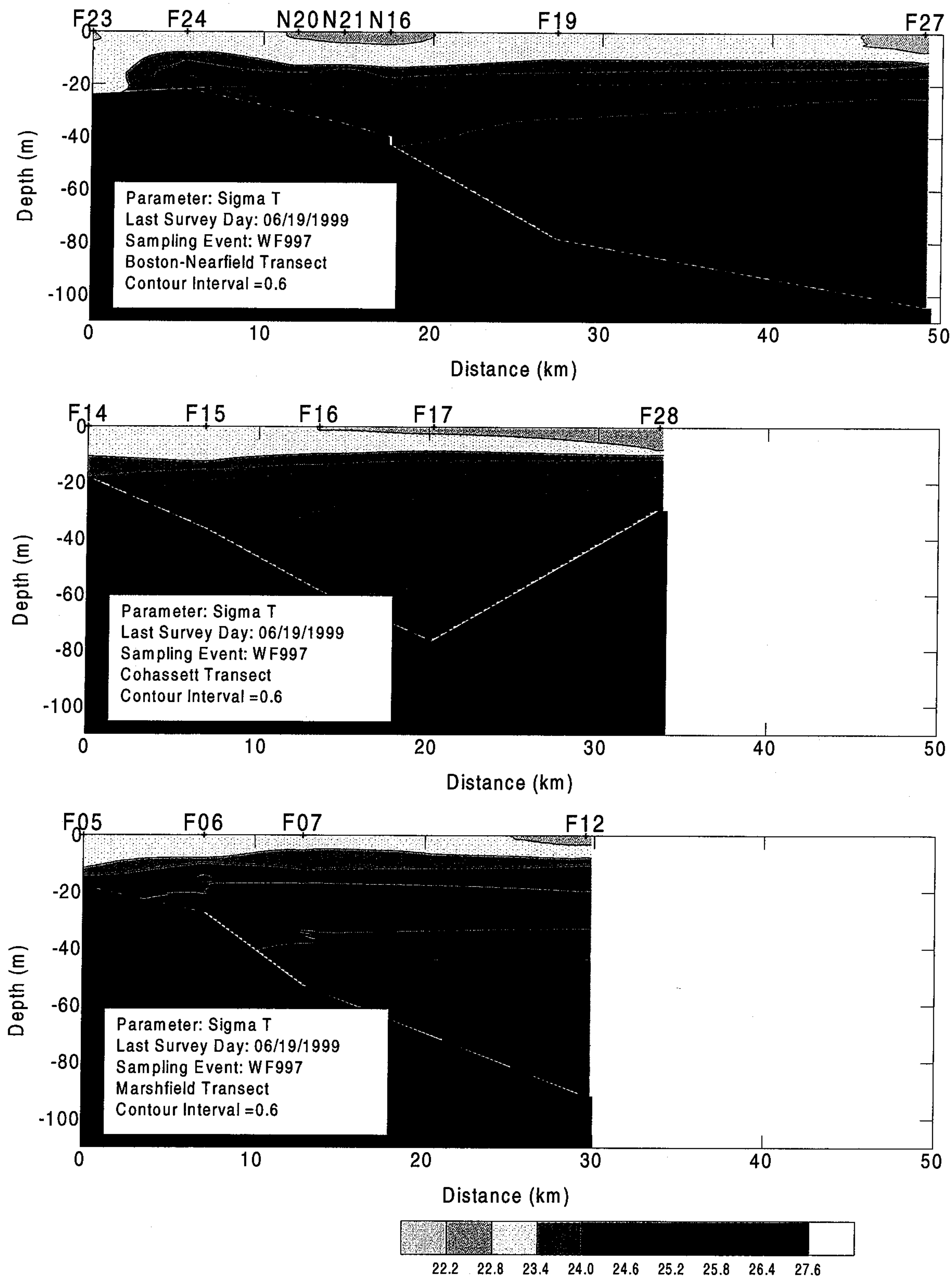
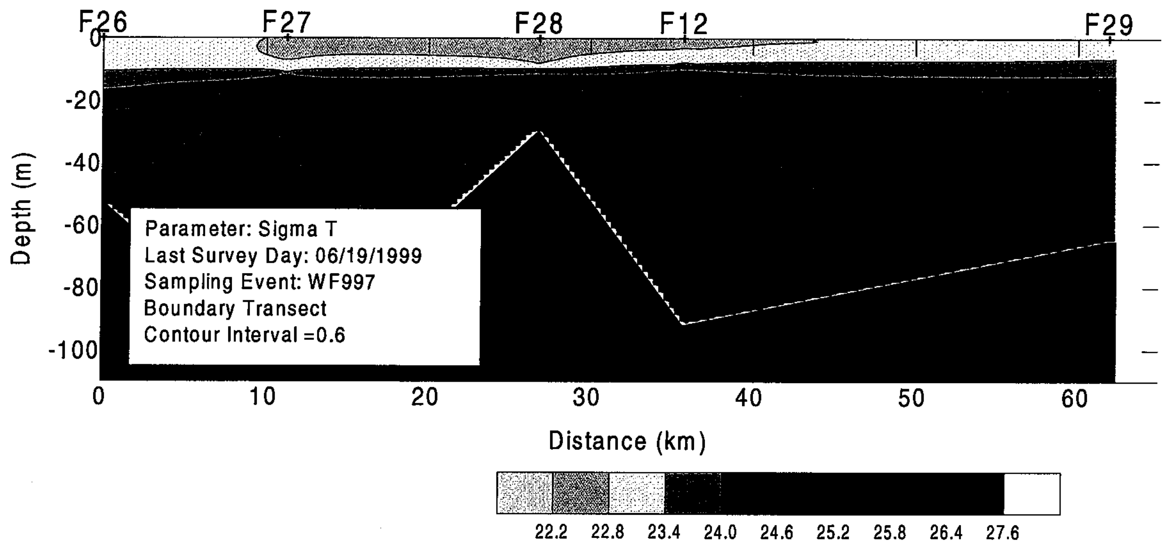


Figure C-7. Density Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)



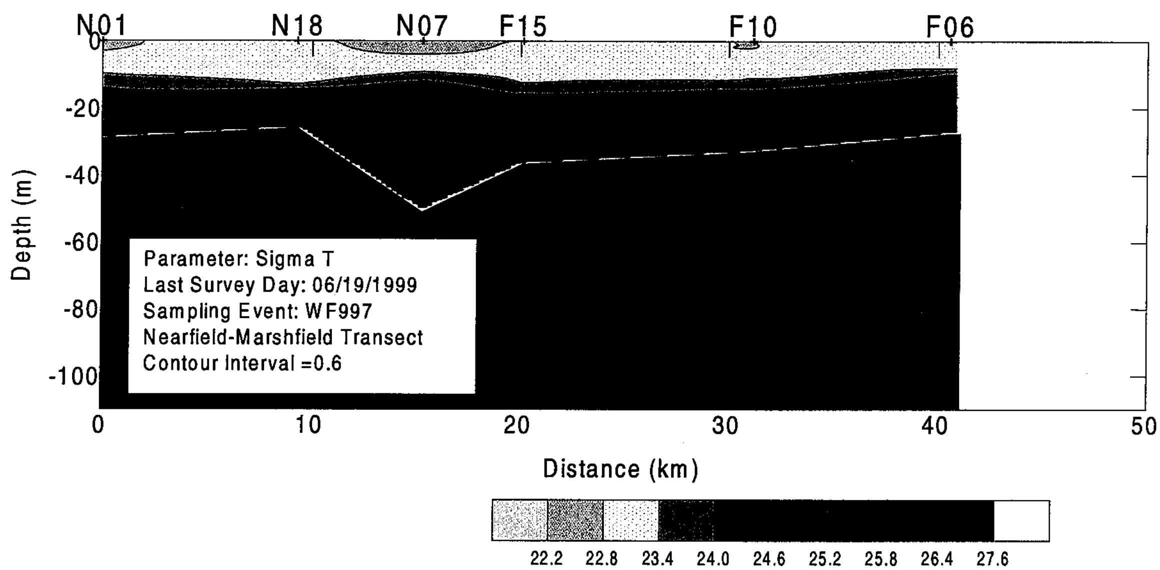


Figure C-8. Density Transect Plots (North - South) for Farfield Survey WF997 (Jun 99)

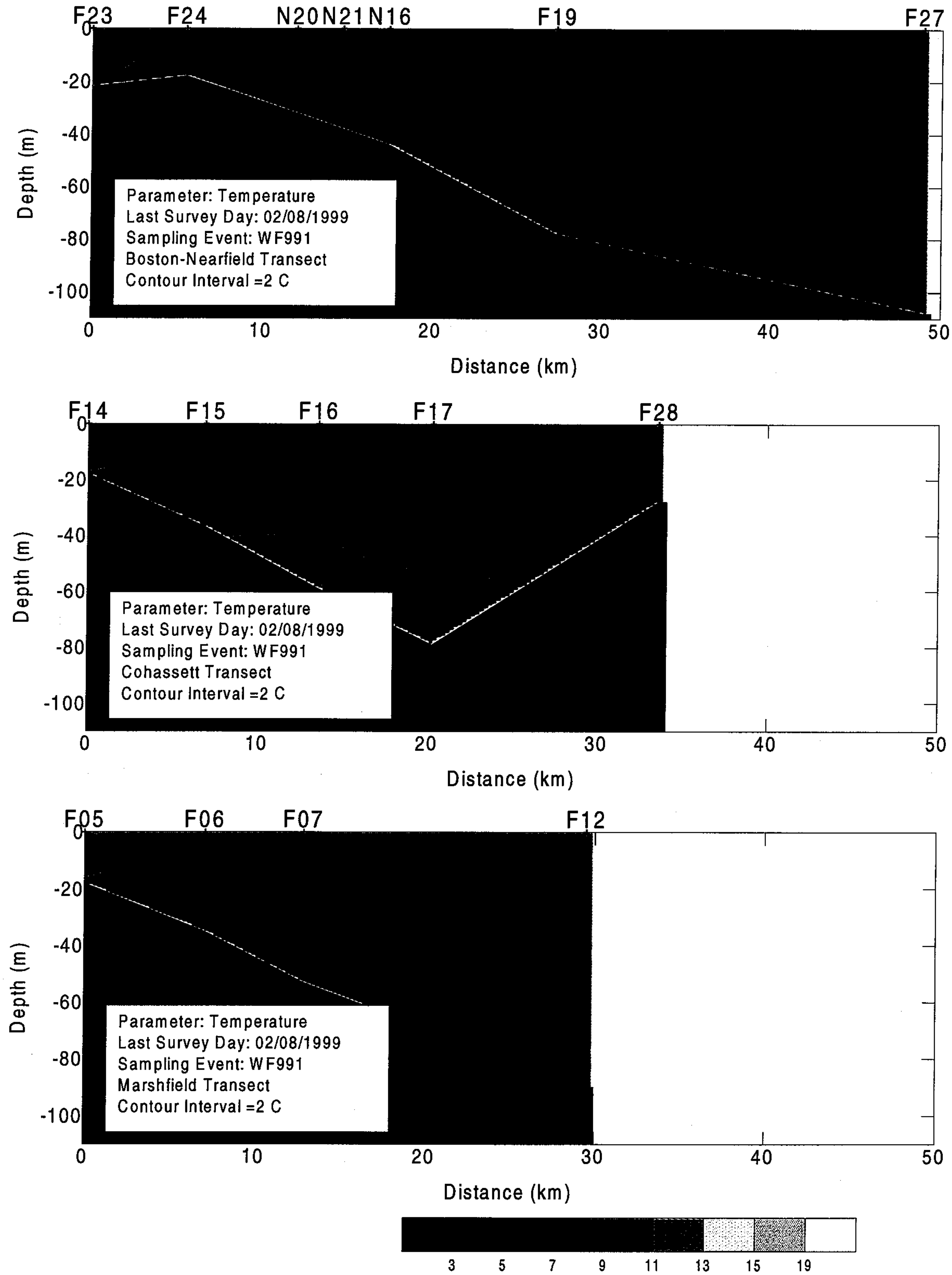
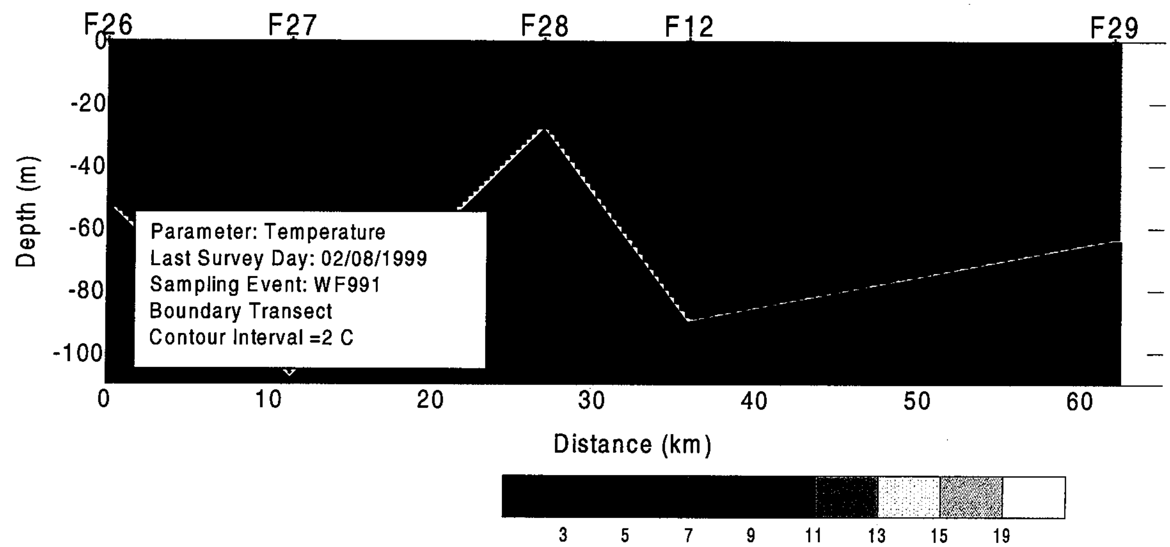


Figure C-9. Temperature Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)



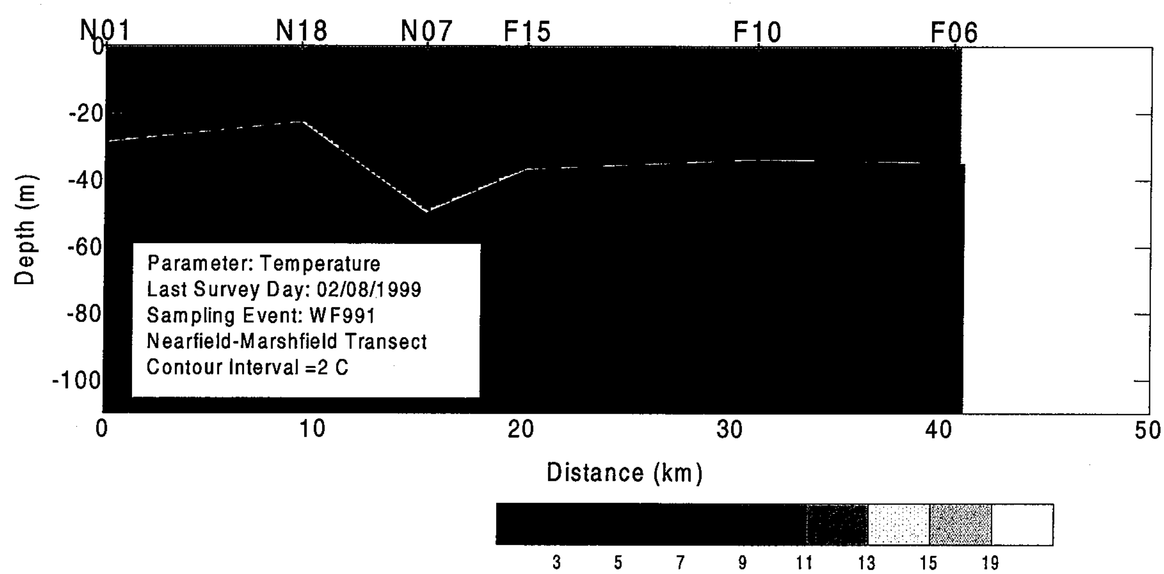


Figure C-10. Temperature Transect Plots (North - South) for Farfield Survey WF991 (Feb 99)

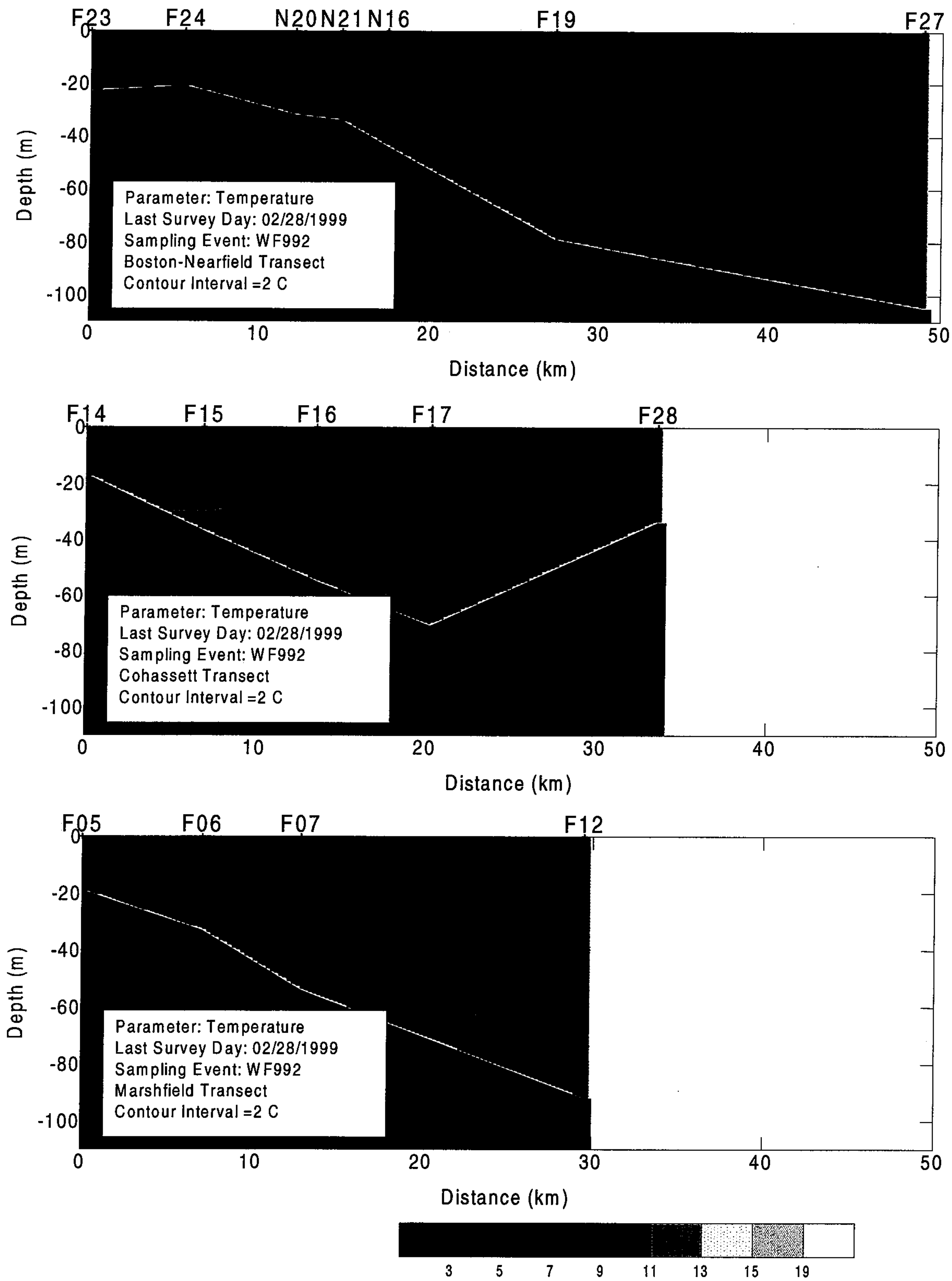


Figure C-11. Temperature Transect Plots (West – East) for Farfield Survey WF992 (Feb 99)

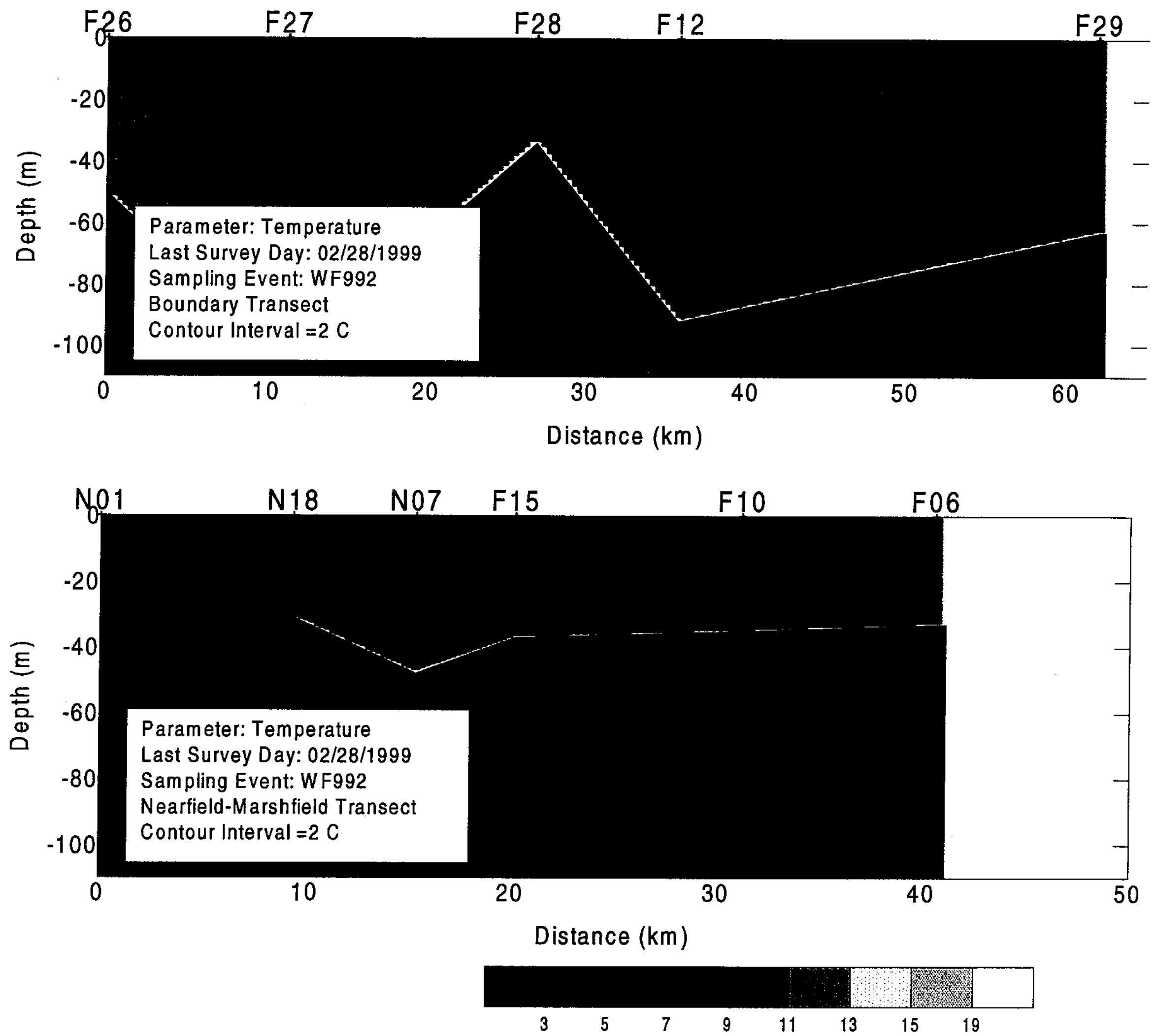


Figure C-12. Temperature Transect Plots (North - South) for Farfield Survey WF992 (Feb 99)

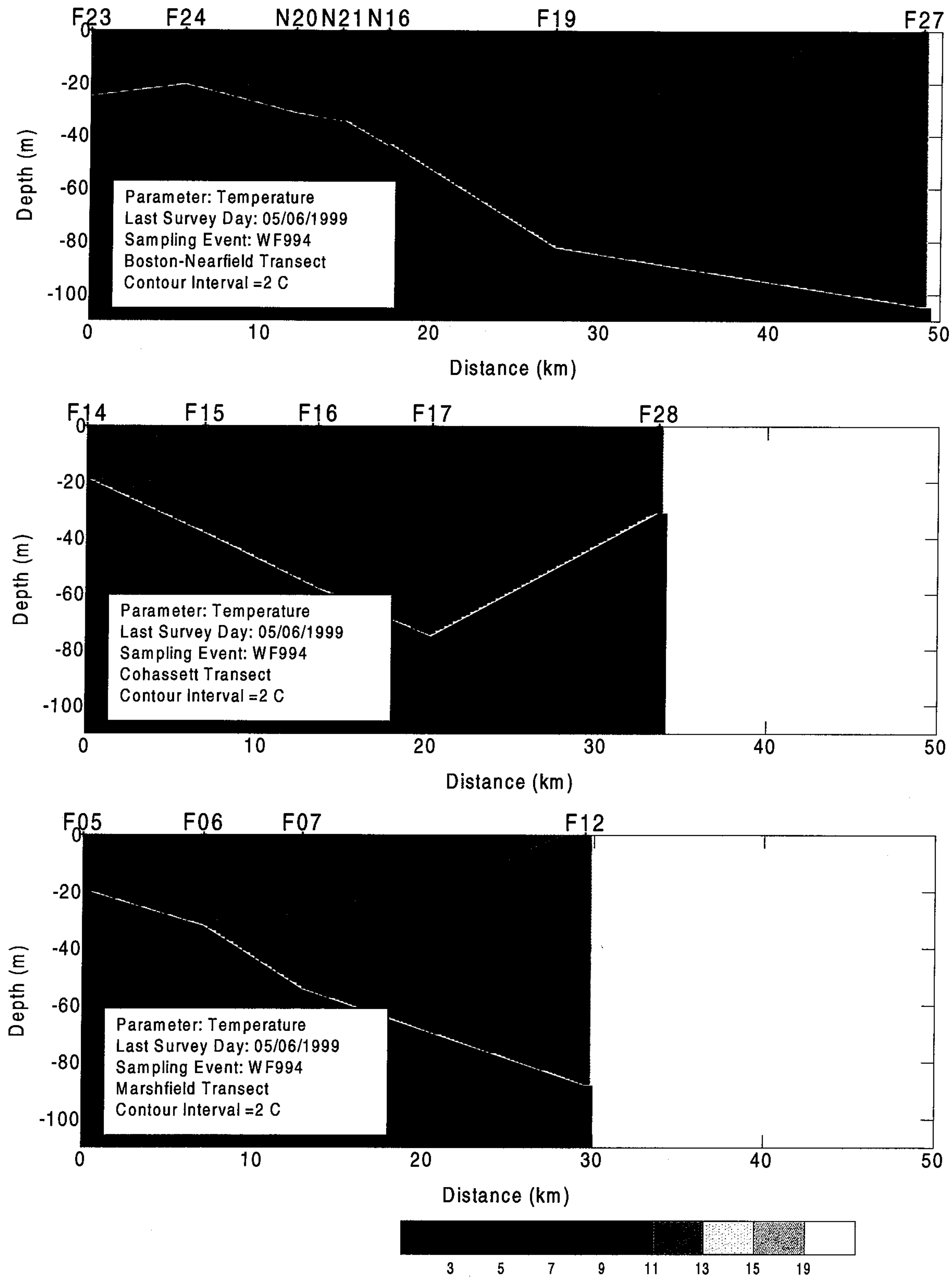


Figure C-13. Temperature Transect Plots (West – East) for Farfield Survey WF994 (Apr 99)

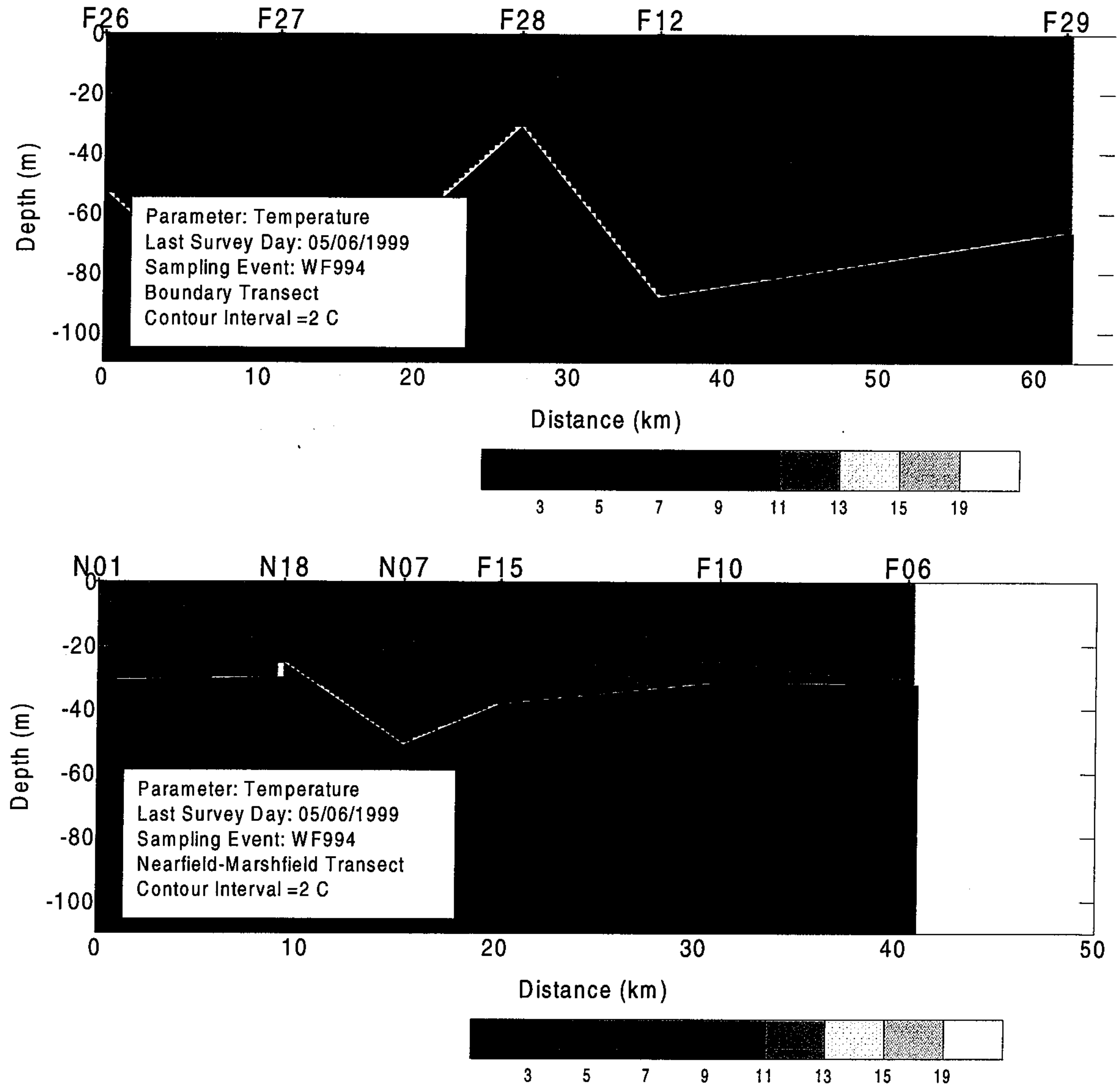


Figure C-14. Temperature Transect Plots (North - South) for Farfield Survey WF994 (Apr 99)

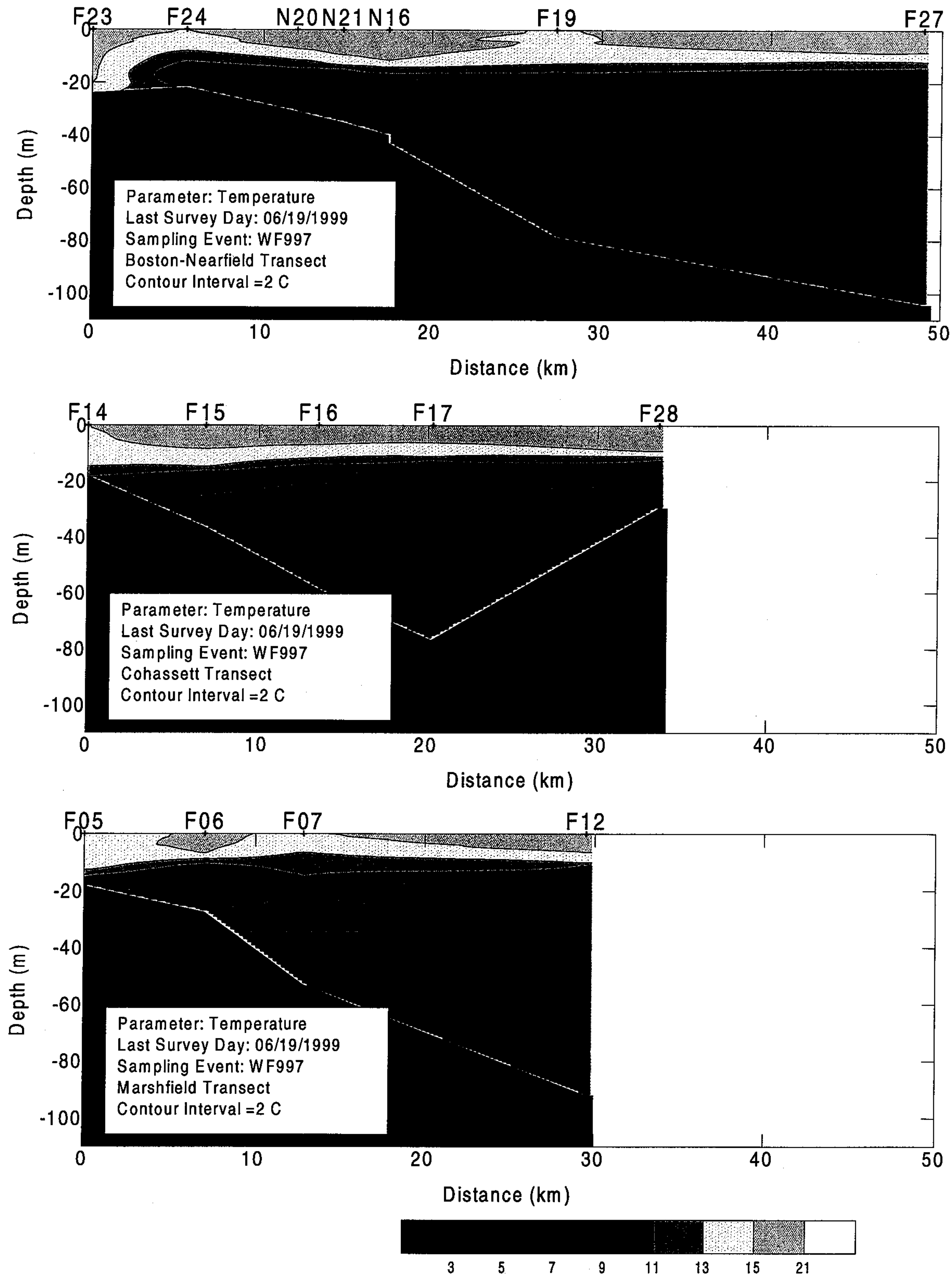
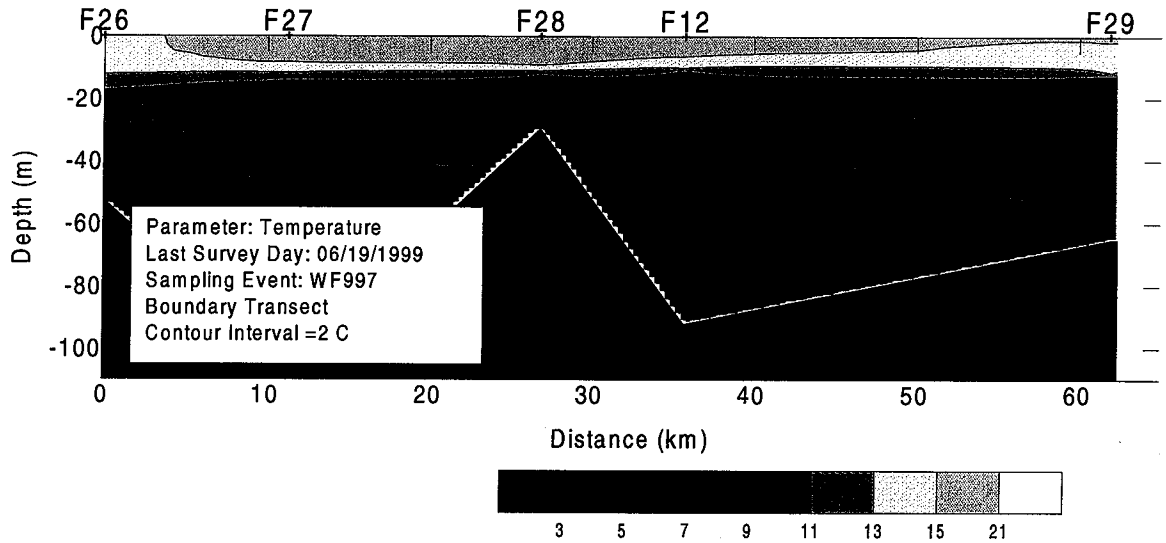


Figure C-15. Temperature Transect Plots (West – East) for Farfield Survey WF997 (Jun 99)



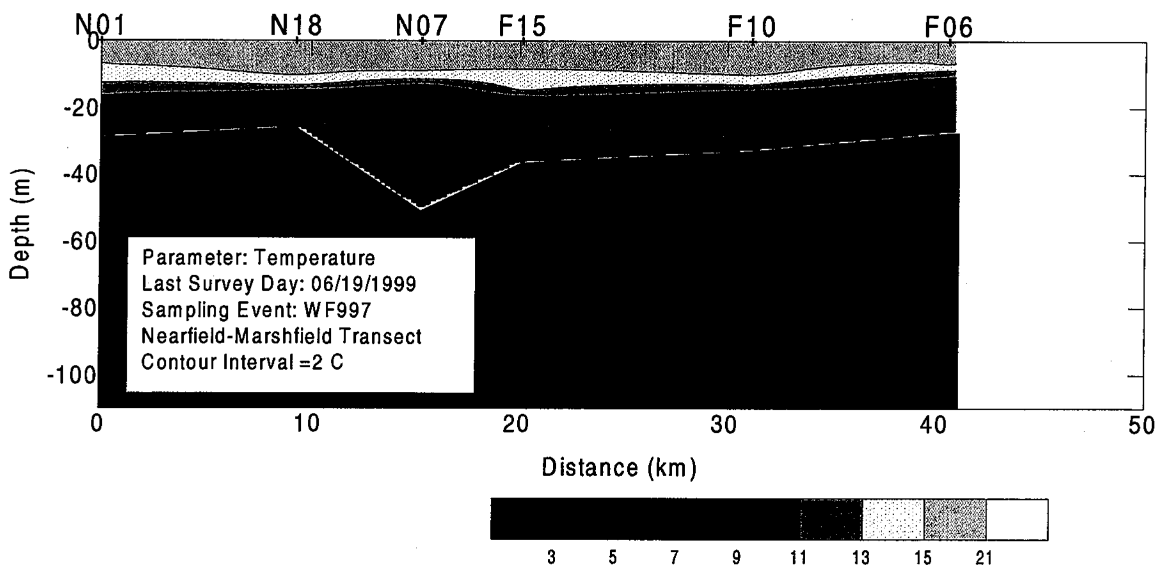


Figure C-16. Temperature Transect Plots (North - South) for Farfield Survey WF997 (Jun 99)

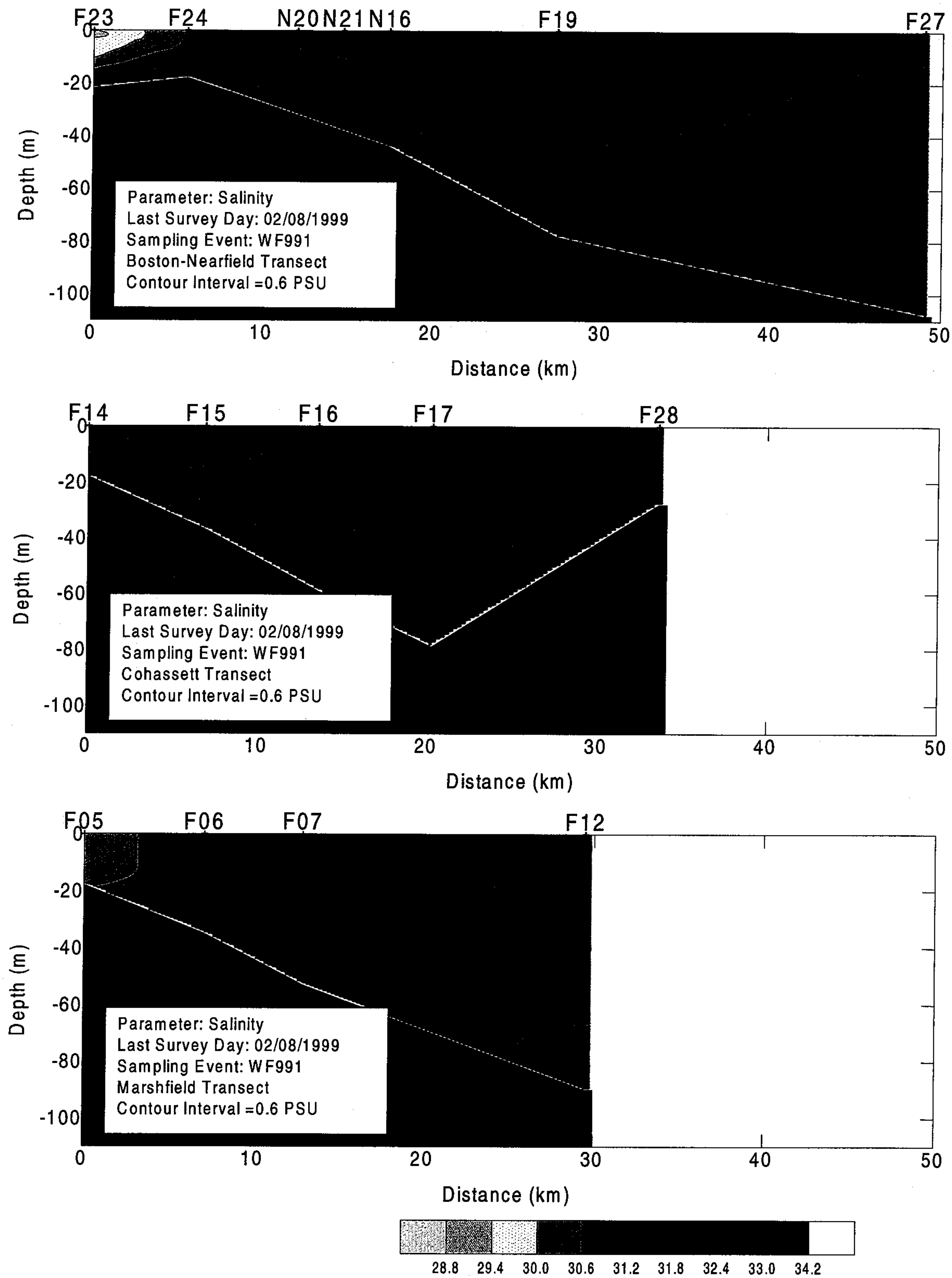
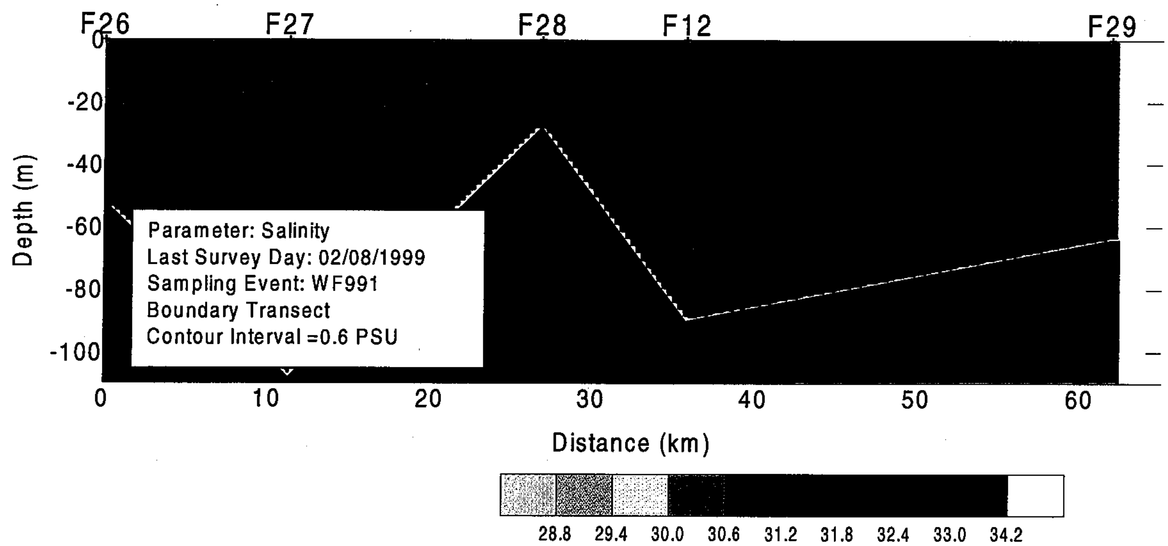


Figure C-17. Salinity Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)



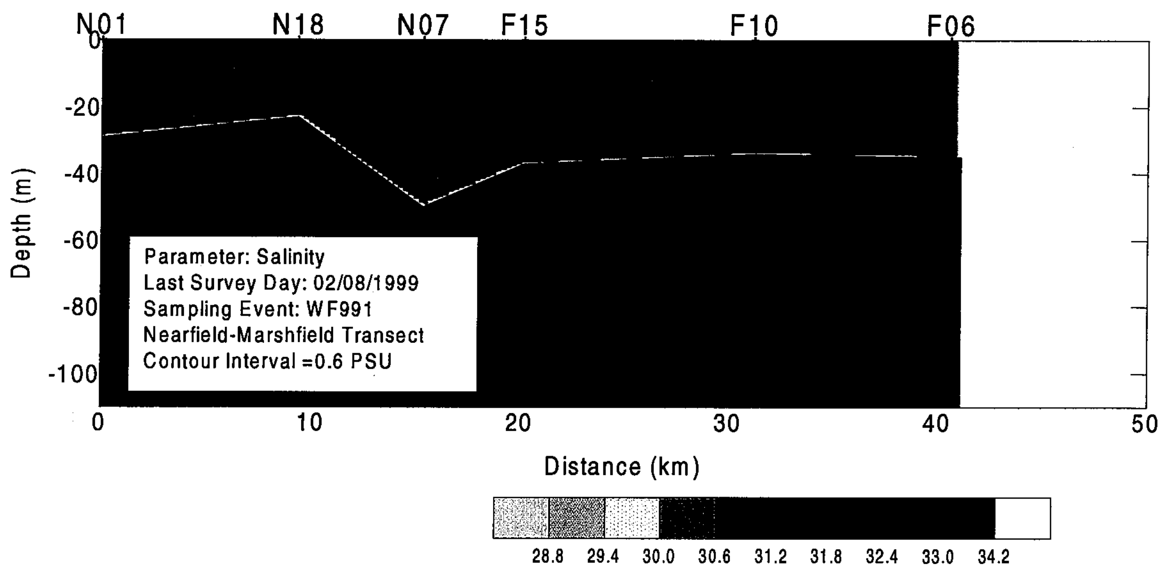


Figure C-18. Salinity Transect Plots (North - South) for Farfield Survey WF991 (Feb 99)

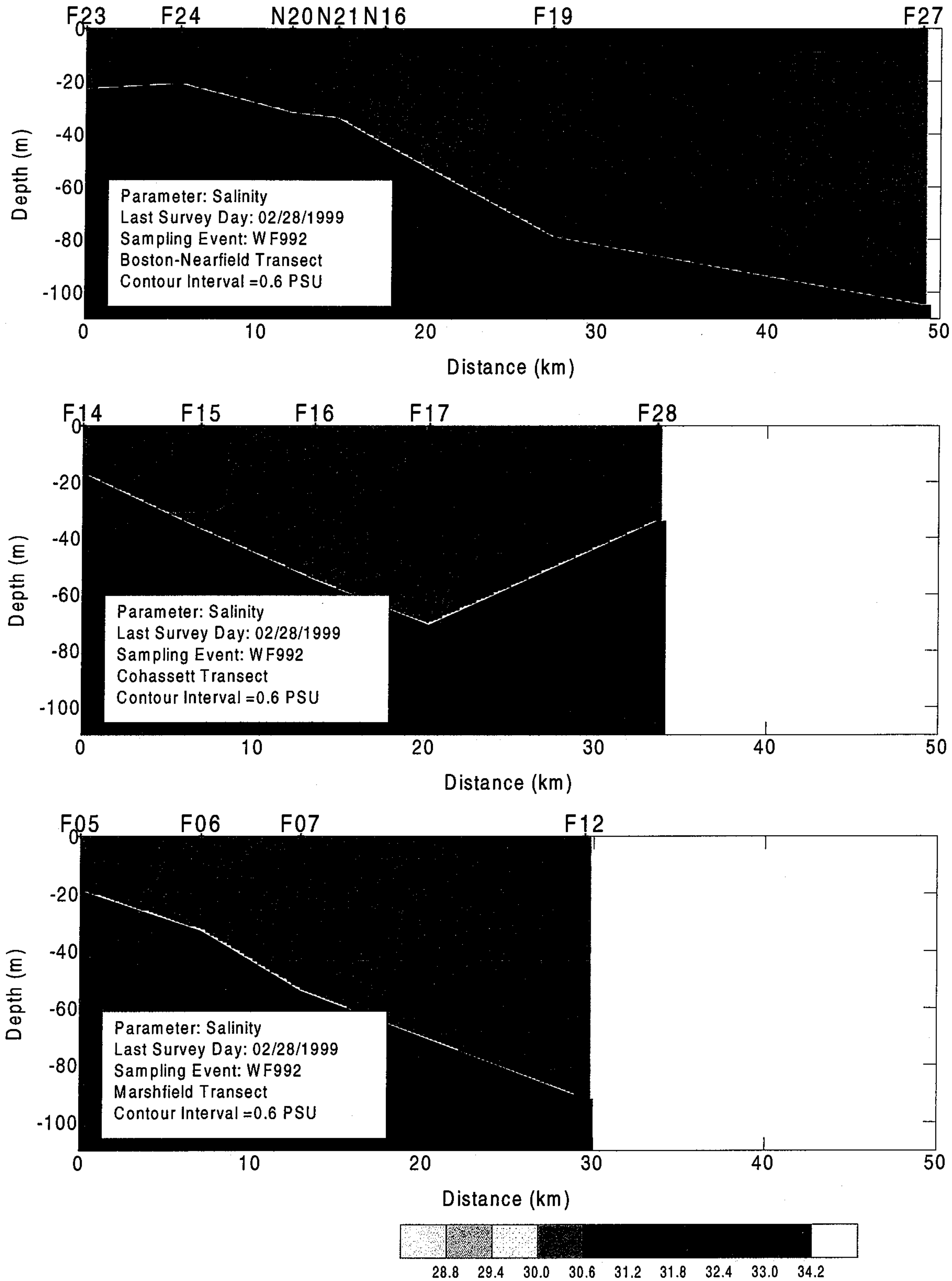


Figure C-19. Salinity Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

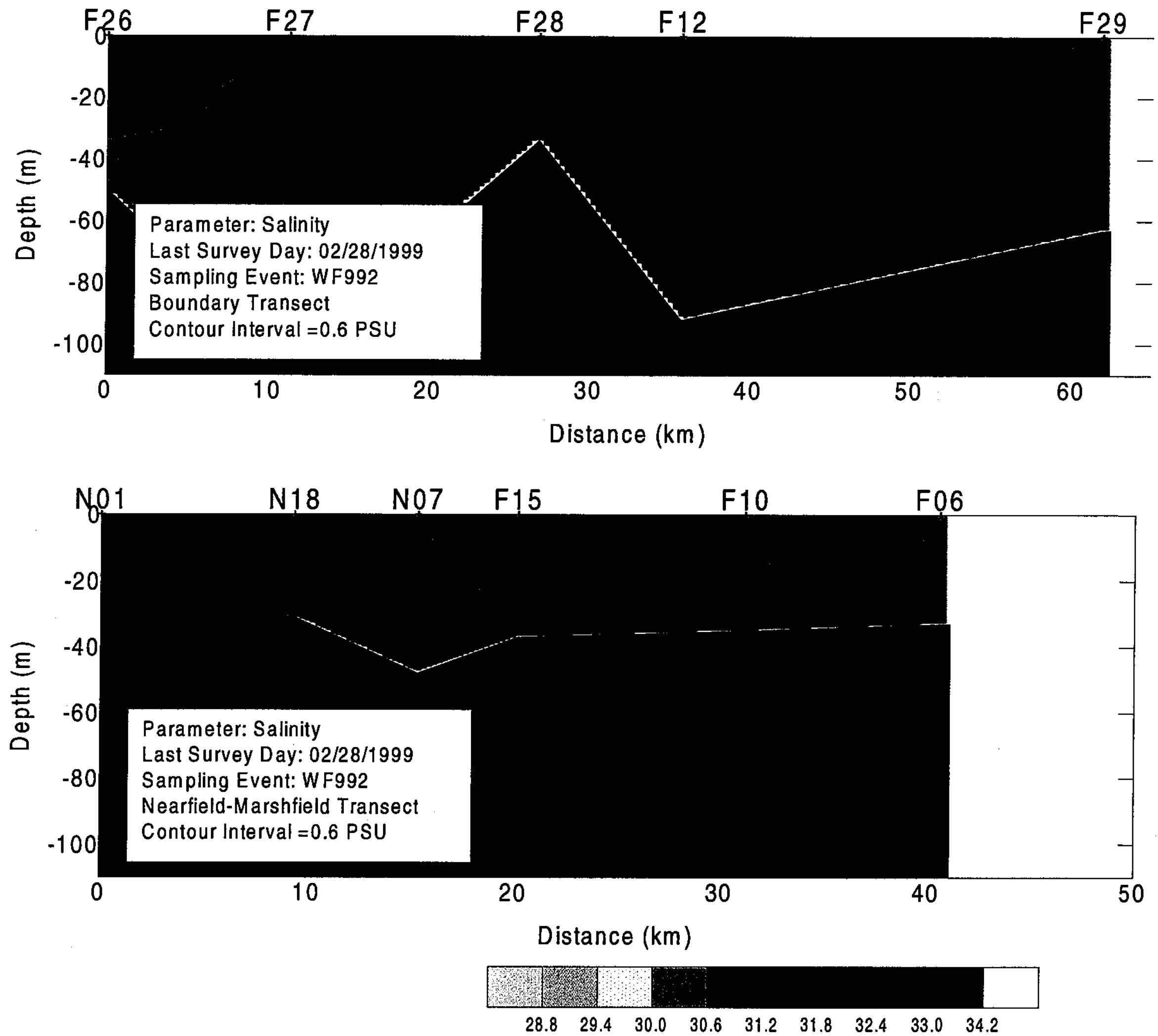


Figure C-20. Salinity Transect Plots (North - South) for Farfield Survey WF992 (Feb 99)

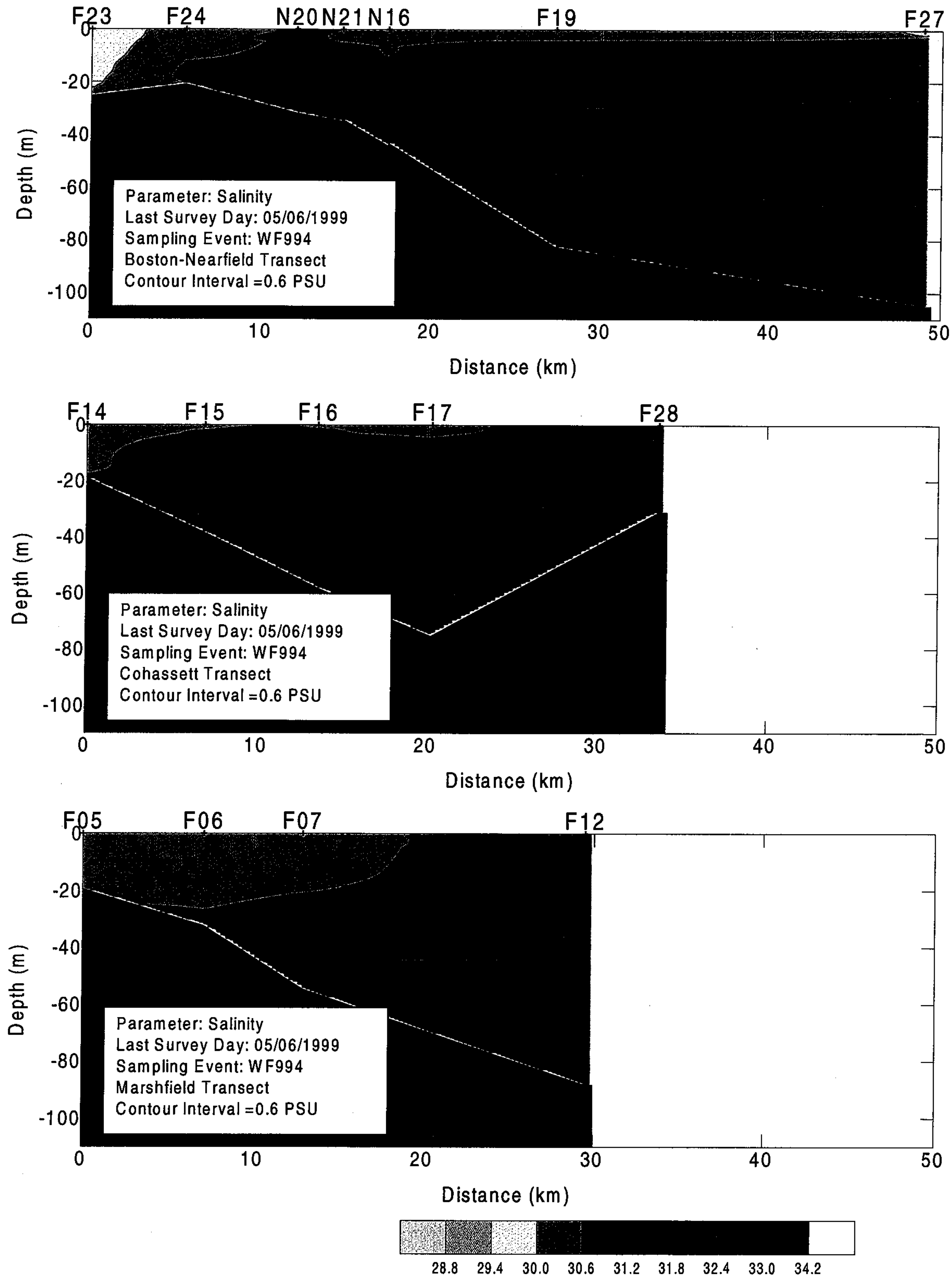
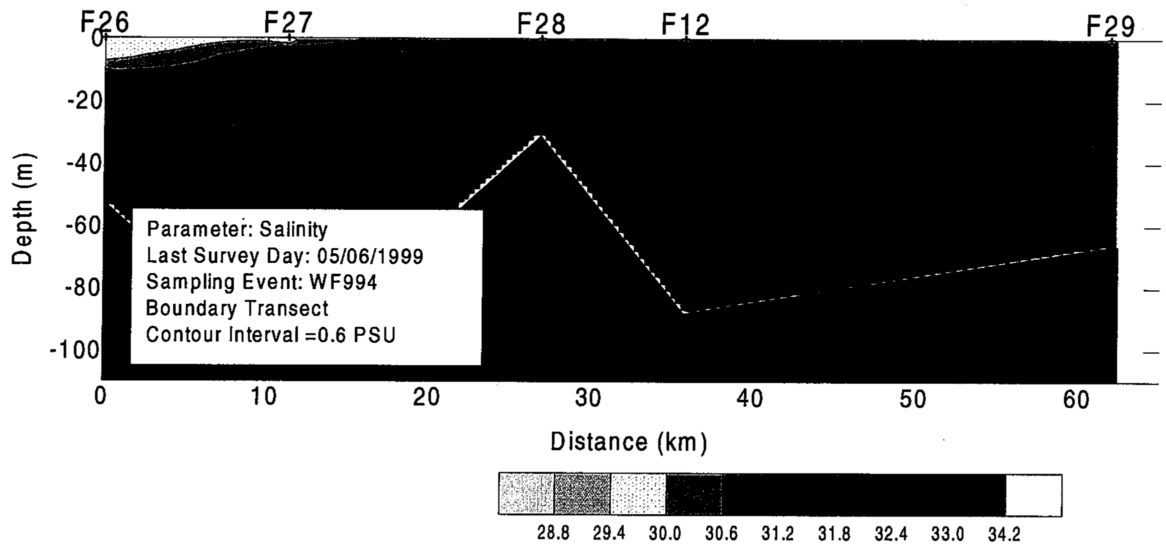


Figure C-21. Salinity Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)



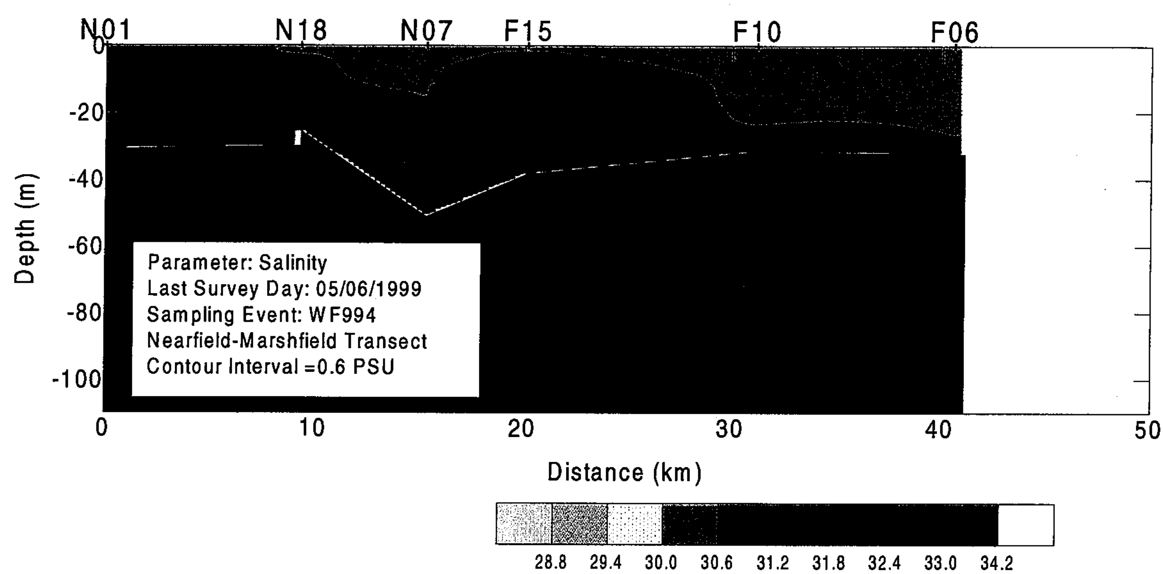


Figure C-22. Salinity Transect Plots (North - South) for Farfield Survey WF994 (Apr 99)

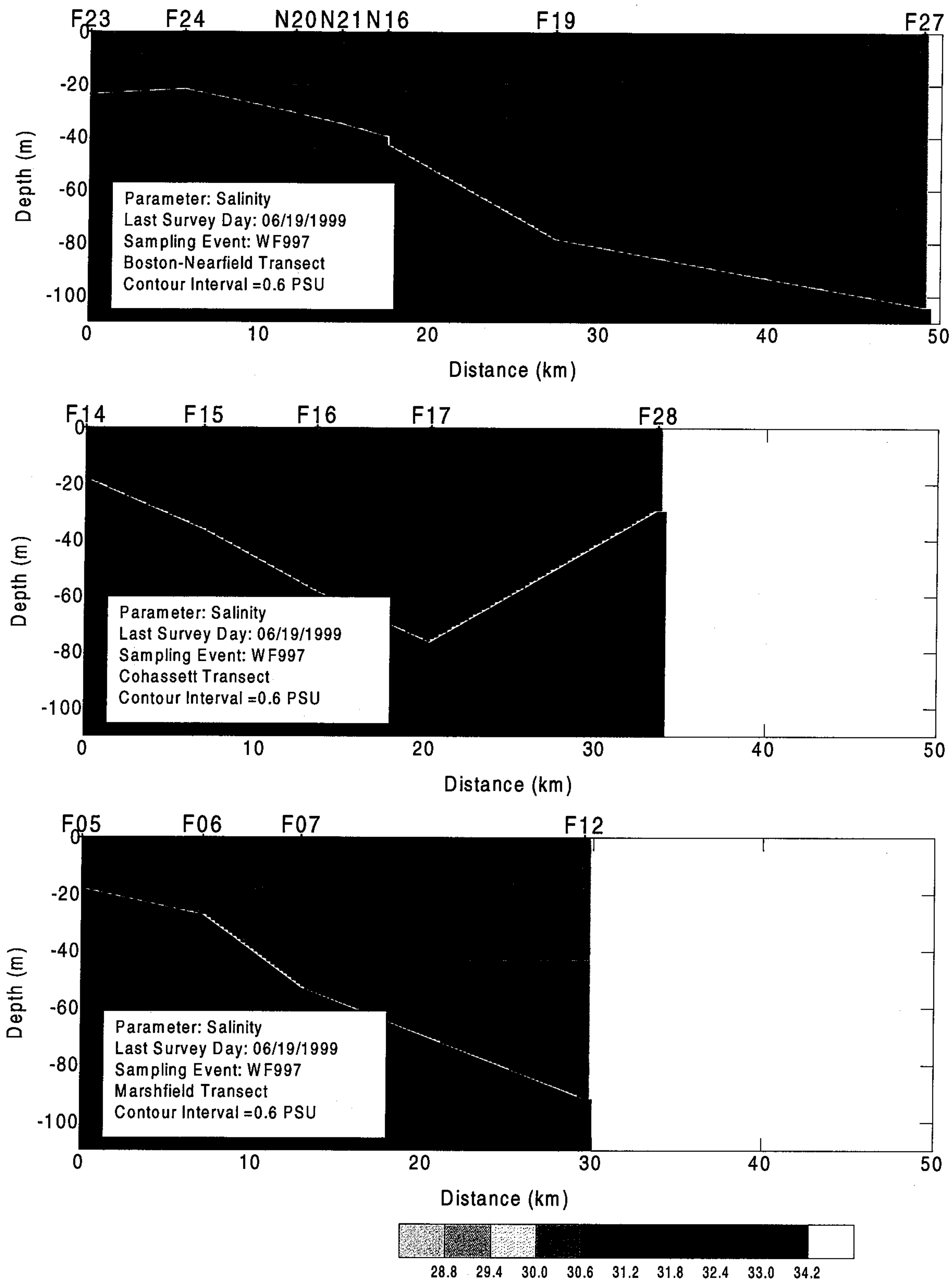
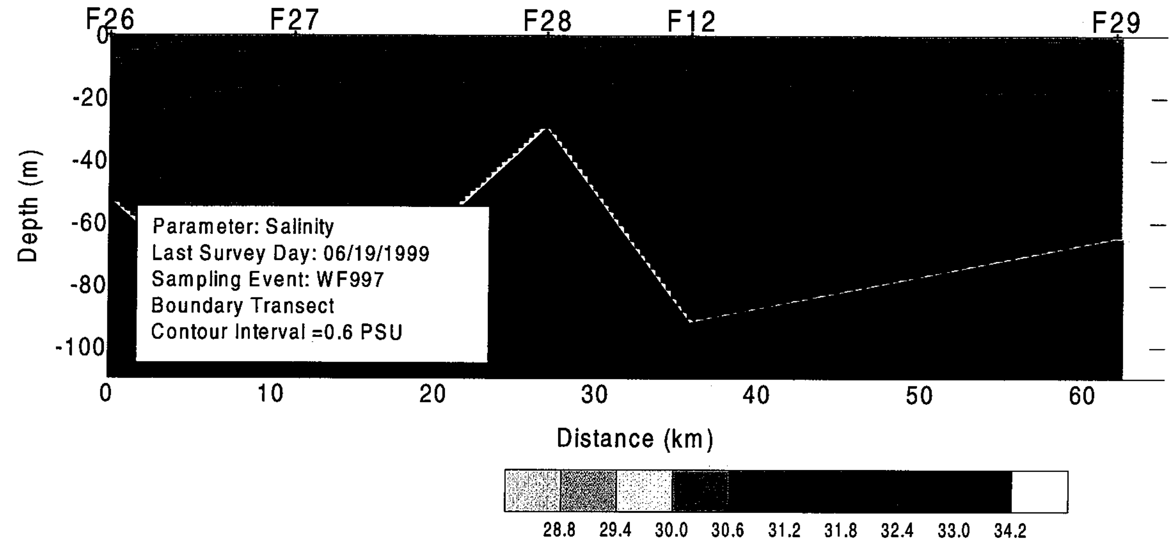


Figure C-23. Salinity Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)



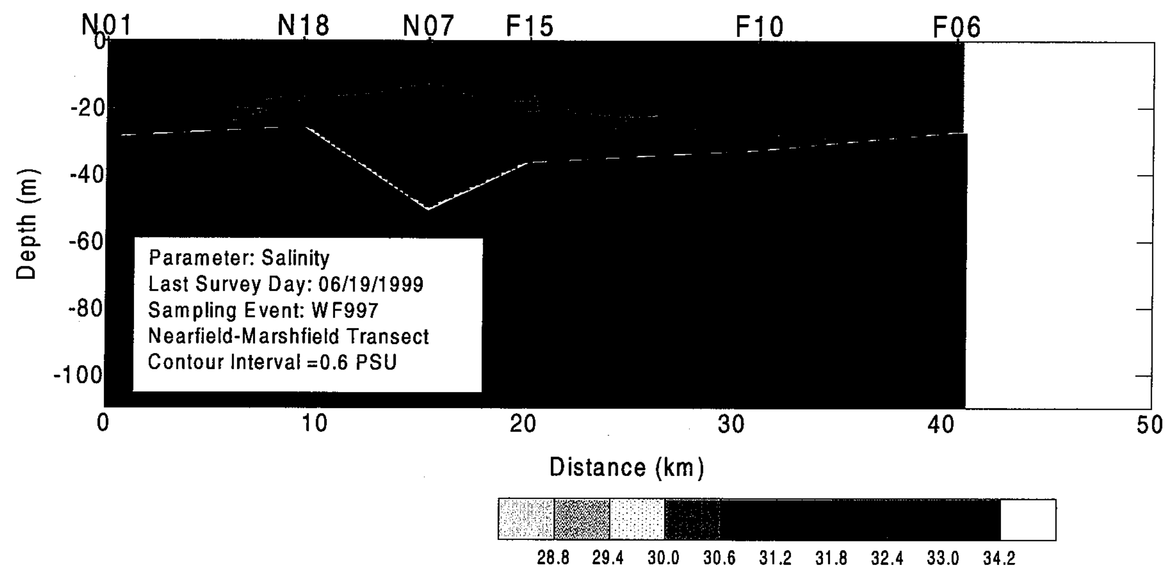


Figure C-24. Salinity Transect Plots (North - South) for Farfield Survey WF997 (Jun 99)

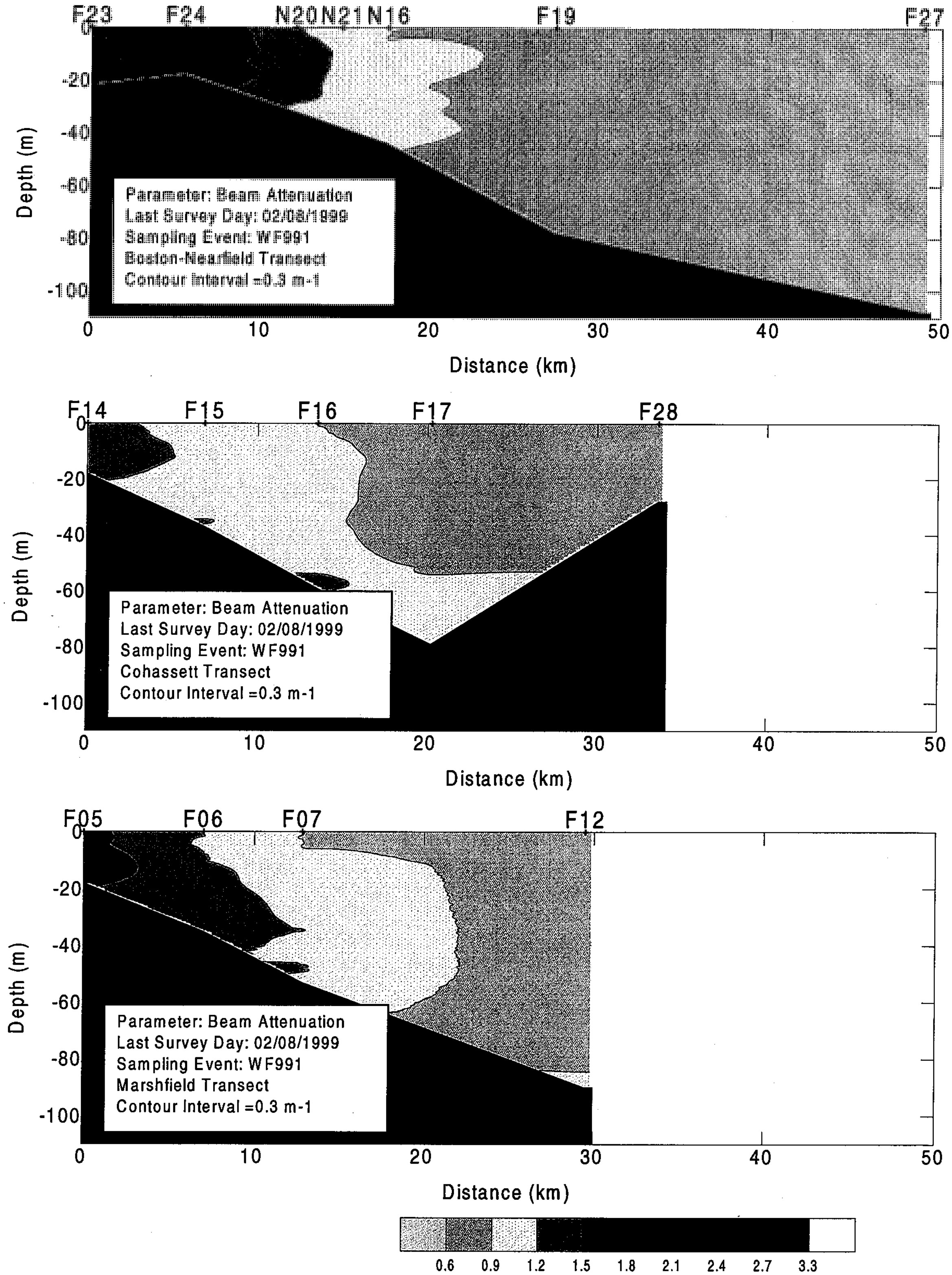


Figure C-25. Beam Attenuation Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)

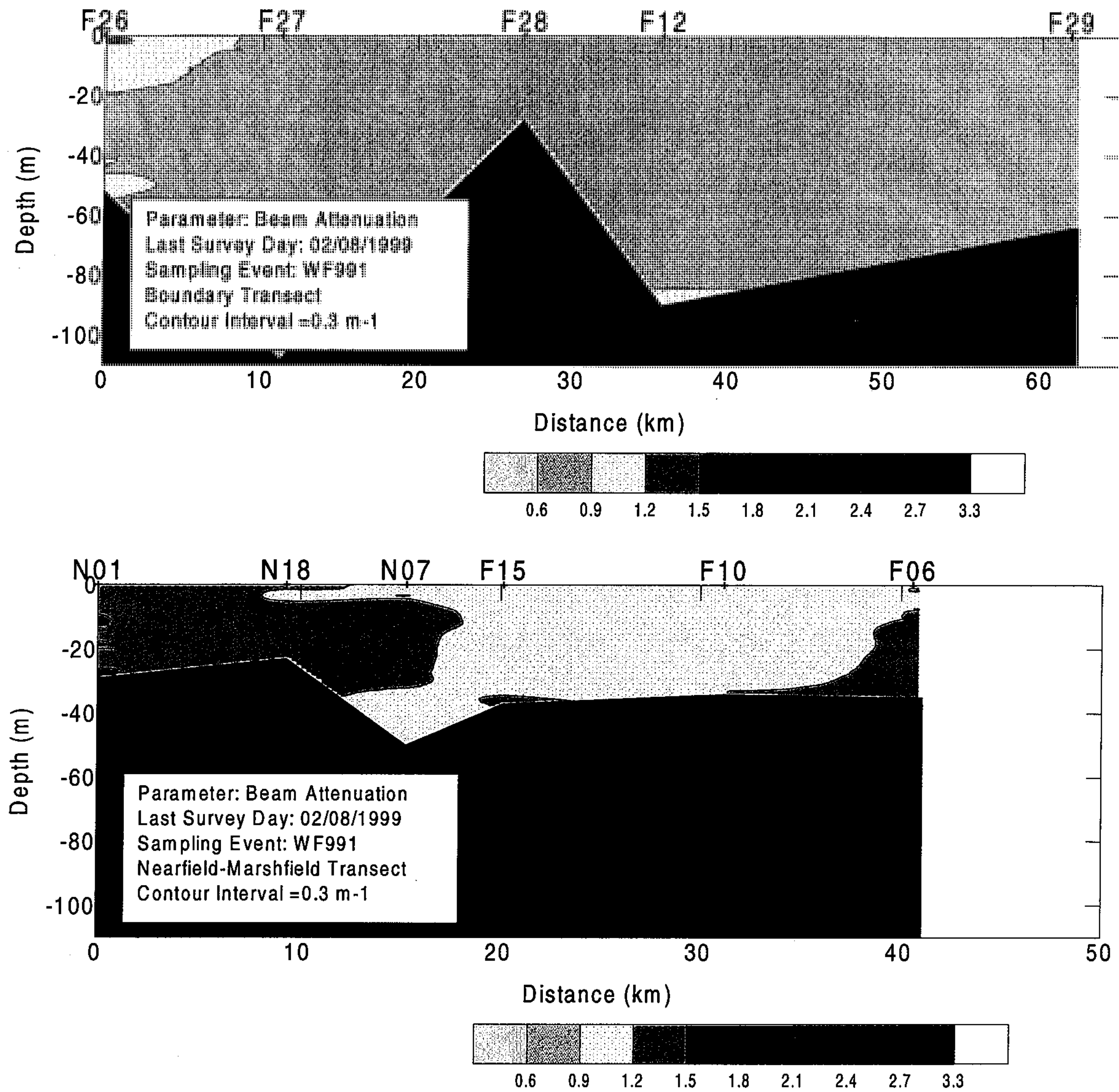


Figure C-26. Beam Attenuation Transect Plots (North - South) for Farfield Survey WF991 (Feb 99)

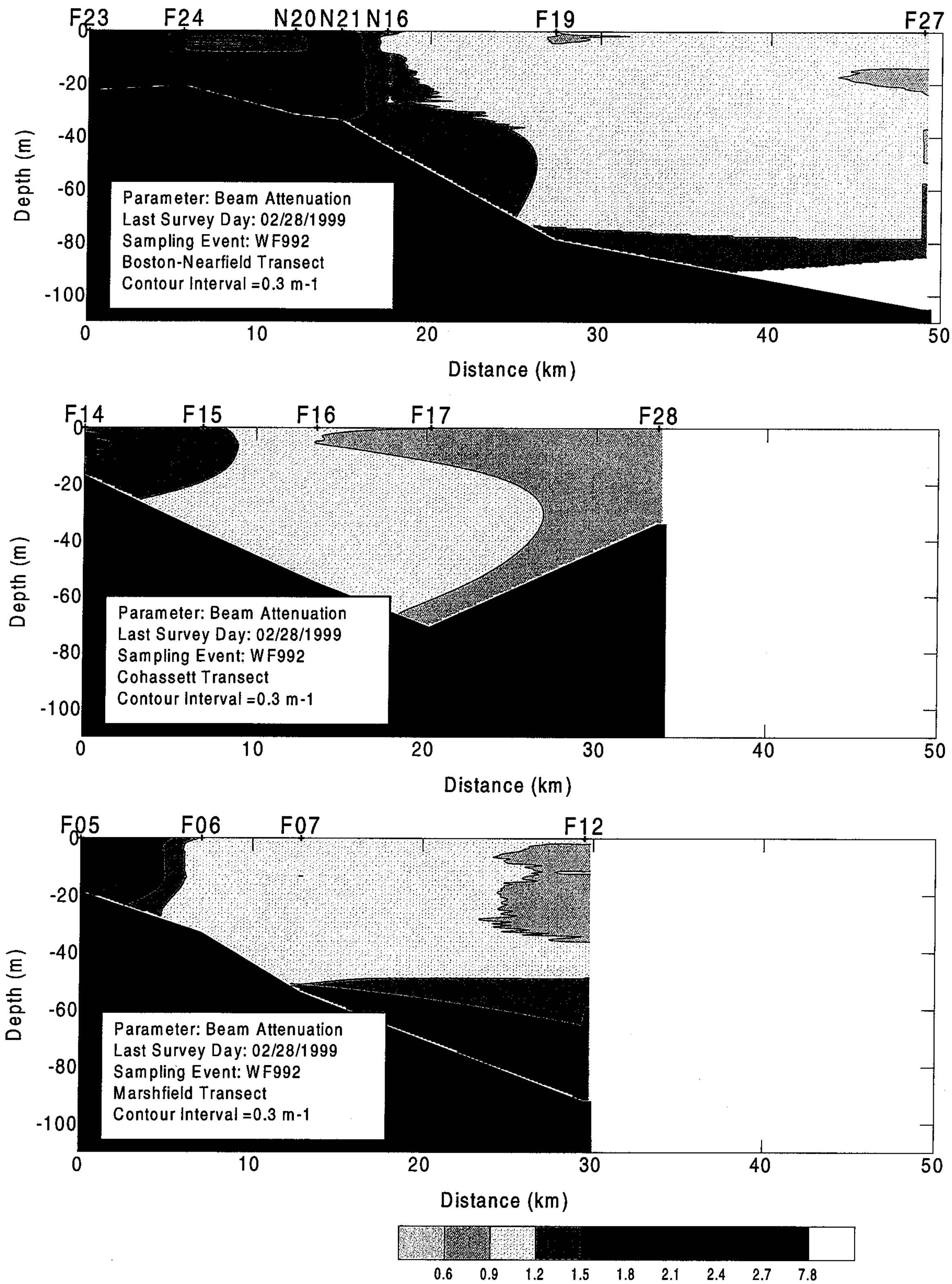


Figure C-27. Beam Attenuation Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

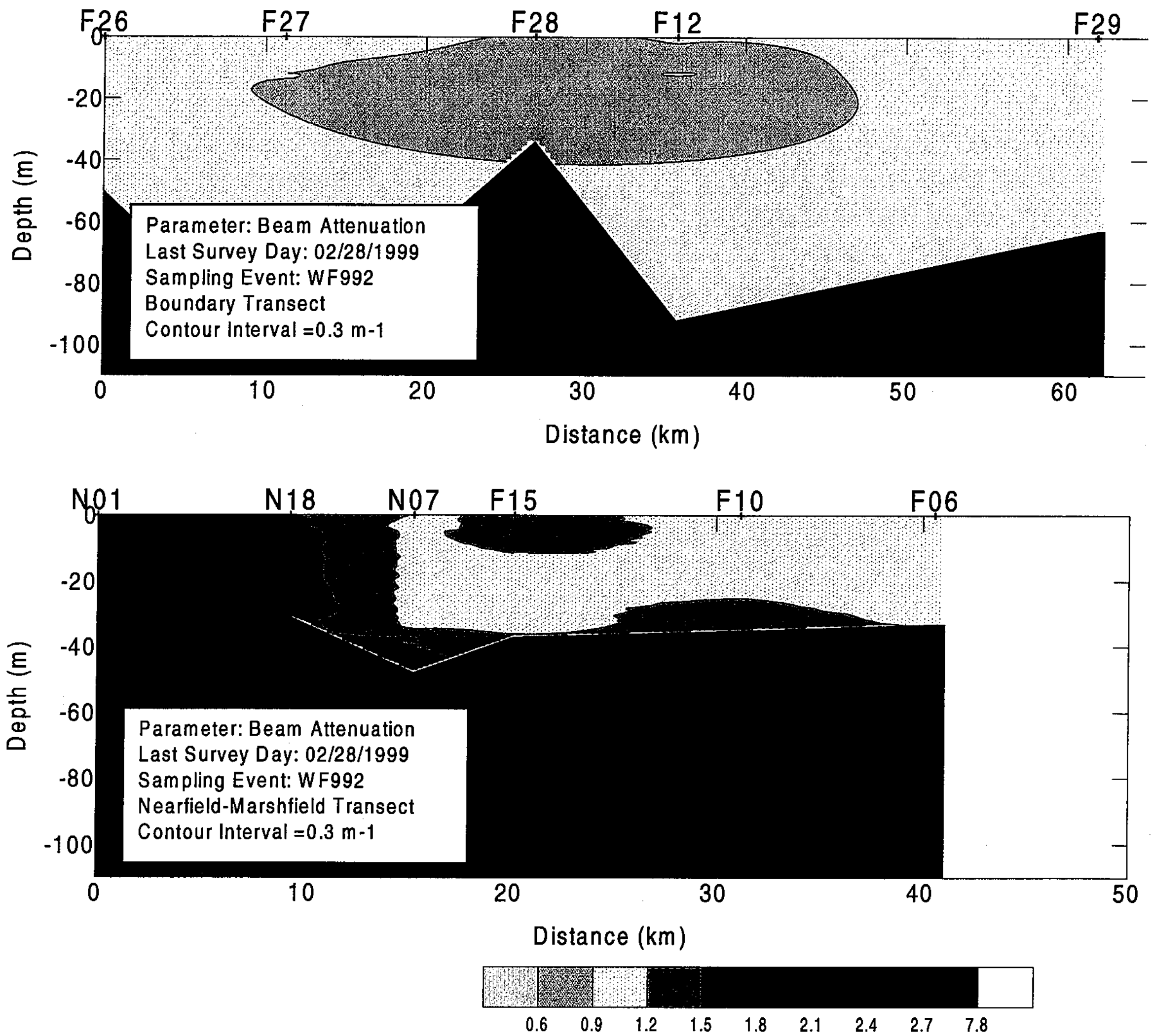


Figure C-28. Beam Attenuation Transect Plots (North - South) for Farfield Survey WF992 (Feb 99)

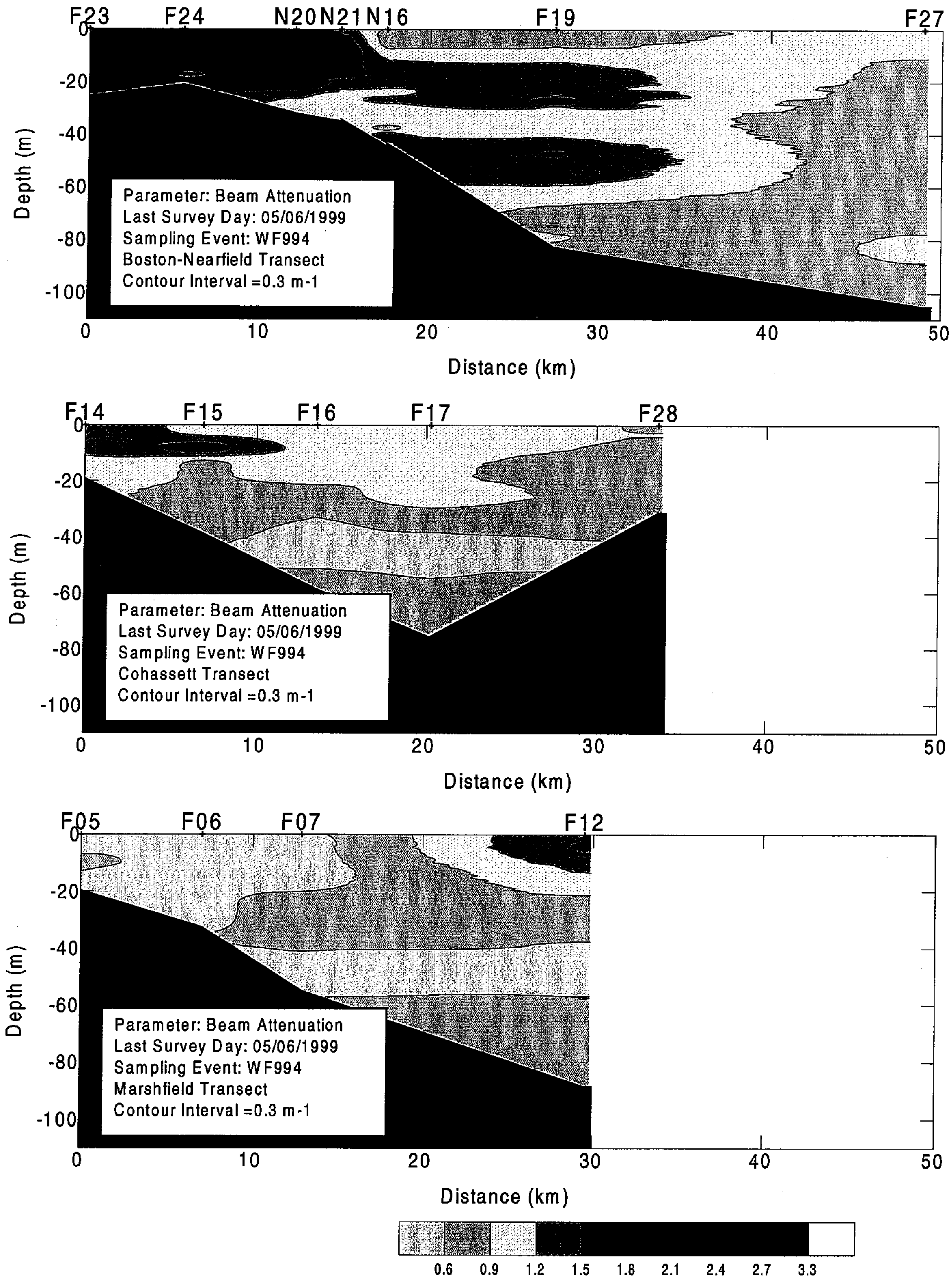


Figure C-29. Beam Attenuation Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)

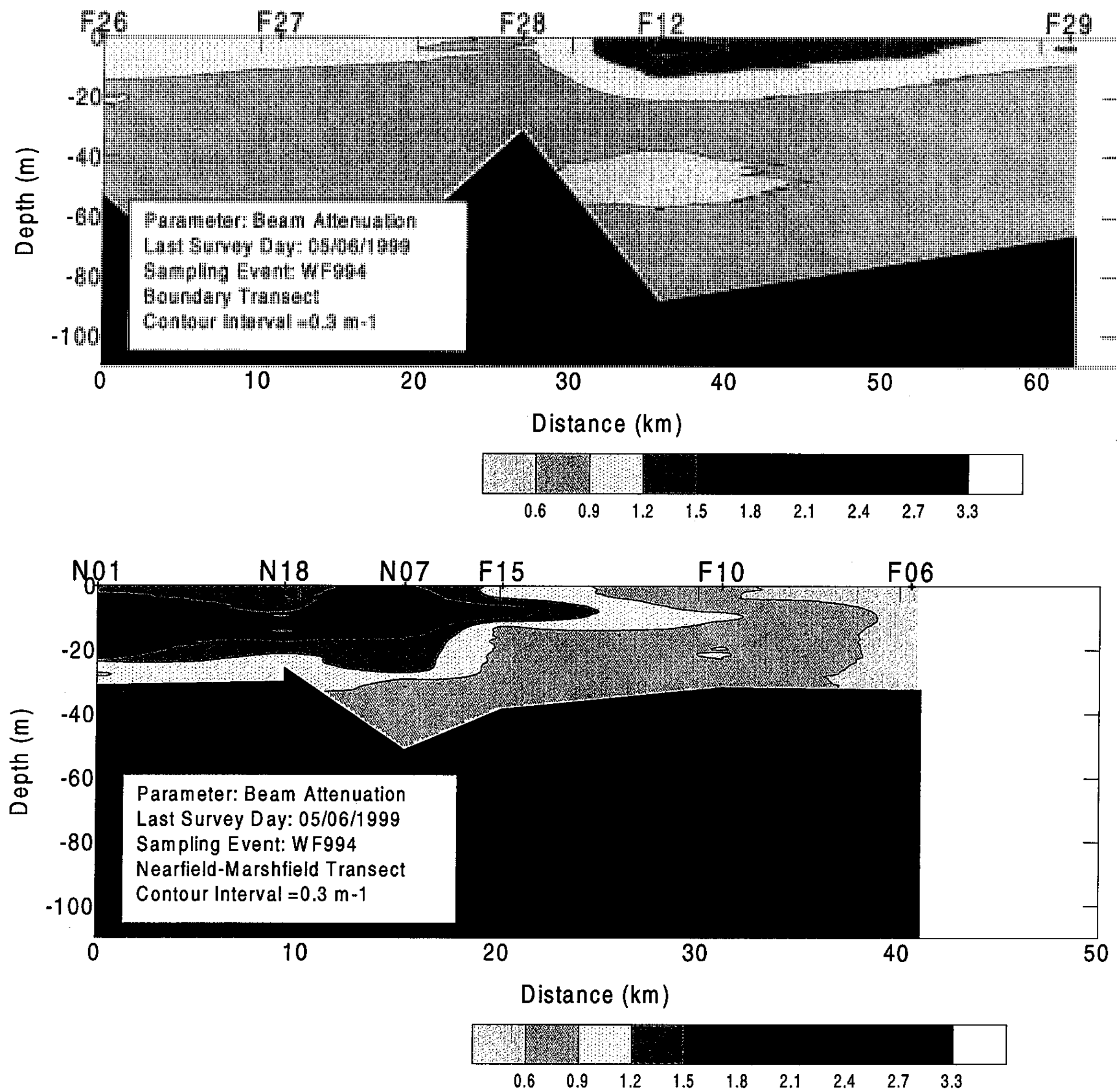


Figure C-30. Beam Attenuation Transect Plots (North - South) for Farfield Survey WF994 (Apr 99)

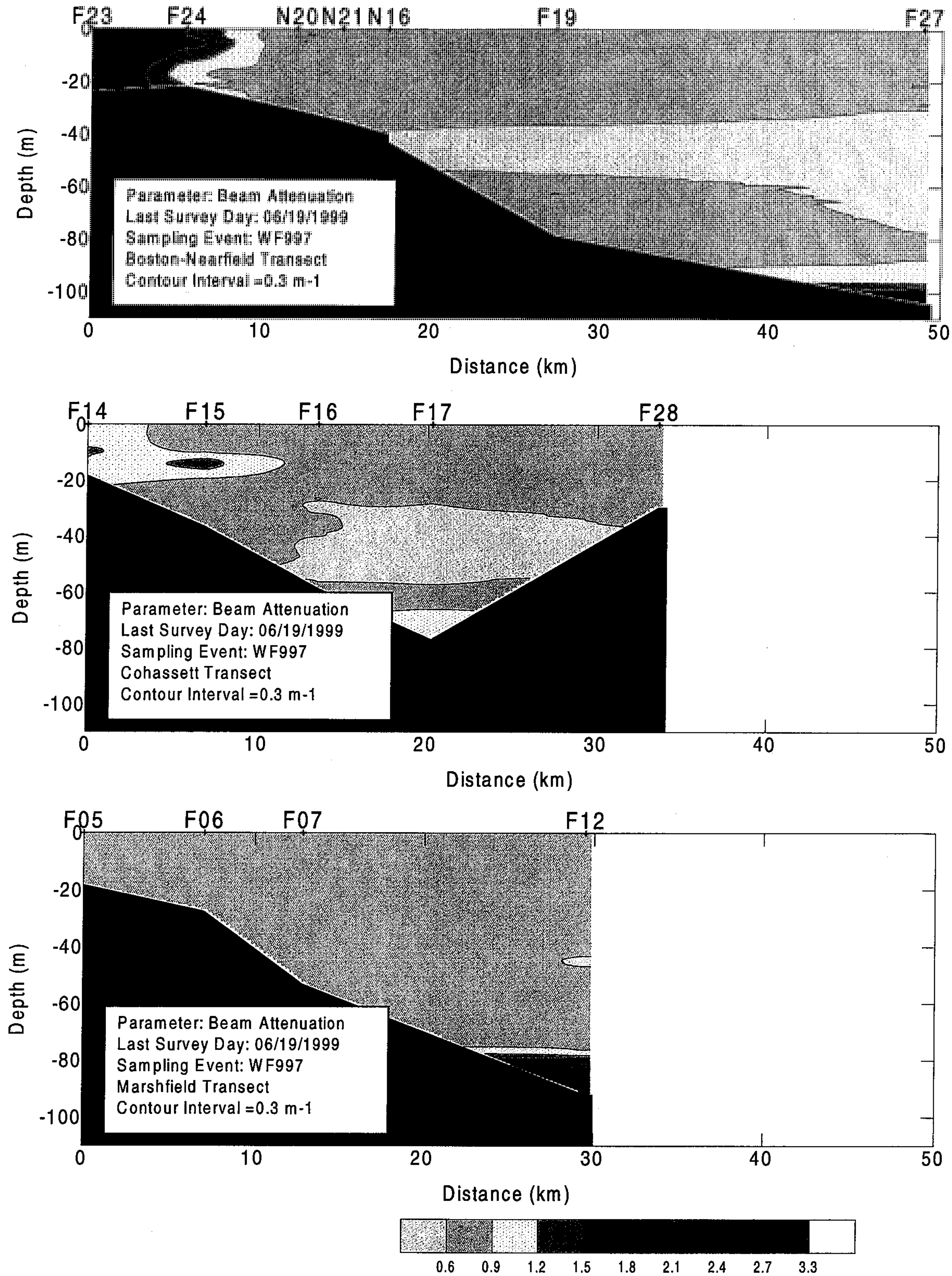


Figure C-31. Beam Attenuation Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)

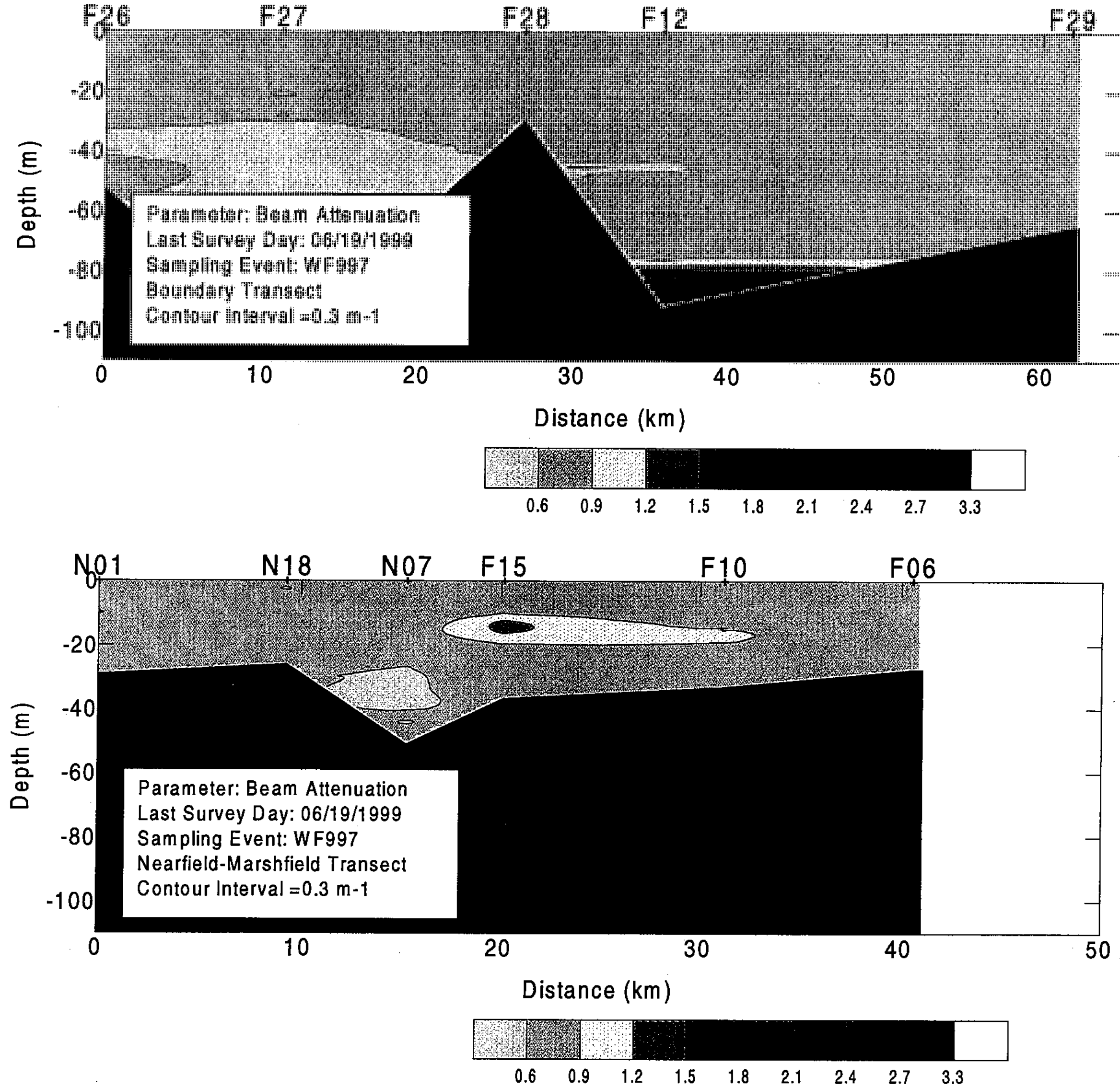


Figure C-32. Beam Attenuation Transect Plots (North - South) for Farfield Survey WF997 (Jun 99)

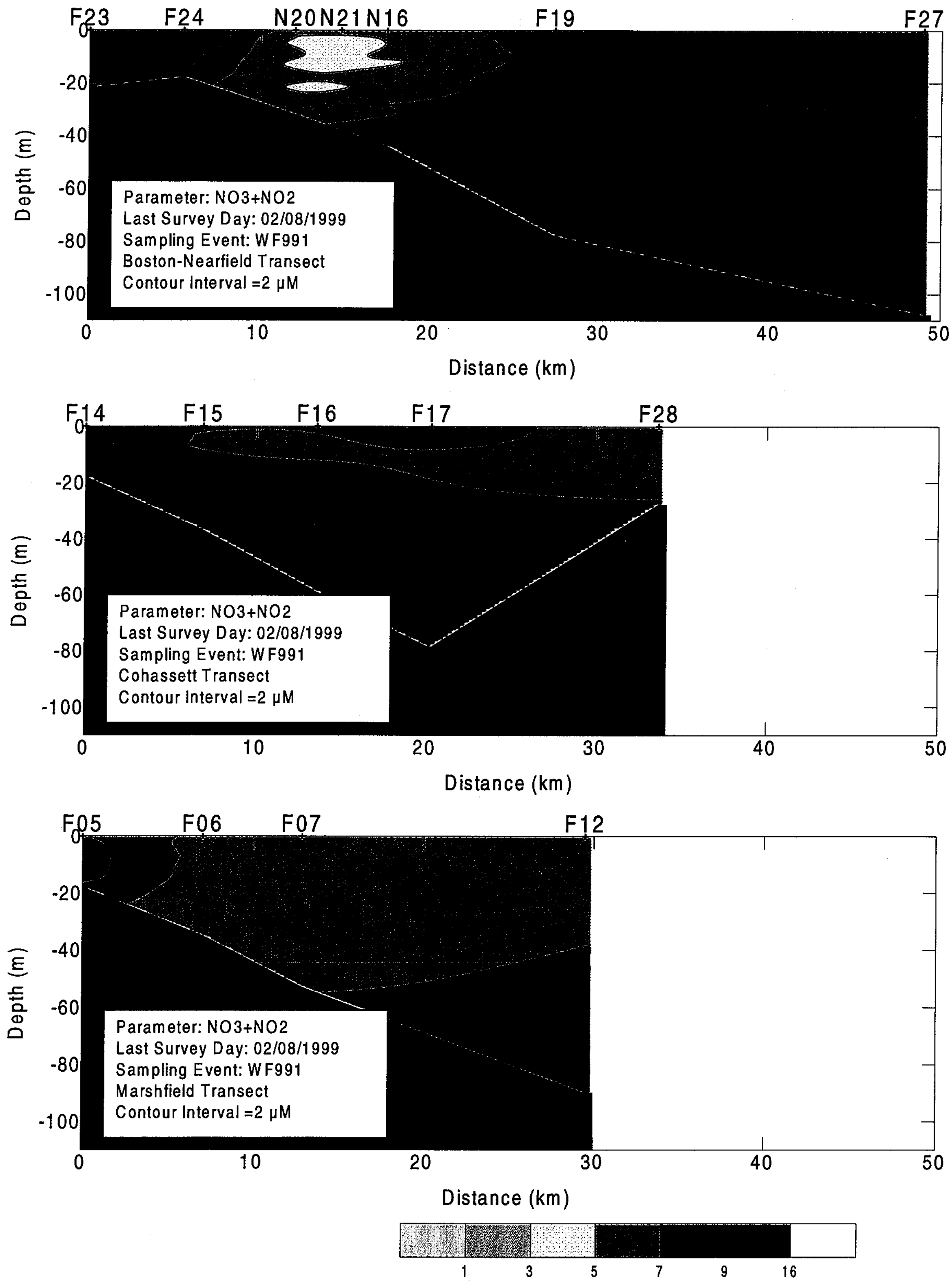


Figure C-33. Nitrate Plus Nitrite Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)

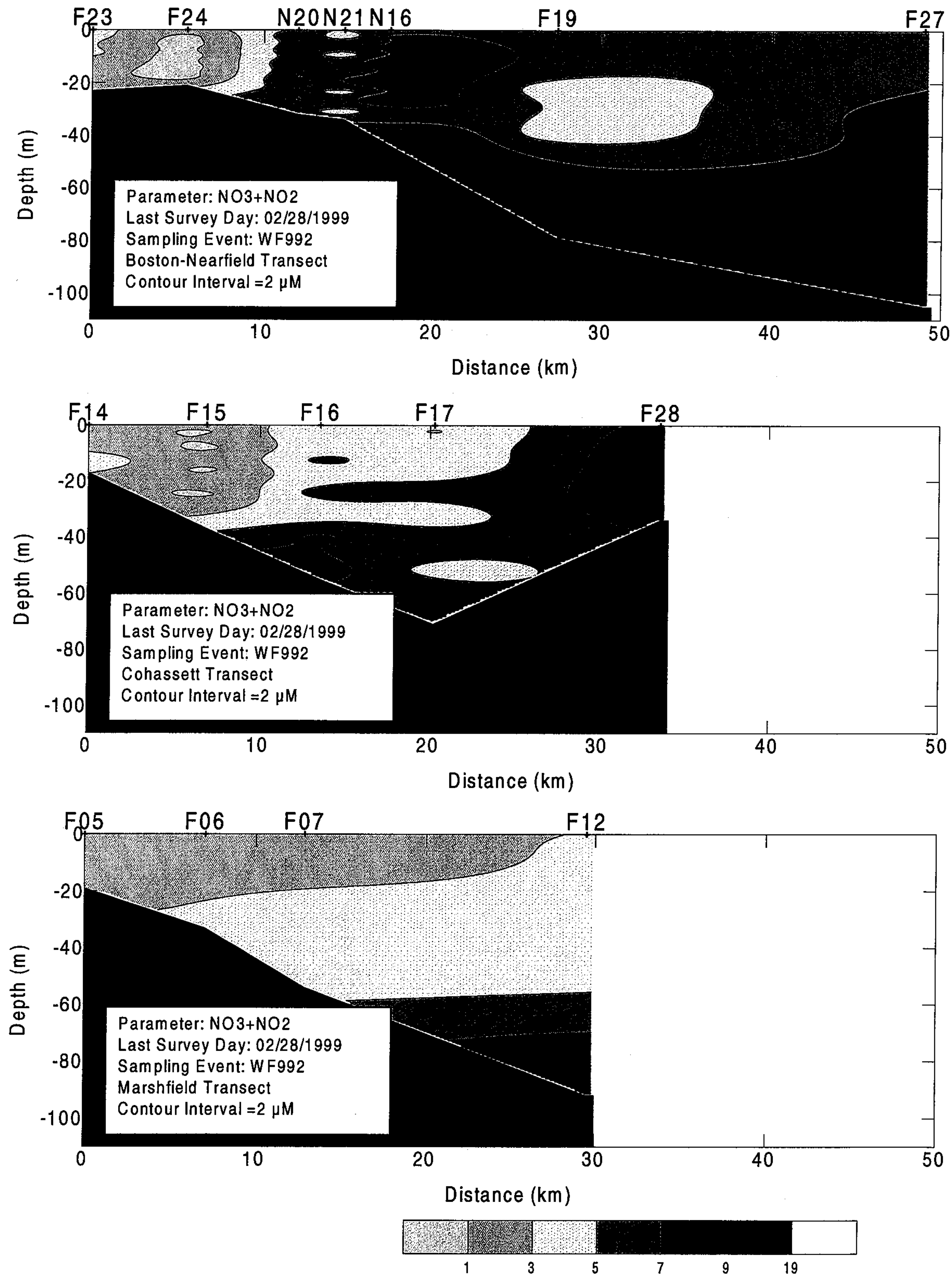


Figure C-34. Nitrate Plus Nitrite Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

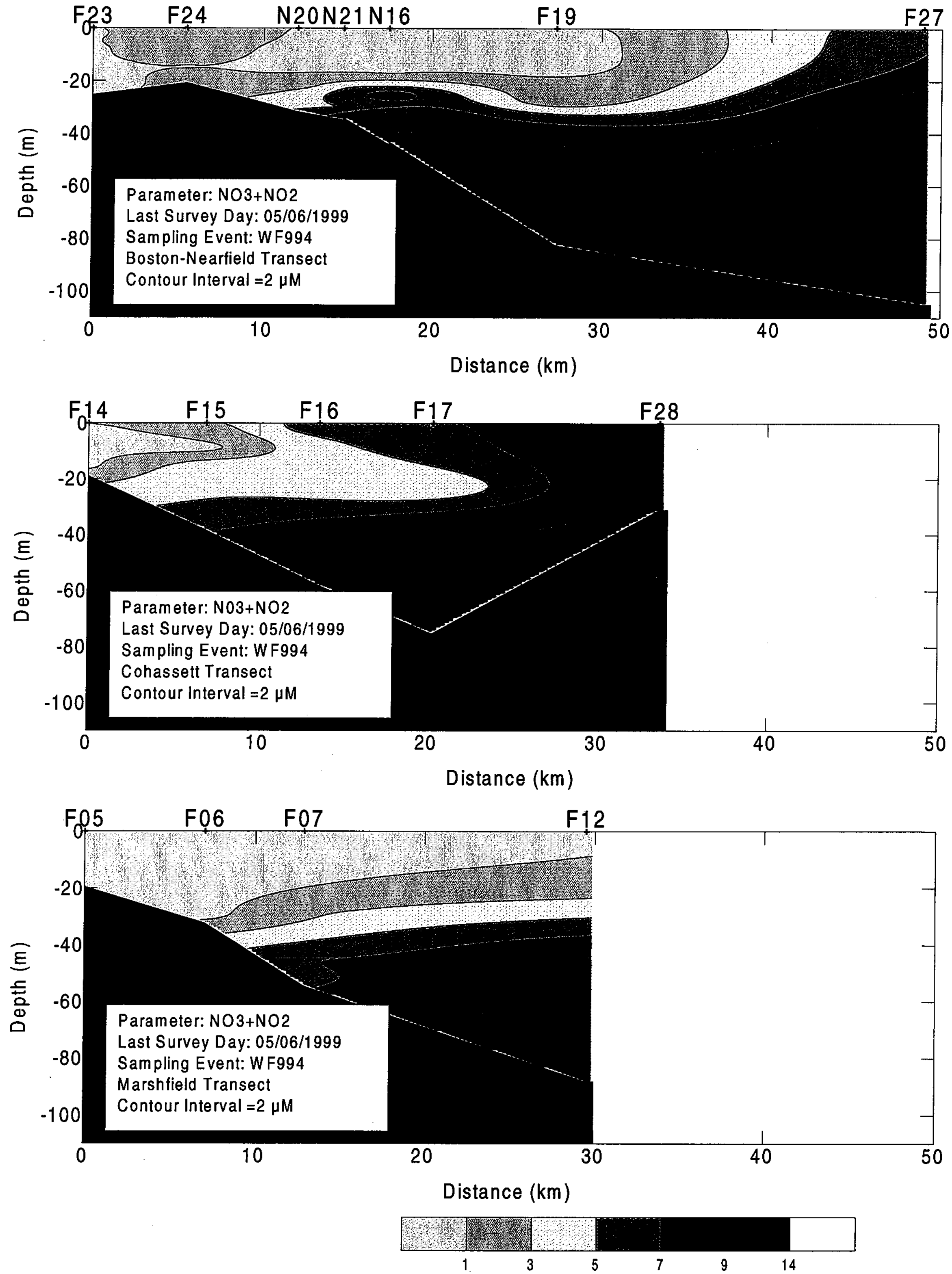


Figure C-35. Nitrate Plus Nitrite Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)

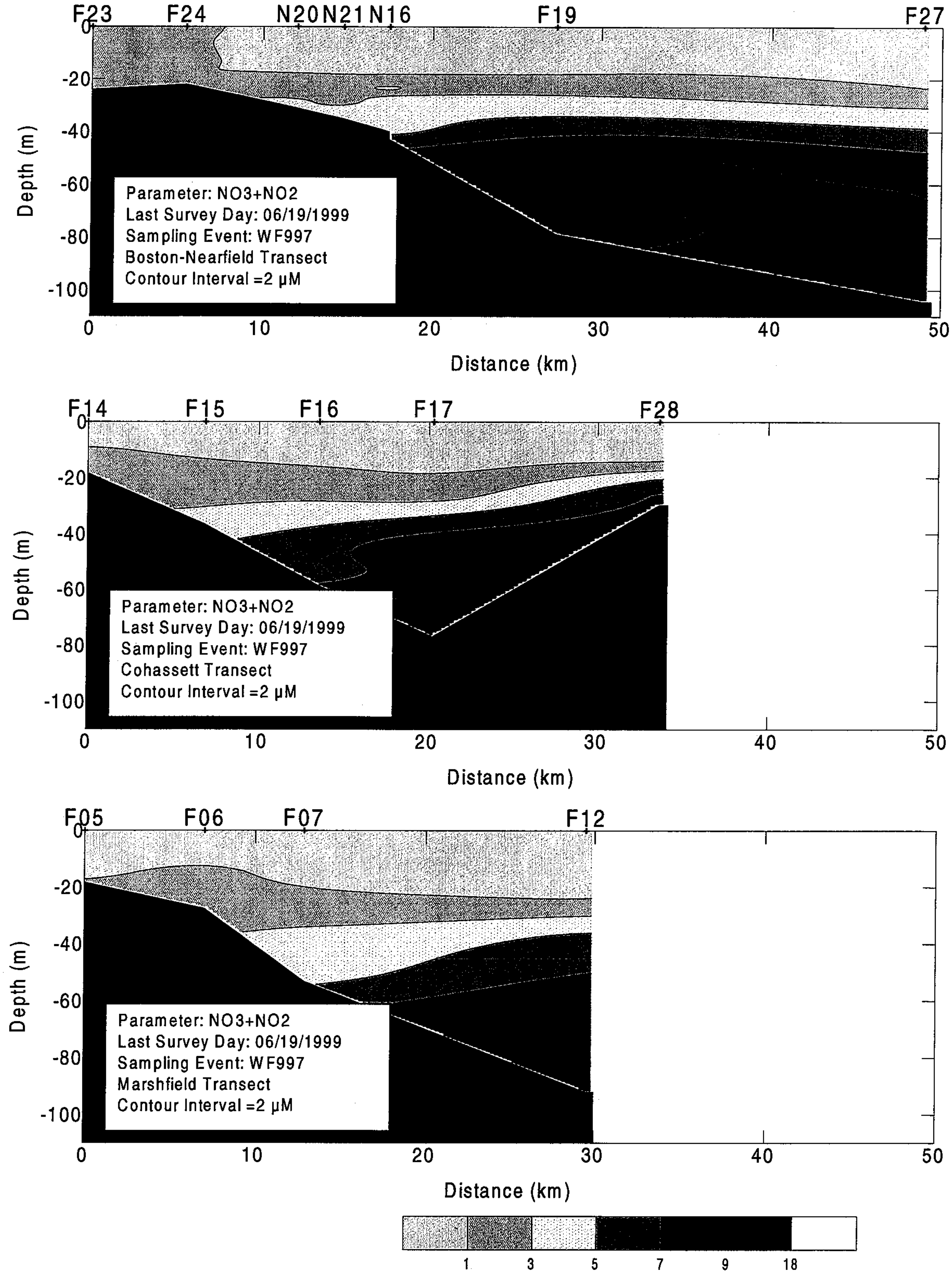


Figure C-36. Nitrate Plus Nitrite Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)

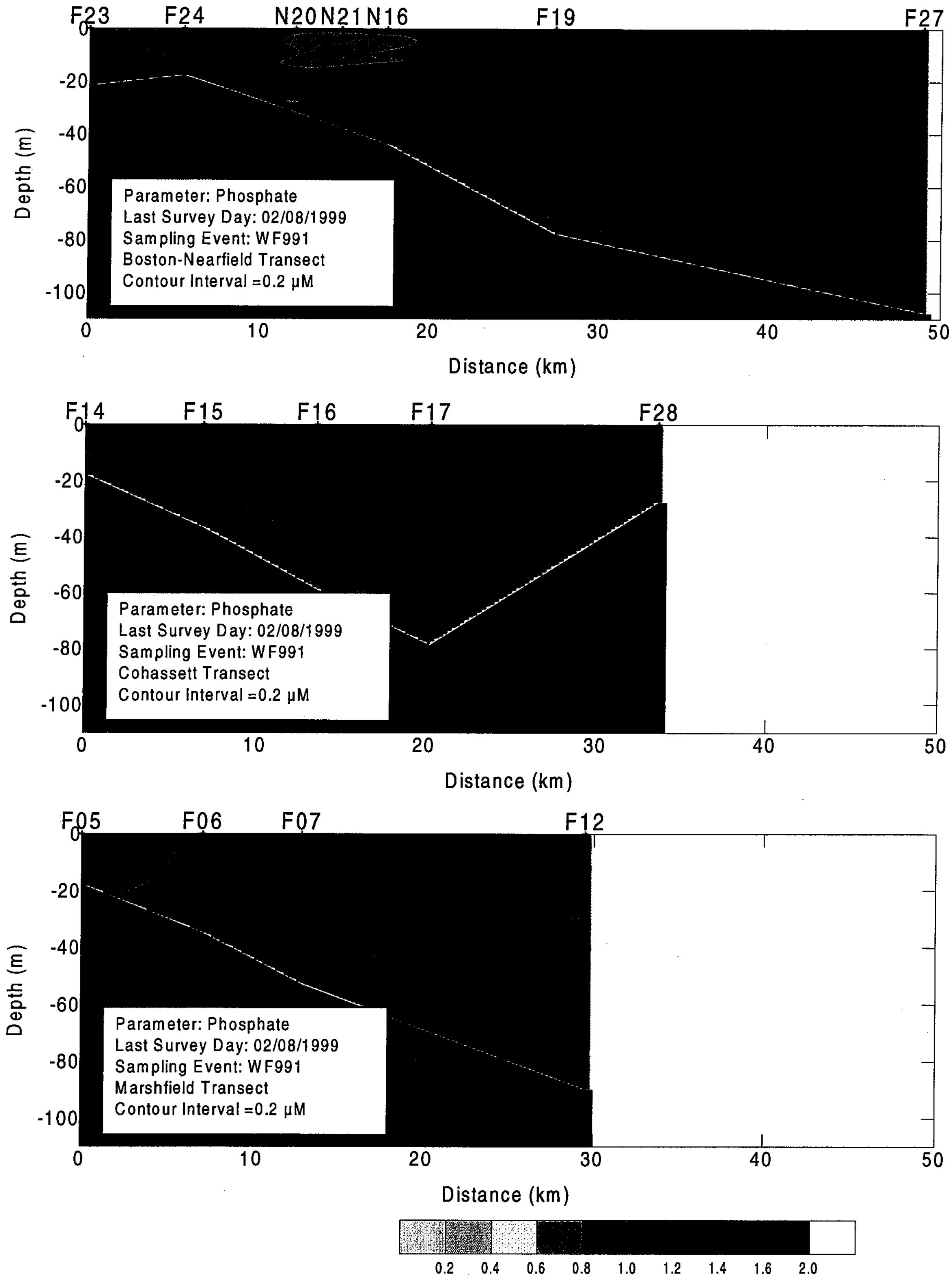


Figure C-37. Phosphate Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)

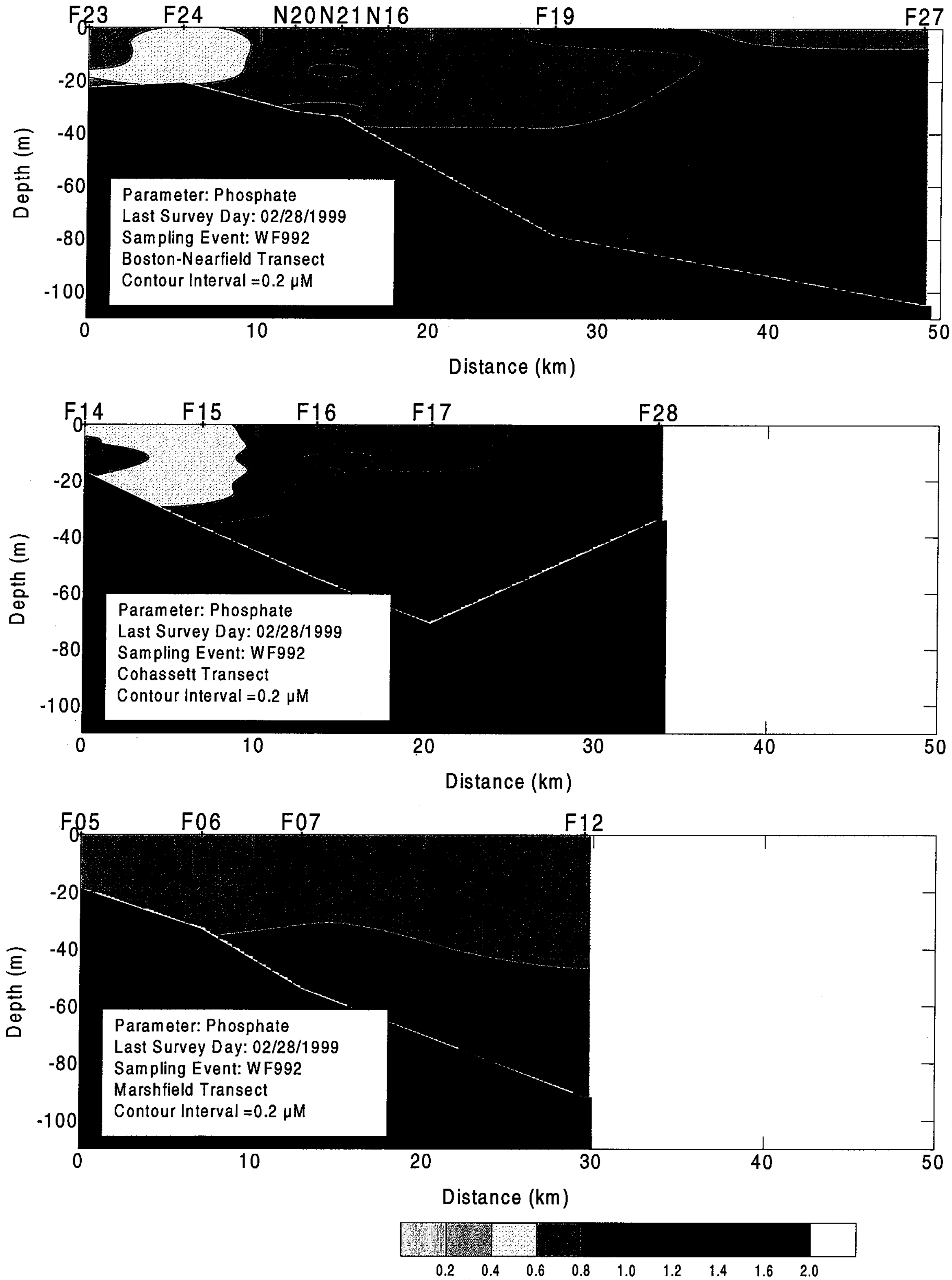


Figure C-38. Phosphate Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

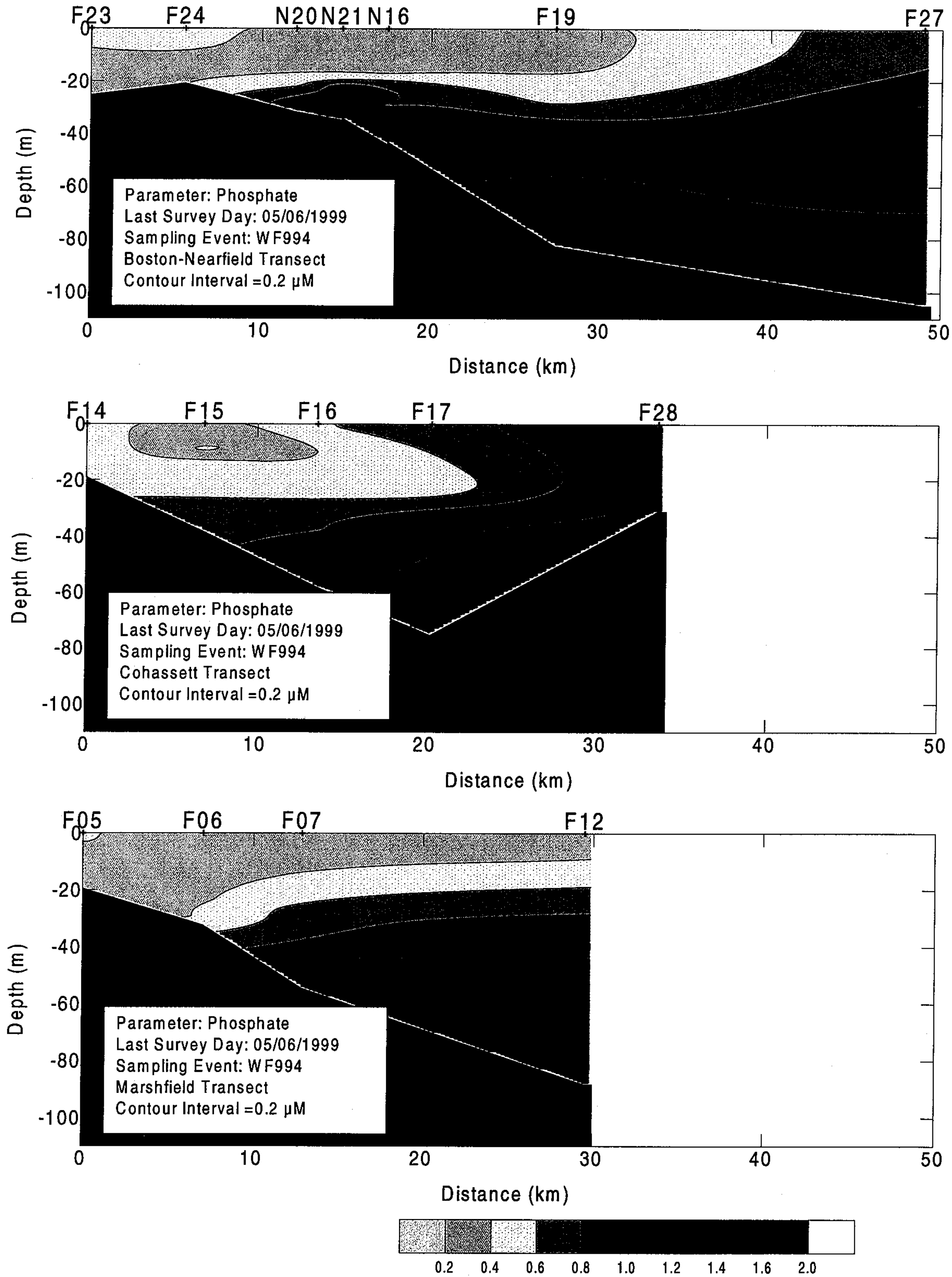


Figure C-39. Phosphate Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)

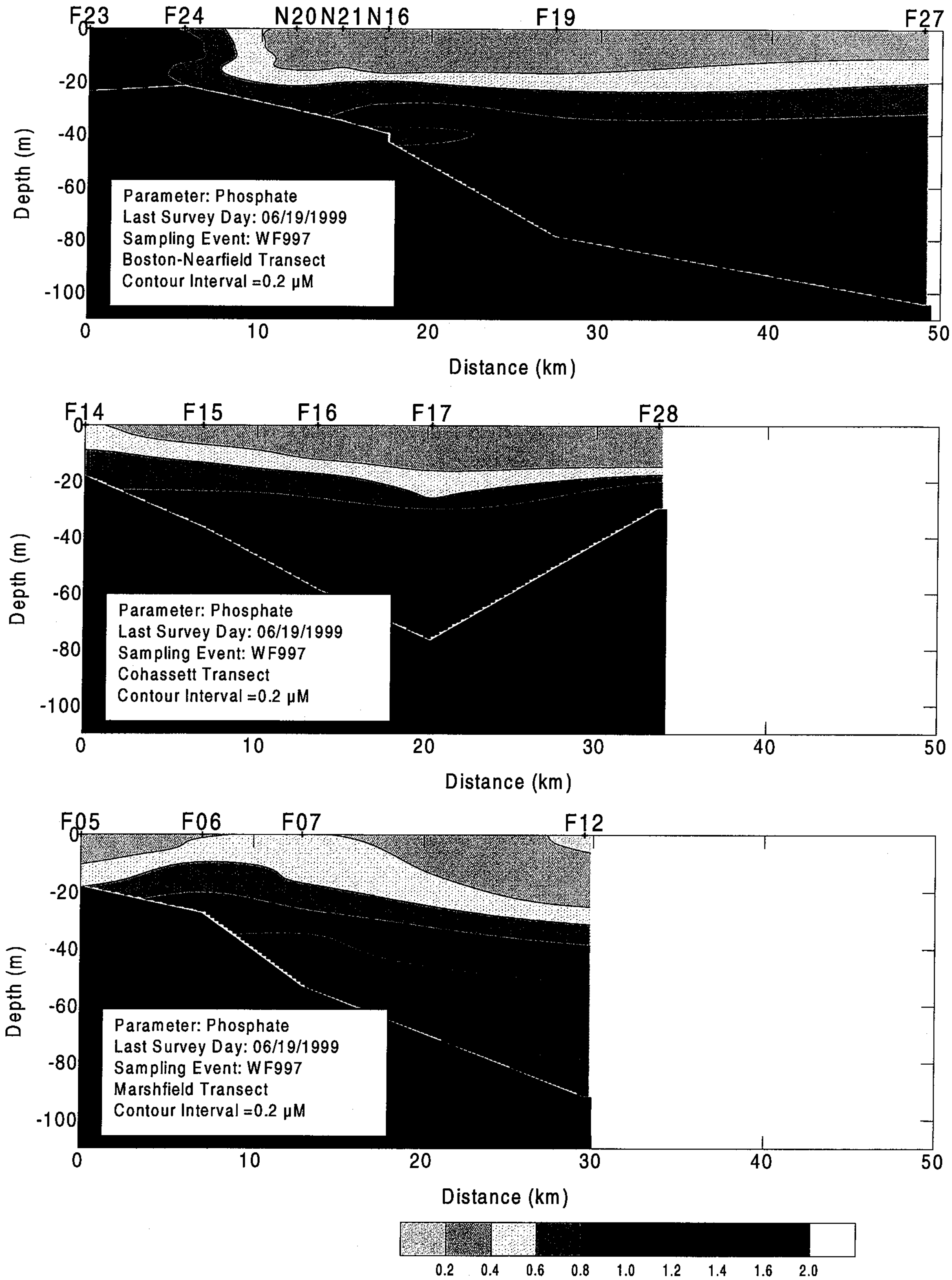


Figure C-40. Phosphate Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)

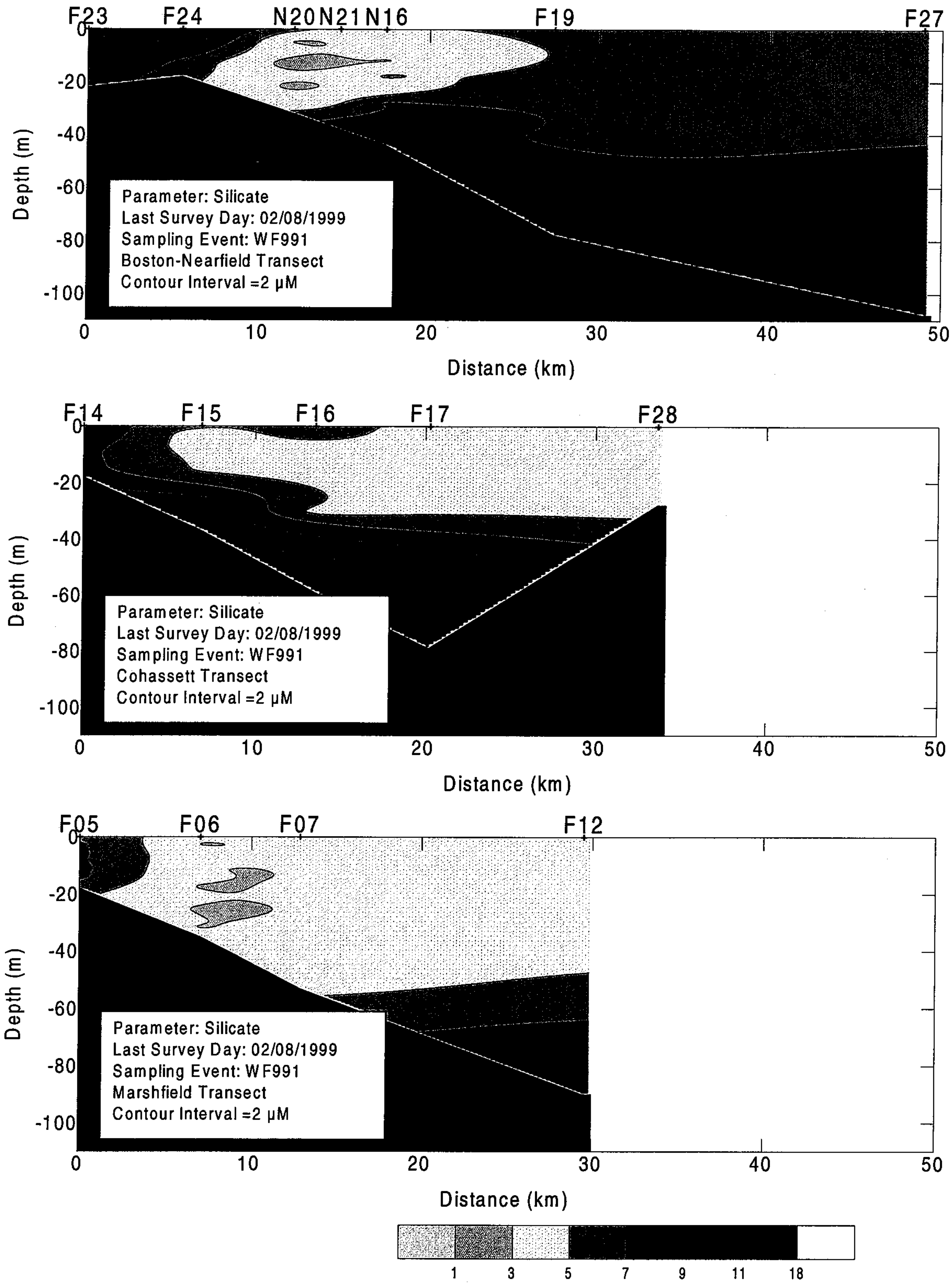


Figure C-41. Silicate Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)

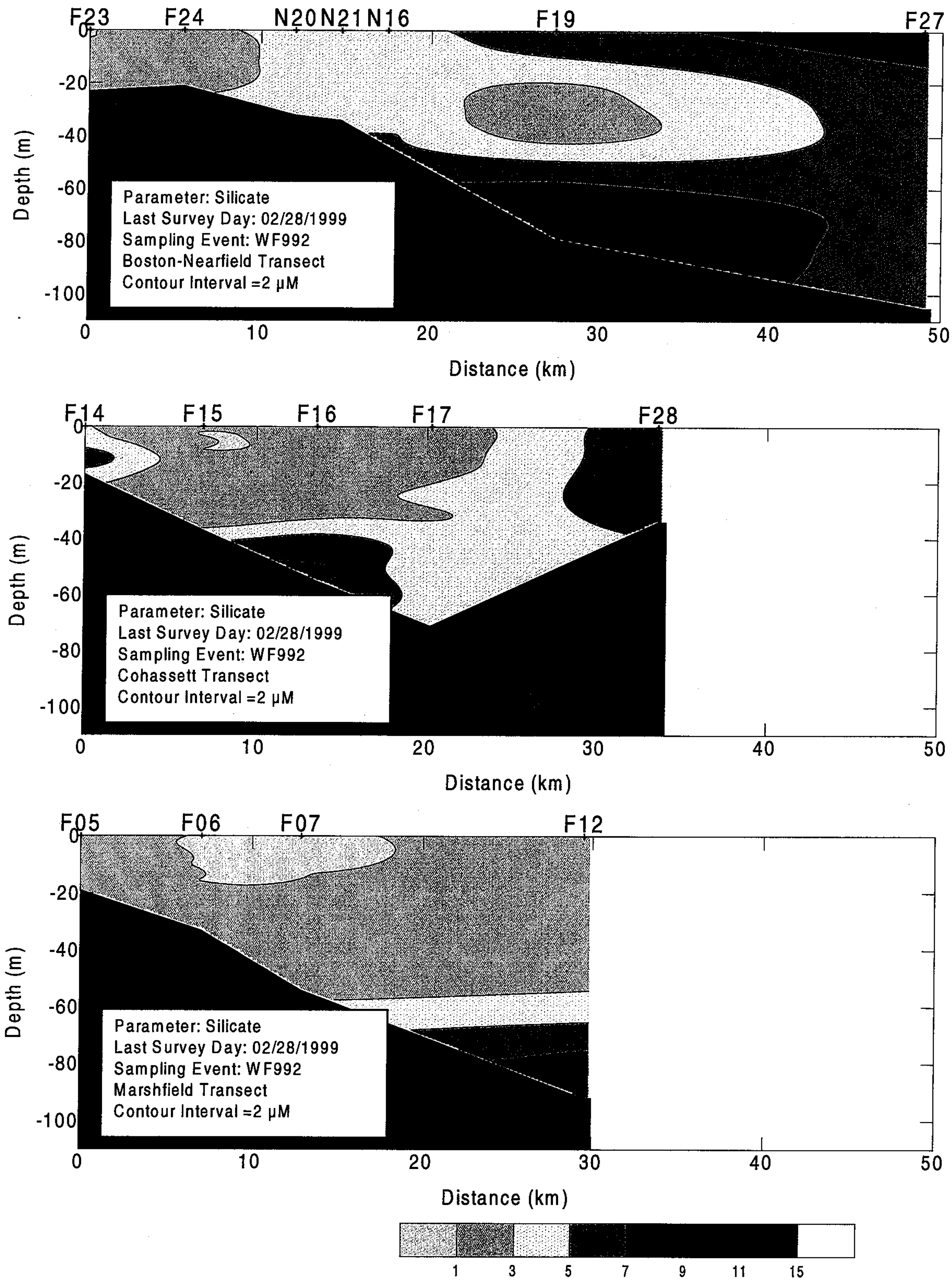


Figure C-42. Silicate Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

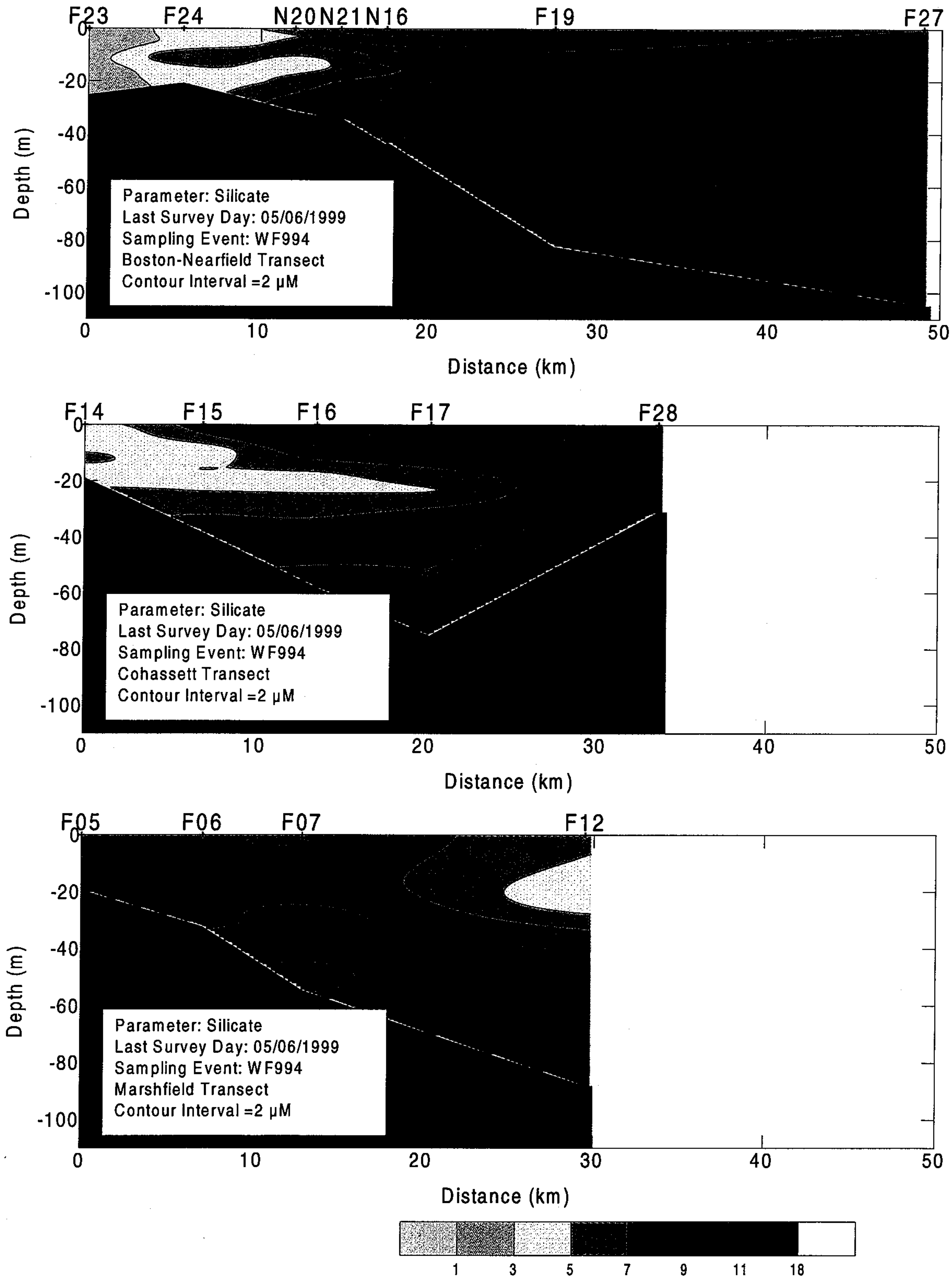


Figure C-43. Silicate Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)

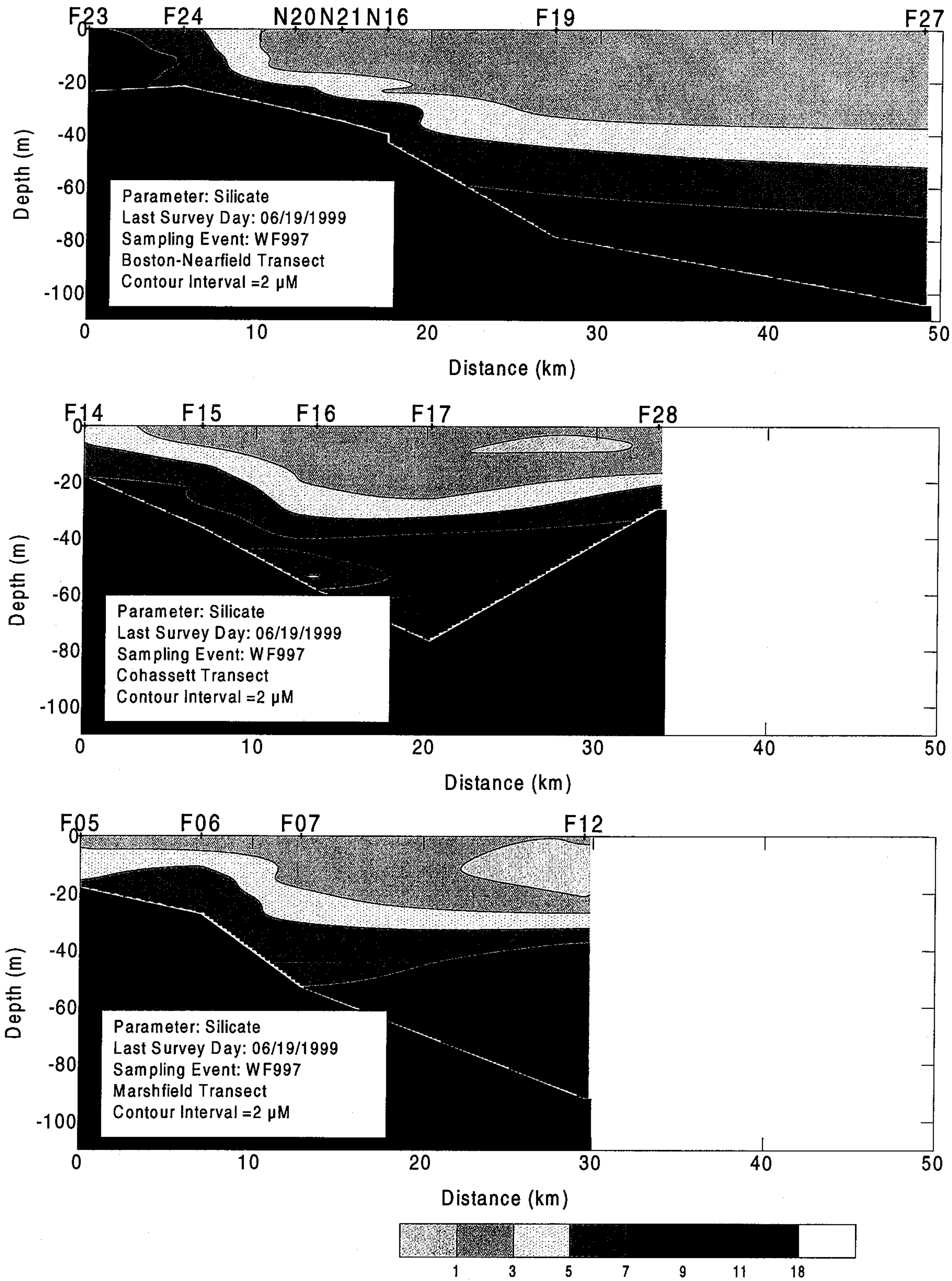


Figure C-44. Silicate Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)

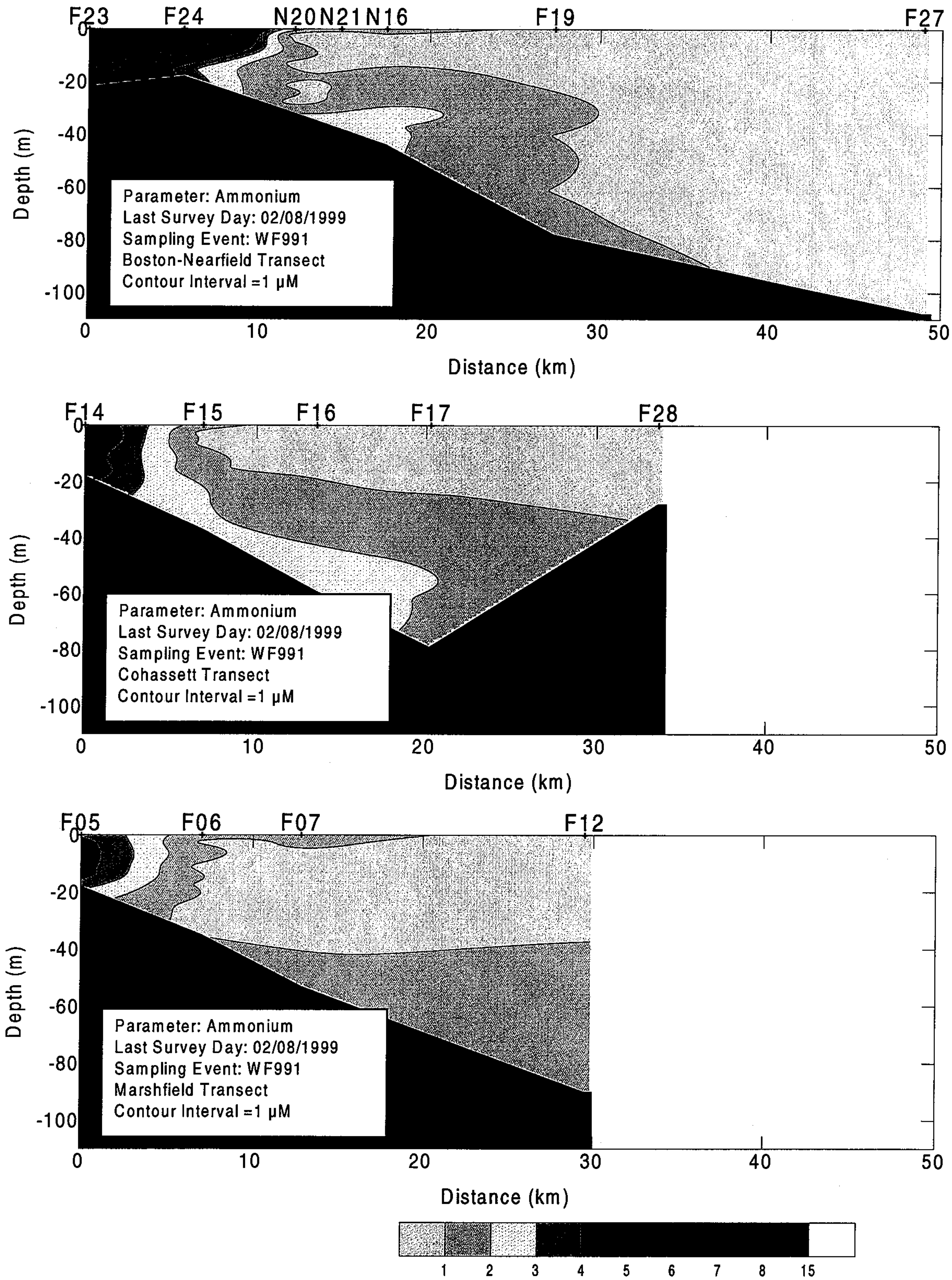


Figure C-45. Ammonium Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)

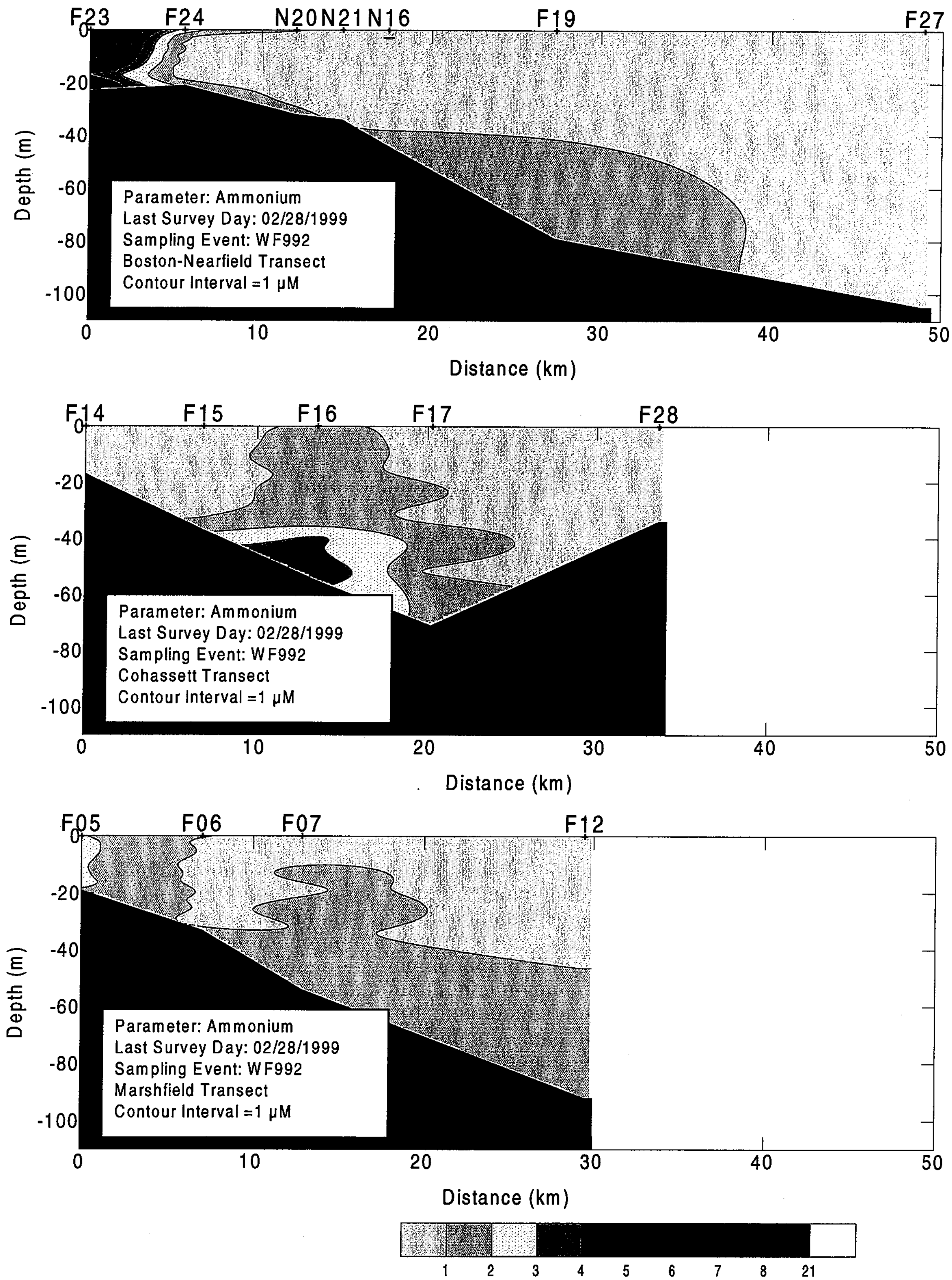


Figure C-46. Ammonium Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

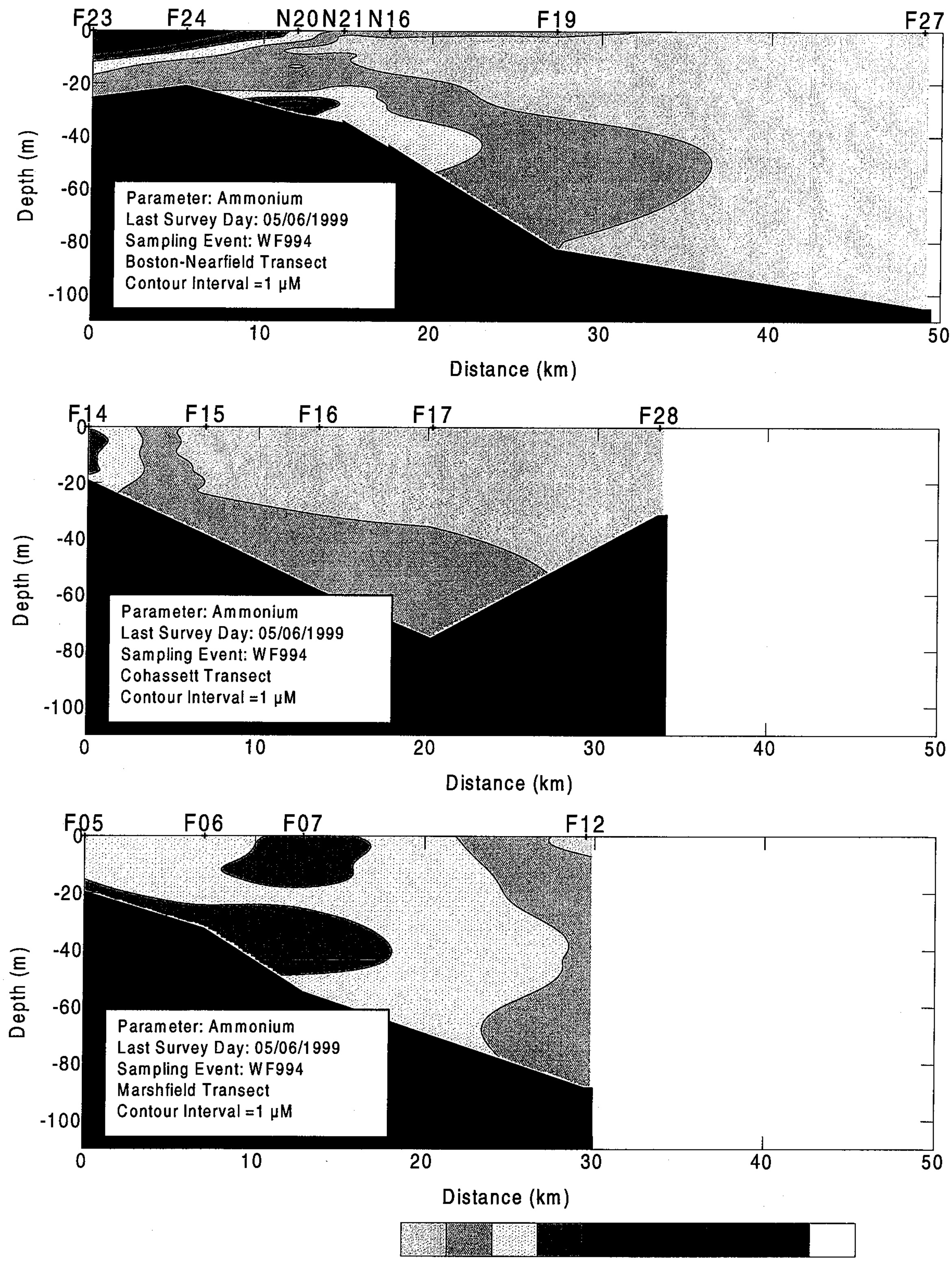


Figure C-47. Ammonium Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)

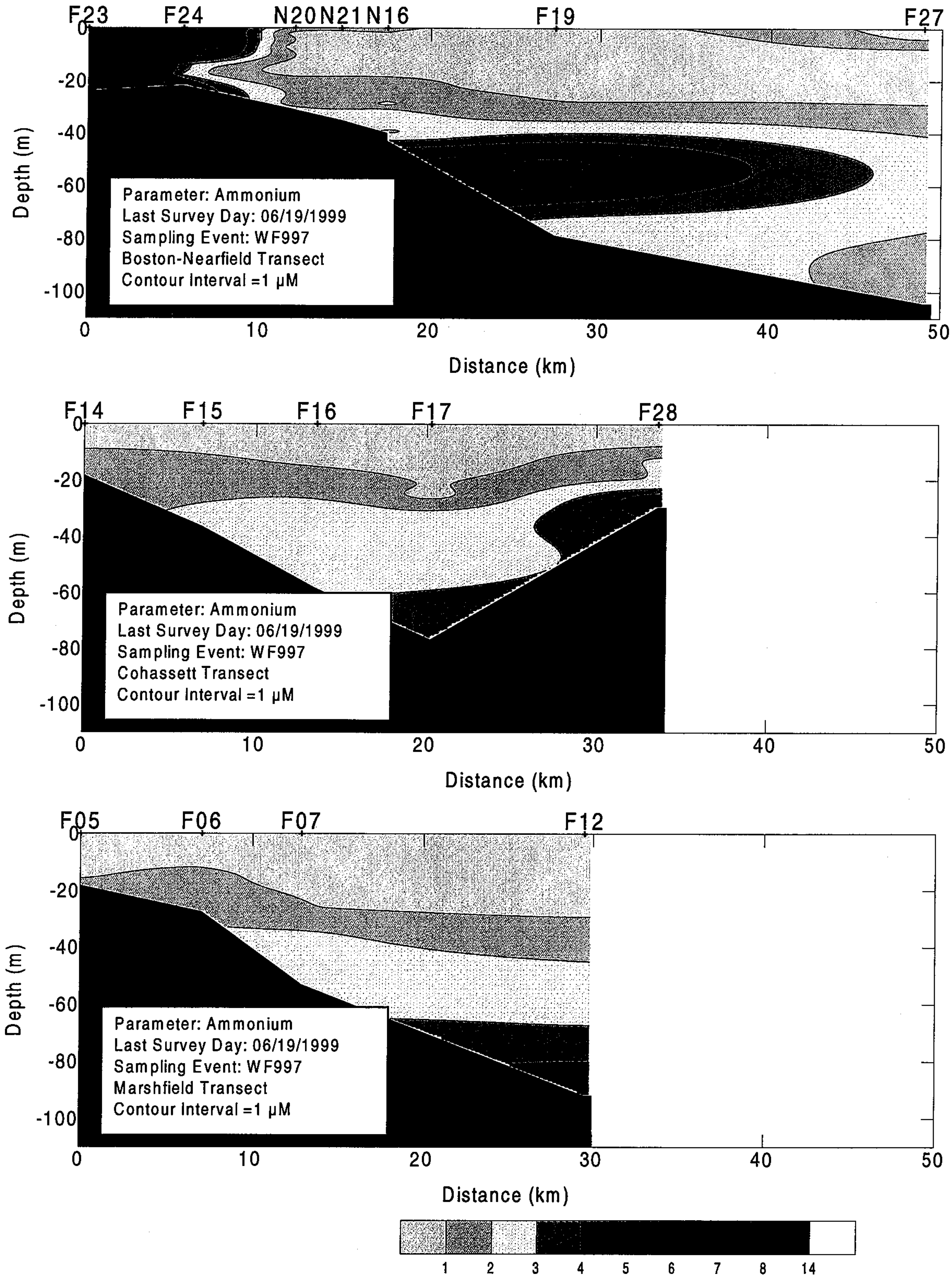


Figure C-48. Ammonium Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)

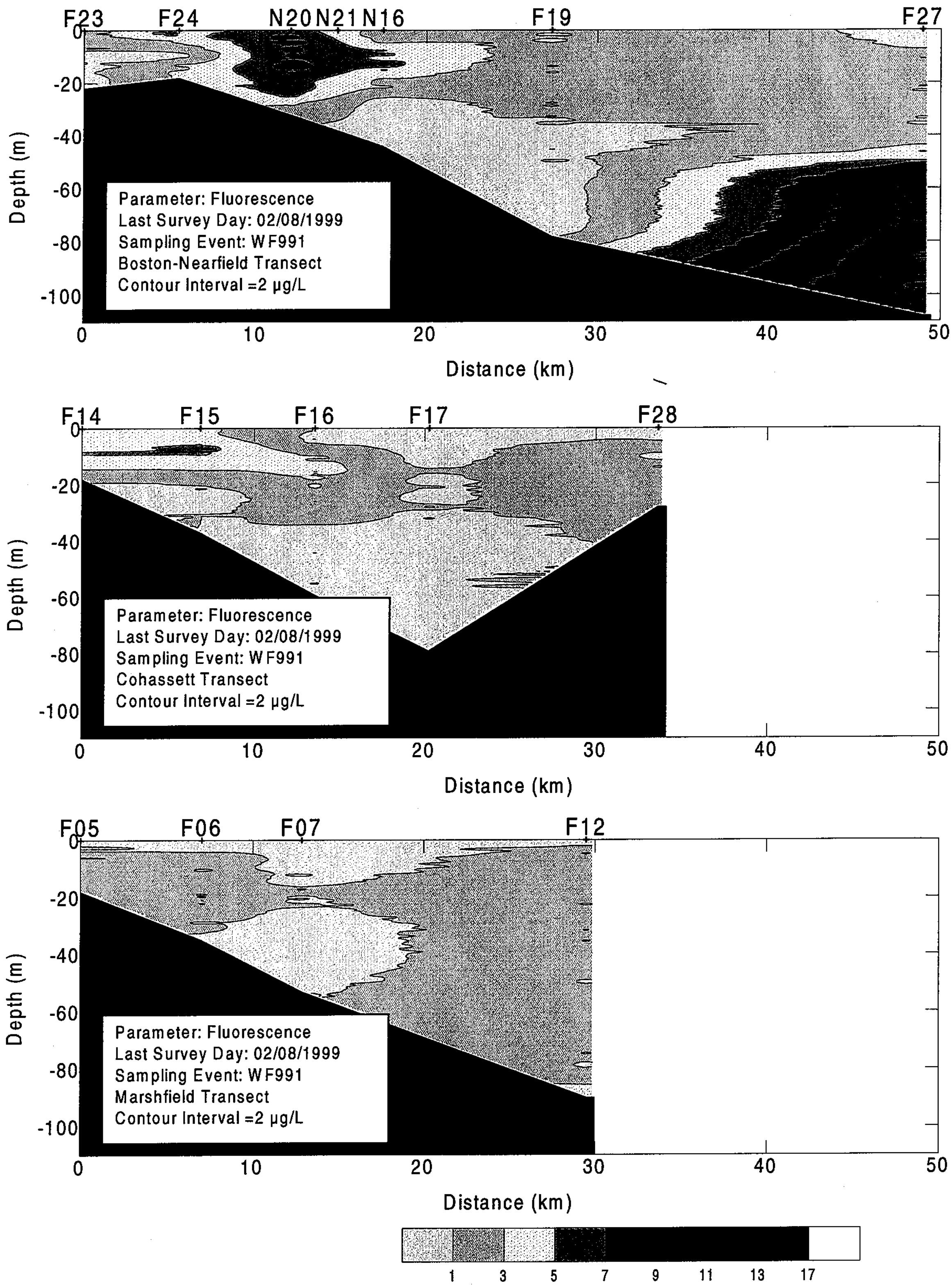
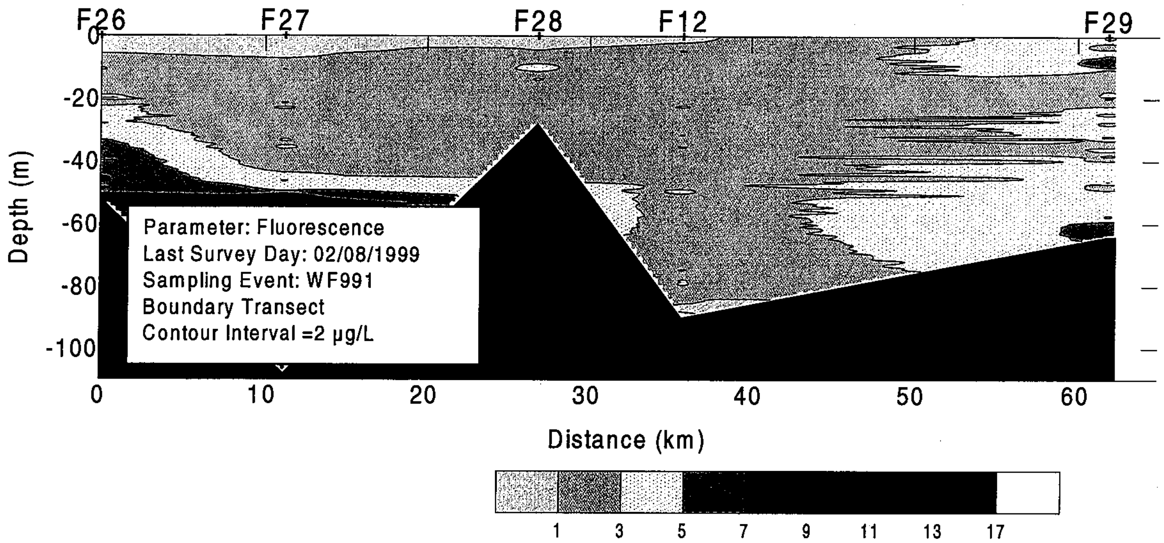


Figure C-49. Fluorescence Transect Plots for Farfield Survey WF991 (Feb 99)



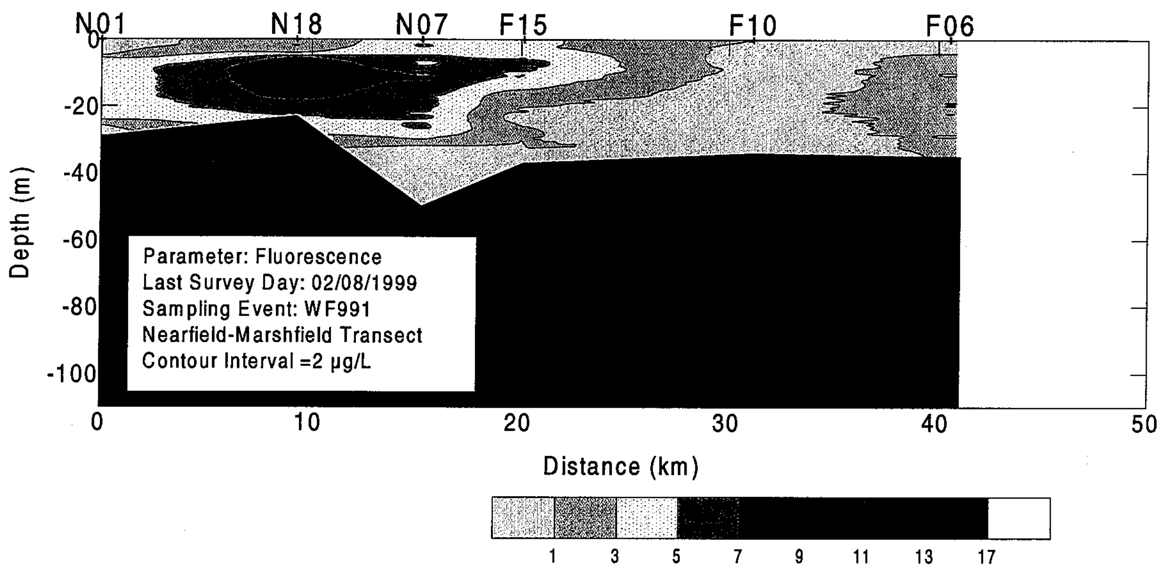


Figure C-50. Fluorescence Transect Plots (North - South) for Farfield Survey WF991 (Feb 99)

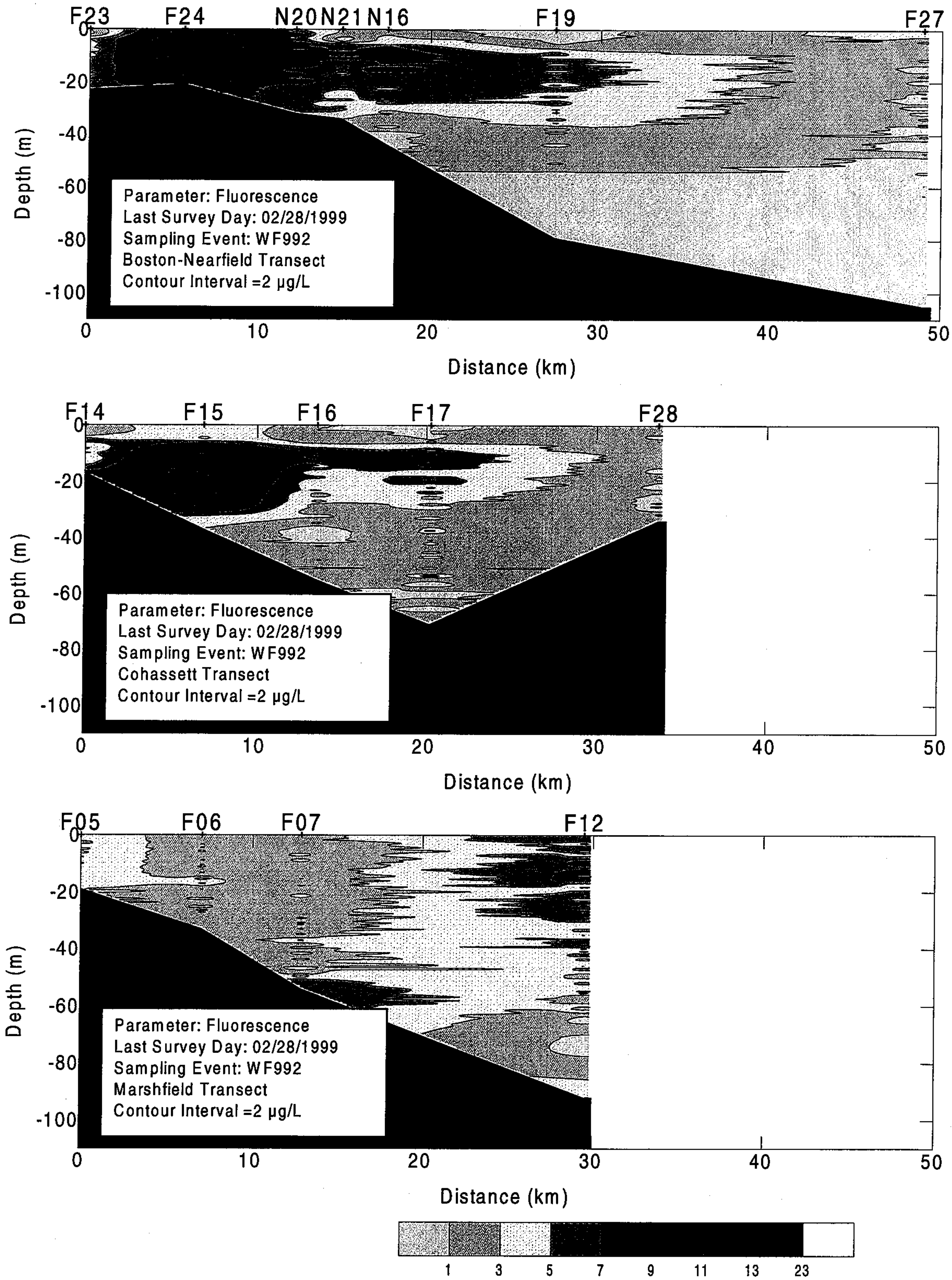


Figure C-51. Fluorescence Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

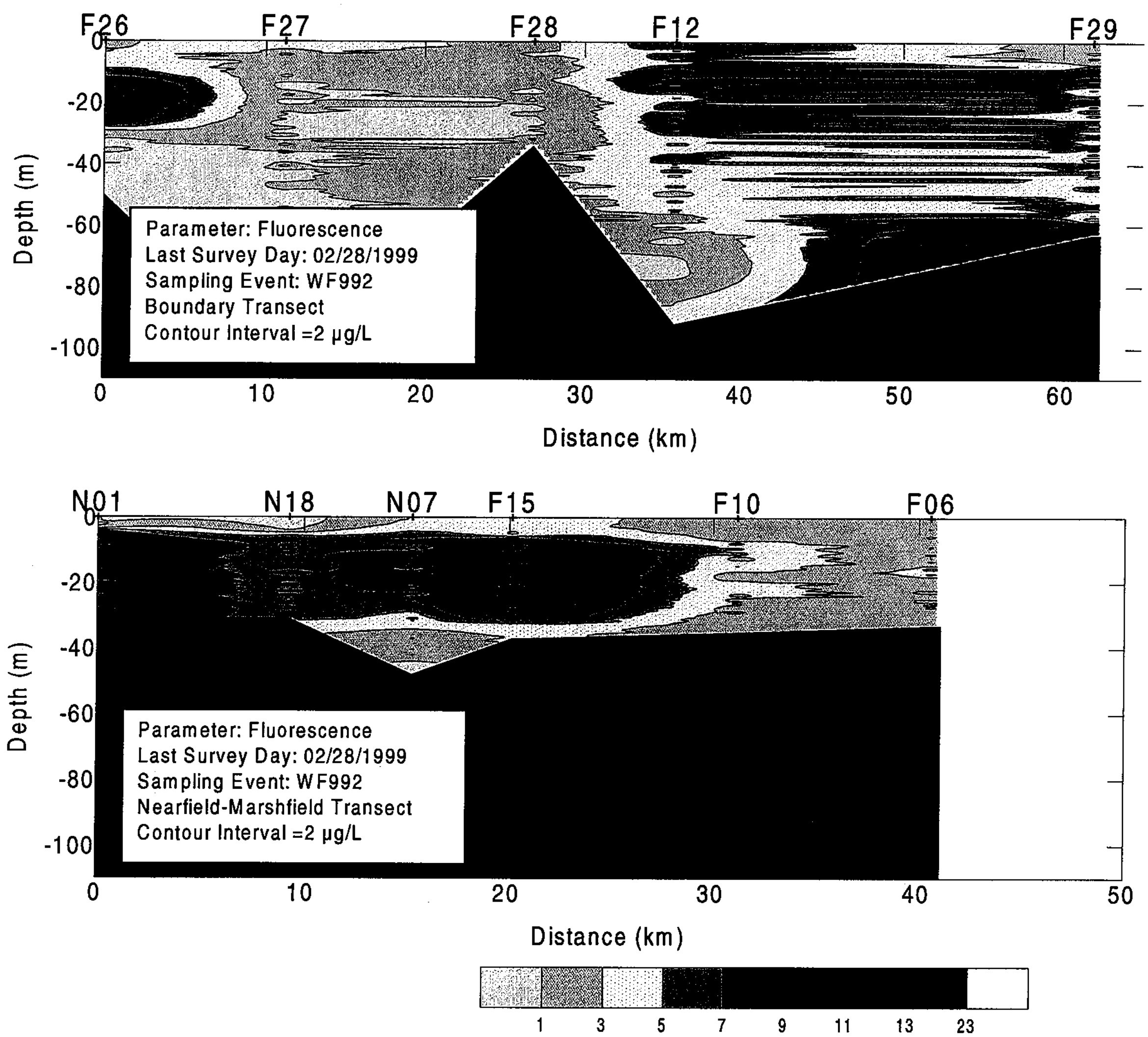


Figure C-52. Fluorescence Transect Plots (North - South) for Farfield Survey WF992 (Feb 99)

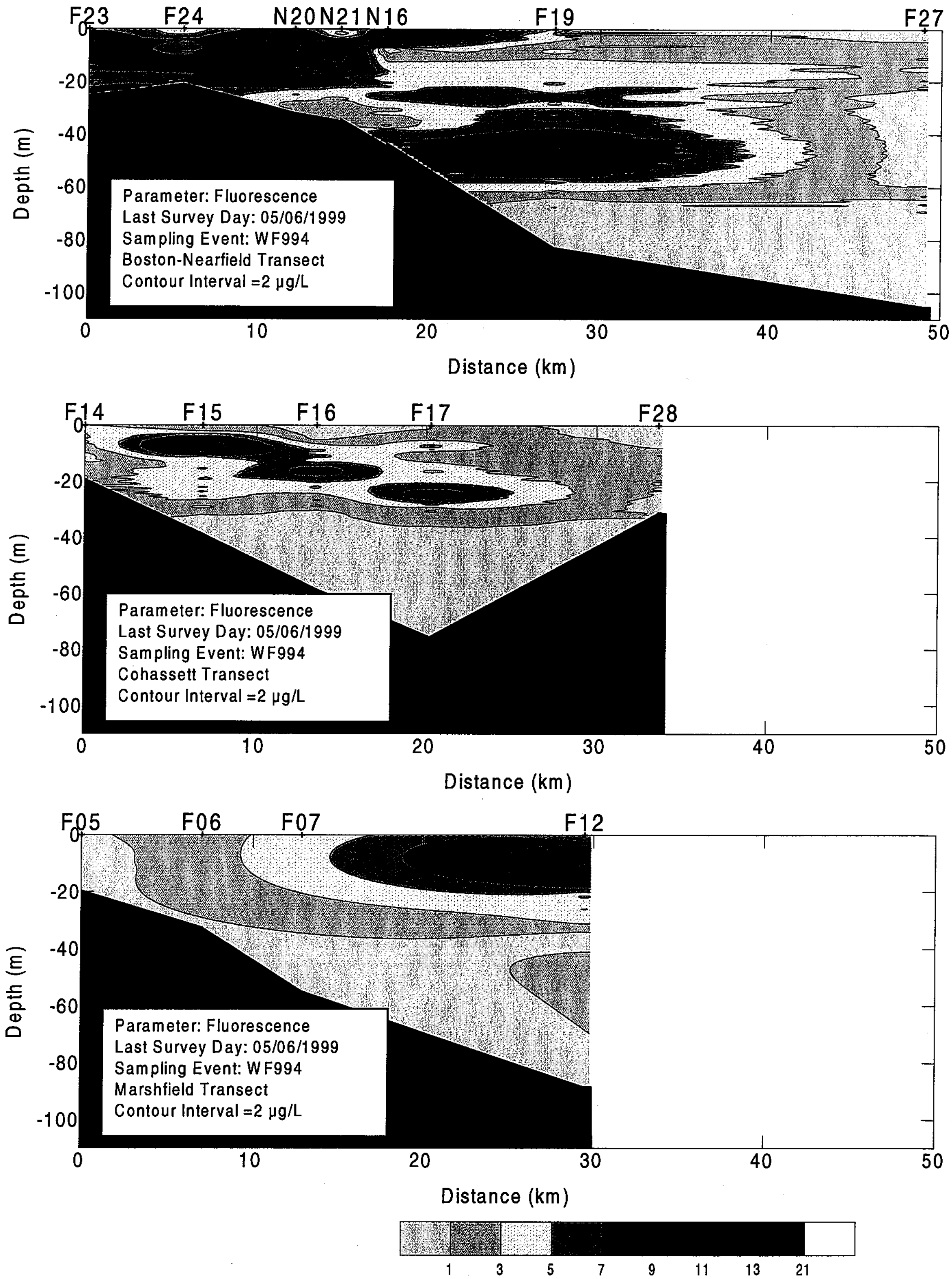


Figure C-53. Fluorescence Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)

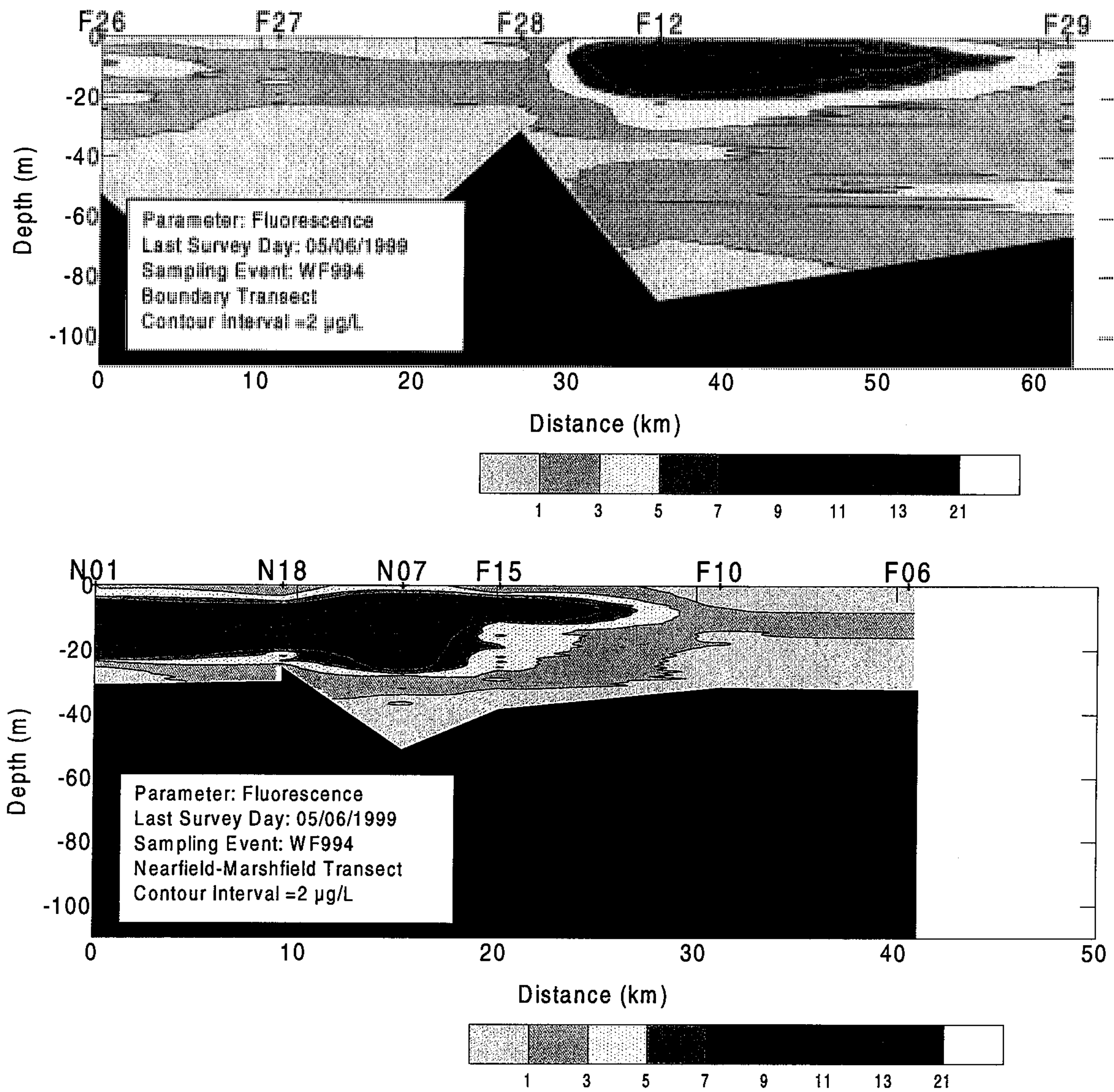


Figure C-54. Fluorescence Transect Plots (North - South) for Farfield Survey WF994 (Jun 99)

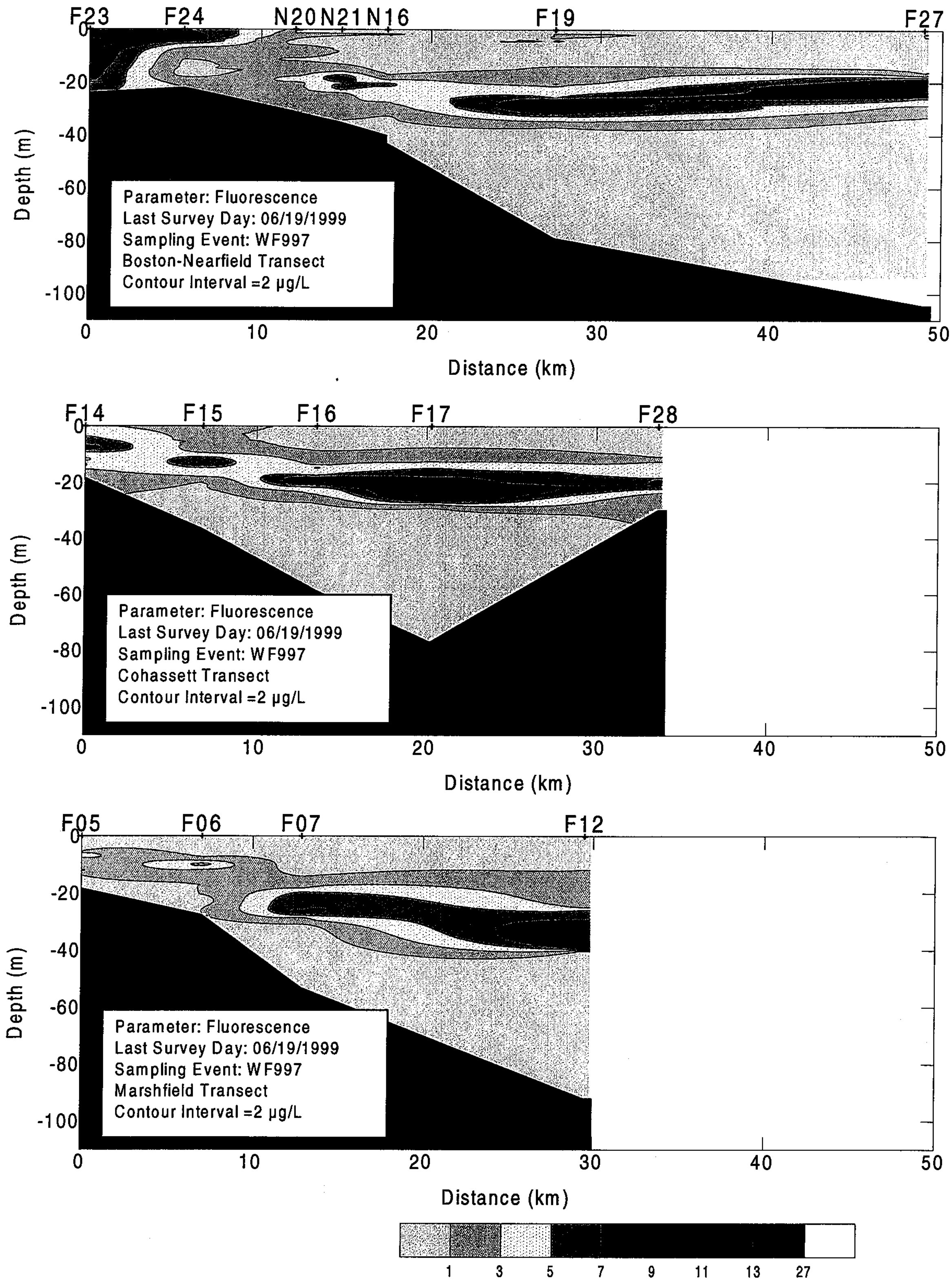
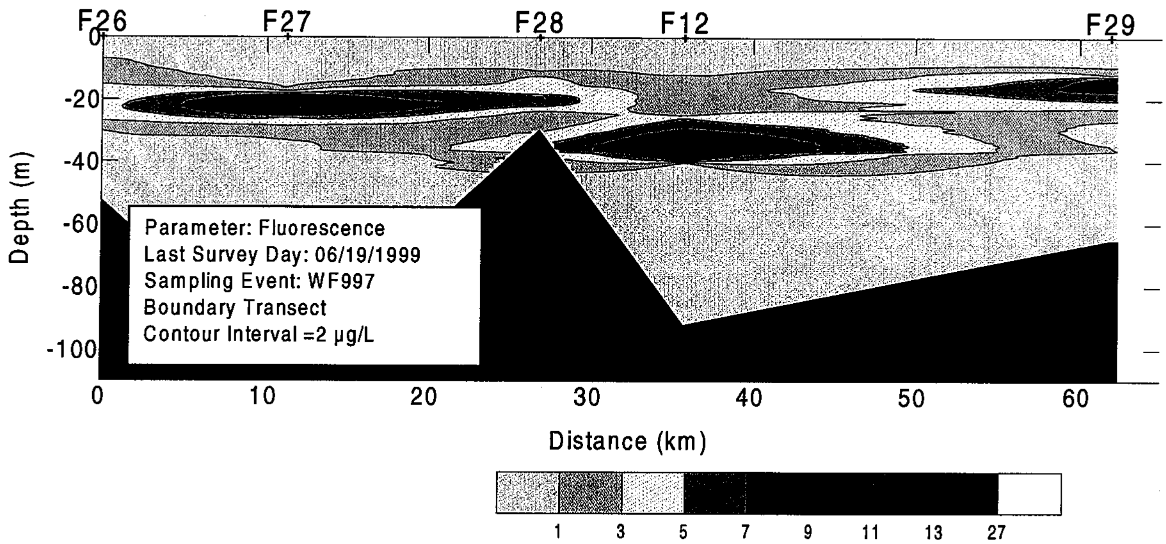


Figure C-54. Fluorescence Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)



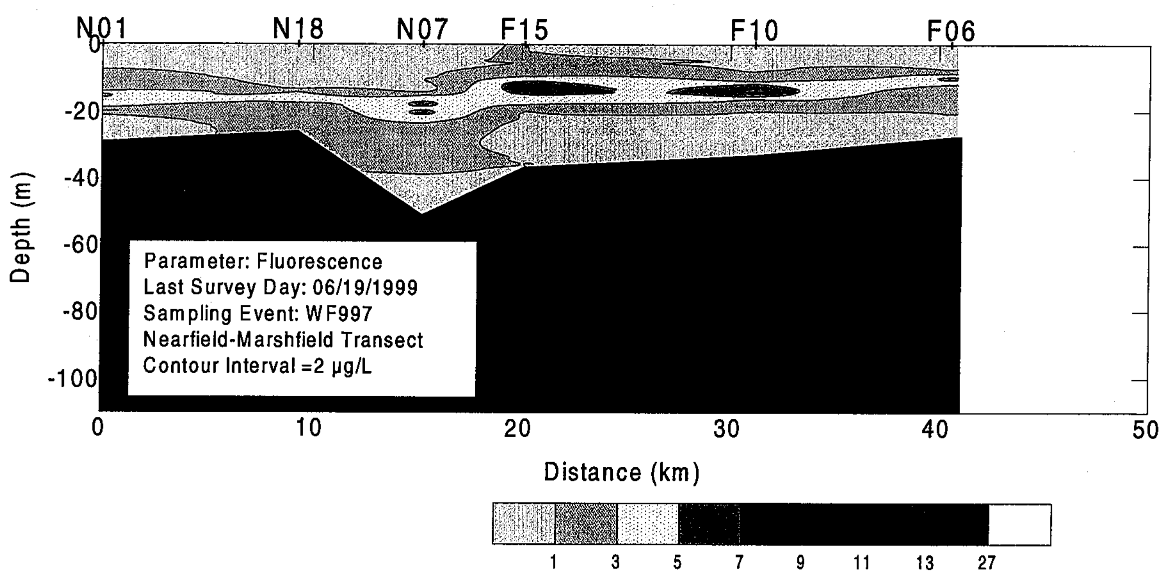


Figure C-55. Fluorescence Transect Plots (North - South) for Farfield Survey WF997 (Jun 99)

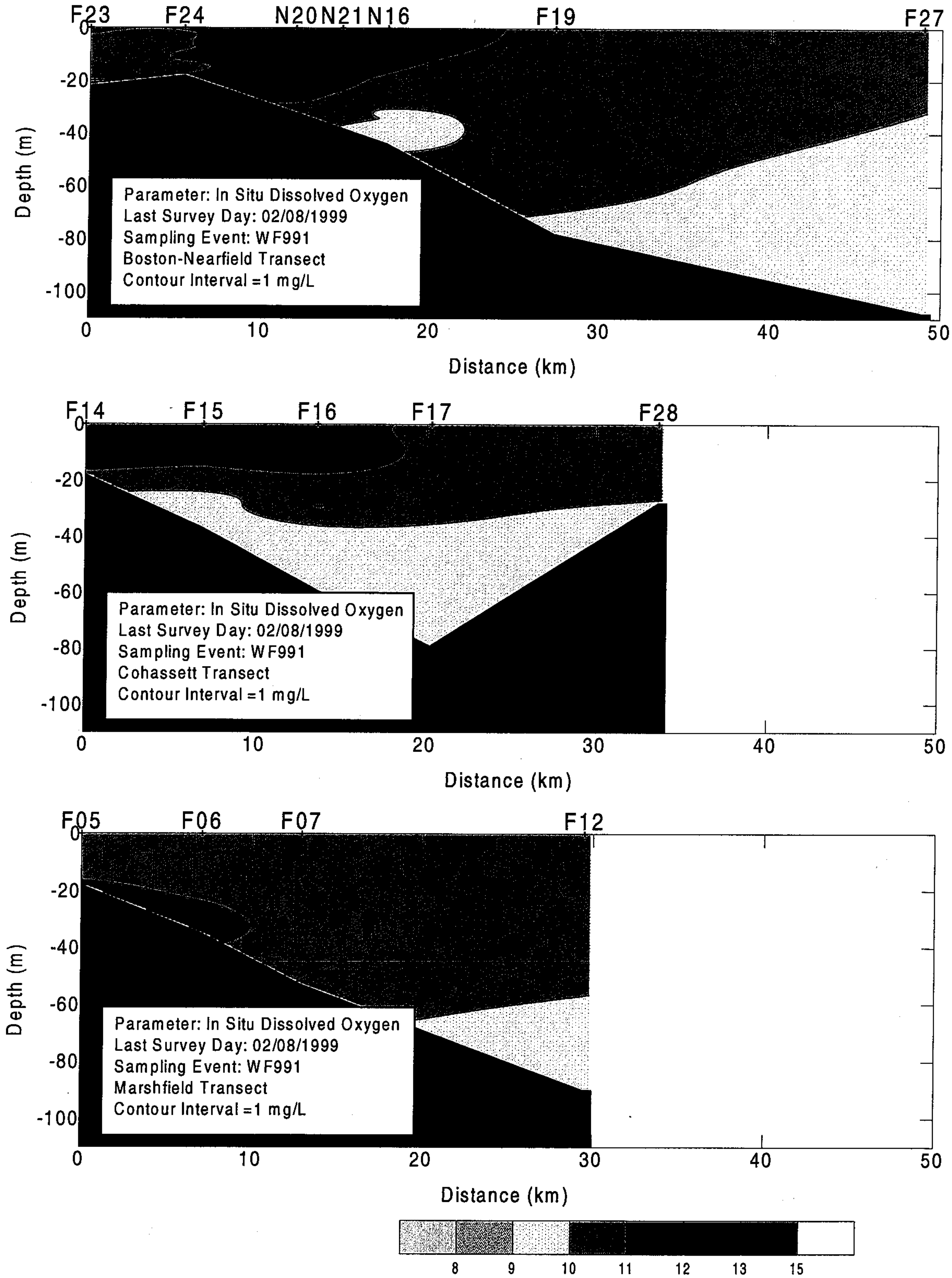
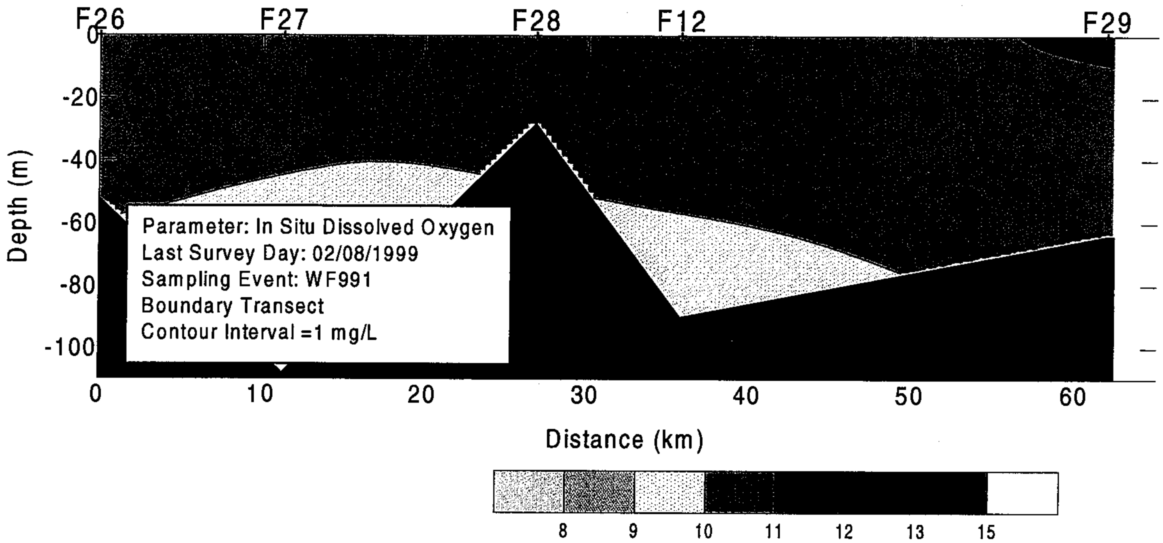


Figure C-56. Dissolved Oxygen Transect Plots (West - East) for Farfield Survey WF991 (Feb 99)



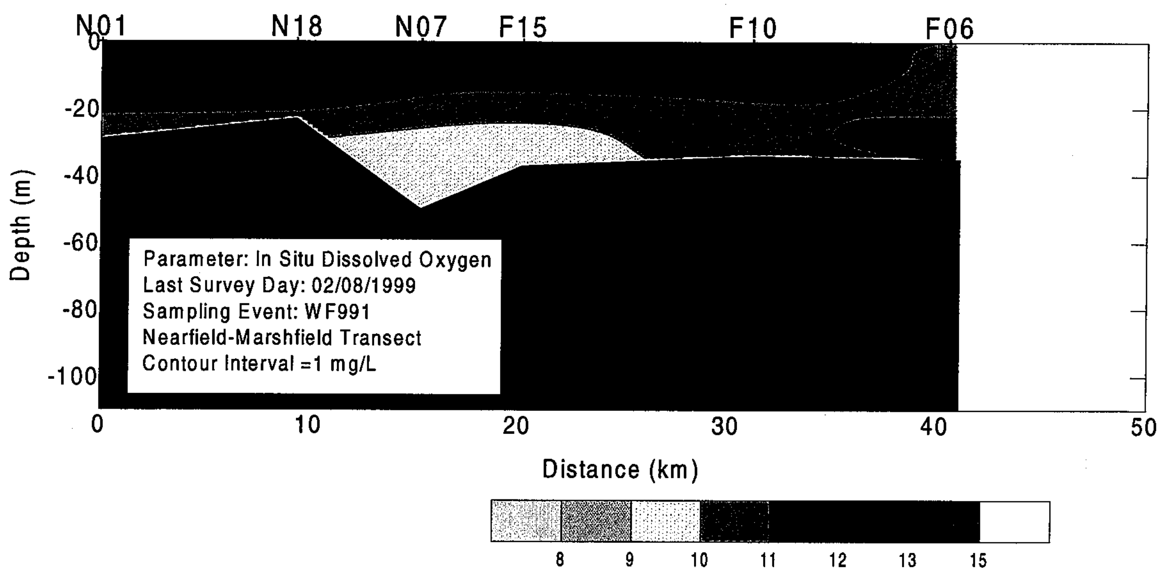


Figure C-57. Dissolved Oxygen Transect Plots (North - South) for Farfield Survey WF991 (Feb 99)

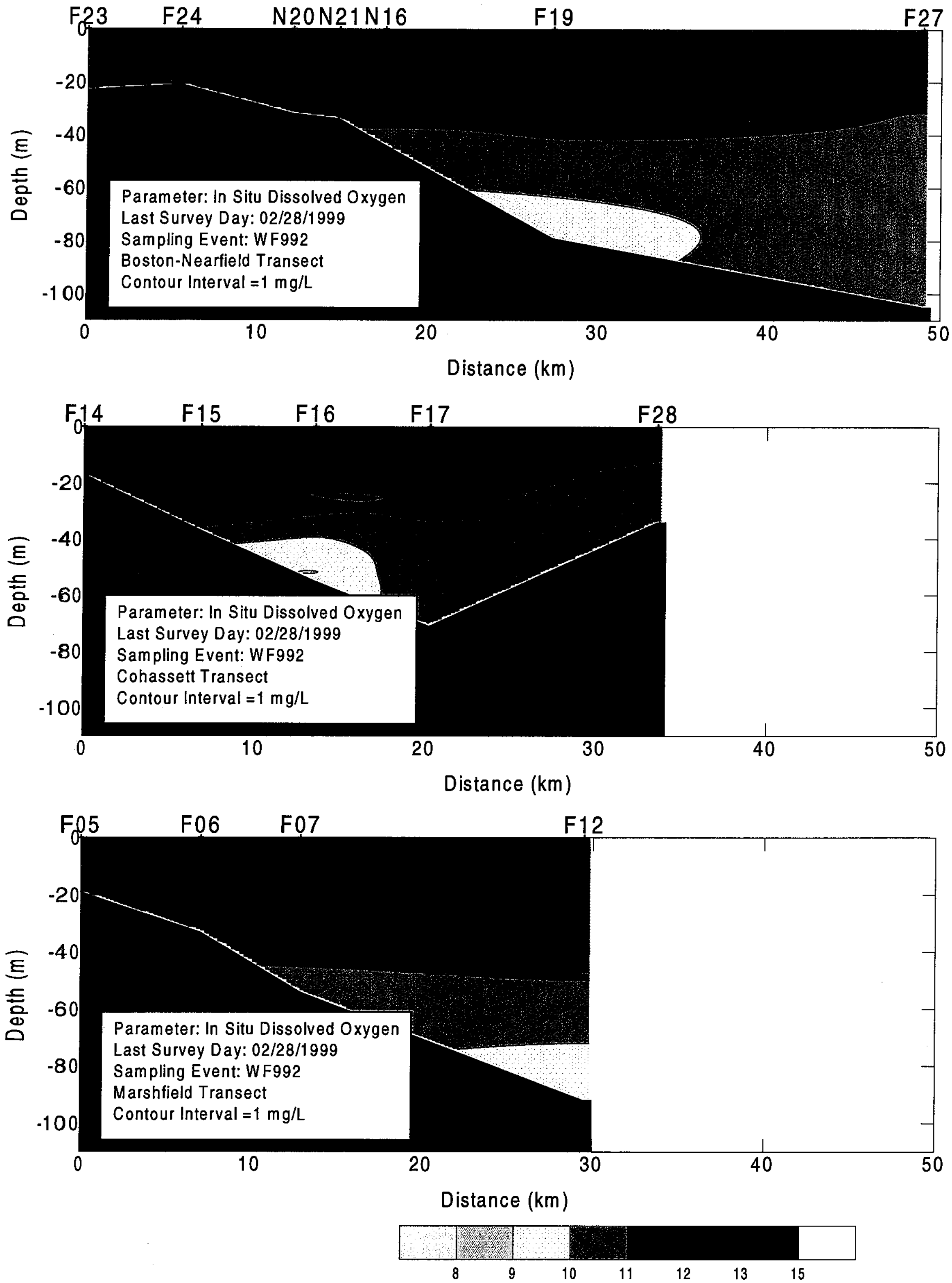


Figure C-58. Dissolved Oxygen Transect Plots (West - East) for Farfield Survey WF992 (Feb 99)

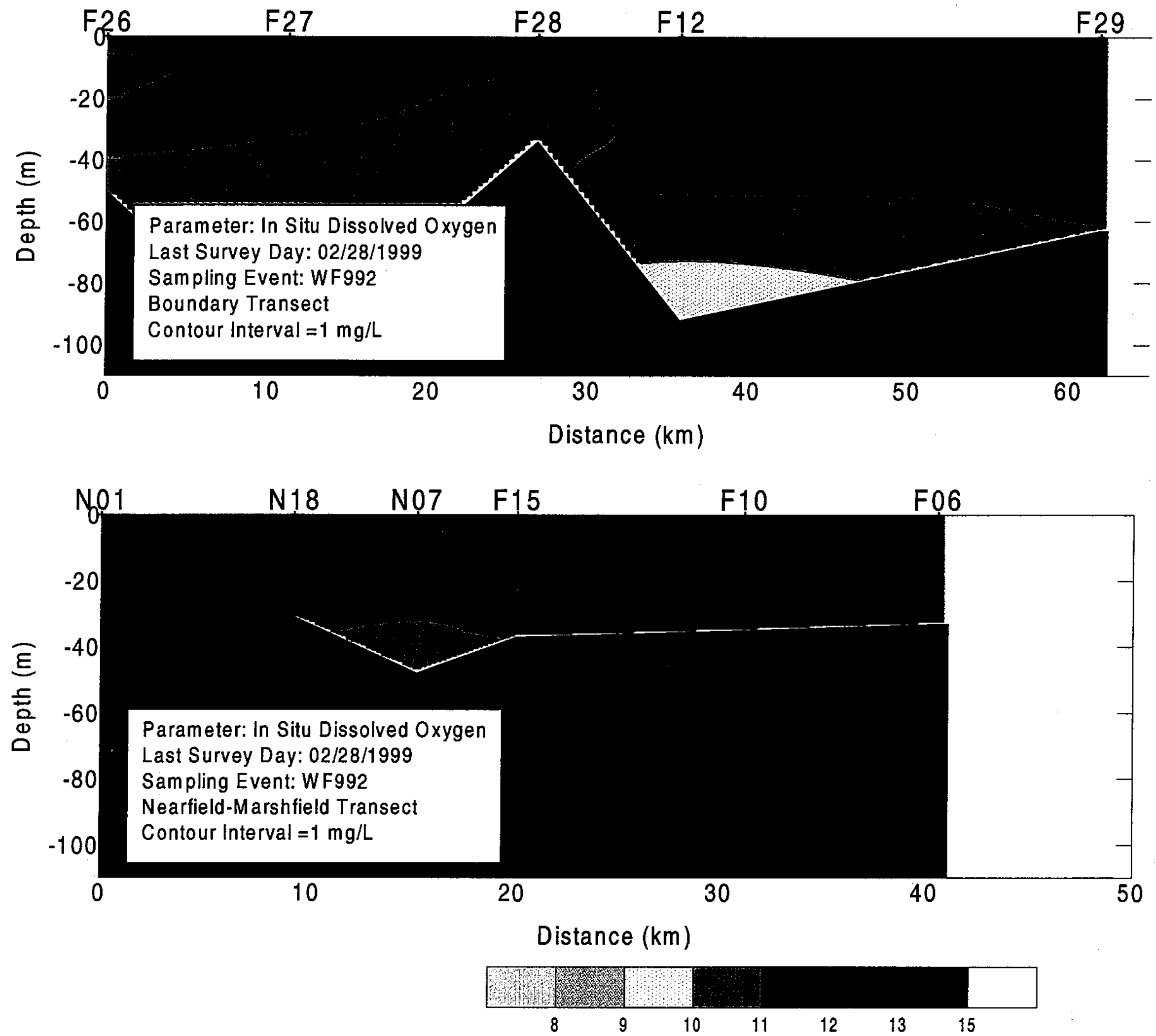


Figure C-59. Dissolved Oxygen Transect Plots (North - South) for Farfield Survey WF992 (Feb 99)

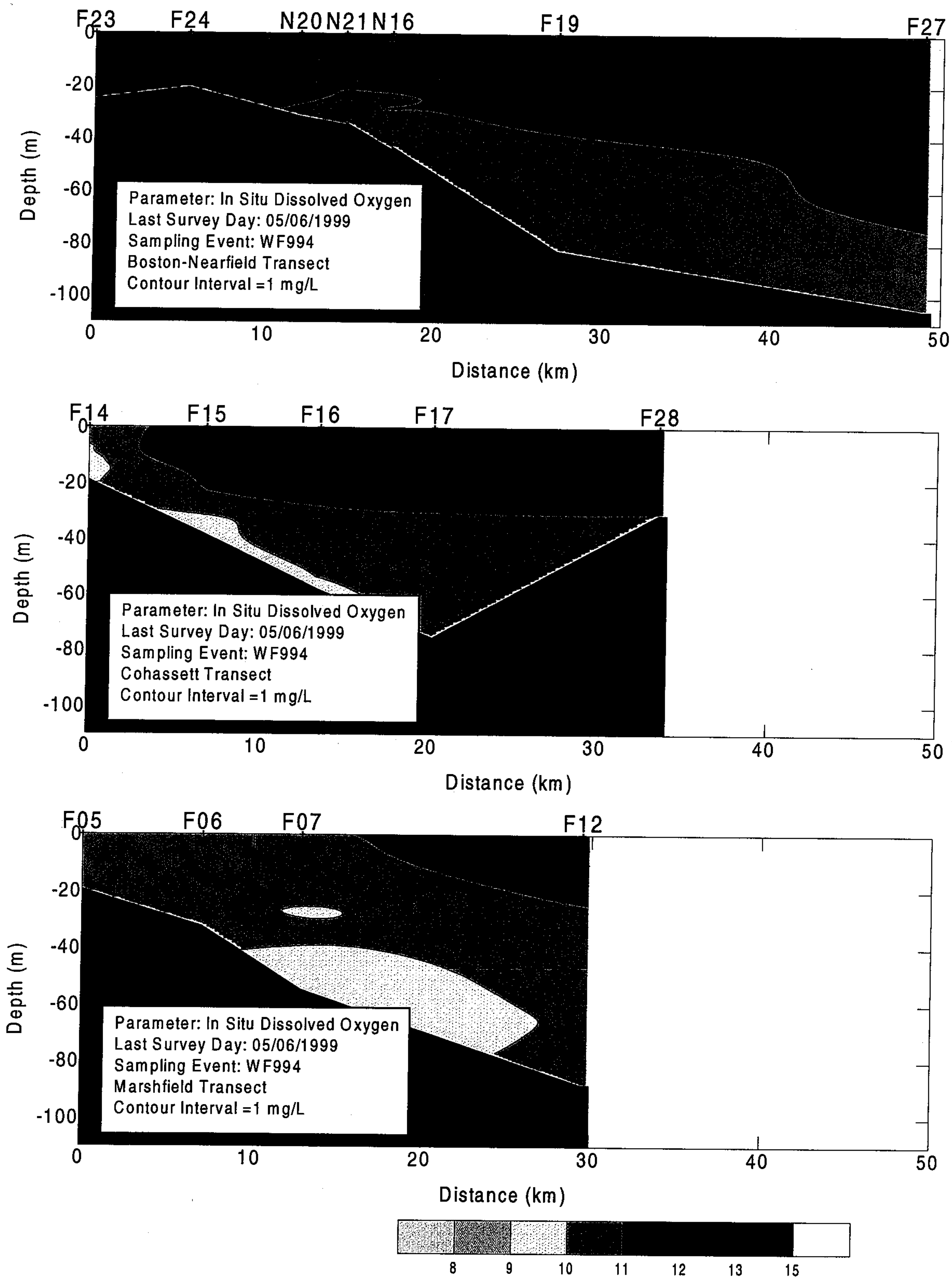
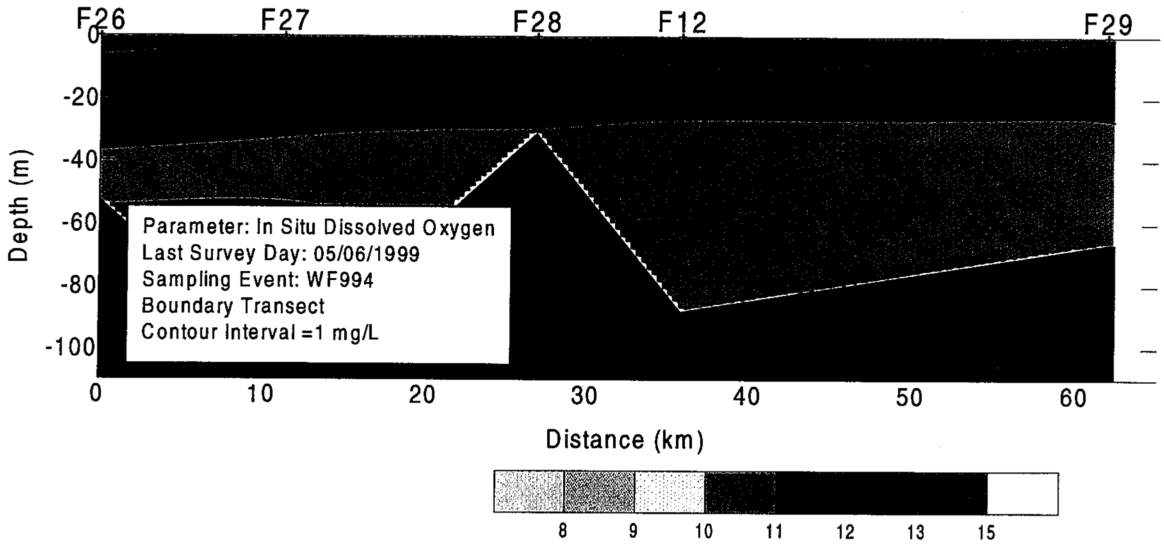


Figure C-60. Dissolved Oxygen Transect Plots (West - East) for Farfield Survey WF994 (Apr 99)



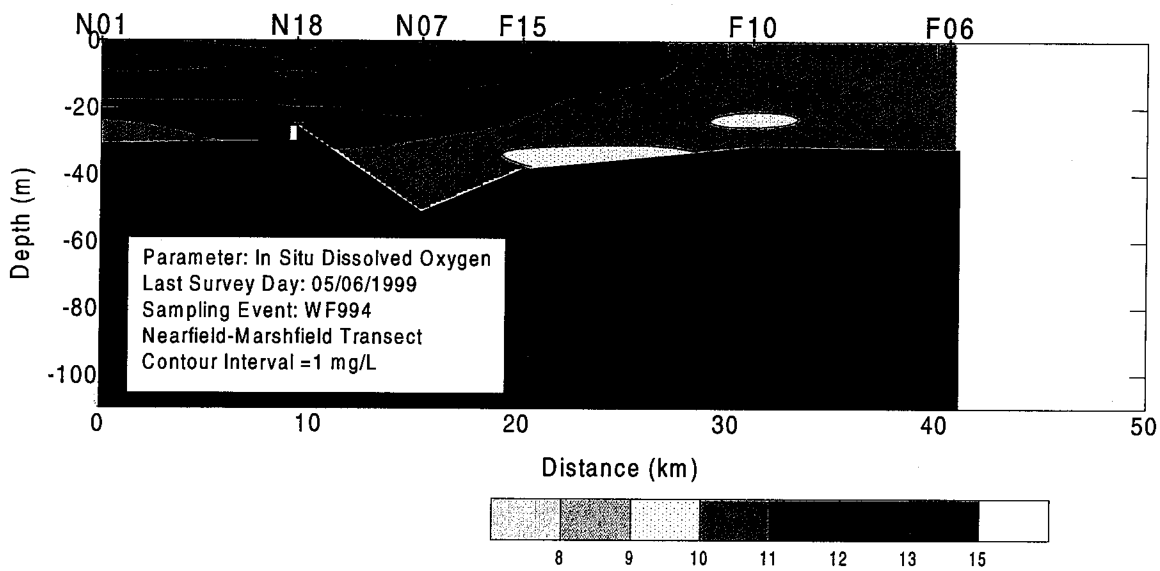


Figure C-61. Dissolved Oxygen Transect Plots (North - South) for Farfield Survey WF994 (Apr 99)

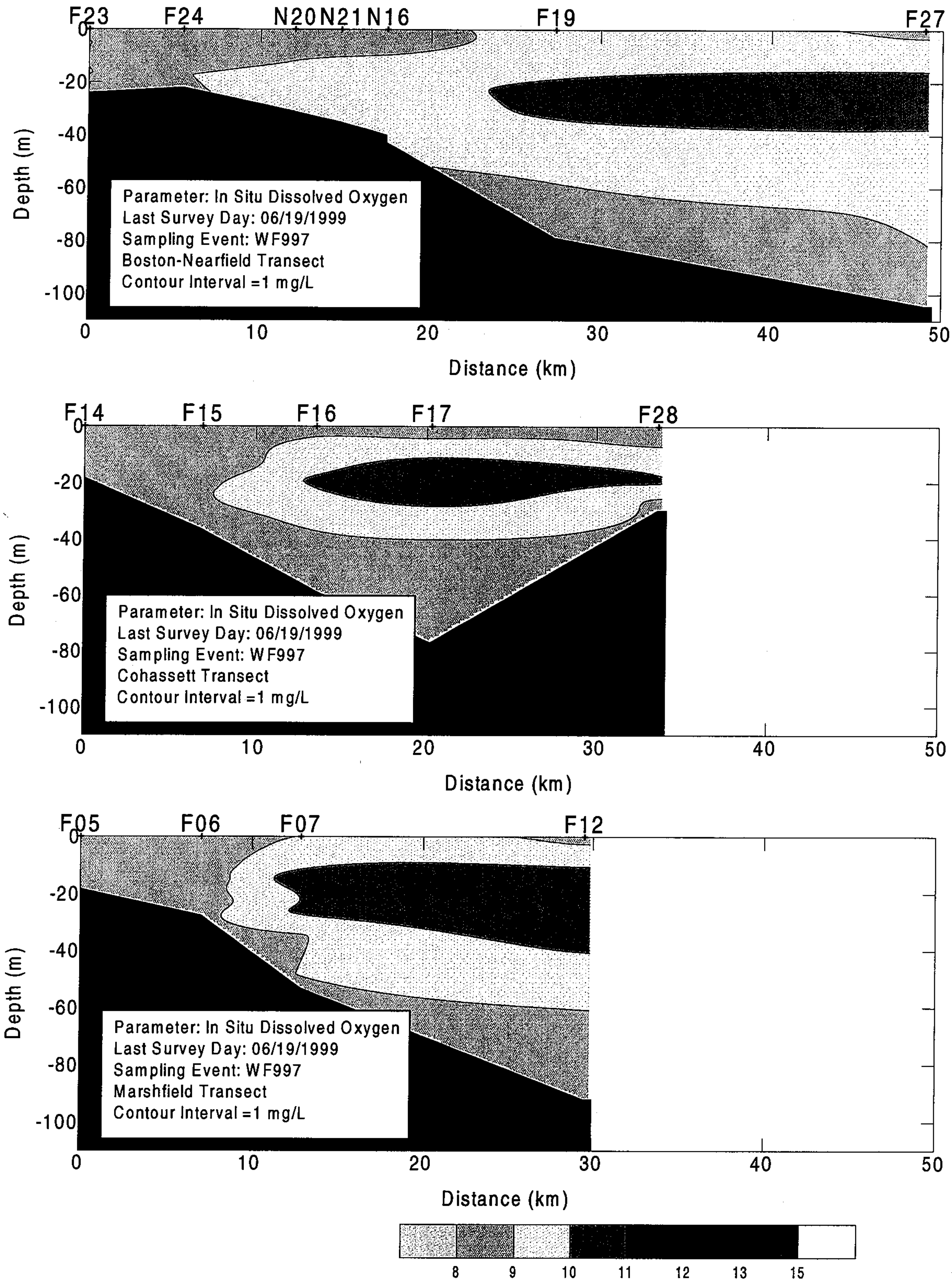
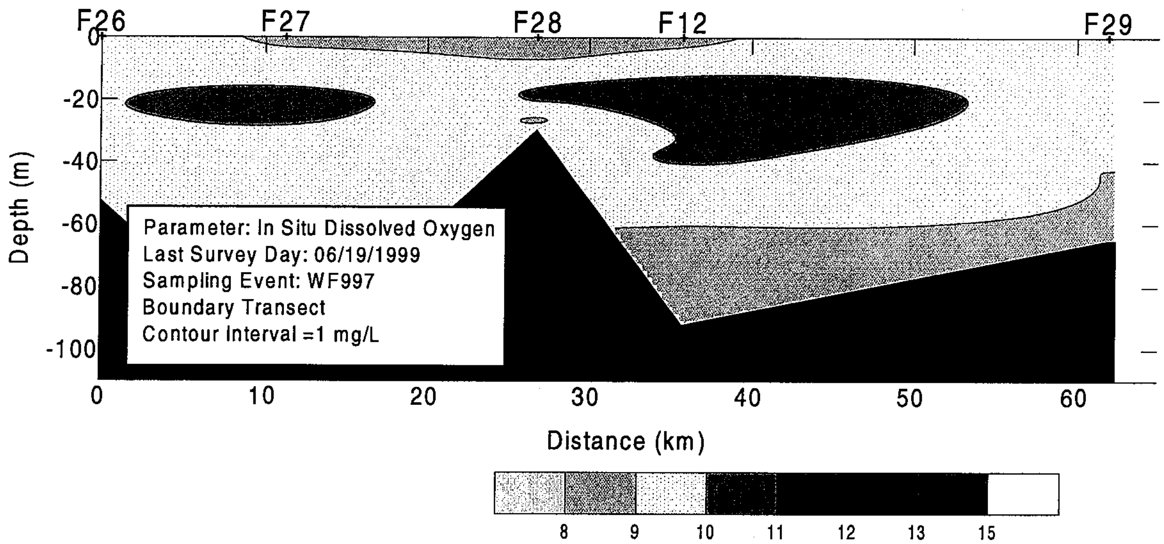


Figure C-62. Dissolved Oxygen Transect Plots (West - East) for Farfield Survey WF997 (Jun 99)



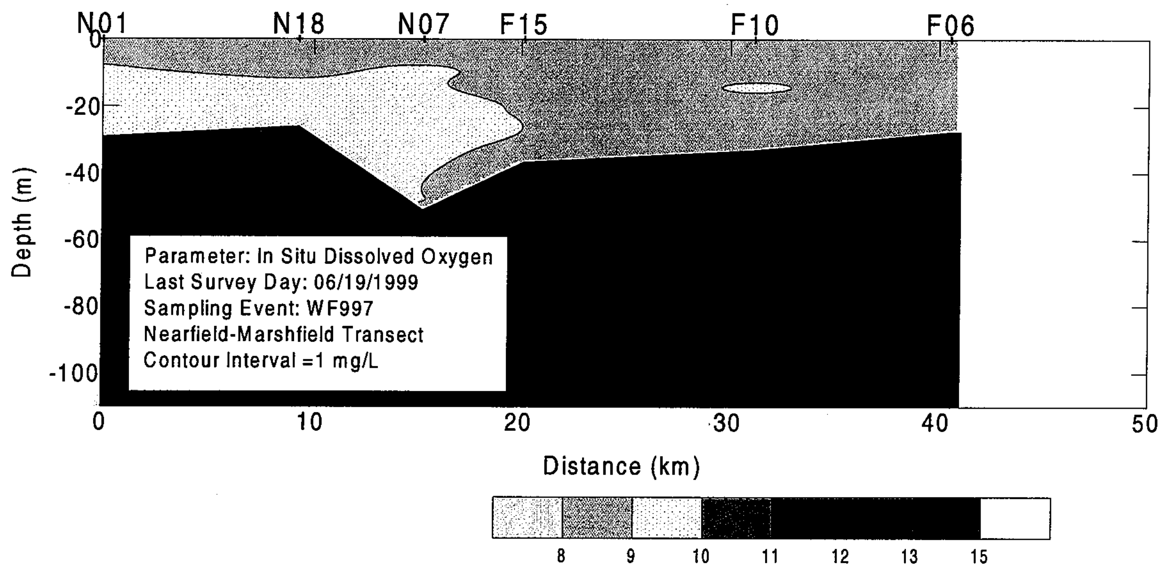


Figure C-63. Dissolved Oxygen Transect Plots (North - South) for Farfield Survey WF997 (Jun 99)

APPENDIX D

Nutrient Scatter Plots for each Survey

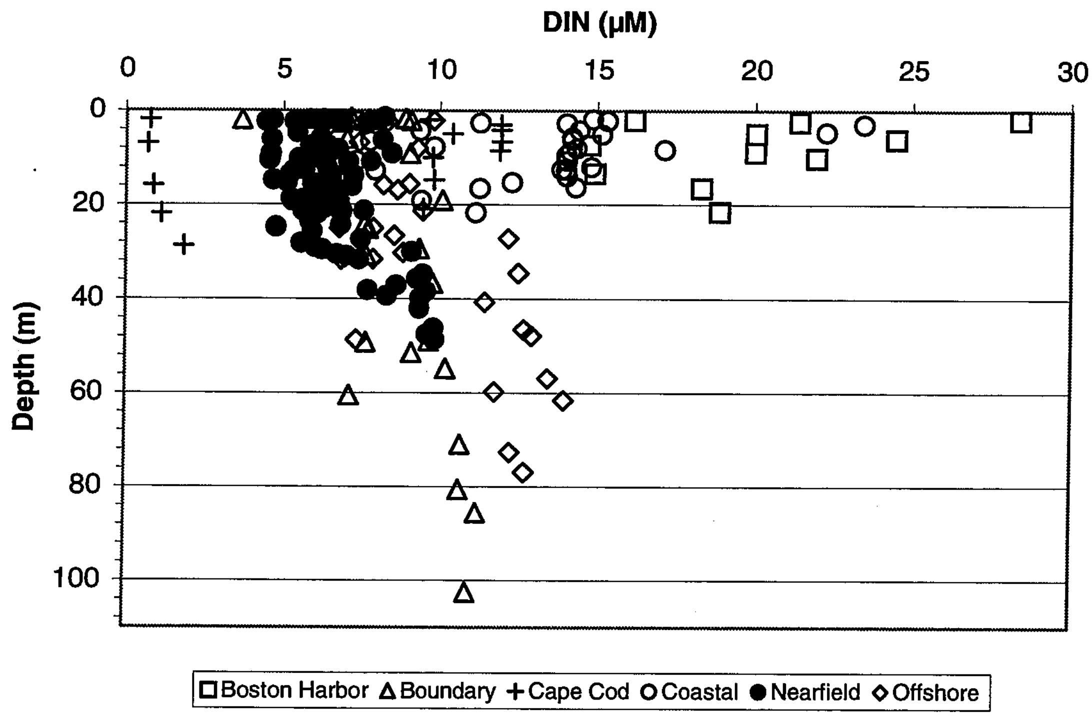
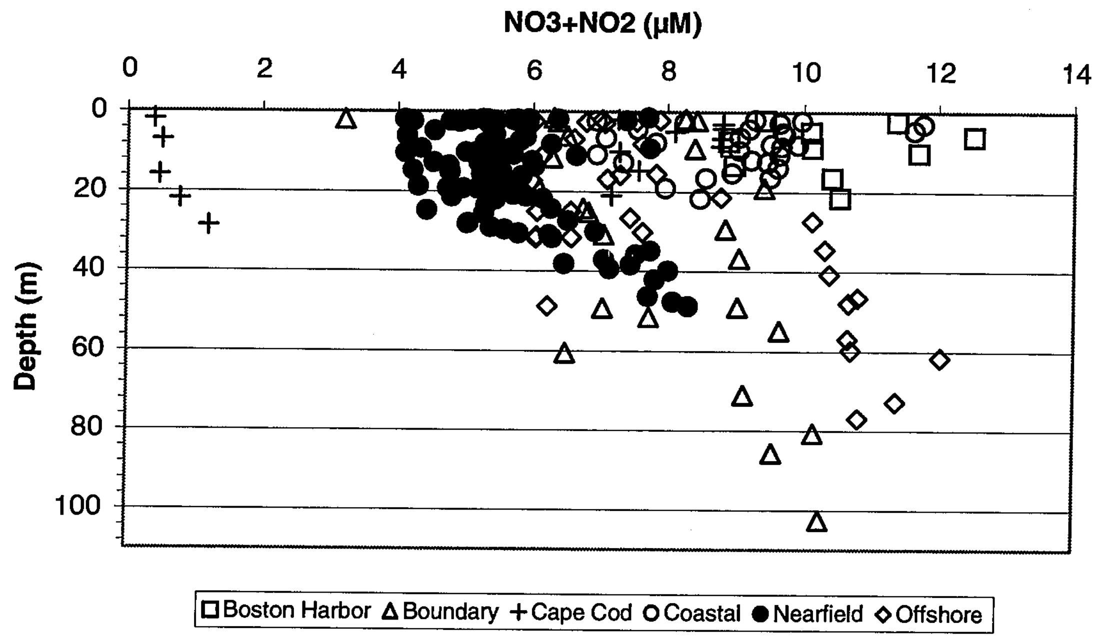


Figure D-1. Depth vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

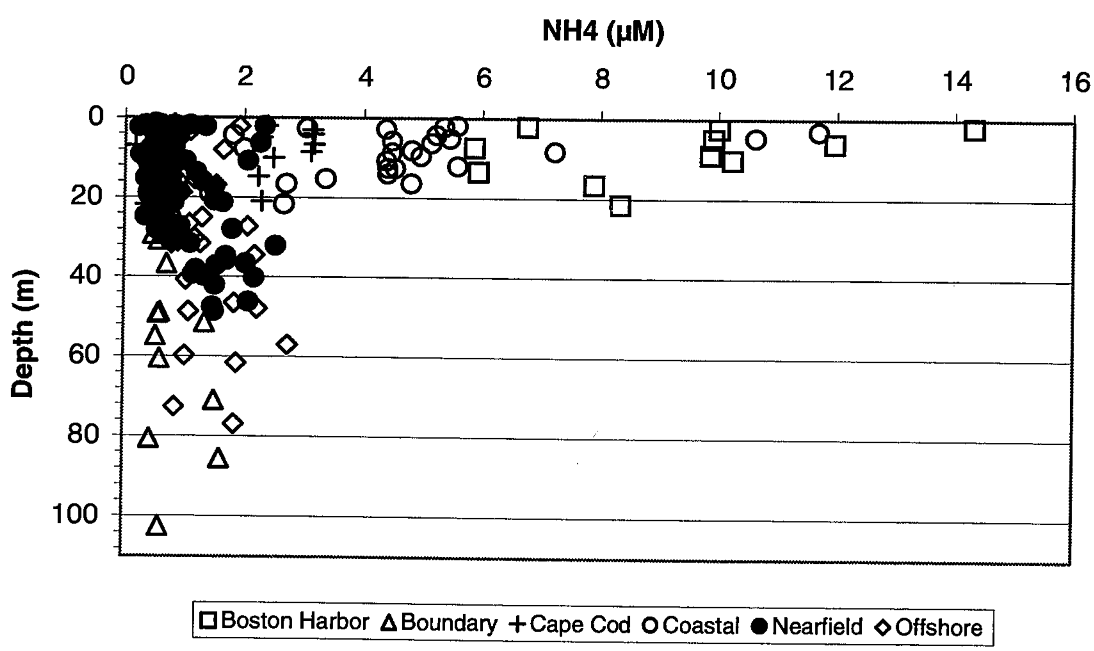
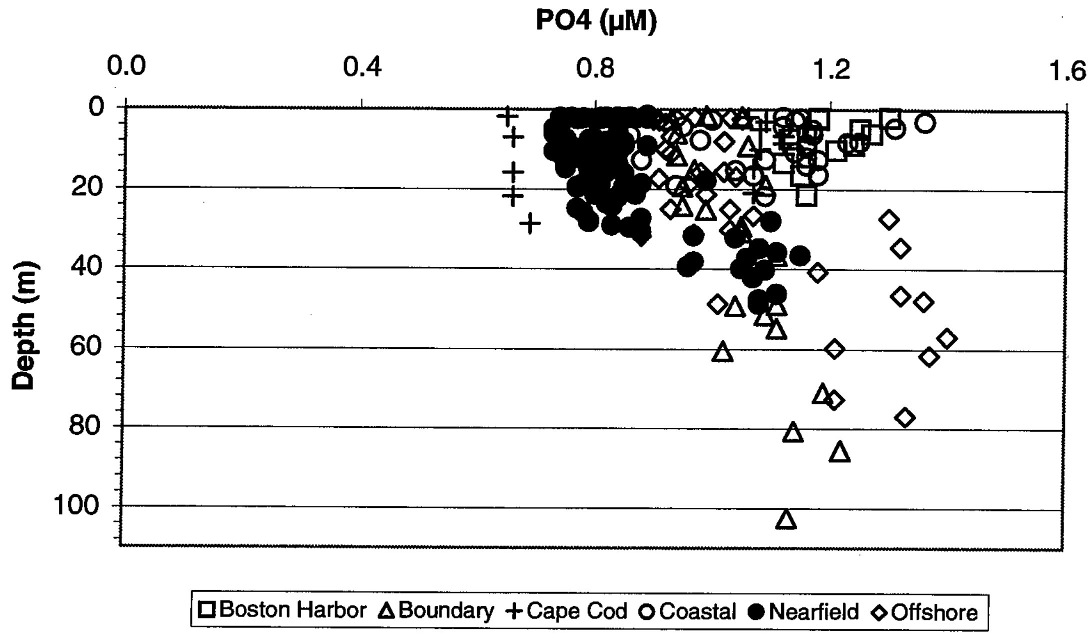


Figure D-2. Depth vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

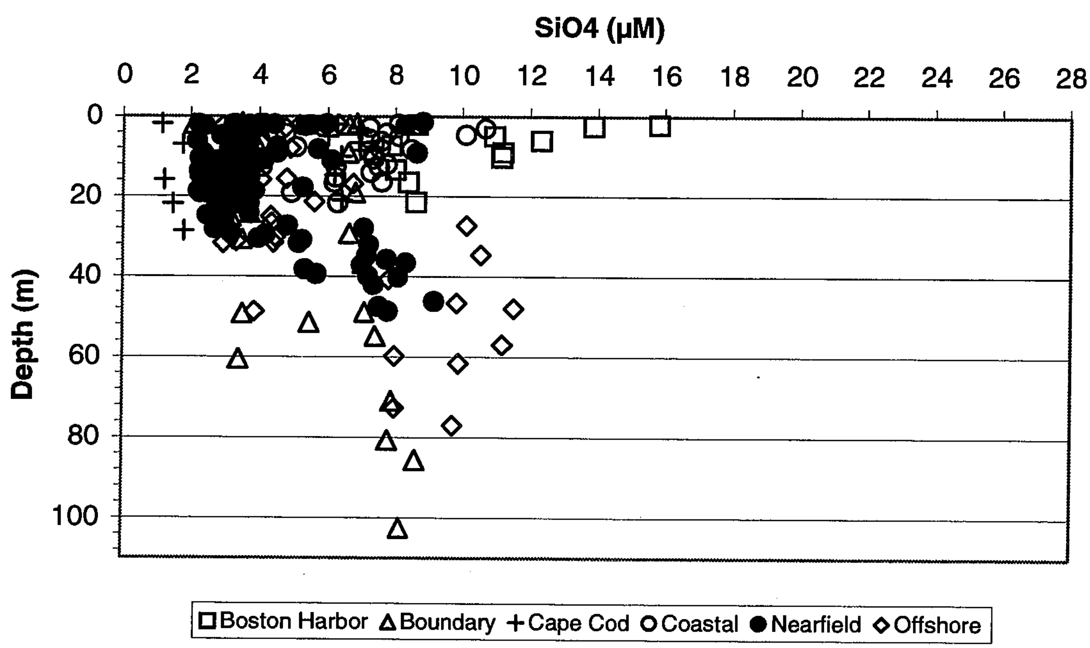
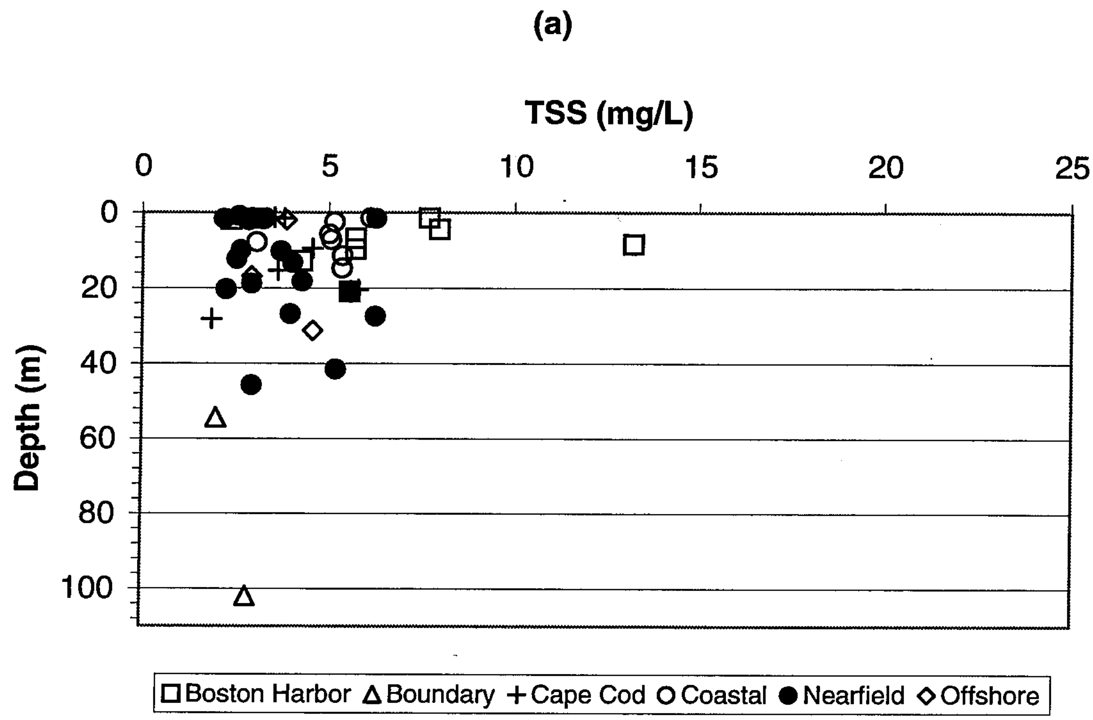


Figure D-3. Depth vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)



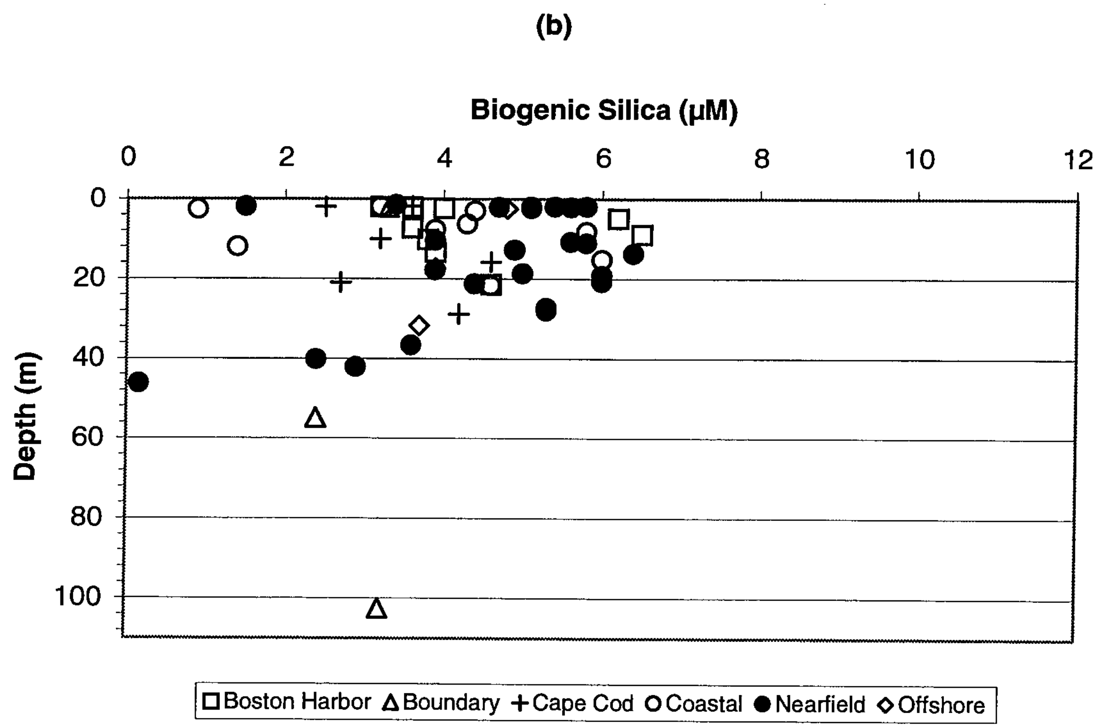
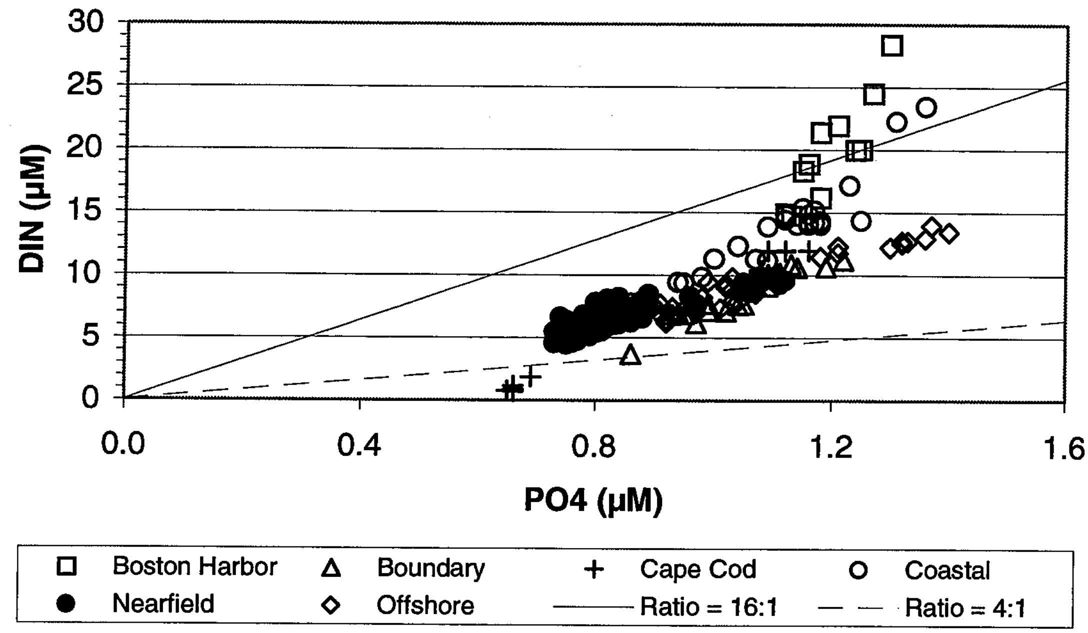


Figure D-4. Depth vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

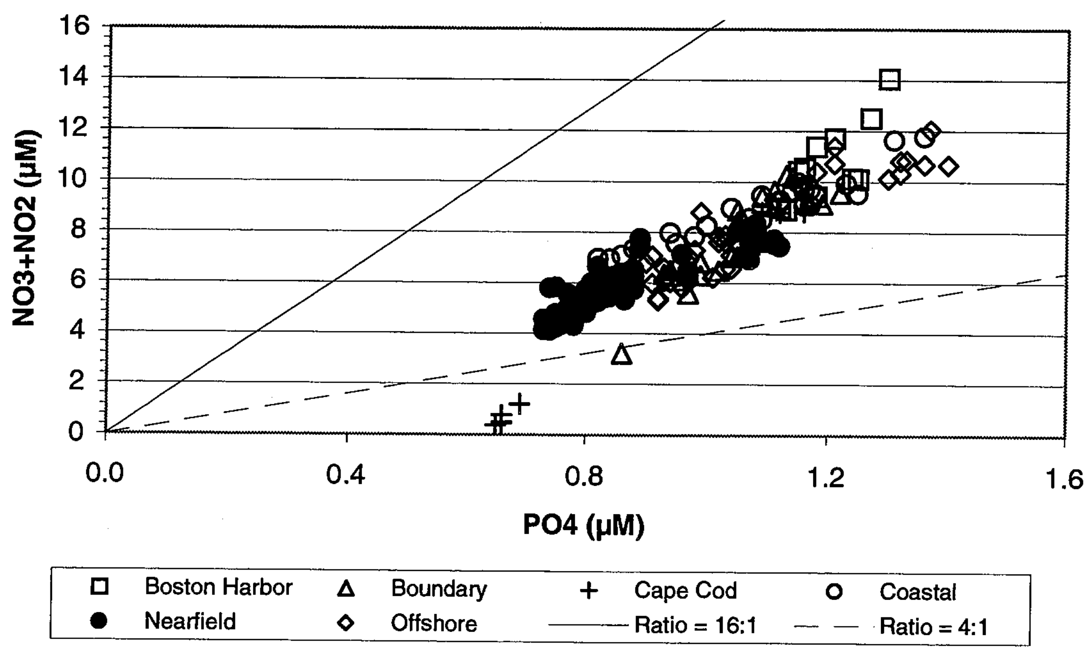


Figure D-5. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

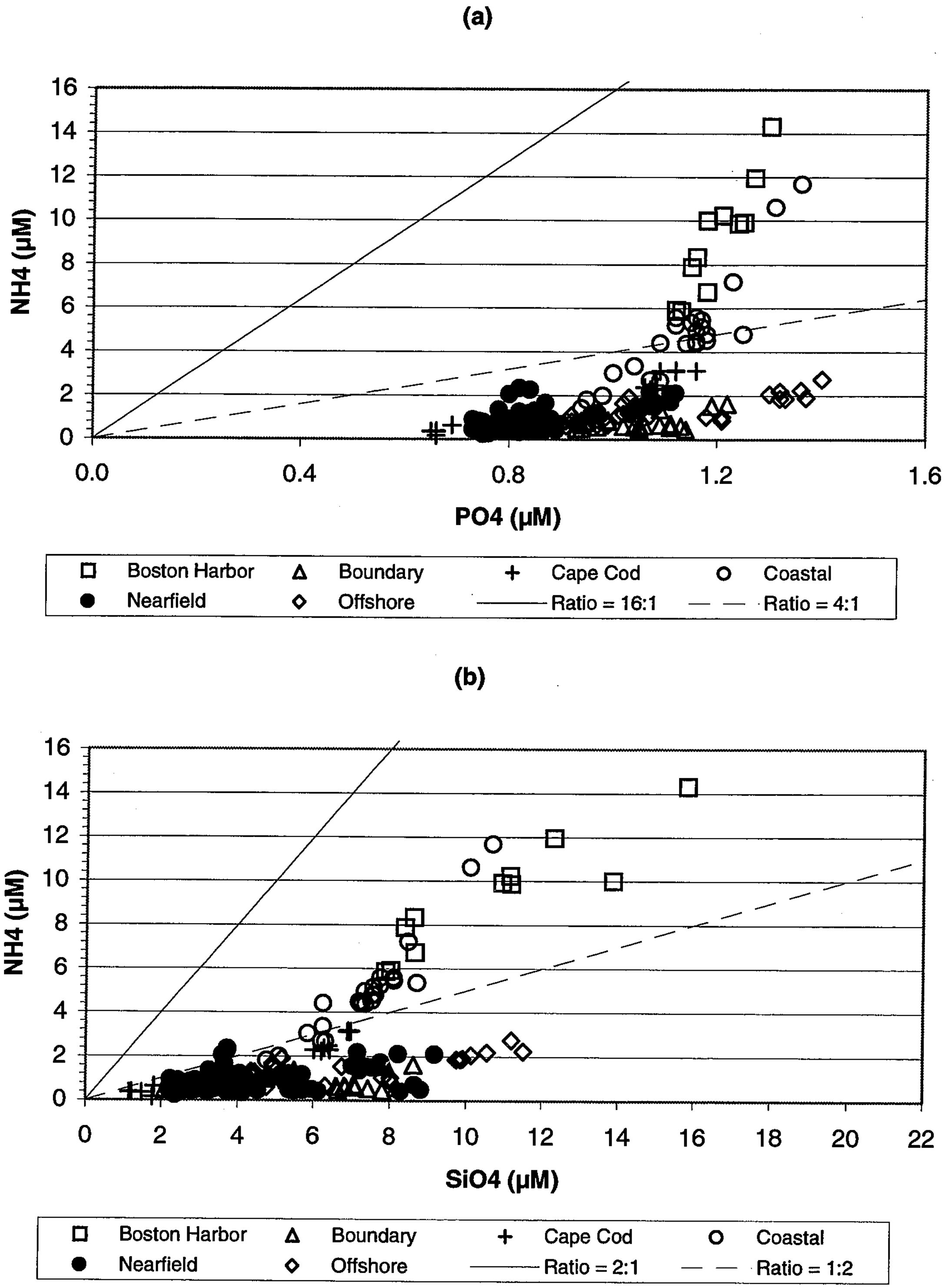


Figure D-6. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

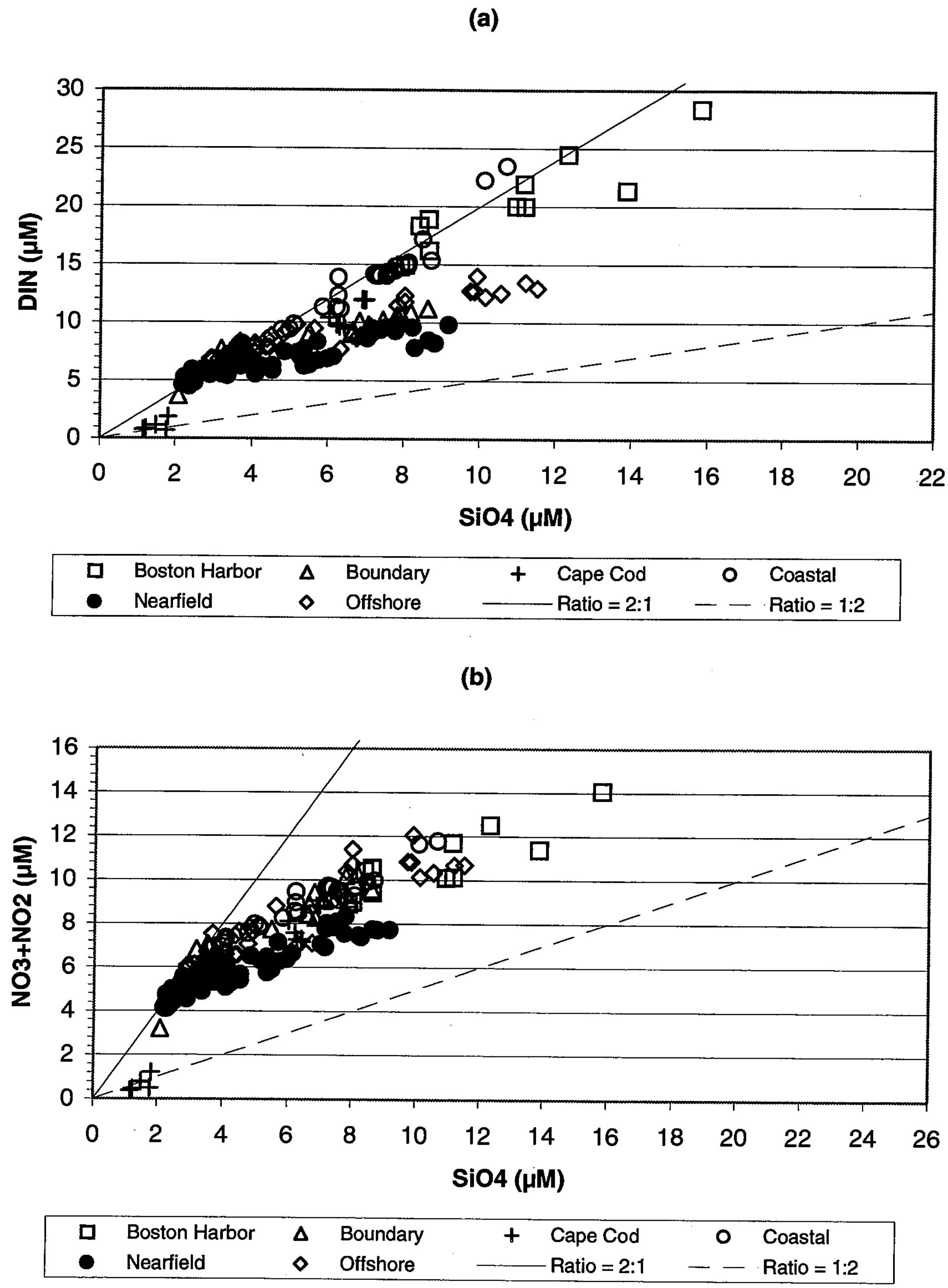
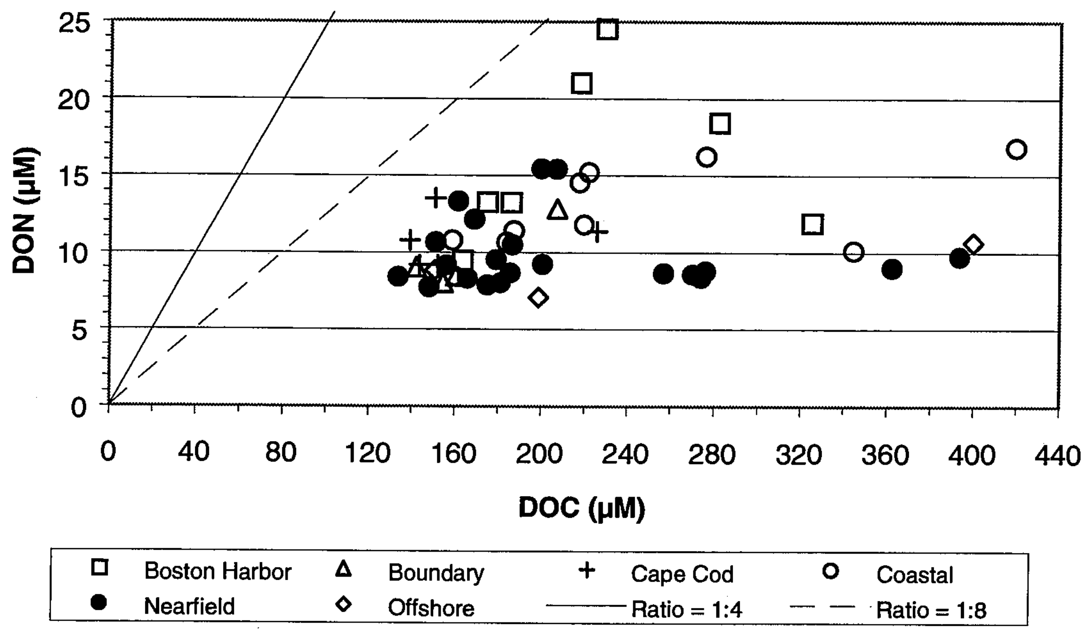


Figure D-7. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

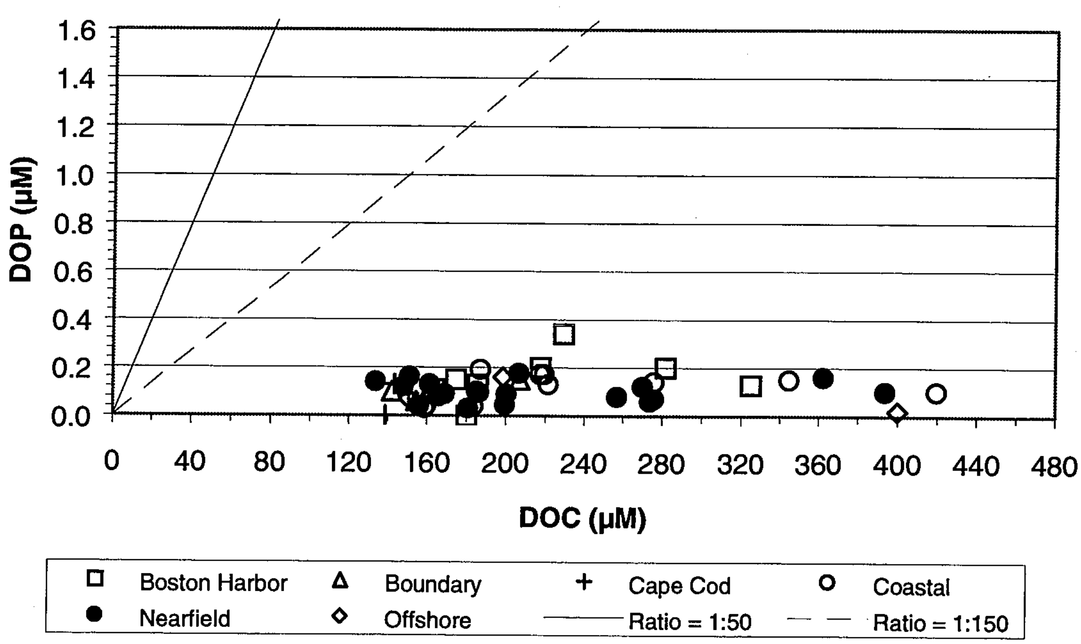
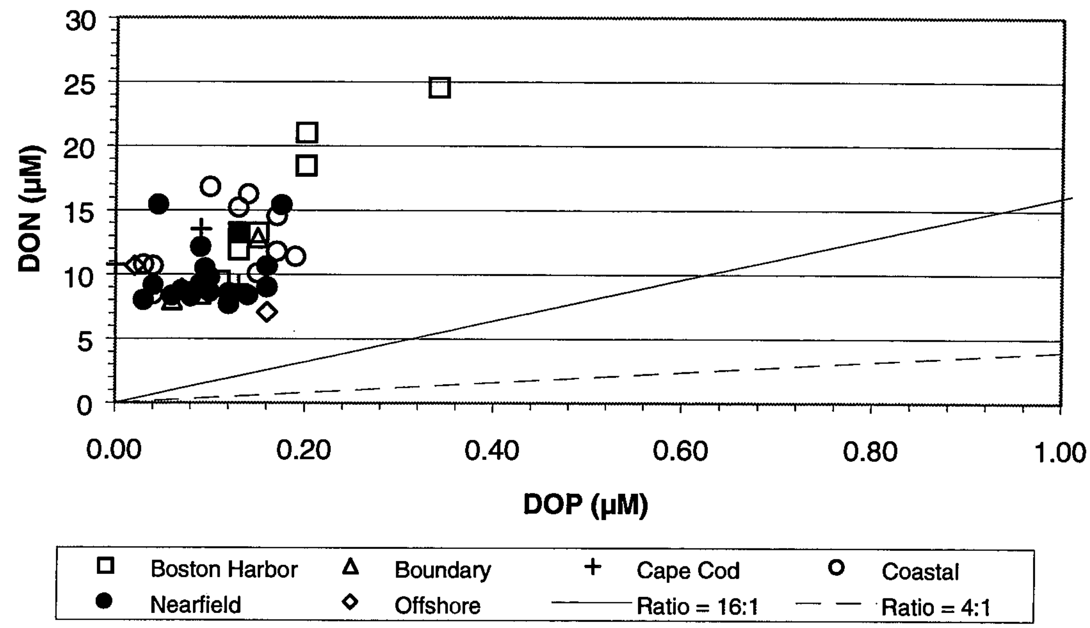


Figure D-8. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

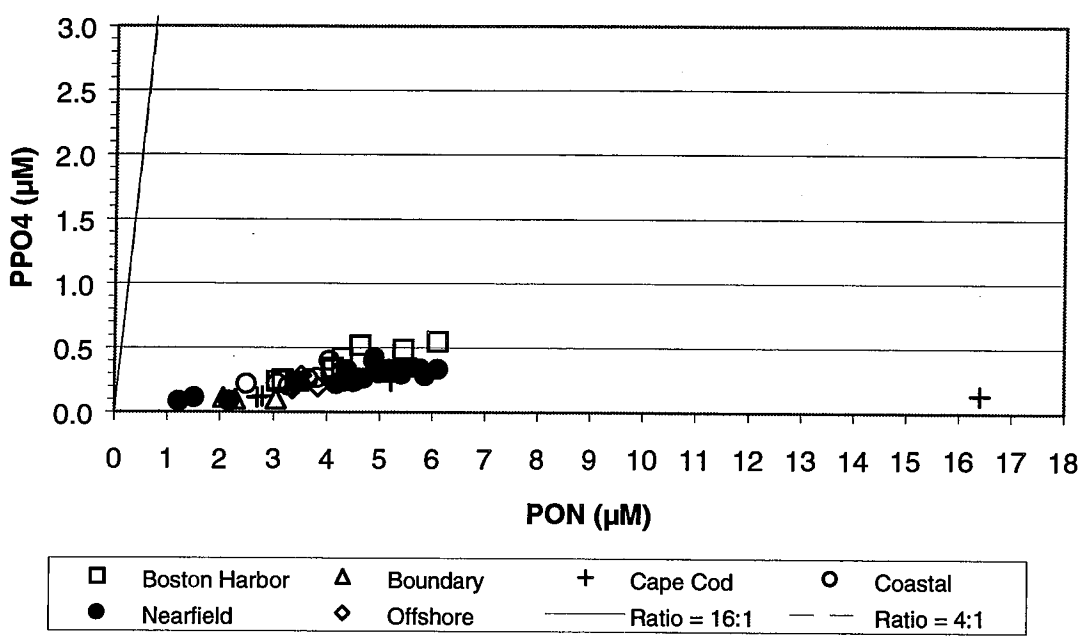
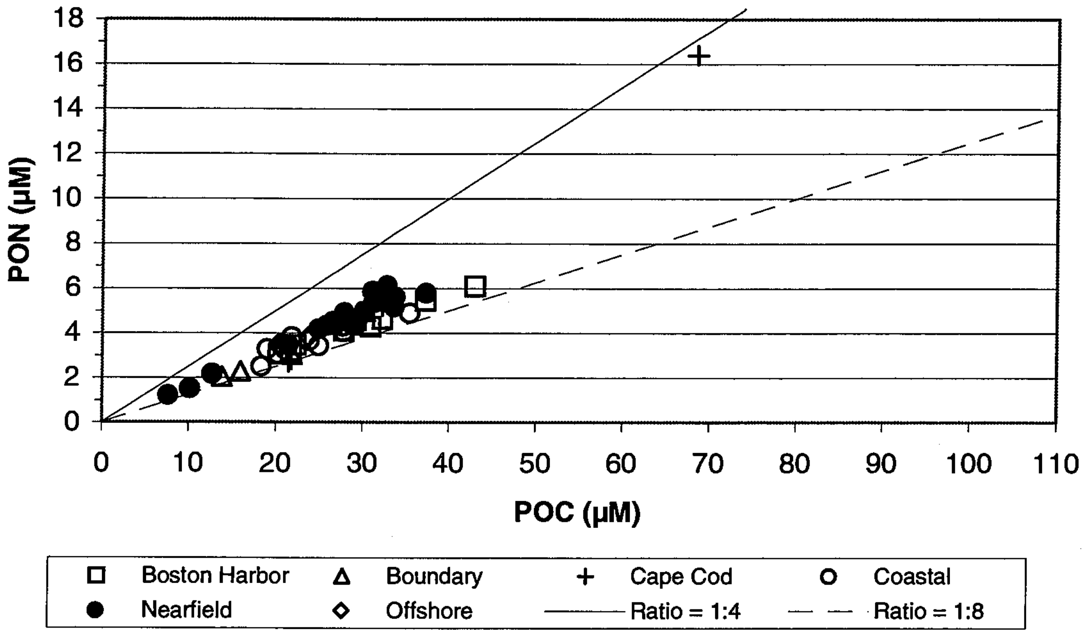


Figure D-9. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

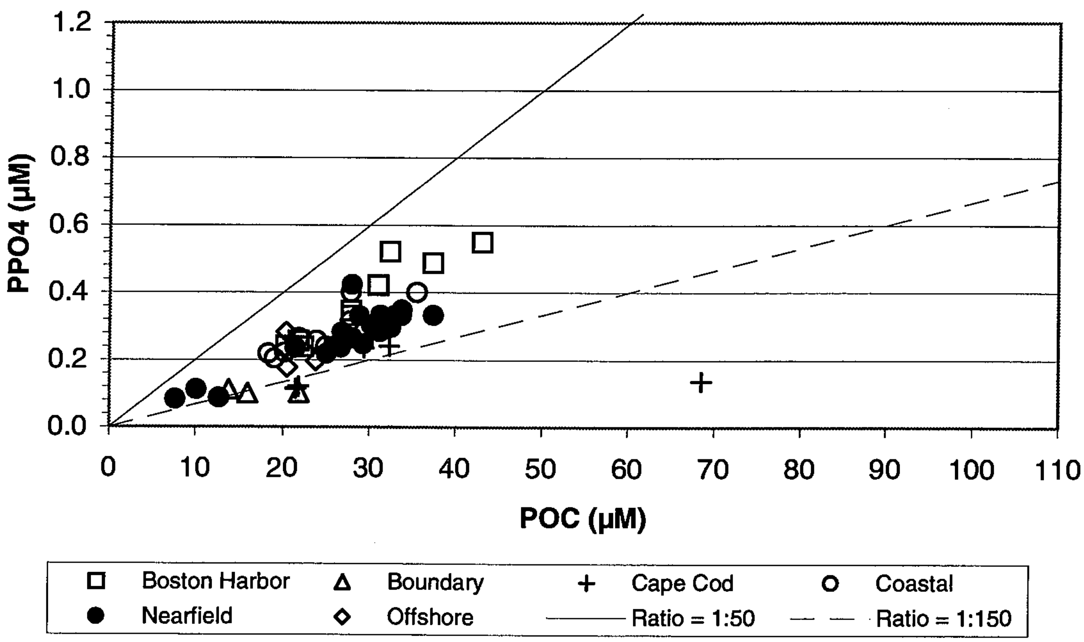
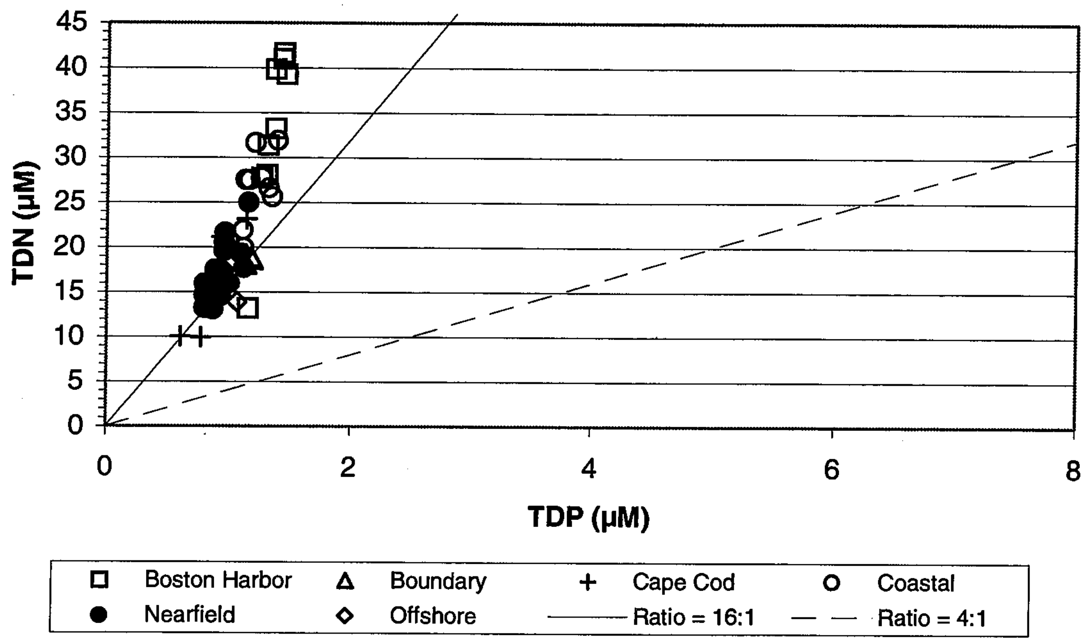


Figure D-10. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

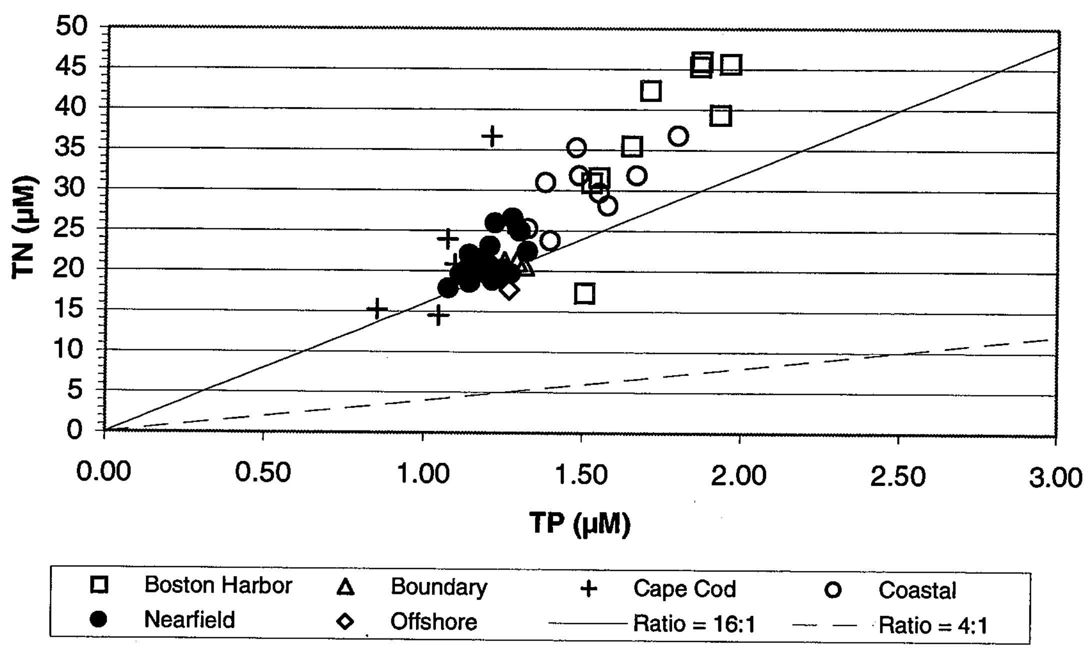
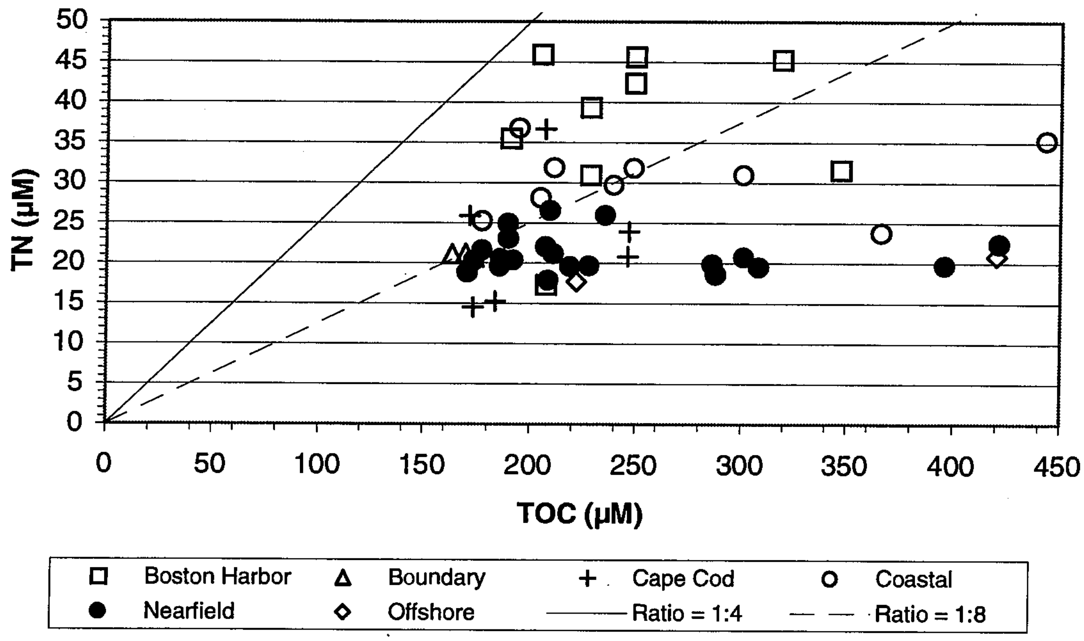


Figure D-11. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

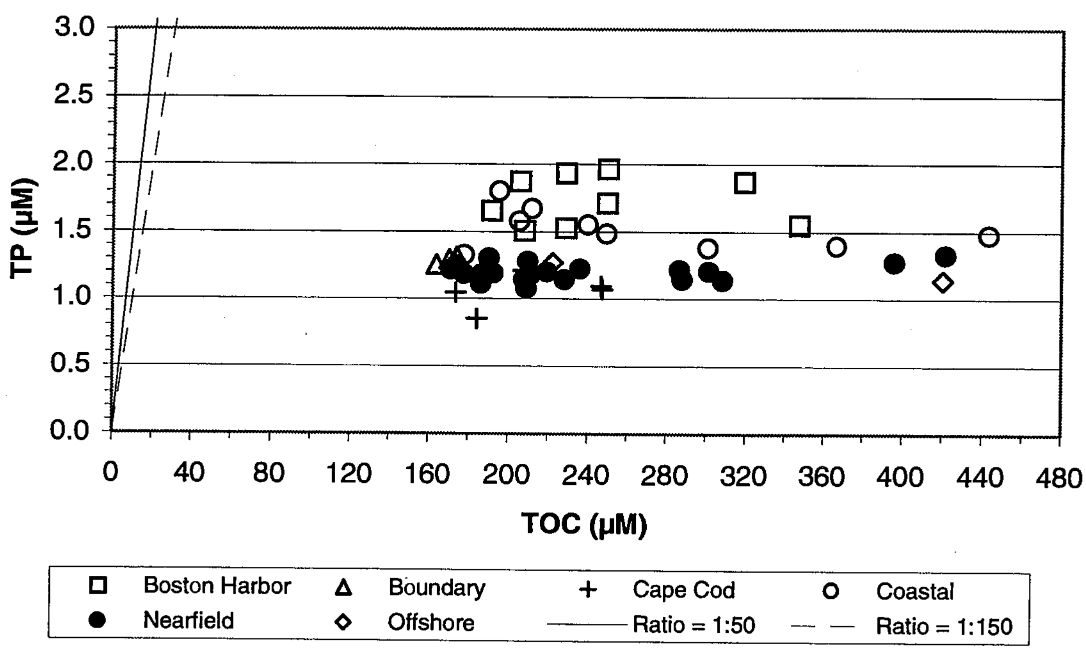


Figure D-12. Nutrient vs. Nutrient Plots for Farfield Survey WF991, (Feb 99)

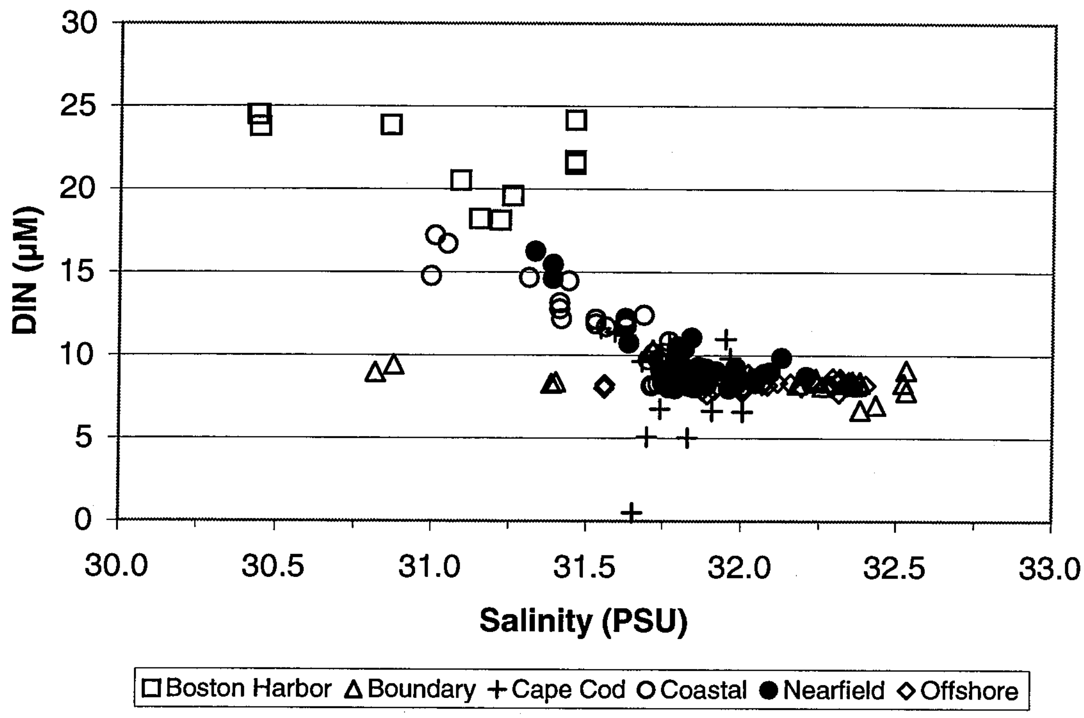
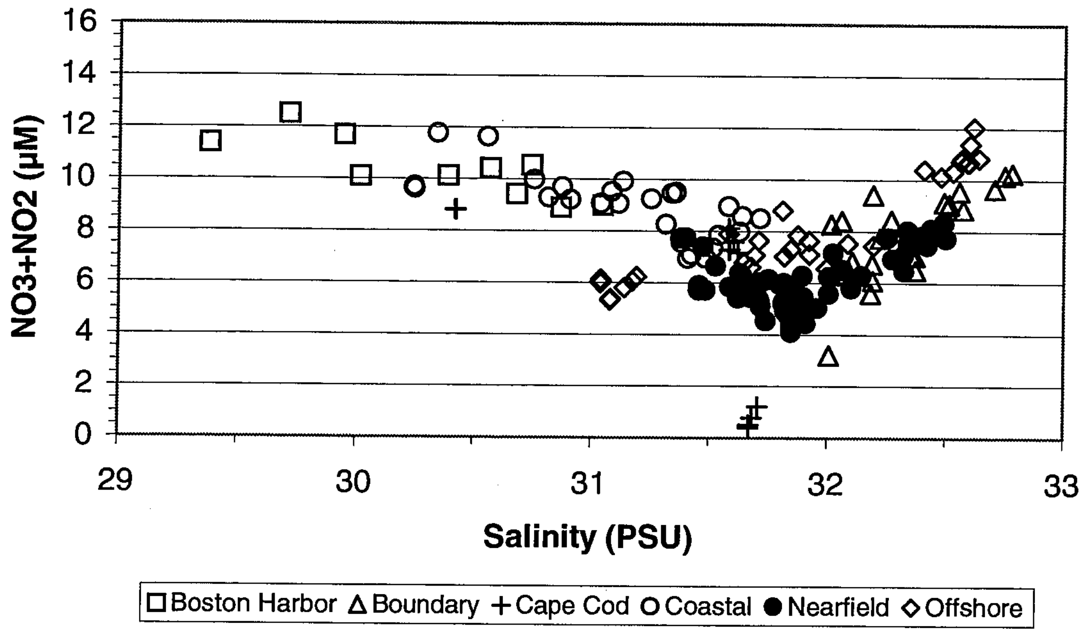


Figure D-13. Nutrient vs. Salinity Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

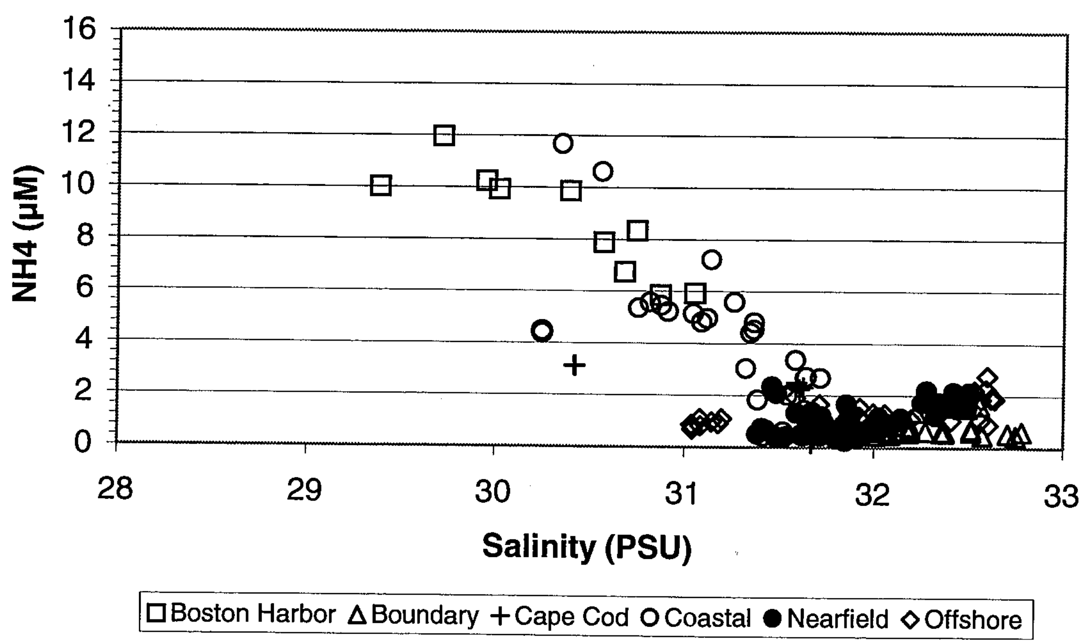
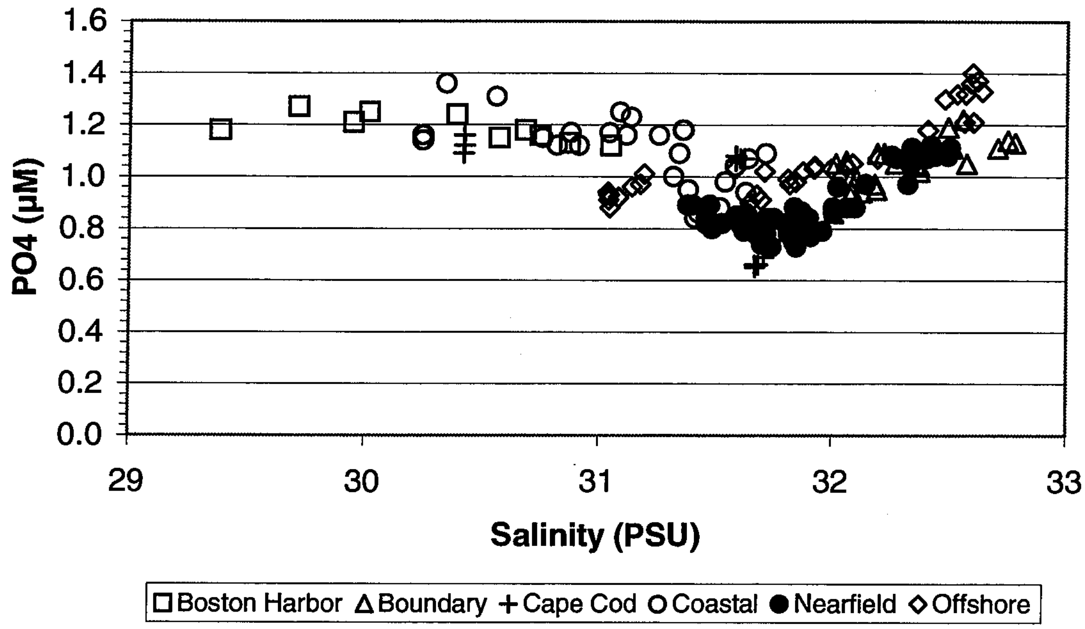


Figure D-14. Nutrient vs. Salinity Plots for Farfield Survey WF991, (Feb 99)

(a)



(b)

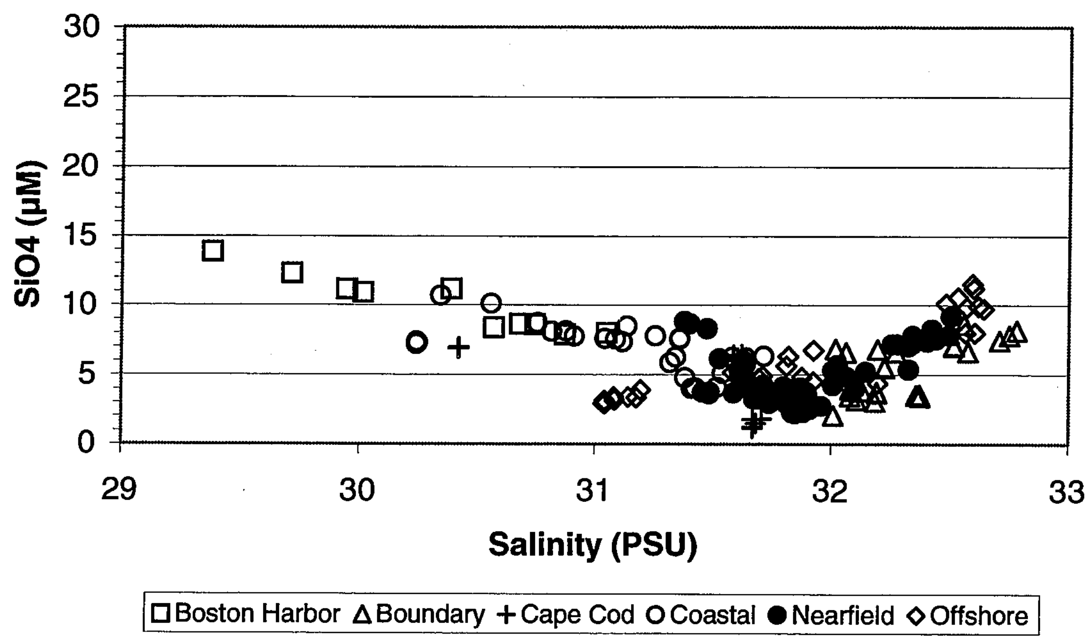


Figure D-15. Nutrient vs. Salinity Plots for Farfield Survey WF991, (Feb 99)

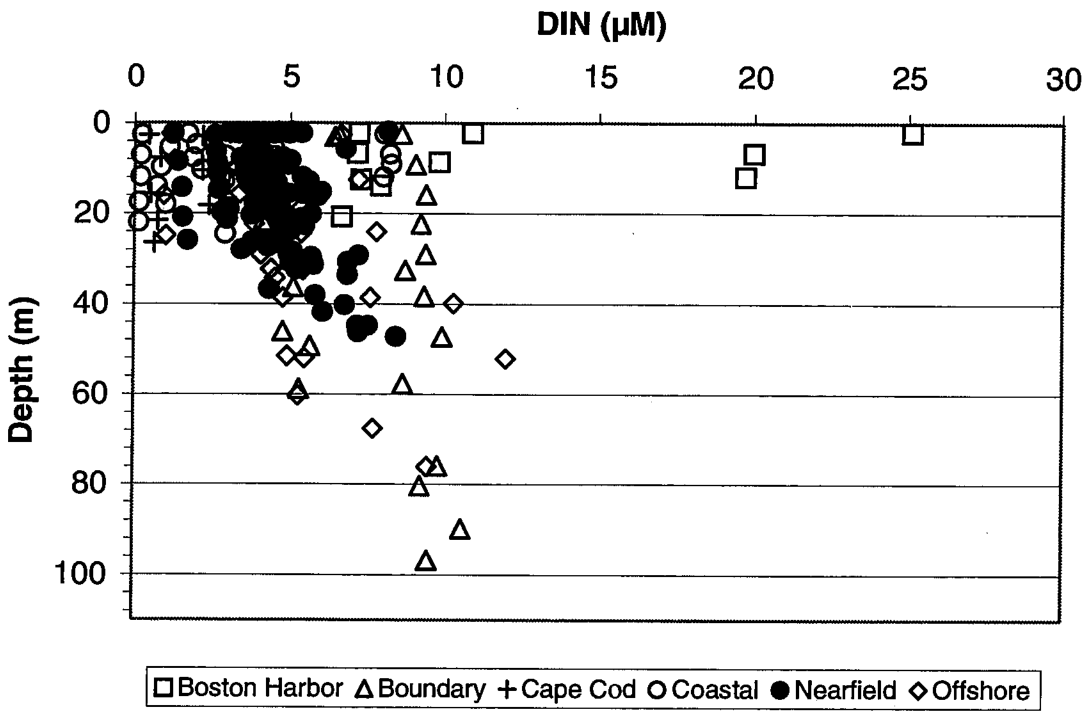
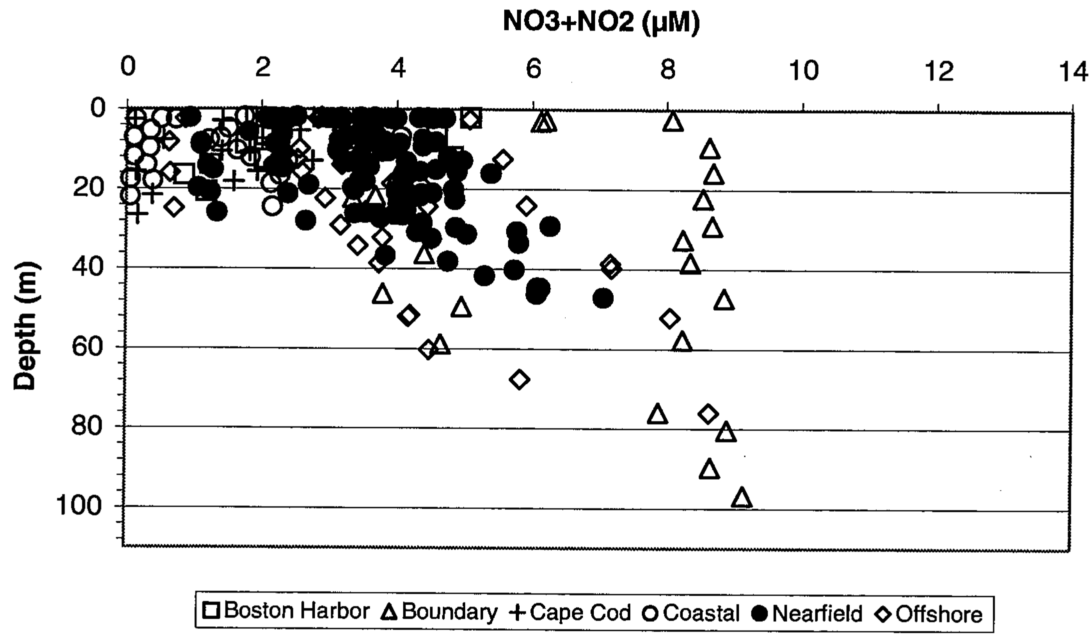


Figure D-16. Depth vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

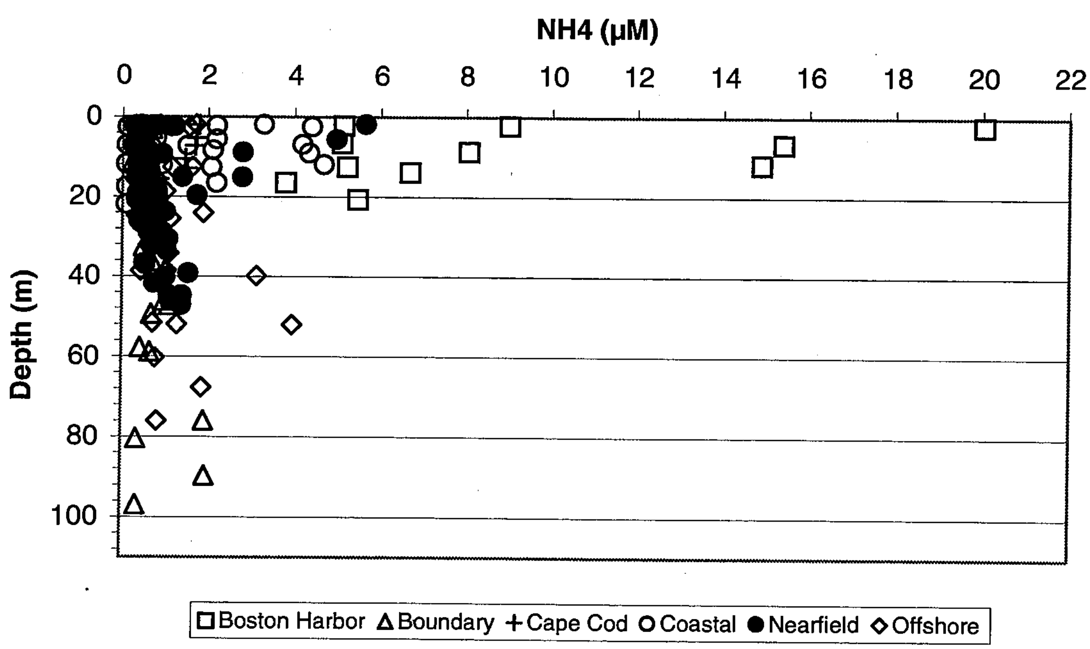
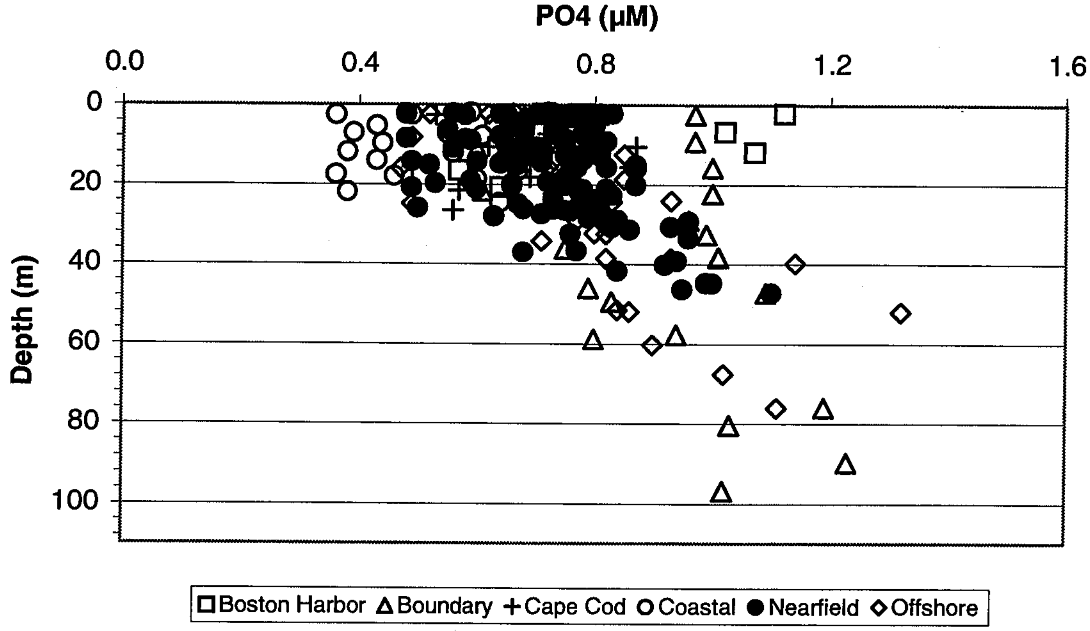


Figure D-17. Depth vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

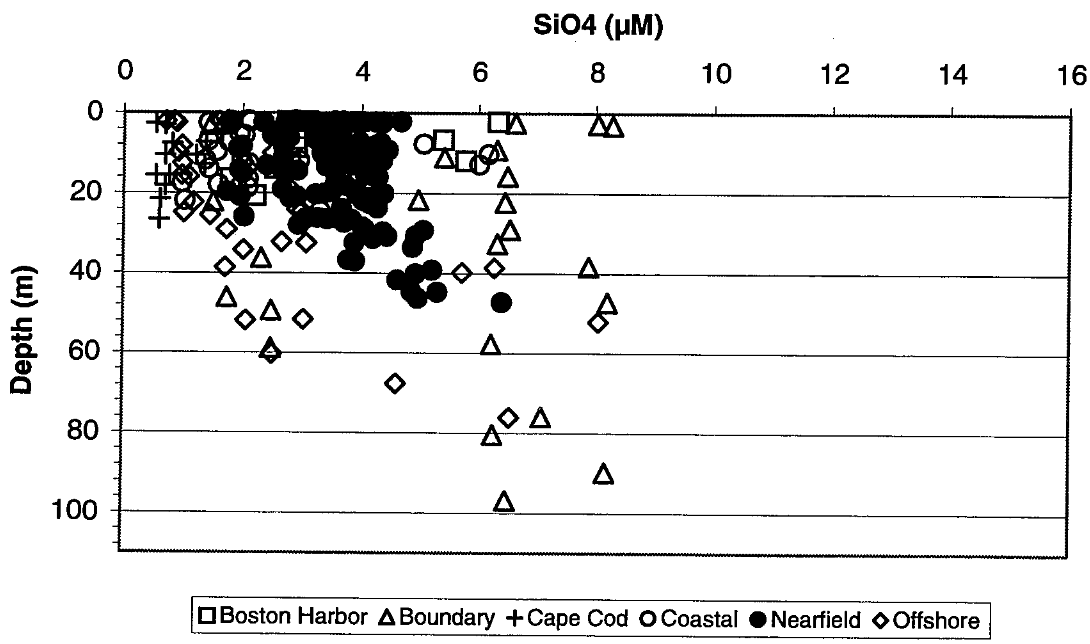
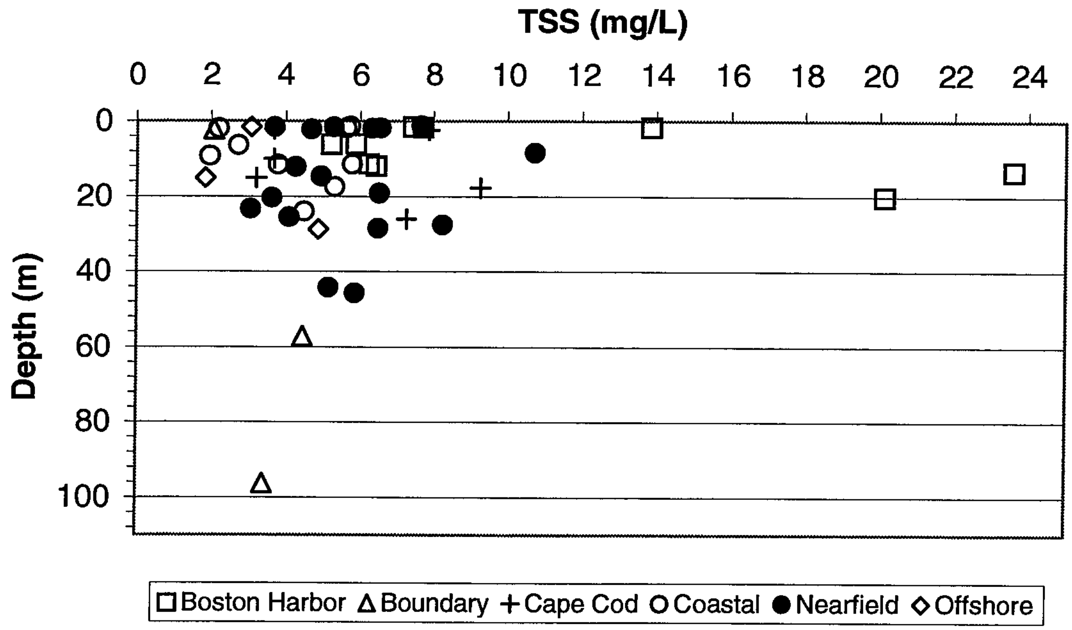


Figure D-18. Depth vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

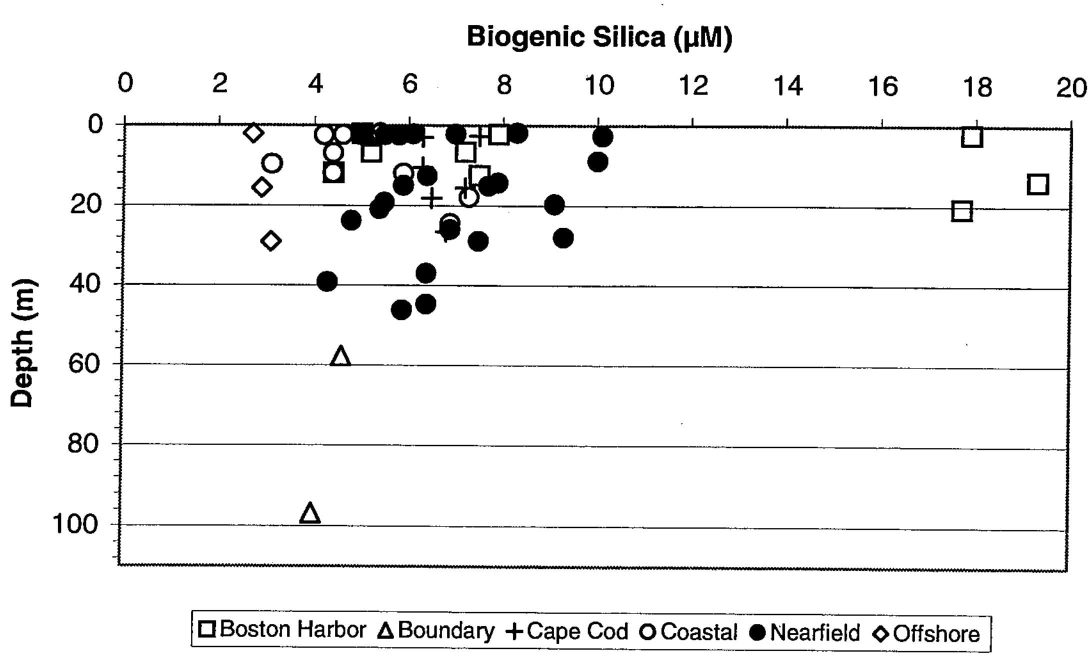
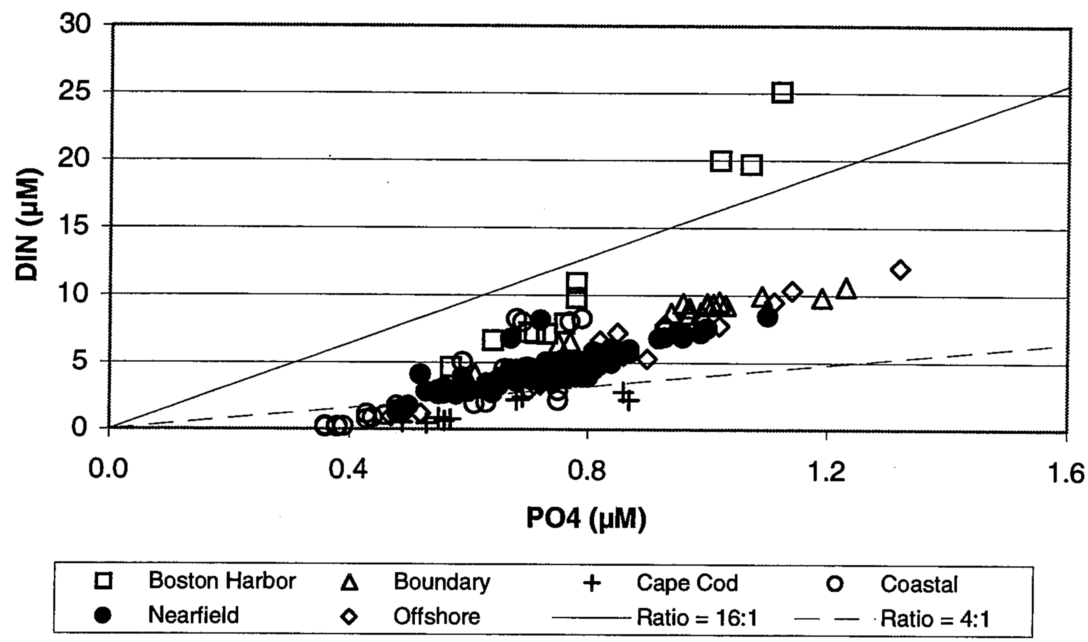


Figure D-19. Depth vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

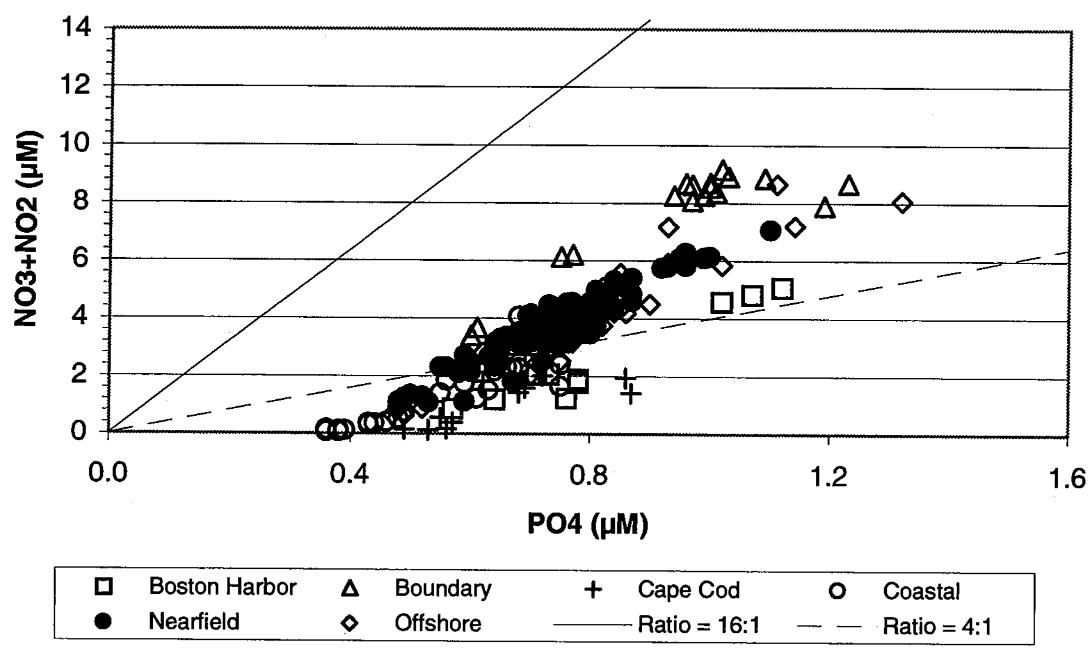
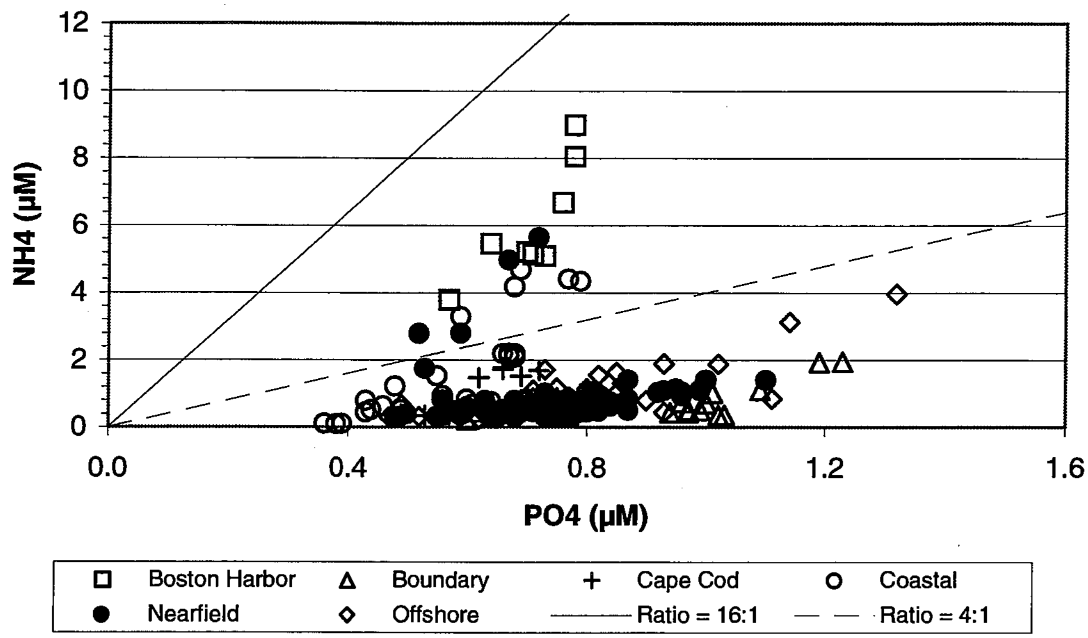


Figure D-20. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

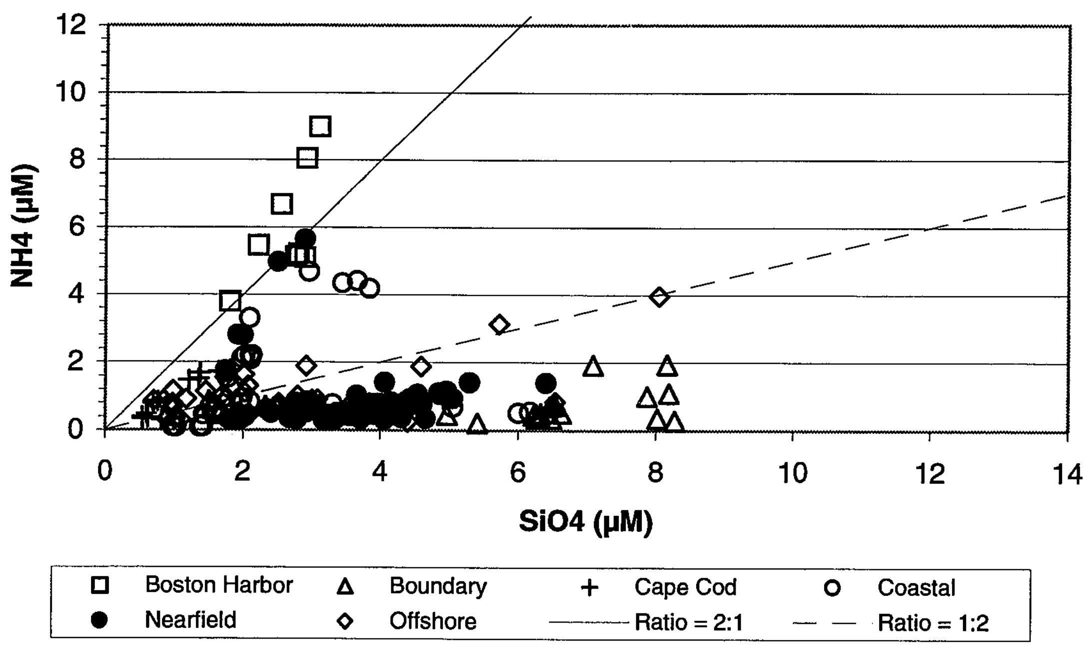
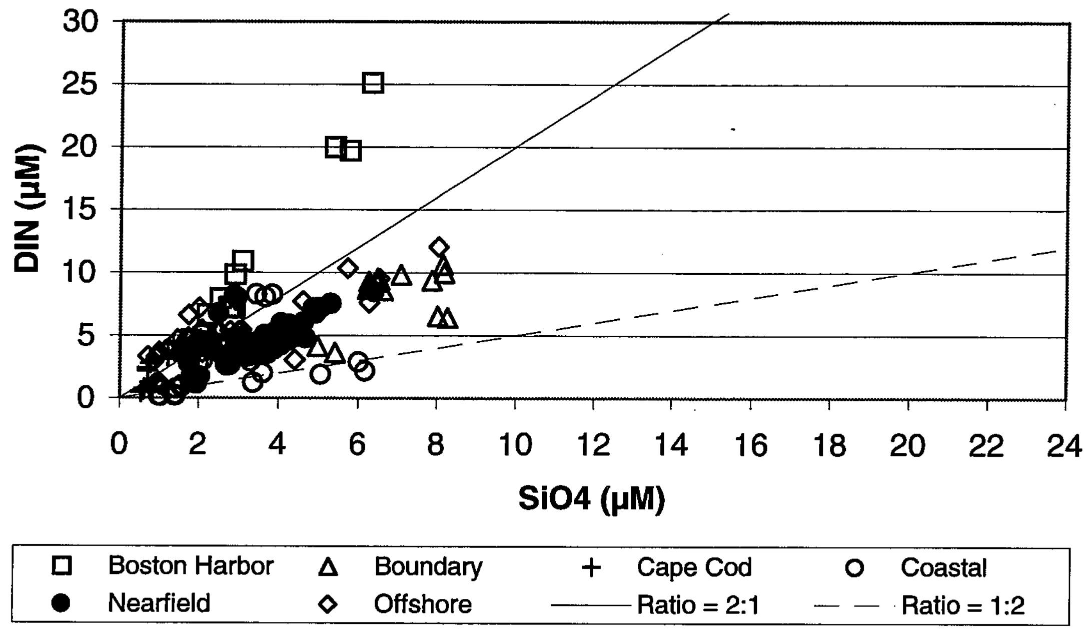


Figure D-21. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

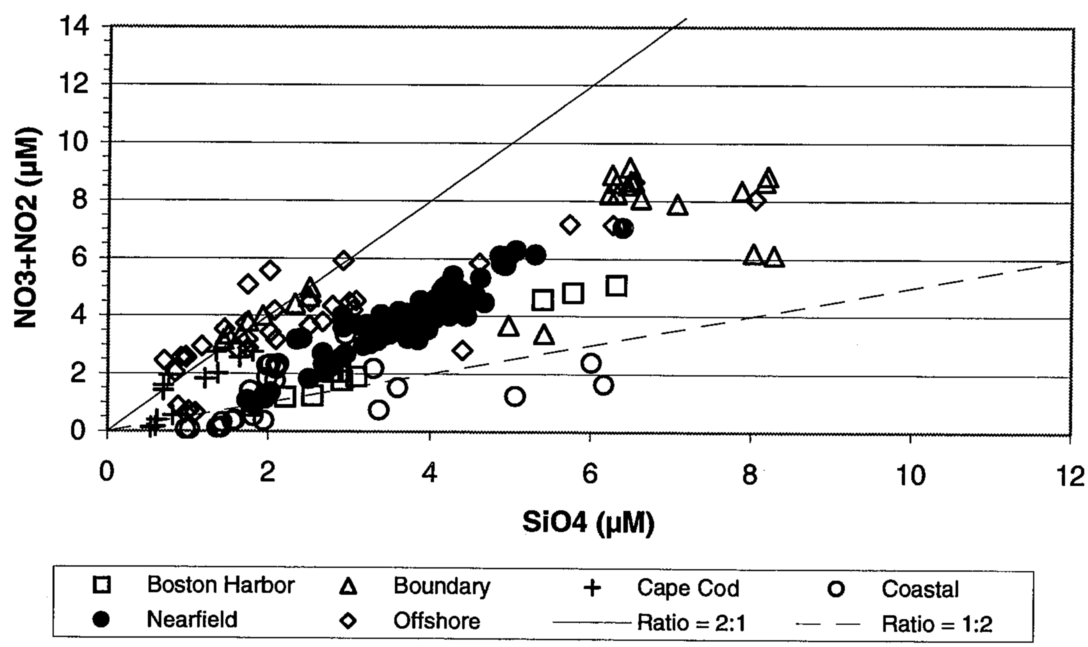
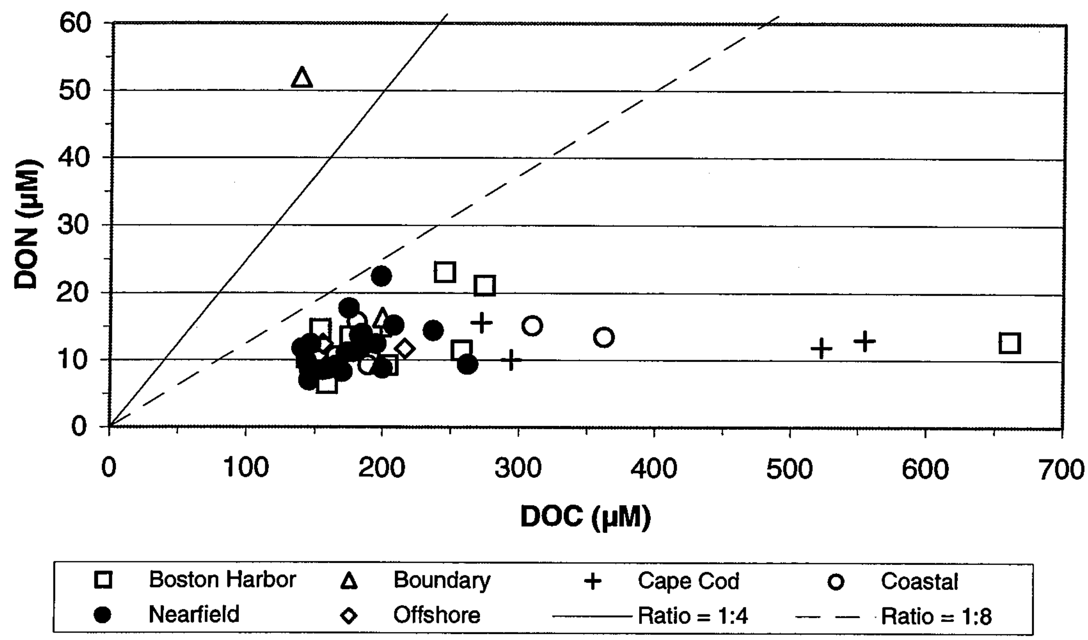


Figure D-22. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

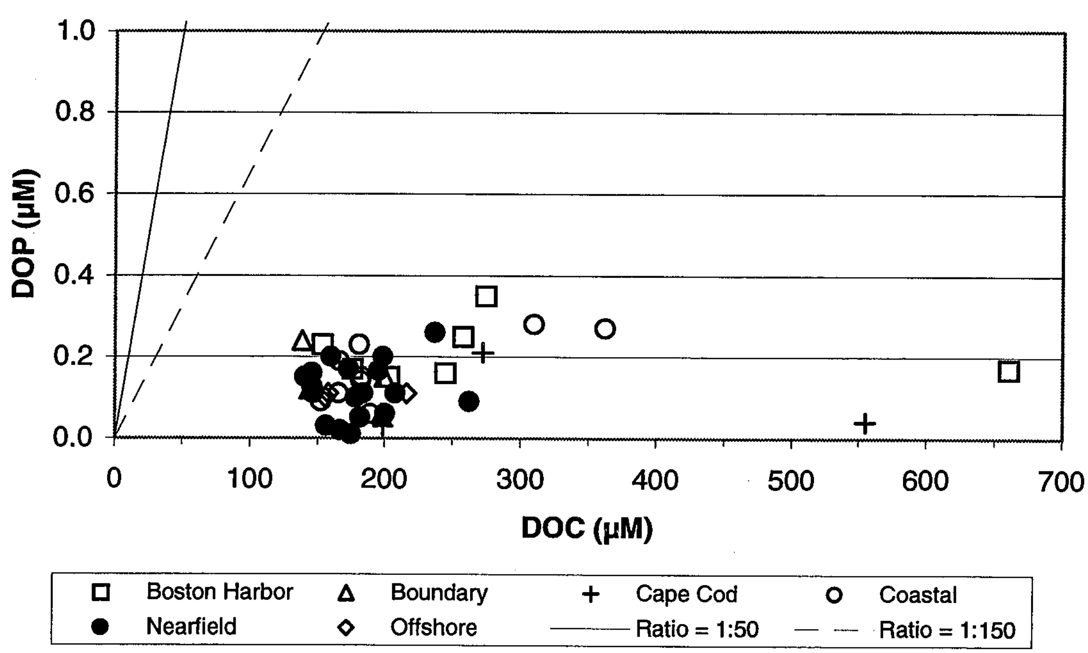
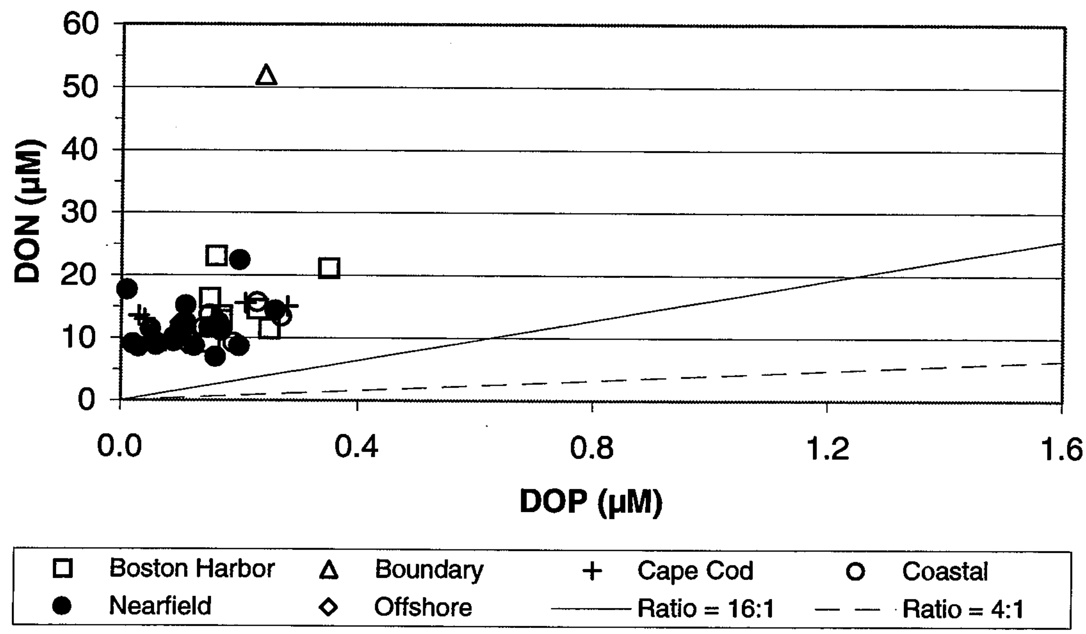


Figure D-23. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

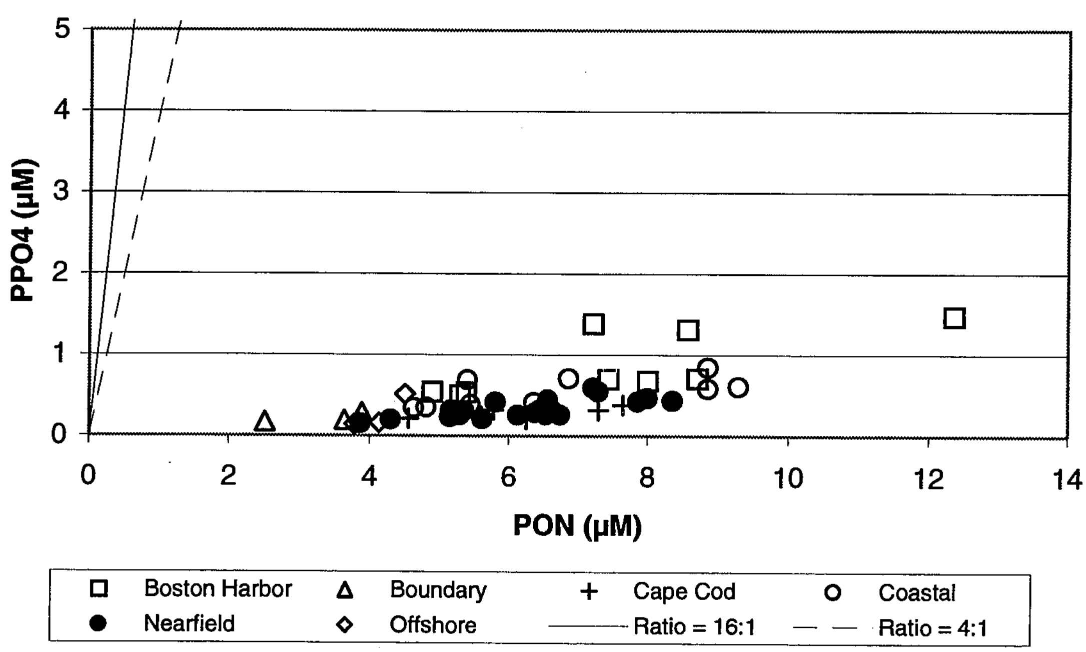
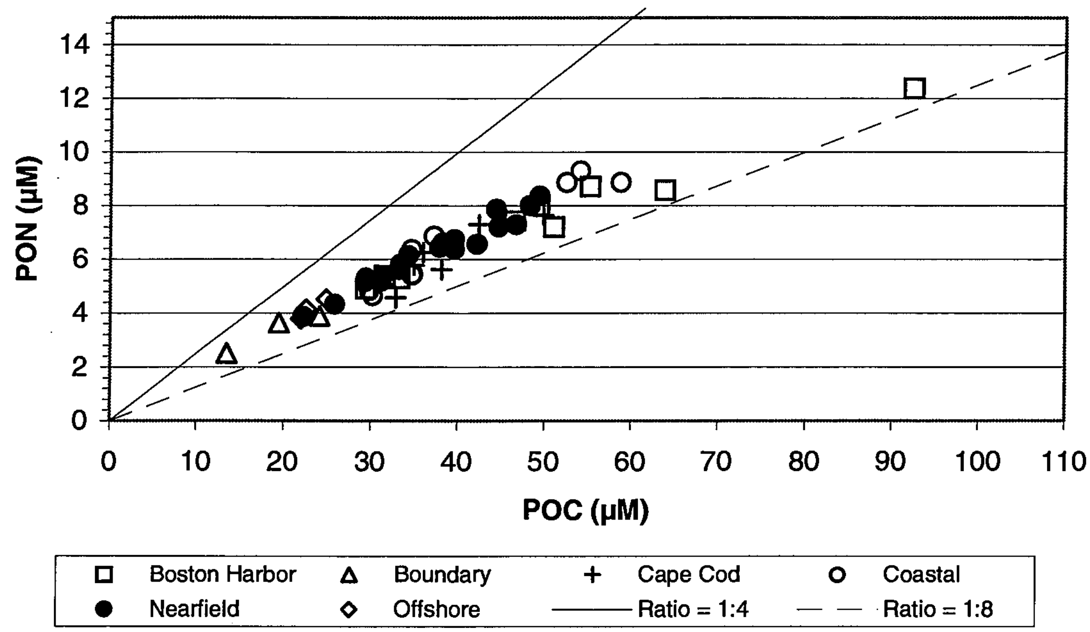


Figure D-24. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

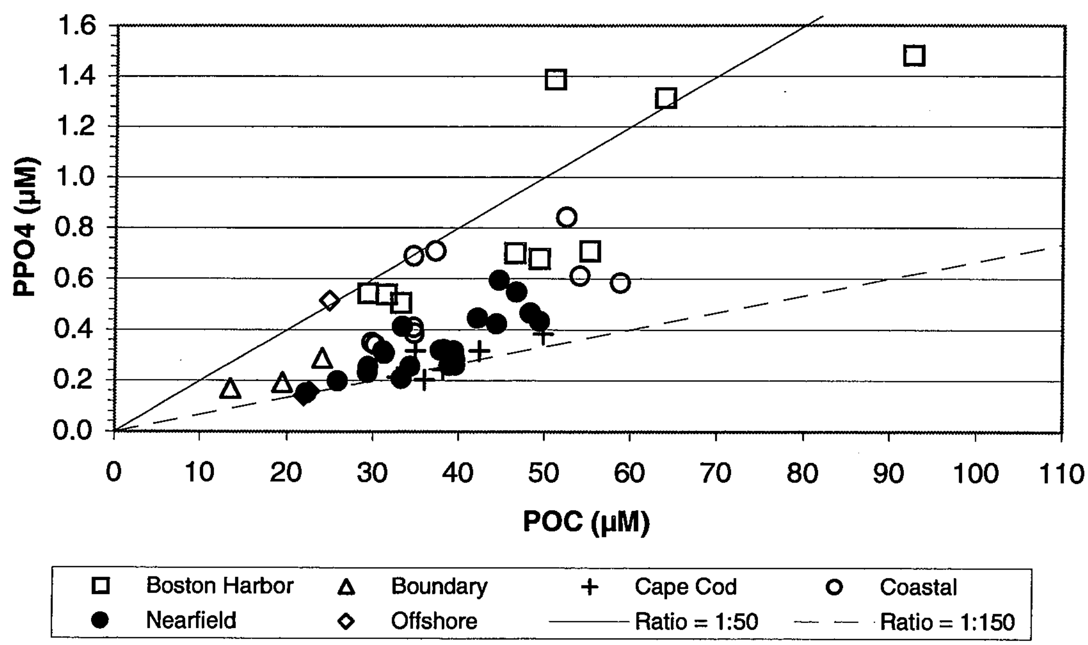
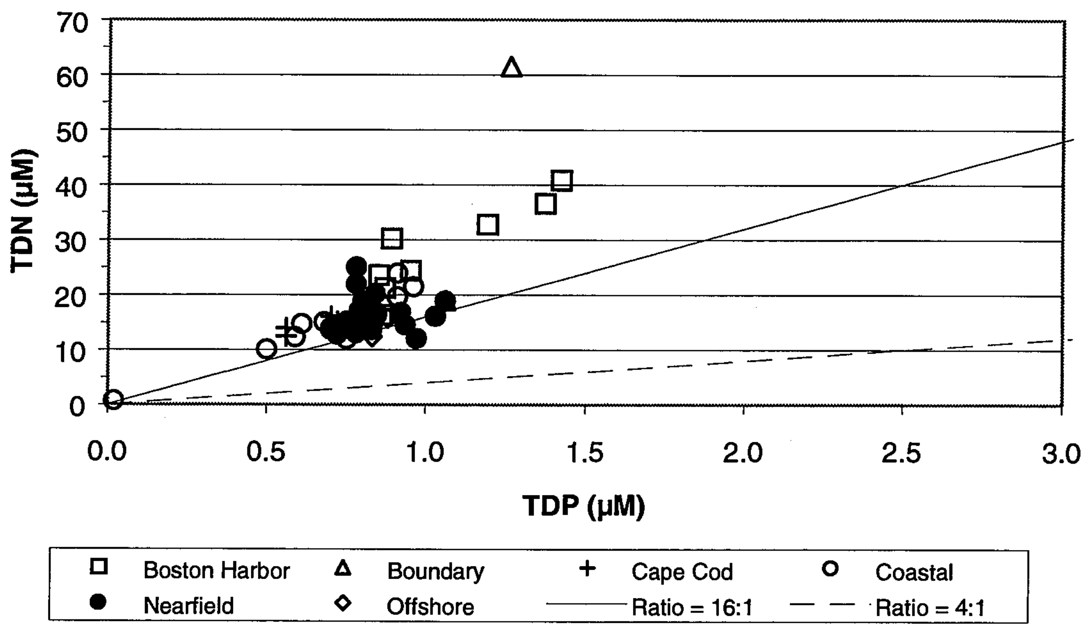


Figure D-25. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

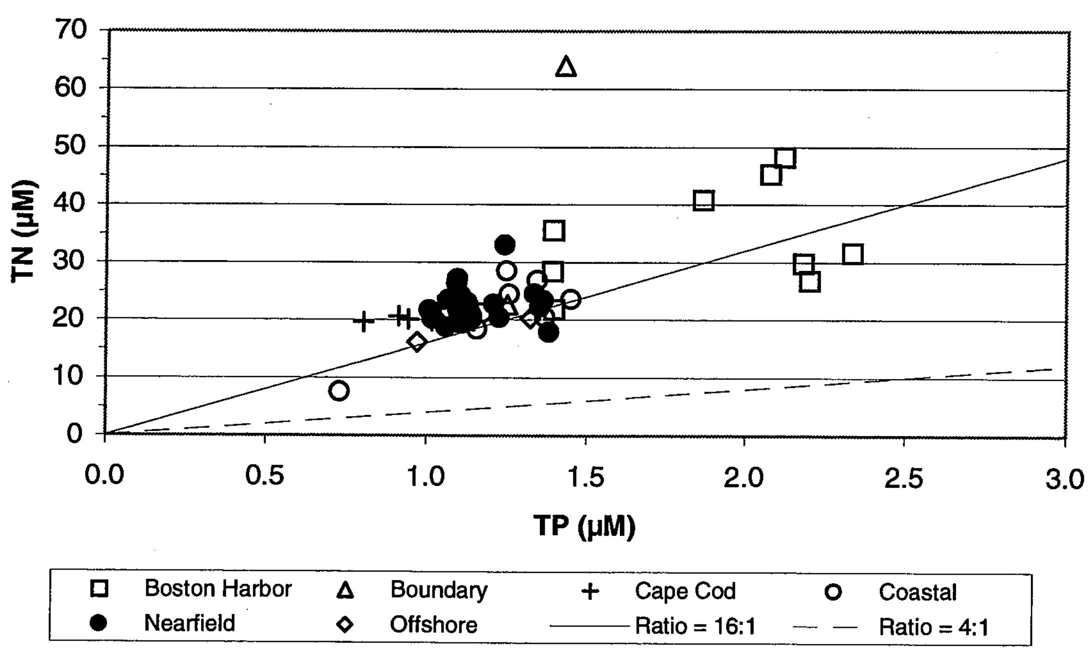
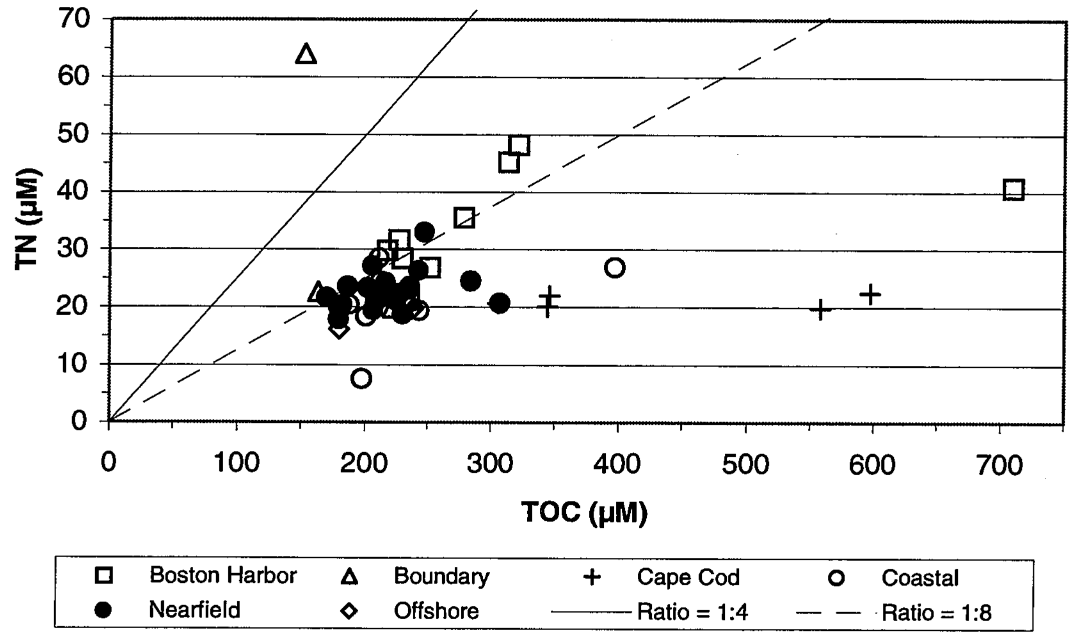


Figure D-26. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

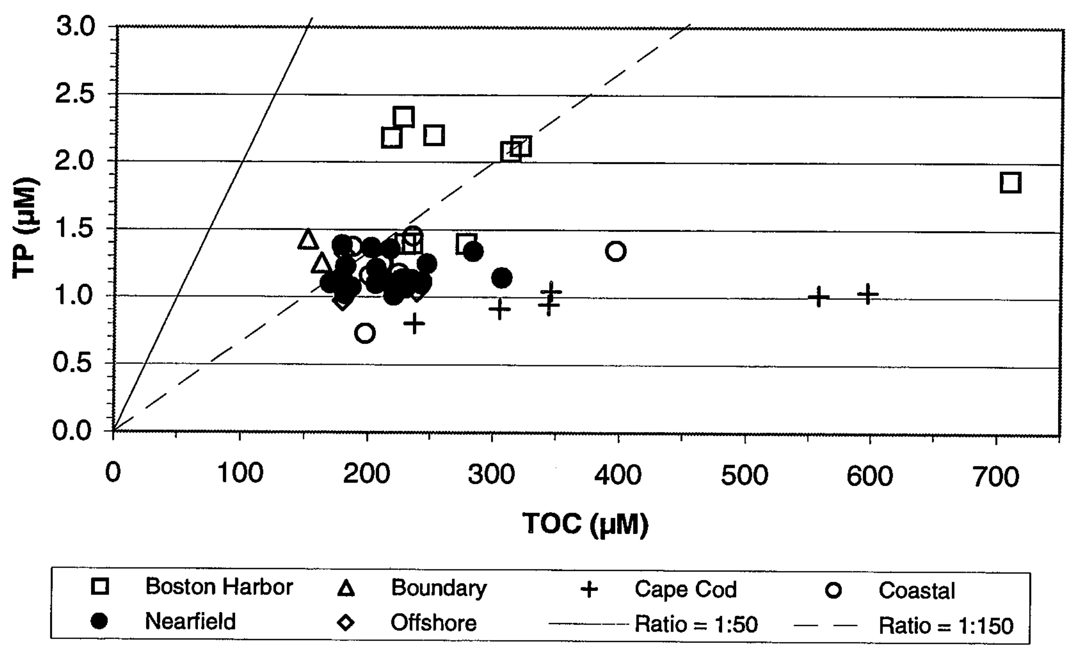


Figure D-27. Nutrient vs. Nutrient Plots for Farfield Survey WF992, (Feb 99)

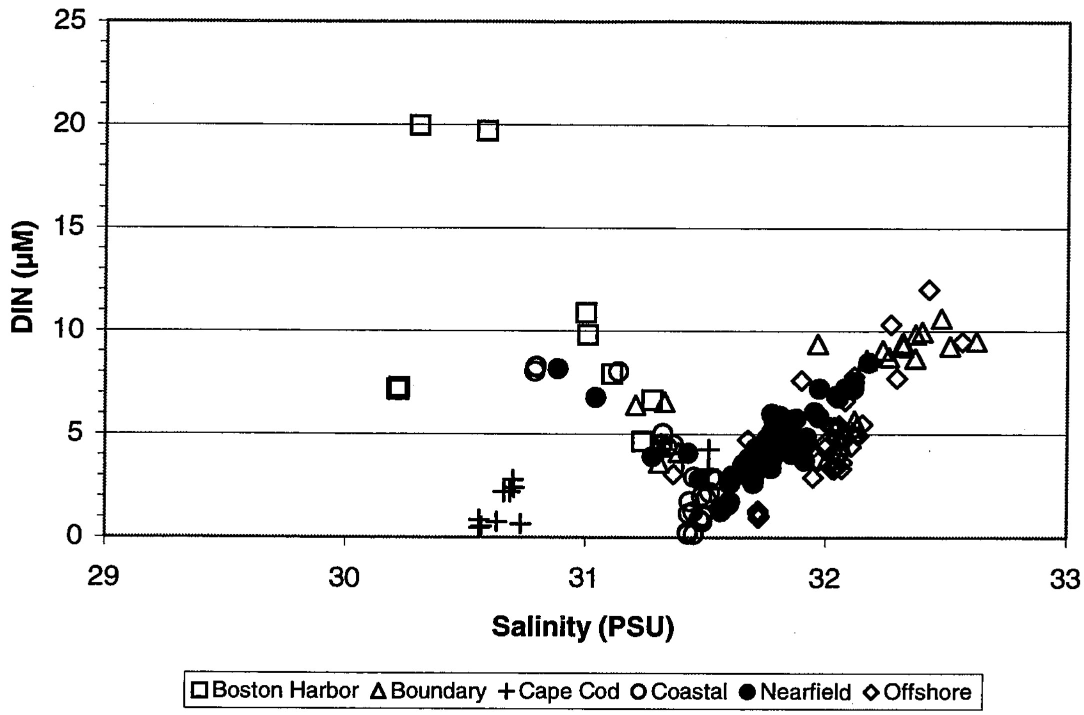
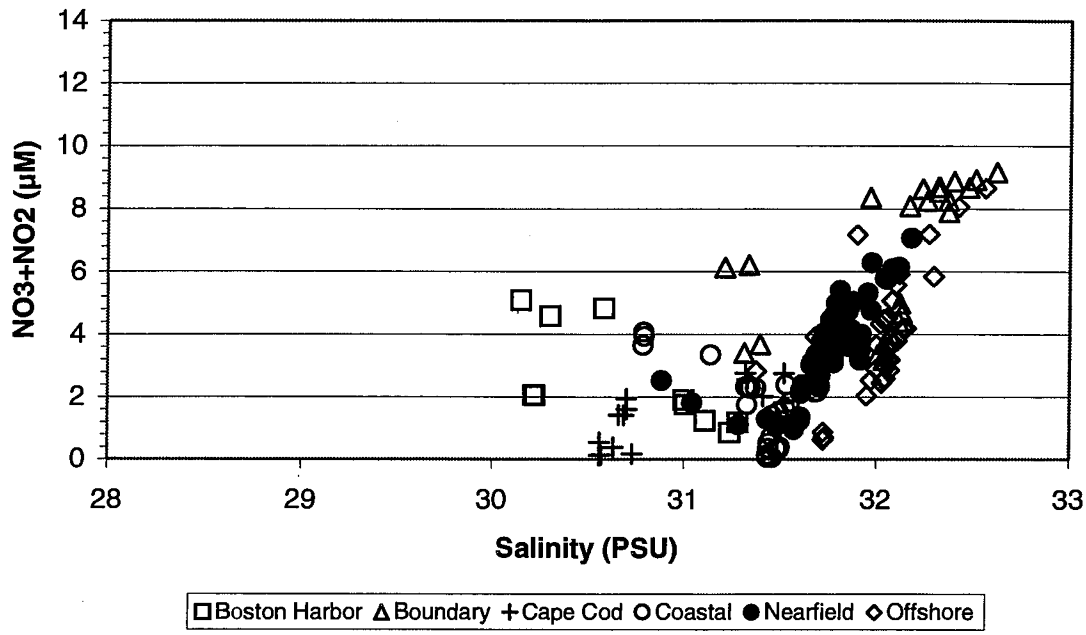


Figure D-28. Nutrient vs. Salinity Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

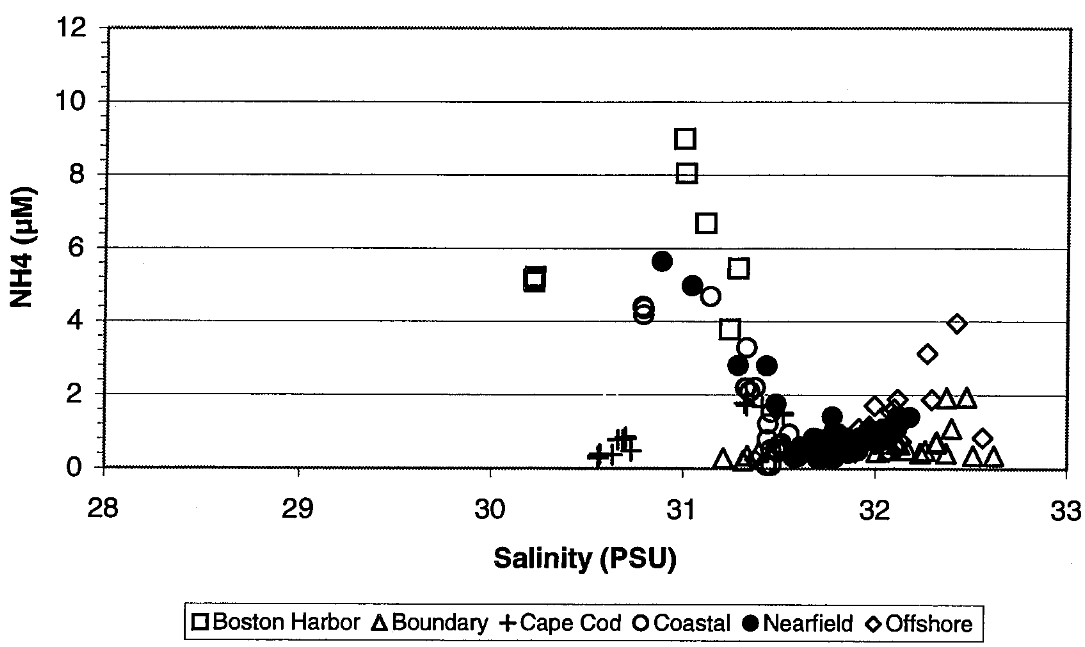
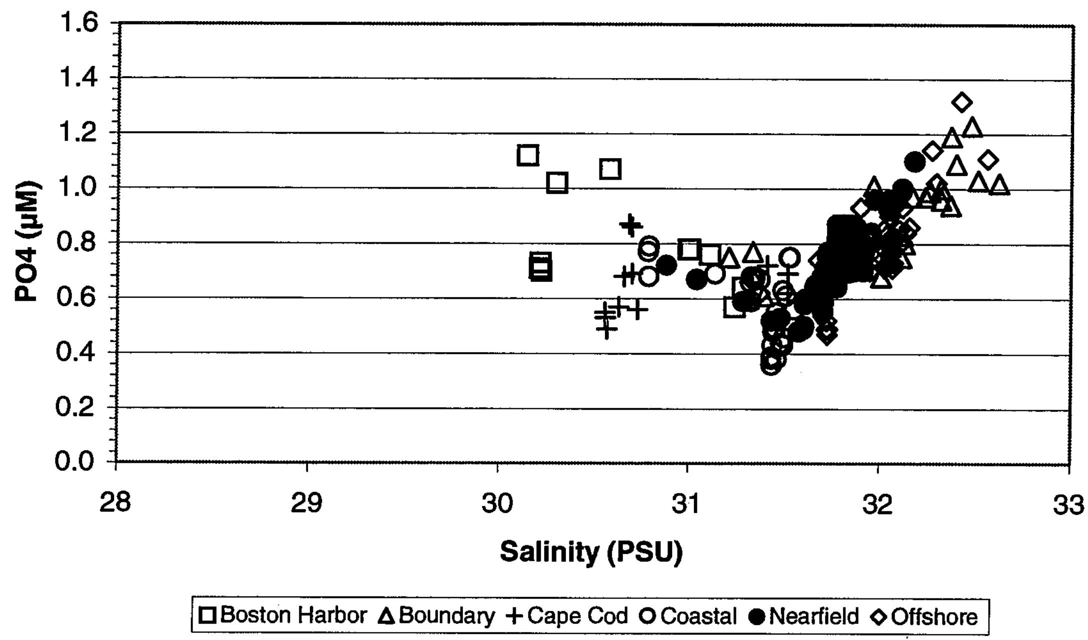


Figure D-29. Nutrient vs. Salinity Plots for Farfield Survey WF992, (Feb 99)

(a)



(b)

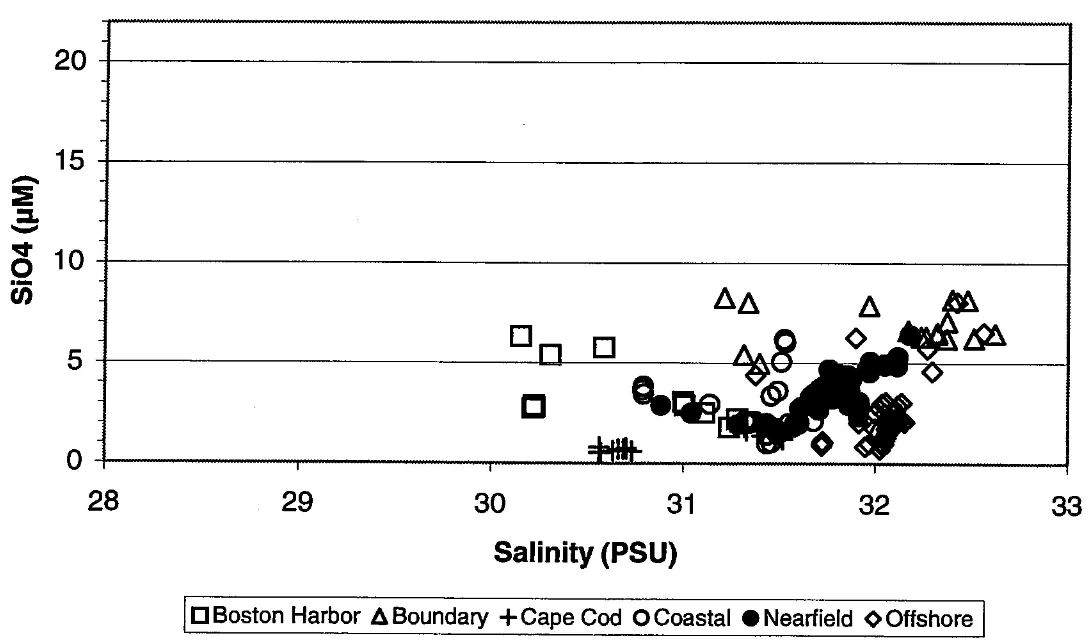


Figure D-30. Nutrient vs. Salinity Plots for Farfield Survey WF992, (Feb 99)

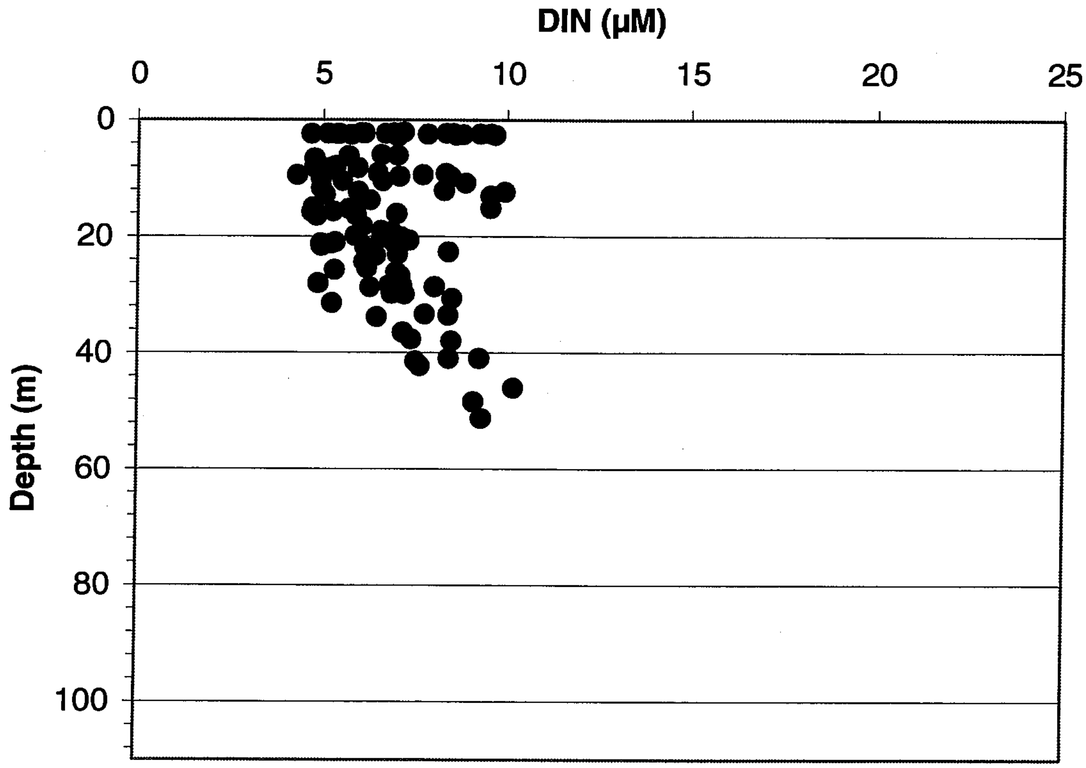
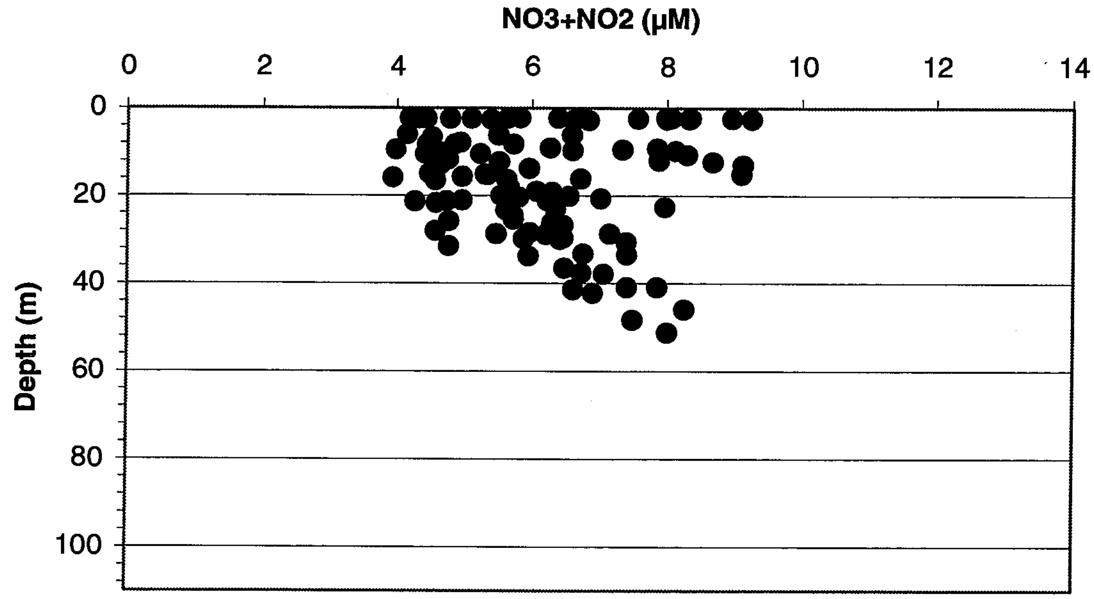


Figure D-31. Depth vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

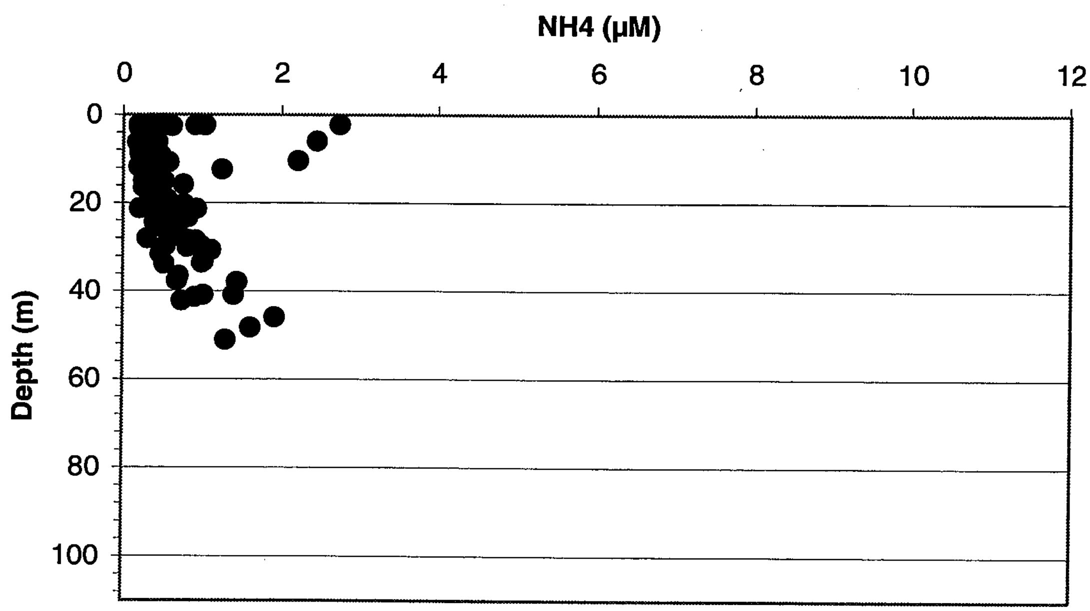
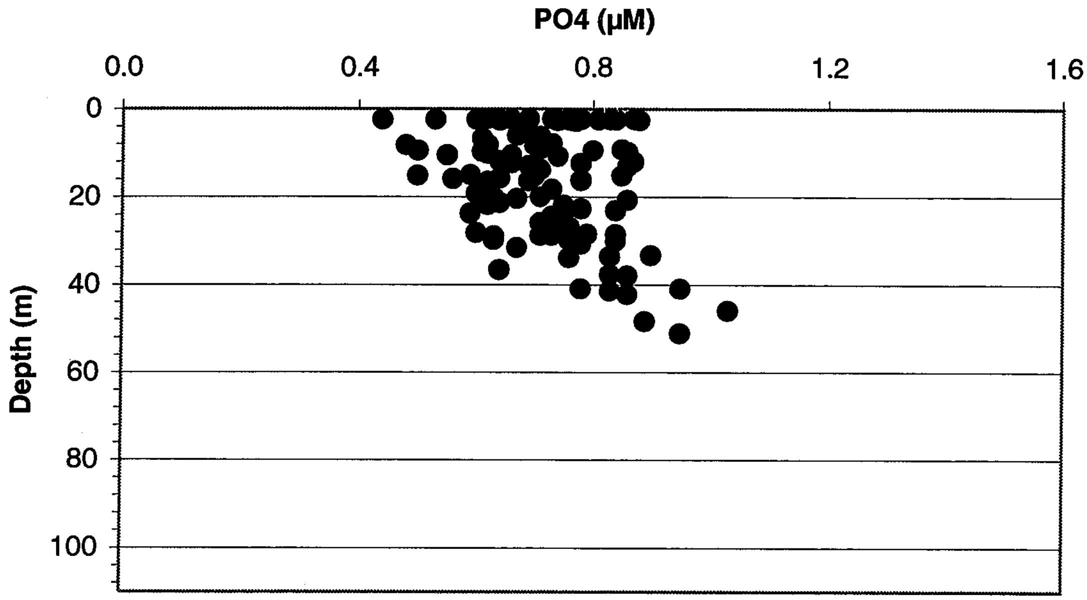


Figure D-32. Depth vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

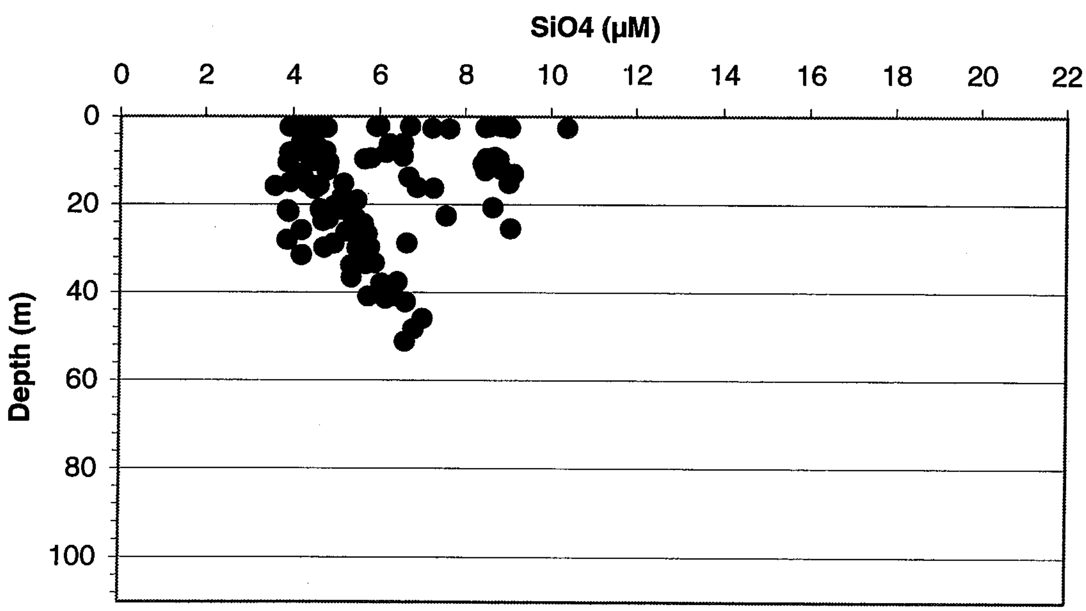
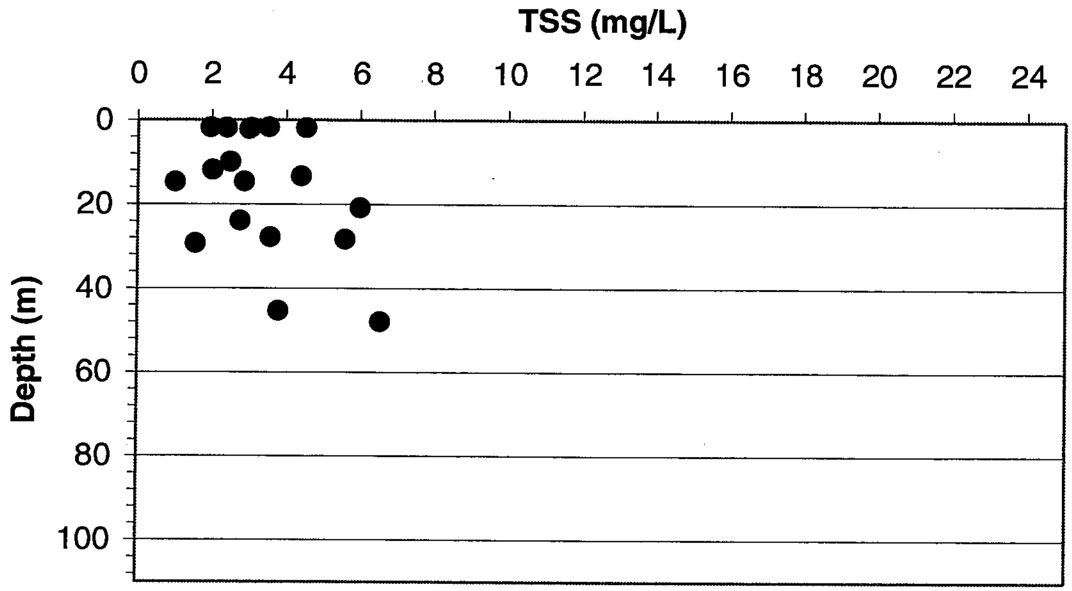


Figure D-33. Depth vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

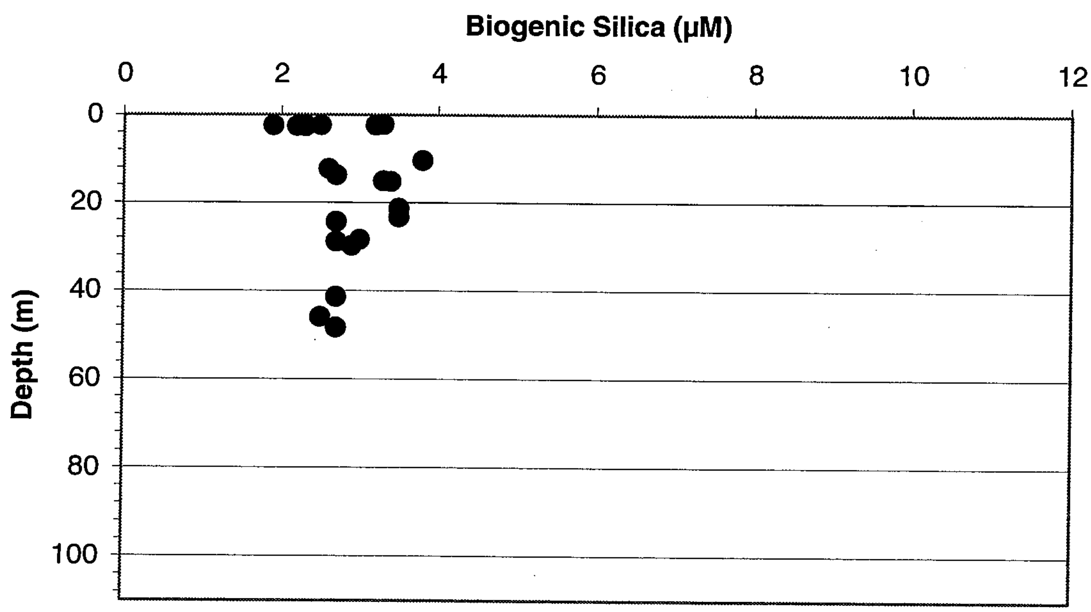
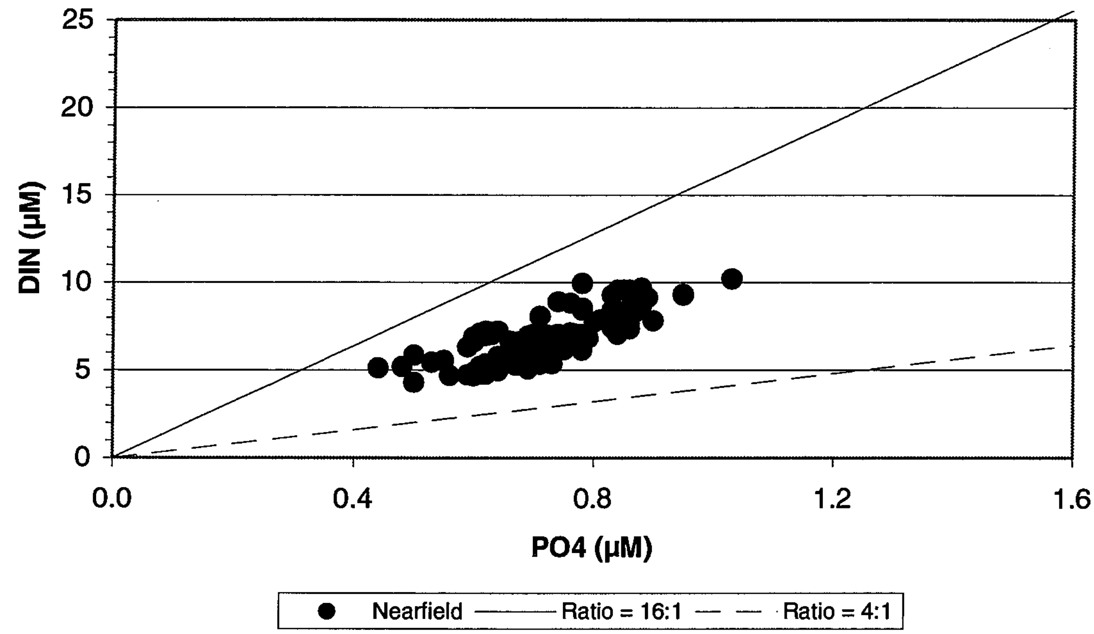


Figure D-34. Depth vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

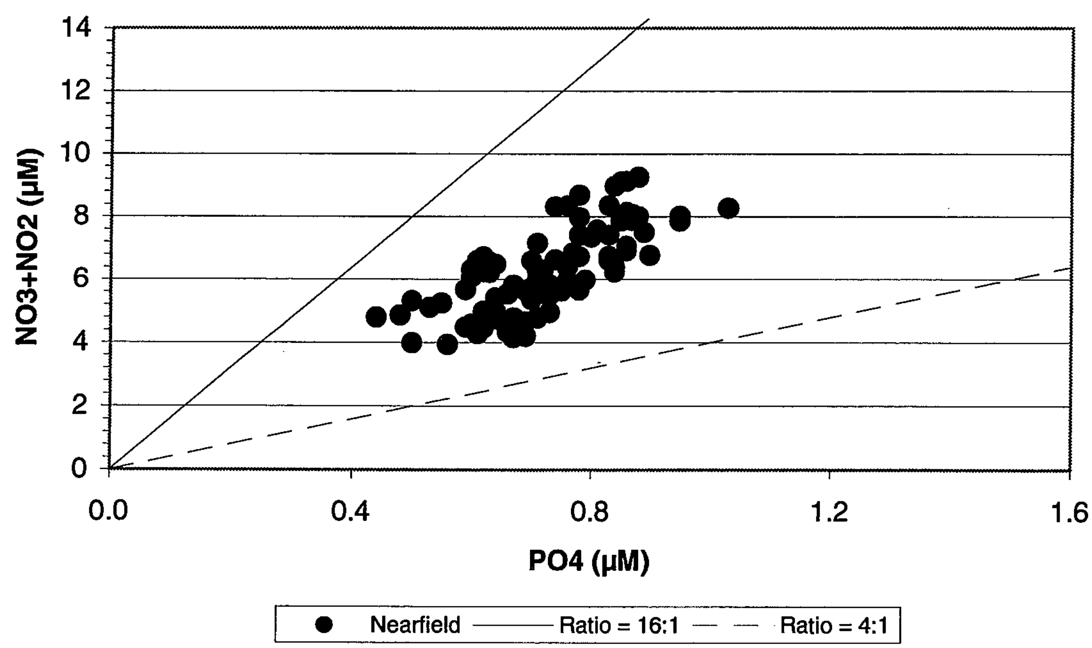
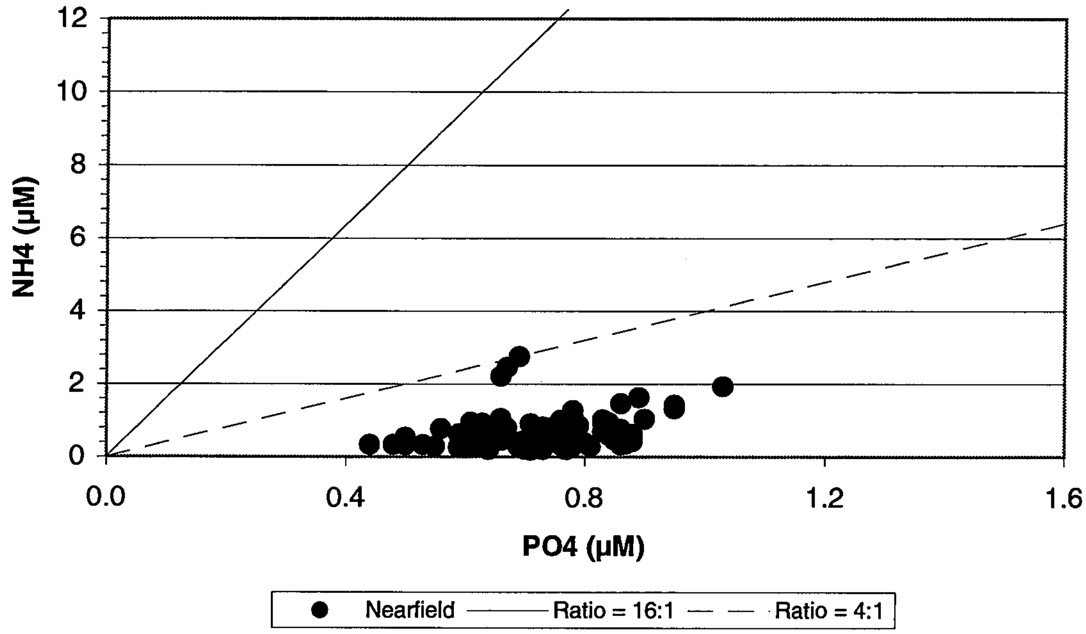


Figure D-35. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

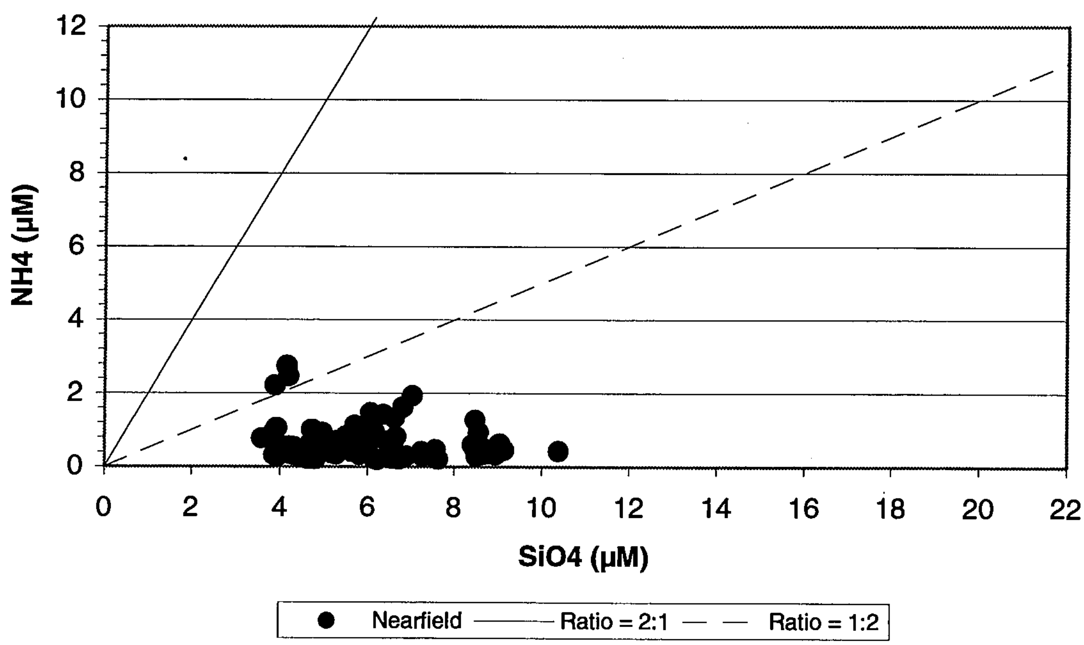
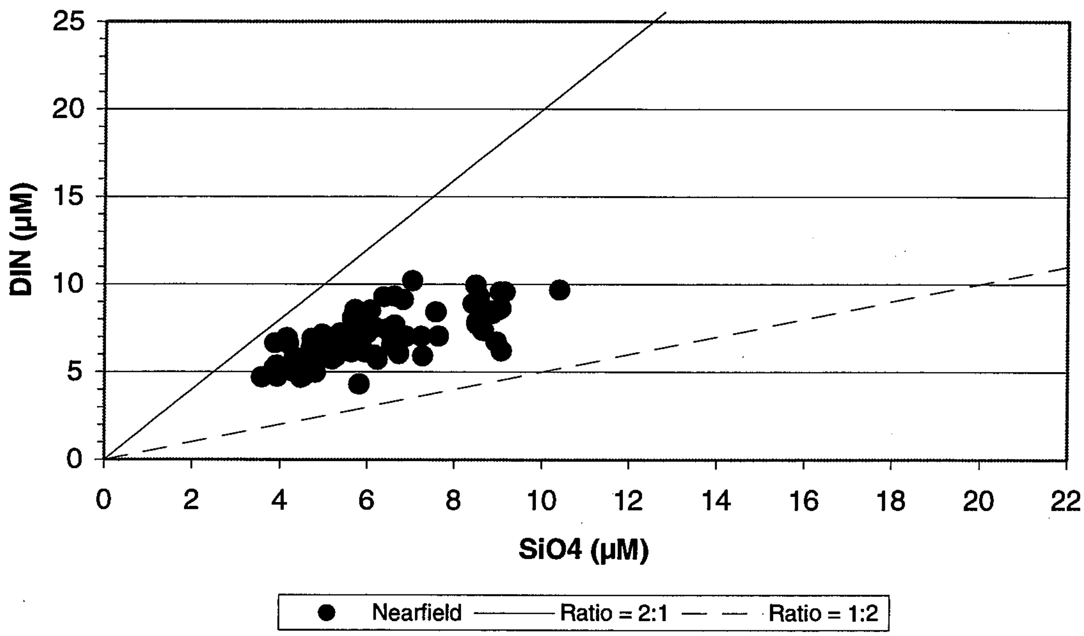


Figure D-36. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

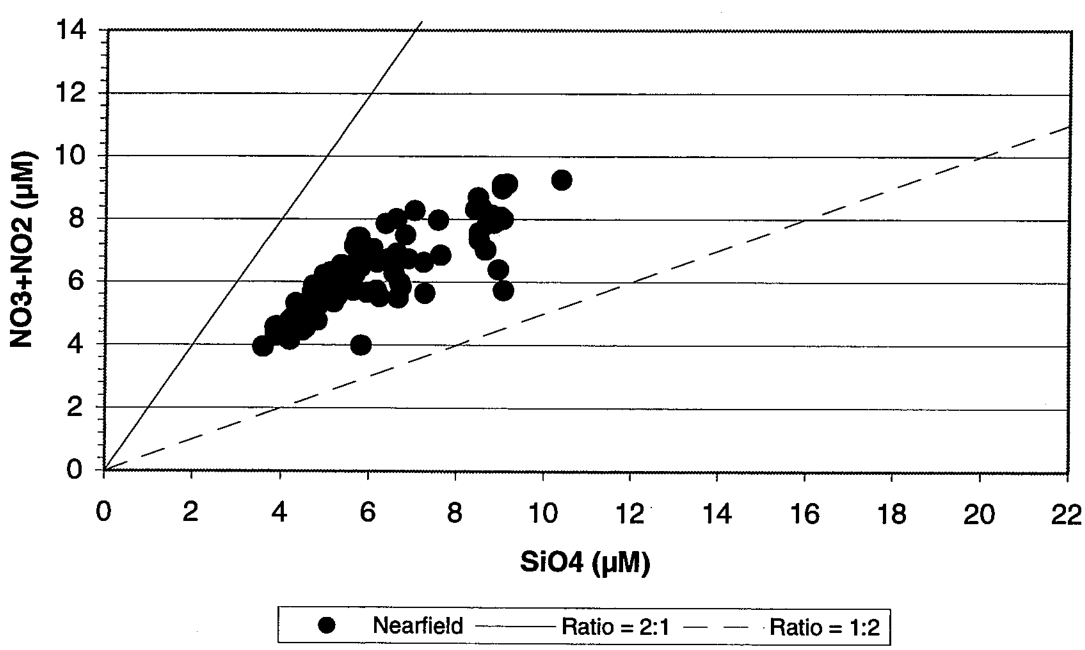
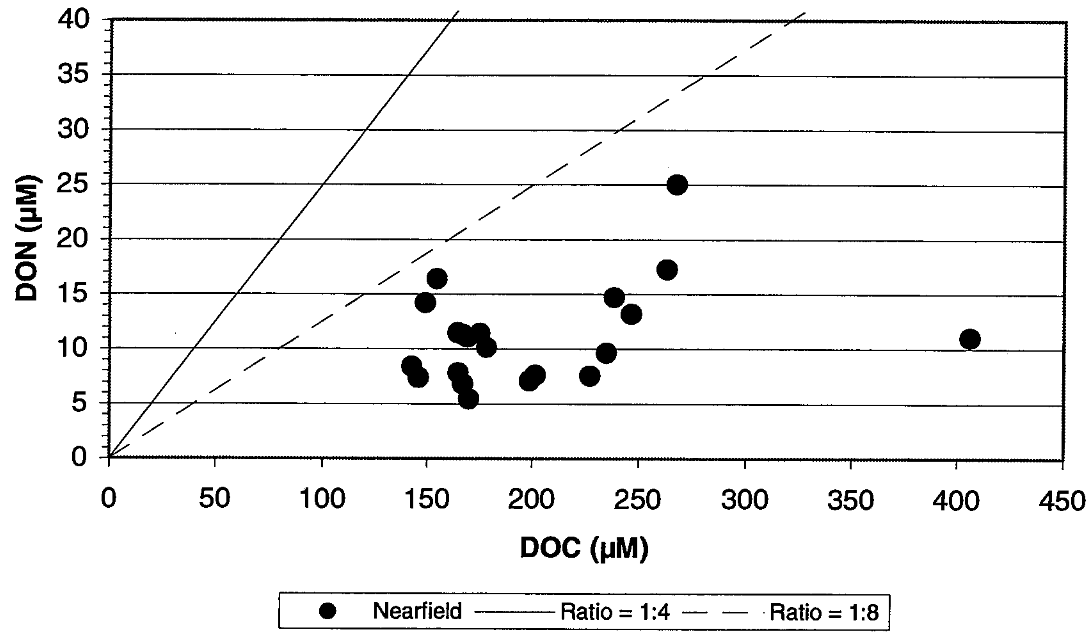


Figure D-37. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

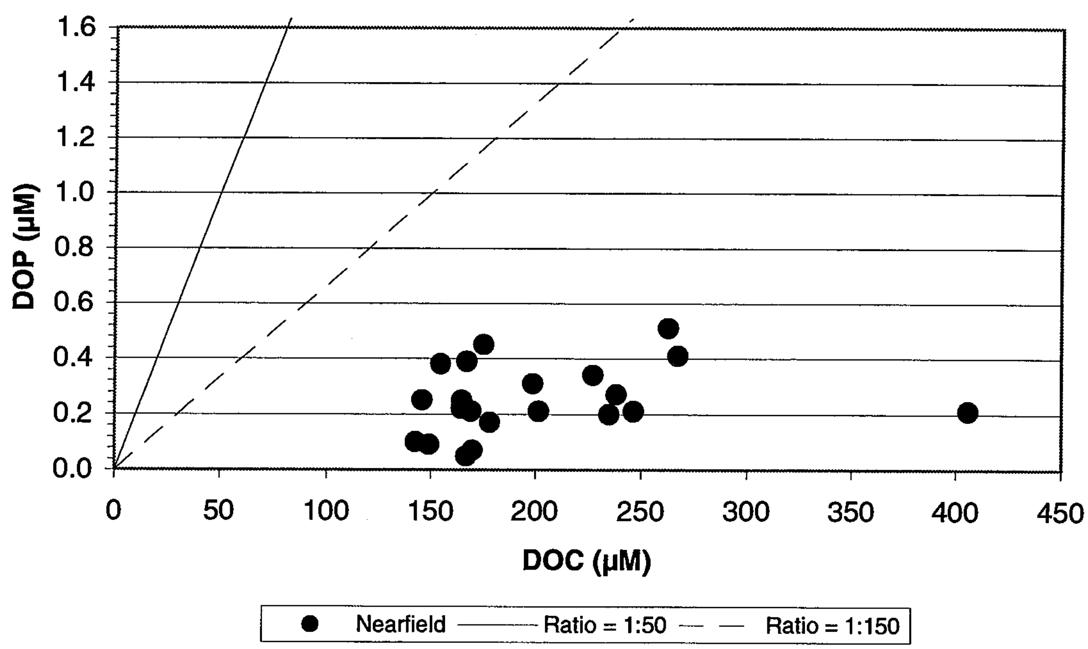
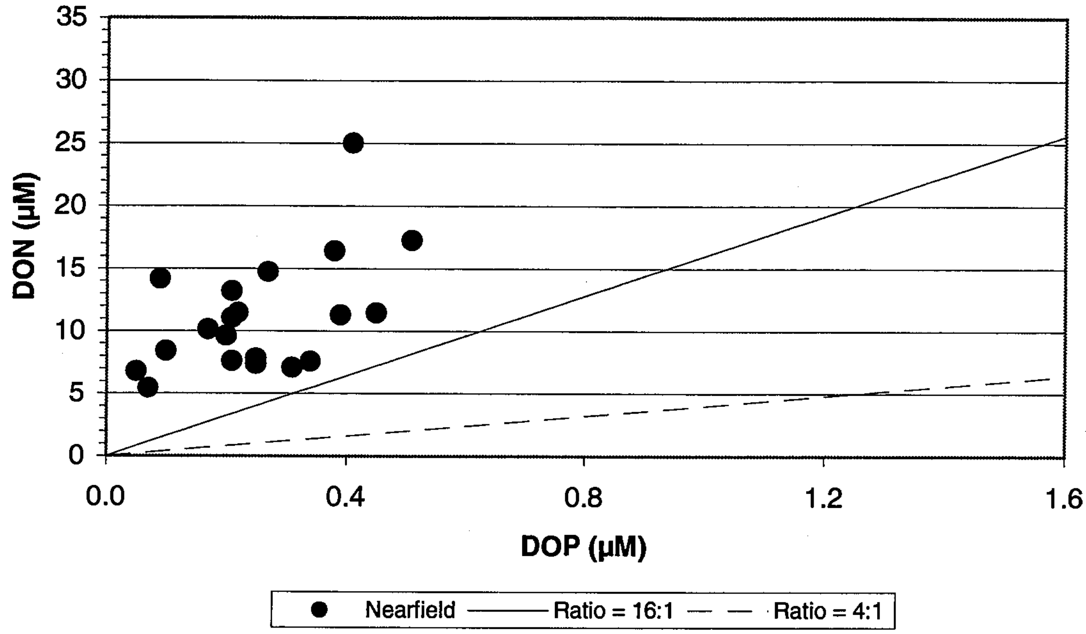


Figure D-38. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

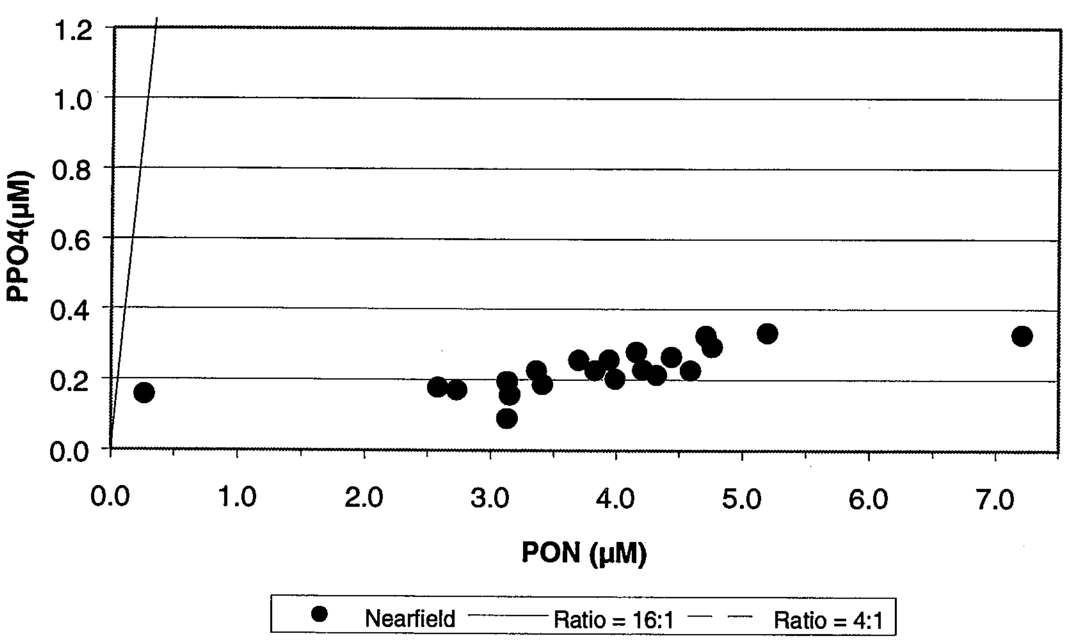
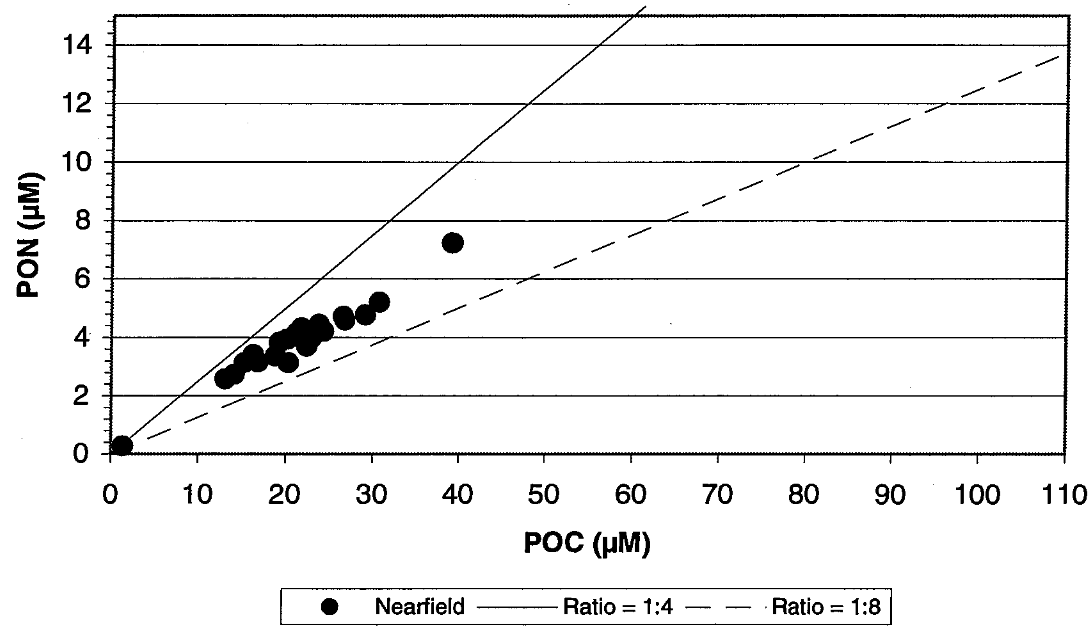


Figure D-39. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

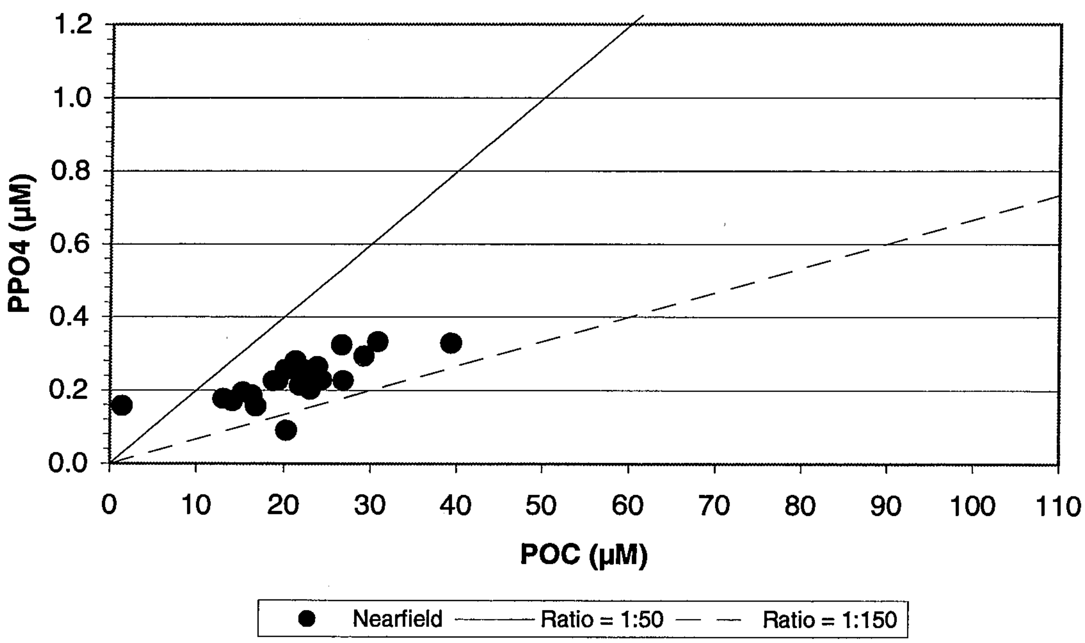
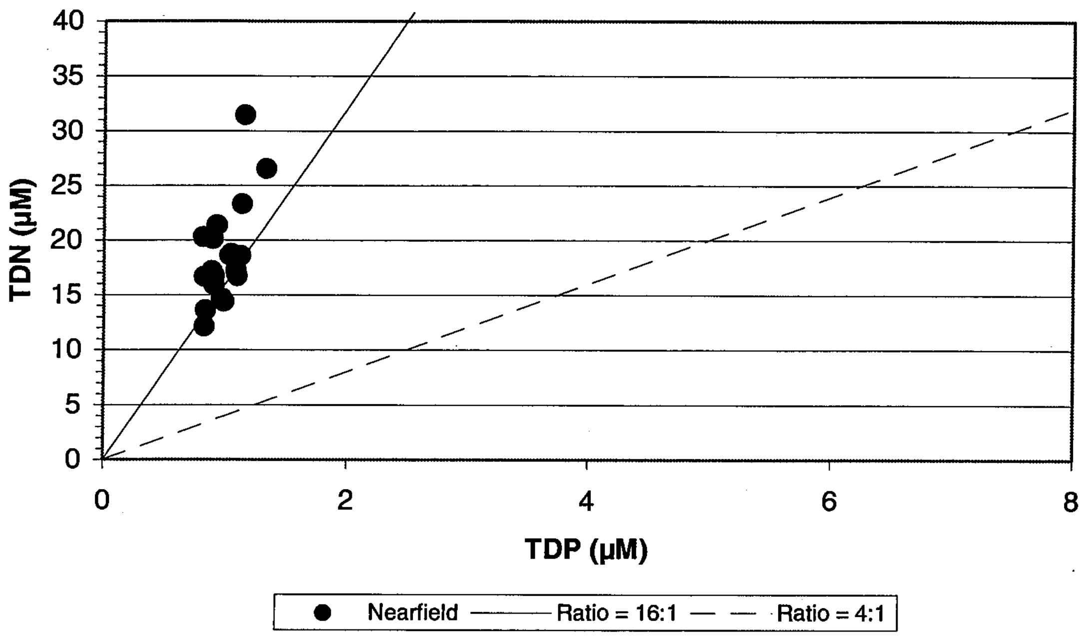


Figure D-40. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

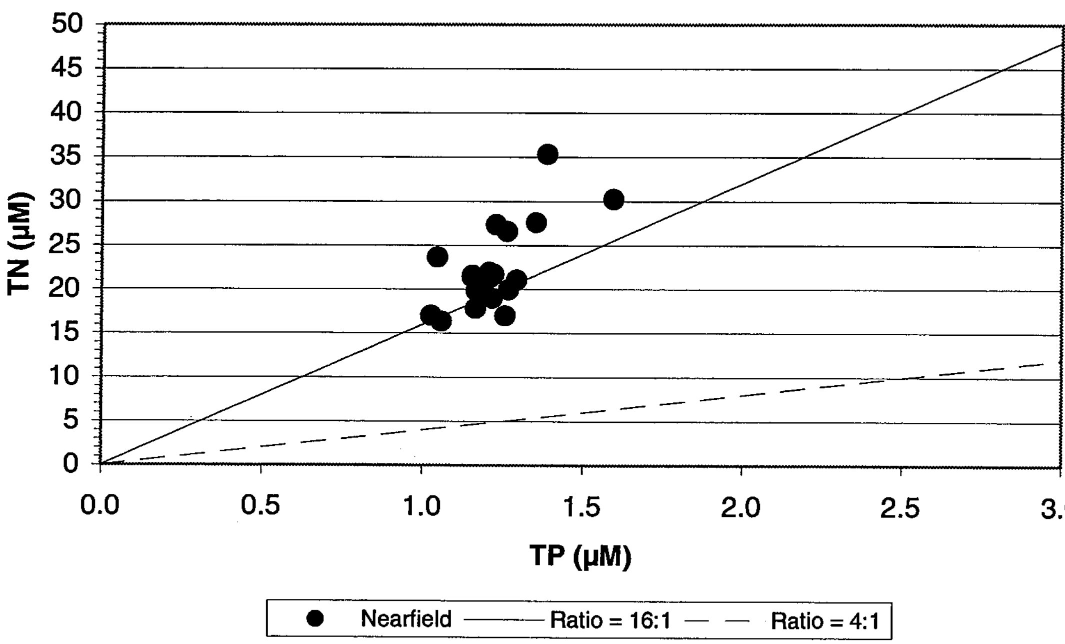


Figure D-41. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

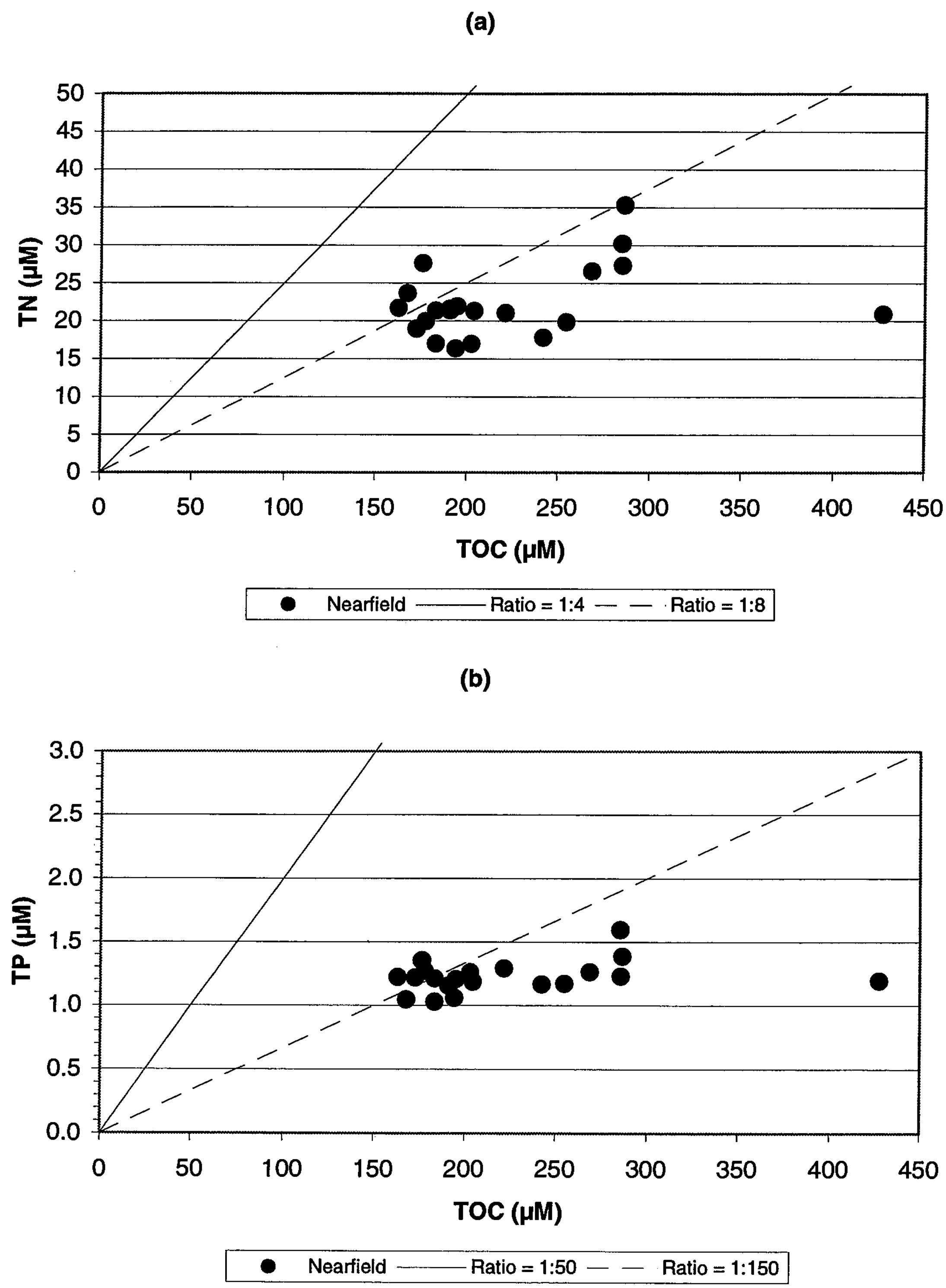


Figure D-42. Nutrient vs. Nutrient Plots for Nearfield Survey WN993, (Mar 99)

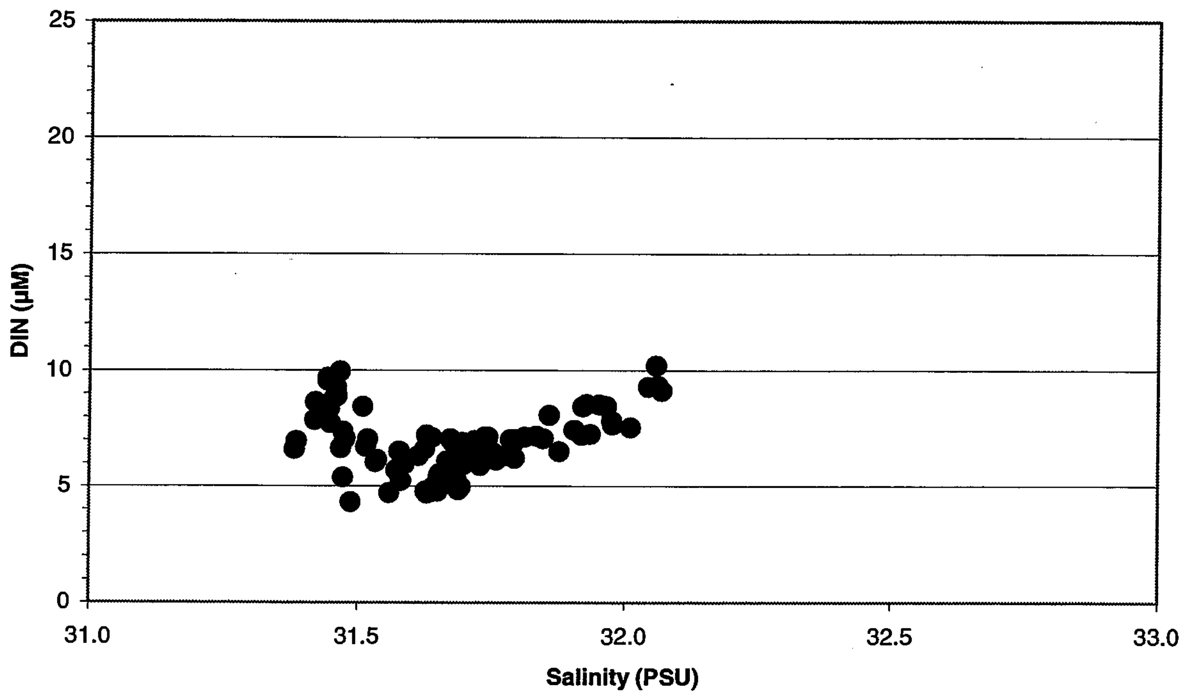
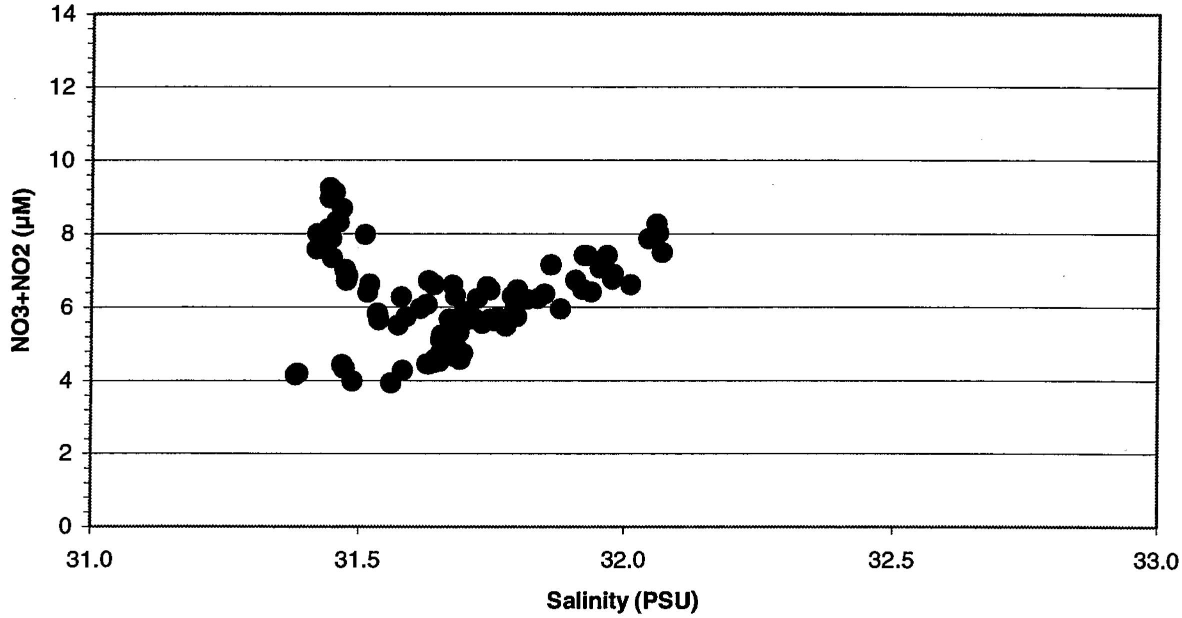


Figure D-43. Nutrient vs. Salinity Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

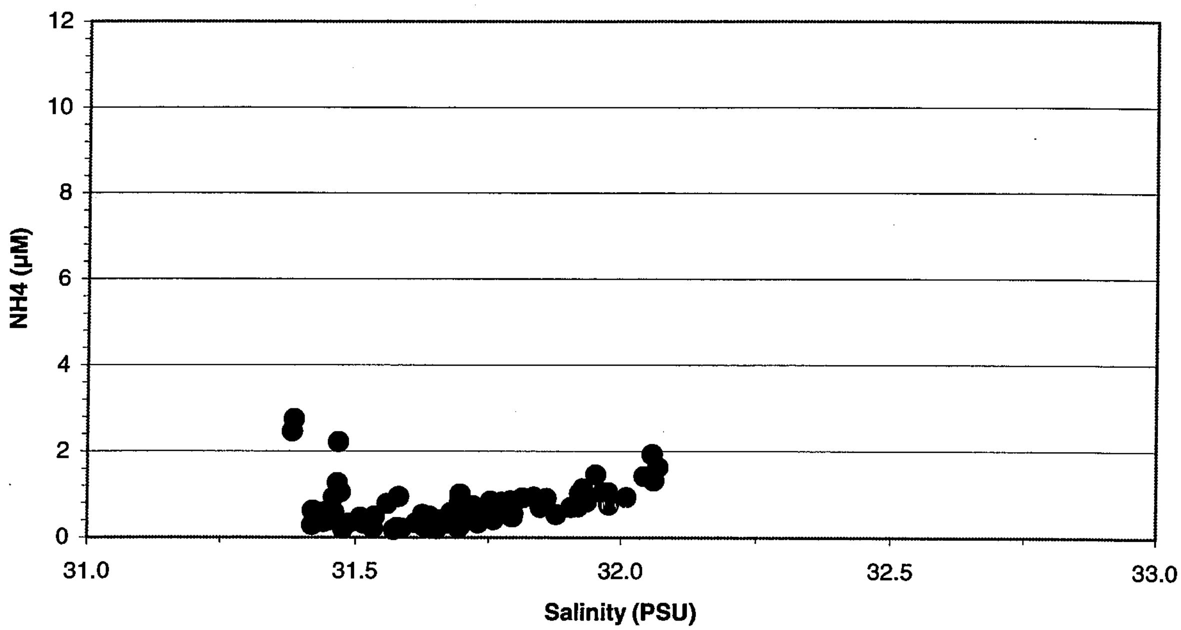
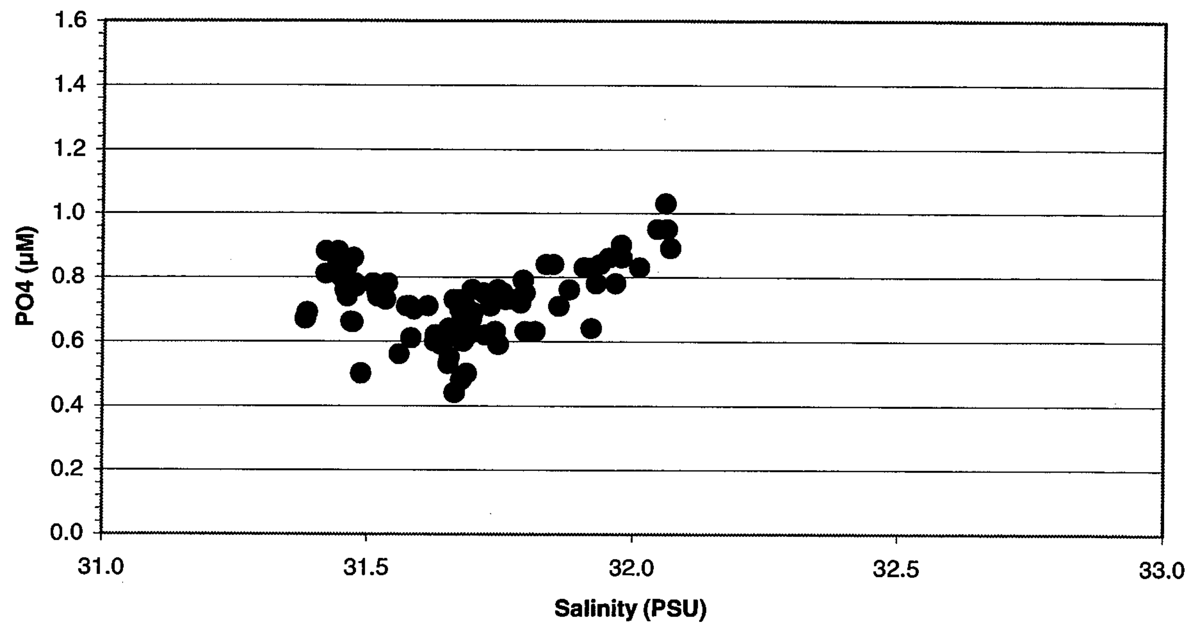


Figure D-44. Nutrient vs. Salinity Plots for Nearfield Survey WN993, (Mar 99)

(a)



(b)

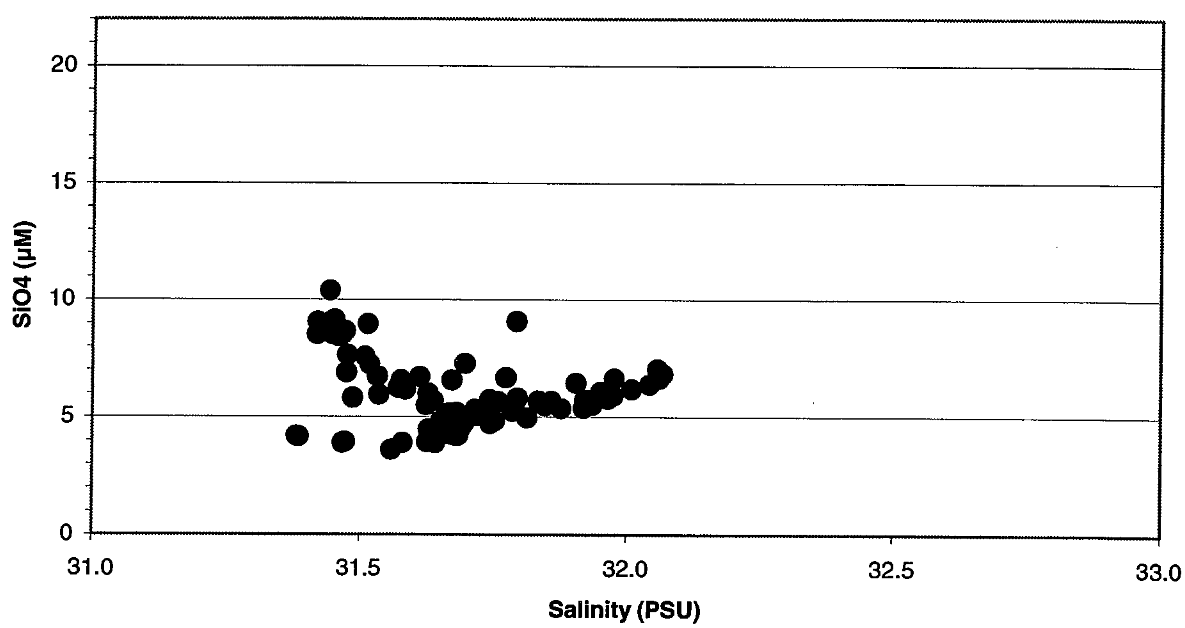


Figure D-45. Nutrient vs. Salinity Plots for Nearfield Survey WN993, (Mar 99)

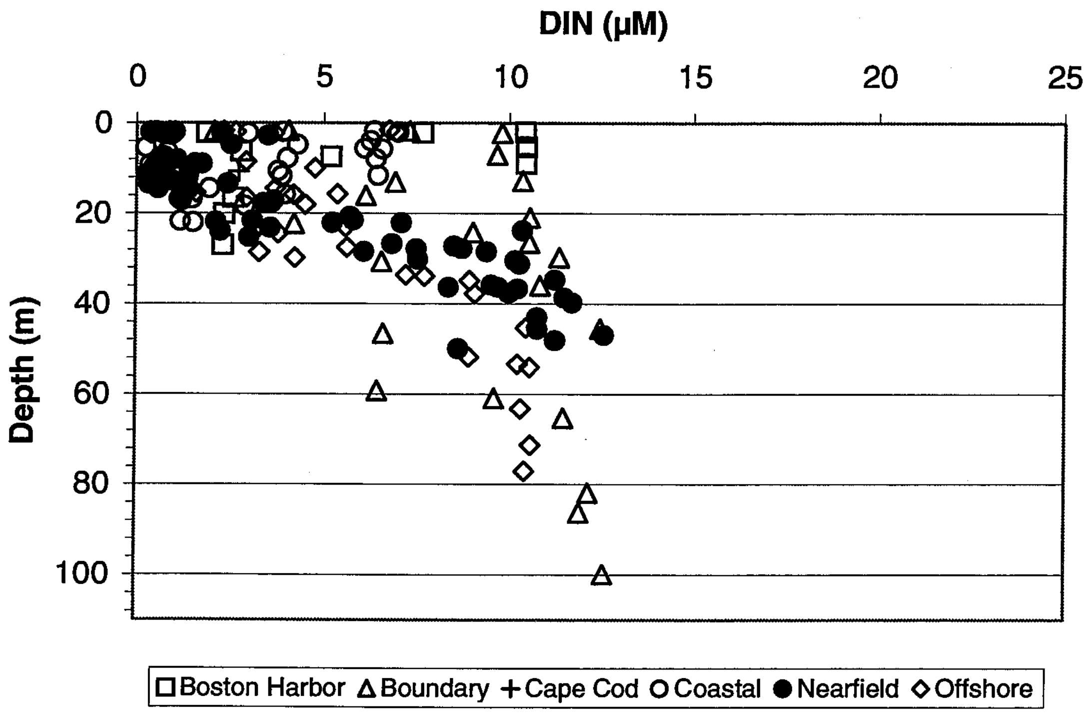
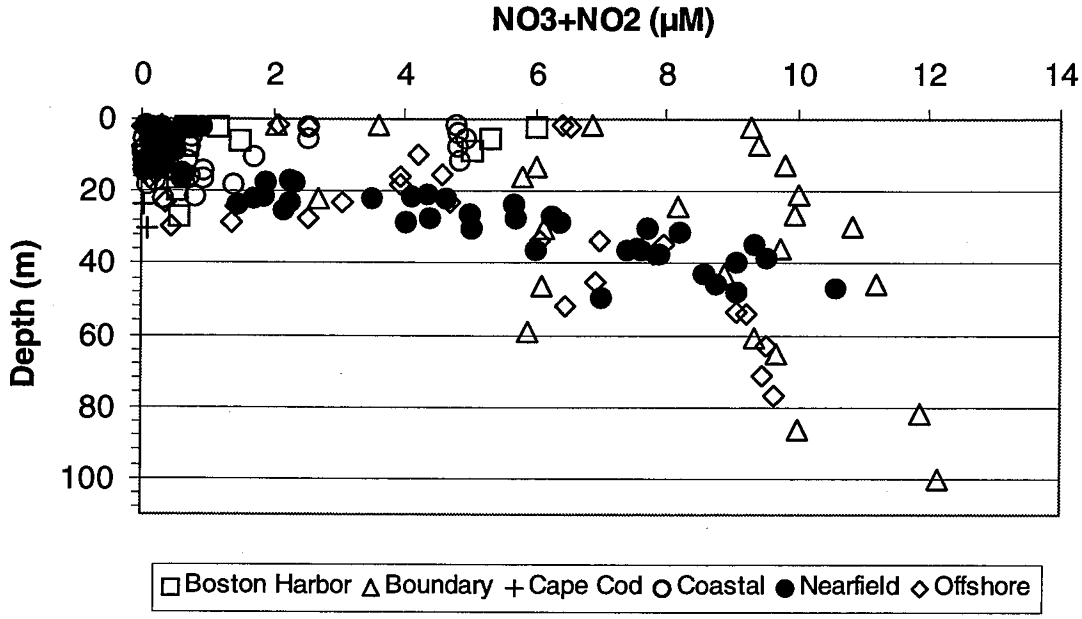


Figure D-46. Depth vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

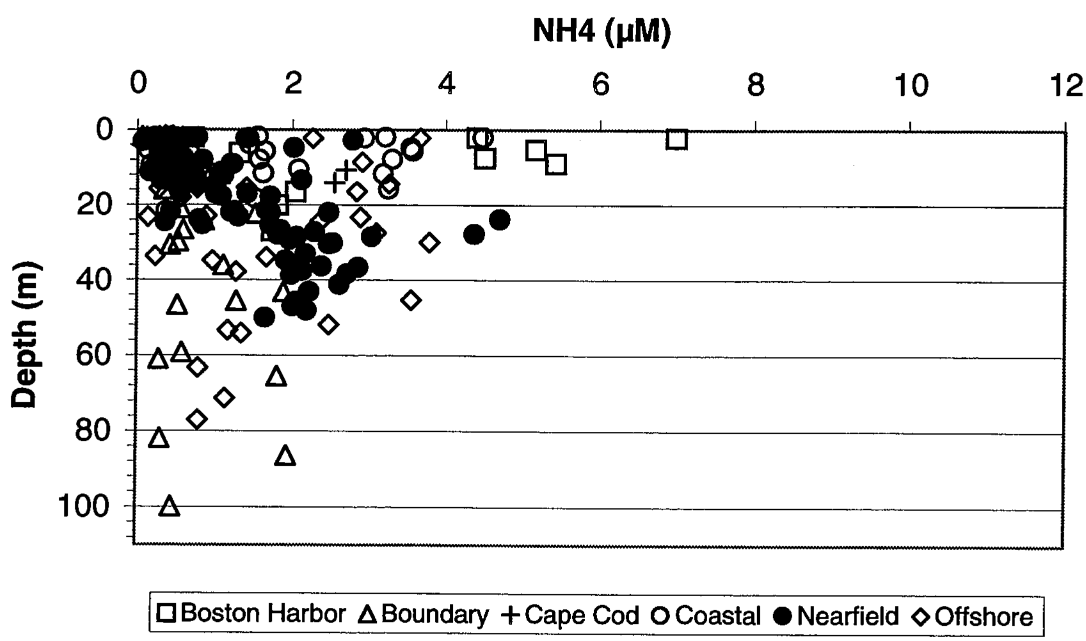
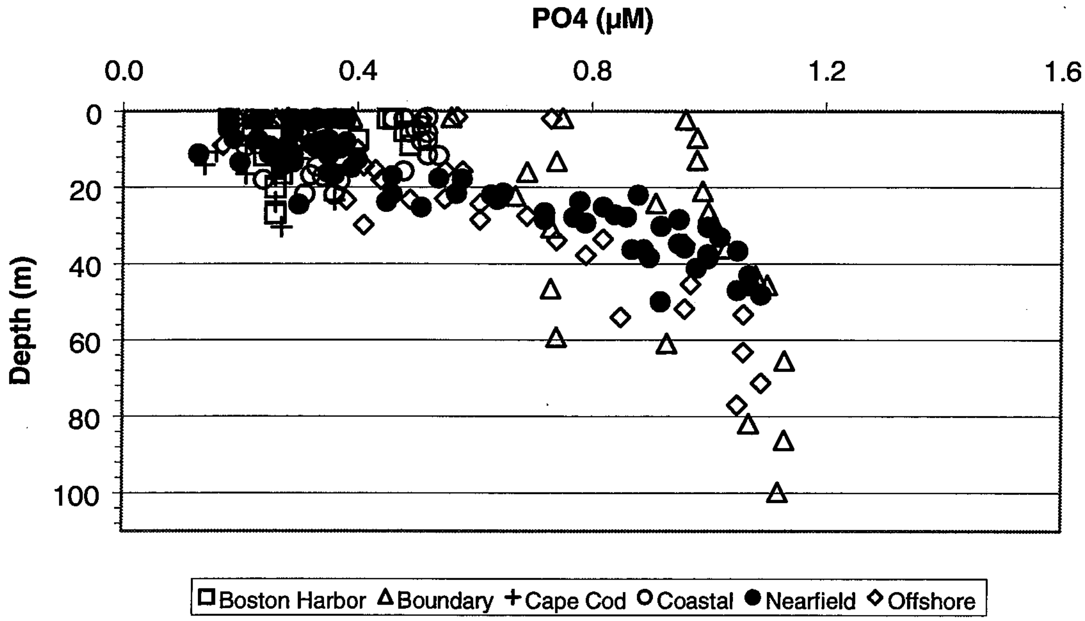


Figure D-47. Depth vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

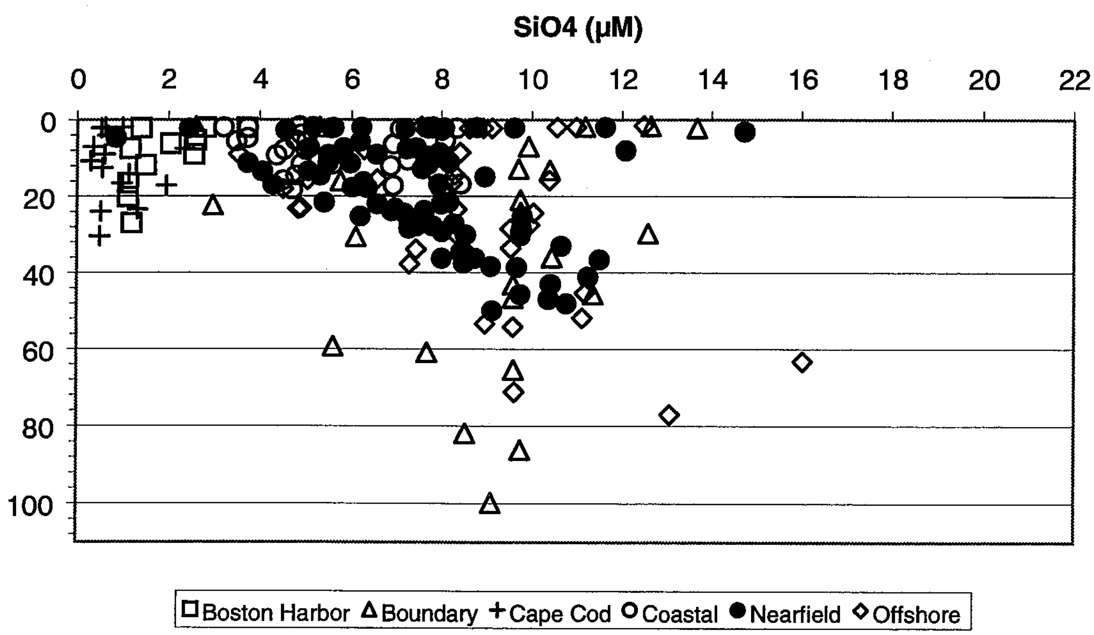
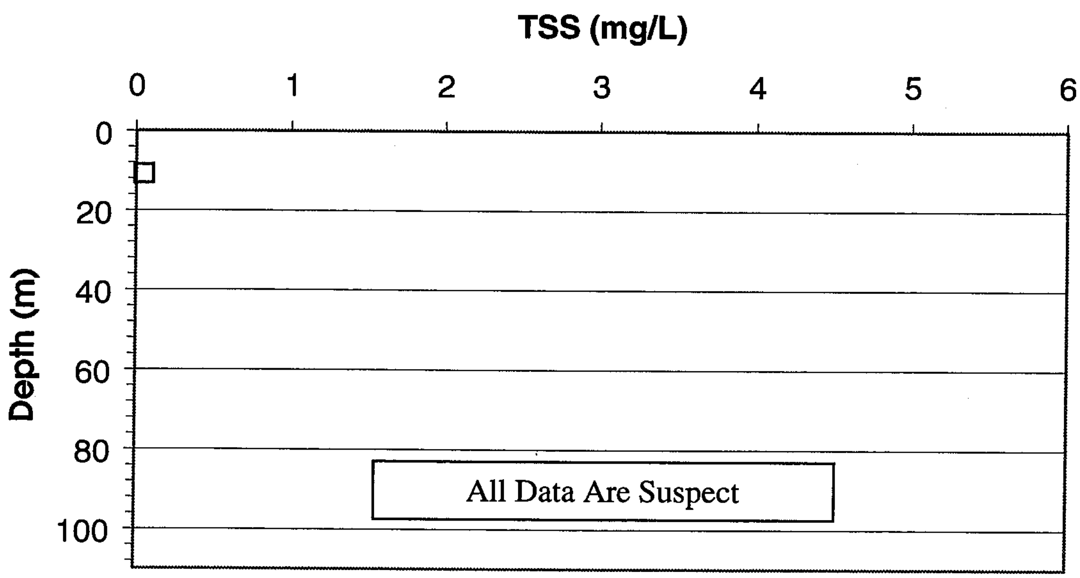


Figure D-48. Depth vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

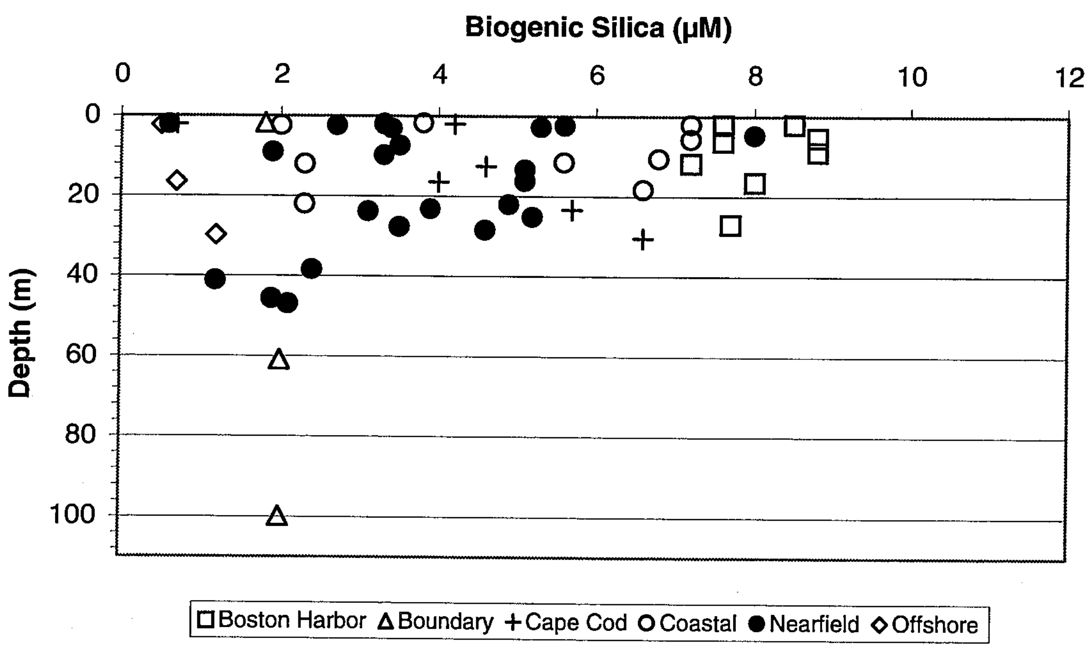
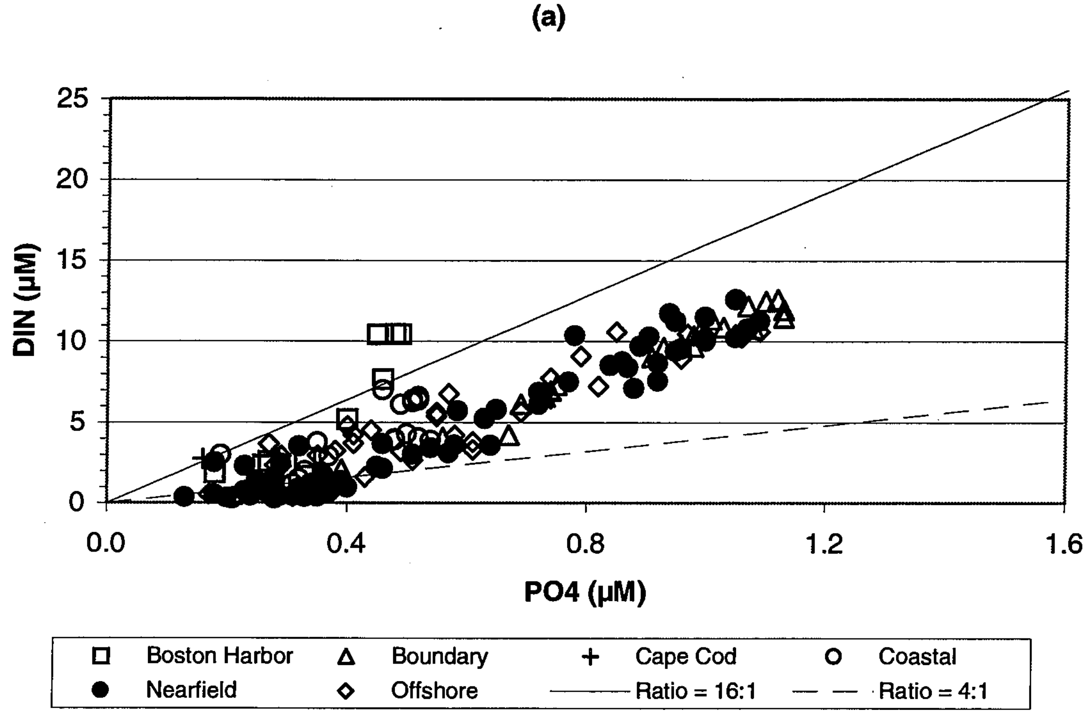


Figure D-49. Depth vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)



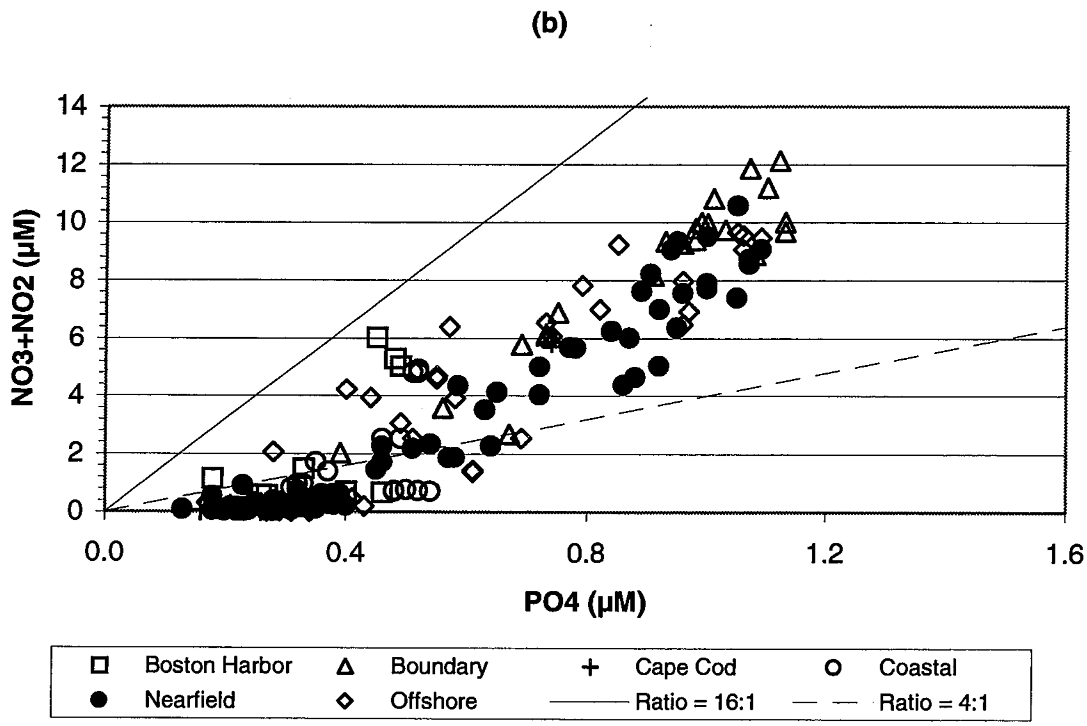


Figure D-50. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

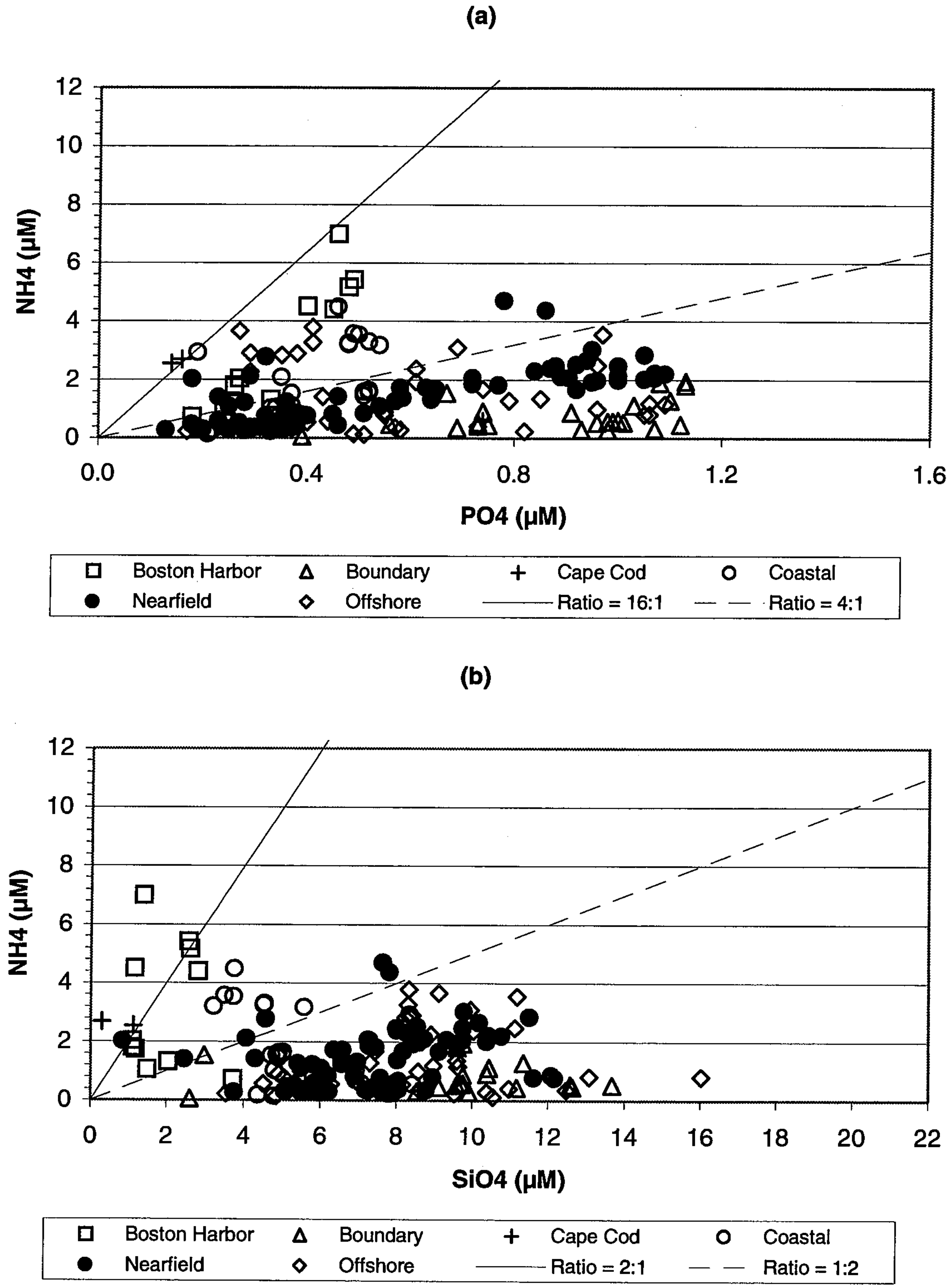
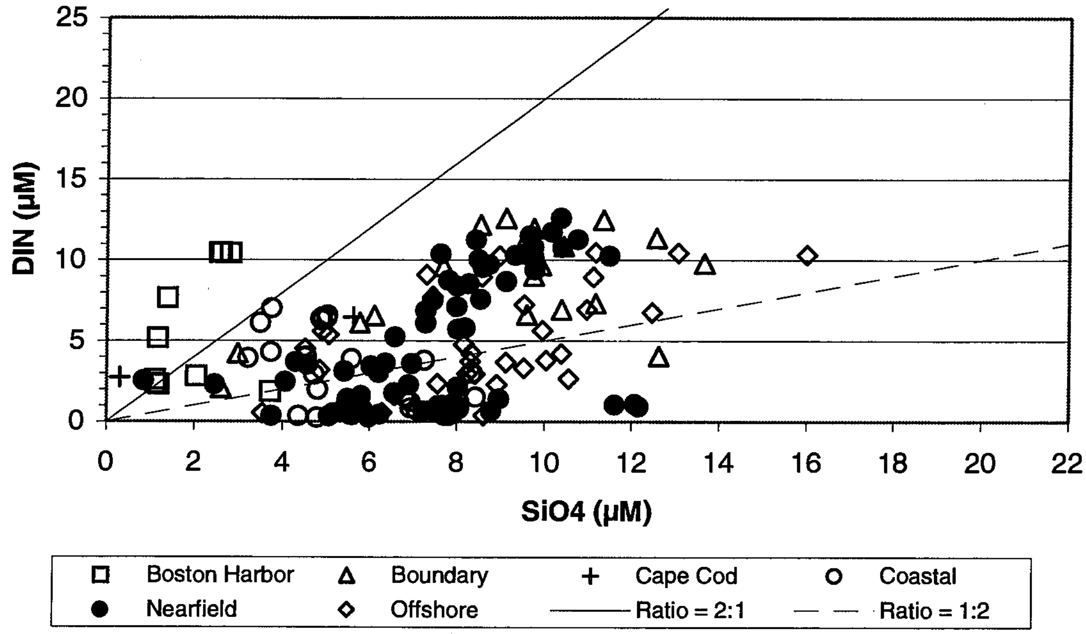


Figure D-51. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

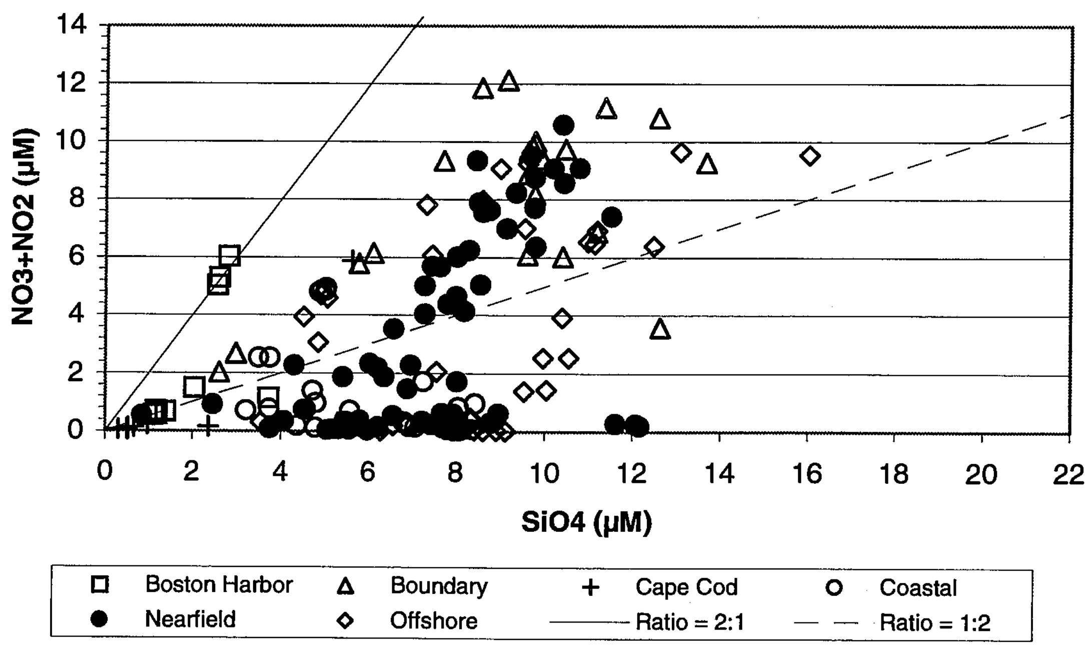
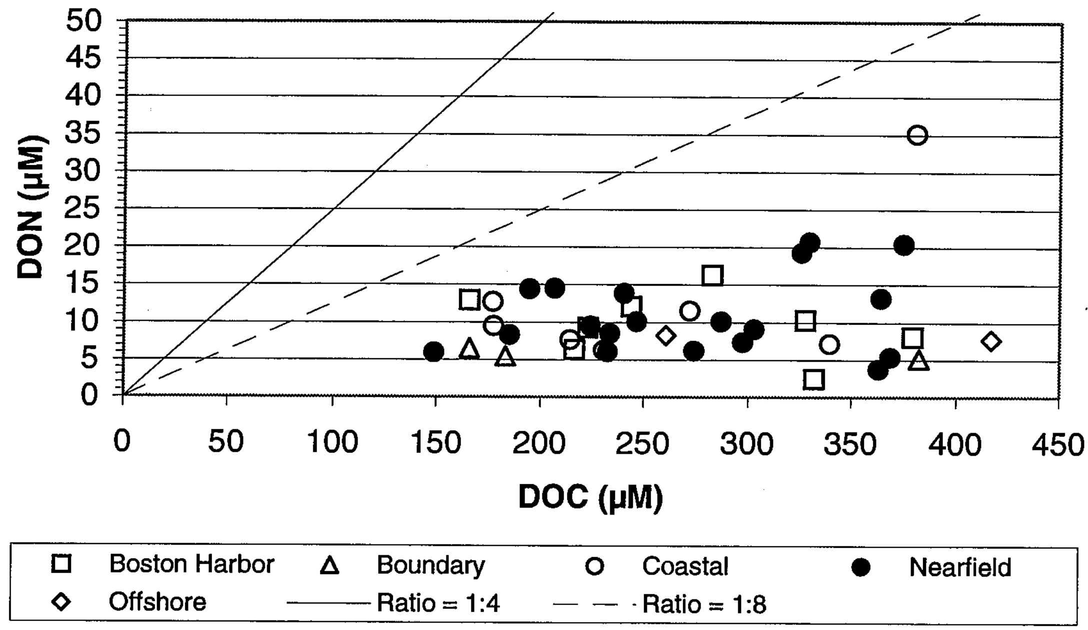


Figure D-52. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

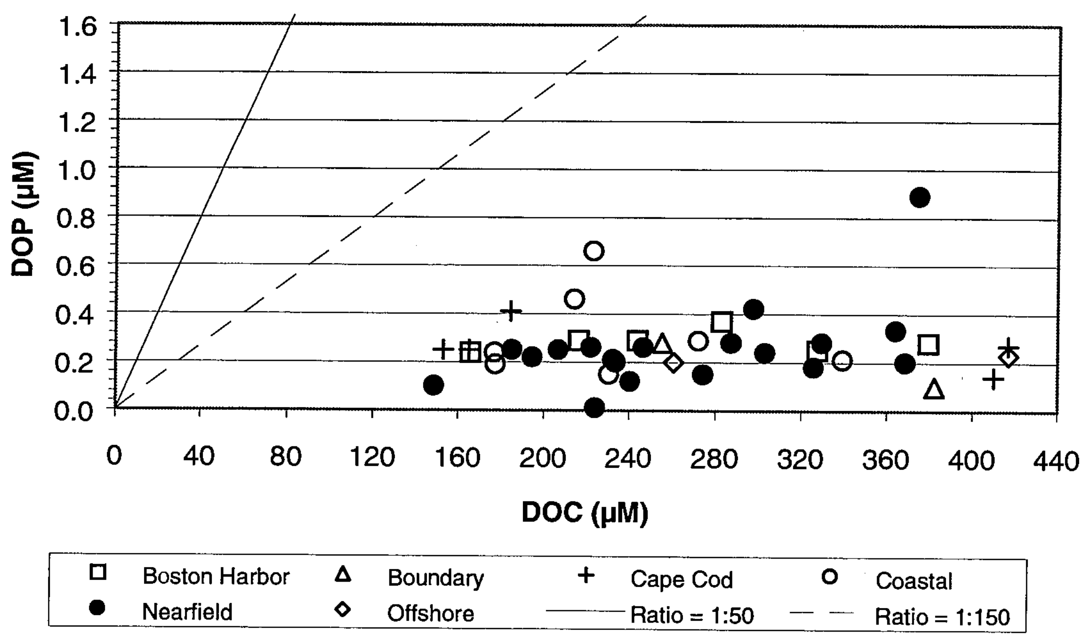
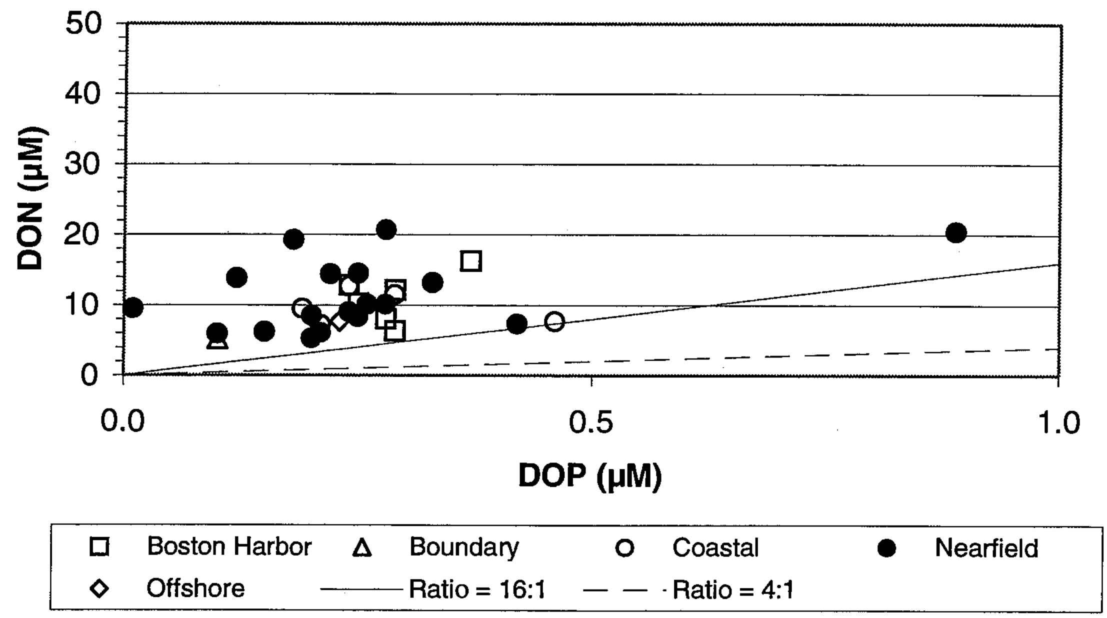


Figure D-53. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

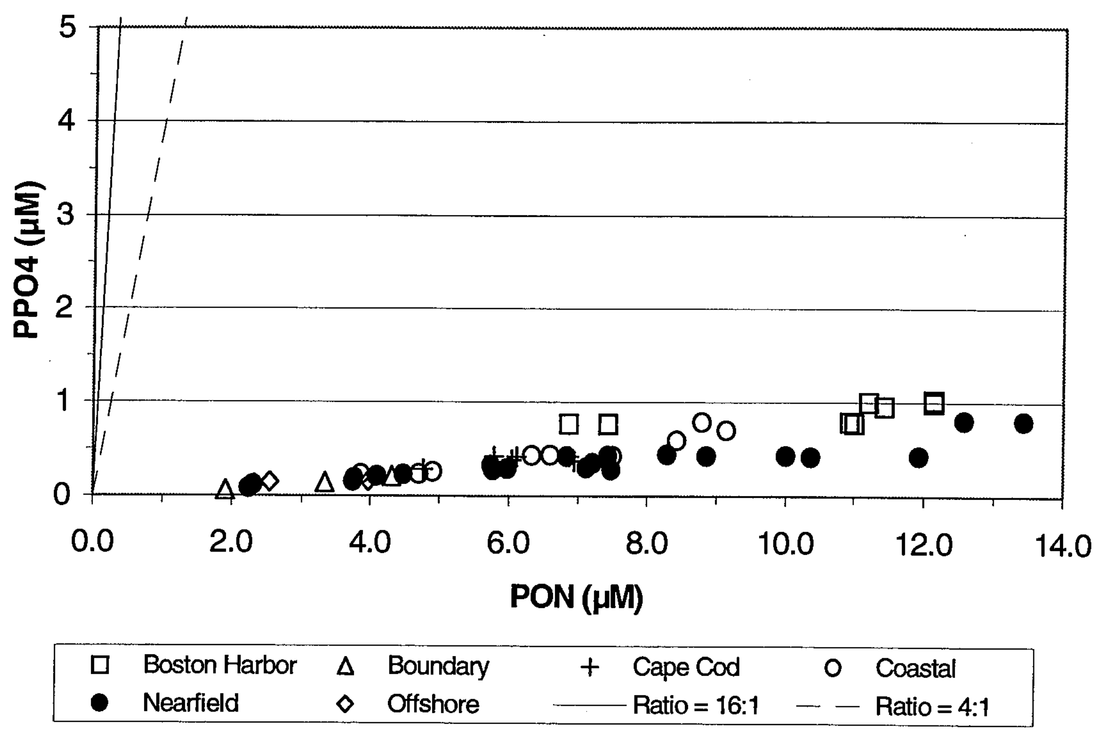
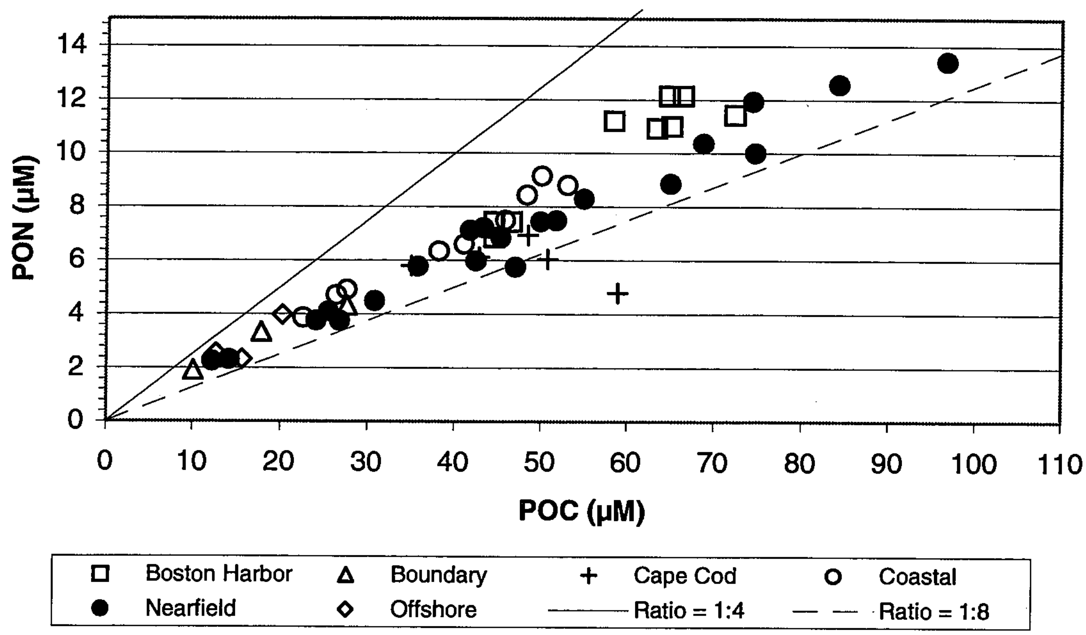


Figure D-54. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

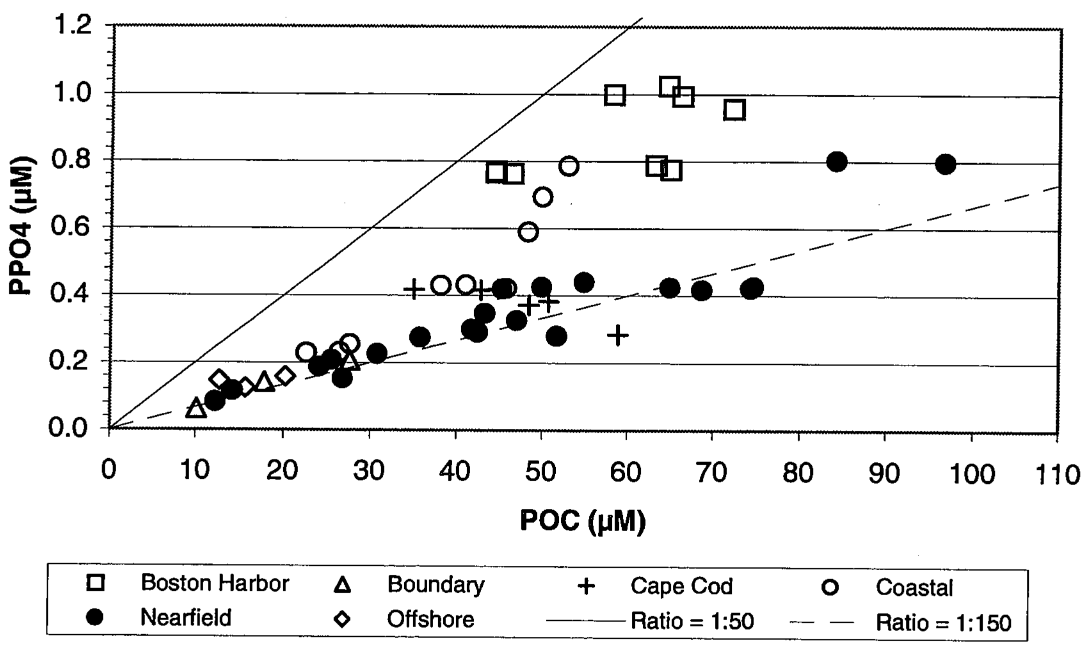
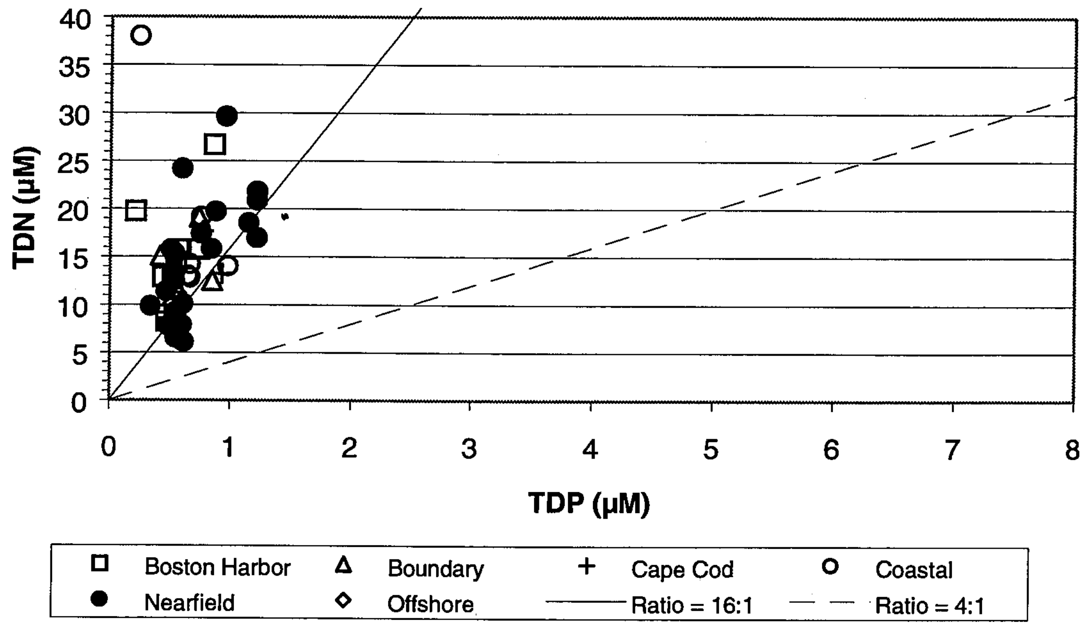


Figure D-55. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

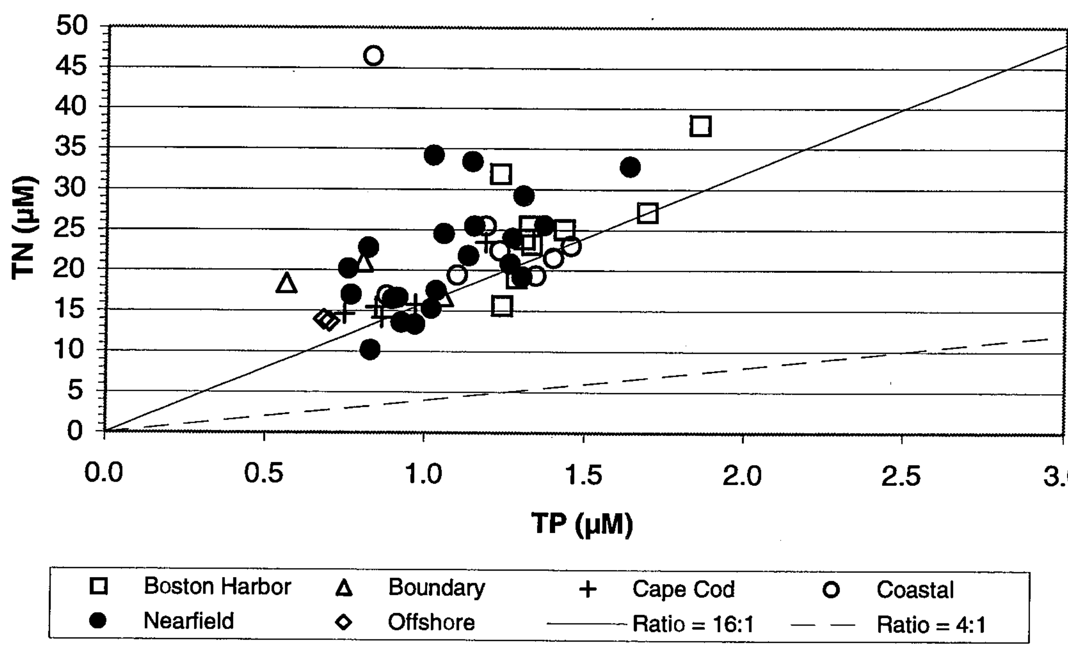
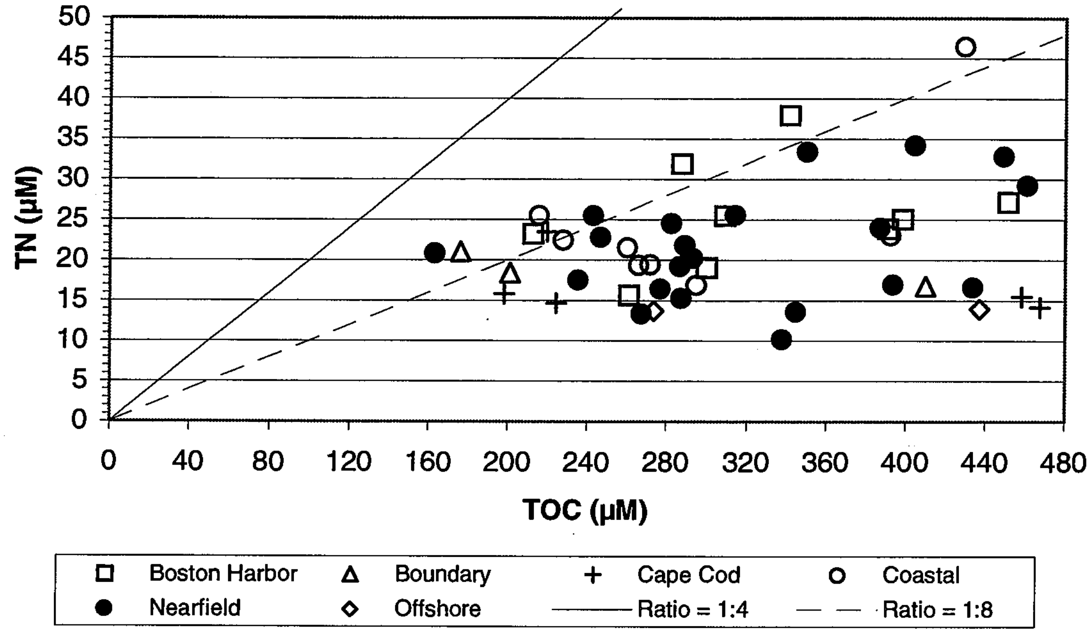


Figure D-56. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

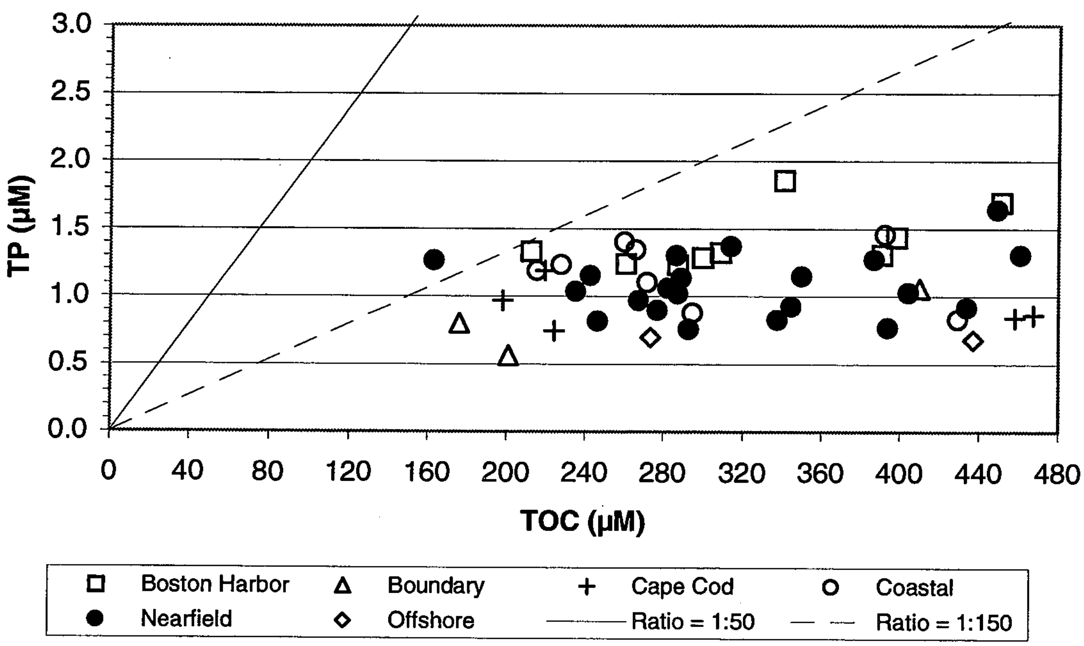


Figure D-57. Nutrient vs. Nutrient Plots for Farfield Survey WF994, (Apr 99)

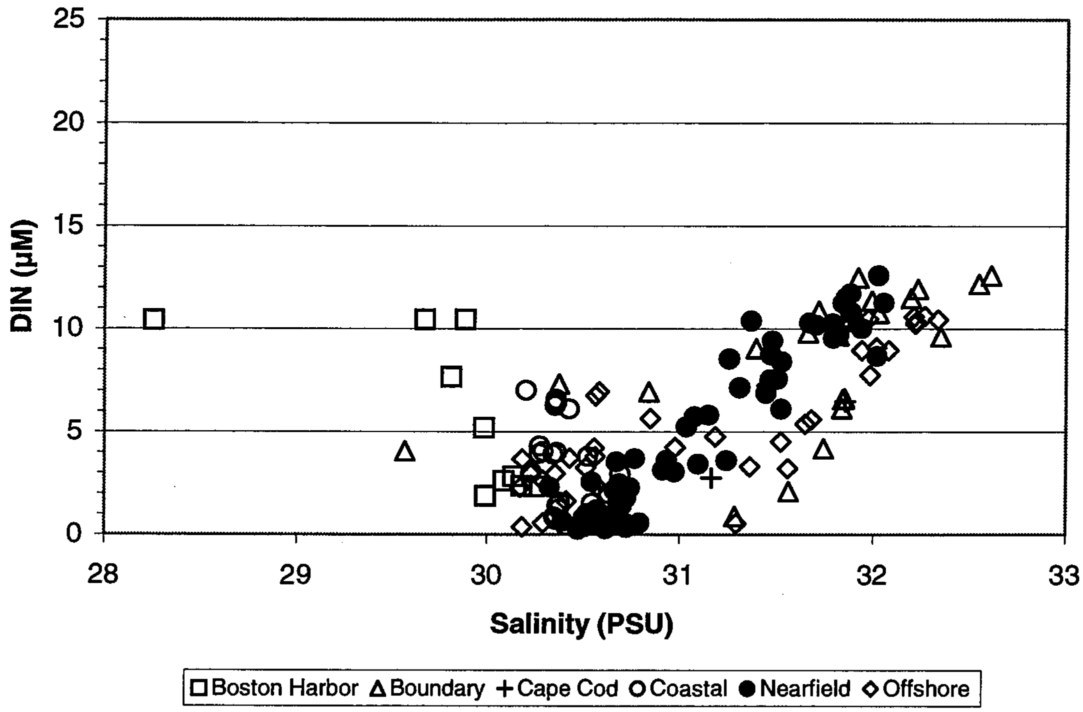
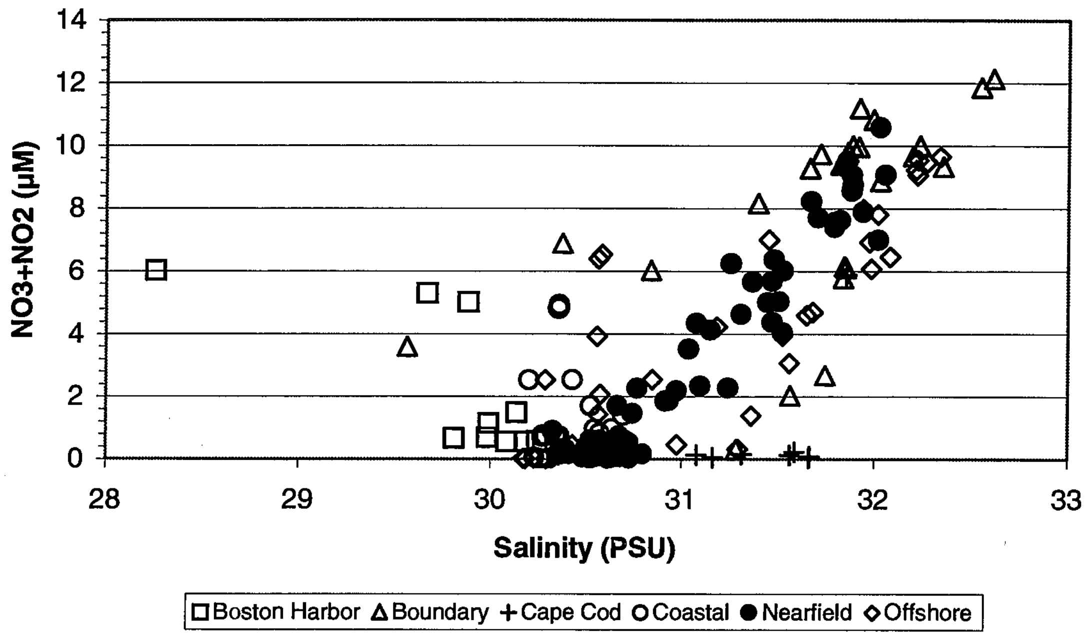


Figure D-58. Nutrient vs. Salinity Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

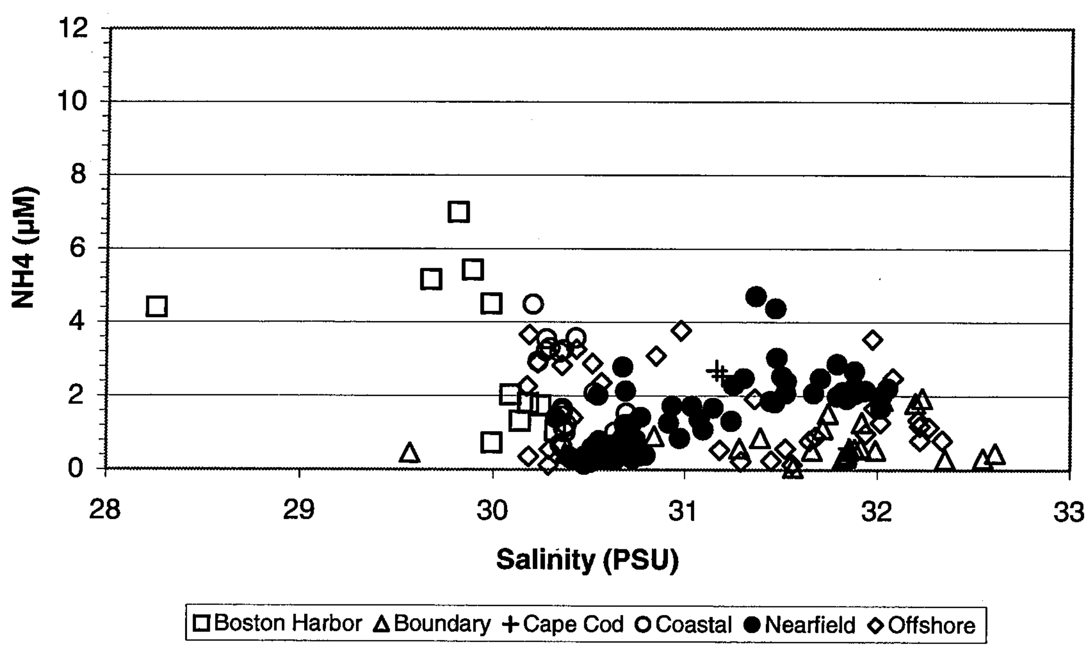
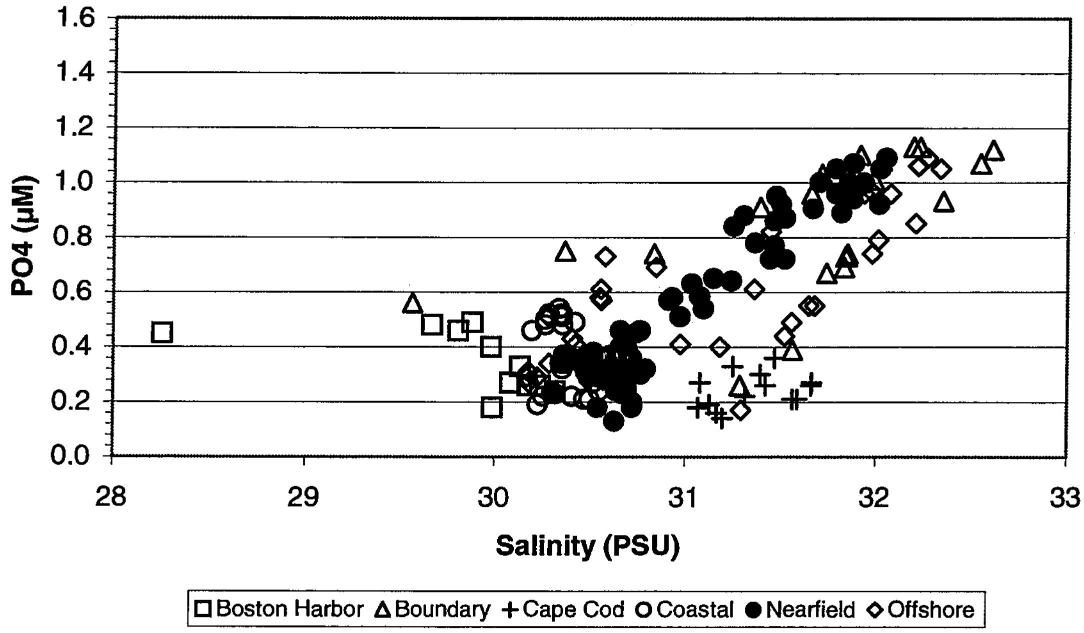


Figure D-59. Nutrient vs. Salinity Plots for Farfield Survey WF994, (Apr 99)

(a)



(b)

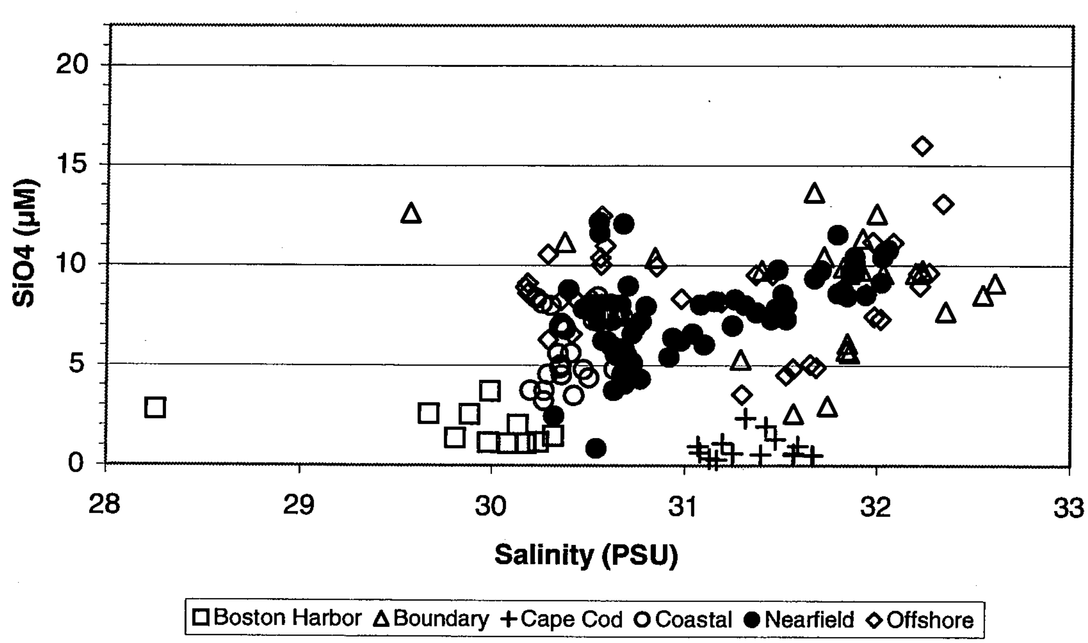


Figure D-60. Nutrient vs. Salinity Plots for Farfield Survey WF994, (Apr 99)

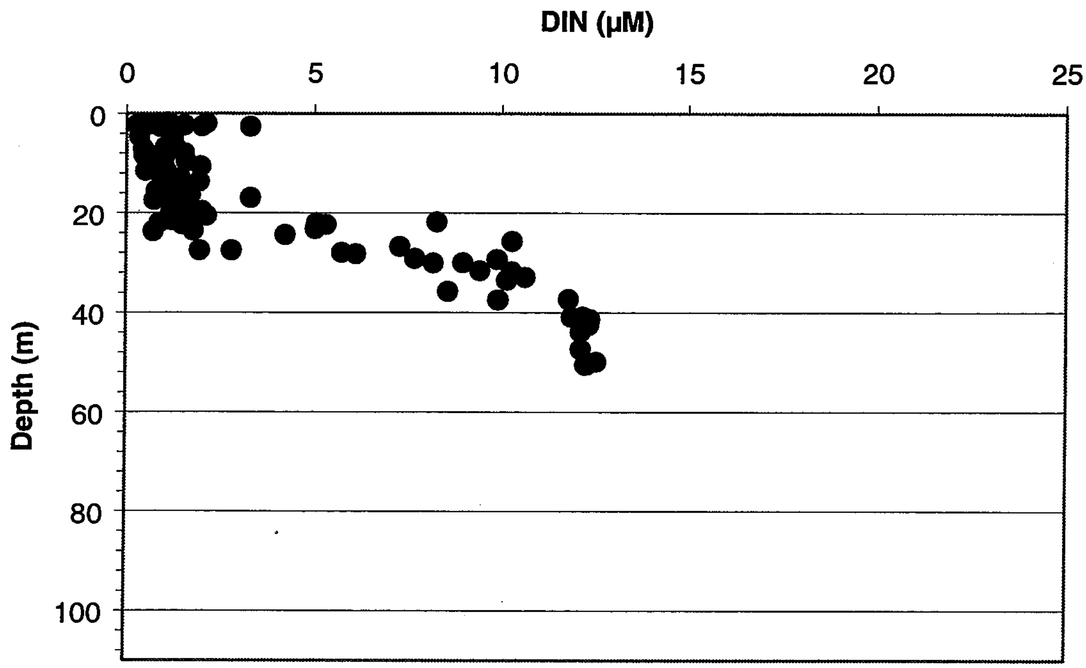
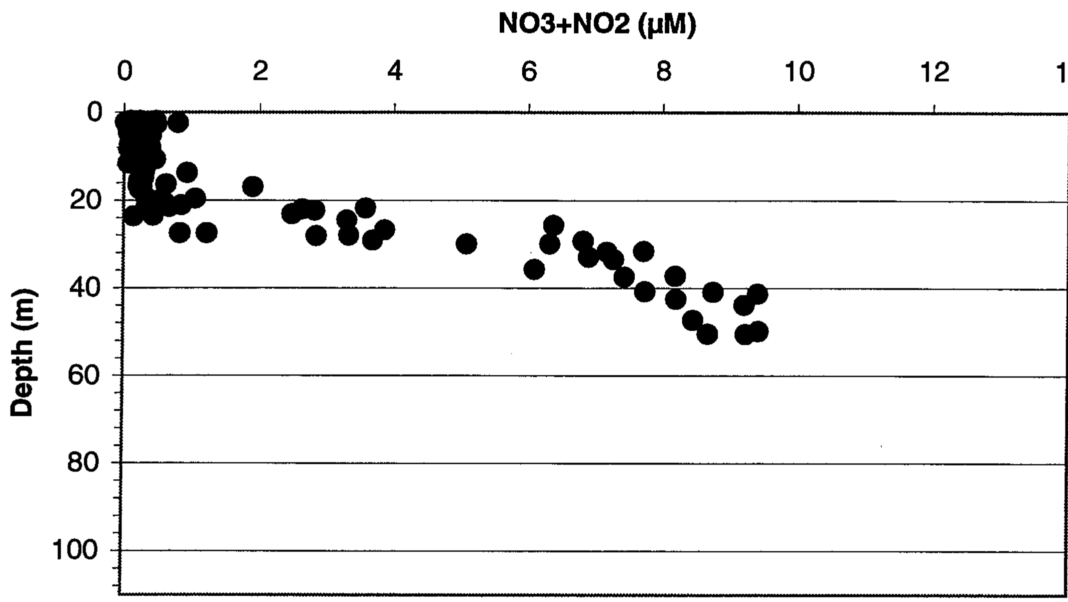


Figure D-61. Depth vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

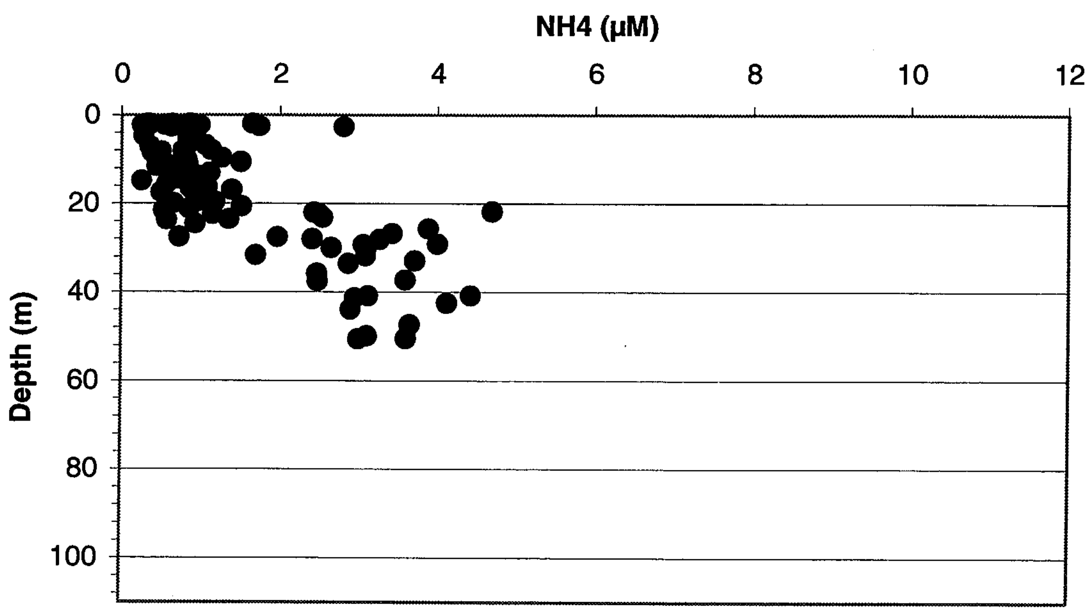
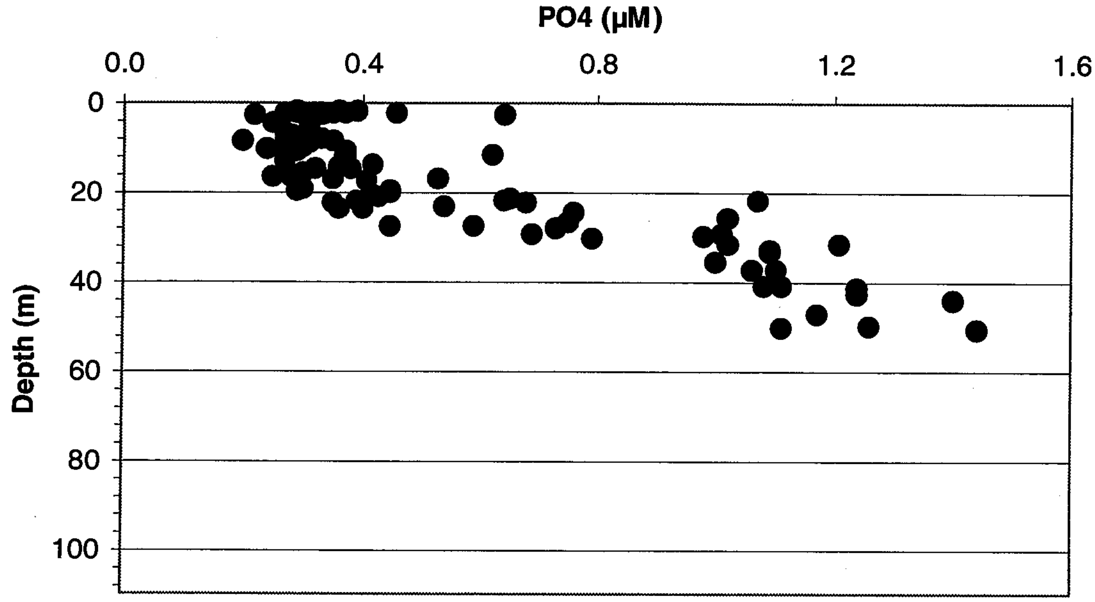


Figure D-62. Depth vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

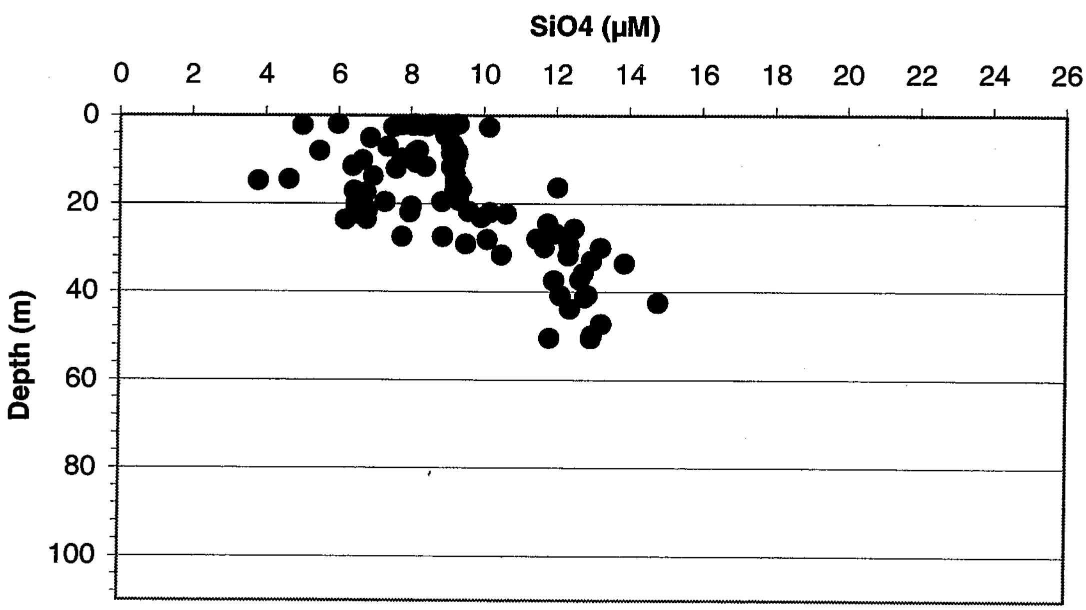
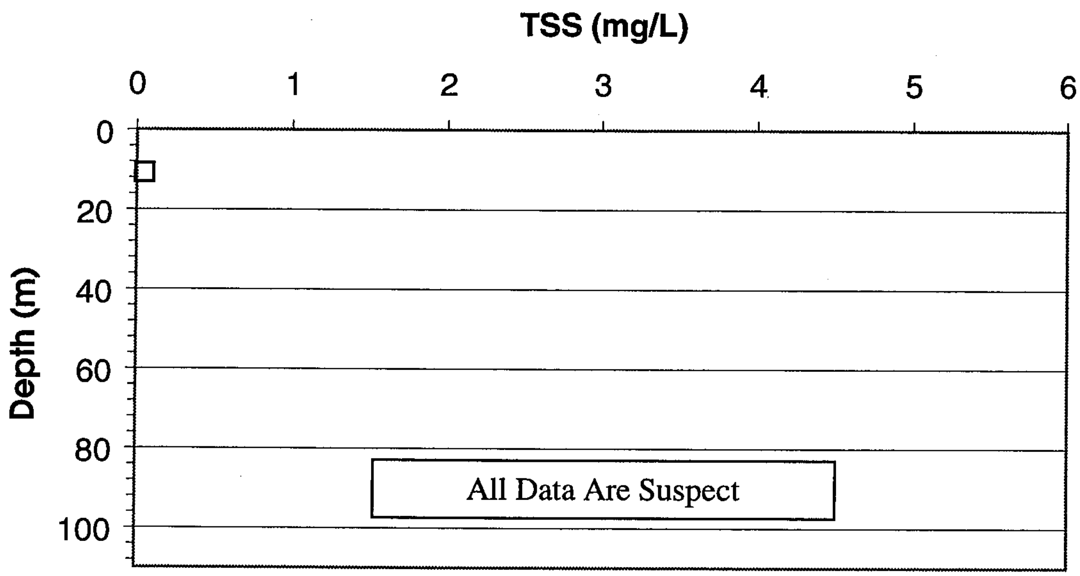


Figure D-63. Depth vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

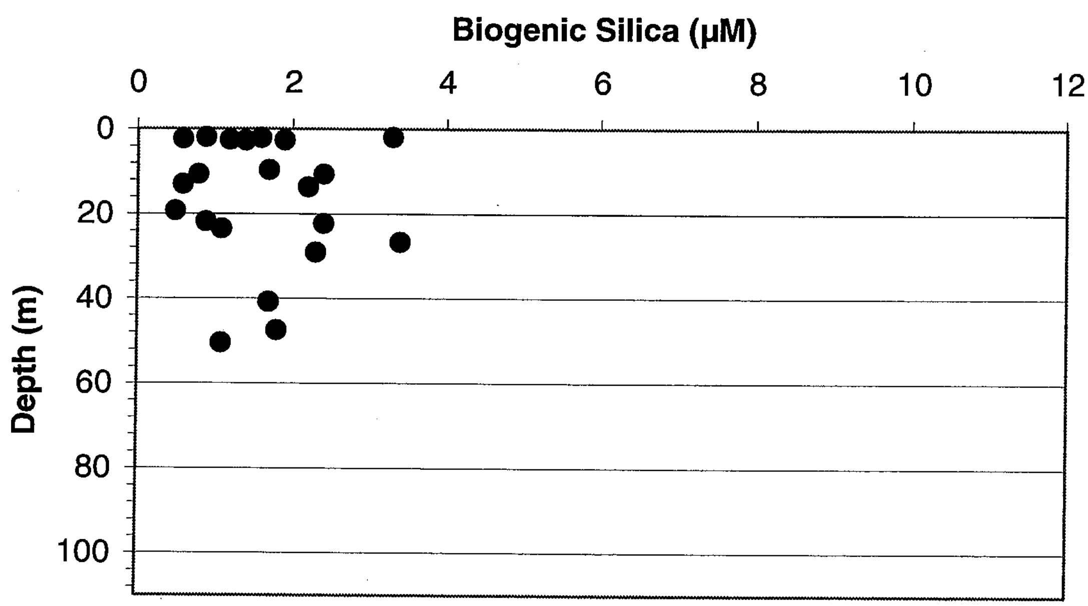
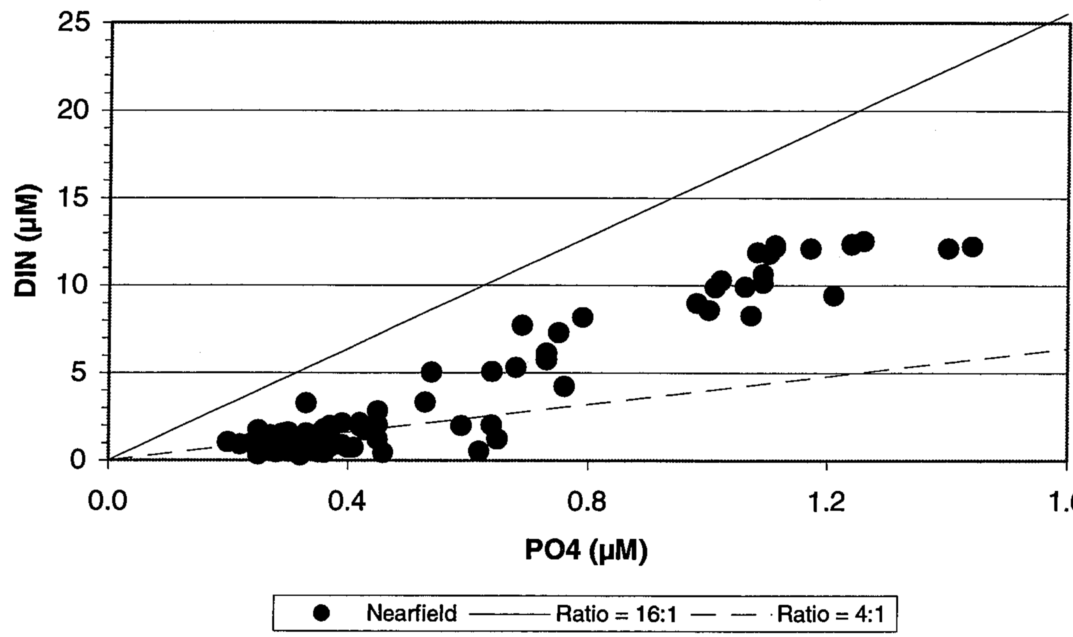


Figure D-64. Depth vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

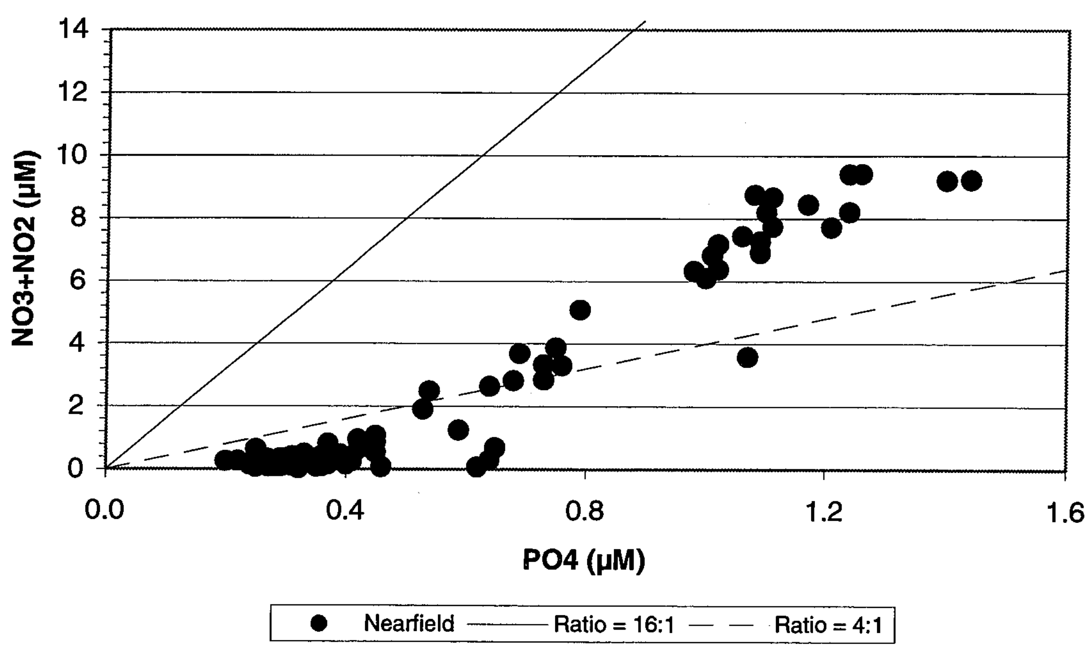
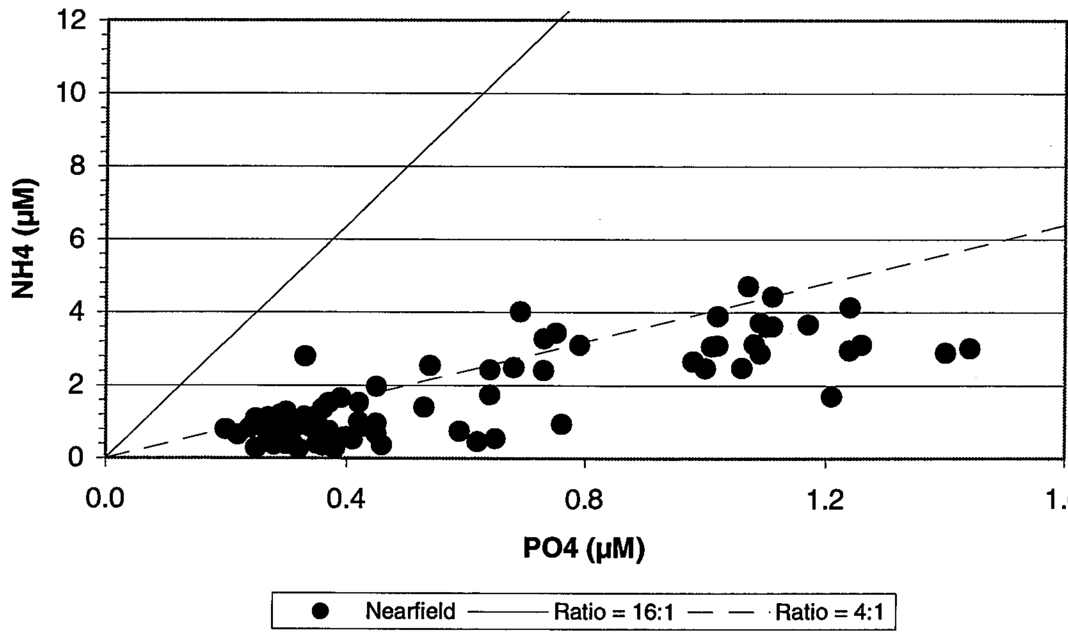


Figure D-65. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

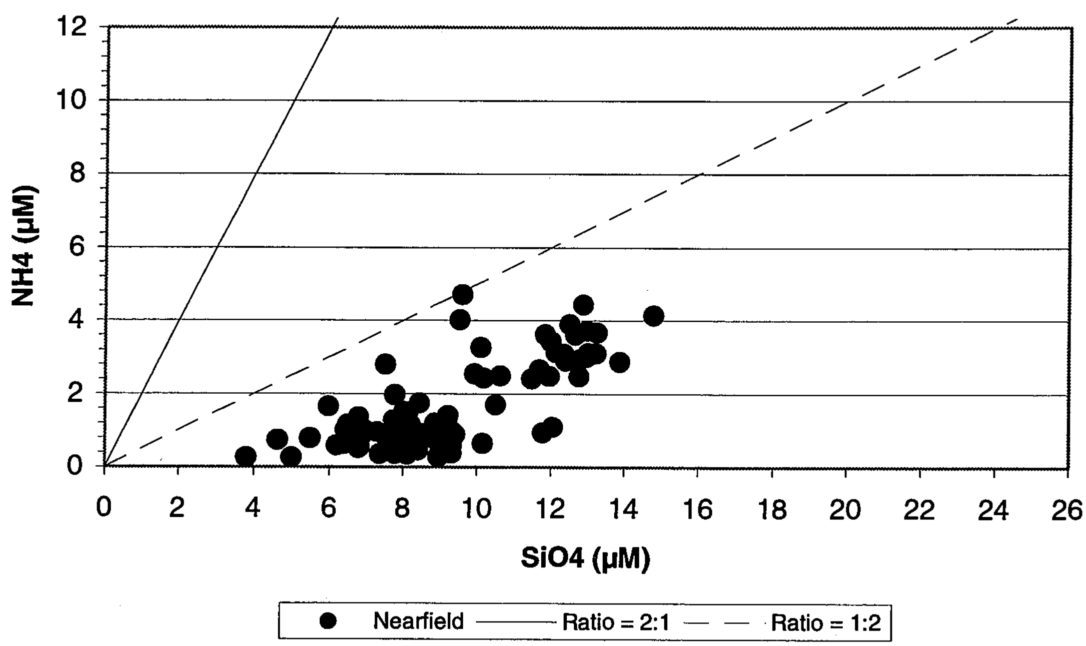
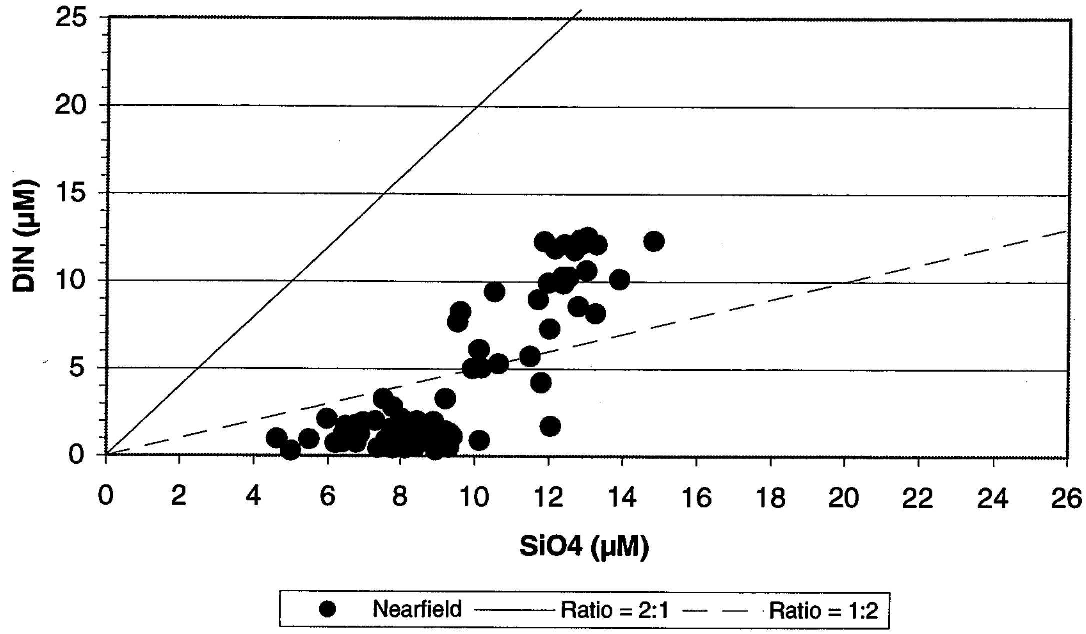


Figure D-66. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

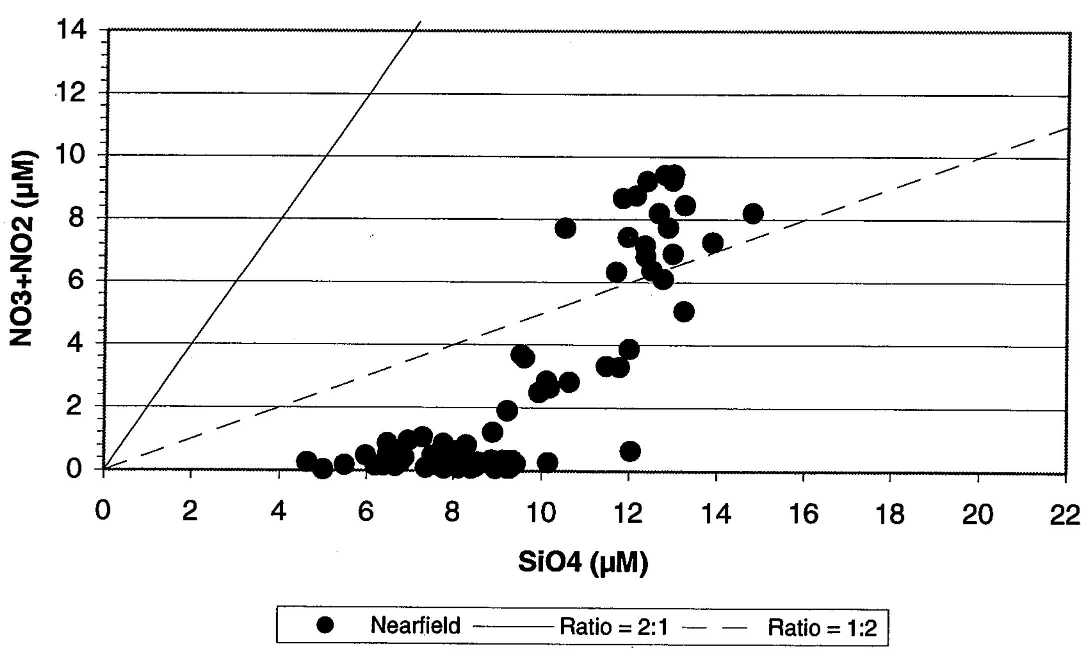
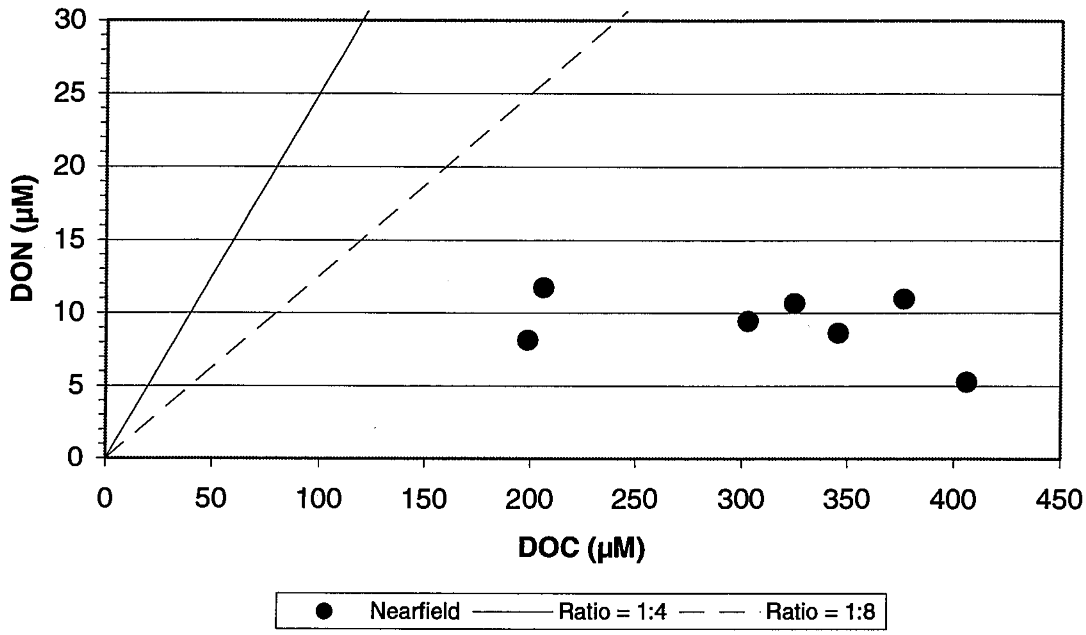


Figure D-67. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

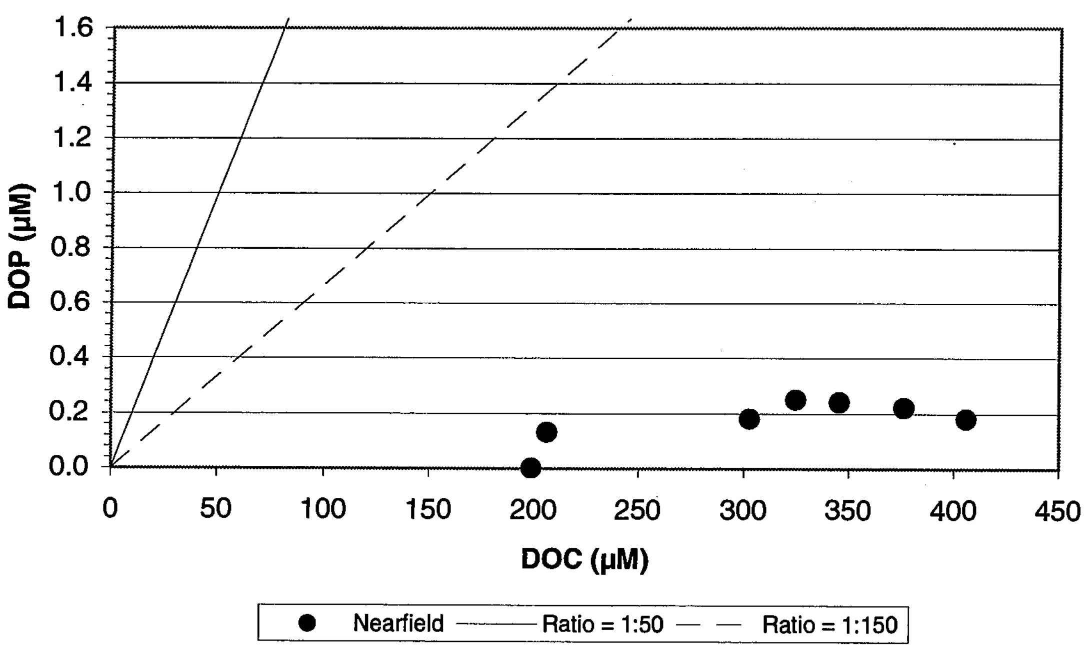


Figure D-68. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

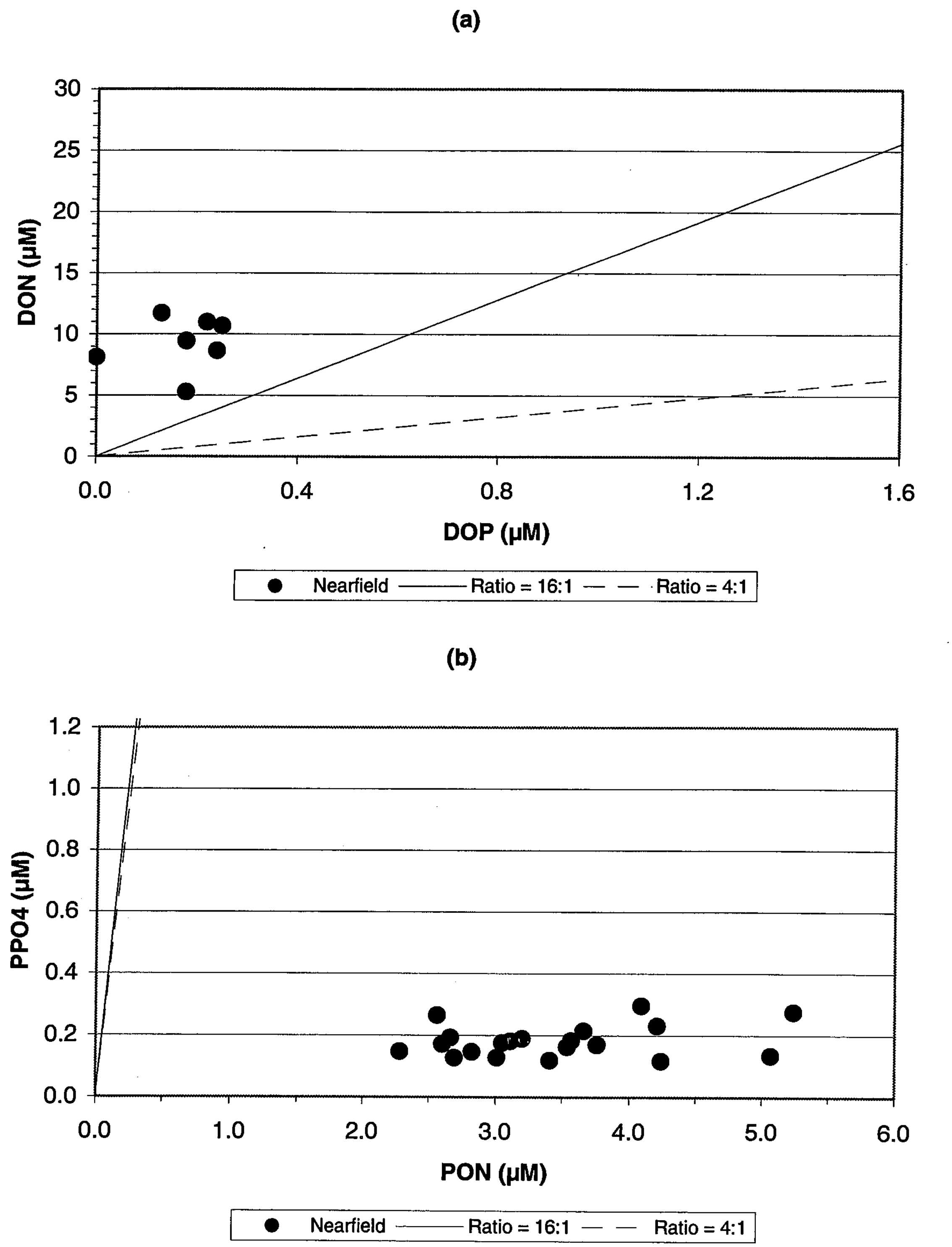
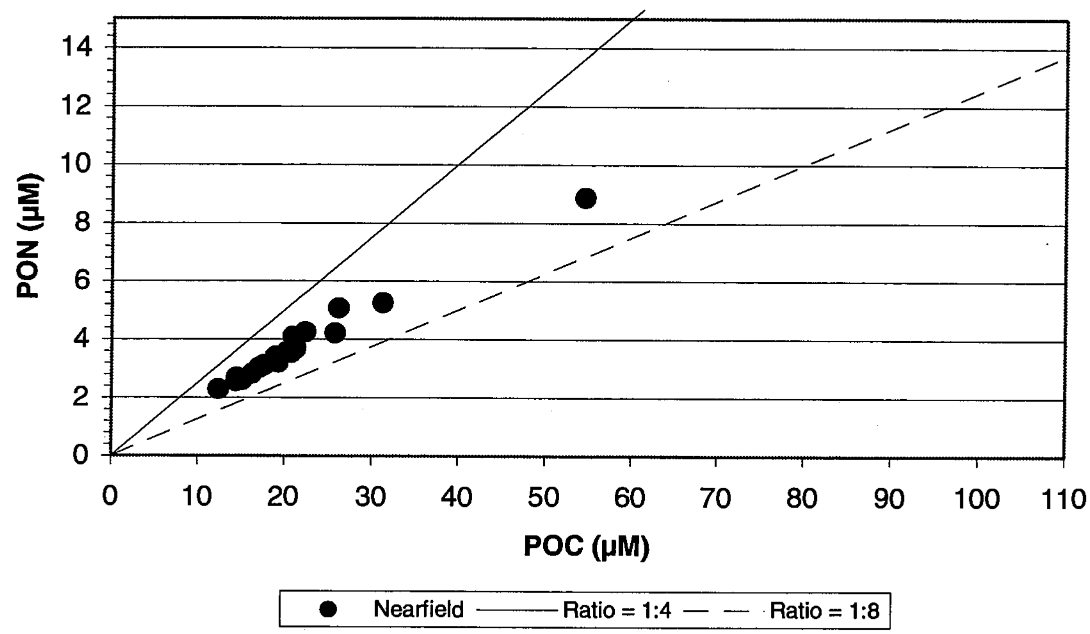


Figure D-69. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

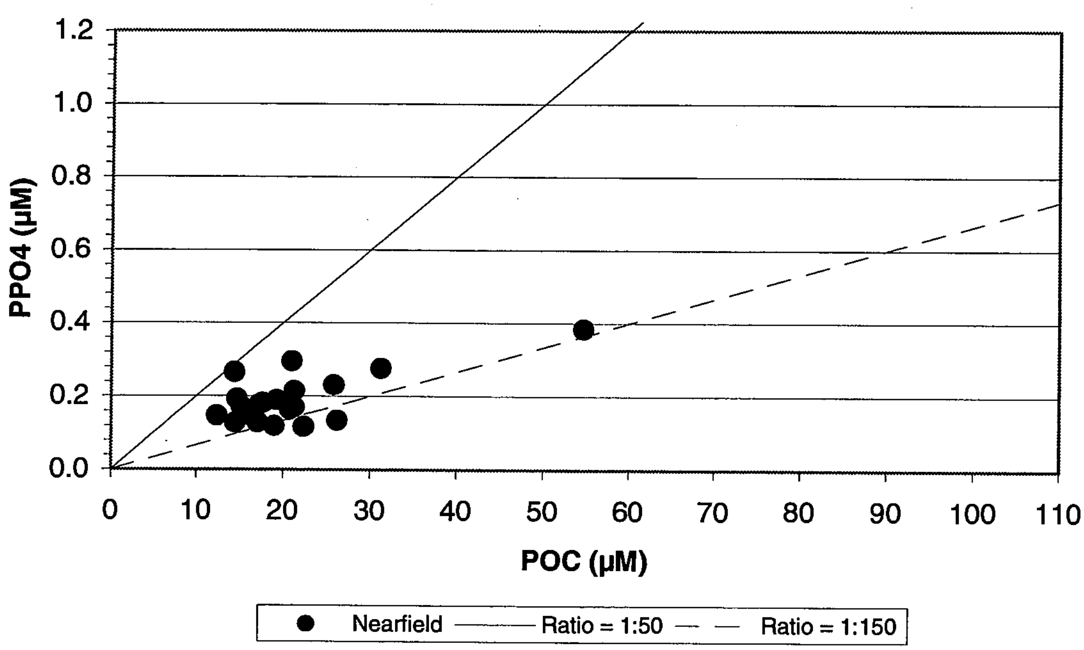
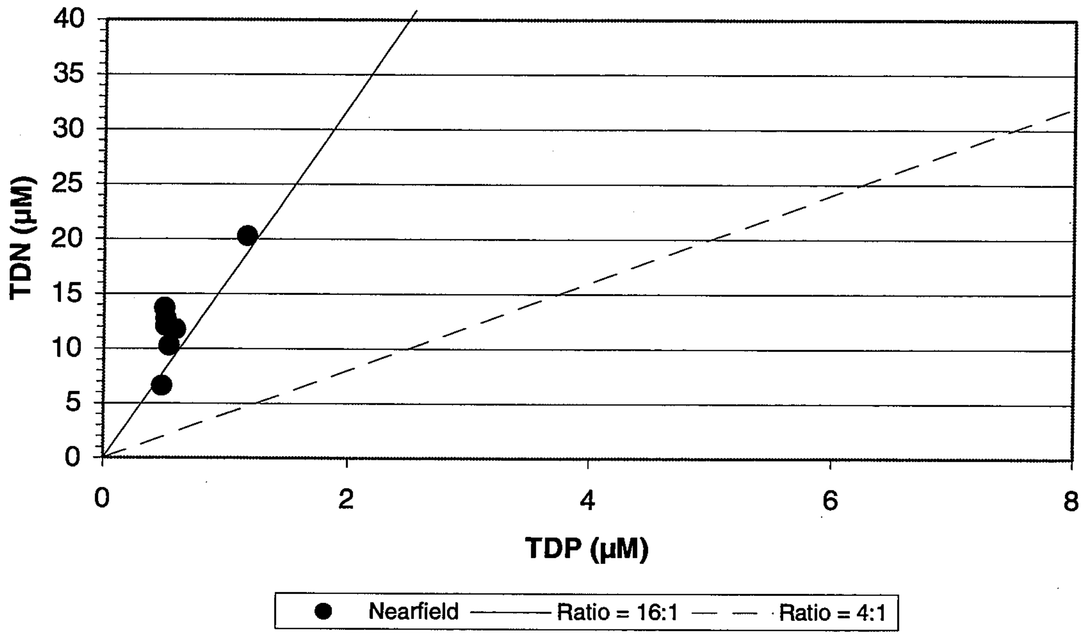


Figure D-70. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

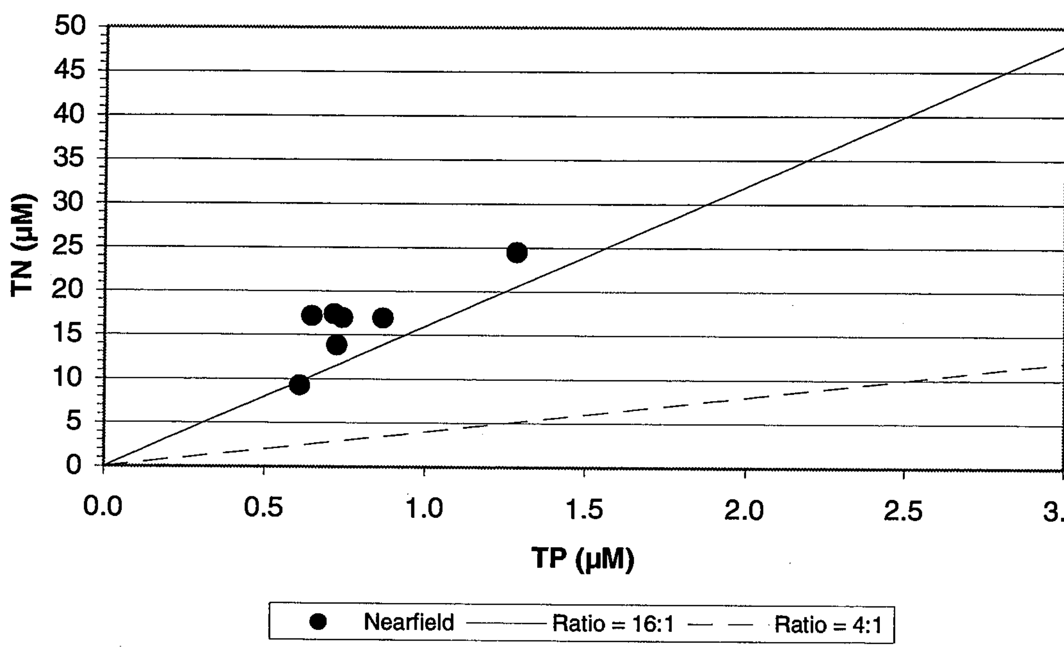
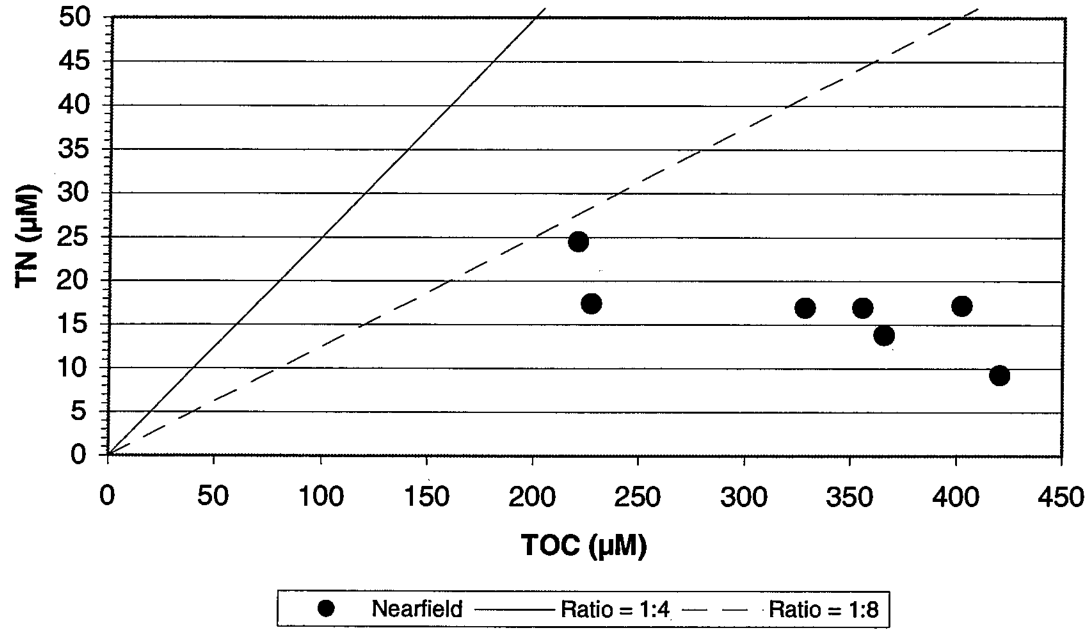


Figure D-71. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

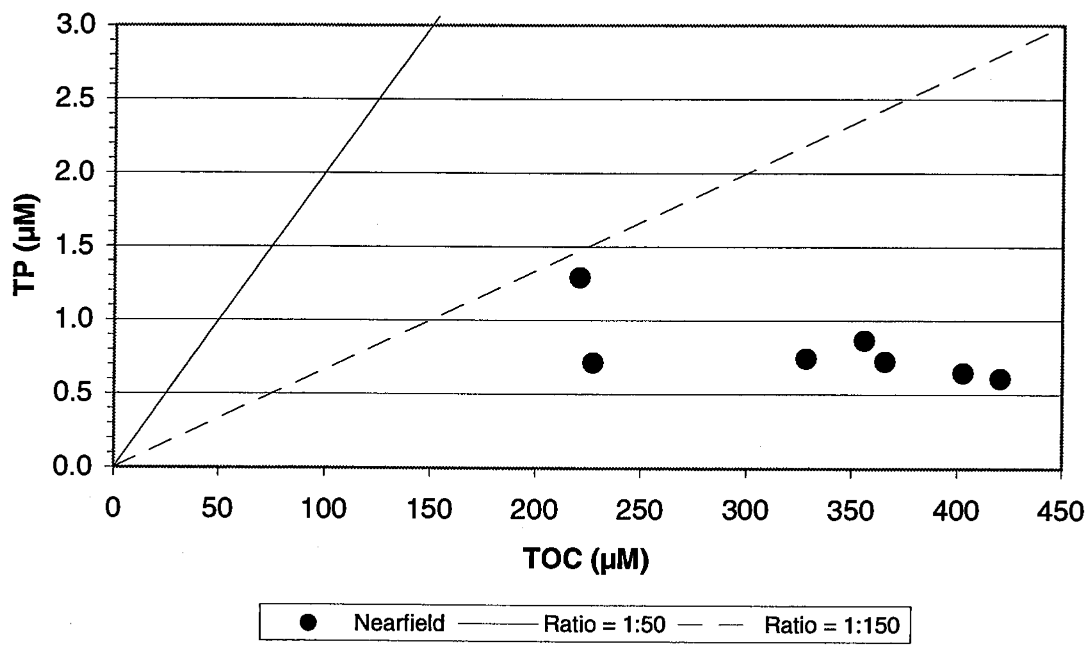


Figure D-72. Nutrient vs. Nutrient Plots for Nearfield Survey WN995, (May 99)

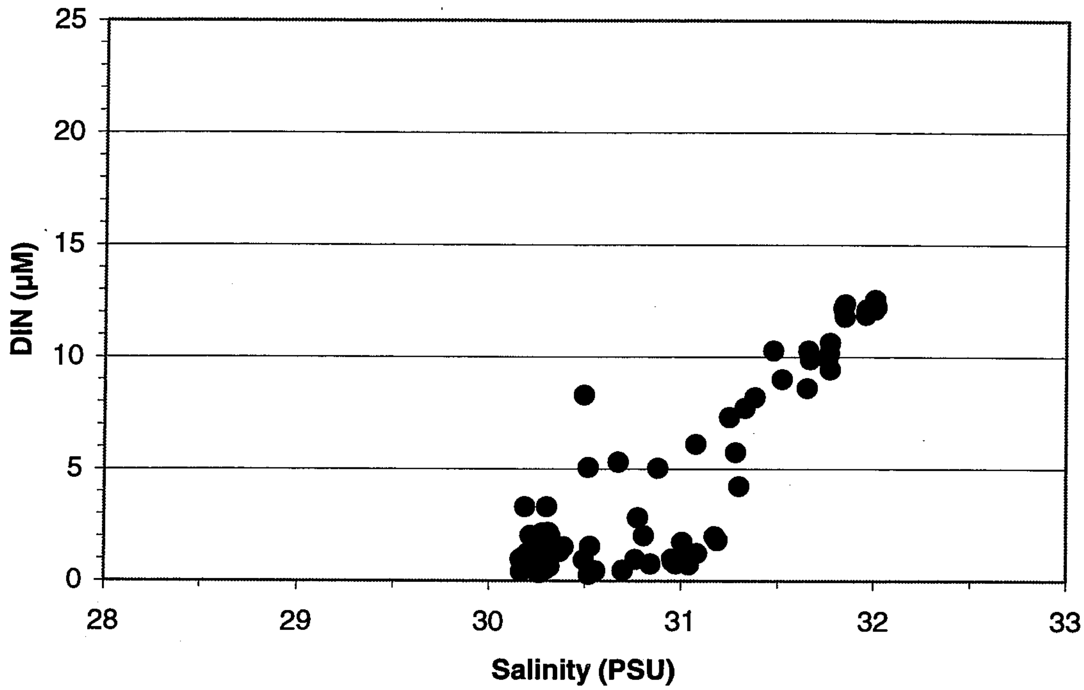
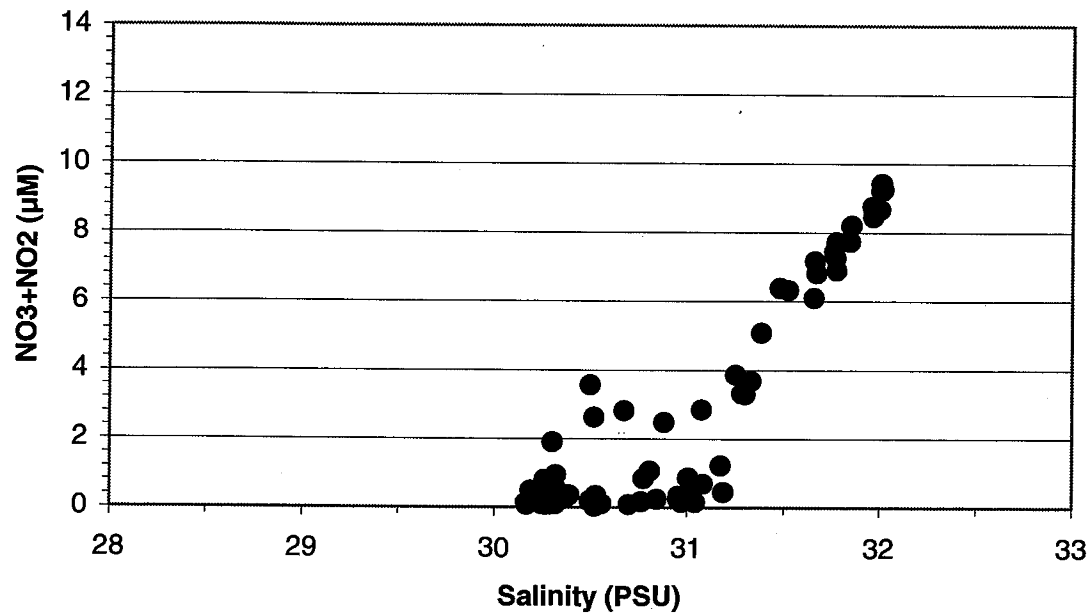


Figure D-73. Nutrient vs. Salinity Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

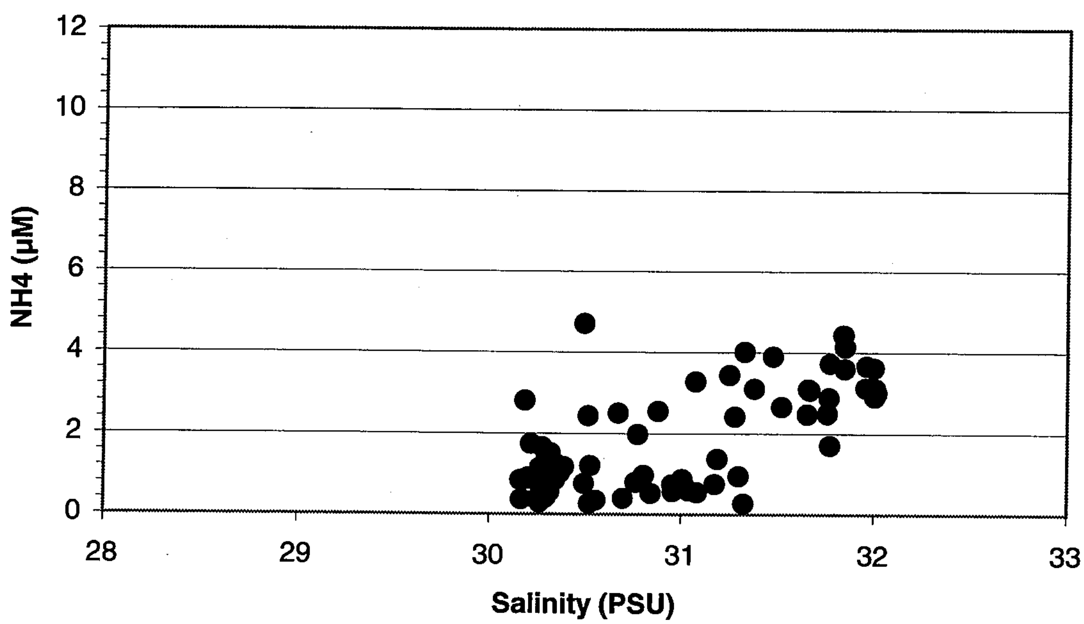
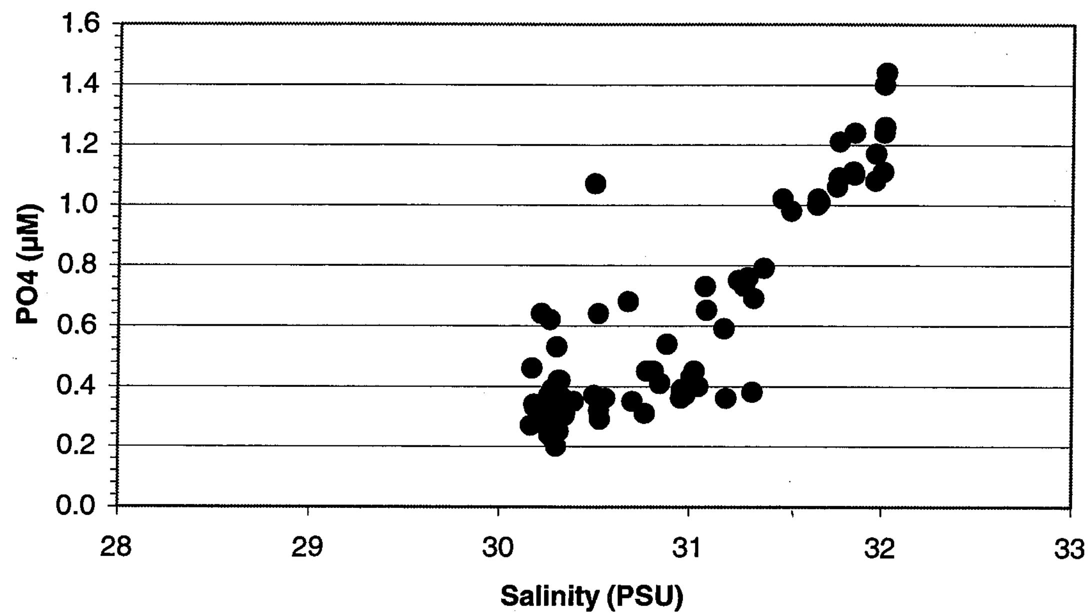


Figure D-74. Nutrient vs. Salinity Plots for Nearfield Survey WN995, (May 99)

(a)



(b)

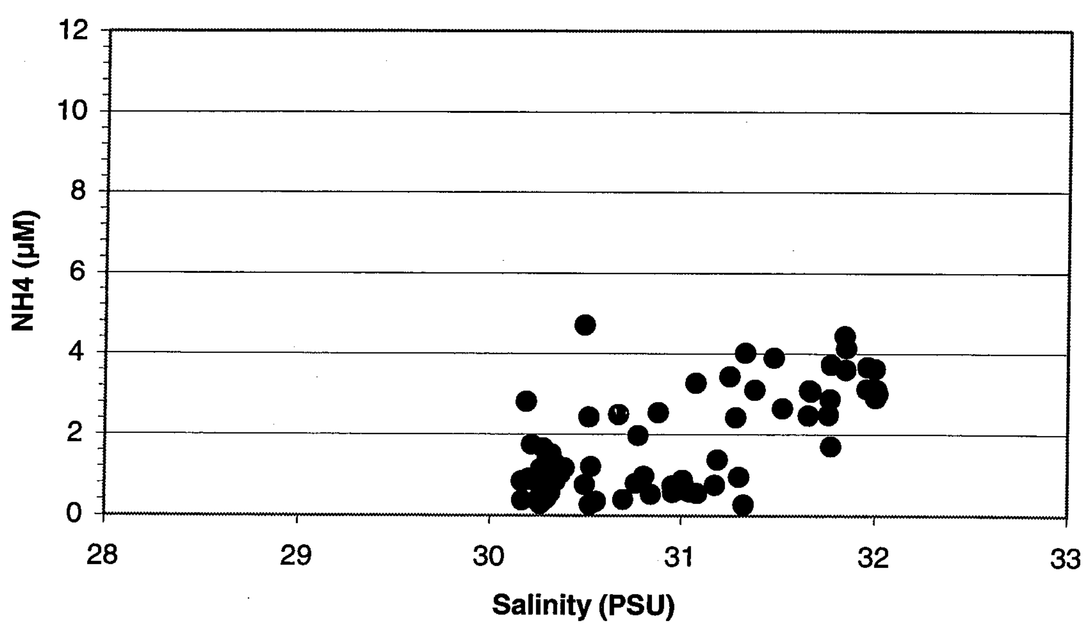


Figure D-75. Nutrient vs. Salinity Plots for Nearfield Survey WN995, (May 99)

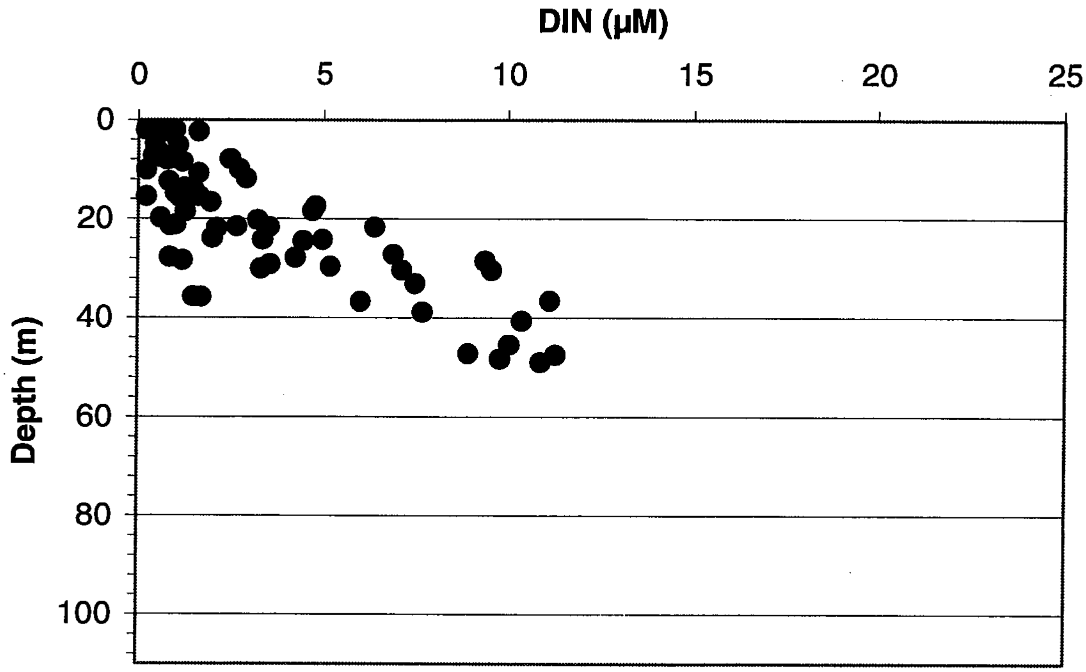
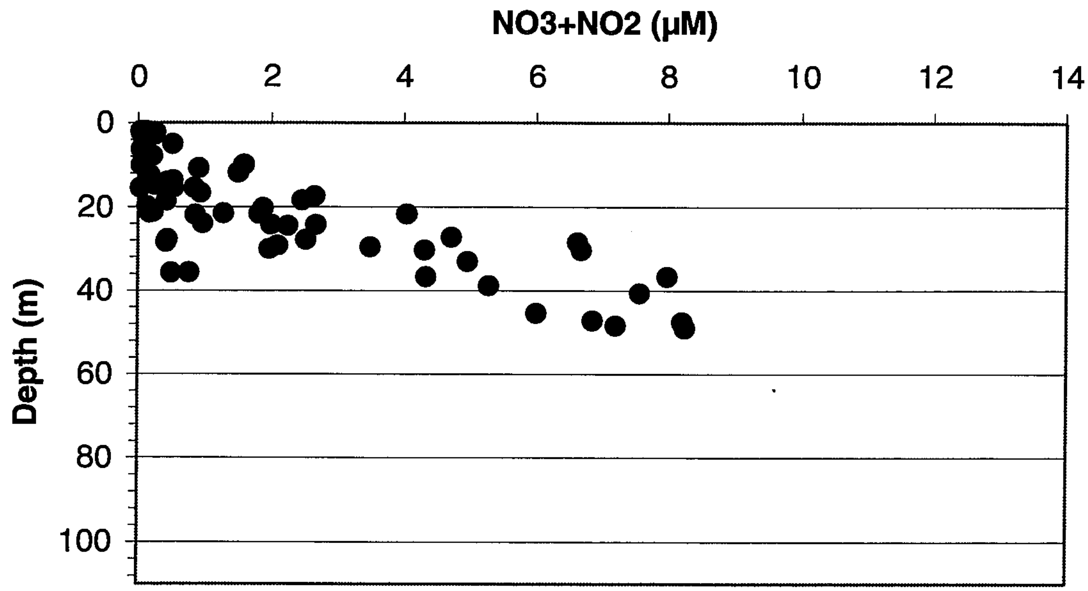


Figure D-76. Depth vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

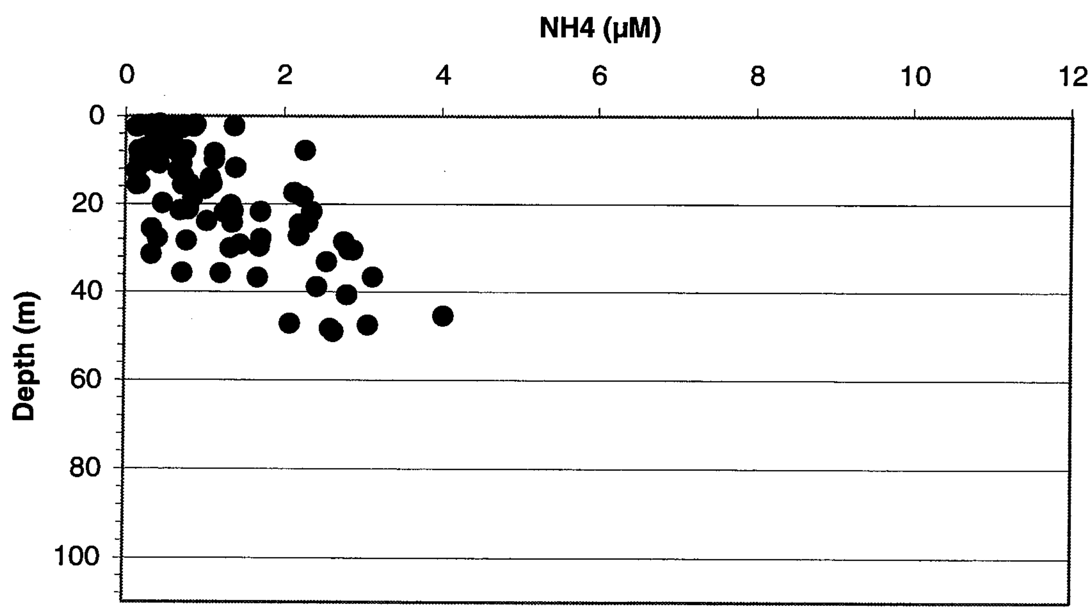
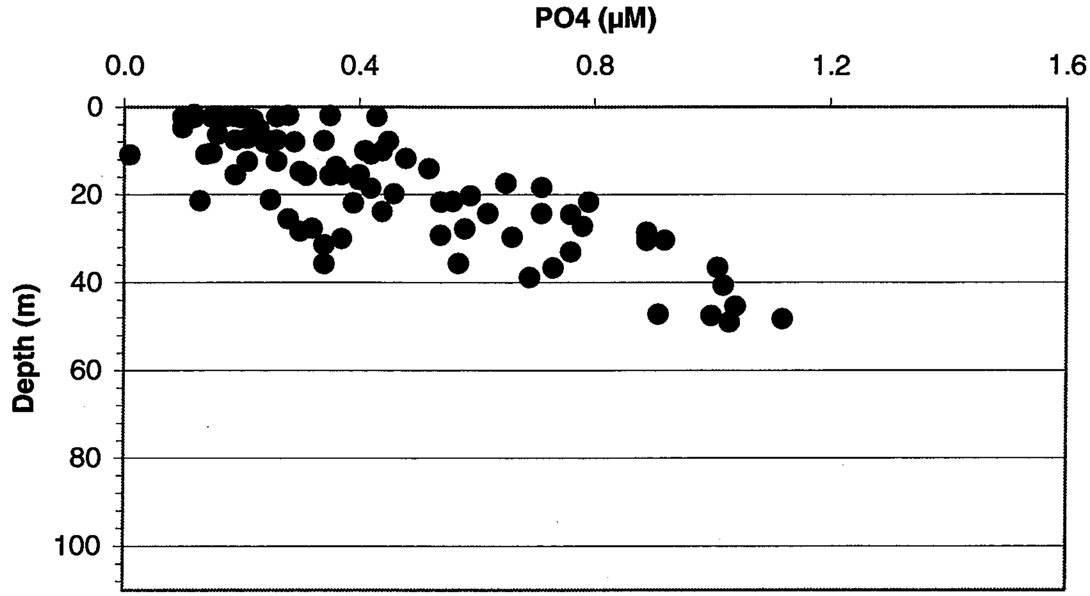


Figure D-77. Depth vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

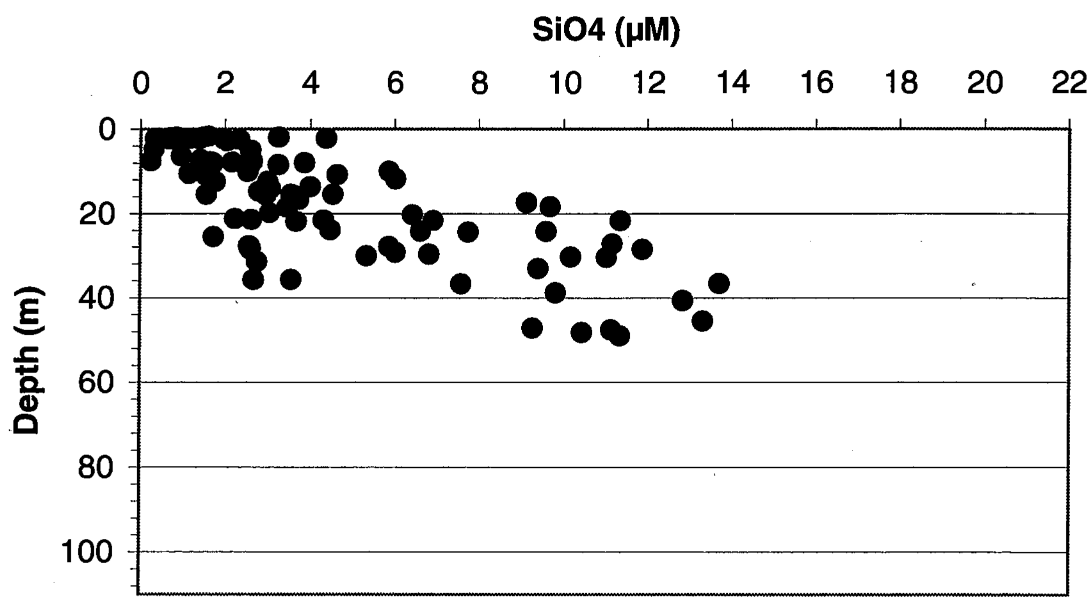
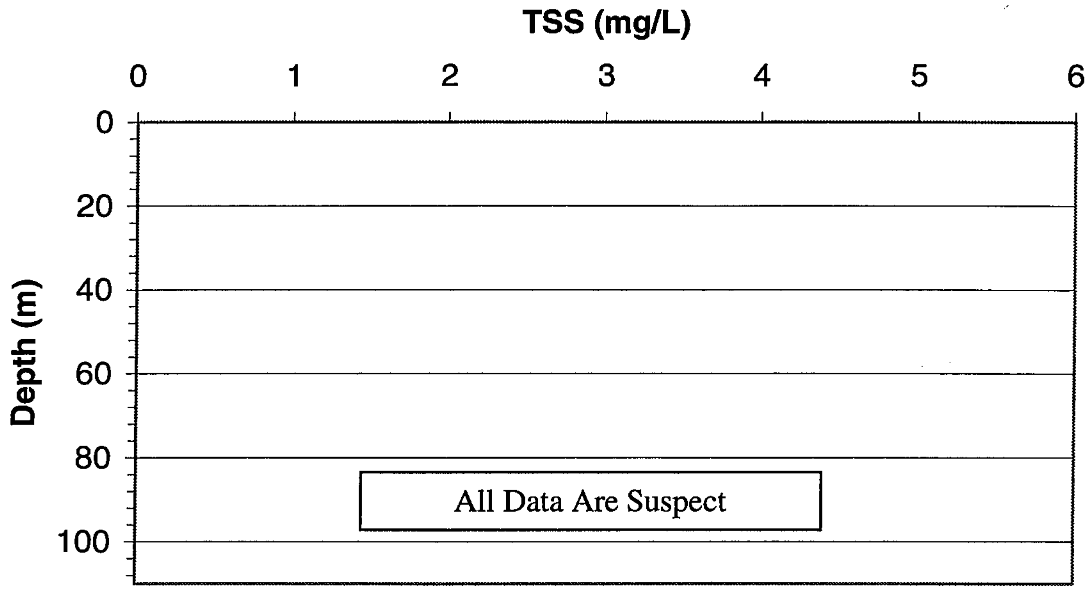


Figure D-78. Depth vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

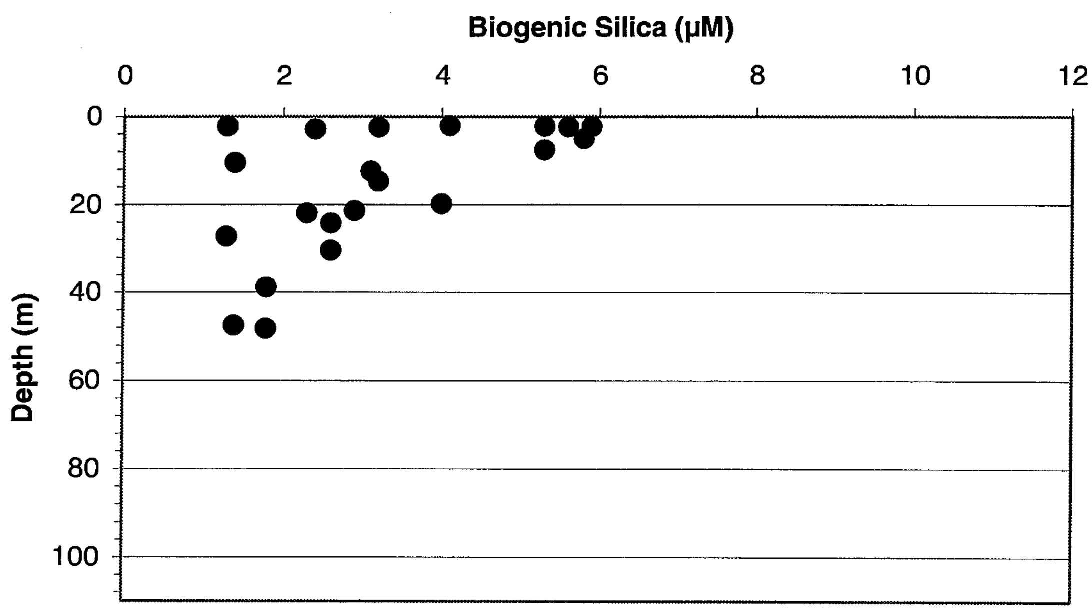


Figure D-79. Depth vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

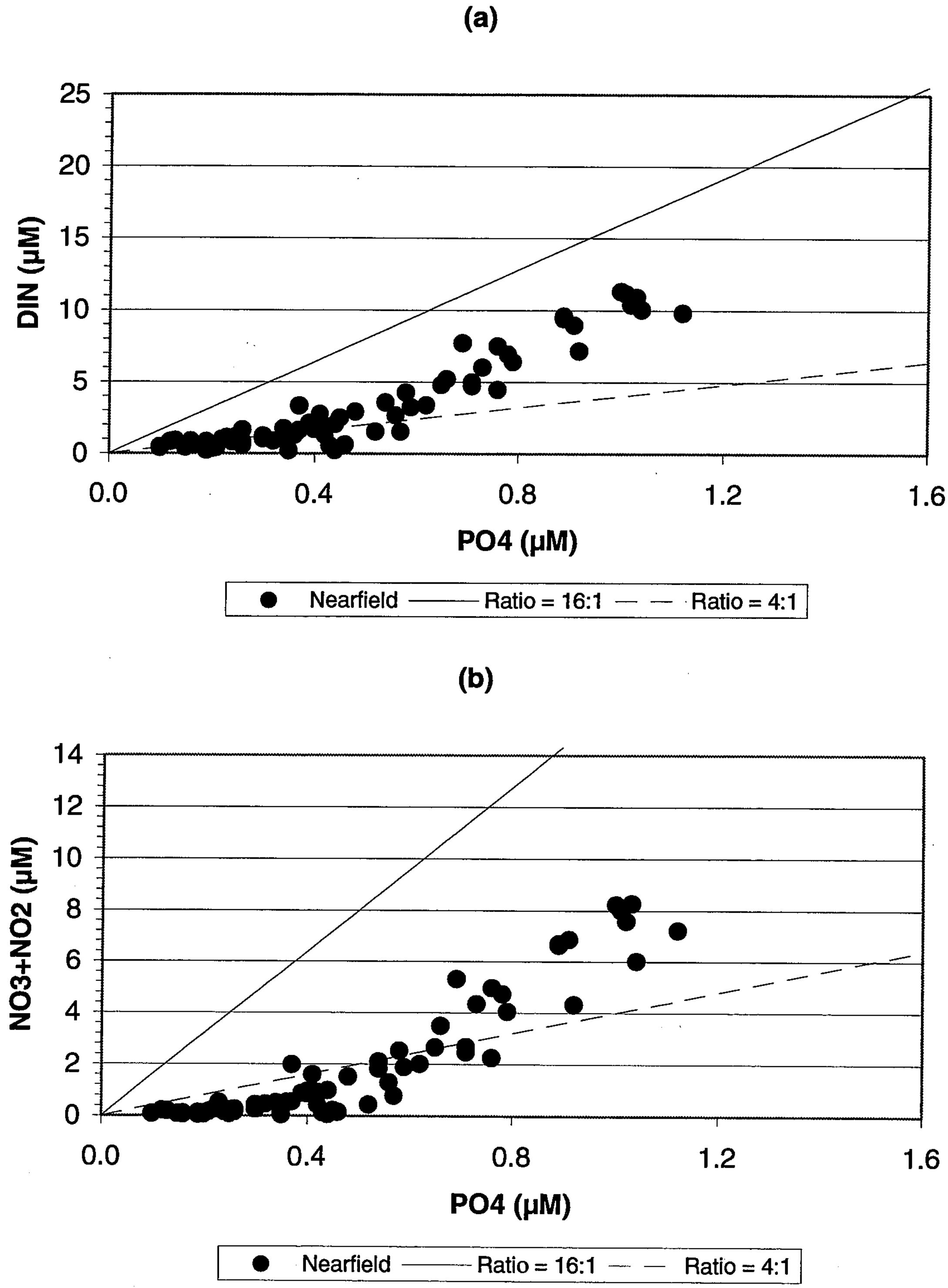
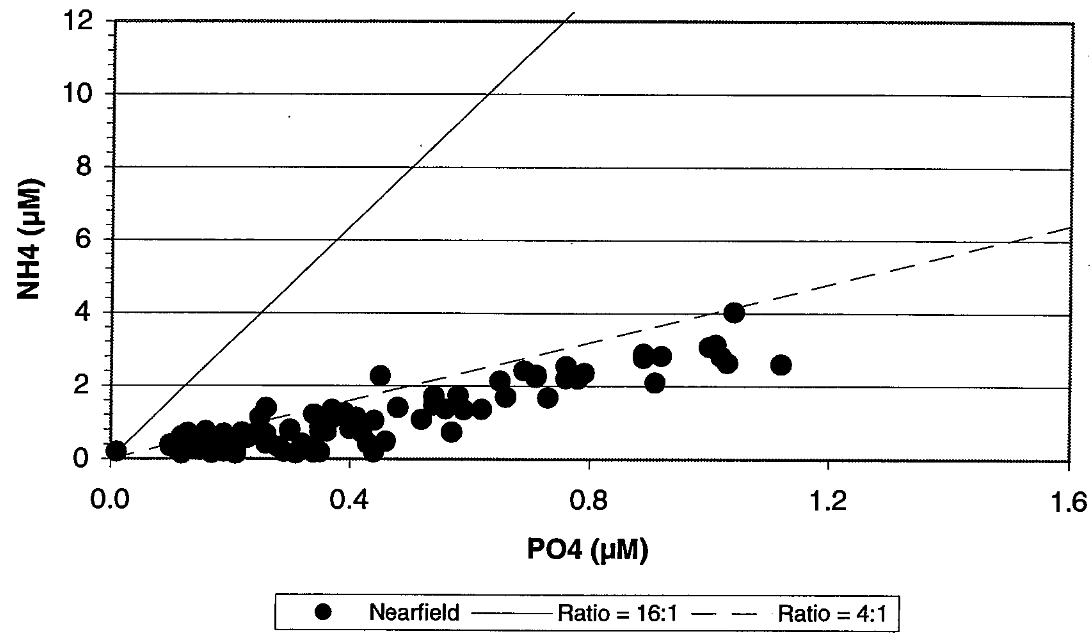


Figure D-80. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

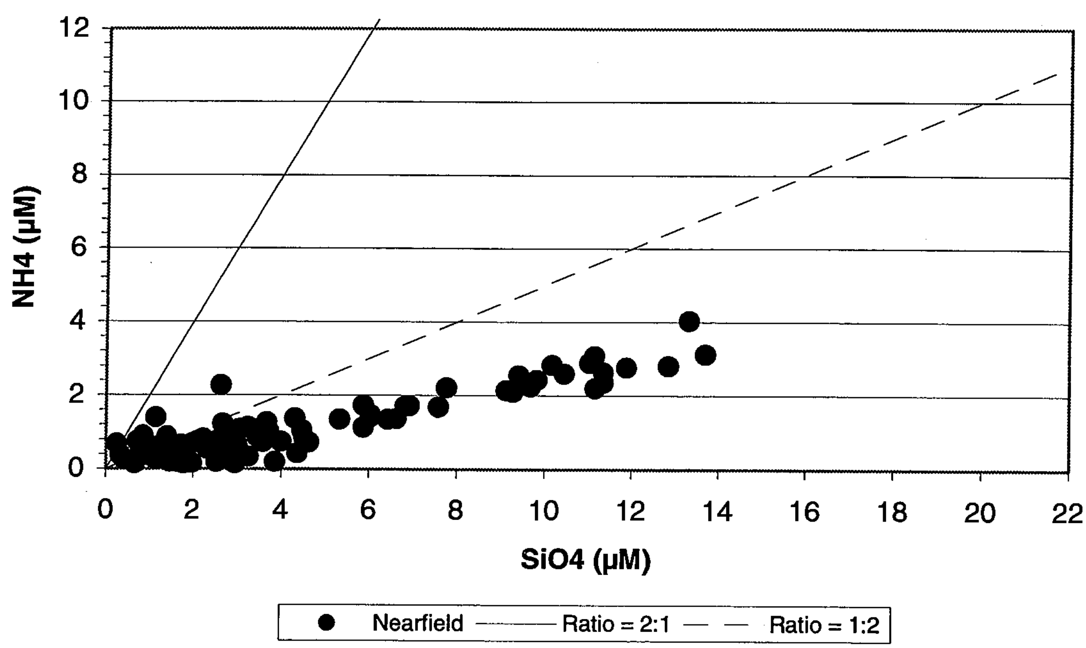
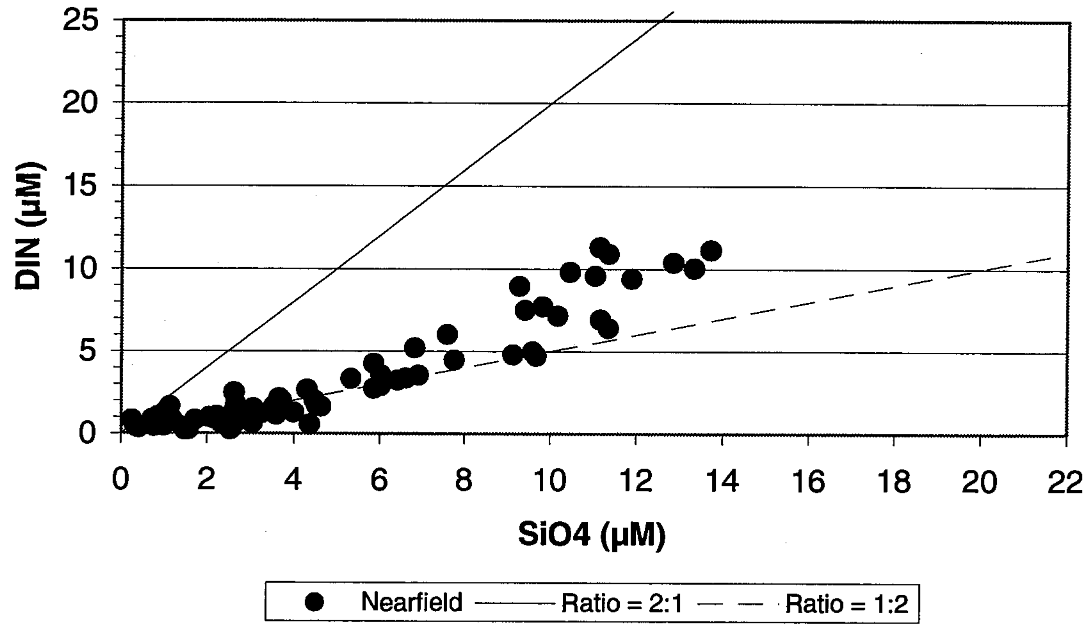


Figure D-81. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

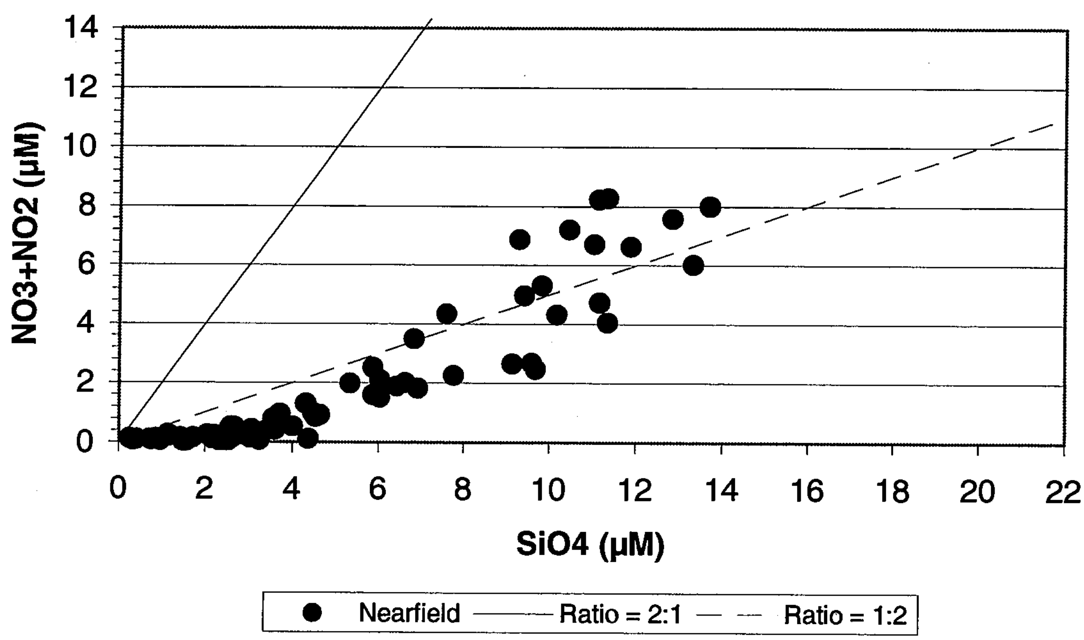
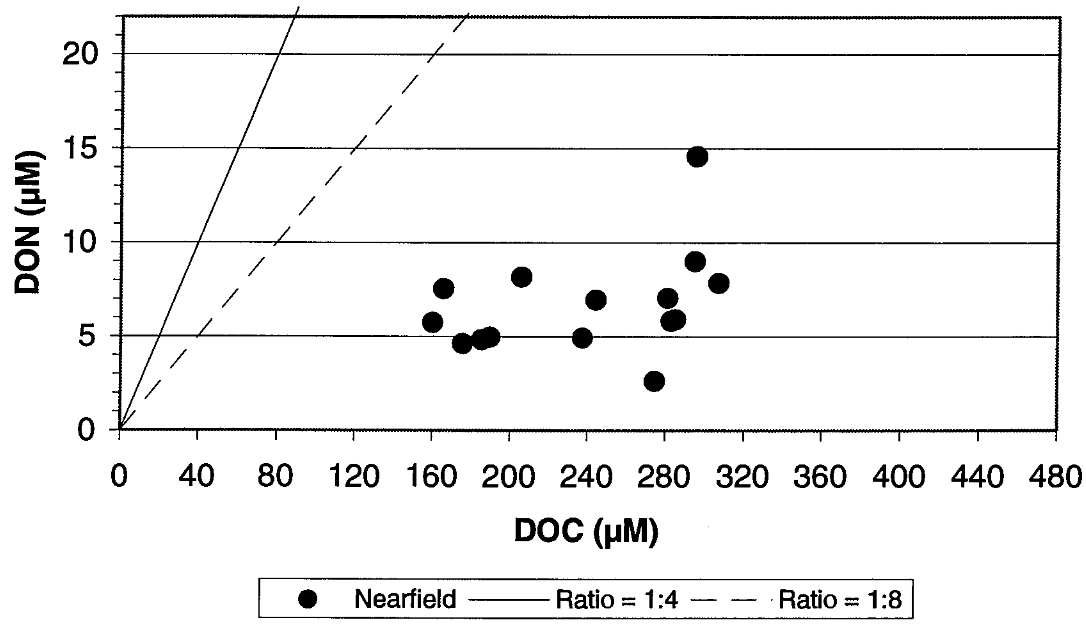


Figure D-82. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

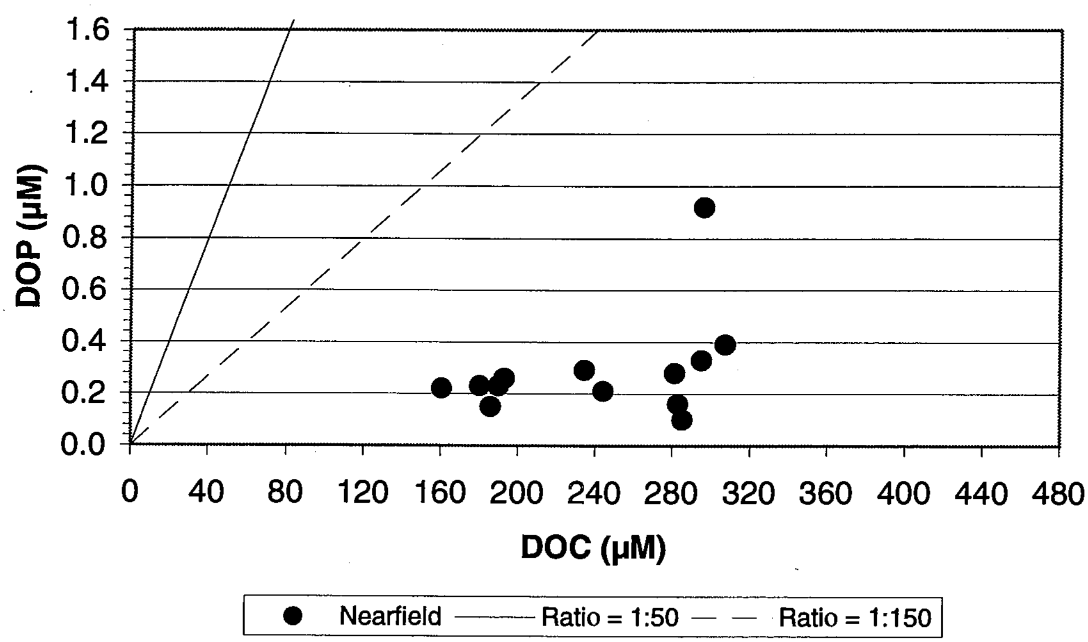


Figure D-83. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

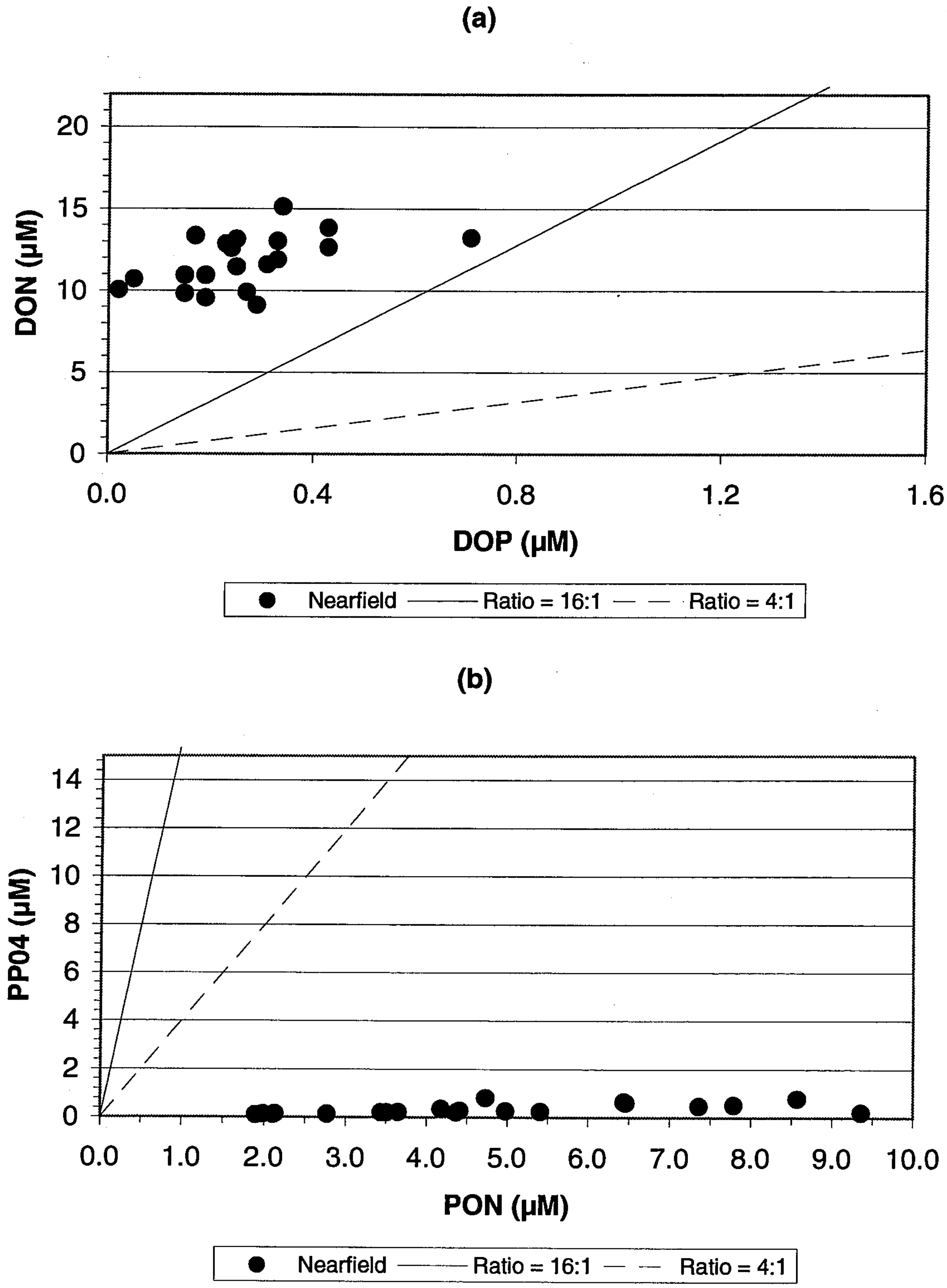
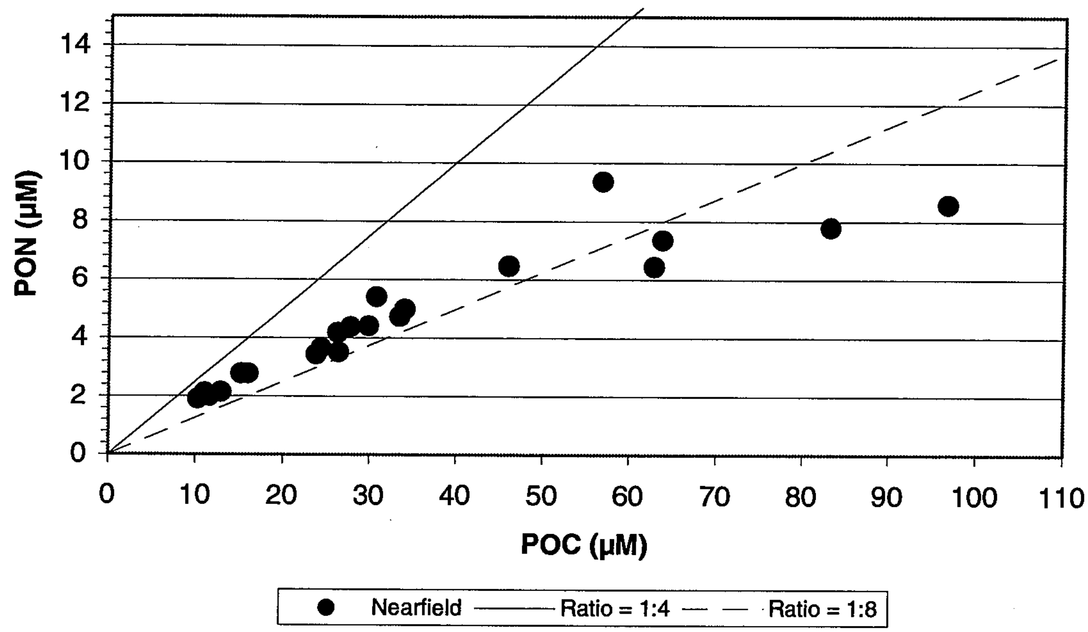


Figure D-84. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

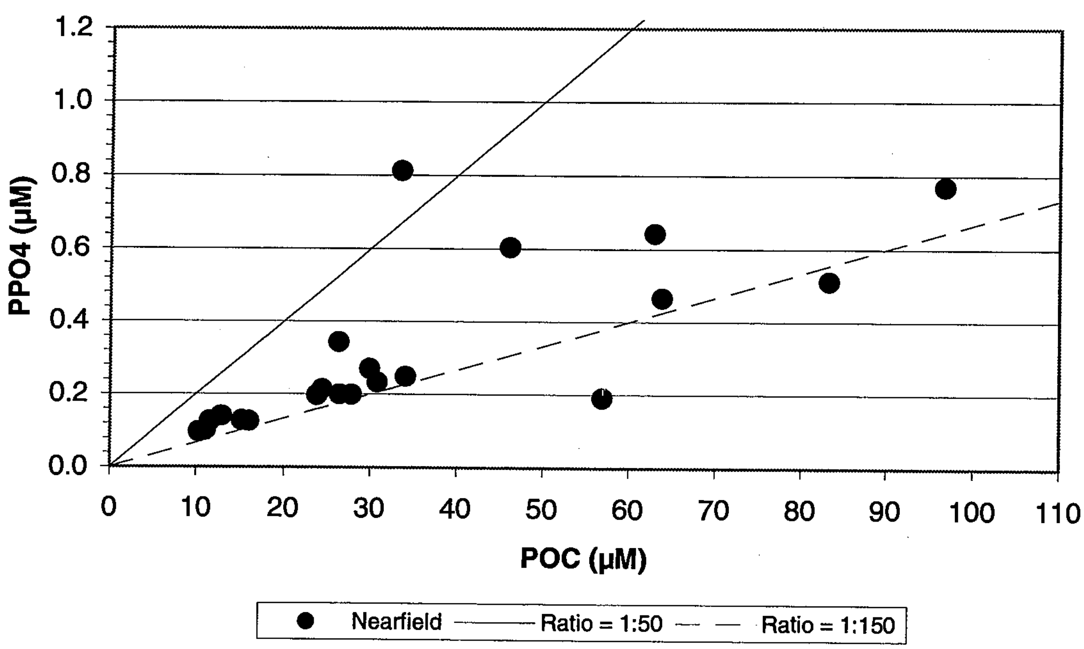
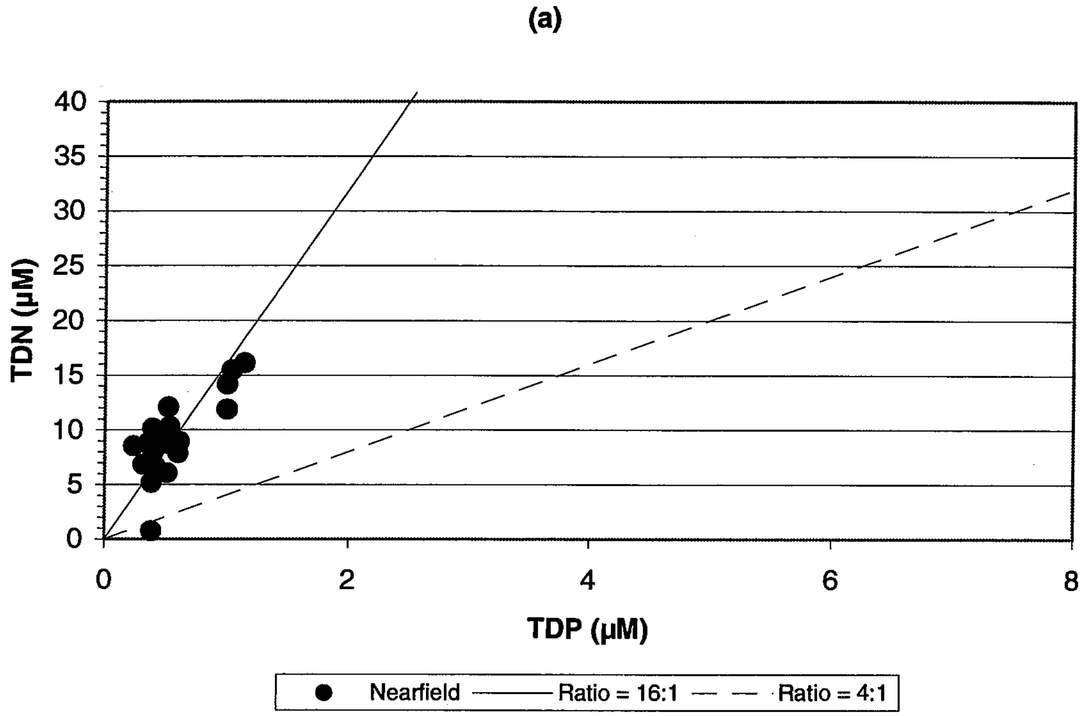


Figure D-85. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)



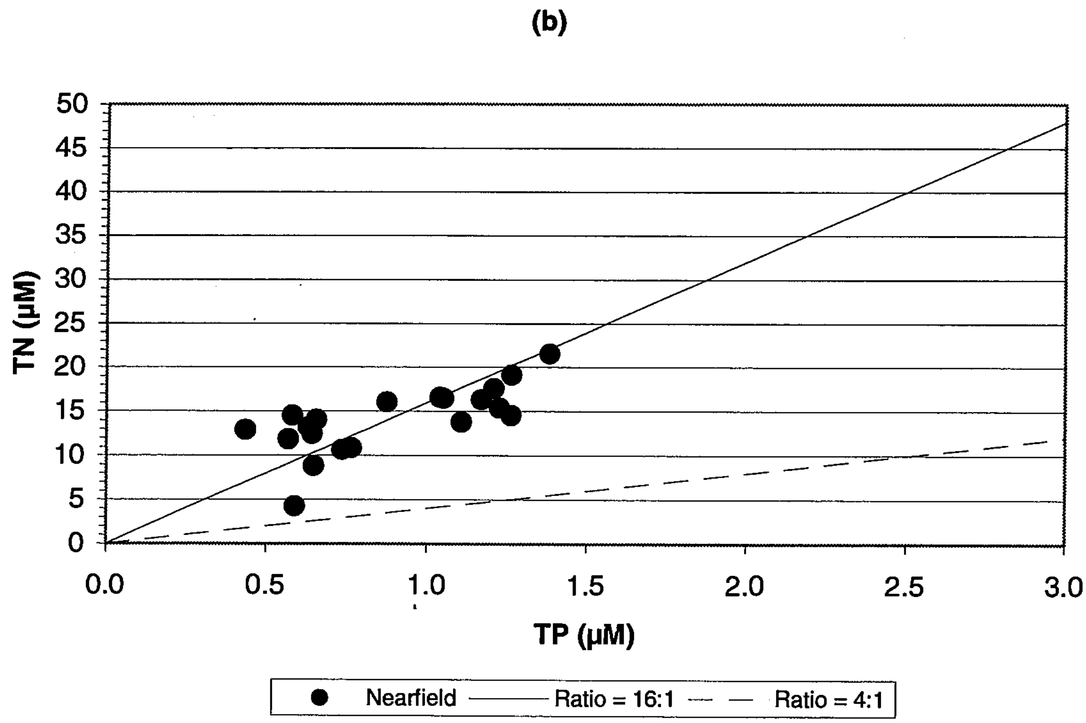
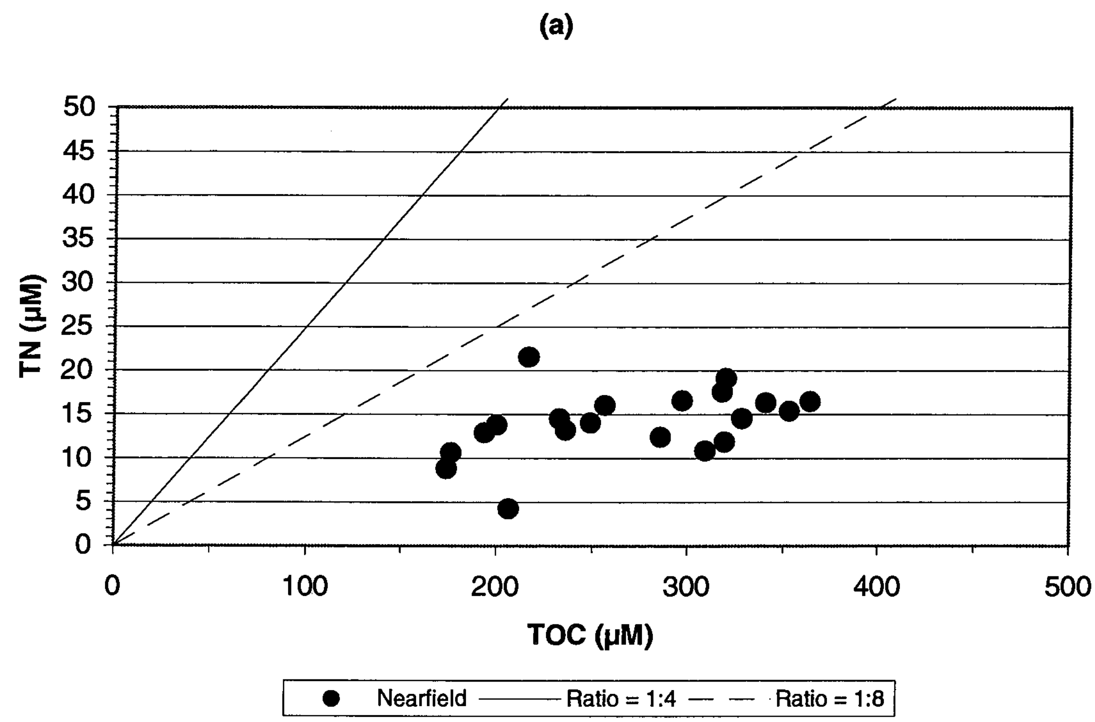


Figure D-86. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)



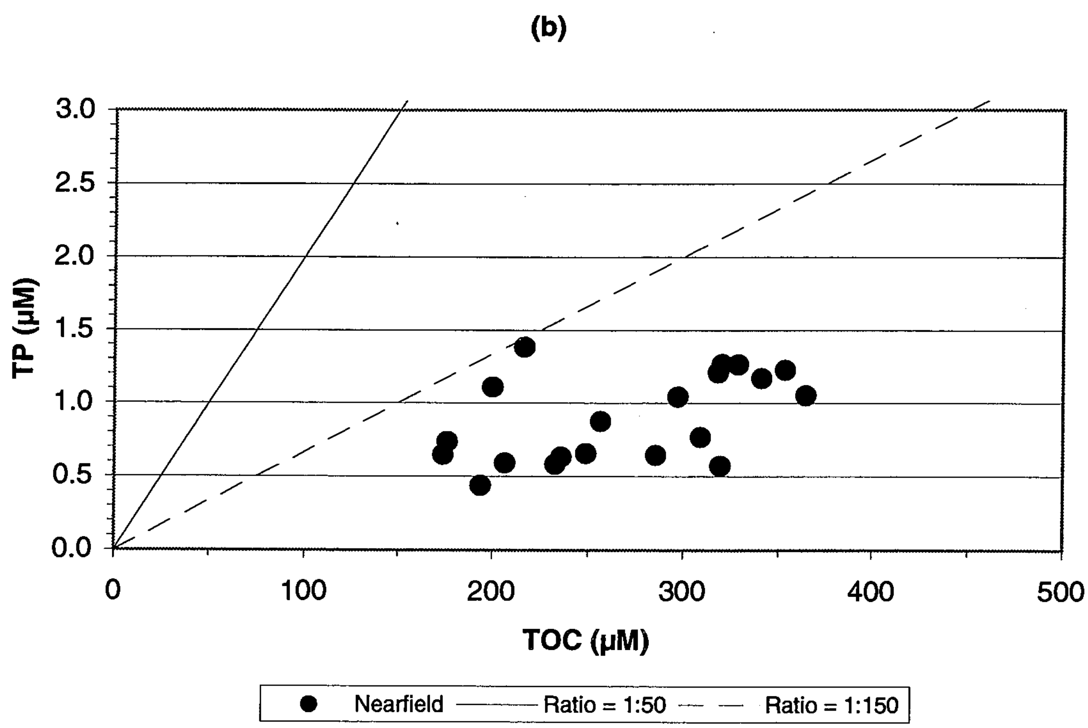


Figure D-87. Nutrient vs. Nutrient Plots for Nearfield Survey WN996, (May 99)

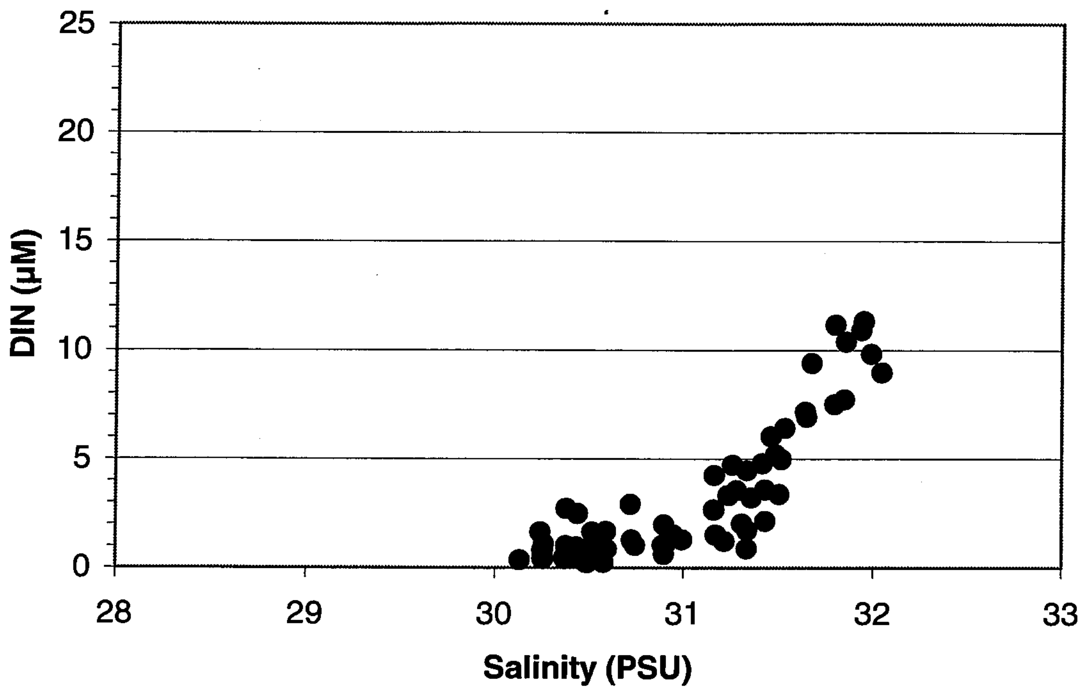
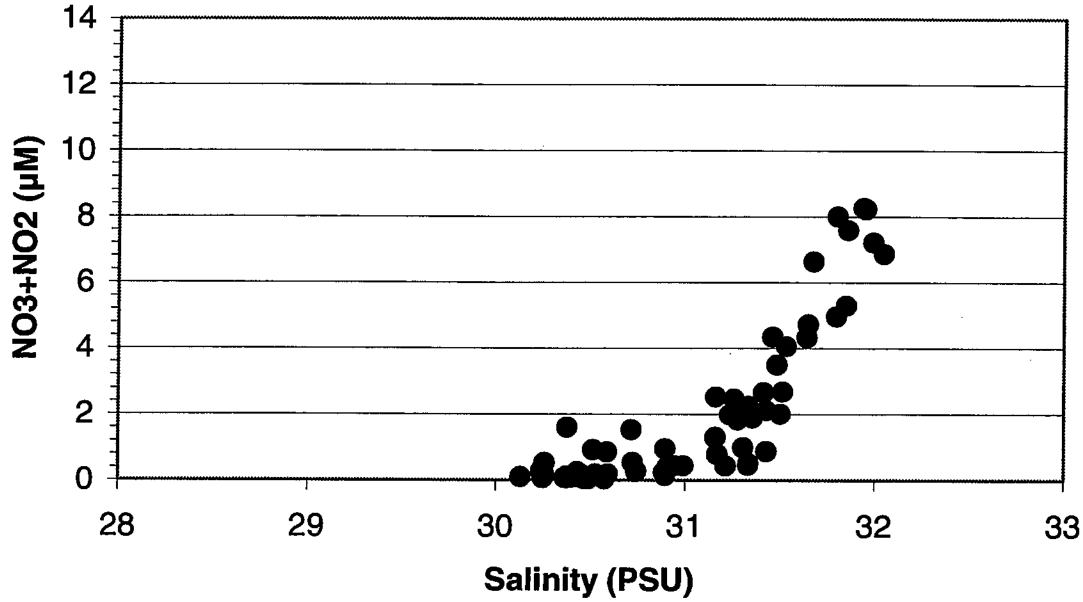


Figure D-88. Nutrient vs. Salinity Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

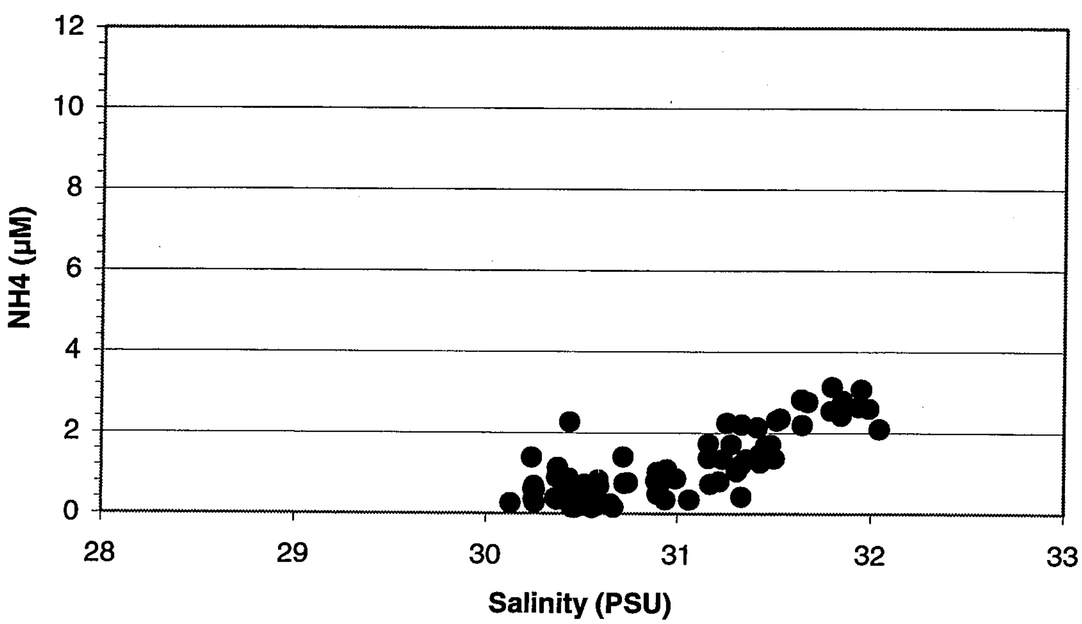
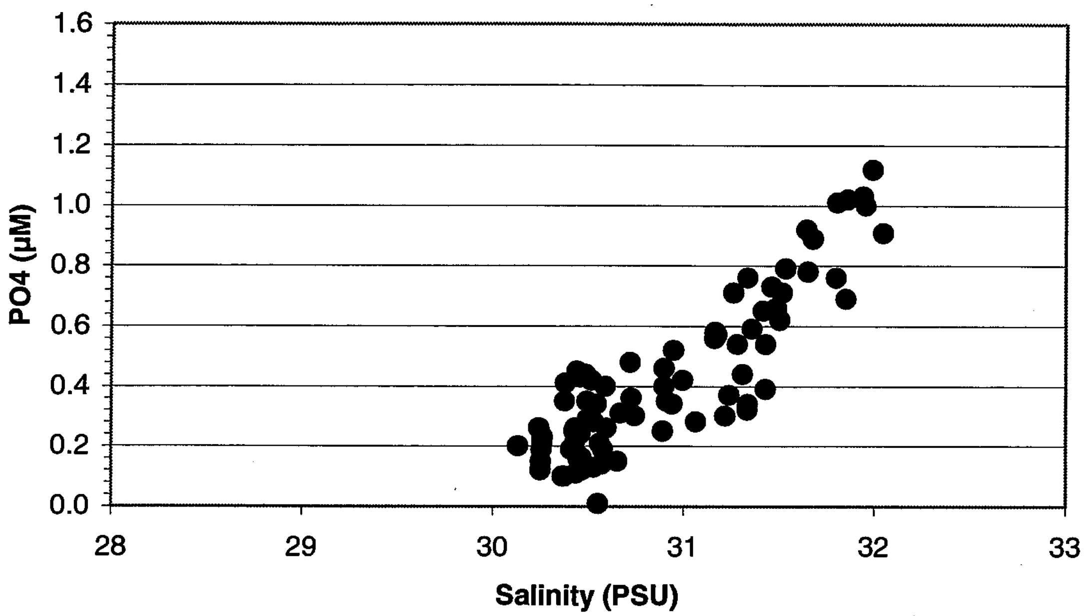


Figure D-89. Nutrient vs. Salinity Plots for Nearfield Survey WN996, (May 99)

(a)



(b)

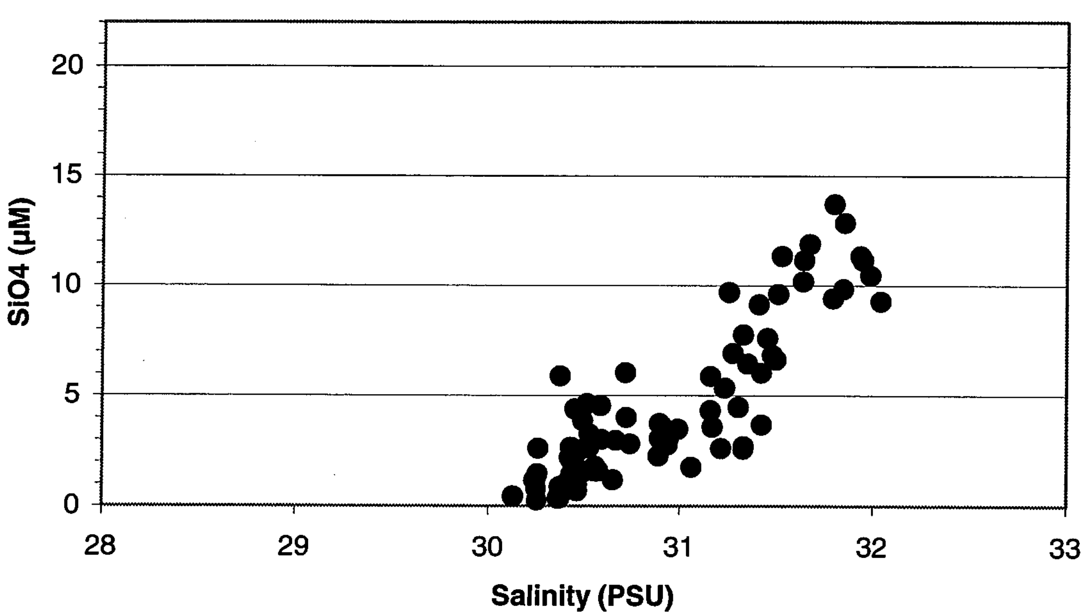


Figure D-90. Nutrient vs. Salinity Plots for Nearfield Survey WN996, (May 99)

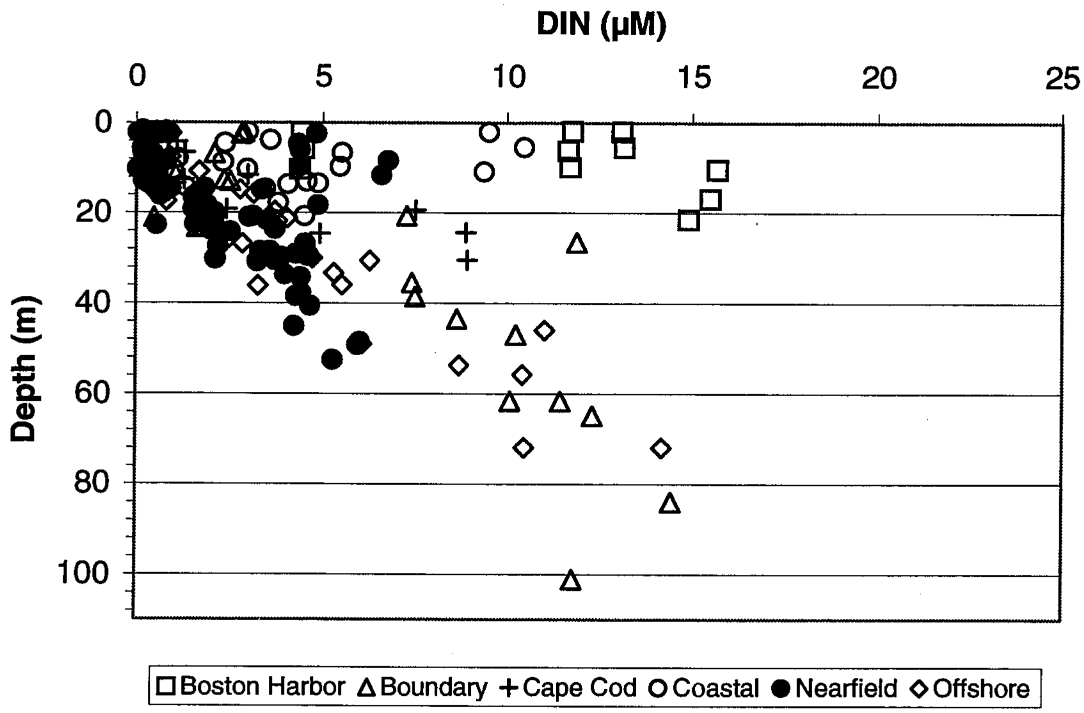


Figure D-91. Depth vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

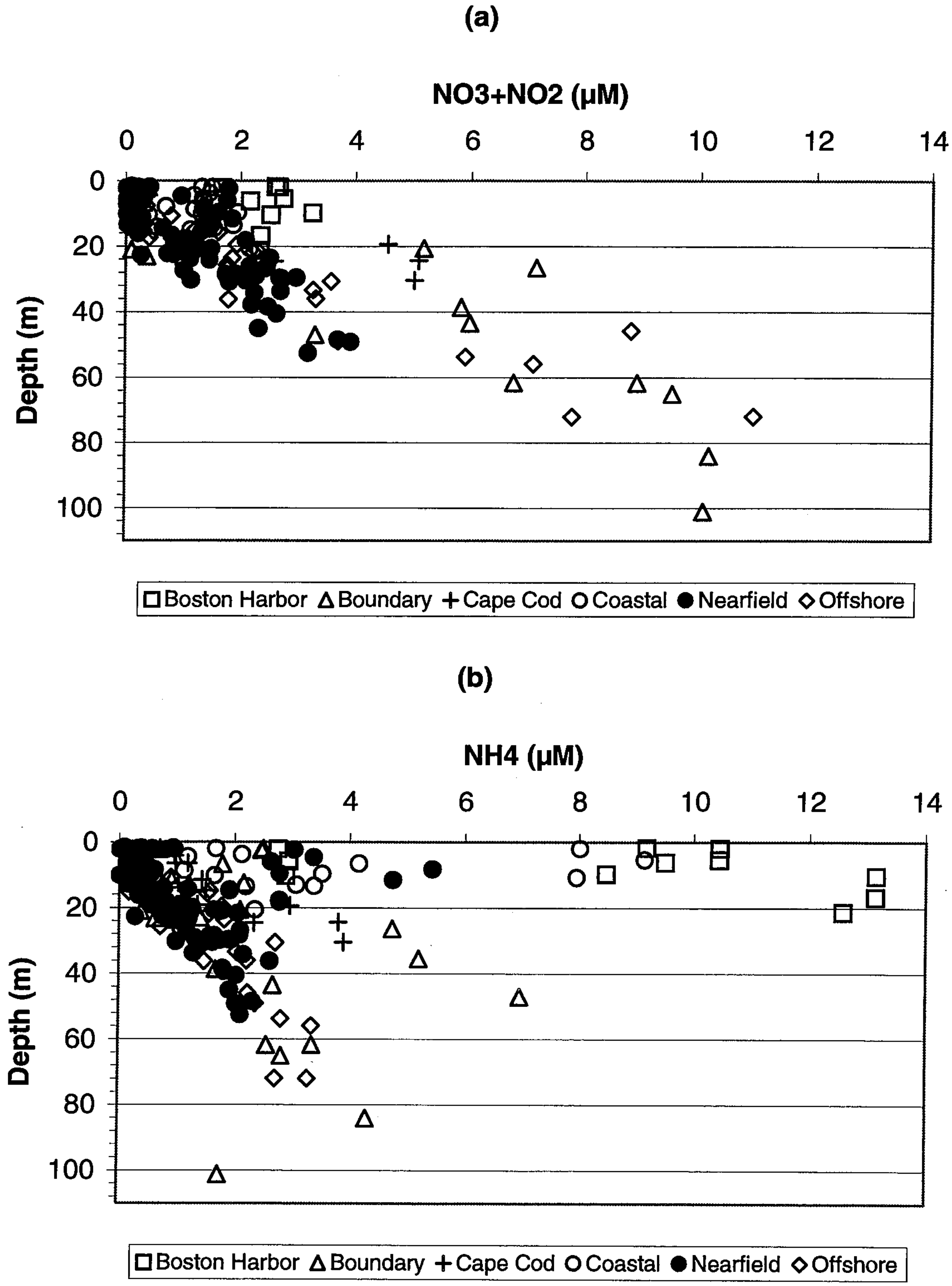
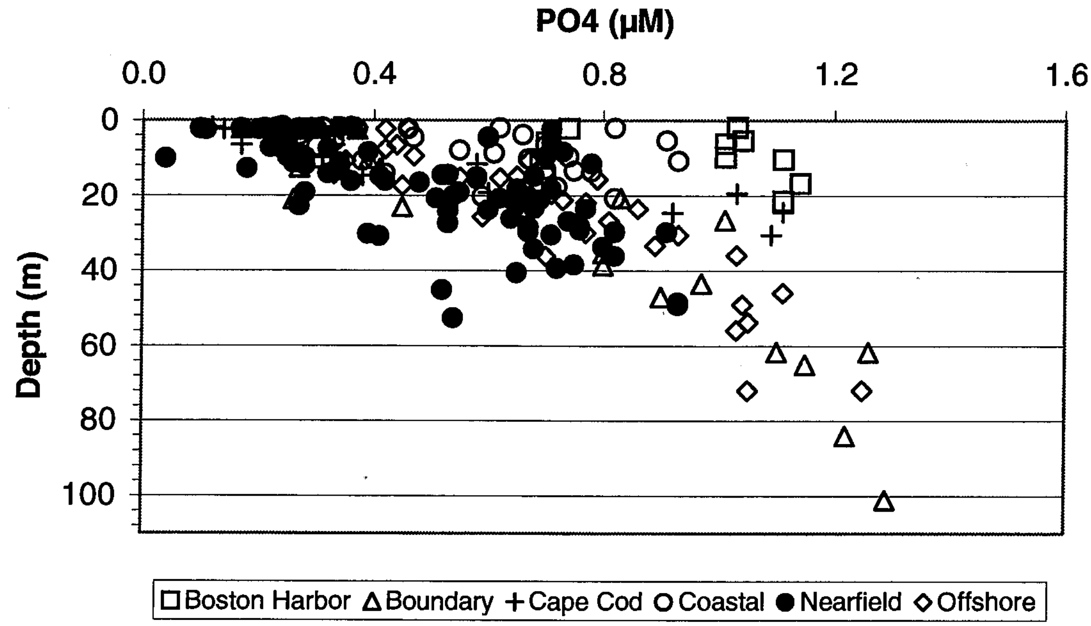


Figure D-92. Depth vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

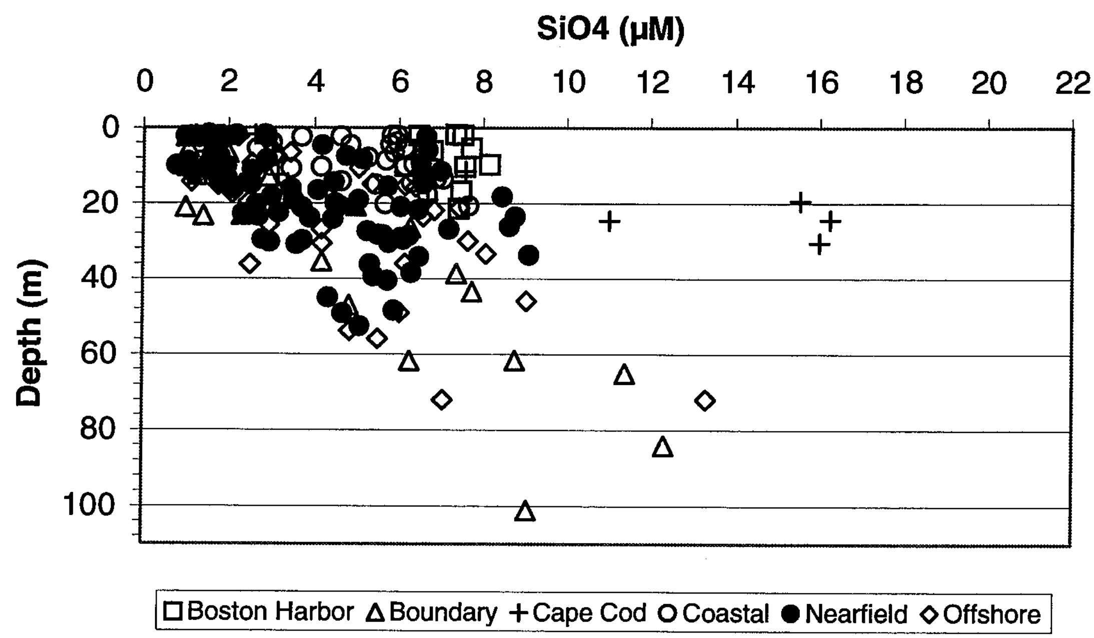
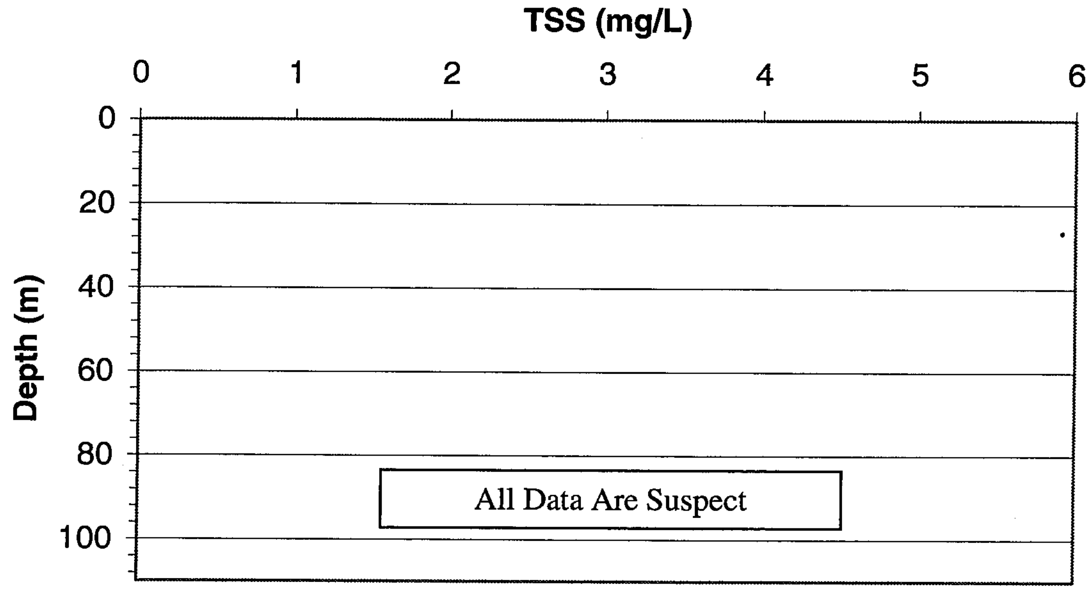


Figure D-93. Depth vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

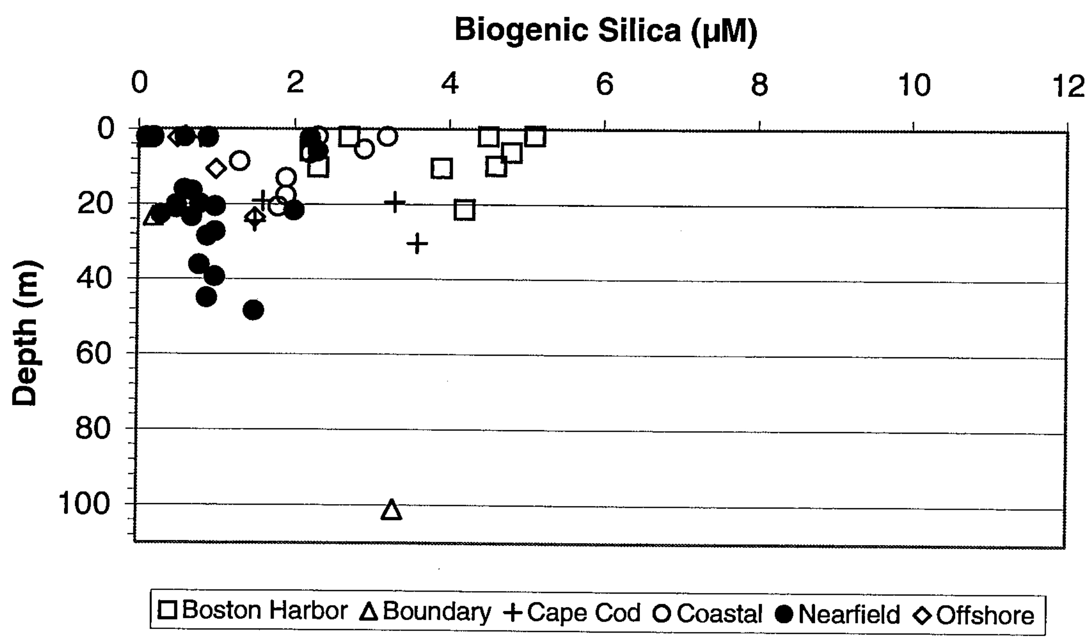
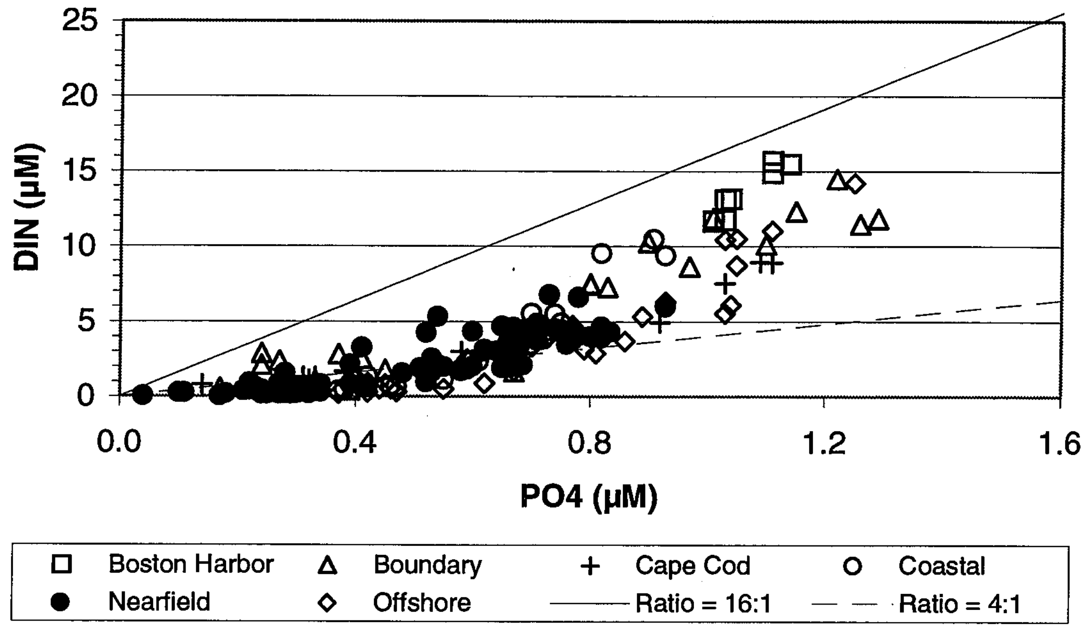


Figure D-94. Depth vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

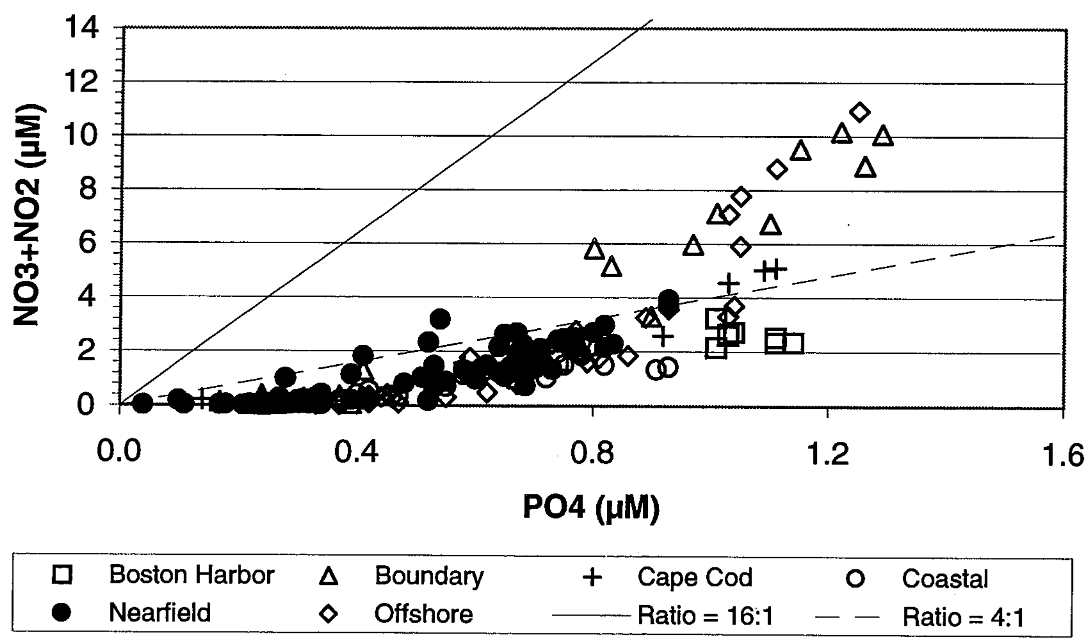
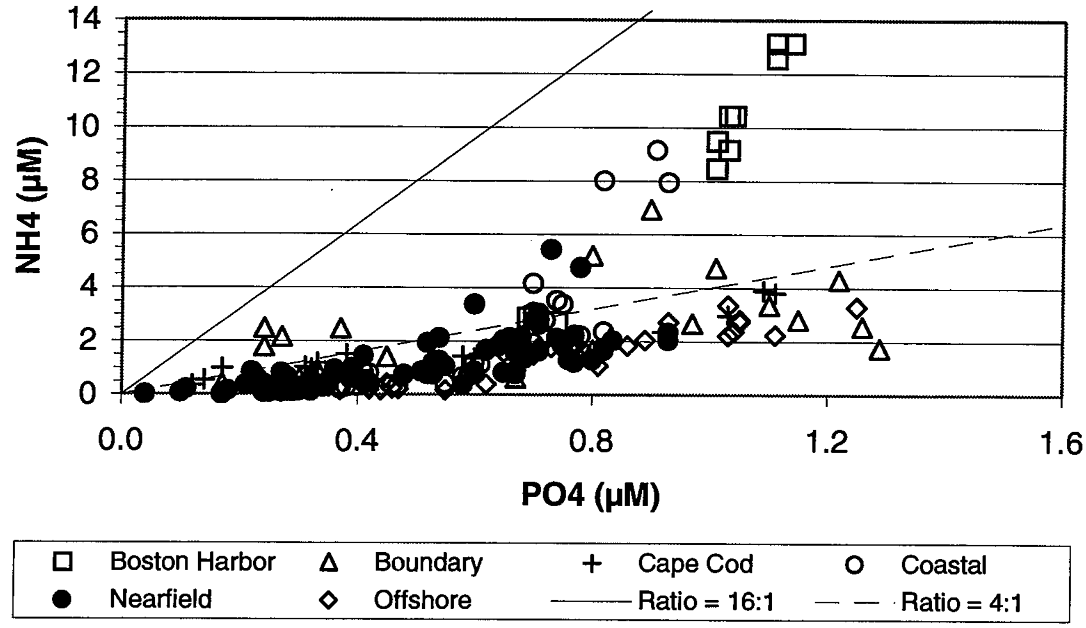


Figure D-95. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

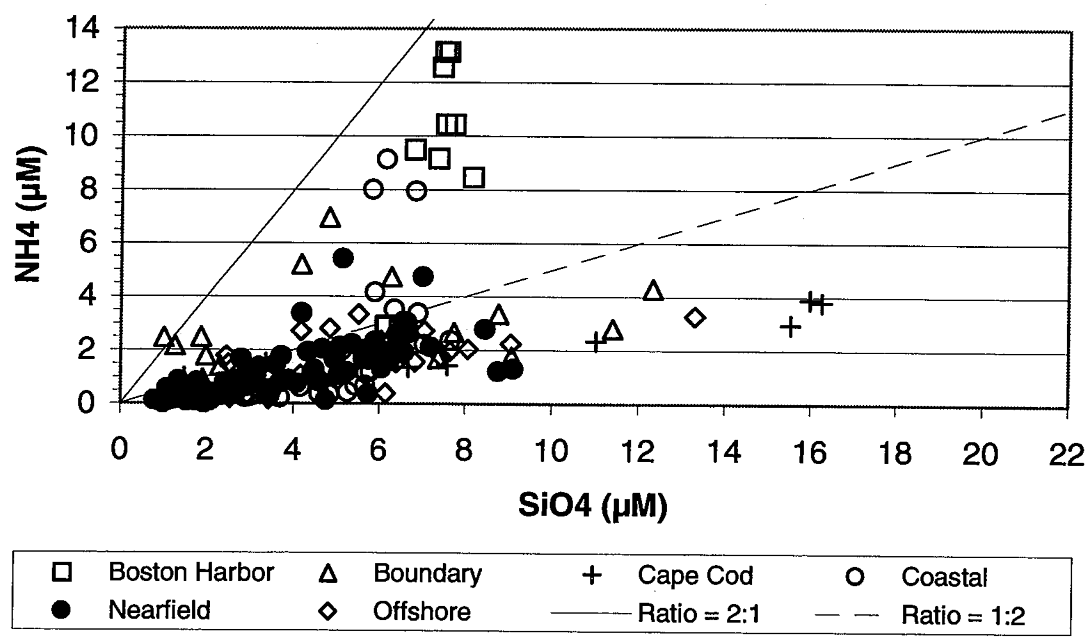
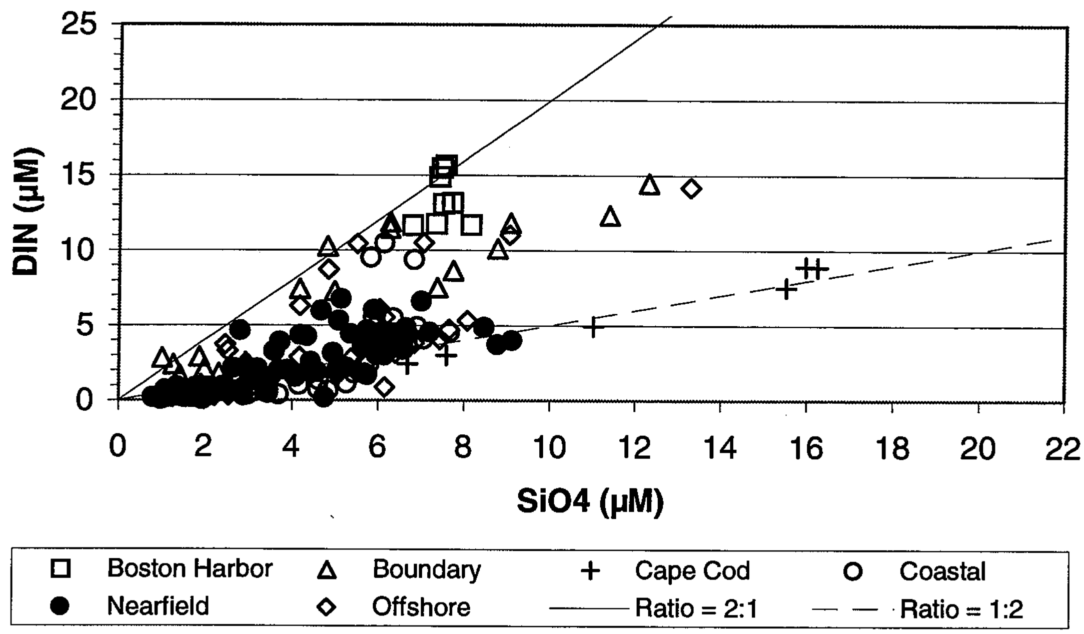


Figure D-96. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

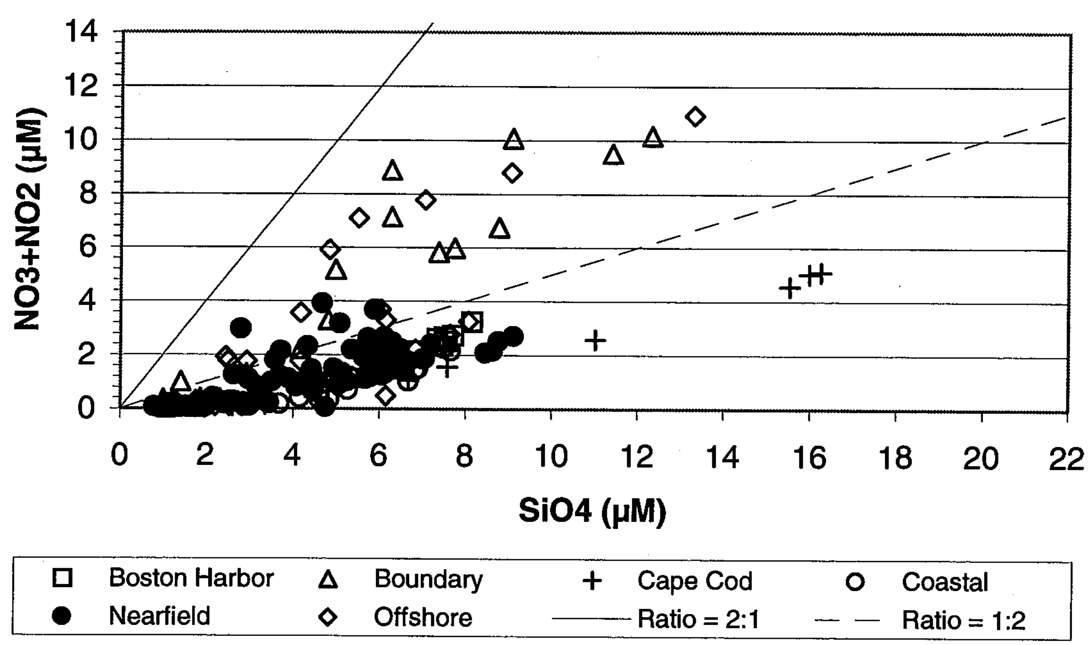
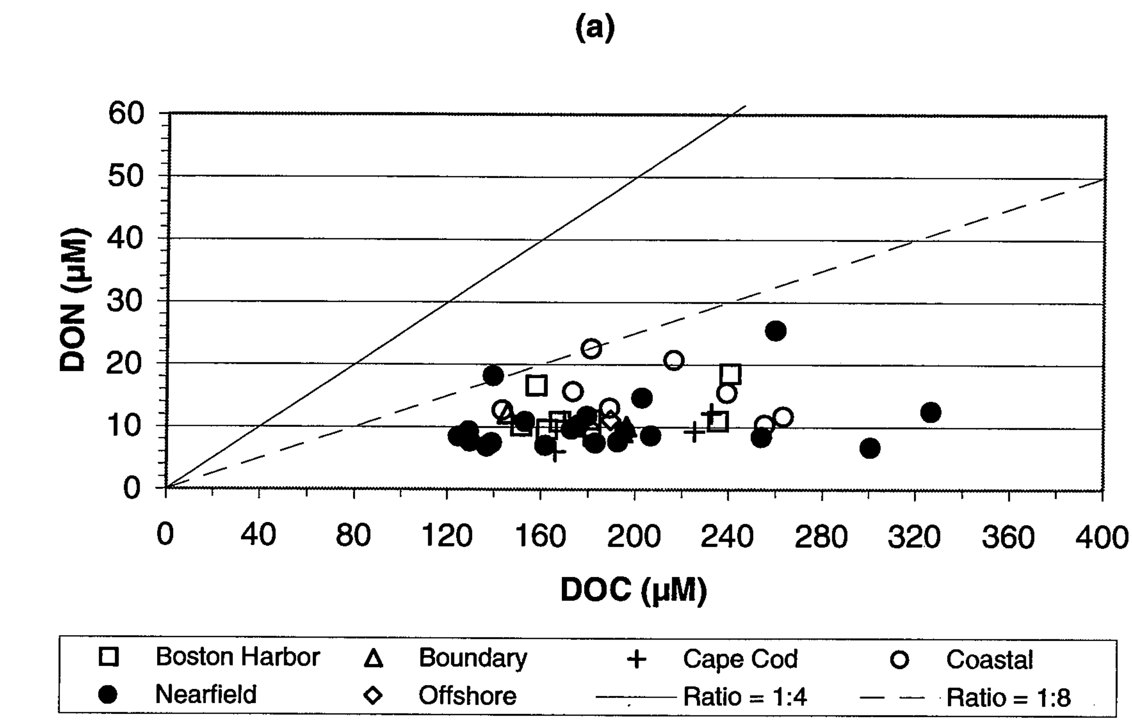


Figure D-97. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)



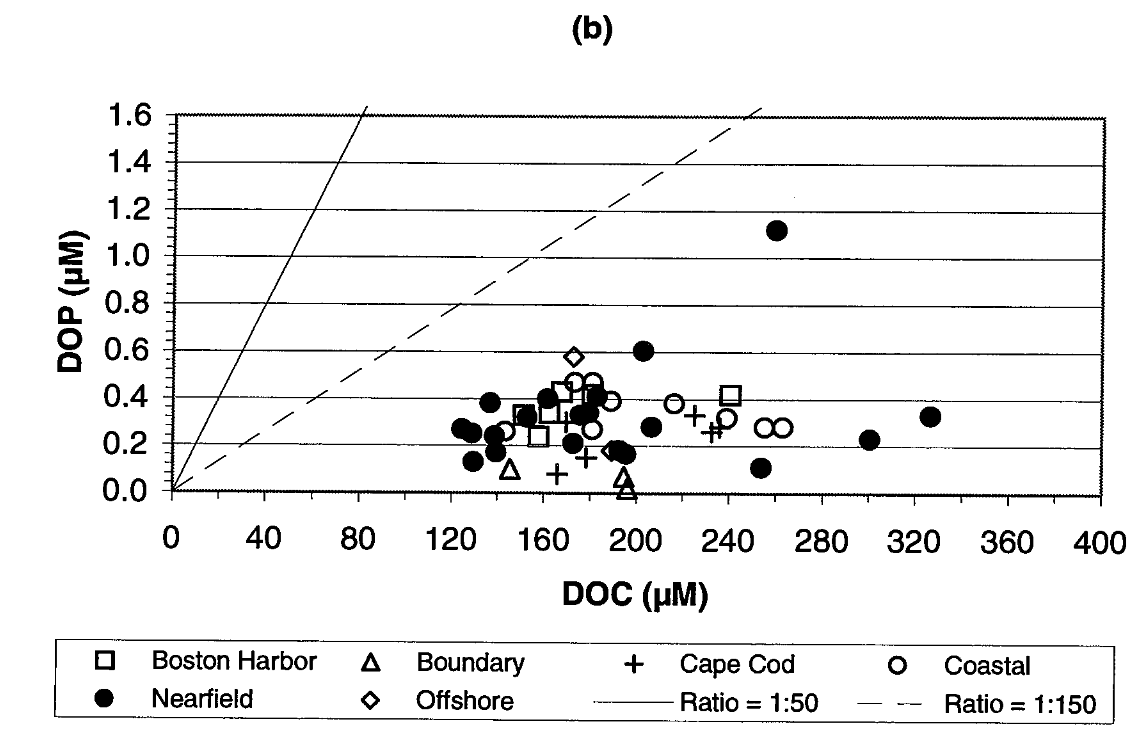


Figure D-98. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

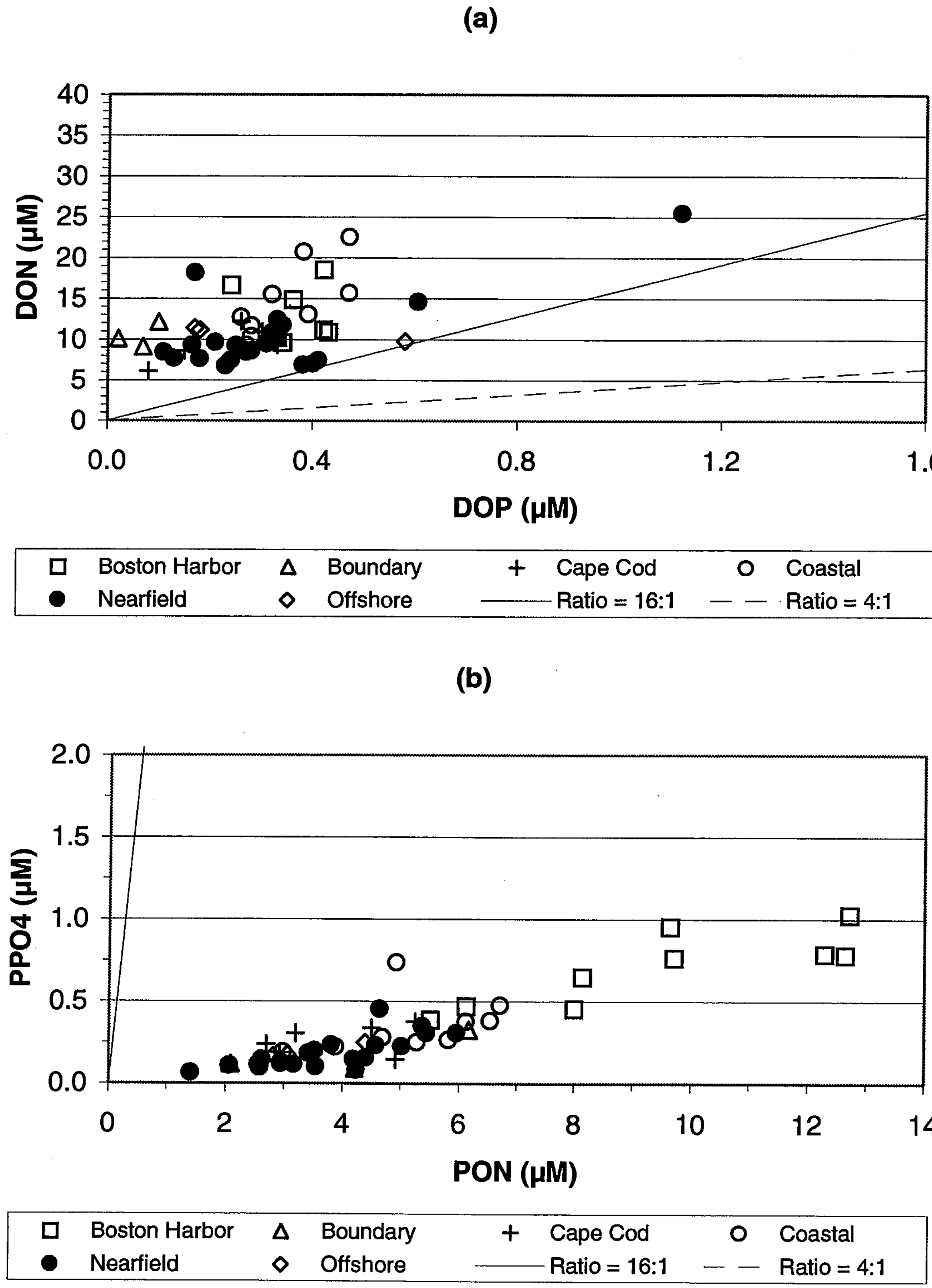
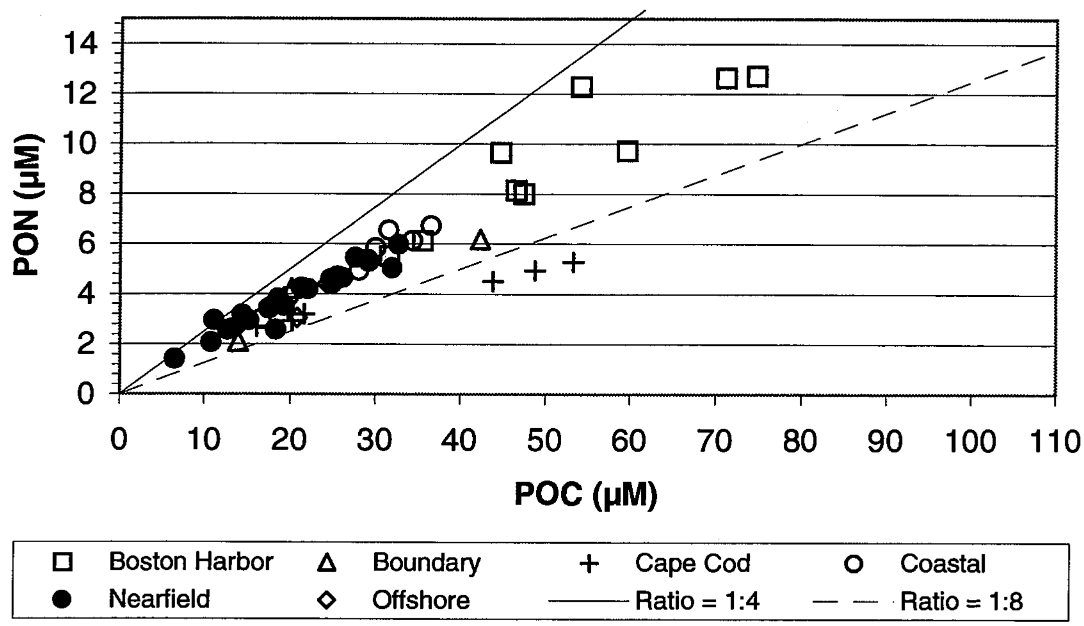


Figure D-99. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

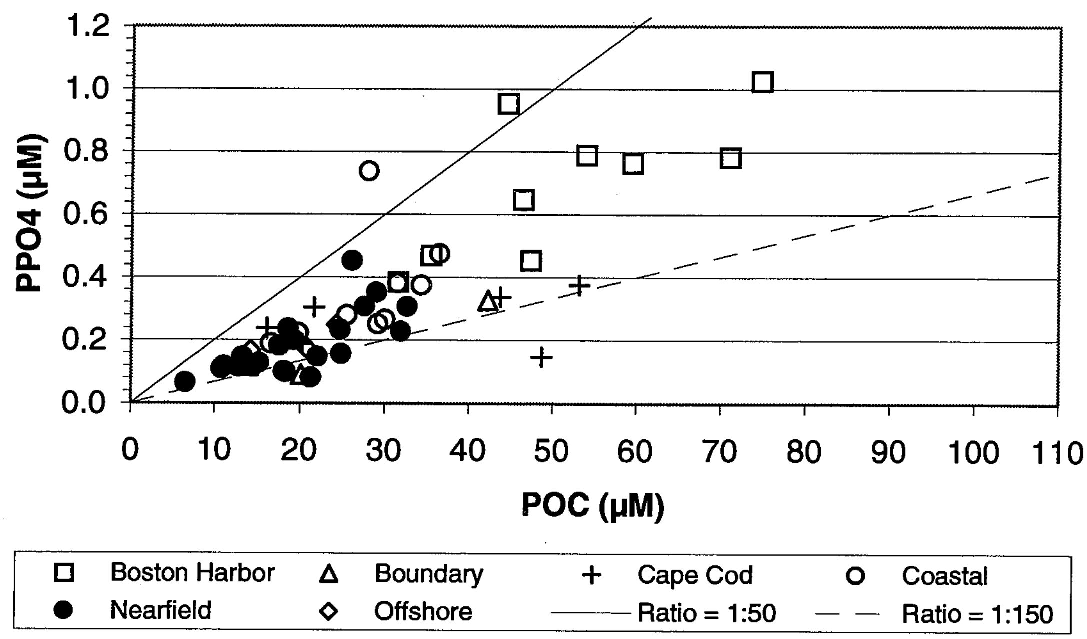
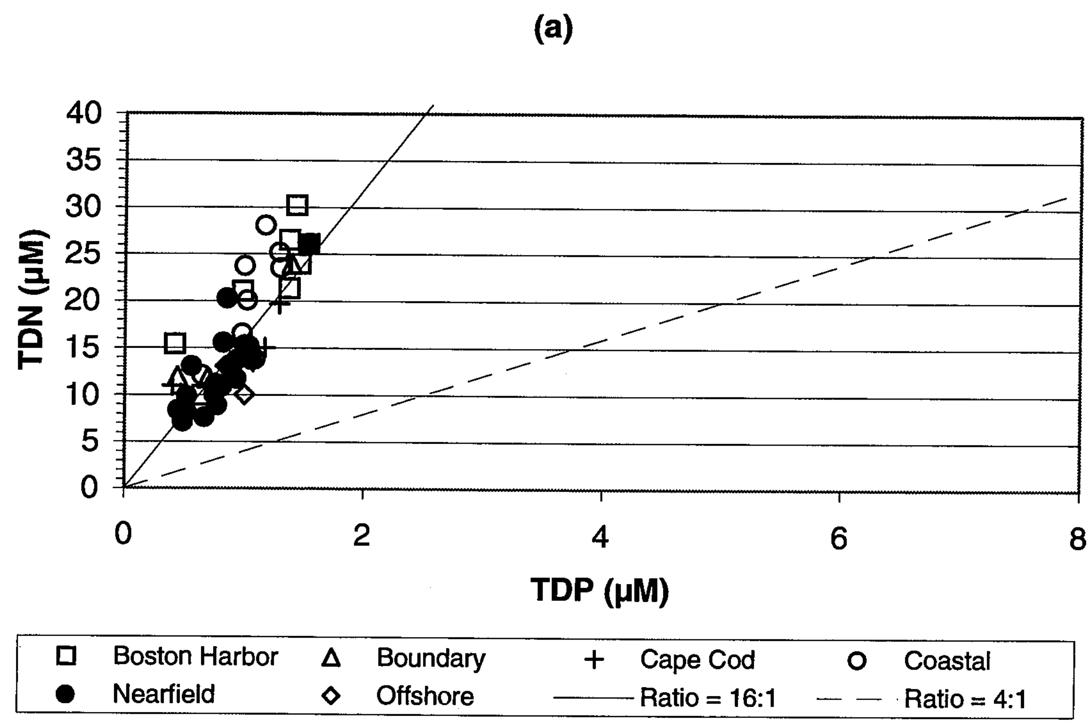


Figure D-100. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)



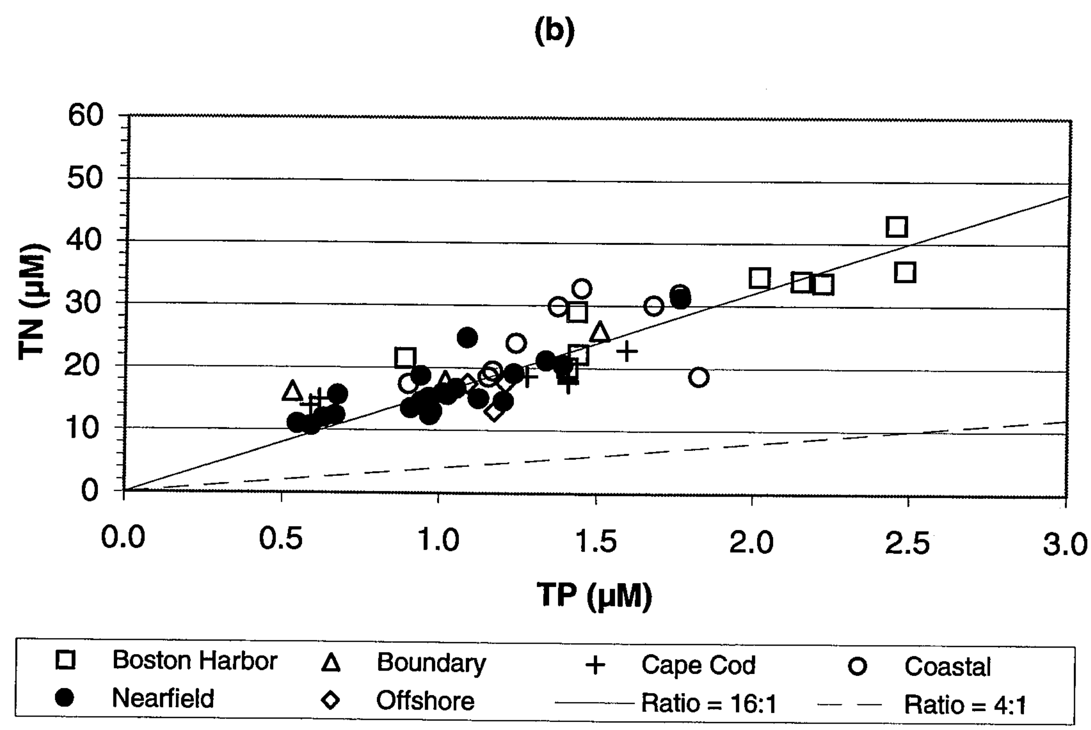
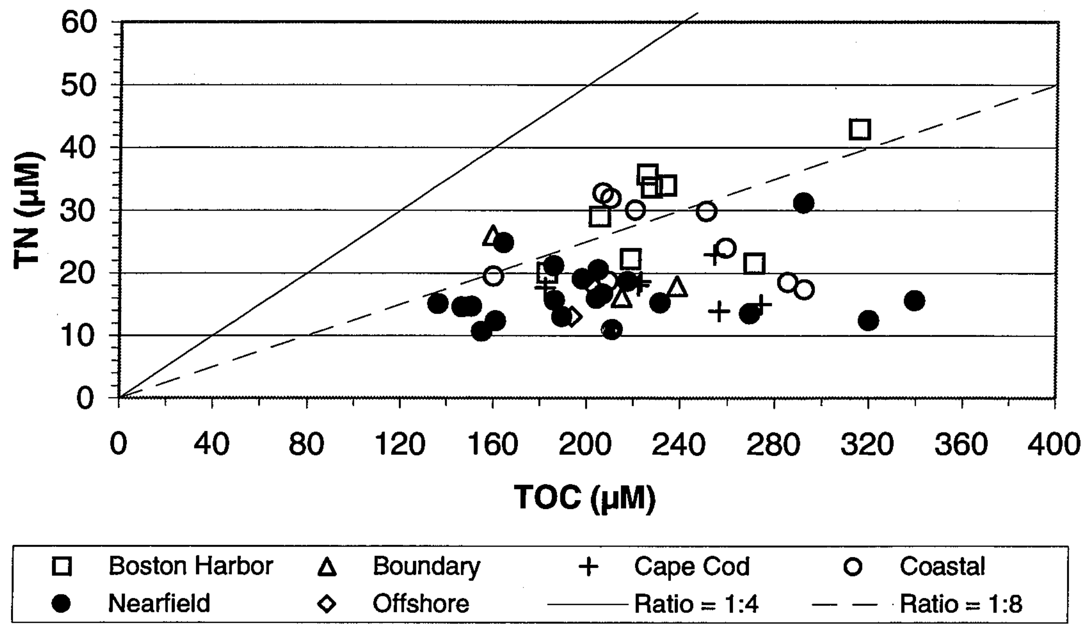


Figure D-101. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

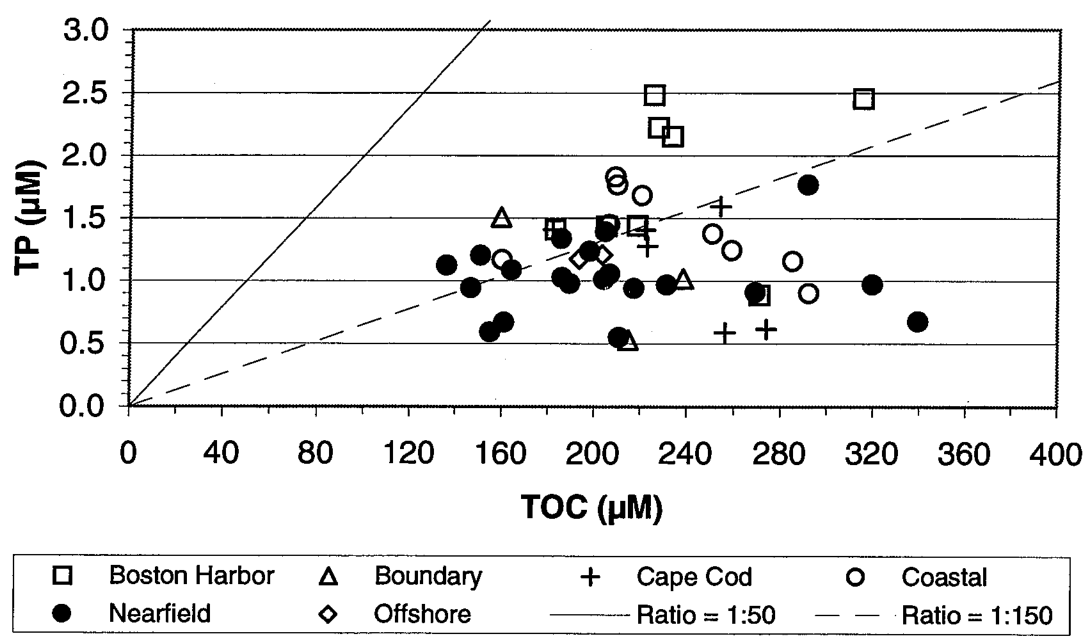


Figure D-102. Nutrient vs. Nutrient Plots for Farfield Survey WF997, (Jun 99)

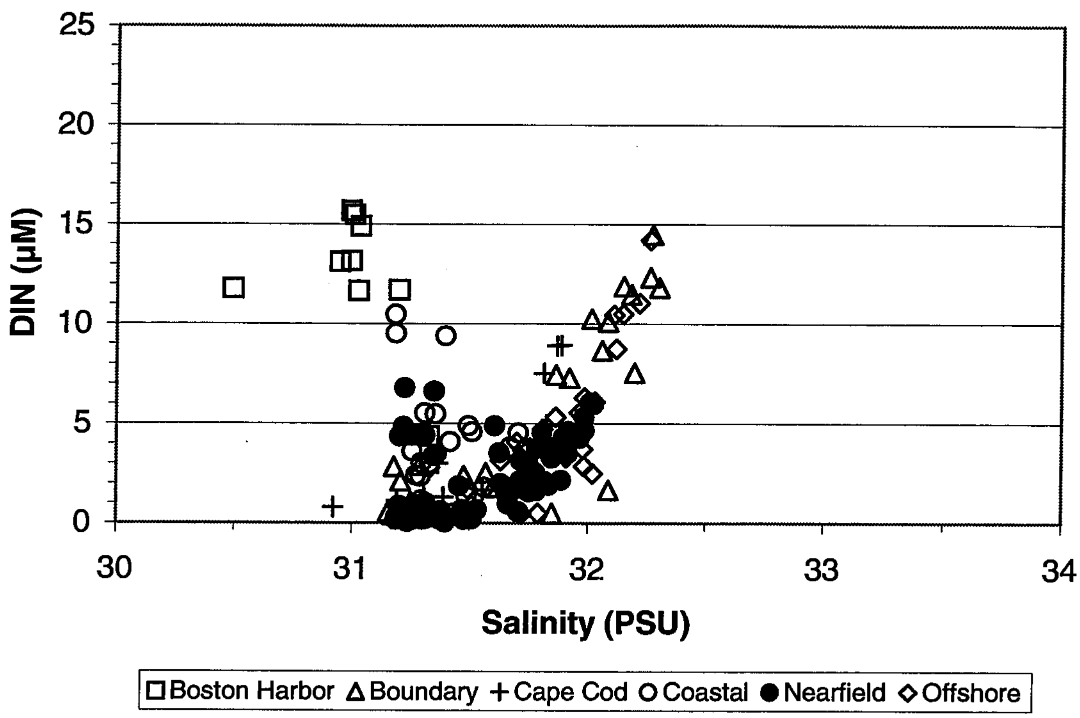
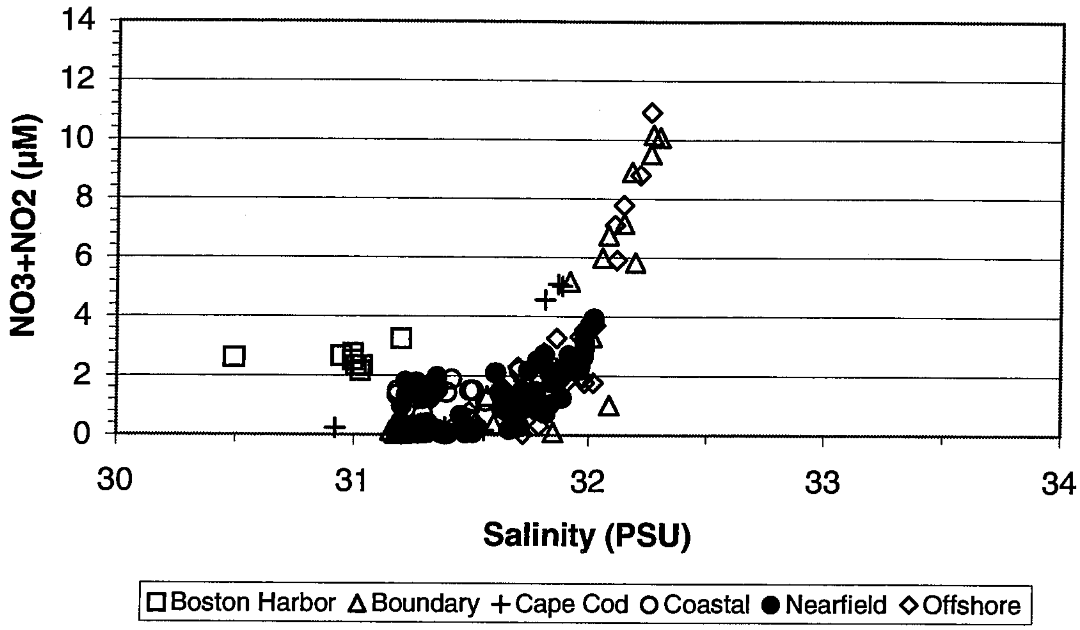


Figure D-103. Nutrient vs. Salinity Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

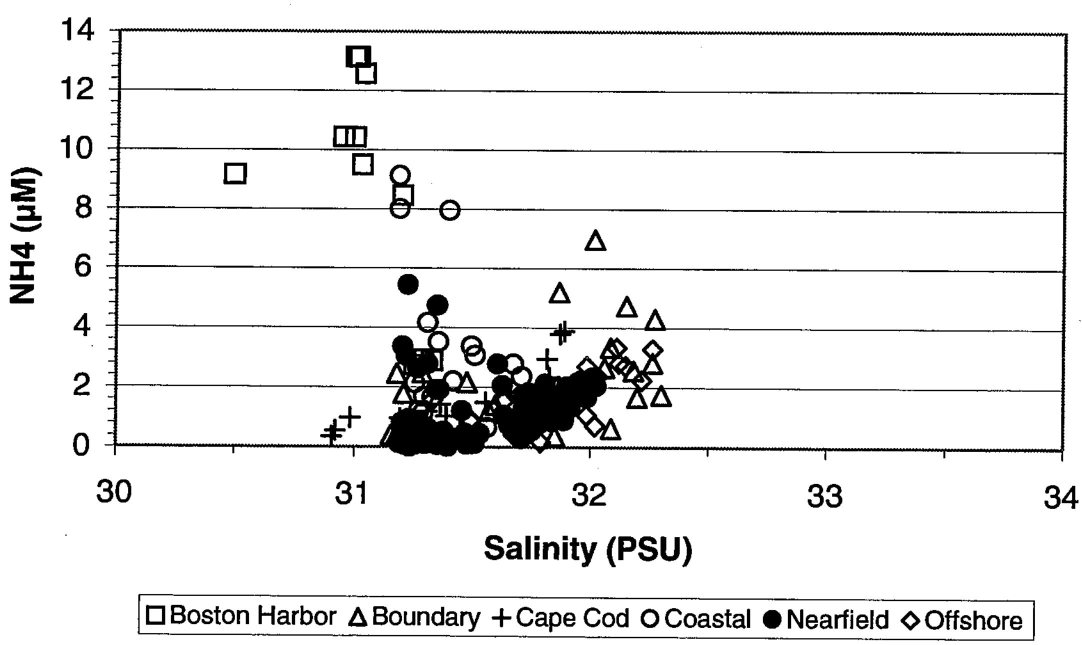
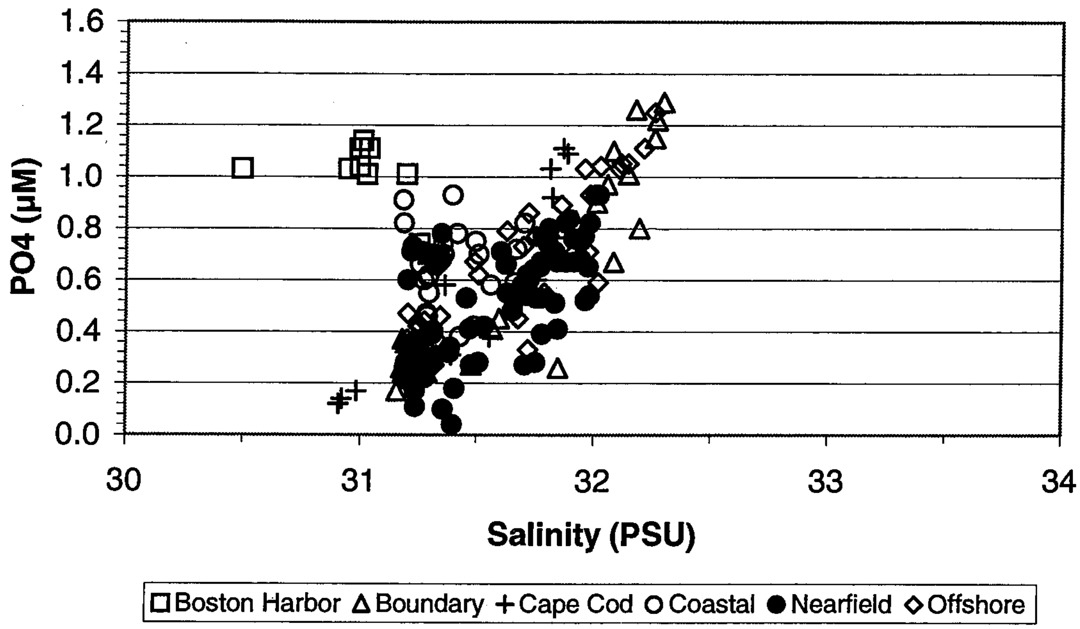


Figure D-104. Nutrient vs. Salinity Plots for Farfield Survey WF997, (Jun 99)

(a)



(b)

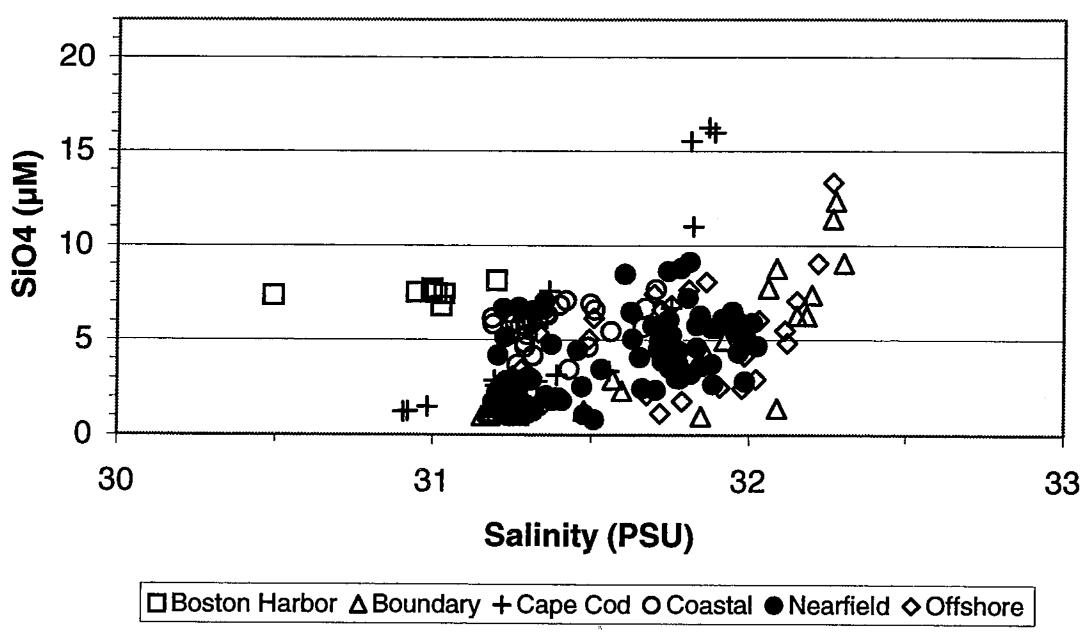


Figure D-105. Nutrient vs. Salinity Plots for Farfield Survey WF997, (Jun 99)

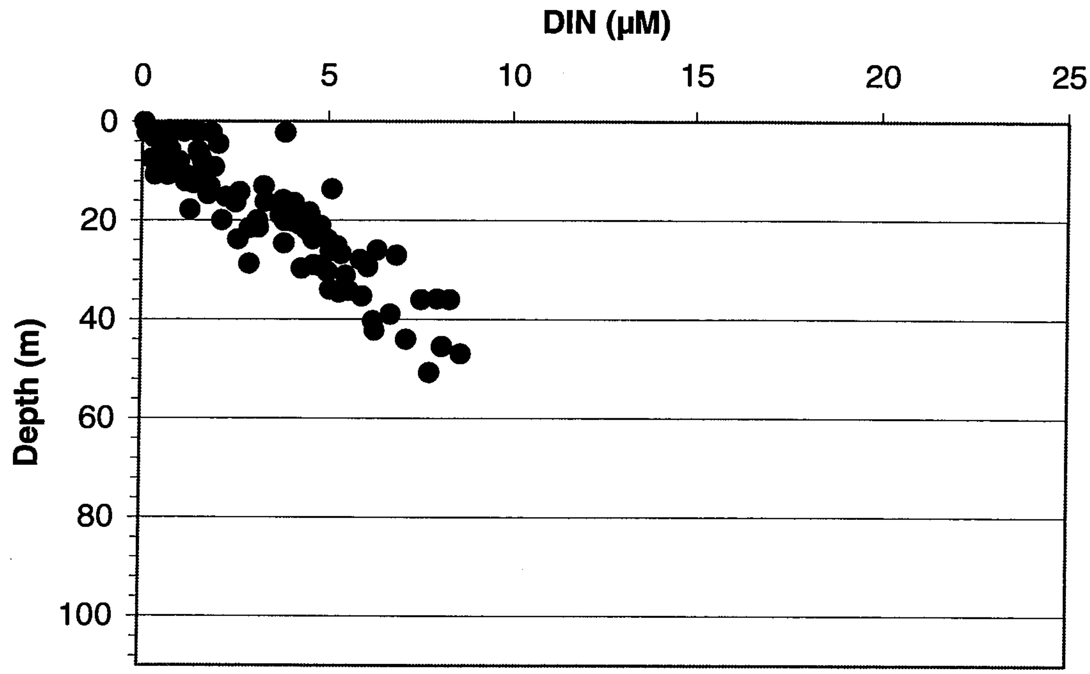
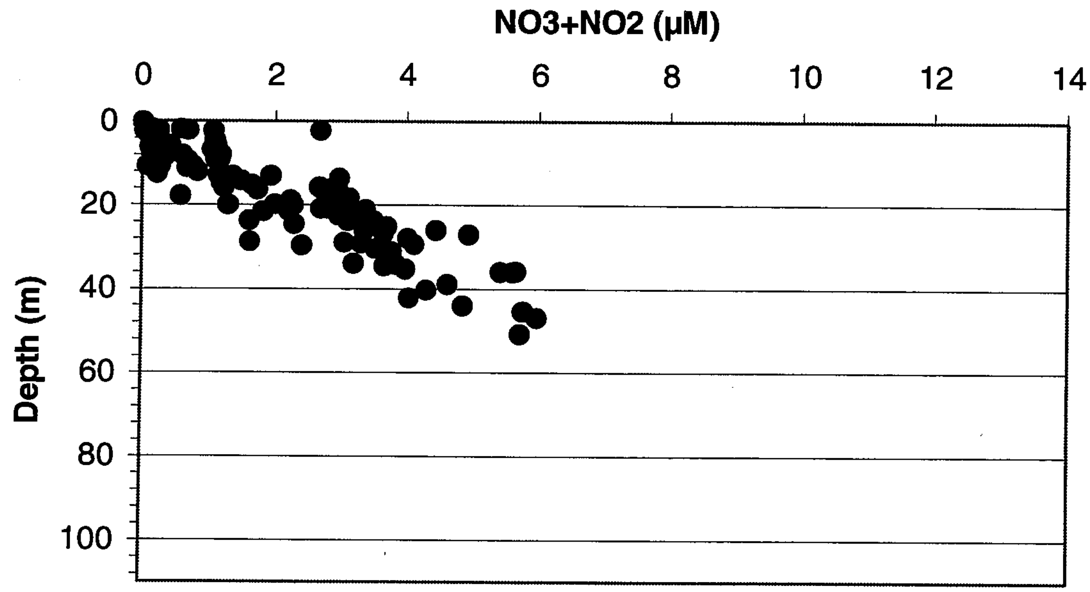


Figure D-106. Depth vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

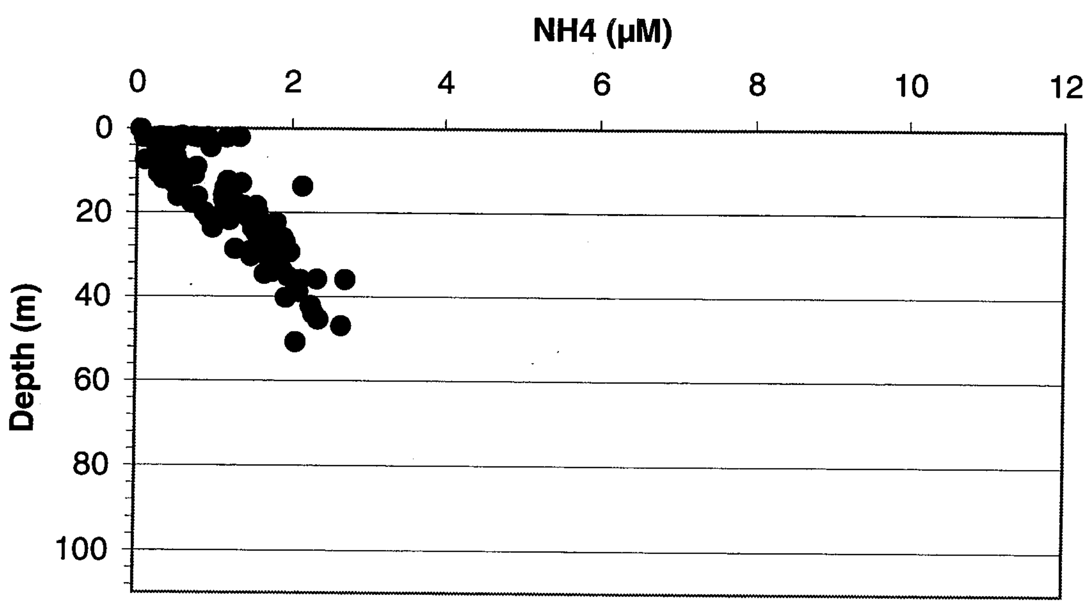
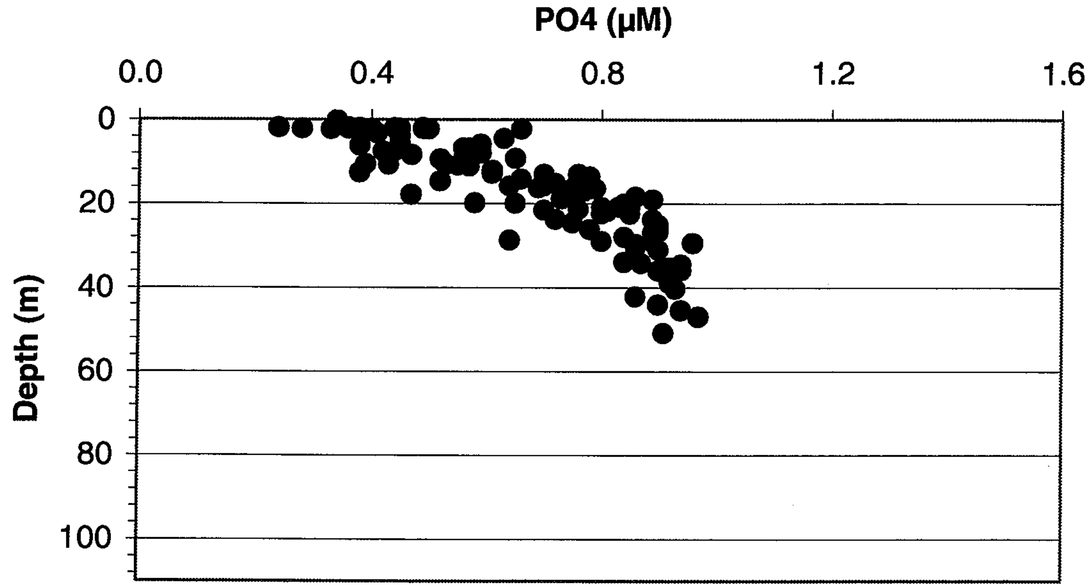


Figure D-107. Depth vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

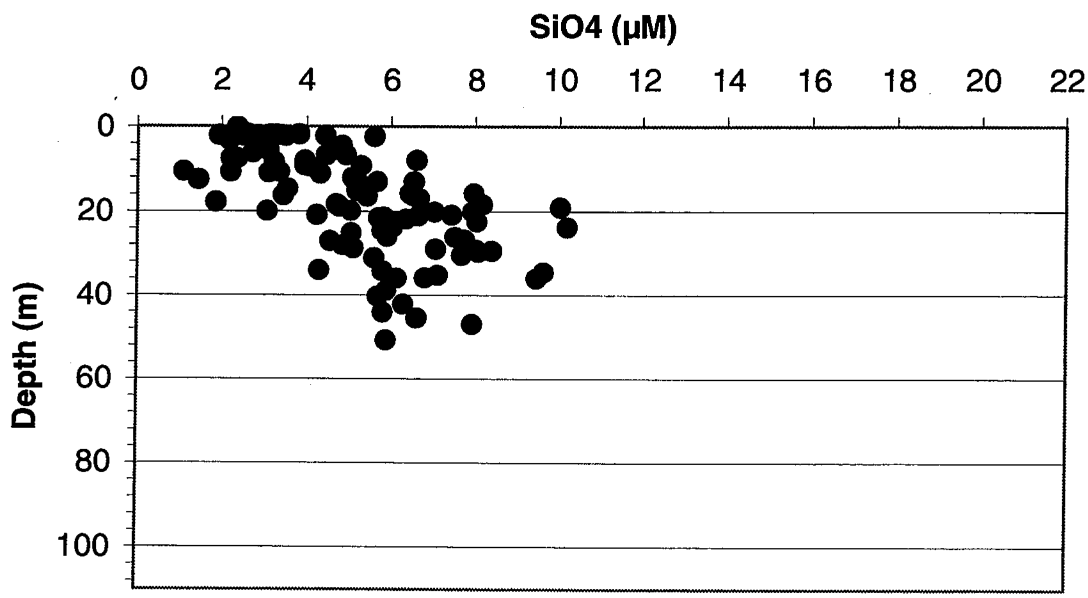
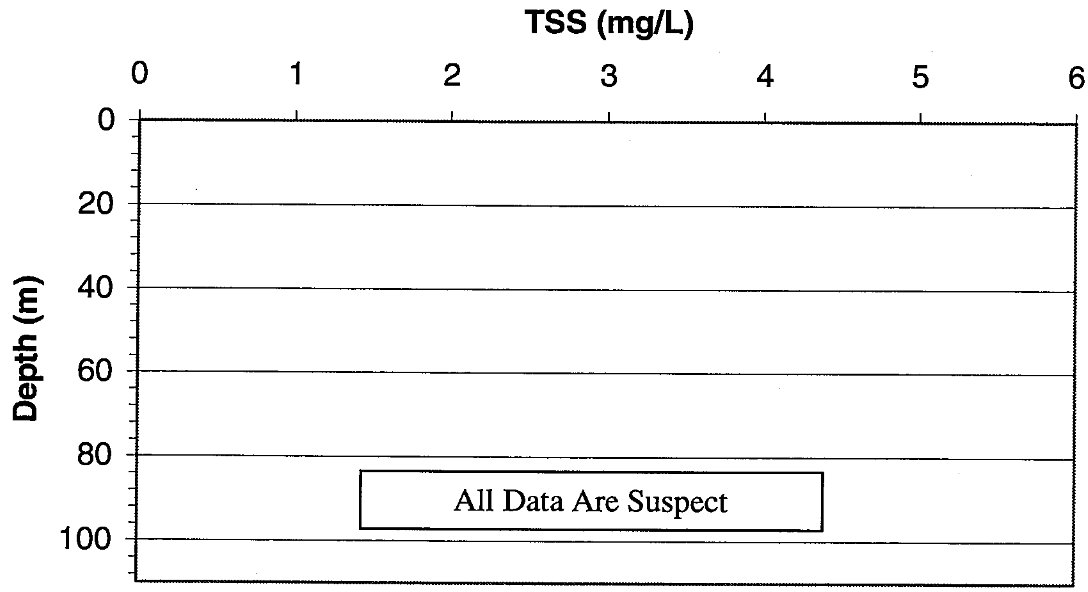


Figure D-108. Depth vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

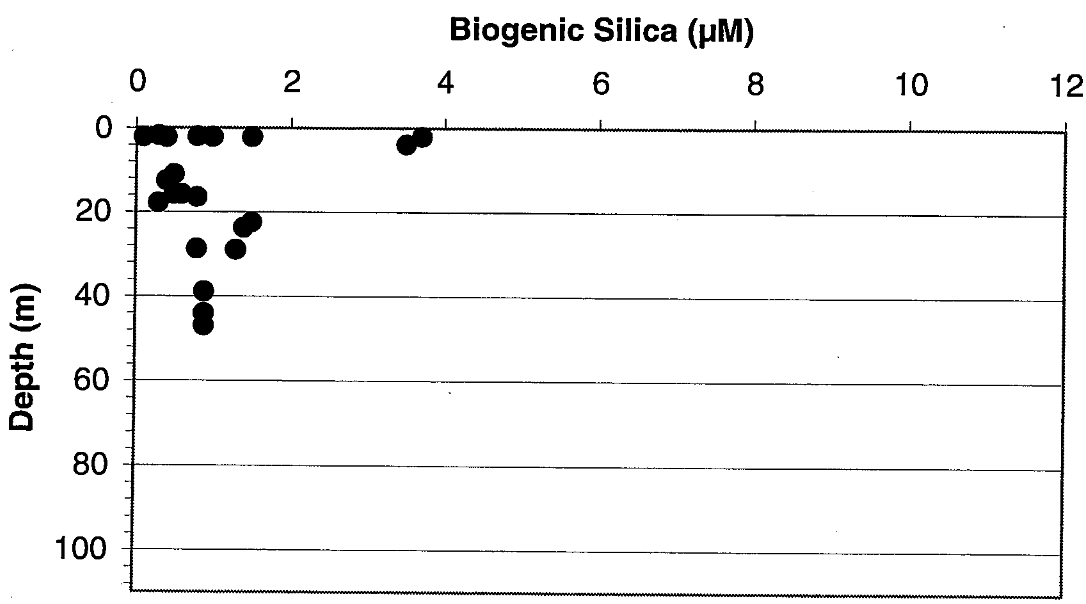
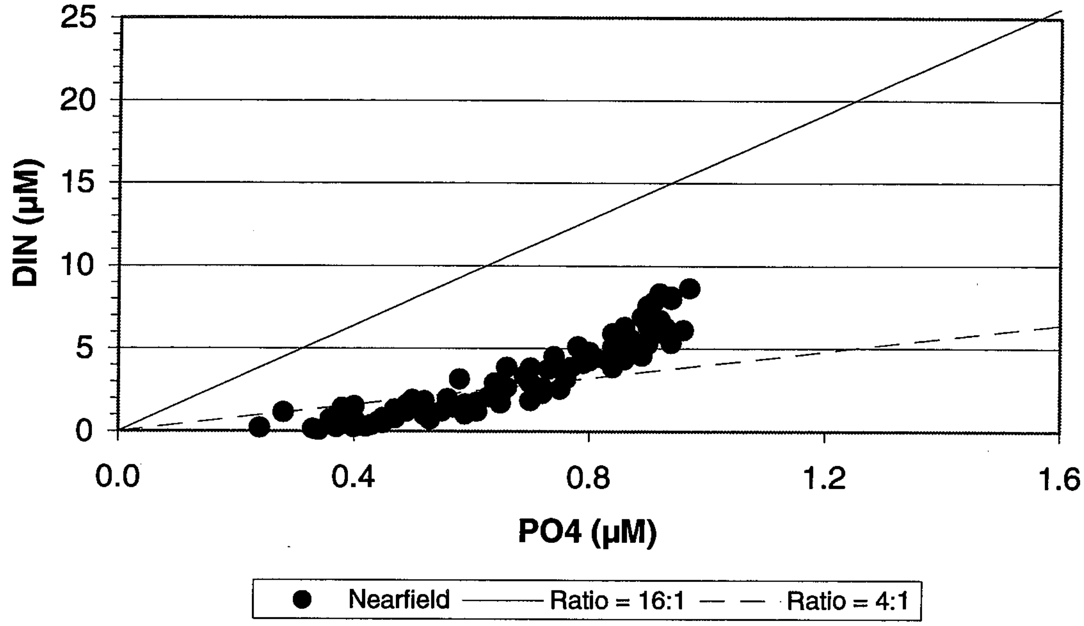


Figure D-109. Depth vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

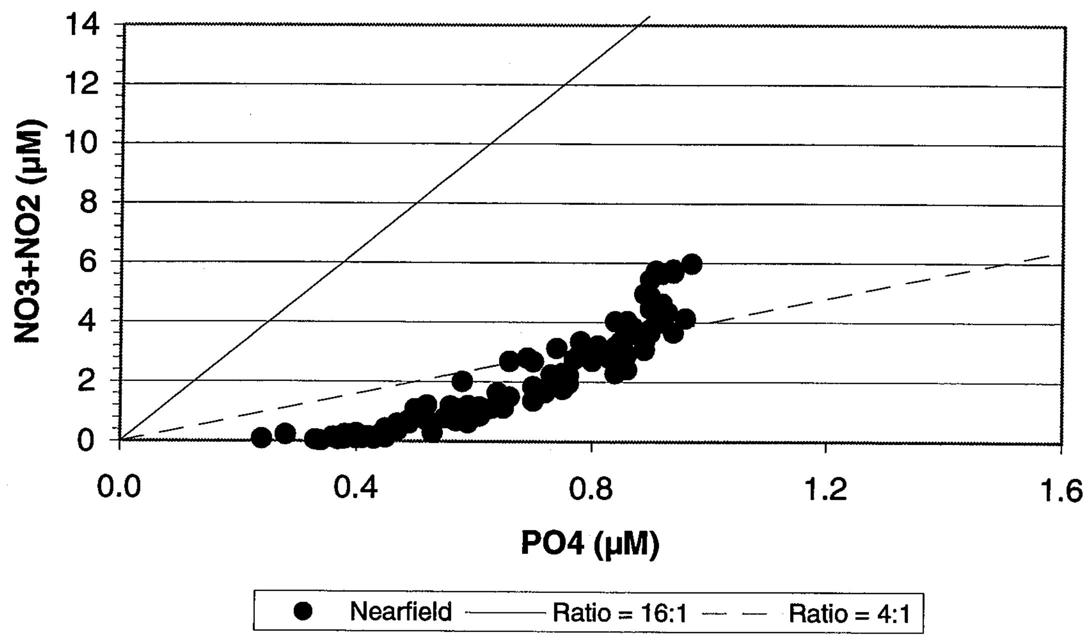
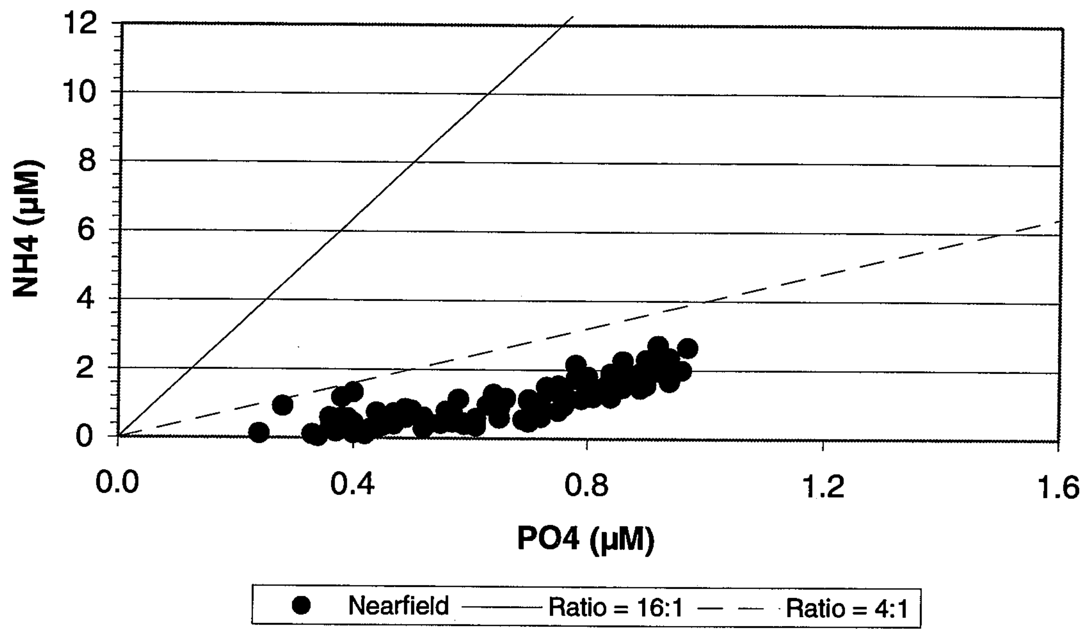


Figure D-110. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

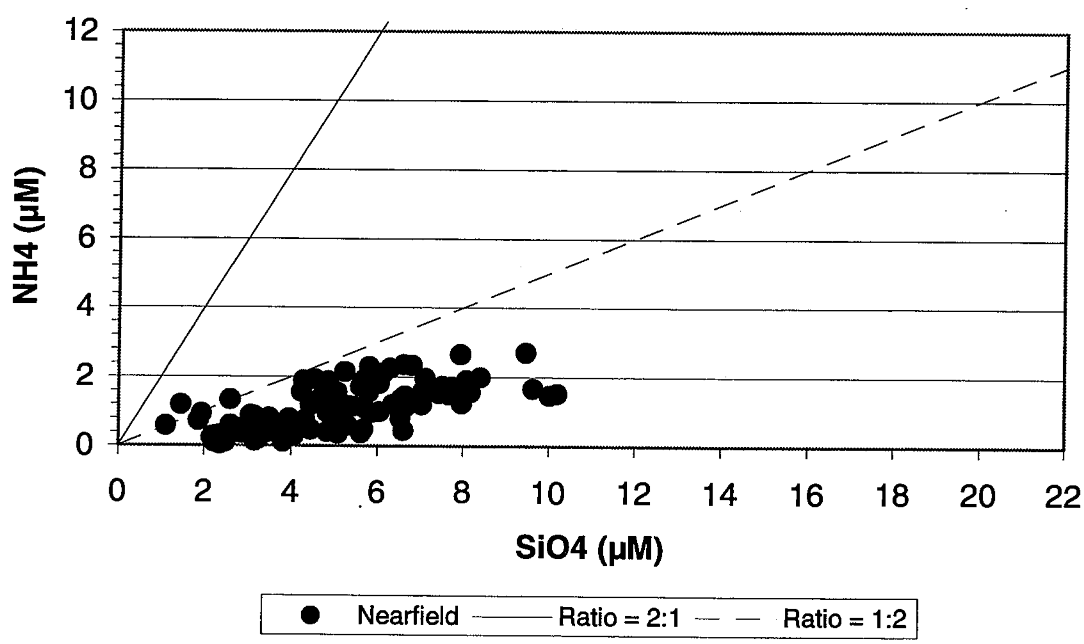
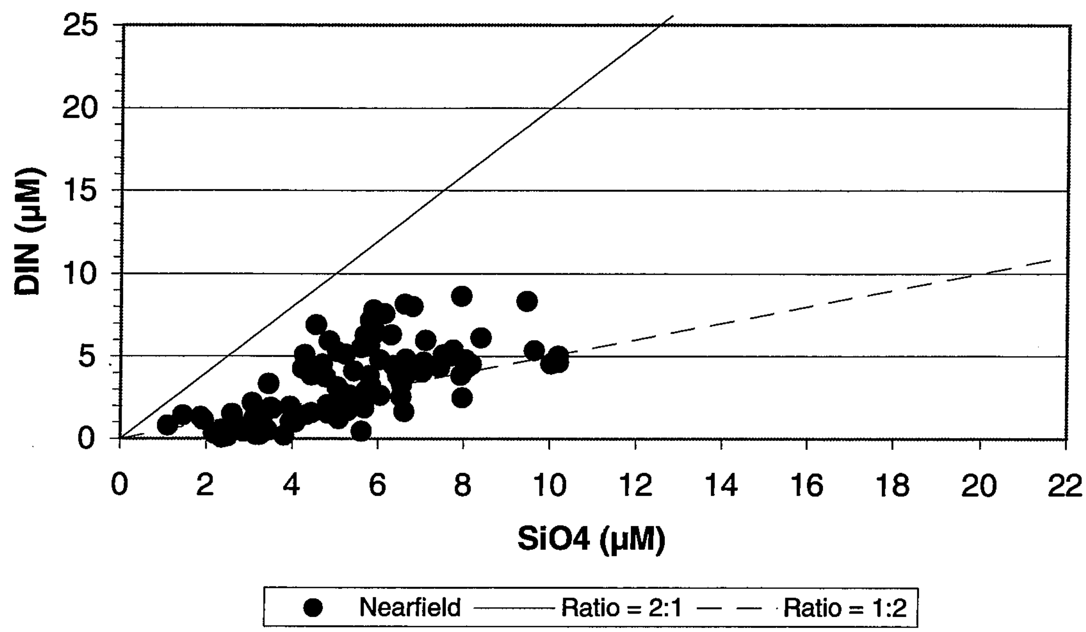


Figure D-111. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

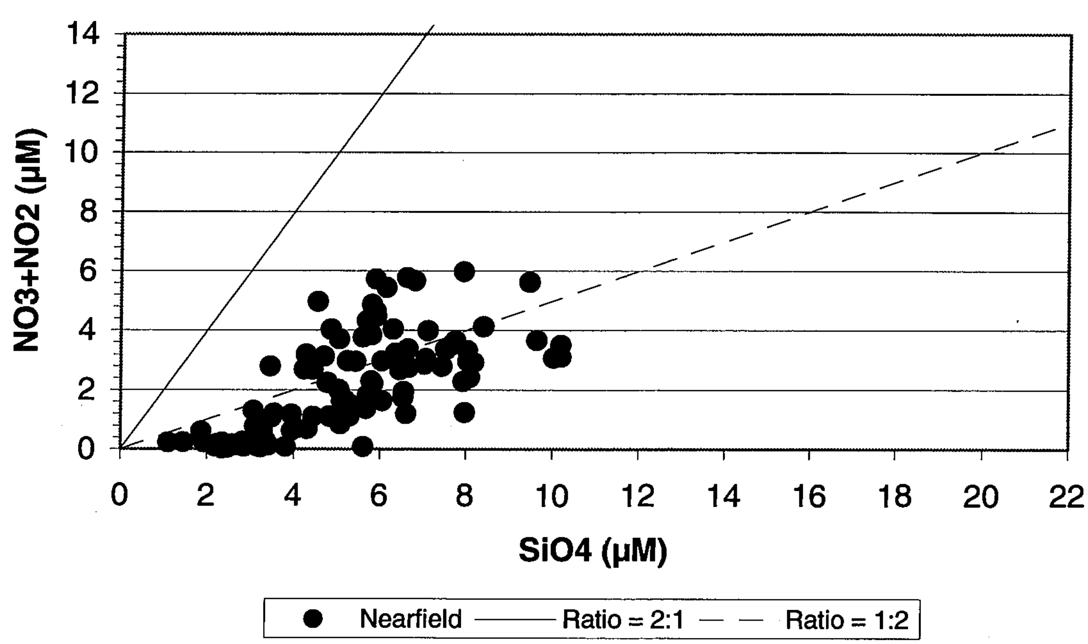
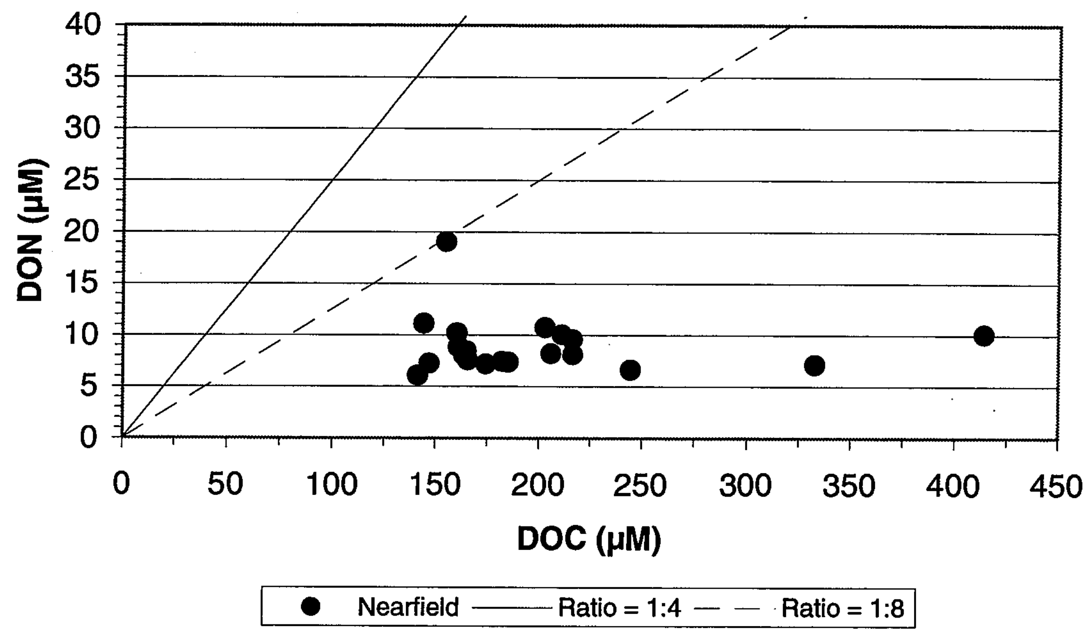


Figure D-112. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

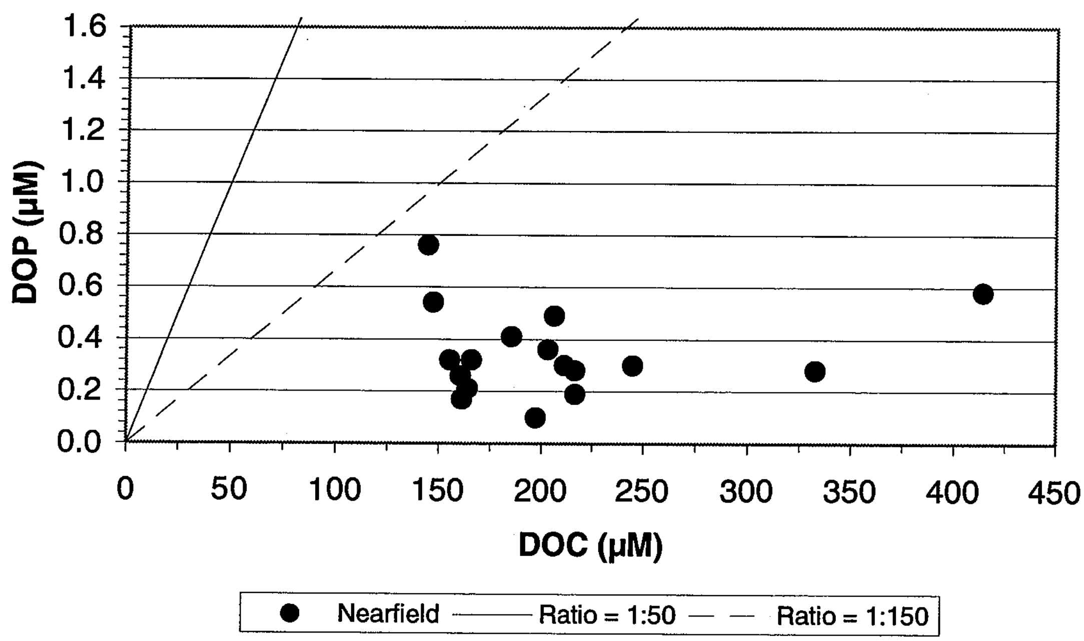
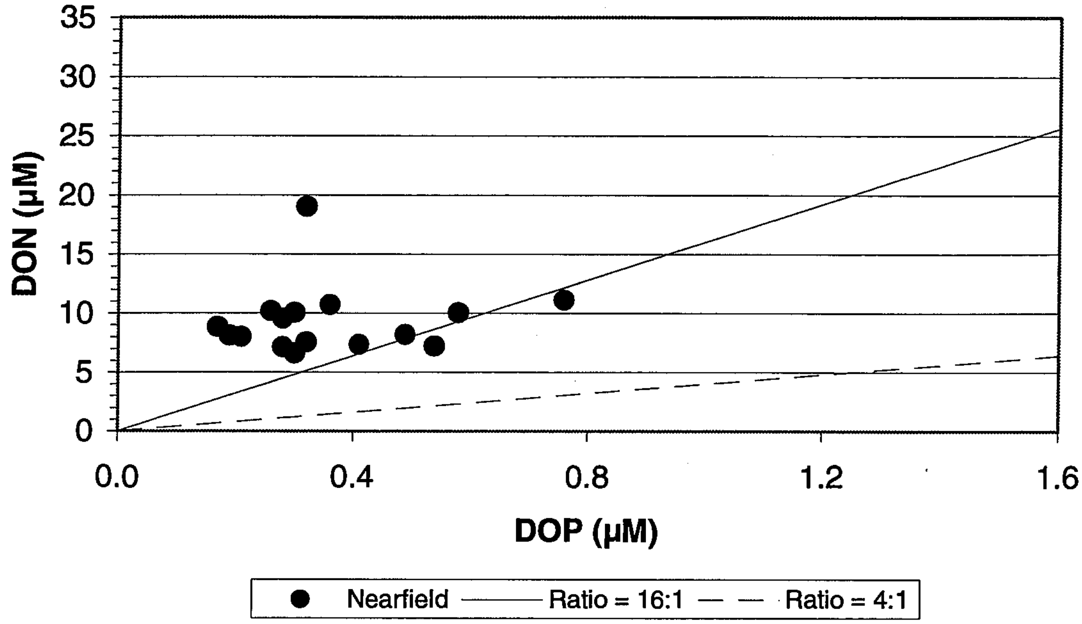


Figure D-113. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

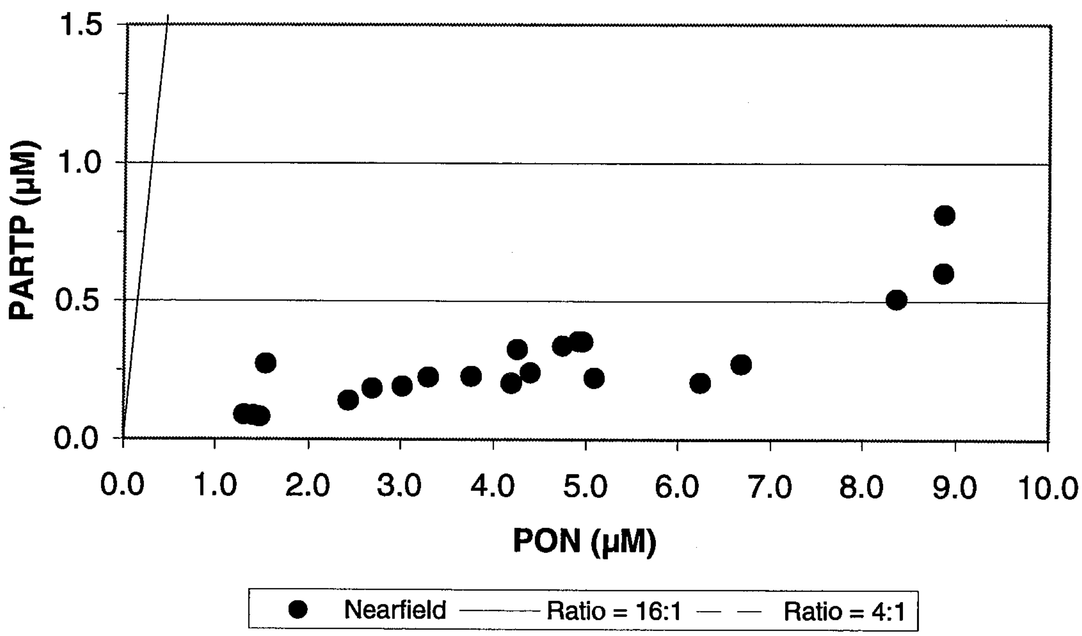


Figure D-114. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

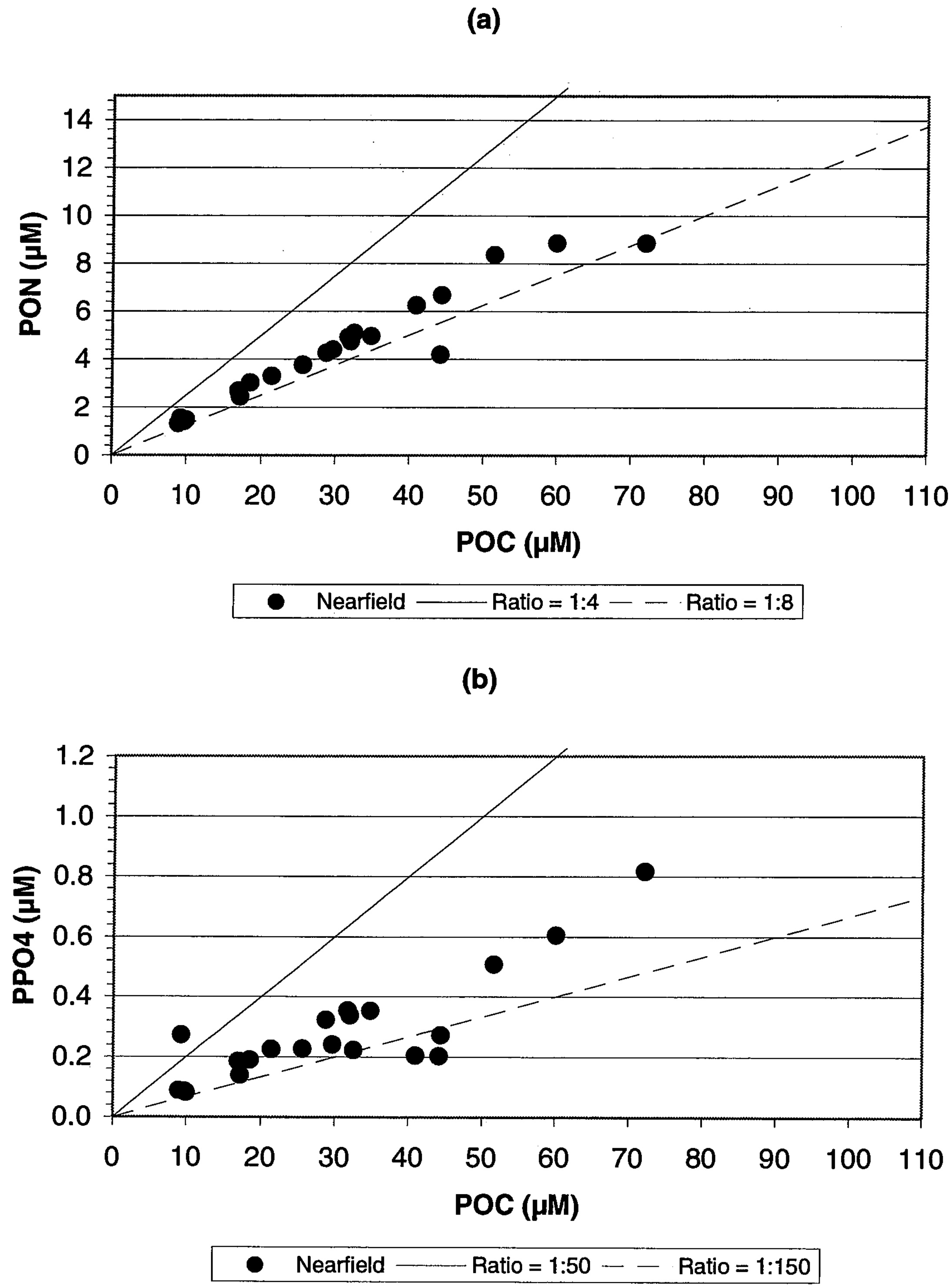
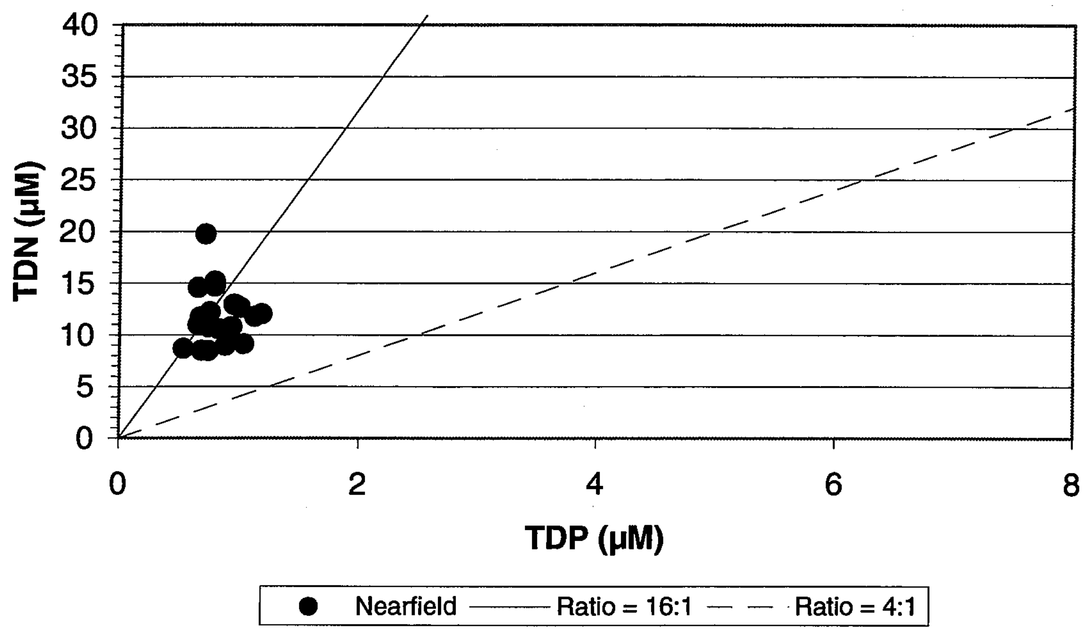


Figure D-115. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

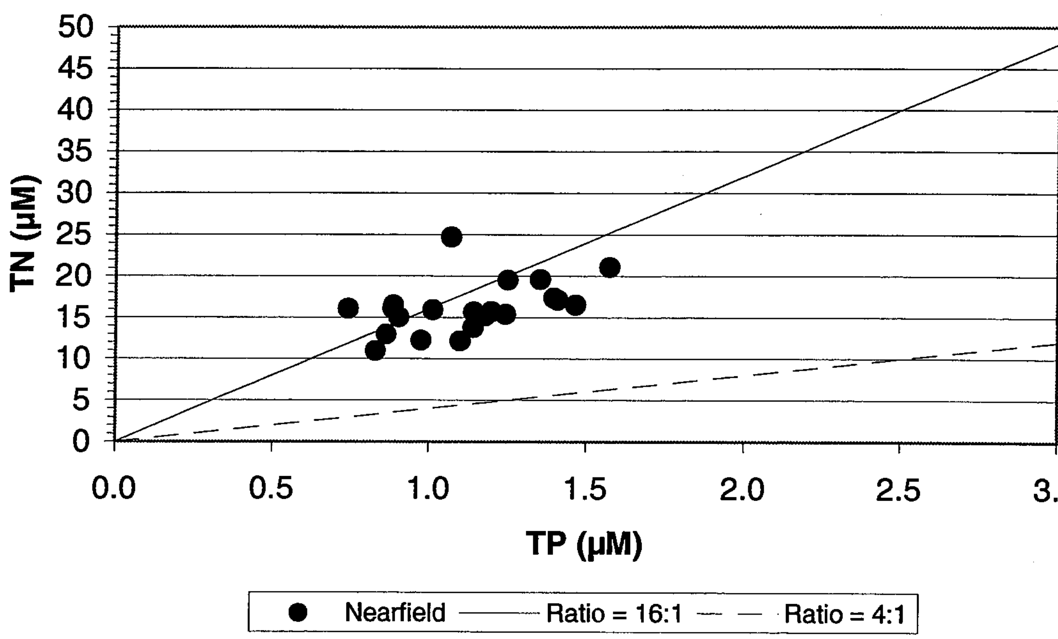
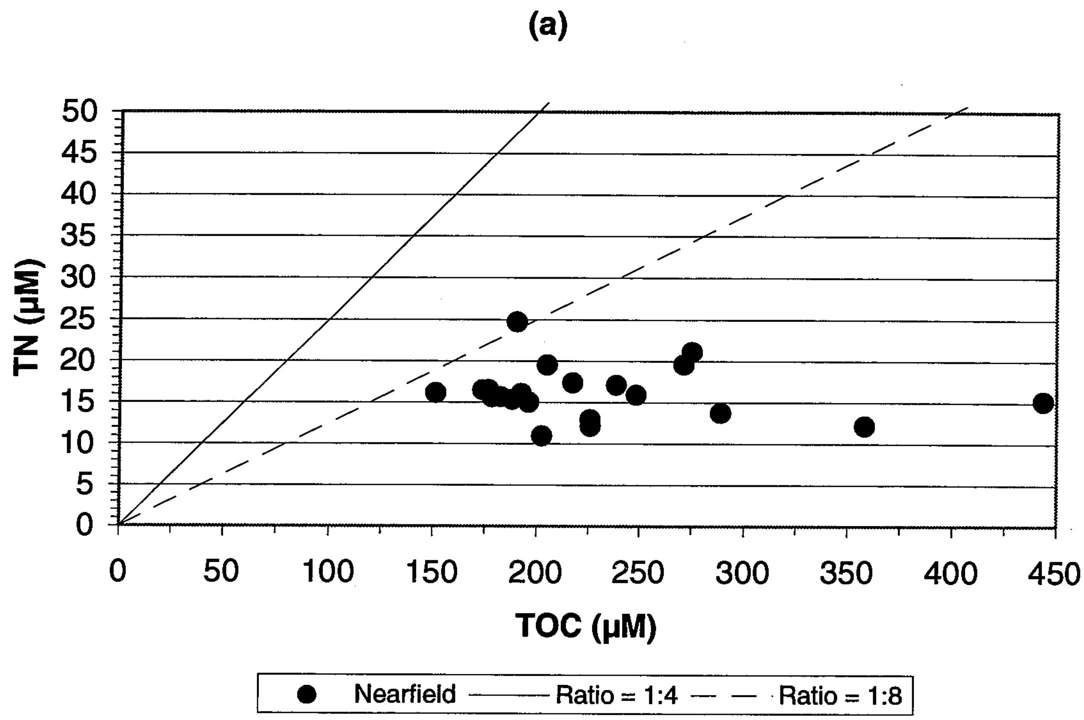


Figure D-116. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)



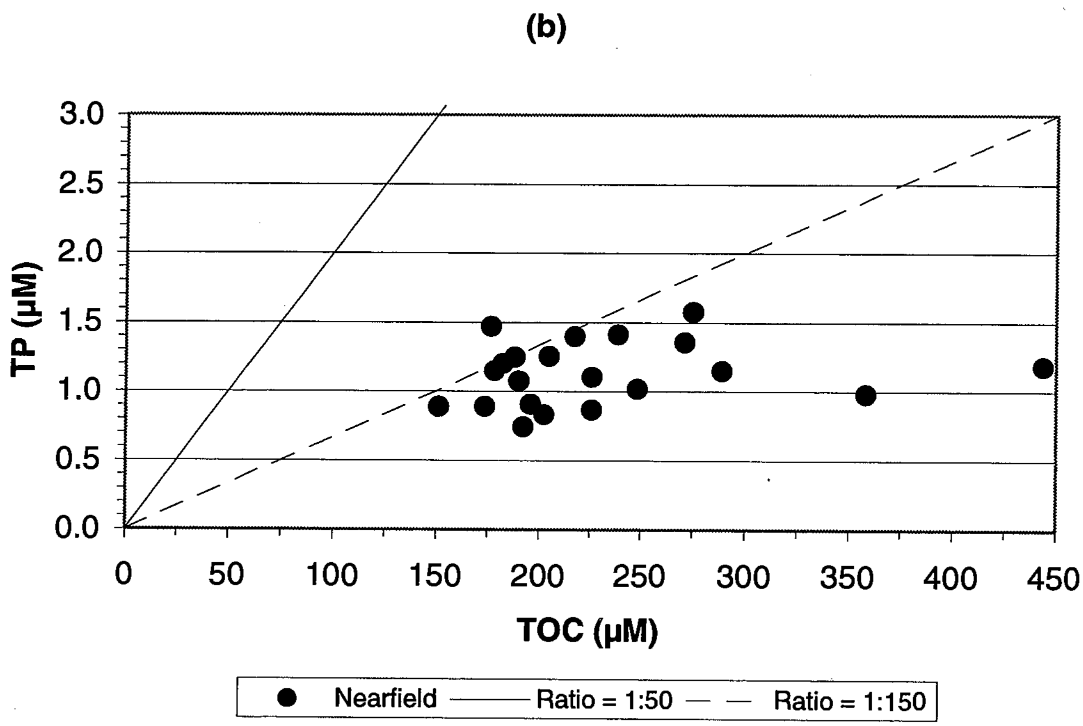


Figure D-117. Nutrient vs. Nutrient Plots for Nearfield Survey WN998, (Jul 99)

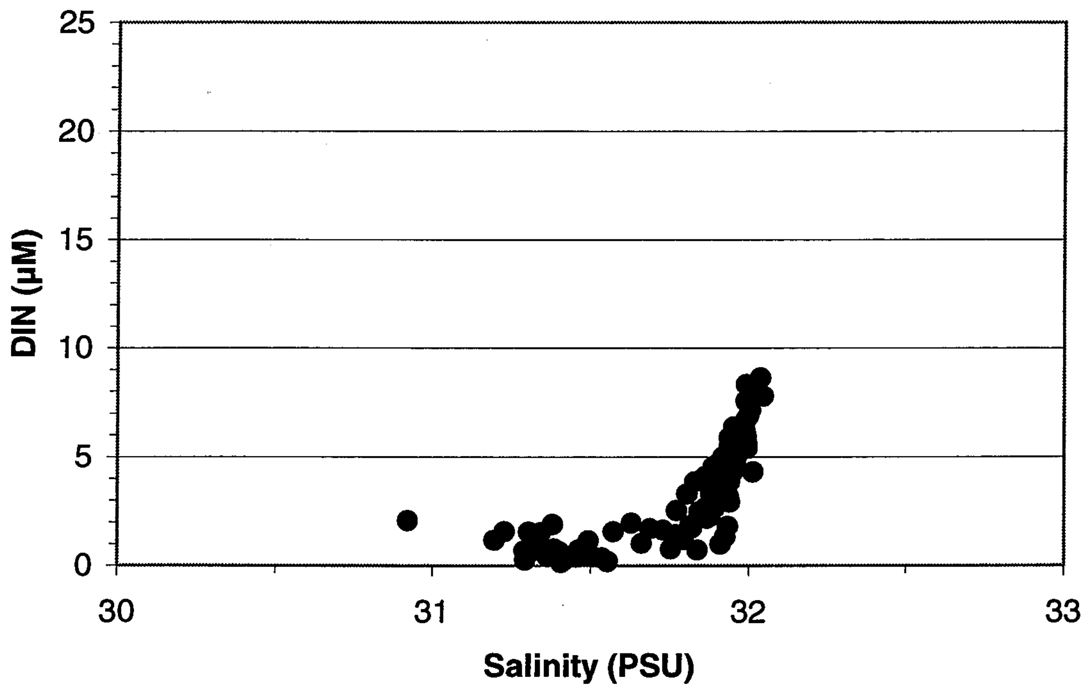
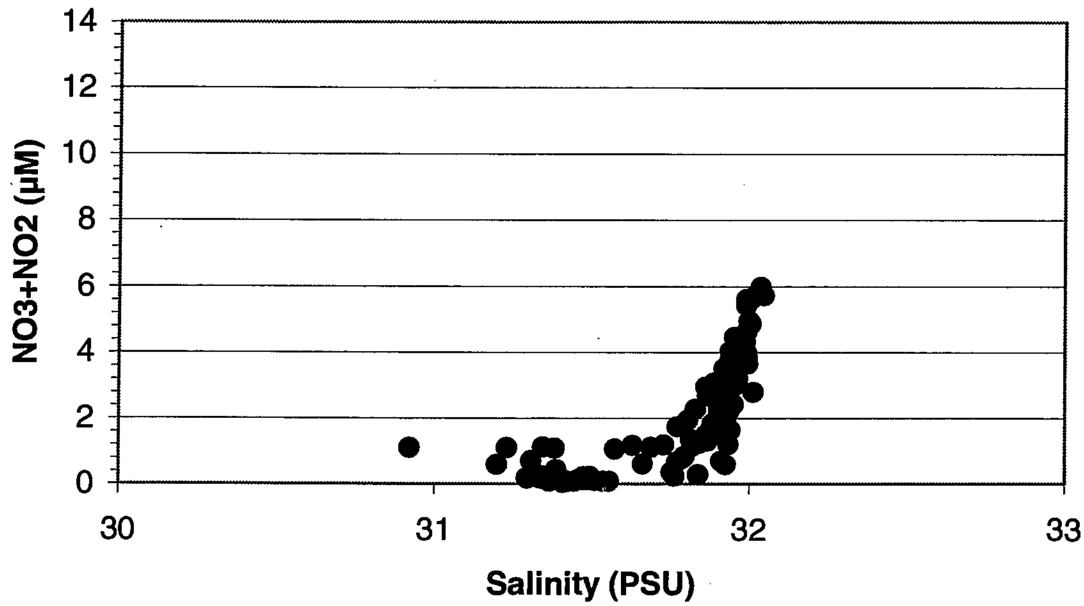


Figure D-118. Nutrient vs. Salinity Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

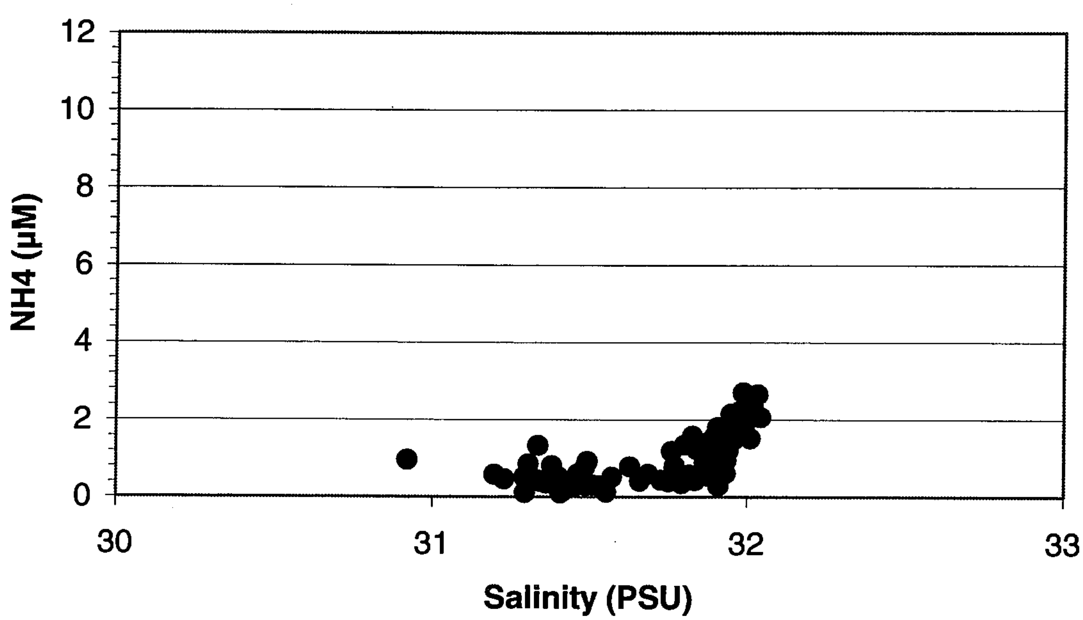
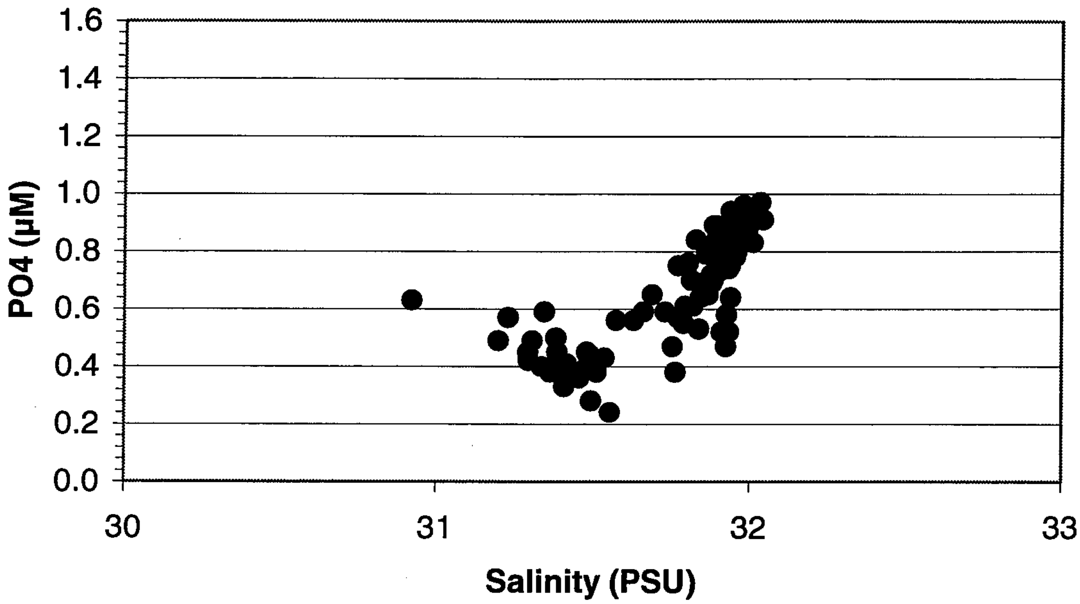


Figure D-119. Nutrient vs. Salinity Plots for Nearfield Survey WN998, (Jul 99)

(a)



(b)

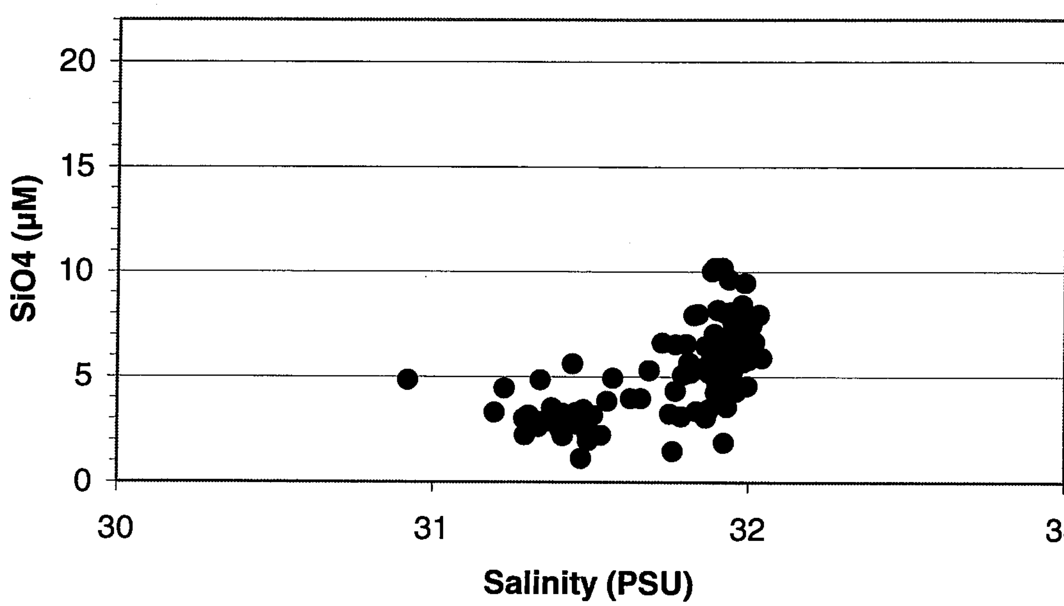


Figure D-120. Nutrient vs. Salinity Plots for Nearfield Survey WN998, (Jul 99)

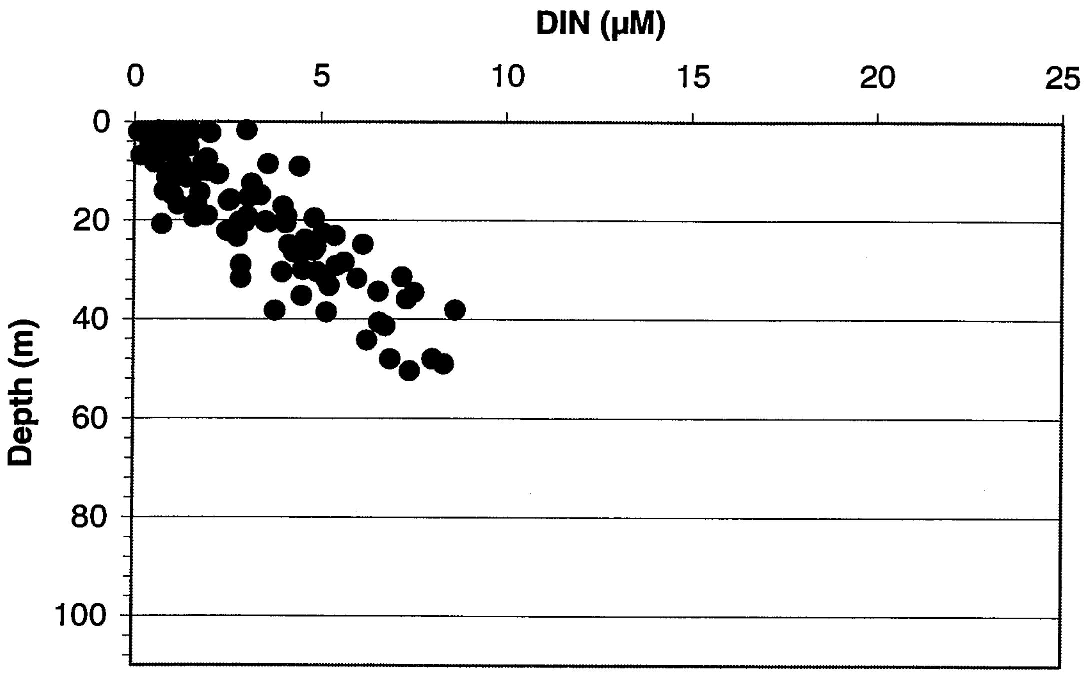
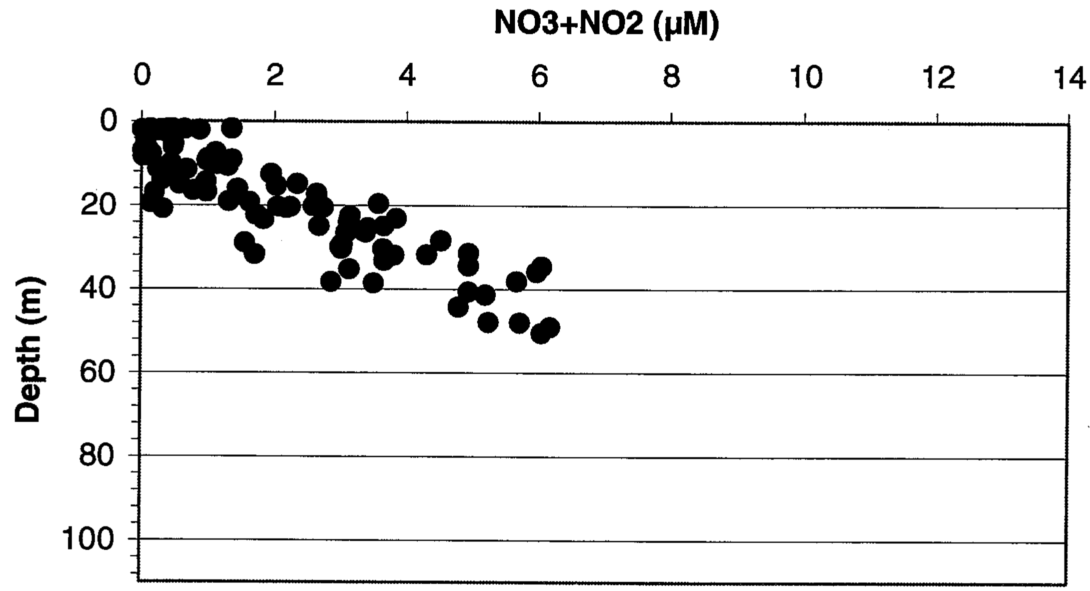


Figure D-121. Depth vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

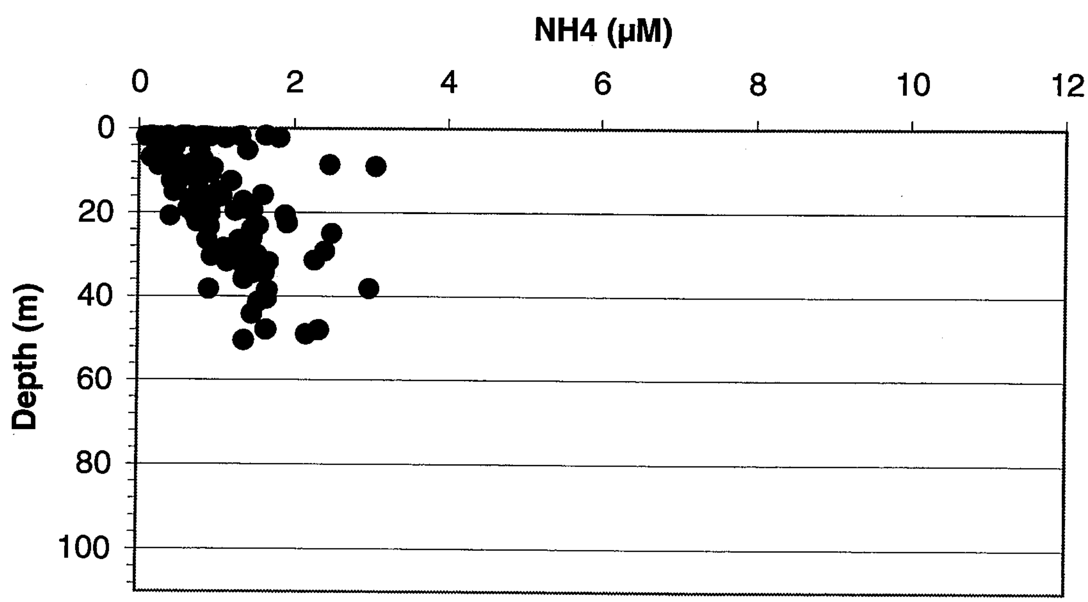
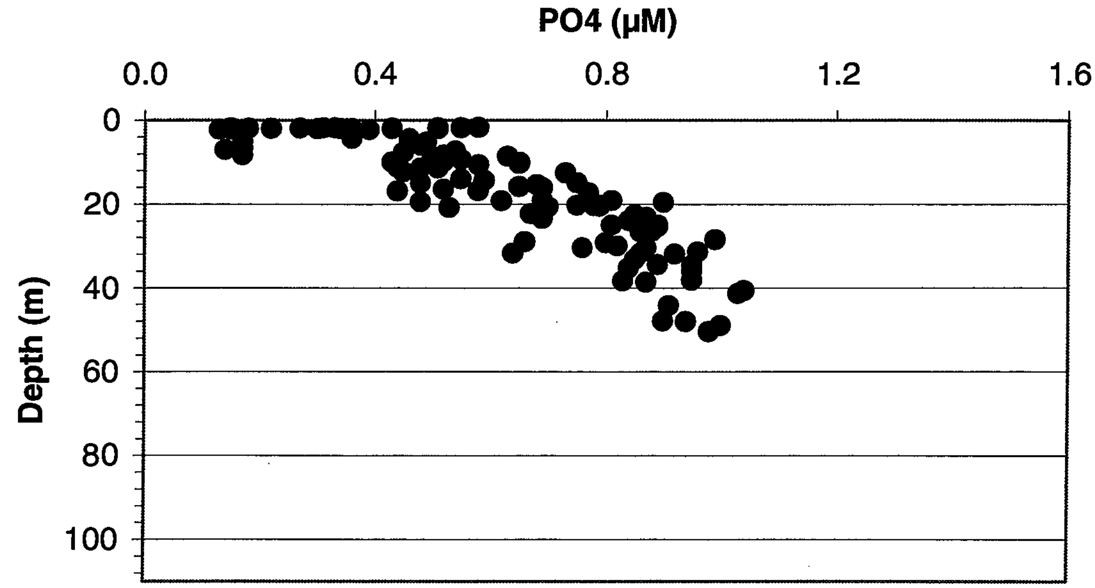


Figure D-122. Depth vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

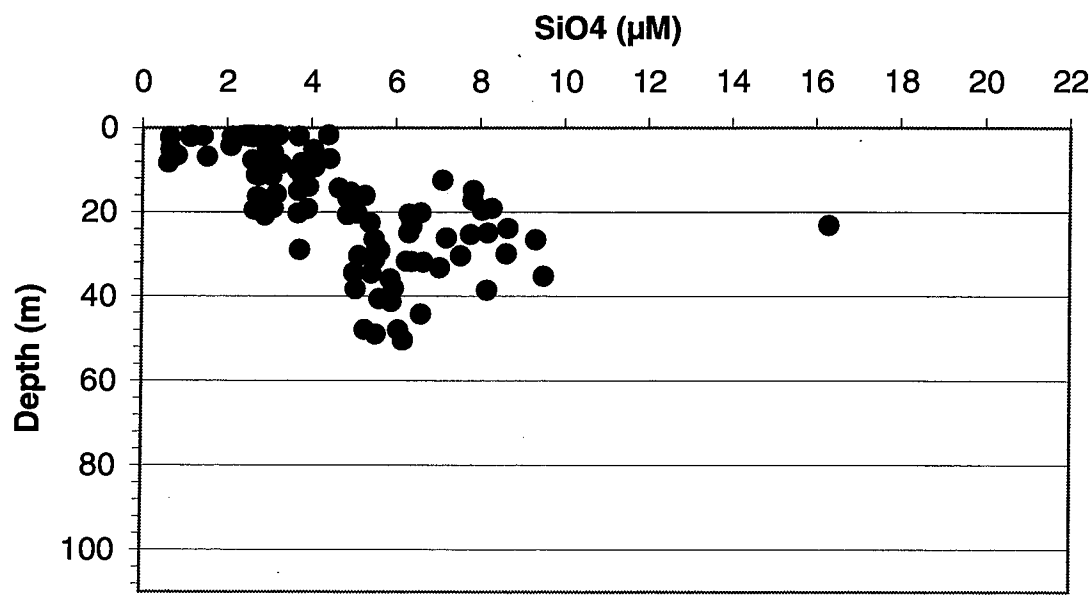
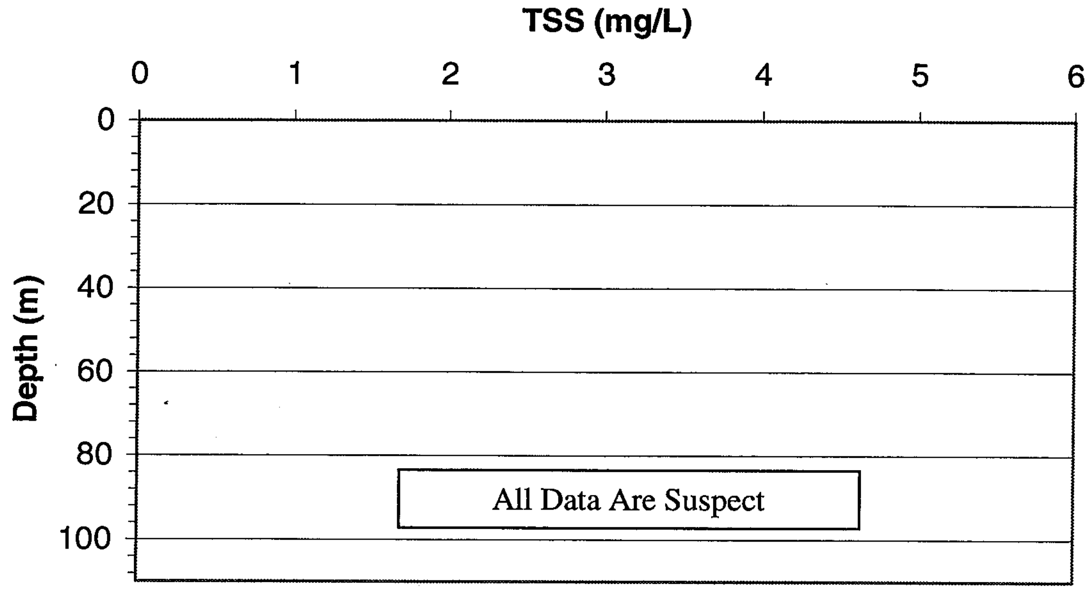


Figure D-123. Depth vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

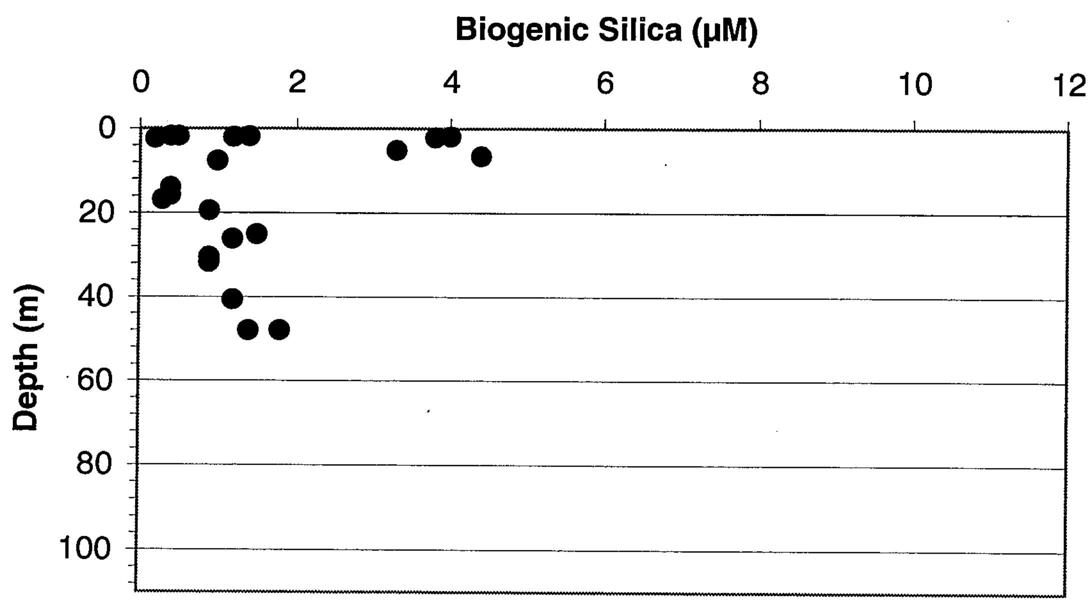
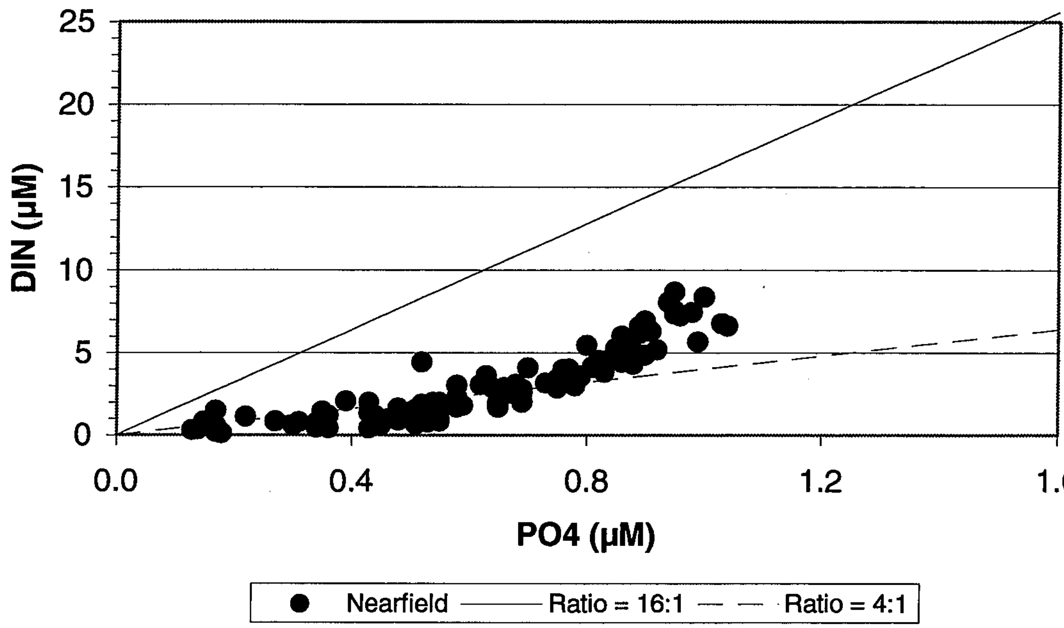


Figure D-124. Depth vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

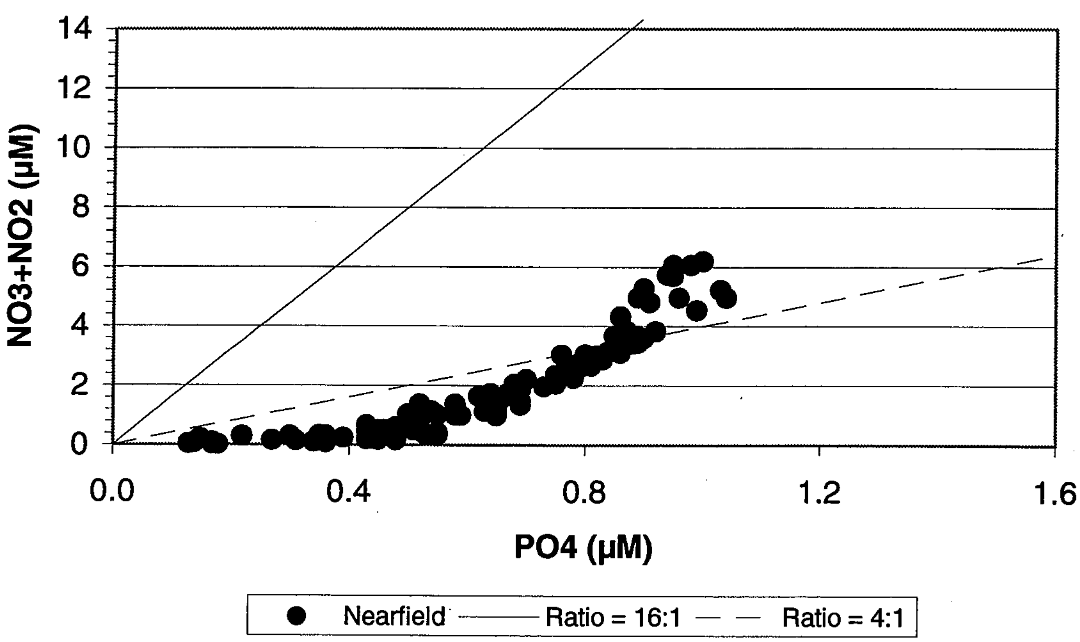
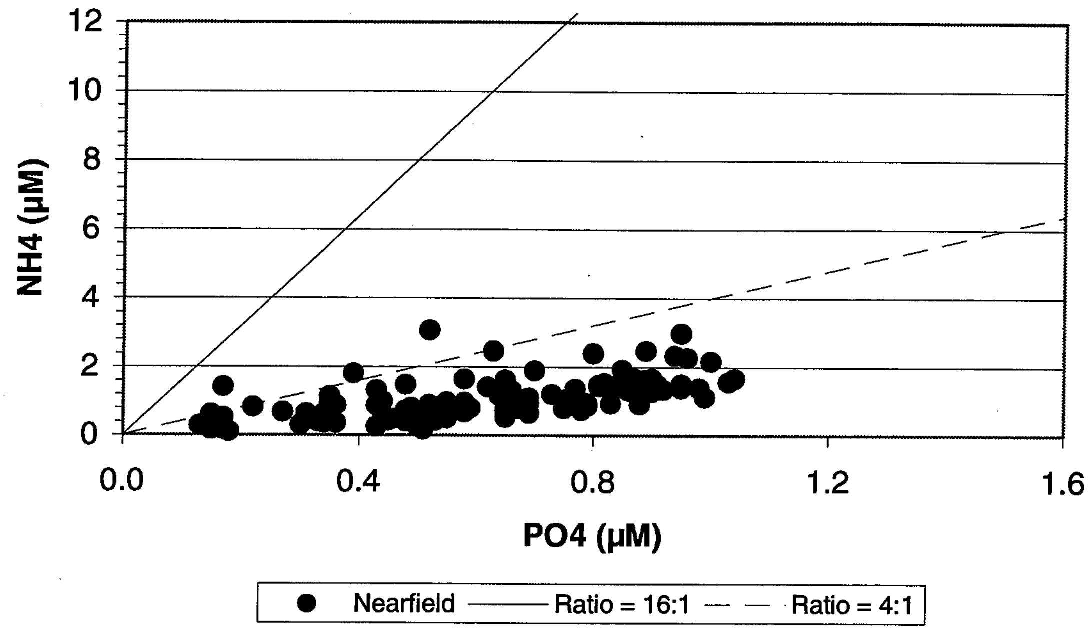


Figure D-125. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

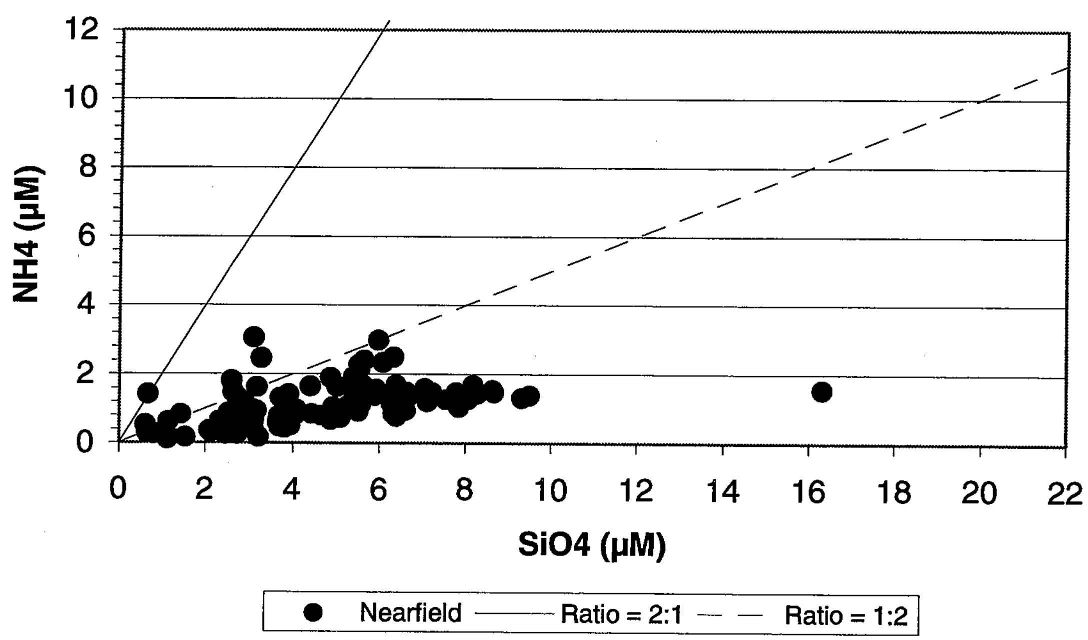
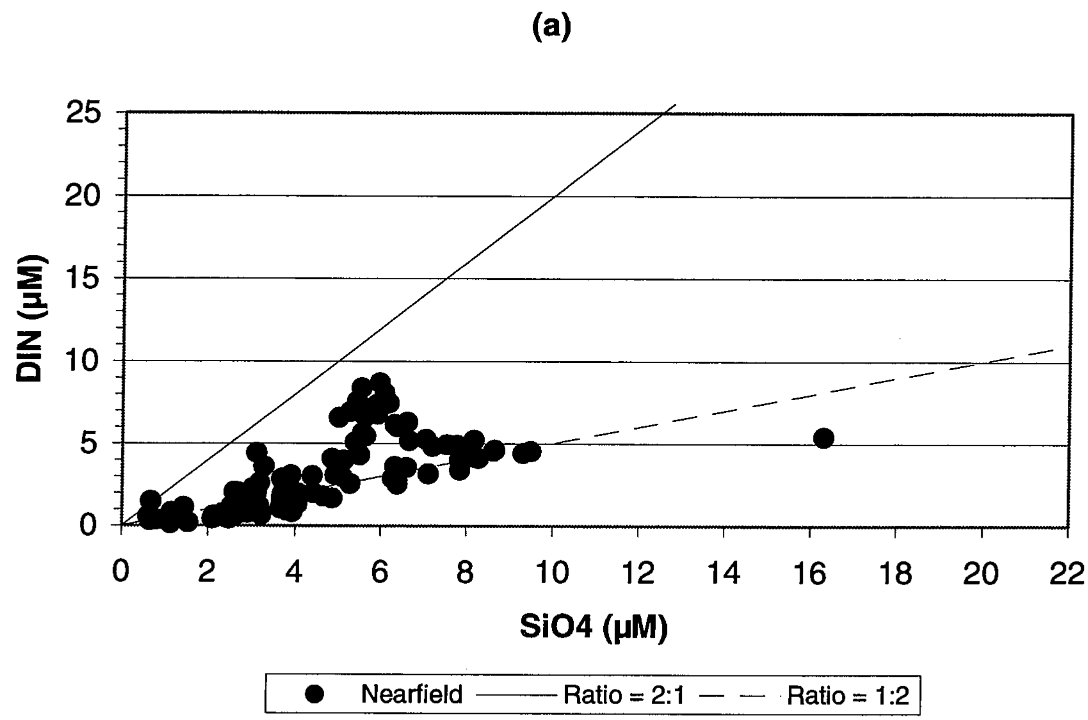


Figure D-126. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)



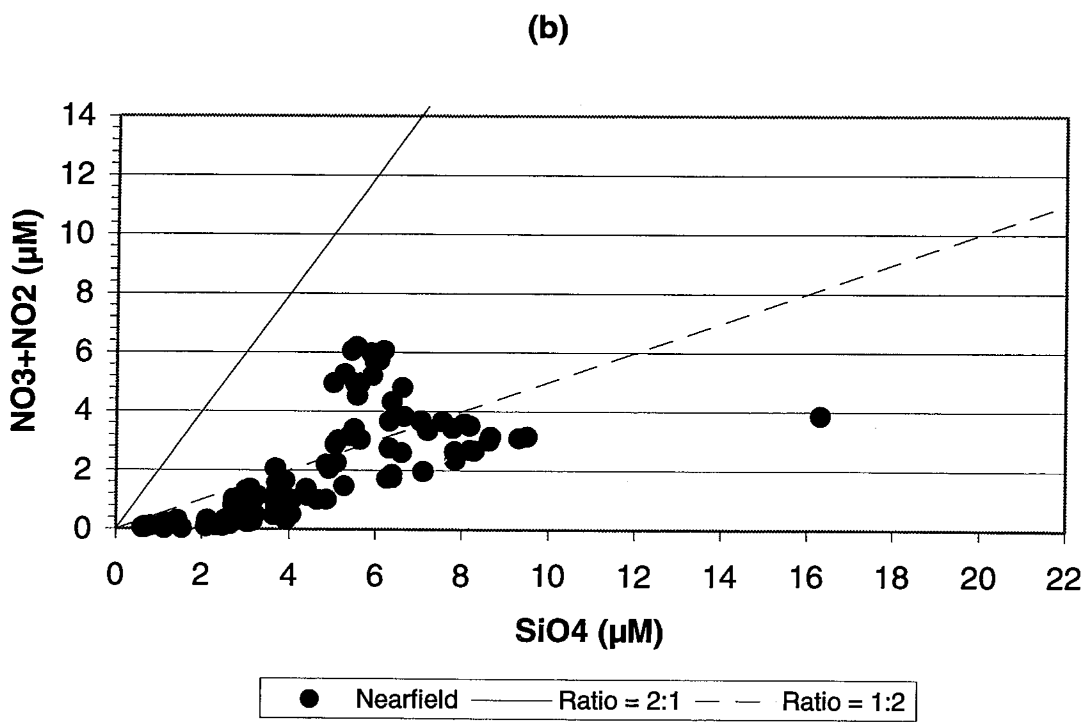
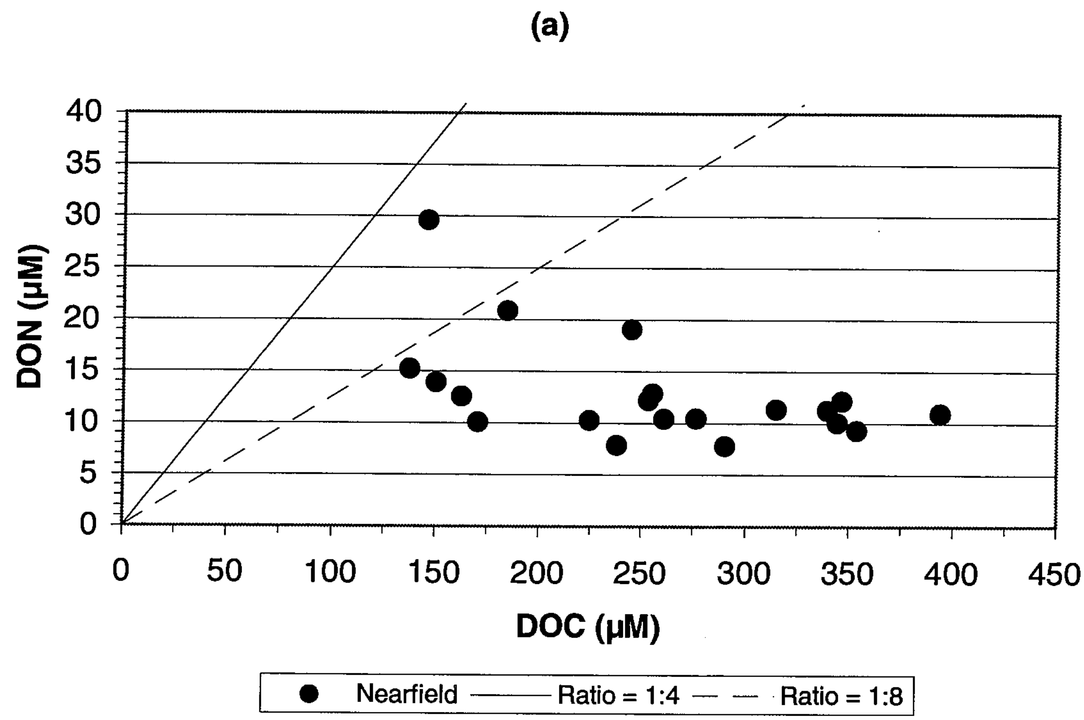


Figure D-127. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)



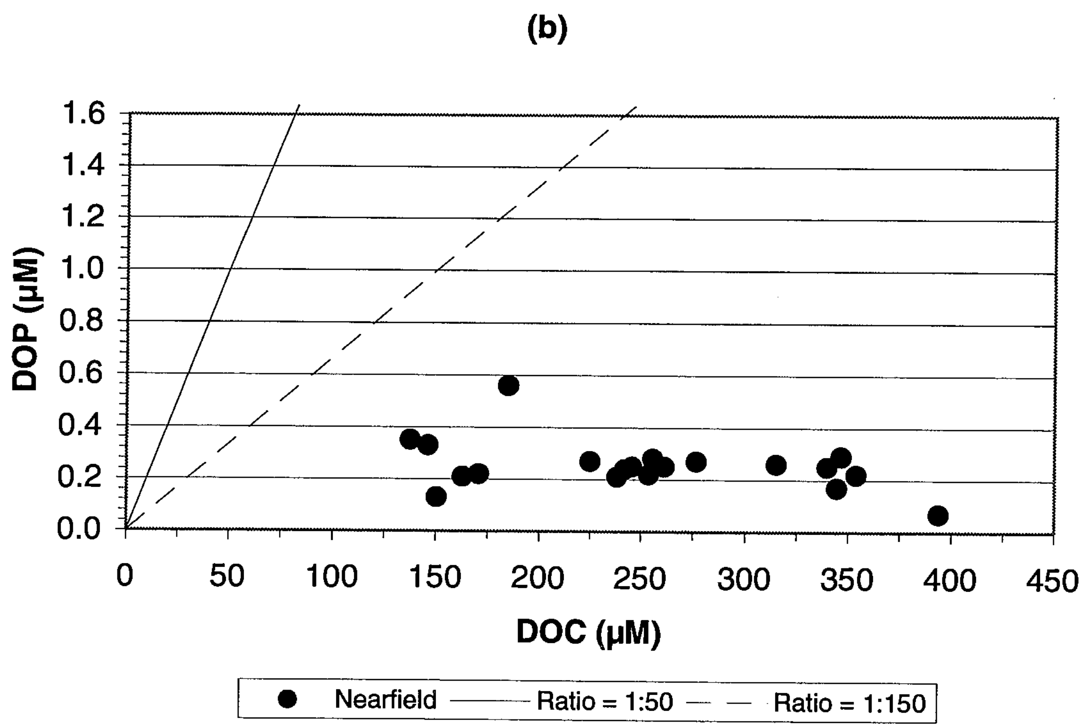
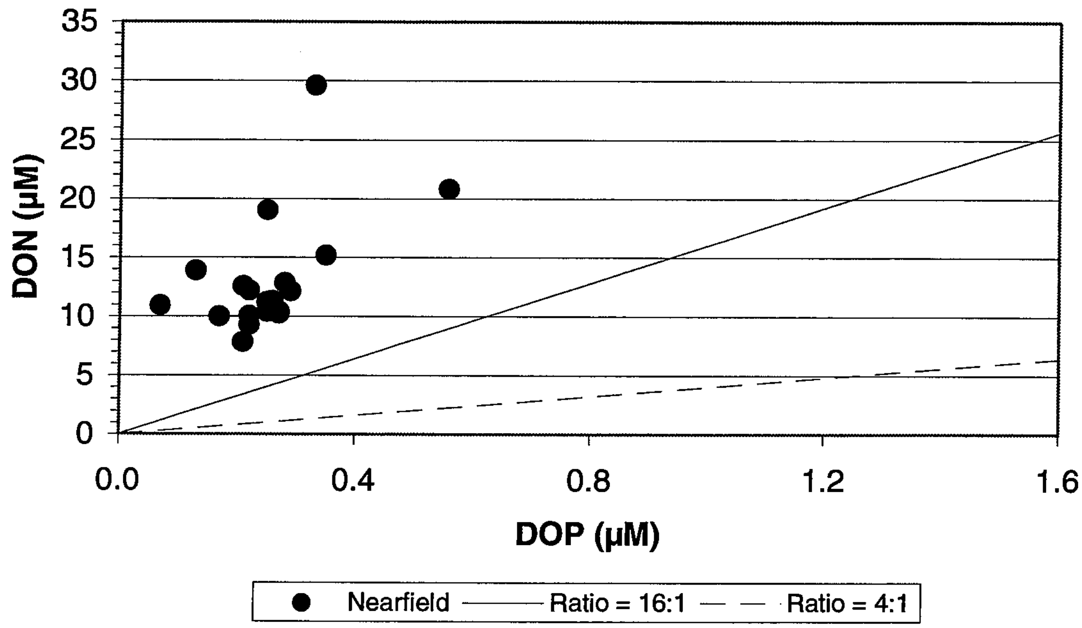


Figure D-128. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

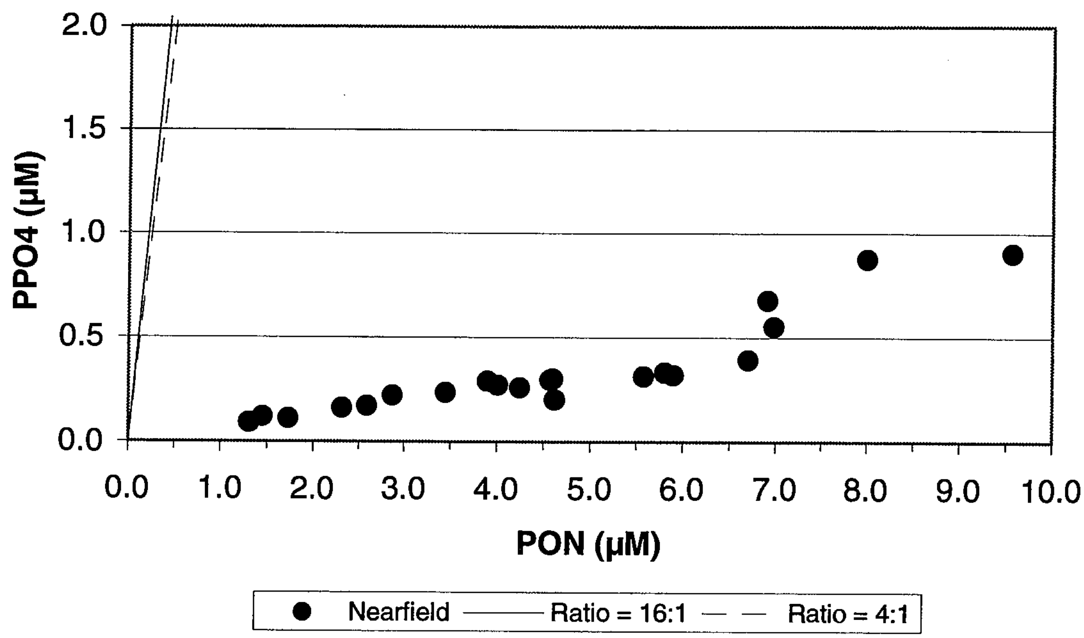
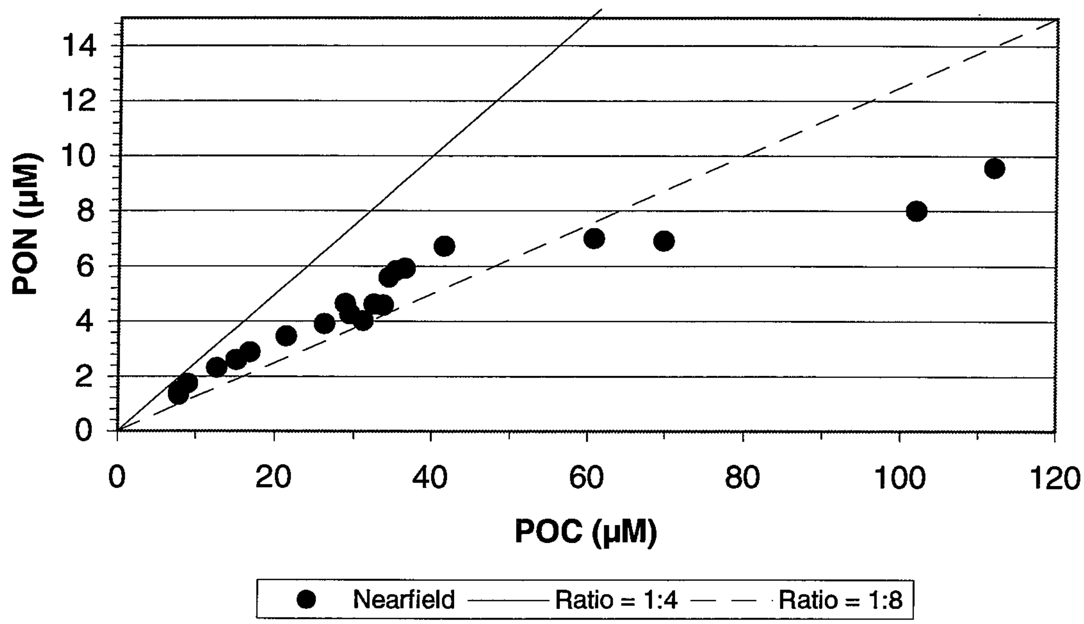


Figure D-129. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

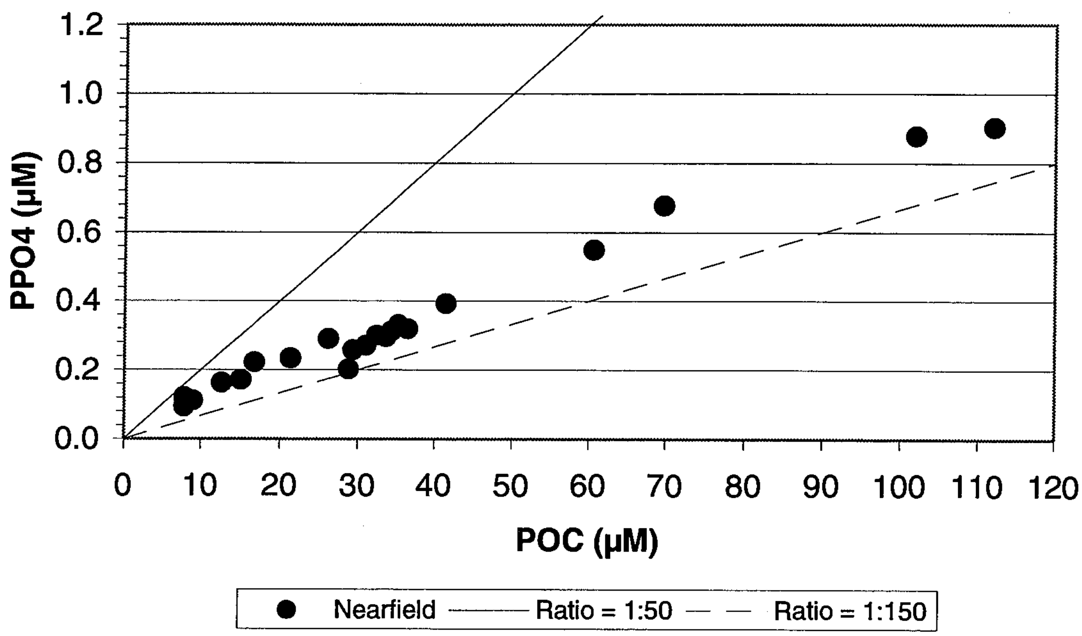
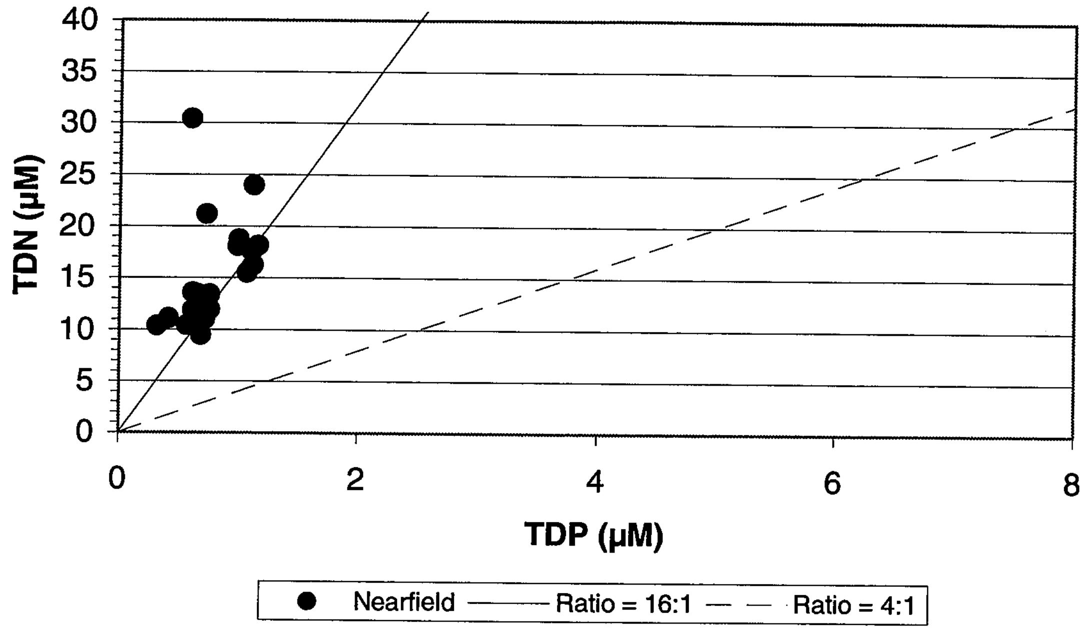


Figure D-130. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

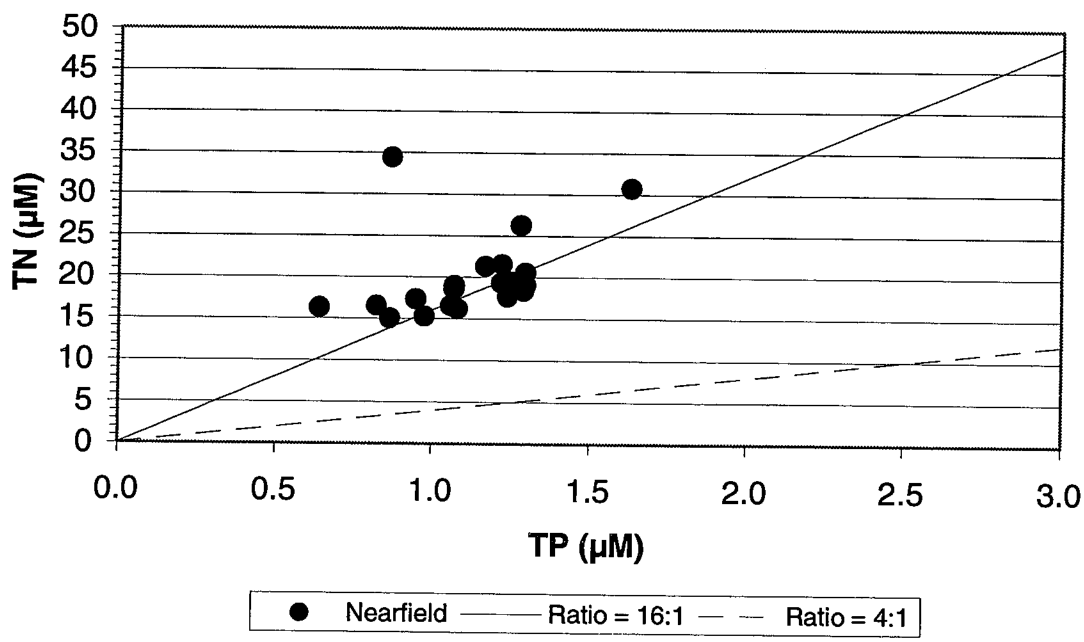
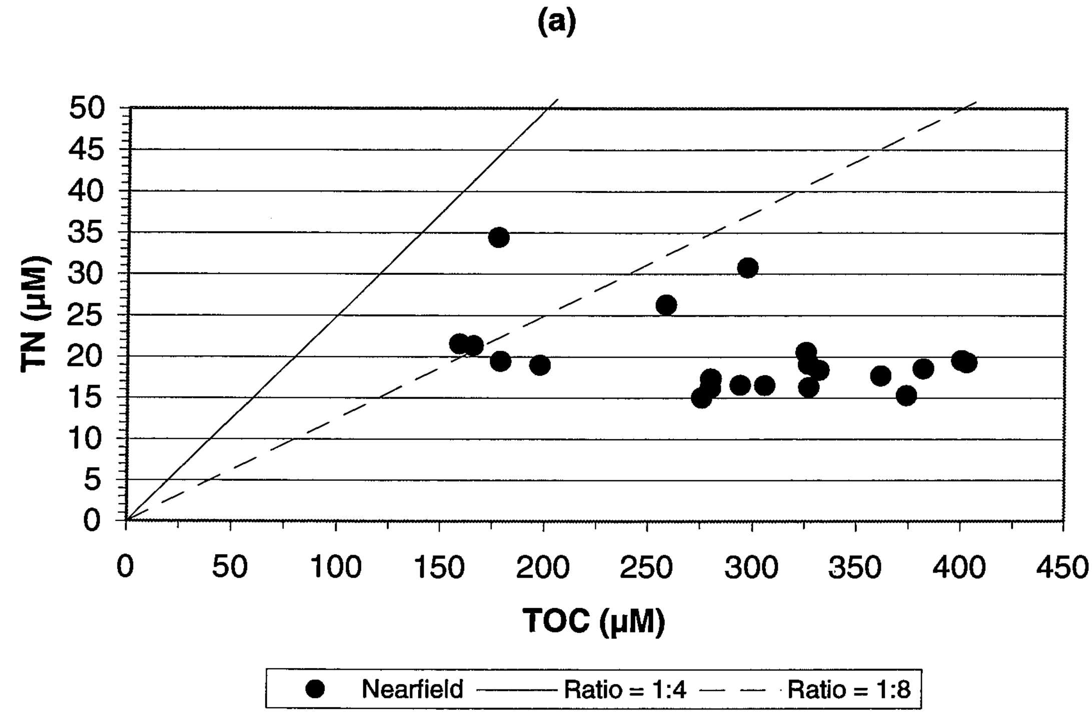


Figure D-131. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)



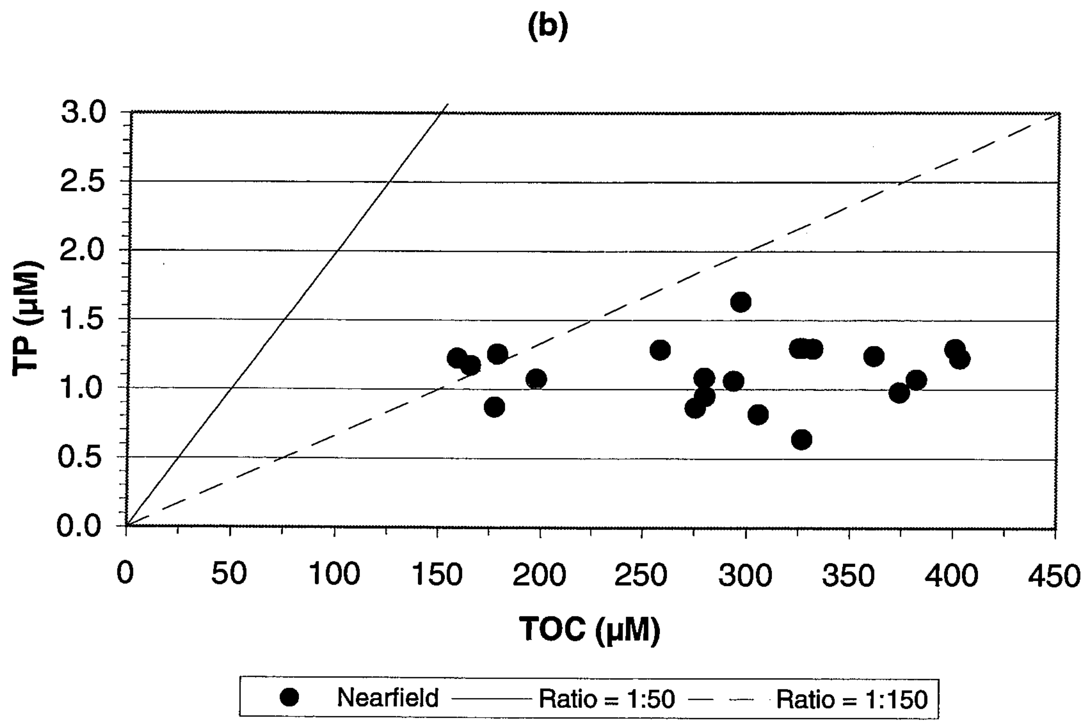


Figure D-132. Nutrient vs. Nutrient Plots for Nearfield Survey WN999, (Jul 99)

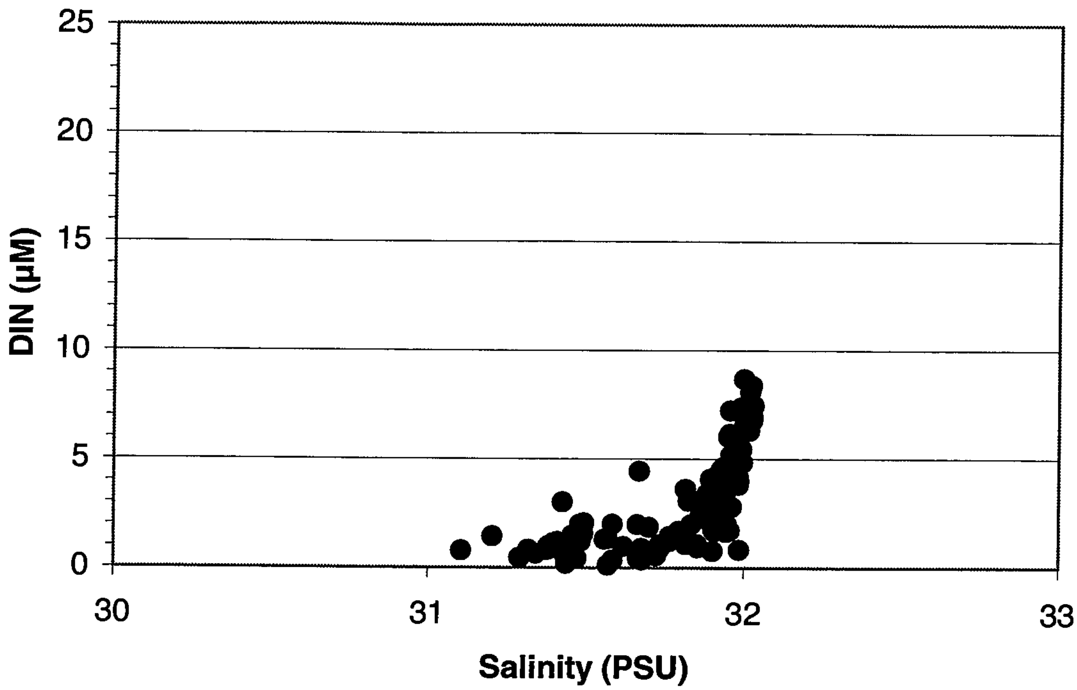
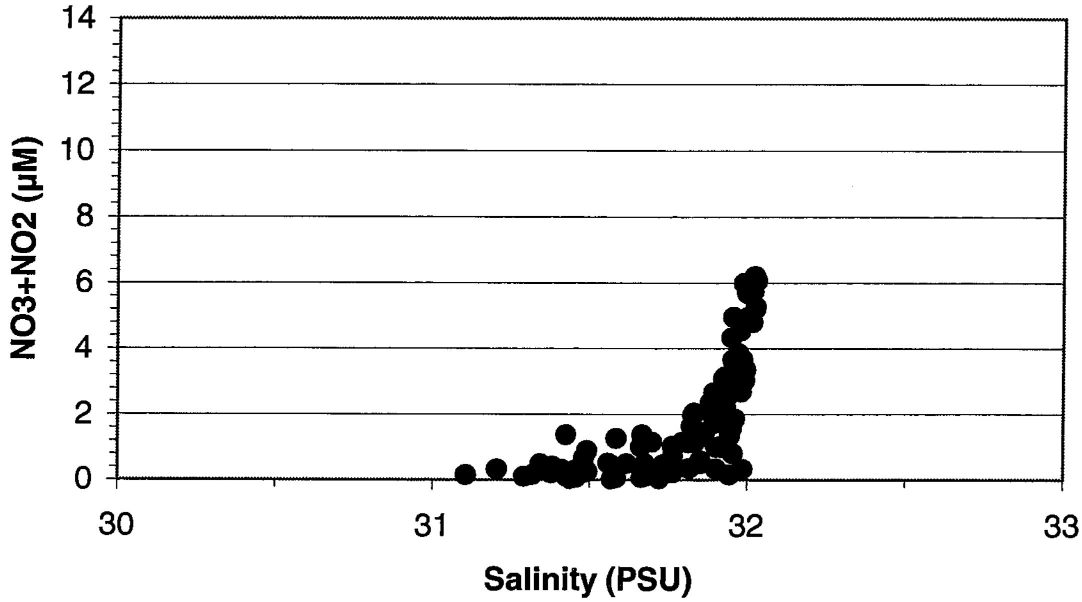


Figure D-133. Nutrient vs. Salinity Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

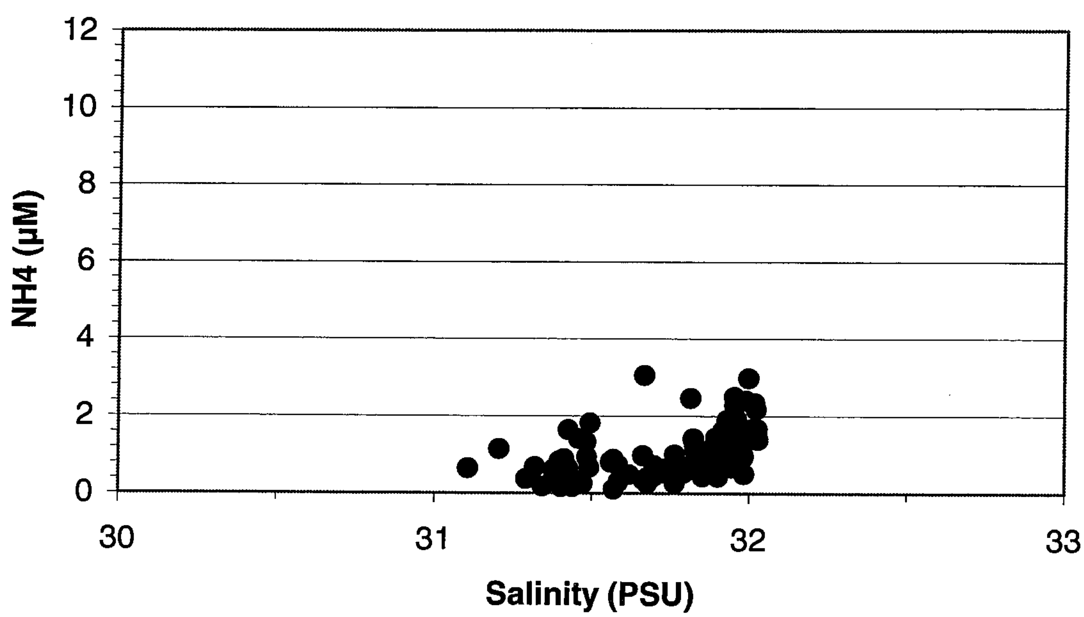
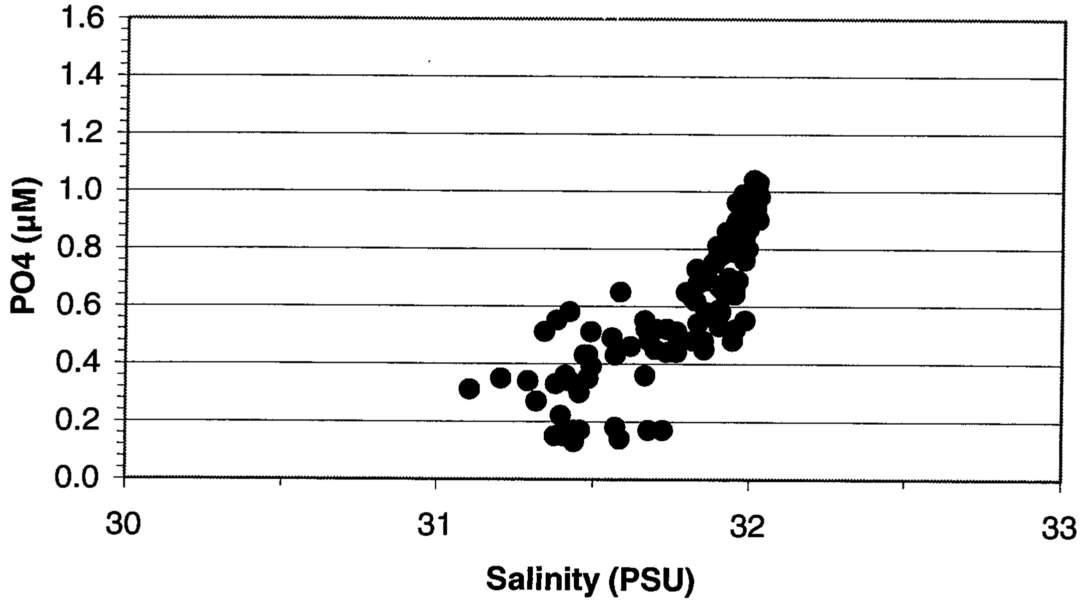


Figure D-134. Nutrient vs. Salinity Plots for Nearfield Survey WN999, (Jul 99)

(a)



(b)

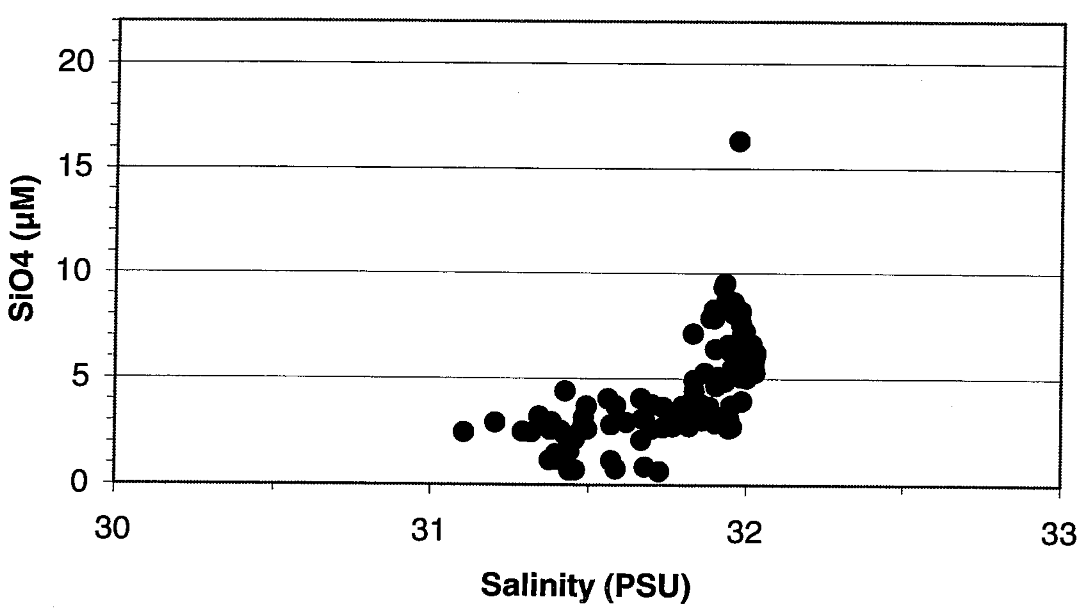


Figure D-135. Nutrient vs. Salinity Plots for Nearfield Survey WN999, (Jul 99)

APPENDIX E

Photosynthesis-Irradiance (P-I) Curves

Photosynthesis-Irradiance (P-I) Curves

Productivity (Prod, mg C m^{-3} hr^{-1}) versus irradiance (Light, μE m^{-2} sec^{-1}) curves for the period 7 February to 20 July 1999. Comprehensive data are presented for each cruise by station (N04, N18, and F23) and by depth (surface, mid-surface, middle, mid-bottom and bottom). Productivity calculations (Appendix A) utilized light attenuation data from a CTD-mounted 4-π sensor and incident light time-series data from a 2-π irradiance sensor located on Deer Island, MA. After collection of the productivity samples, they were transported to the Marine Ecosystems Research Laboratory (MERL) where they were incubated in temperature controlled incubators. Hourly productivity measurements were converted to daily values by fitting the measured hourly rates and light data to one of two P-I models (with or without photoinhibition). Using the fitted parameters, the measured incident light, and the light attenuation data, production rates were calculated for each 15-minute interval over the daylight period (centered from 6 AM to 6 PM), summed for each sampling depth, then integrated over depth to give areal production for each station.

WF991 **Station N04**

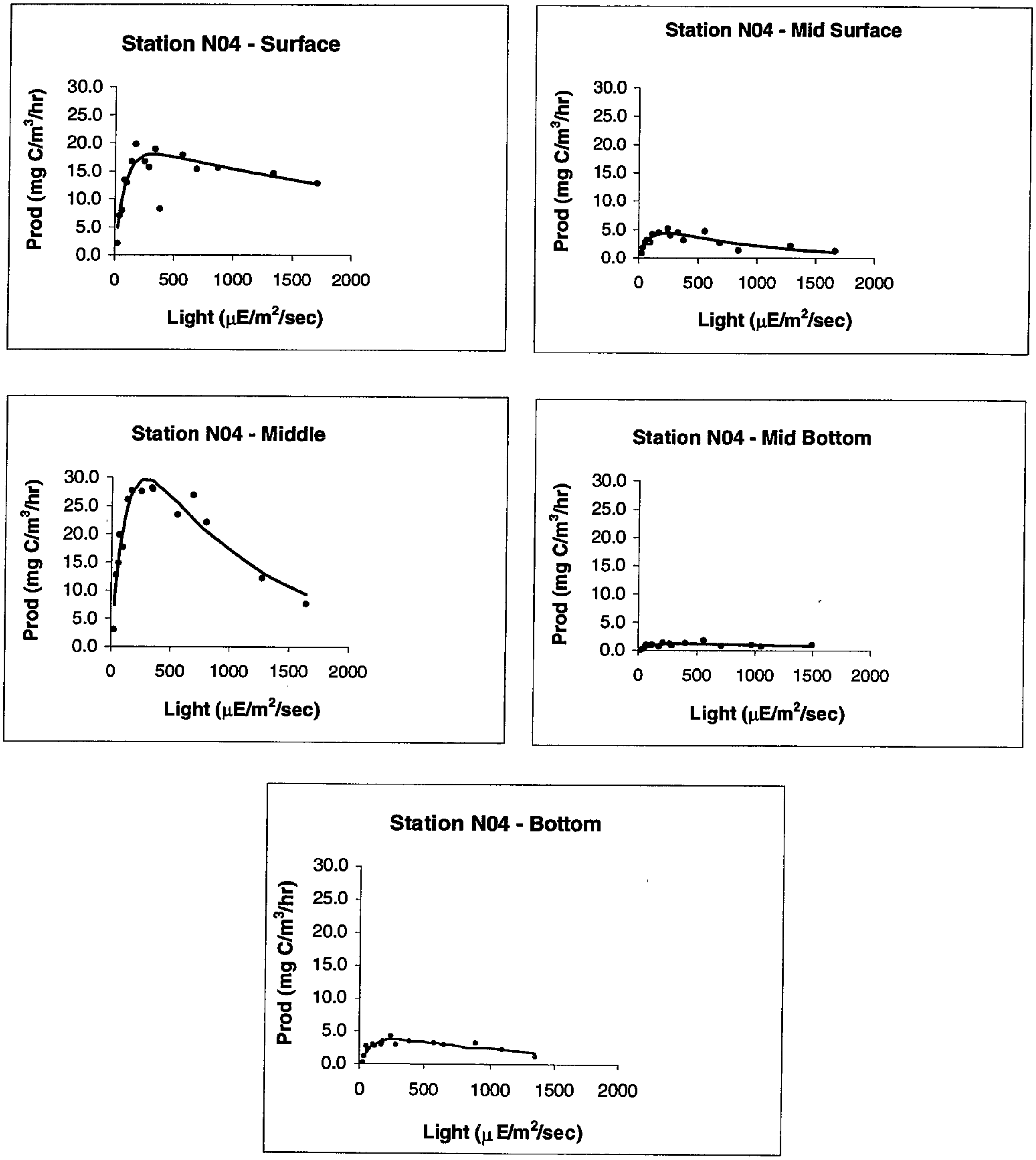


Figure E-1. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Farfield Survey WF991 (Feb 99)

WF991 **Station N18**

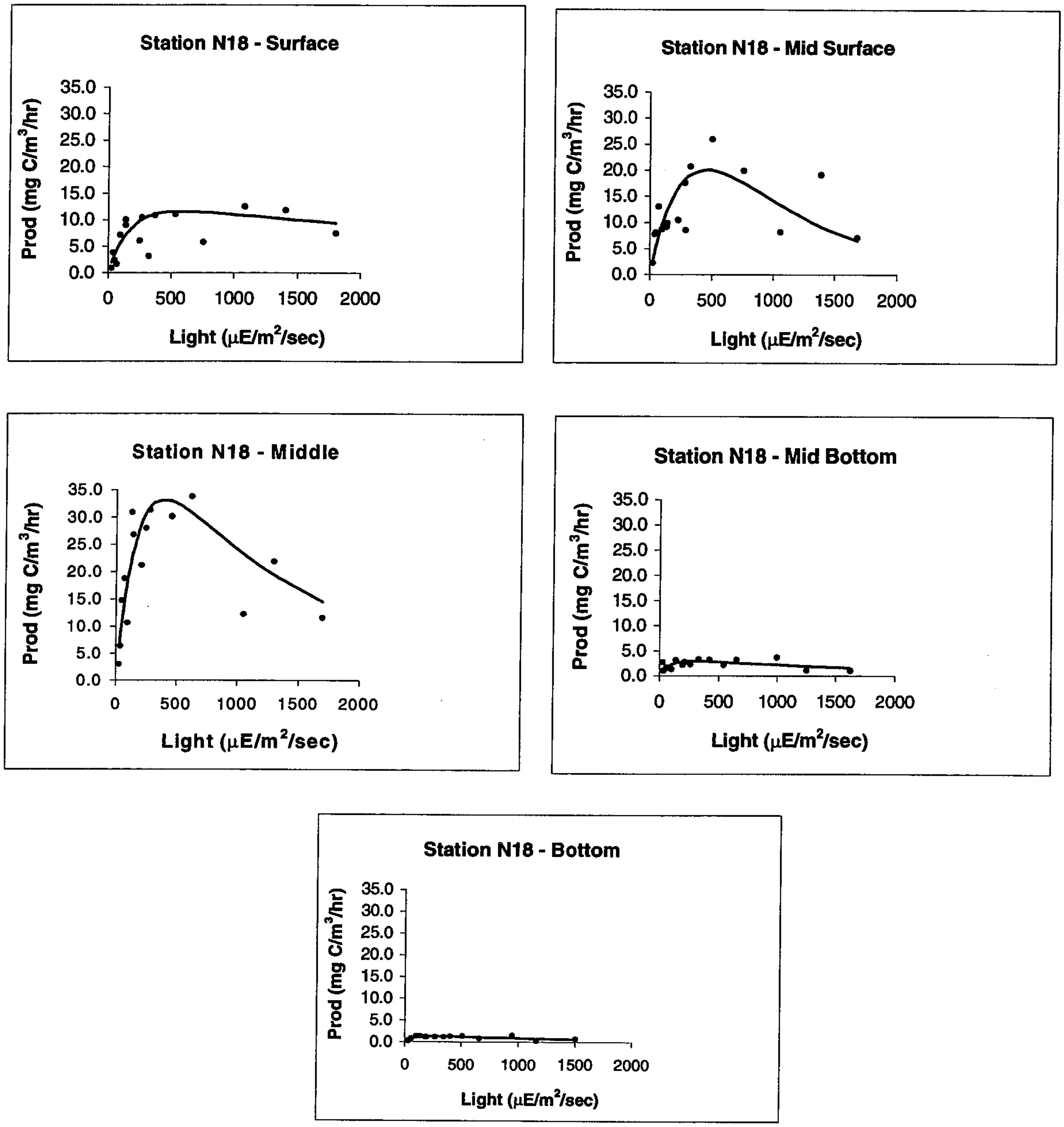


Figure E-2. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Farfield Survey WF991 (Feb 99)

WF991 **Station F23**

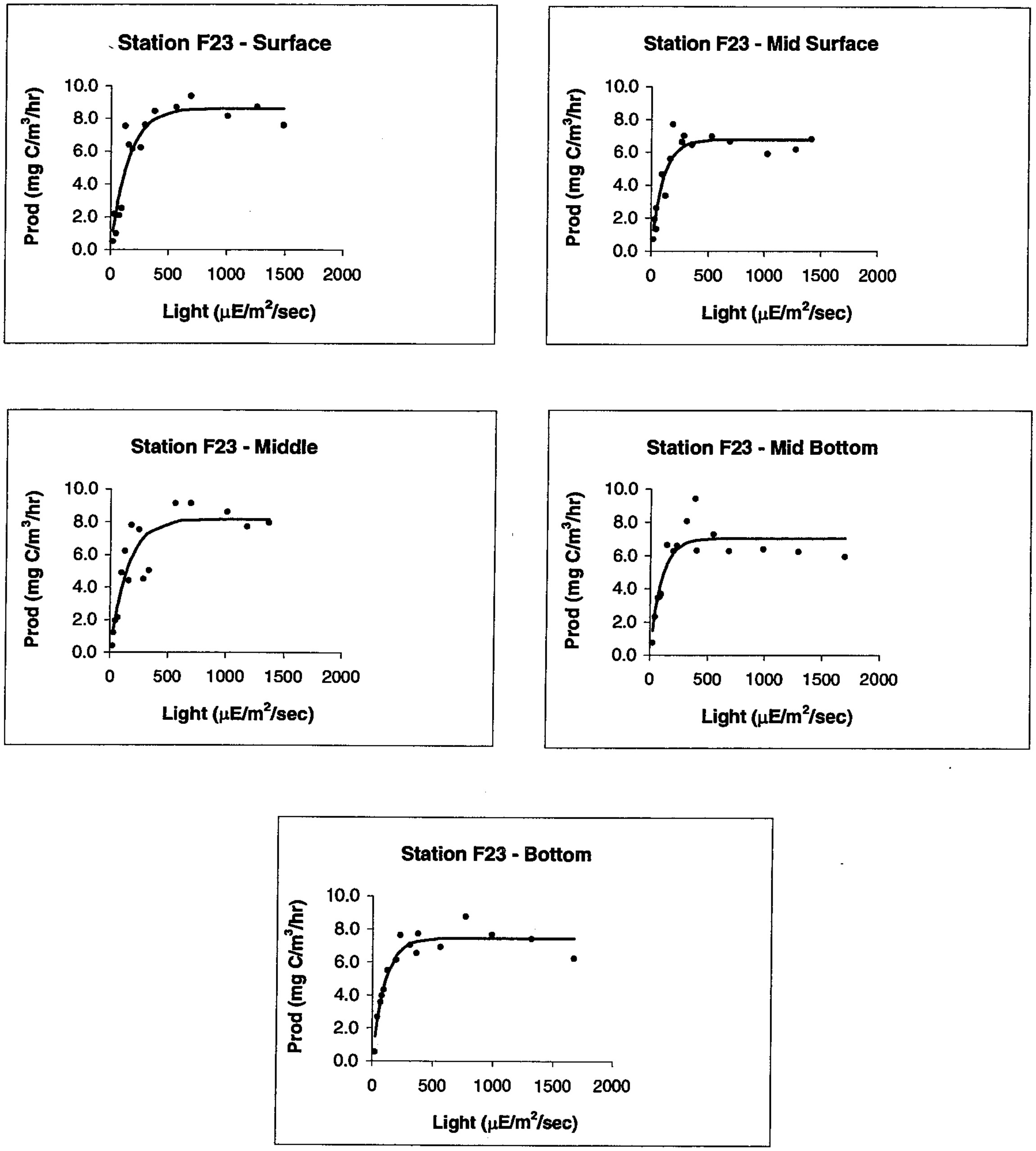


Figure E-3. Photosynthesis-Irradiance (P-I) Curves for Station F23 from Farfield Survey WF991 (Feb 99)

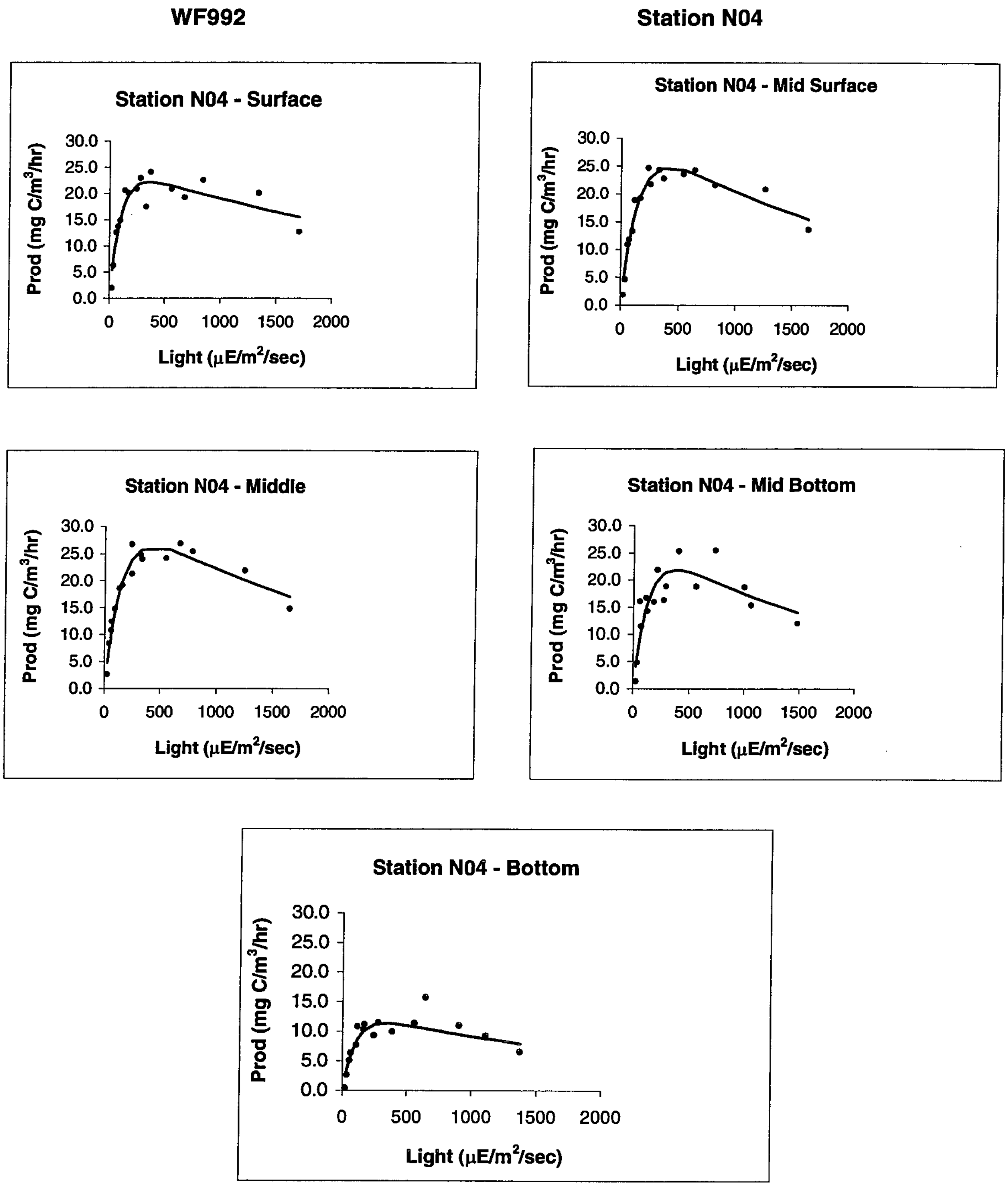


Figure E-4. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Farfield Survey WF992 (Feb 99)

WF992 **Station N18**

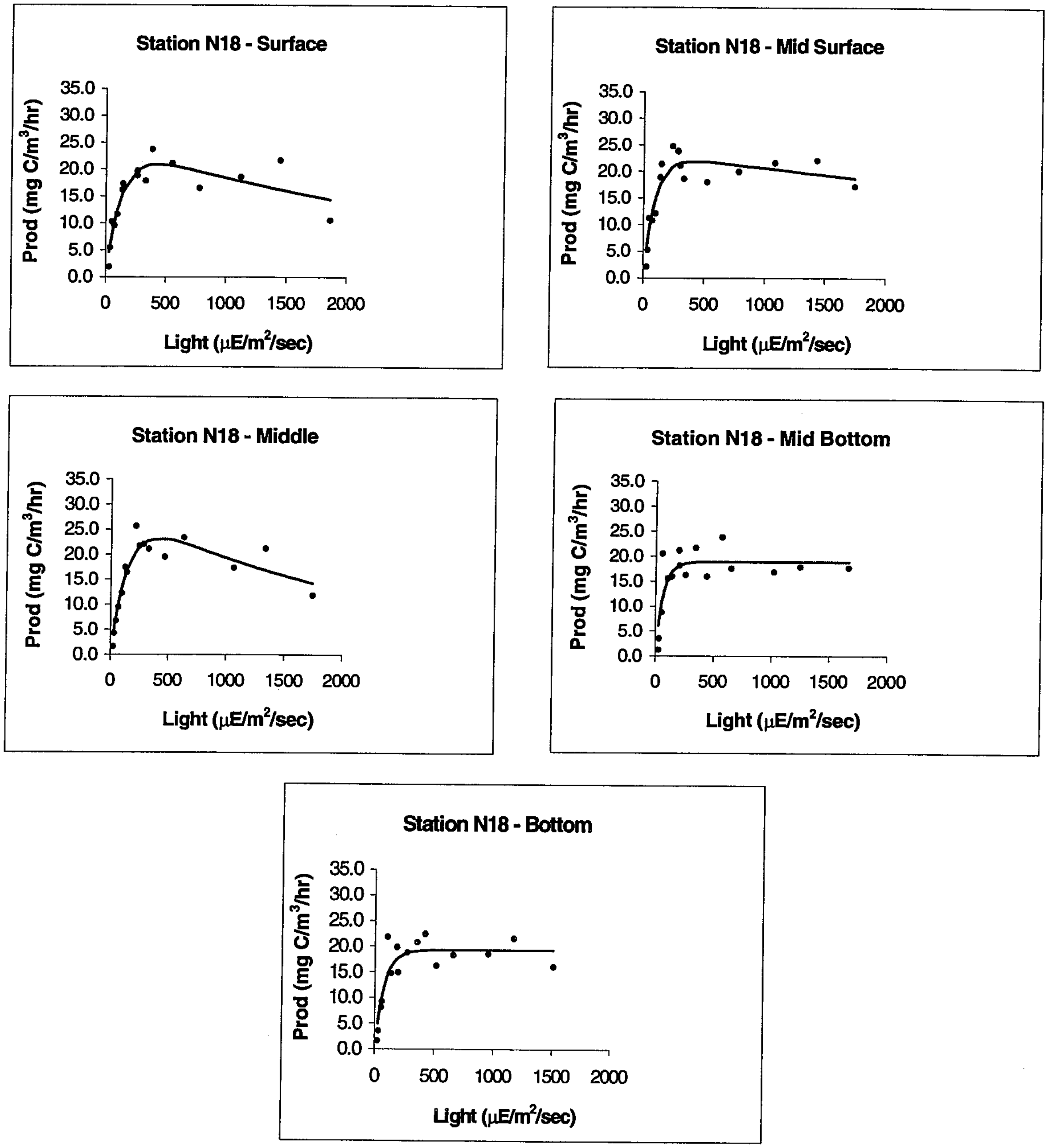
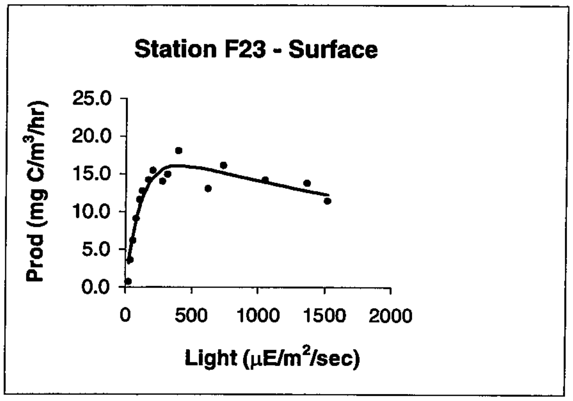
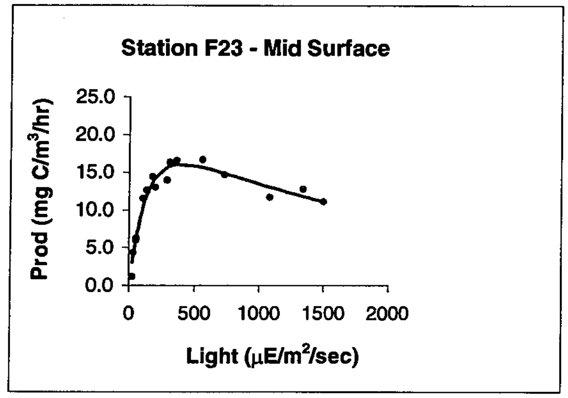
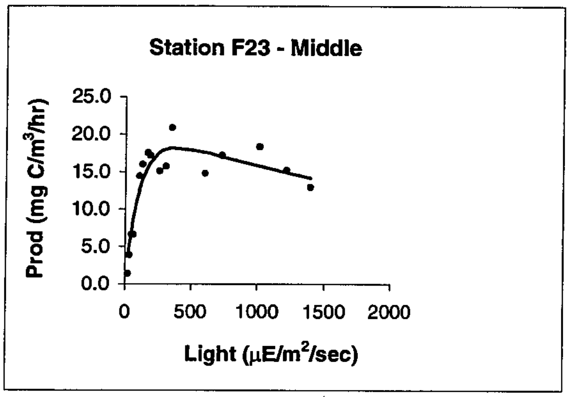


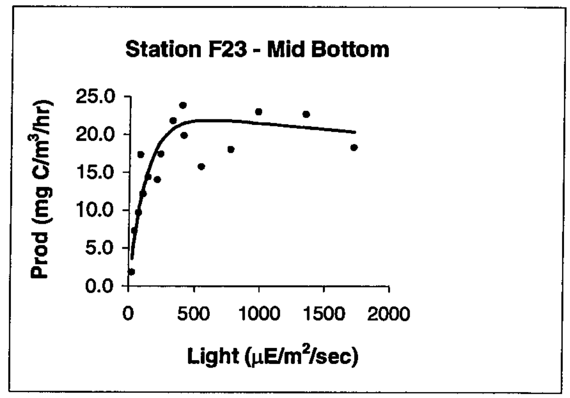
Figure E-5. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Farfield Survey WF992 (Feb 99)

WF992 **Station F23**









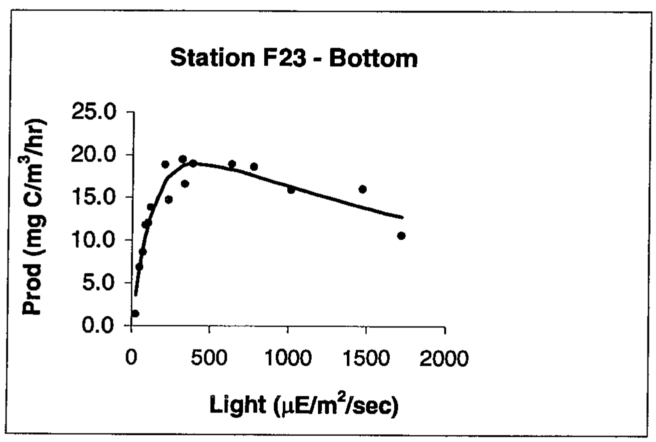
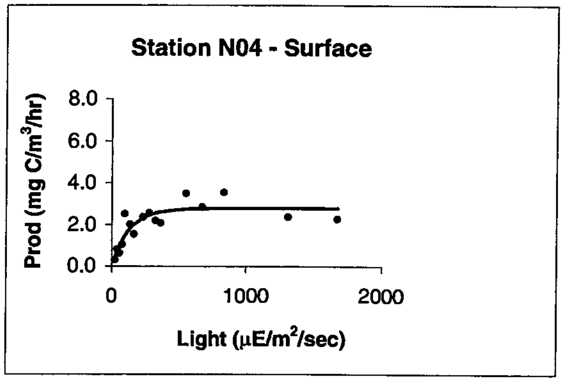
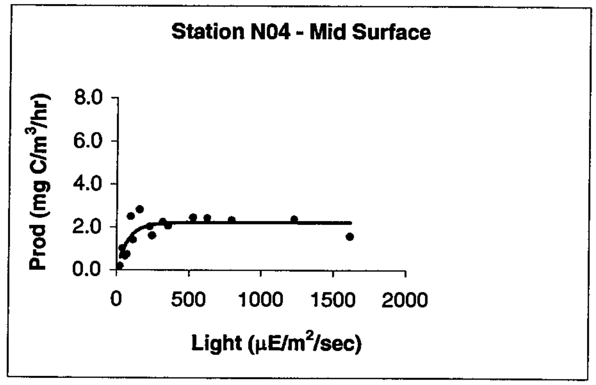
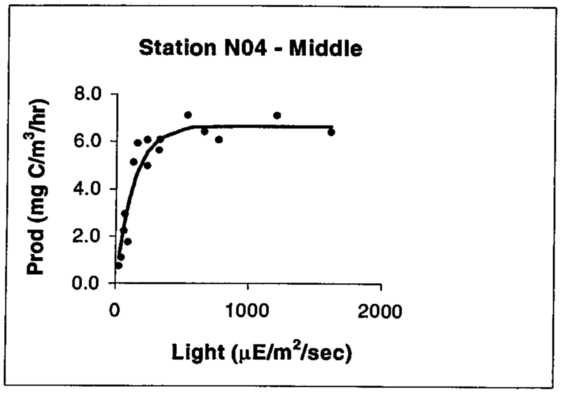


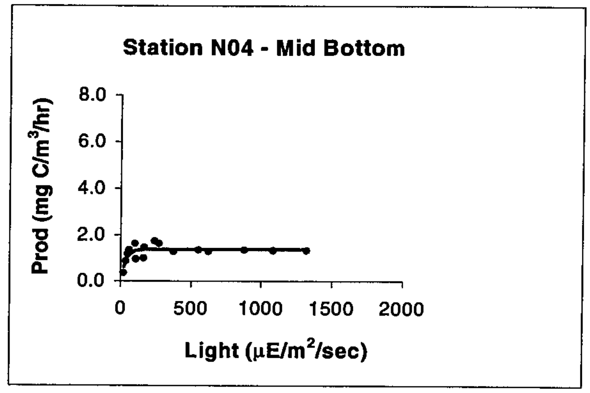
Figure E-6. Photosynthesis-Irradiance (P-I) Curves for Station F23 from Farfield Survey WF992 (Feb 99)

WN993 **Station NO4**









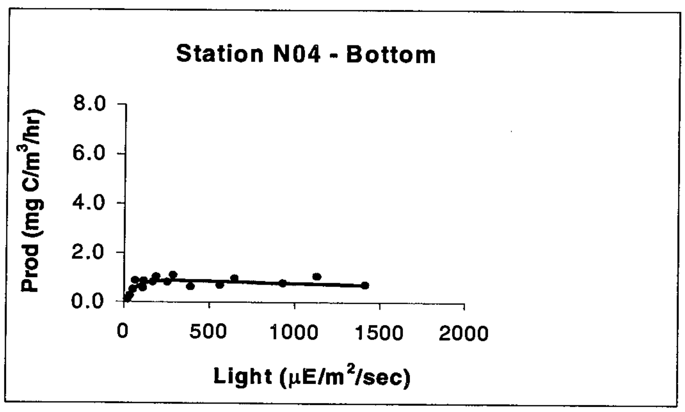


Figure E-7. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Nearfield Survey WN993 (Mar 99)

WN993 **Station N18**

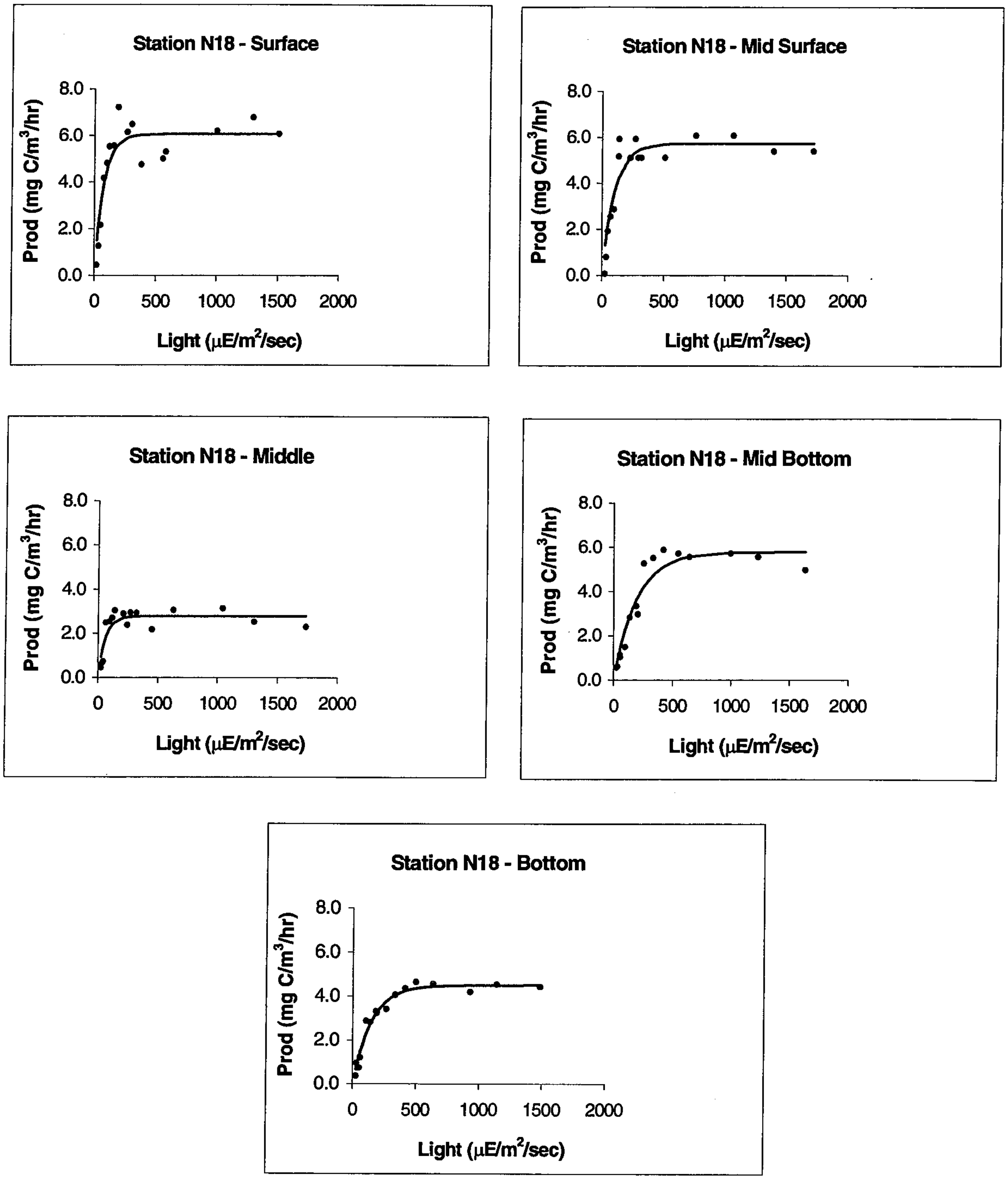


Figure E-8. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Nearfield Survey WN993 (Mar 99)

WF994 **Station N04**

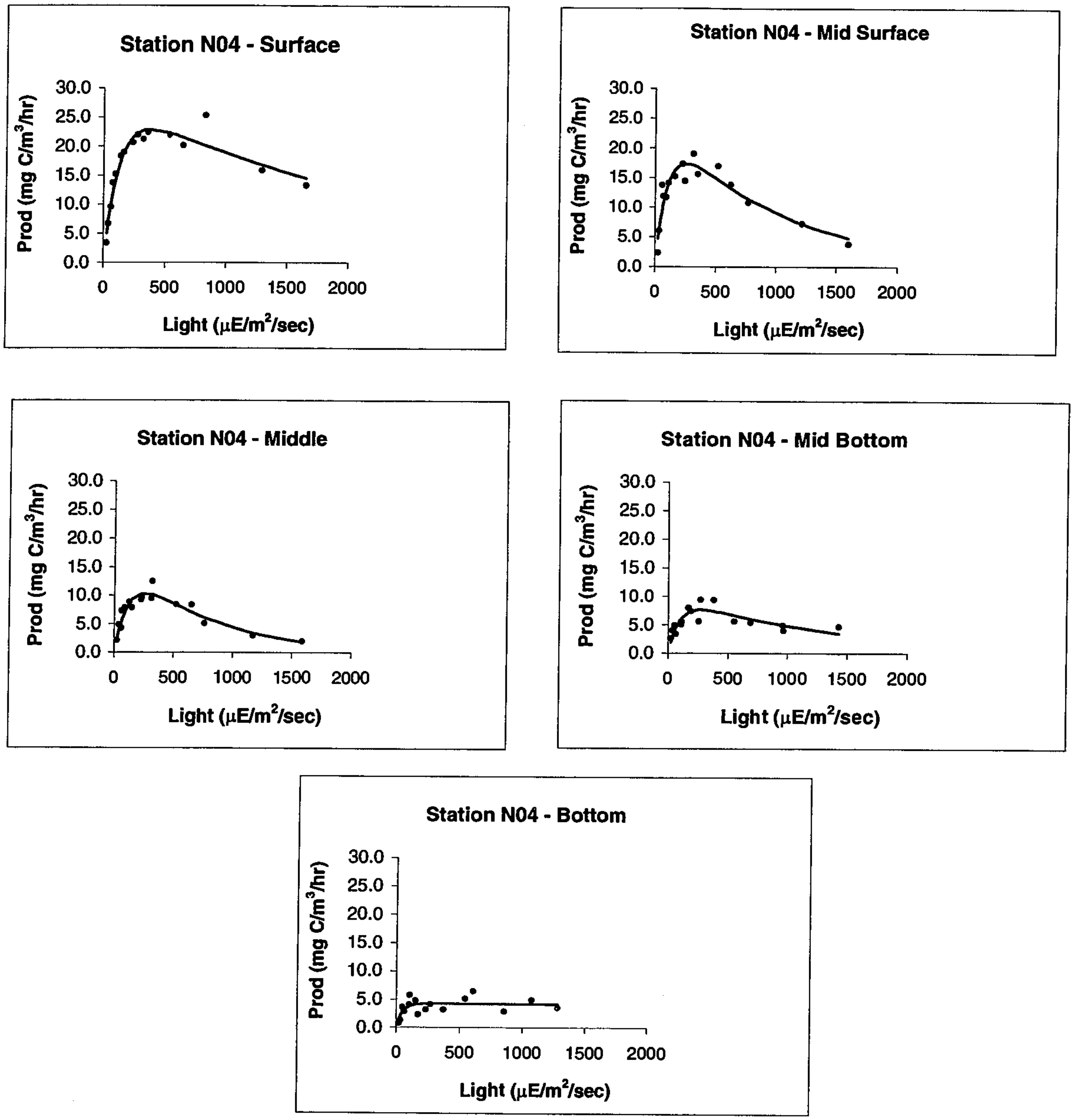


Figure E-9. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Farfield Survey WF994 (Apr 99)

WF994 **Station N18**

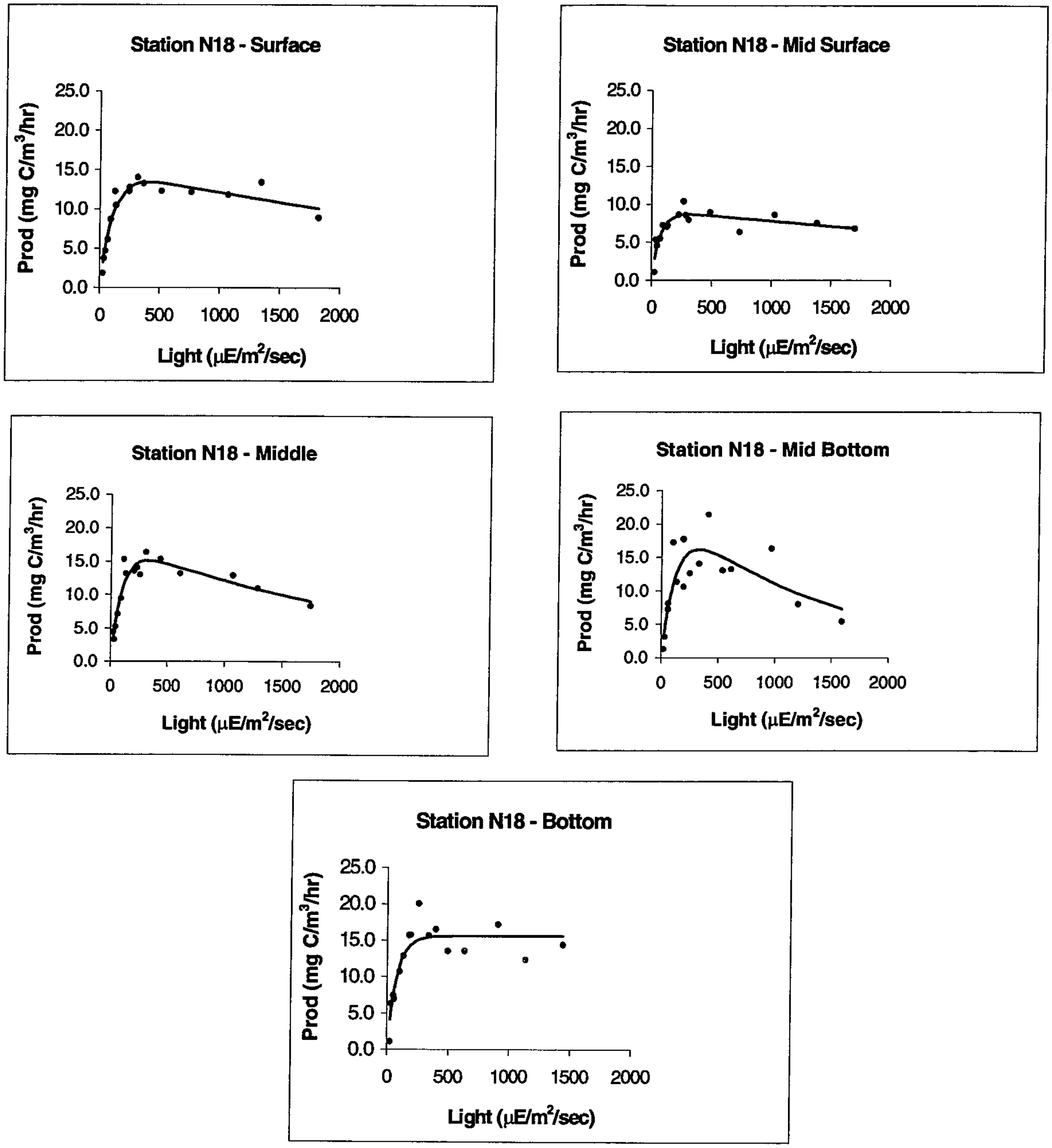


Figure E-10. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Farfield Survey WF994 (Apr 99)

WF994 **Station N18**

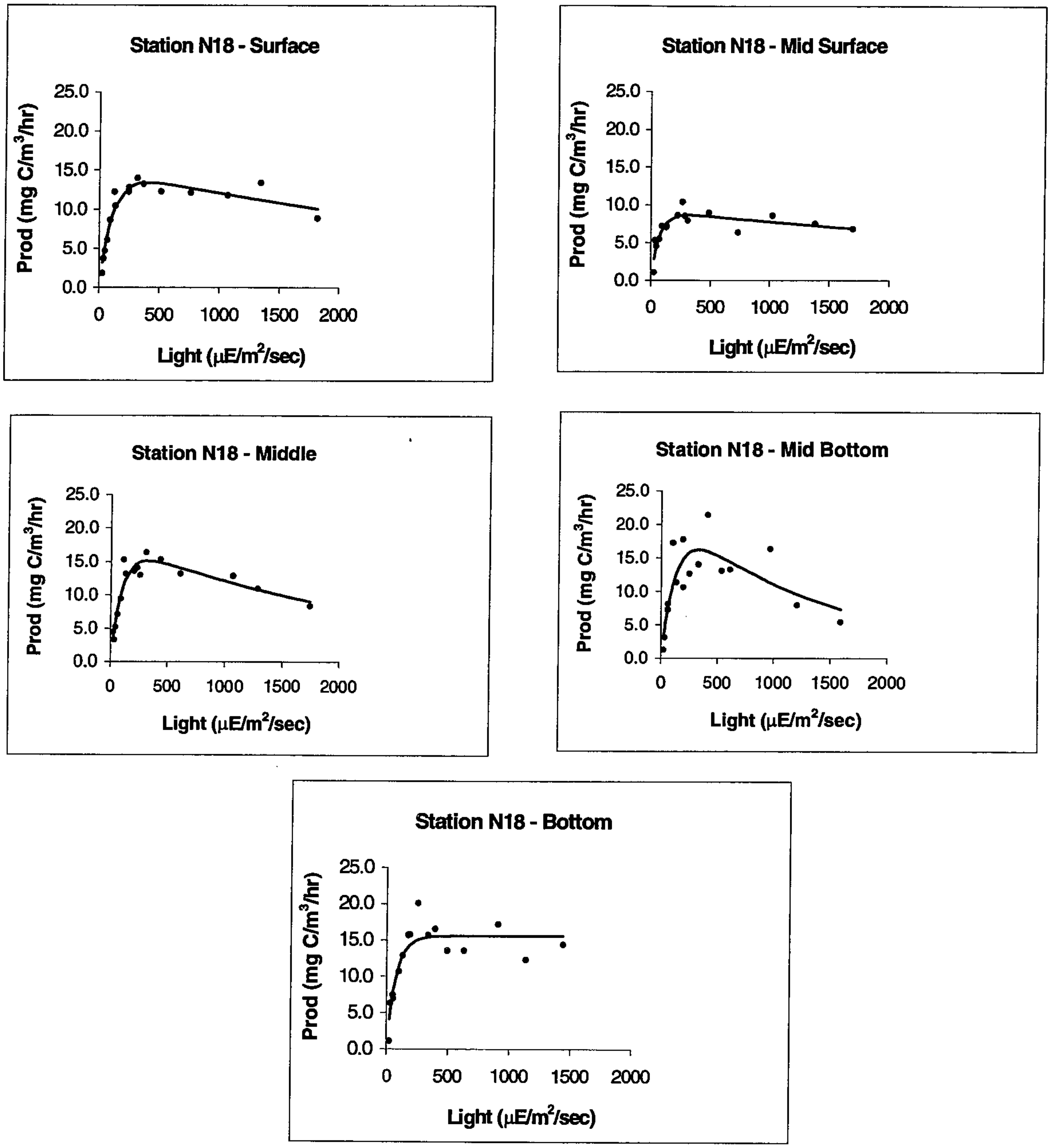


Figure E-10. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Farfield Survey WF994 (Apr 99)

WF994 **Station F23**

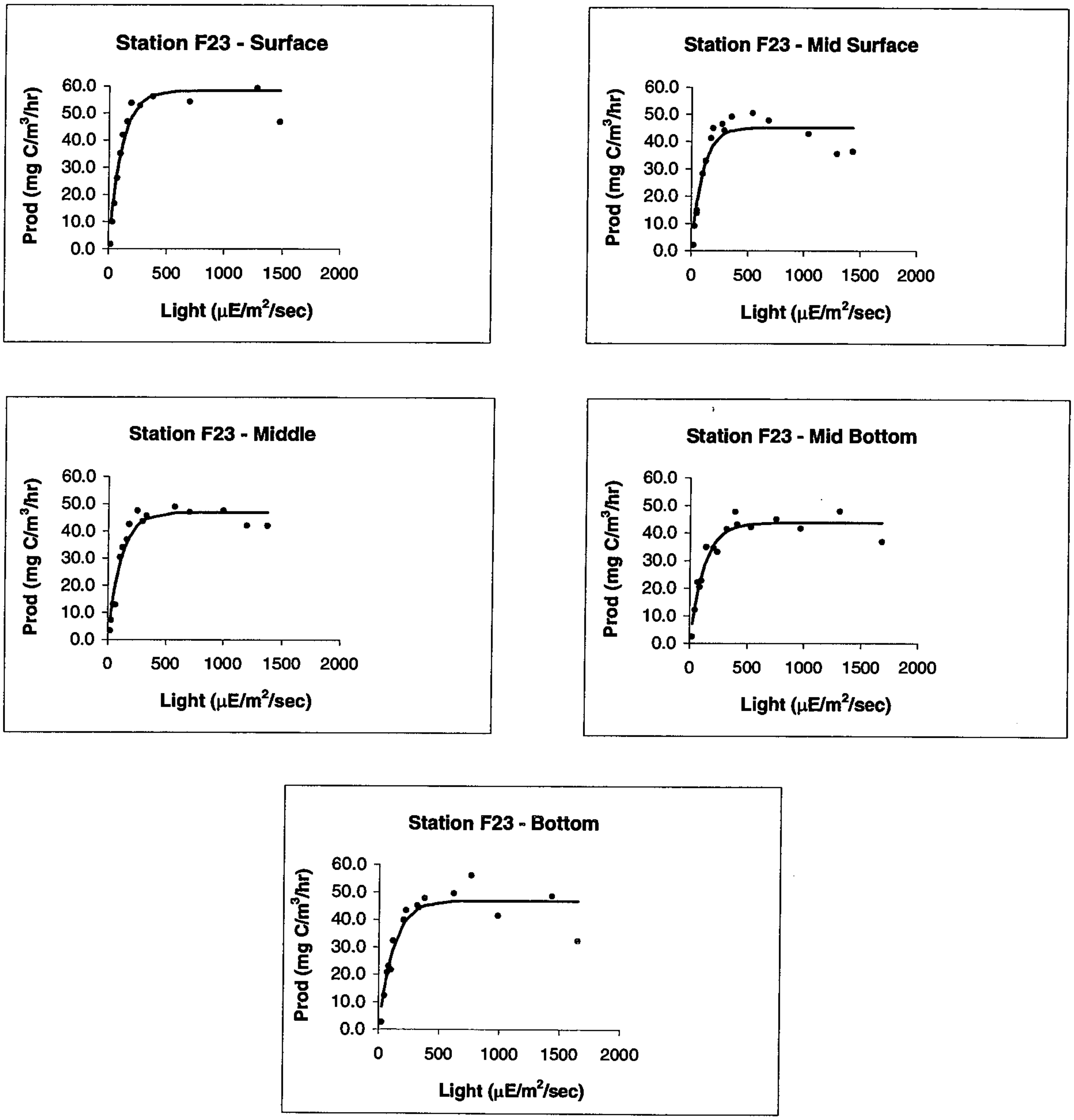
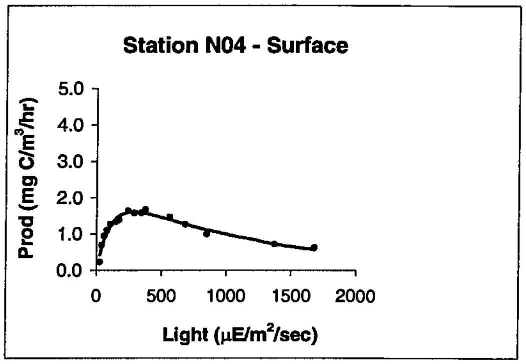
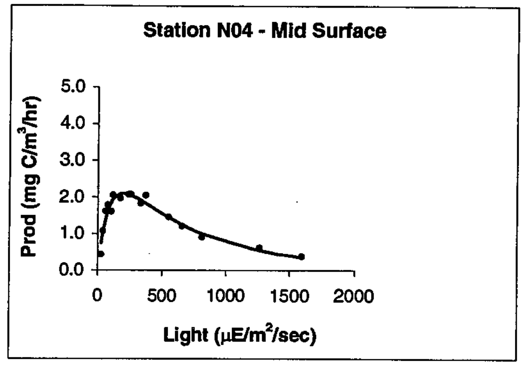
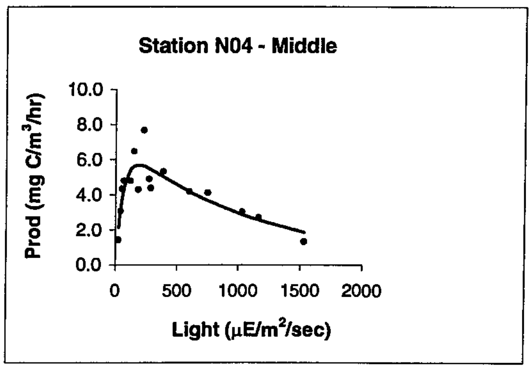


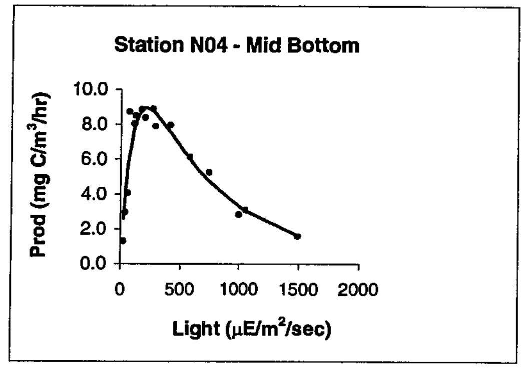
Figure E-11. Photosynthesis-Irradiance (P-I) Curves for Station F23 from Farfield Survey WF994 (Apr 99)

WN995 **Station N04**









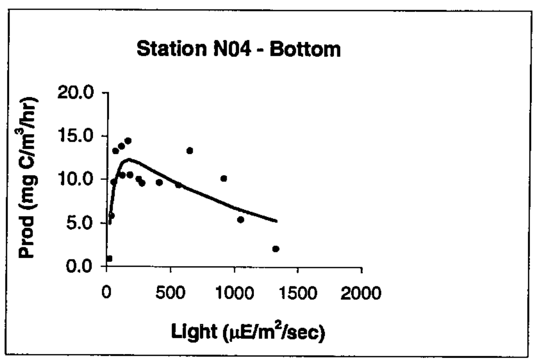
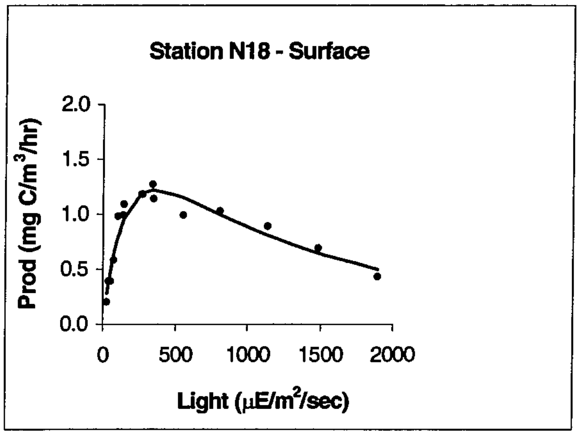
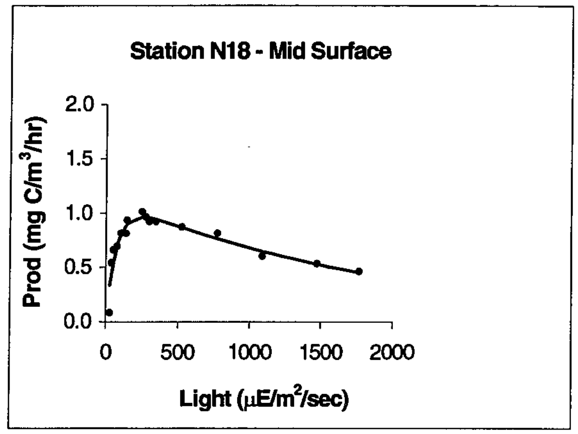
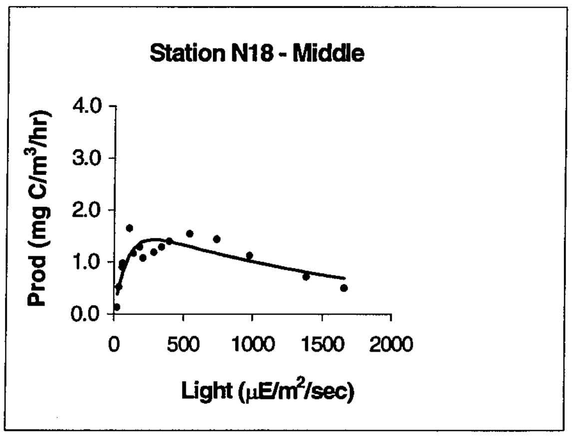


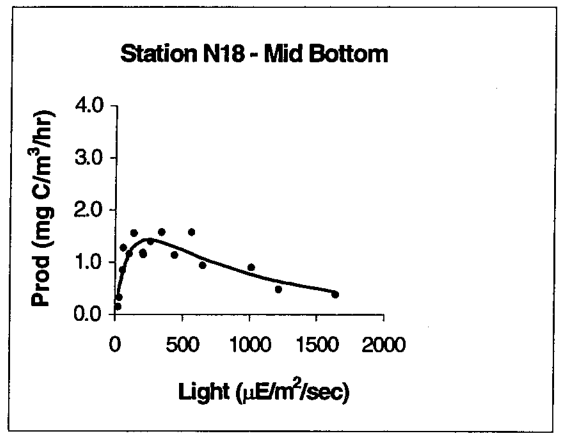
Figure E-12. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Nearfield Survey WN995 (May 99)

WN995 **Station N18**









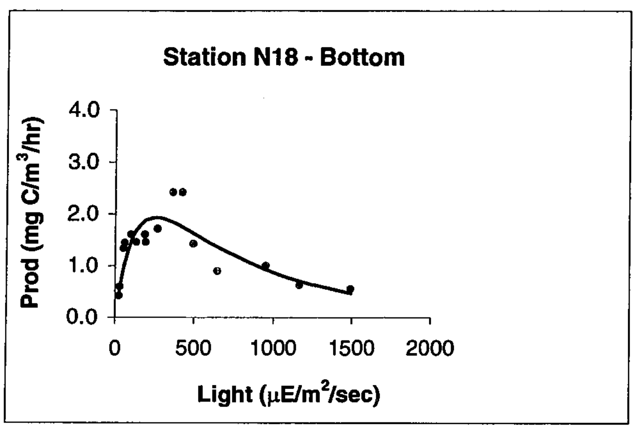


Figure E-13. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Nearfield Survey WN995 (May 99)

WN996 **Station N04**

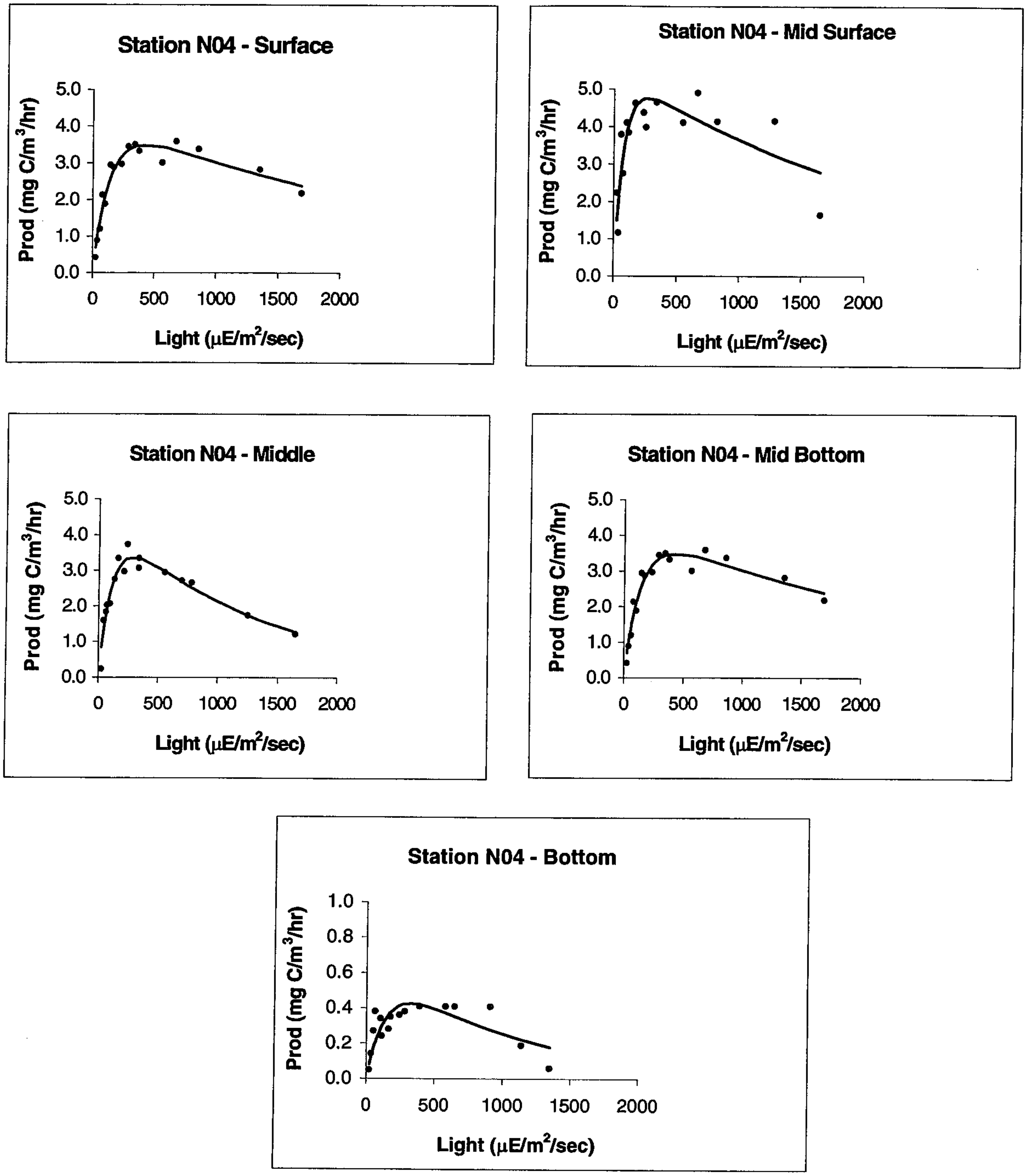


Figure E-14. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Nearfield Survey WN996 (May 99)

WN996 **Station N18**

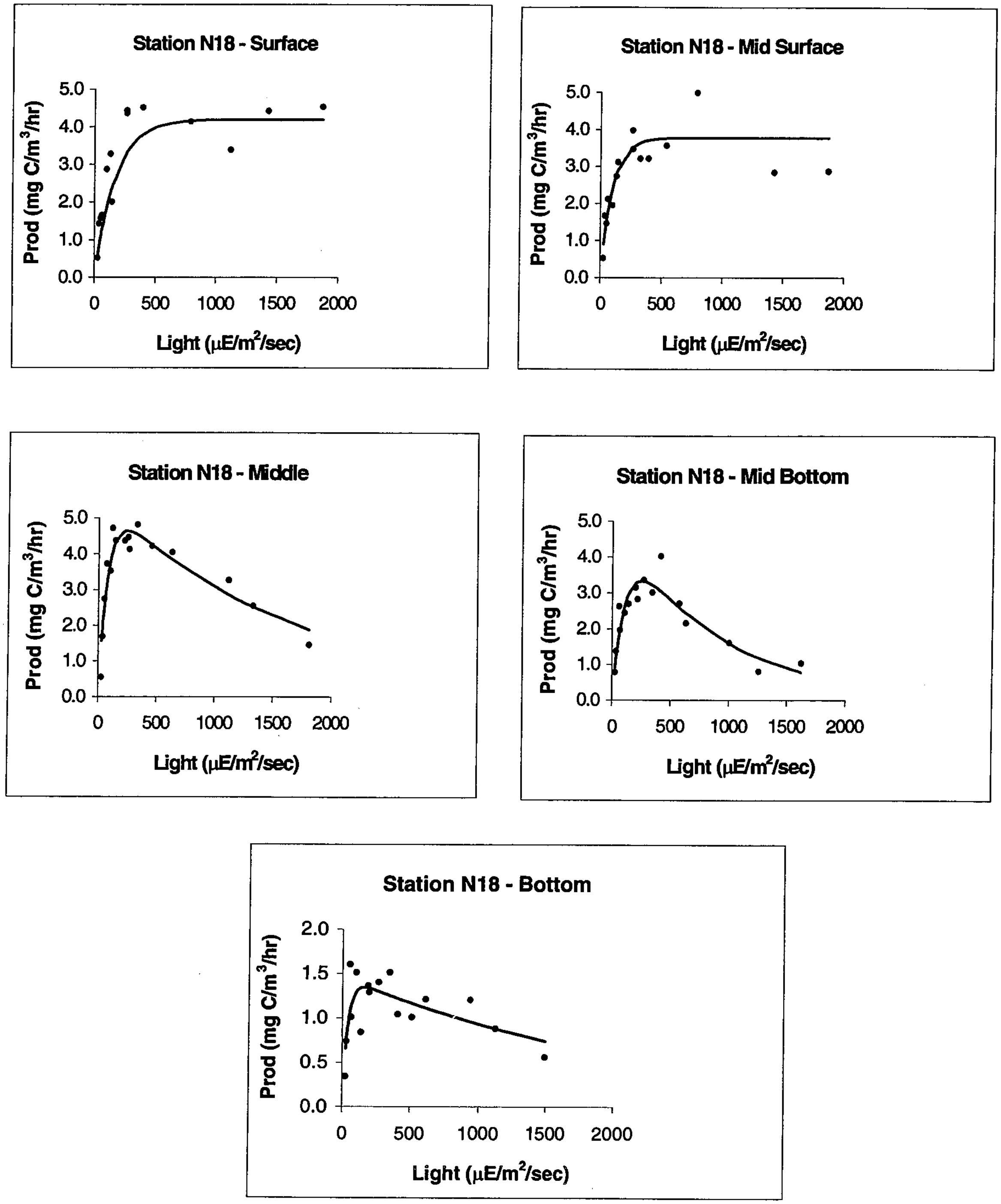


Figure E-15. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Nearfield Survey WN996 (May 99)

WF997 **Station N04**

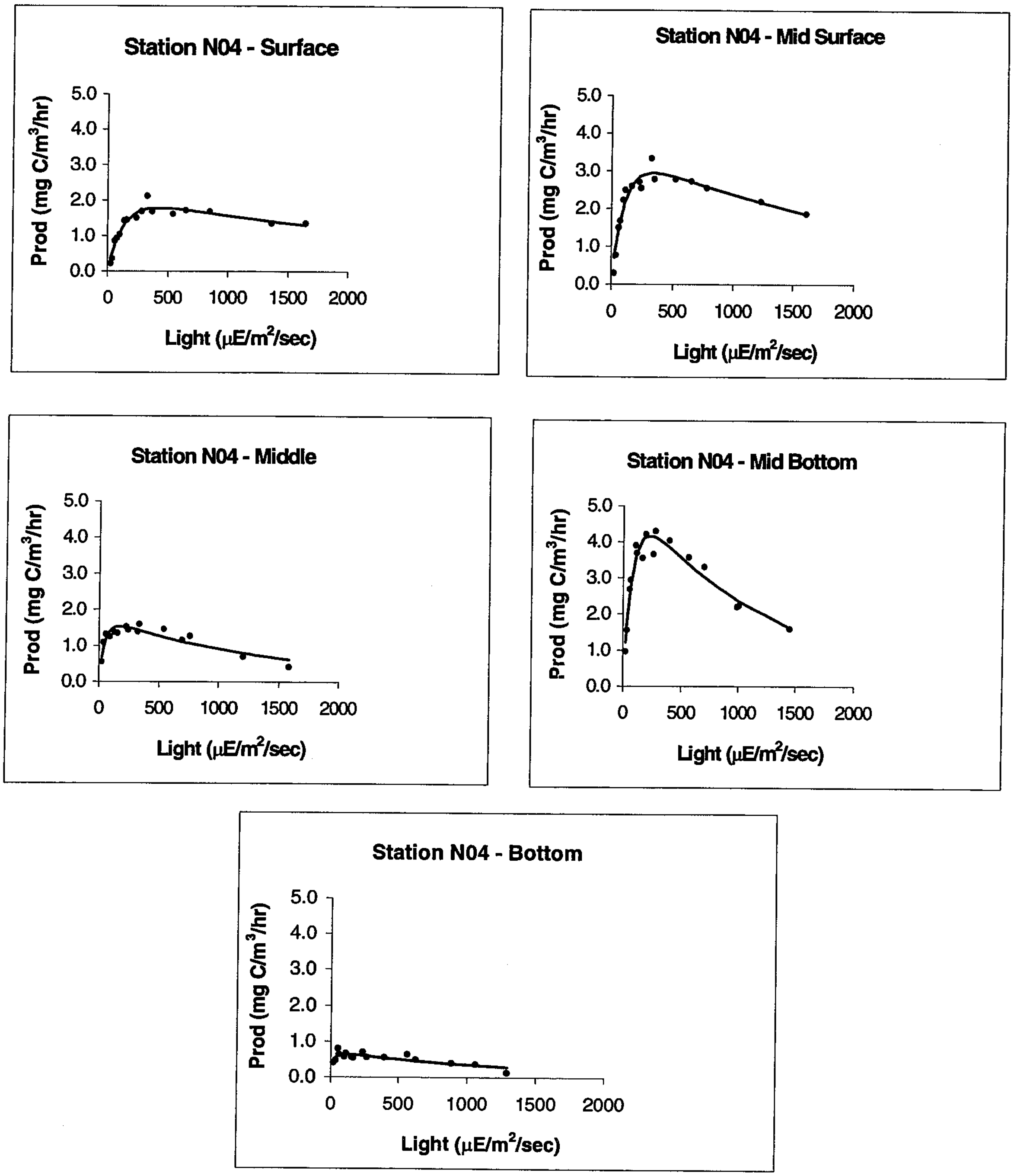


Figure E-16. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Farfield Survey WF997 (Jun 99)

WF997 **Station N18**

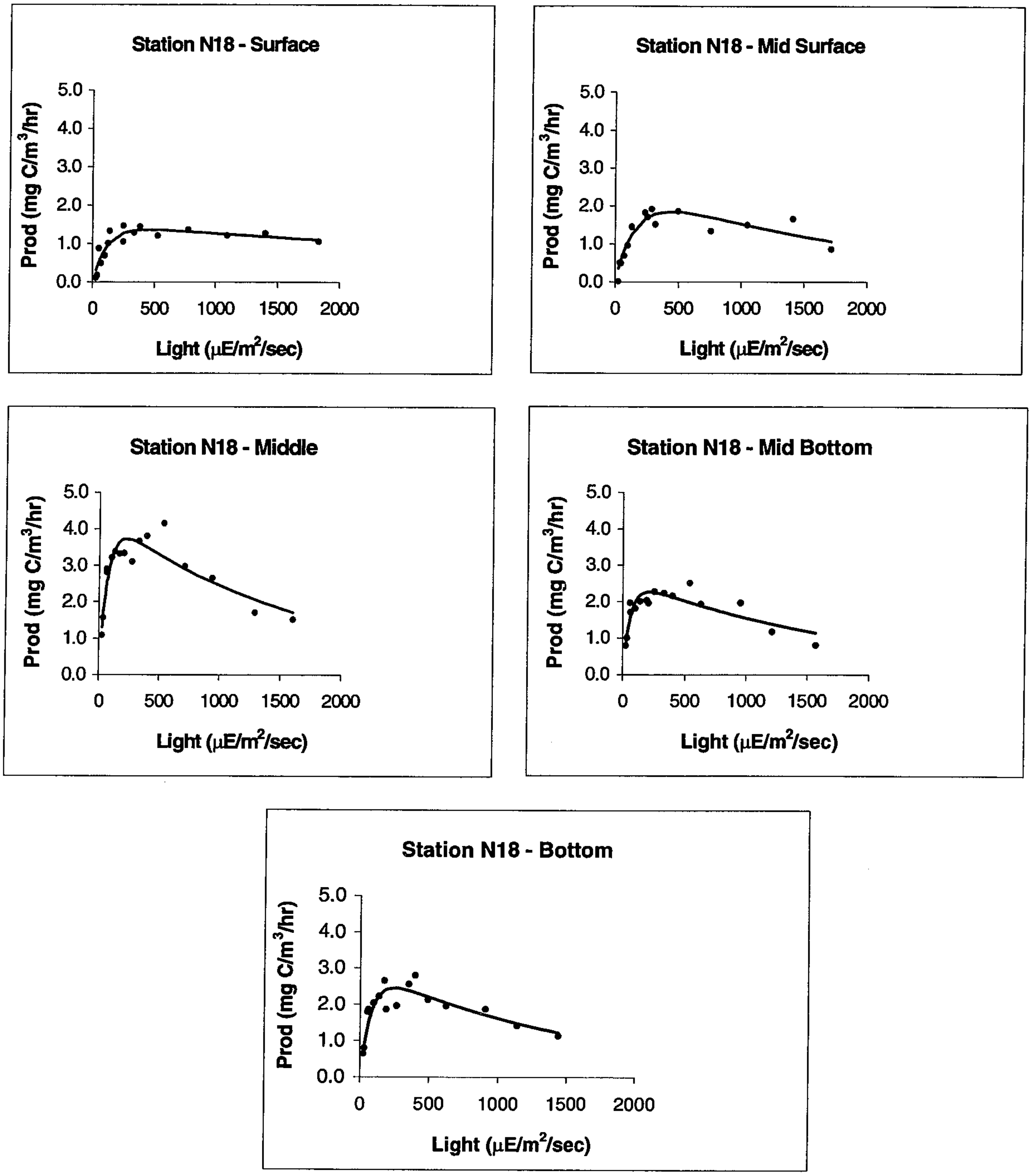


Figure E-17. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Farfield Survey WF997 (Jun 99)

WF997 **Station F23**

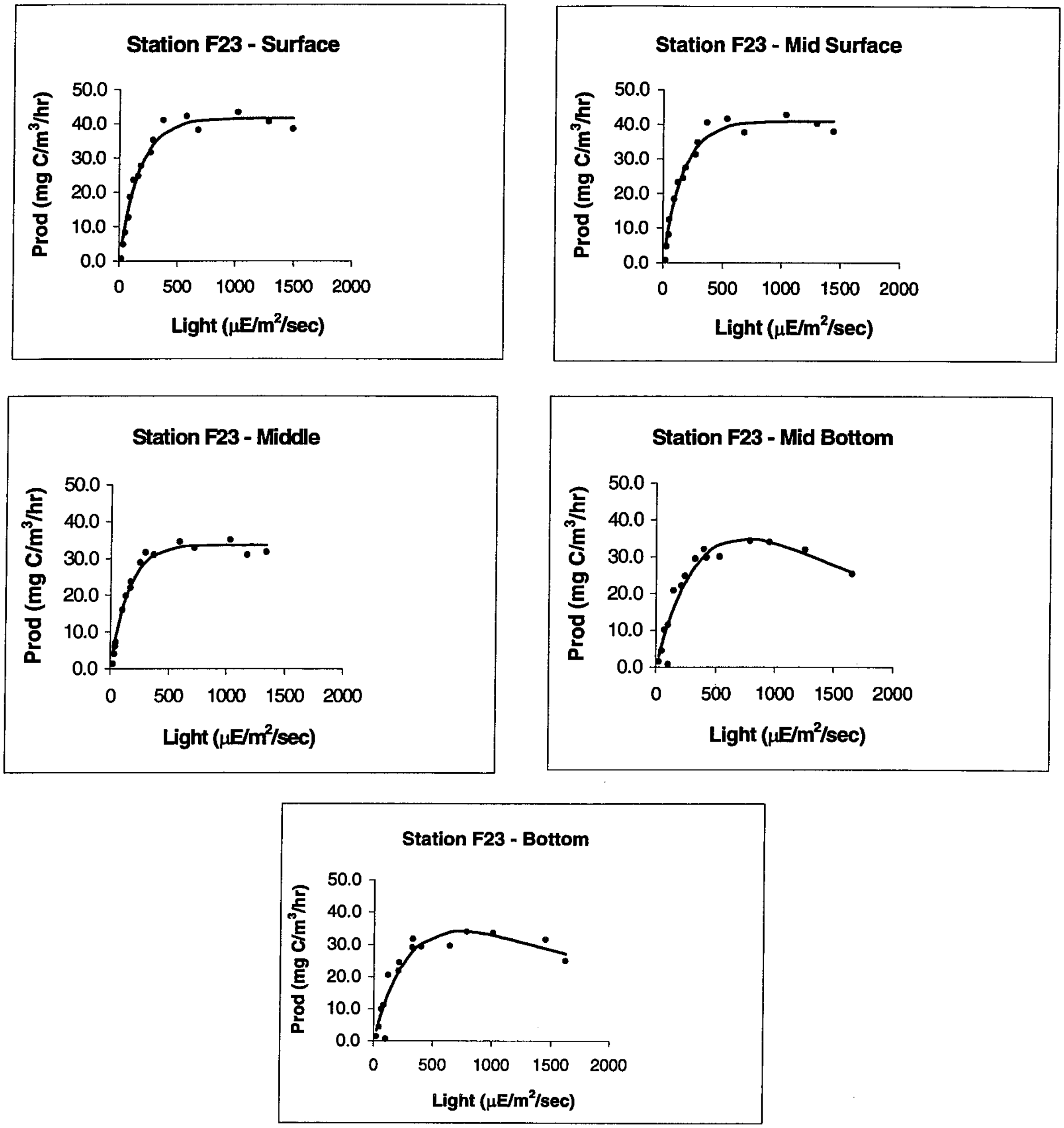


Figure E-18. Photosynthesis-Irradiance (P-I) Curves for Station F23 from Farfield Survey WF997 (Jun 99)

WN998 **Station N04**

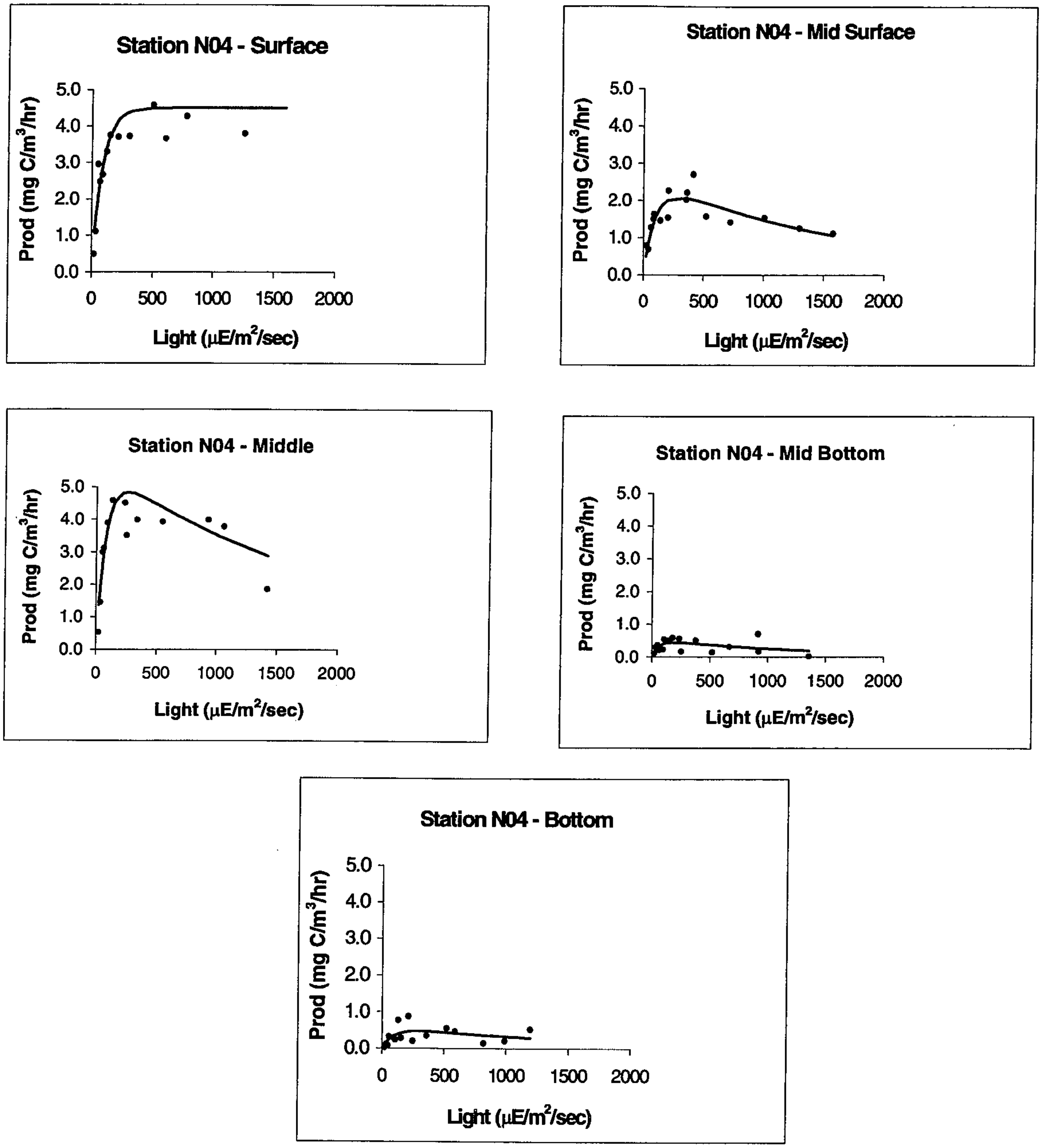


Figure E-19. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Nearfield Survey WN998 (Jul 99)

WN998 **Station N18**

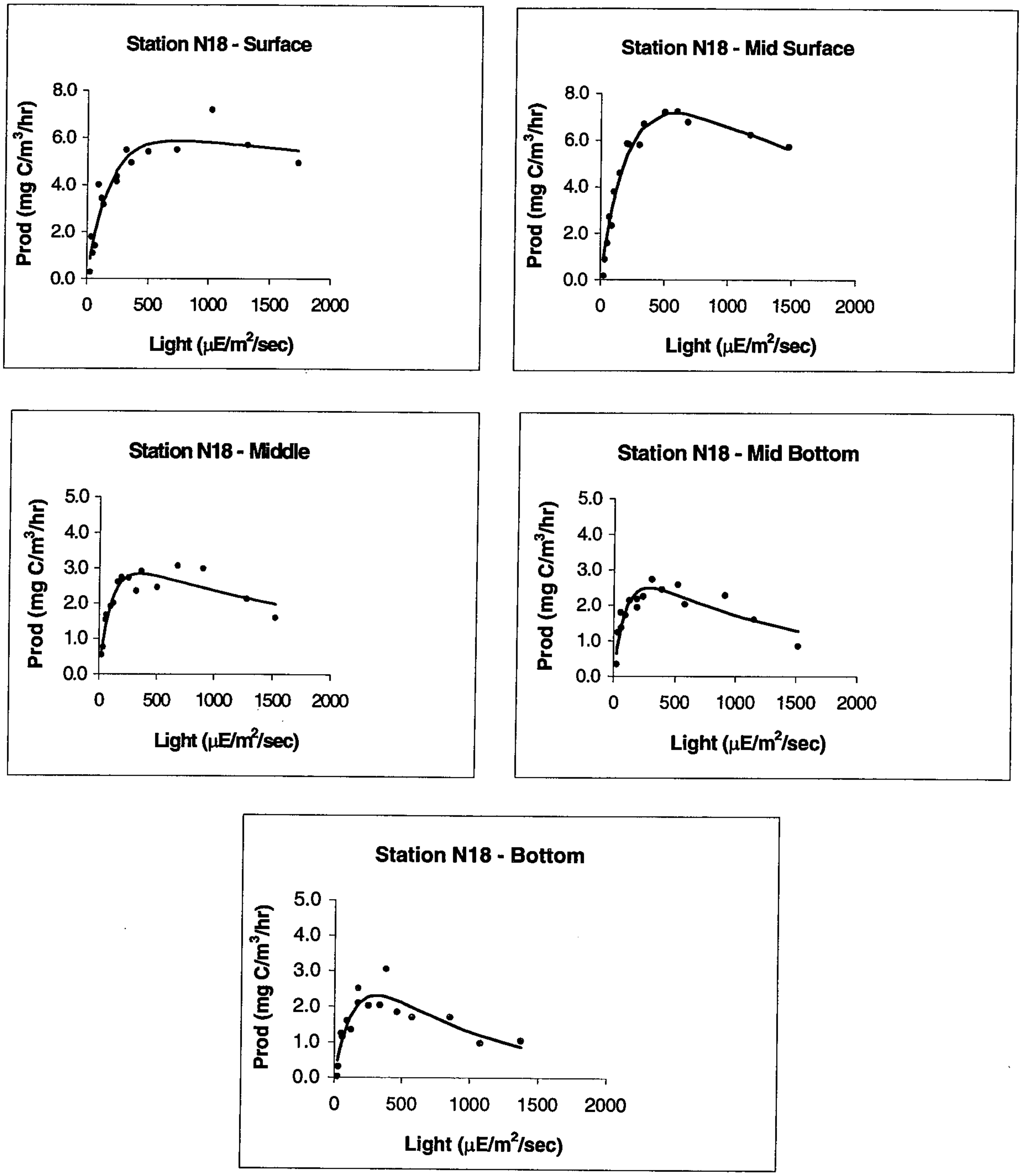


Figure E-20. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Nearfield Survey WN998 (Jul 99)

WN999 **Station N04**

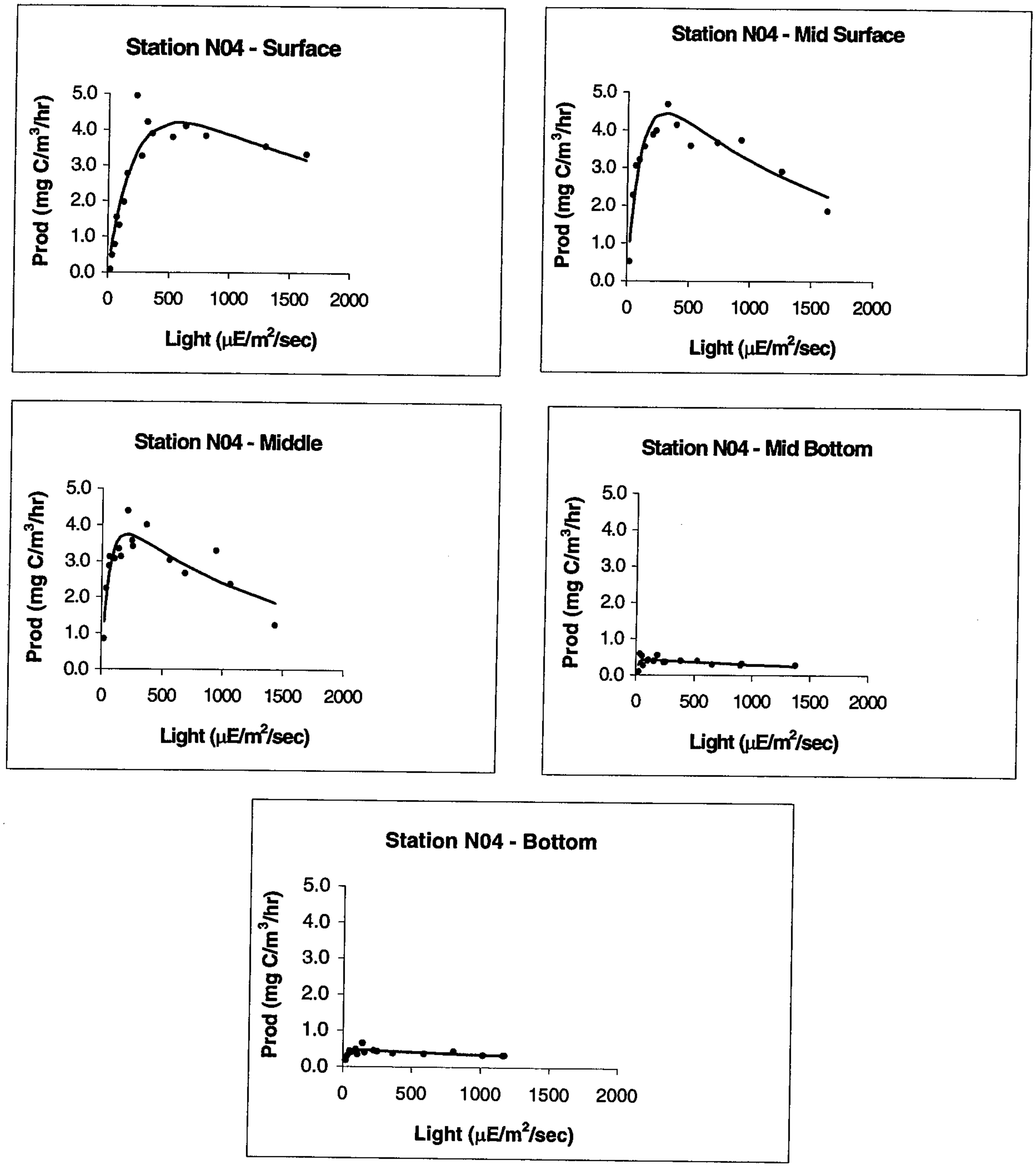
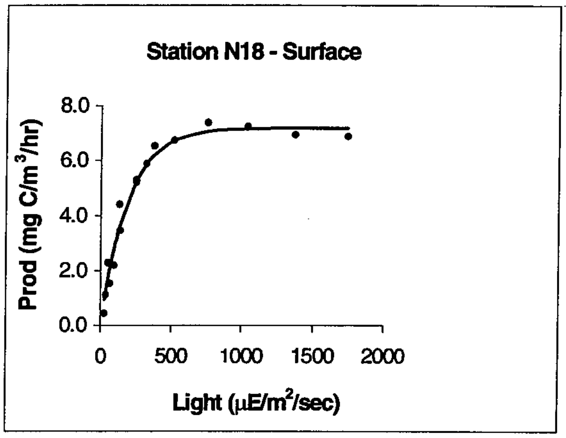
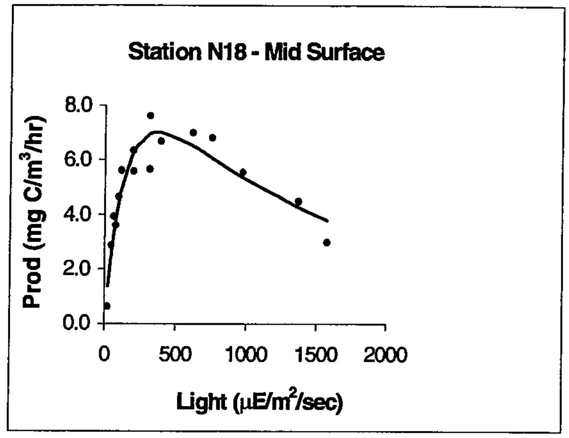
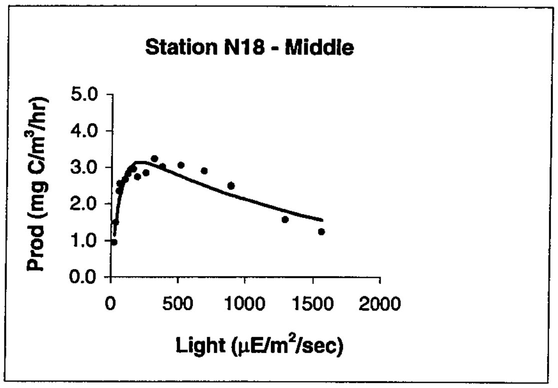


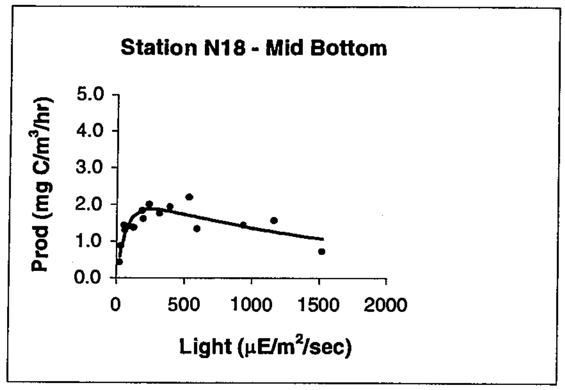
Figure E-21. Photosynthesis-Irradiance (P-I) Curves for Station N04 from Nearfield Survey WN999 (Jul 99)

WN999 **Station N18**









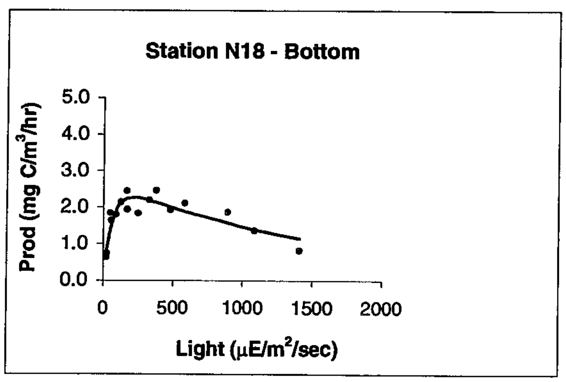


Figure E-22. Photosynthesis-Irradiance (P-I) Curves for Station N18 from Nearfield Survey WN999 (Jul 99)

APPENDIX F

Abundance of Prevalent Phytoplankton Species in Whole Water Surface and Chlorophyll-A Maximum Samples

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF991**

			F01	F02	F06	F13	F23	F24
BACTERIOSIRA BATHYOMPHALA	CD	%		5.774				
BACTERIOSIRA BATHYOMPHALA	CD	E6CELLS/L		0.057				
CHAETOCEROS DEBILIS	CD	%	18.569	22.017	9.136	18.738	5.862	10.407
CHAETOCEROS DEBILIS	CD	E6CELLS/L	0.1566	0.218	0.034	0.123	0.041	0.071
CHAETOCEROS SOCIALIS	CD	%		14.354				
CHAETOCEROS SOCIALIS	CD	E6CELLS/L		0.1422				
CHAETOCEROS SPP. (10-20UM)	CD	%						
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L						
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%					6.742	
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L					0.047	
PSEUDONITZSCHIA PUNGENS	PD	%		7.771	14.546	19.347		13.858
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L		0.077	0.054	0.127		0.095
PSEUDONITZSCHIA SPP.	PD	%			8.249			
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L			0.031			
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	53.195	30.485	46.641	35.705	69.215	47.841
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.449	0.302	0.174	0.234	0.482	0.327

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF991
(continued)

			F25	F27	F30	F31	N04	N16	N18
BACTERIOSIRA BATHYOMPHALA	CD	%							
BACTERIOSIRA BATHYOMPHALA	CD	E6CELLS/L							
CHAETOCEROS DEBILIS	CD	%		7.043	7.672	6.503		11.468	5.481
CHAETOCEROS DEBILIS	CD	E6CELLS/L		0.038	0.052	0.025		0.078	0.033
CHAETOCEROS SOCIALIS	CD	%					37.988		
CHAETOCEROS SOCIALIS	CD	E6CELLS/L					0.273		
CHAETOCEROS SPP. (10-20UM)	CD	%							7.177
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L							0.043
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	9.481		6.298	7.160			
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.043		0.042	0.027			
PSEUDONITZSCHIA PUNGENS	PD	%		33.584	6.811	11.319		23.503	26.229
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L		0.181	0.046	0.043		0.160	0.157
PSEUDONITZSCHIA SPP.	PD	%		5.857			8.724		12.005
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L		0.031			0.063		0.072
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	65.693	34.158	56.229	62.057	32.740	46.400	27.185
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.299	0.184	0.378	0.235	0.236	0.317	0.162

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF992

			F01	F02	F06	F13	F23	F24
CHAETOCEROS DEBILIS	CD	%	5.463	7.425				
CHAETOCEROS DEBILIS	CD	E6CELLS/L	0.079	0.114				
CHAETOCEROS SOCIALIS	CD	%	36.522	45.385	30.118	38.589	30.199	47.121
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.529	0.695	0.173	0.449	0.346	1.191
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	%	15.580					
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	E6CELLS/L	0.226					
CHAETOCEROS SPP. (10-20UM)	CD	%		13.086	23.805	26.736	22.988	25.991
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L		0.200	0.137	0.311	0.263	0.657
PSEUDONITZSCHIA PUNGENS	PD	%	5.564		5.392			
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L	0.081		0.031			
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	25.937	23.980	25.551	20.839	27.309	14.654
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.376	0.367	0.147	0.243	0.313	0.371

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF992
(continued)

			F25	F27	F30	F31	N04	N16	N18
CHAETOCEROS DEBILIS	CD	%							
CHAETOCEROS DEBILIS	CD	E6CELLS/L							
CHAETOCEROS SOCIALIS	CD	%	55.444	44.961	50.166	31.326	34.491	46.912	33.790
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.747	0.580	0.800	0.390	0.508	0.542	0.471
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	%							
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	E6CELLS/L							
CHAETOCEROS SPP. (10-20UM)	CD	%	14.557	17.916	12.934	22.794	30.606	20.716	30.660
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L	0.196	0.231	0.206	0.283	0.450	0.239	0.428
PSEUDONITZSCHIA PUNGENS	PD	%							
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L							
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	16.507	19.428	20.909	27.099	17.081	15.125	18.811
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.222	0.251	0.333	0.337	0.252	0.175	0.262

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WN993

			N04	N18
CHAETOCEROS SOCIALIS	CD	%	52.223	49.931
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.541	0.666
CHAETOCEROS SPP. (10-20UM)	CD	%	18.734	21.612
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L	0.194	0.288
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	16.935	15.566
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.176	0.208

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF994**

			F01	F02	F06	F13	F23	F24
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%	5.833		5.731			8.272
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L	0.100		0.037			0.141
CHAETOCEROS SOCIALIS	CD	%	38.601	25.302		19.741	24.481	20.376
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.662	0.261		0.138	0.421	0.348
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CD	%	14.652	13.446		8.193	14.518	13.464
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L	0.251	0.139		0.057	0.249	0.230
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%			17.672	5.932		7.373
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L			0.114	0.042		0.126
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	%			5.254			
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	E6CELLS/L			0.034			
PROROCENTRUM MINIMUM	DF	%			5.865			
PROROCENTRUM MINIMUM	DF	E6CELLS/L			0.038			
THALASSIOSIRA ROTULA	CD	%						
THALASSIOSIRA ROTULA	CD	E6CELLS/L						
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	28.224	48.951	57.791	51.019	40.680	38.123
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.484	0.505	0.374	0.357	0.699	0.651

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF994
(continued)

			F25	F27	F30	F31	N04	N16	N18
	CD	%			5.899			5.732	
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L			0.090			0.048	
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%	25.118		19.394	31.578	25.271		
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.389		0.296	0.671	0.551		
CHAETOCEROS SOCIALIS	CD	%	17.692		15.028	24.478	5.706		
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L	0.274		0.230	0.520	0.124		
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CY	%	7.162		10.578	7.451		15.847	
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.111		0.162	0.158		0.132	
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	DF	%						7.080	
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	E6CELLS/L						0.059	
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	%							
PROROCENTRUM MINIMUM	DF	E6CELLS/L							
PROROCENTRUM MINIMUM	CD	%			6.397				
THALASSIOSIRA ROTULA	CD	E6CELLS/L			0.098				
THALASSIOSIRA ROTULA	MF	%	32.506	78.870	31.124	22.623	55.651	60.352	86.367
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.503	0.450	0.476	0.481	1.213	0.502	1.298
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS									

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WN995

			N04	N18
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	8.398	11.081
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.053	0.047
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	%		6.649
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	E6CELLS/L		0.028
PROROCENTRUM MINIMUM	DF	%	9.271	6.047
PROROCENTRUM MINIMUM	DF	E6CELLS/L	0.058	0.026
SKELETONEMA COSTATUM	CD	%	6.263	
SKELETONEMA COSTATUM	CD	E6CELLS/L	0.039	
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	60.267	56.883
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.378	0.243
UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH >10 MICRONS	MF	%	6.422	
UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH >10 MICRONS	MF	E6CELLS/L	0.040	

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WN996

			N04	N18
CHAETOCEROS SOCIALIS	CD	%	24.435	
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.365	
CHAETOCEROS SPP.(<10UM)	CD	%	10.502	
CHAETOCEROS SPP.(<10UM)	CD	E6CELLS/L	0.157	
SKELETONEMA COSTATUM	CD	%	14.973	55.053
SKELETONEMA COSTATUM	CD	E6CELLS/L	0.223	0.824
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	39.370	34.136
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.588	0.511

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF997

			F01	F02	F06	F13	F23	F24
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%					7.830	
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L					0.123	
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%		8.551	5.070	24.449	22.967	23.395
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L		0.109	0.014	0.124	0.359	0.253
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	%						
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	E6CELLS/L						
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	%		7.036				
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	E6CELLS/L		0.090				
LEPTOCYLINDRUS MINIMUS	CD	%		5.403				
LEPTOCYLINDRUS MINIMUS	CD	E6CELLS/L		0.069				
PSEUDONITZSCHIA SPP.	PD	%	5.711					
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L	0.038					
SKELETONEMA COSTATUM	CD	%					12.594	
SKELETONEMA COSTATUM	CD	E6CELLS/L					0.197	
THALASSIOSIRA ROTULA	CD	%					7.296	
THALASSIOSIRA ROTULA	CD	E6CELLS/L					0.114	
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	68.231	69.382	87.205	61.382	35.668	53.555
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.453	0.886	0.240	0.312	0.558	0.578

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WF997
(continued)

			F25	F27	F30	F31	N04	N16	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%			9.435	10.612		7.191	
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L			0.154	0.112		0.020	
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	34.676		14.954	20.958	7.031	20.545	6.279
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.376		0.244	0.222	0.028	0.059	0.022
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	%	11.397						
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	E6CELLS/L	0.123						
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	%							
GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM L	DF	E6CELLS/L							
LEPTOCYLINDRUS MINIMUS	CD	%							
LEPTOCYLINDRUS MINIMUS	CD	E6CELLS/L							
PSEUDONITZSCHIA SPP.	PD	%							
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L							
SKELETONEMA COSTATUM	CD	%			7.732				
SKELETONEMA COSTATUM	CD	E6CELLS/L			0.126				
THALASSIOSIRA ROTULA	CD	%			8.354				
THALASSIOSIRA ROTULA	CD	E6CELLS/L			0.136				
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	40.496	94.616	40.767	58.631	87.569	63.432	87.201
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.439	0.330	0.664	0.621	0.353	0.181	0.302

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WN998

			N04	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%		11.034
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L		0.105
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%		11.612
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L		0.111
RHIZOSOLENIA DELICATULA	CD	%		12.952
RHIZOSOLENIA DELICATULA	CD	E6CELLS/L		0.124
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	90.666	49.206
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.313	0.469

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Whole Water Phytoplankton, Survey WN999

			N04	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%		11.984
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L		0.097
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	5.904	5.182
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.023	0.042
THALASSIOSIRA SP. GROUP 3 10-20 MICRONS LENGTH	CD	%		5.712
THALASSIOSIRA SP. GROUP 3 10-20 MICRONS LENGTH	CD	E6CELLS/L		0.046
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	85.934	61.537
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.330	0.499

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton,survey WF991

			F01	F02	F06	F13	F23	F24
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%						
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L						
CHAETOCEROS DEBILIS	CD	%	17.140	22.507	9.027	15.300	8.451	12.557
CHAETOCEROS DEBILIS	CD	E6CELLS/L	0.123	0.266	0.034	0.115	0.054	0.095
CHAETOCEROS SOCIALIS	CD	%		10.934				
CHAETOCEROS SOCIALIS	CD	E6CELLS/L		0.129				
CHAETOCEROS SPP. (10-20UM)	CD	%	5.138	6.906		5.335		
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L	0.037	0.082		0.040		
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	5.920				6.125	6.388
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.043				0.039	0.0481
PSEUDONITZSCHIA PUNGENS	PD	%		5.371	14.318	24.761	7.686	13.354
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L		0.063	0.054	0.187	0.049	0.101
PSEUDONITZSCHIA SPP.	PD	%			9.027			
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L			0.034			
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	56.013	31.510	42.868	27.624	62.781	47.912
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.403	0.372	0.162	0.208	0.402	0.361

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton,survey WF991
(continued)

			F25	F27	F30	F31	N04	N16	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%		9.202			6.297		
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L		0.048			0.043		
CHAETOCEROS DEBILIS	CD	%			6.216	6.504	25.149	12.493	
CHAETOCEROS DEBILIS	CD	E6CELLS/L			0.058	0.025	0.171	0.072	
CHAETOCEROS SOCIALIS	CD	%							5.710
CHAETOCEROS SOCIALIS	CD	E6CELLS/L							0.037
CHAETOCEROS SPP. (10-20UM)	CD	%							5.161
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L							0.033
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	8.122			7.160			
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.040			0.027			
PSEUDONITZSCHIA PUNGENS	PD	%		24.805	8.255	11.319	12.911	22.315	17.131
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L		0.130	0.076	0.043	0.088	0.128	0.111
PSEUDONITZSCHIA SPP.	PD	%						6.634	8.785
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L						0.038	0.057
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	69.347	46.584	66.209	62.057	37.334	33.397	39.156
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.341	0.245	0.613	0.235	0.254	0.191	0.253

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WF992

			F01	F02	F06	F13	F23	F24
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%						
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L						
CHAETOCEROS DEBILIS	CD	%		9.793				
CHAETOCEROS DEBILIS	CD	E6CELLS/L		0.145				
CHAETOCEROS SOCIALIS	CD	%	36.937	44.899	34.055	33.935	42.993	47.806
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.541	0.667	0.352	0.363	0.604	1.018
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	%	11.827					
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	E6CELLS/L	0.173					
CHAETOCEROS SPP. (10-20UM)	CD	%		11.548	36.832	21.816	15.604	25.978
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L		0.171	0.381	0.233	0.219	0.553
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%						
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L						
PSEUDONITZSCHIA PUNGENS	PD	%	6.398					
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L	0.094					
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	27.767	22.759	14.198	25.131	23.604	11.467
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.407	0.338	0.147	0.269	0.332	0.244

**Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WF992
(continued)**

			F25	F27	F30	F31	N04	N16	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%		6.403					
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L		0.060					
CHAETOCEROS DEBILIS	CD	%							
CHAETOCEROS DEBILIS	CD	E6CELLS/L							
CHAETOCEROS SOCIALIS	CD	%	50.518	28.068	40.778	33.279	35.466	39.756	34.210
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.661	0.265	0.651	0.476	0.598	0.589	0.577
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	%							
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	E6CELLS/L							
CHAETOCEROS SPP. (10-20UM)	CD	%	14.021	12.787	18.113	21.578	30.642	29.670	31.201
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L	0.183	0.121	0.289	0.308	0.516	0.440	0.526
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%				5.375			
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L				0.077			
PSEUDONITZSCHIA PUNGENS	PD	%		6.081					
PSEUDONITZSCHIA PUNGENS	PD	E6CELLS/L		0.057					
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	19.079	22.331	24.882	28.597	15.567	11.669	19.454
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.250	0.211	0.397	0.409	0.262	0.173	0.328

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WN993

			N04	N18
CHAETOCEROS SOCIALIS	CD	%	48.359	43.350
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.509	0.550
CHAETOCEROS SPP. (10-20UM)	CD	%	18.135	26.768
CHAETOCEROS SPP. (10-20UM)	CD	E6CELLS/L	0.191	0.340
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	22.738	19.215
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.239	0.244

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WF994

			F01	F02	F06	F13	F23	F24
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%						8.231
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L						0.171
CHAETOCEROS SOCIALIS	CD	%	67.791	33.215		13.206	20.182	19.818
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	2.318	0.693		0.128	0.327	0.411
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CD	%	8.386	27.310		5.853	16.455	11.359
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L	0.287	0.570		0.057	0.266	0.236
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%			6.527	17.737		13.396
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L			0.028	0.172		0.278
THALASSIOSIRA ROTULA	CD	%						
THALASSIOSIRA ROTULA	CD	E6CELLS/L						
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	15.650	29.722	82.675	55.016	47.536	36.313
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.535	0.620	0.350	0.533	0.770	0.754

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WF994
(continued)

			F25	F27	F30	F31	N04	N16	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%							
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L							
CHAETOCEROS SOCIALIS	CD	%	33.184		25.780	35.279	24.615	23.816	8.321
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.651		0.478	1.056	0.741	0.367	0.252
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CD	%	13.616		13.383	17.279	6.269	8.292	
CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L	0.267		0.248	0.517	0.189	0.128	
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	6.409		13.158	9.712			
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.126		0.244	0.291			
THALASSIOSIRA ROTULA	CD	%			5.583				
THALASSIOSIRA ROTULA	CD	E6CELLS/L			0.103				
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	31.302	77.070	30.100	23.943	59.319	59.108	78.163
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.615	0.473	0.558	0.717	1.785	0.912	2.368

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WN995

			N04	N18
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	6.036	8.810
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.020	0.040
PROROCENTRUM MINIMUM	DF	%	7.145	10.080
PROROCENTRUM MINIMUM	DF	E6CELLS/L	0.023	0.046
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	71.567	63.023
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.234	0.288

**Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WN996**

			N04	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%		6.136
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L		0.069
CHAETOCEROS SOCIALIS	CD	%	12.208	
CHAETOCEROS SOCIALIS	CD	E6CELLS/L	0.129	
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	%		5.429
CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRONS	CD	E6CELLS/L		0.061
CHAETOCEROS SPP.(<10UM)	CD	%	13.076	11.973
CHAETOCEROS SPP.(<10UM)	CD	E6CELLS/L	0.138	0.135
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	6.704	8.088
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.071	0.091
PROROCENTRUM MINIMUM	DF	%	5.020	5.499
PROROCENTRUM MINIMUM	DF	E6CELLS/L	0.053	0.062
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	47.177	45.461
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.498	0.513

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WF997

			F01	F02	F06	F13	F23	F24
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%					6.383	
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L					0.078	
CERATIUM LONGIPES	DF	%	5.035					
CERATIUM LONGIPES	DF	E6CELLS/L	0.037					
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	7.702		6.035	25.569	22.231	17.242
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.057		0.022	0.259	0.273	0.226
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	%						
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	E6CELLS/L						
LEPTOCYLINDRUS MINIMUS	CD	%		30.886				
LEPTOCYLINDRUS MINIMUS	CD	E6CELLS/L		0.378				
PSEUDONITZSCHIA SPP.	PD	%	8.788	21.561				
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L	0.065	0.264				
SKELETONEMA COSTATUM	CD	%					7.362	
SKELETONEMA COSTATUM	CD	E6CELLS/L					0.091	
THALASSIOSIRA ROTULA	CD	%					10.439	
THALASSIOSIRA ROTULA	CD	E6CELLS/L					0.128	
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	65.283	24.139	80.075	61.096	40.941	60.675
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.483	0.295	0.292	0.620	0.503	0.797

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WF997
(continued)

			F25	F27	F30	F31	N04	N16	N18
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	%							
CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICRONS	CD	E6CELLS/L							
CERATIUM LONGIPES	DF	%							
CERATIUM LONGIPES	DF	E6CELLS/L							
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	17.265	6.165	18.839	15.066	20.376	10.753	13.272
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.127	0.022	0.234	0.148	0.0626	0.083	0.024
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	%	5.626						
CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRONS	CY	E6CELLS/L	0.041						
LEPTOCYLINDRUS MINIMUS	CD	%							
LEPTOCYLINDRUS MINIMUS	CD	E6CELLS/L							
PSEUDONITZSCHIA SPP.	PD	%							
PSEUDONITZSCHIA SPP.	PD	E6CELLS/L							
SKELETONEMA COSTATUM	CD	%							
SKELETONEMA COSTATUM	CD	E6CELLS/L							
THALASSIOSIRA ROTULA	CD	%			5.754				
THALASSIOSIRA ROTULA	CD	E6CELLS/L			0.071				
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	64.599	88.607	54.535	71.565	75.322	84.274	78.582
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.474	0.322	0.676	0.705	0.231	0.654	0.141

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WN998

			N04	N18
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%		6.488
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L		0.030
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	92.806	74.514
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.429	0.345

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Whole Water Phytoplankton, Survey WN999

			N04	N18
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	%	5.117	6.260
CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRONS	CY	E6CELLS/L	0.010	0.011
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	%	90.396	78.594
UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH <10 MICRONS	MF	E6CELLS/L	0.181	0.140

APPENDIX G

Abundance of prevalent Phytoplankton Species in Screened Water Surface and Chlorophyll-A Maximum Samples

Abundance Of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF991

			F01	F02	F06	F13	F23	F24
ATHECATE DINOFLAGELLATE	DF	%				5.1		
ATHECATE DINOFLAGELLATE	DF	CELLS/L				13.5		
CERATIUM FUSUS	DF	%	33.9	27.6	23.4		34.8	43.4
CERATIUM FUSUS	DF	CELLS/L	133.8	204.0	160.0		48.0	129.6
CERATIUM LINEATUM	DF	%				13.6		7.2
CERATIUM LINEATUM	DF	CELLS/L				36.0		21.6
CERATIUM LONGIPES	DF	%						5.4
CERATIUM LONGIPES	DF	CELLS/L						16.2
CERATIUM MACROCEROS	DF	%	5.4					
CERATIUM MACROCEROS	DF	CELLS/L	21.2					
CERATIUM TRIPOS	DF	%	17.4	33.3	41.7	14.1	8.7	14.5
CERATIUM TRIPOS	DF	CELLS/L	68.9	246.0	285.0	37.5	12.0	43.2
DINOPHYSIS NORVEGICA	DF	%	7.0			9.0	5.4	
DINOPHYSIS NORVEGICA	DF	CELLS/L	27.8			24.0	7.5	
DISTEPHANUS SPECULUM	CR	%					22.8	
DISTEPHANUS SPECULUM	CR	CELLS/L					31.5	
MESODINIUM RUBRUM	DF	%						
MESODINIUM RUBRUM	DF	CELLS/L						
PROROCENTRUM MICANS	DF	%	9.4	8.1				
PROROCENTRUM MICANS	DF	CELLS/L	37.1	60.0				
PROTOPERIDINIUM BIPES	DF	%						
PROTOPERIDINIUM BIPES	DF	CELLS/L						
PROTOPERIDINIUM DEPRESSUM	DF	%			6.8	27.1	8.7	9.0
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L			46.3	72.0	12.0	27.0
PROTOPERIDINIUM PUNCTULATUM	DF	%						
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L						
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	9.7	6.5		6.8	8.7	
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	38.4	48.0		18.0	12.0	
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	%						
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	CELLS/L						

**Abundance Of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF991
(continued)**

			F25	F27	F30	F31	N04	N16	N18
ATHECATE DINOFLAGELLATE	DF	%							
ATHECATE DINOFLAGELLATE	DF	CELLS/L							
CERATIUM FUSUS	DF	%	12.2	35.4	38.5	31.9	13.8	24.9	34.8
CERATIUM FUSUS	DF	CELLS/L	30.0	131.3	50.0	50.3	52.2	150.8	230.4
CERATIUM LINEATUM	DF	%	14.2				6.1	9.5	
CERATIUM LINEATUM	DF	CELLS/L	35.0				23.2	57.2	
CERATIUM LONGIPES	DF	%							
CERATIUM LONGIPES	DF	CELLS/L							
CERATIUM MACROCEROS	DF	%							
CERATIUM MACROCEROS	DF	CELLS/L							
CERATIUM TRIPOS	DF	%	8.1	25.3	27.0	17.0	19.9	24.7	38.6
CERATIUM TRIPOS	DF	CELLS/L	20.0	93.6	35.0	26.8	75.4	149.5	256.0
DINOPHYSIS NORVEGICA	DF	%	11.7		7.7	21.3	9.2	5.2	
DINOPHYSIS NORVEGICA	DF	CELLS/L	28.8		10.0	33.5	34.8	31.2	
DISTEPHANUS SPECULUM	CR	%	6.1						
DISTEPHANUS SPECULUM	CR	CELLS/L	15.0						
MESODINIUM RUBRUM	DF	%	5.6						
MESODINIUM RUBRUM	DF	CELLS/L	13.8						
PROROCENTRUM MICANS	DF	%			8.7				
PROROCENTRUM MICANS	DF	CELLS/L			11.3				
PROTOPERIDINIUM BIPES	DF	%	16.2						
PROTOPERIDINIUM BIPES	DF	CELLS/L	40.0						
PROTOPERIDINIUM DEPRESSUM	DF	%	8.1	14.0			15.3	10.3	
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	20.0	52.0			58.0	62.4	
PROTOPERIDINIUM PUNCTULATUM	DF	%				8.5			
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L				13.4			
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%		6.7	15.4	9.6	16.9		
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L		24.7	20.0	15.1	63.8		
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	%	6.1					5.2	
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	CELLS/L	15.0					31.2	

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF992

			F01	F02	F06	F13	F23	F24
CERATIUM FUSUS	DF	%	16.0			15.5	13.1	6.7
CERATIUM FUSUS	DF	CELLS/L	155.4			43.8	26.0	33.3
CERATIUM LONGIPES	DF	%						
CERATIUM LONGIPES	DF	CELLS/L						
CERATIUM TRIPOS	DF	%	19.8	19.3	36.8	18.1	12.1	12.3
CERATIUM TRIPOS	DF	CELLS/L	192.4	62.9	174.4	51.3	24.0	61.05
DICTYOCHA FIBULA	CR	%		6.8				
DICTYOCHA FIBULA	CR	CELLS/L		22.1				
DINOPHYSIS NORVEGICA	DF	%	26.6	16.7	15.2	16.8	17.2	19.4
DINOPHYSIS NORVEGICA	DF	CELLS/L	259.0	54.4	72.0	47.5	34.0	96.2
DISTEPHANUS SPECULUM	CR	%				16.4		
DISTEPHANUS SPECULUM	CR	CELLS/L				46.3		
GYRODINIUM SPIRALE	DF	%						
GYRODINIUM SPIRALE	DF	CELLS/L						
PROTOPERIDINIUM BREVIPES	DF	%						
PROTOPERIDINIUM BREVIPES	DF	CELLS/L						
PROTOPERIDINIUM DEPRESSUM	DF	%	8.6		11.1		17.2	16.0
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	83.2		52.8		34.0	79.6
PROTOPERIDINIUM PALLIDUM	DF	%				7.1	6.1	
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L				20.0	12.0	
PROTOPERIDINIUM PENTAGONUM	DF	%						5.6
PROTOPERIDINIUM PENTAGONUM	DF	CELLS/L						27.8
PROTOPERIDINIUM PUNCTULATUM	DF	%	6.1	29.2			7.1	
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L	59.2	95.2			14.0	
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%						7.8
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L						38.9
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	11.4	17.2	15.5	7.5	12.1	9.7
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	111.0	56.1	73.6	21.3	24.0	48.1

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF992
(continued)

			F25	F27	F30	F31	N04	N16	N18
CERATIUM FUSUS	DF	%	14.8	21.0		13.6	16.7	10.4	8.4
CERATIUM FUSUS	DF	CELLS/L	28.8	64.6		39.4	58.6	54.4	41.8
CERATIUM LONGIPES	DF	%		11.6				6.7	
CERATIUM LONGIPES	DF	CELLS/L		35.7				35.2	
CERATIUM TRIPOS	DF	%	11.5				8.6	20.1	16.3
CERATIUM TRIPOS	DF	CELLS/L	22.4				30.2	105.6	81.7
DICTYOCHA FIBULA	CR	%							
DICTYOCHA FIBULA	CR	CELLS/L							
DINOPHYSIS NORVEGICA	DF	%			9.0		13.6	12.8	6.8
DINOPHYSIS NORVEGICA	DF	CELLS/L			11.6		47.9	67.2	34.2
DISTEPHANUS SPECULUM	CR	%		13.8					8.0
DISTEPHANUS SPECULUM	CR	CELLS/L		42.5					39.9
GYRODINIUM SPIRALE	DF	%	7.4		20.5	7.1			
GYRODINIUM SPIRALE	DF	CELLS/L	14.4		26.4	20.5			
PROTOPERIDINIUM BREVIPES	DF	%			10.3				
PROTOPERIDINIUM BREVIPES	DF	CELLS/L			13.2				
PROTOPERIDINIUM DEPRESSUM	DF	%	9.8	18.2		15.8	19.7		19.8
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	19.2	56.1		45.7	69.2		98.8
PROTOPERIDINIUM PALLIDUM	DF	%	6.6		5.1	7.6		5.2	6.5
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L	12.8		6.6	22.1		27.2	32.3
PROTOPERIDINIUM PENTAGONUM	DF	%		7.2	15.4				
PROTOPERIDINIUM PENTAGONUM	DF	CELLS/L		22.1	19.8				
PROTOPERIDINIUM PUNCTULATUM	DF	%	12.3						
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L	24.0						
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%	9.8		6.4				
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L	19.2		8.3				
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	18.0	14.4	21.8	27.2	20.2	23.8	18.6
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	35.2	44.2	28.1	78.8	71.0	124.8	93.1

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WN993

			N04	N18
CERATIUM FUSUS	DF	%	8.9	15.2
CERATIUM FUSUS	DF	CELLS/L	62.9	100.7
CERATIUM LONGIPES	DF	%		7.2
CERATIUM LONGIPES	DF	CELLS/L		47.9
CERATIUM TRIPOS	DF	%	6.3	20.1
CERATIUM TRIPOS	DF	CELLS/L	44.4	133.7
DINOPHYSIS NORVEGICA	DF	%	9.4	12.2
DINOPHYSIS NORVEGICA	DF	CELLS/L	66.6	80.9
DISTEPHANUS SPECULUM	CR	%	17.8	6.2
DISTEPHANUS SPECULUM	CR	CELLS/L	125.8	41.3
PROTOPERIDINIUM DEPRESSUM	DF	%	8.4	
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	59.2	
PROTOPERIDINIUM PALLIDUM	DF	%		5.2
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L		34.7
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	16.8	
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	118.4	
THECATE DINOFLAGELLATE SPP.	DF	%		6.0
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L		39.6

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF994

			F01	F02	F06	F13	F23	F24
ATHECATE DINOFLAGELLATE	DF	%	21.1					
ATHECATE DINOFLAGELLATE	DF	CELLS/L	106.7					
CERATIUM FUSUS	DF	%	5.6	18.7		10.4		
CERATIUM FUSUS	DF	CELLS/L	28.4	79.6		108.0		
CERATIUM LINEATUM	DF	%						
CERATIUM LINEATUM	DF	CELLS/L						
CERATIUM LONGIPES	DF	%	8.0	12.6	53.9	43.0	9.4	11.1
CERATIUM LONGIPES	DF	CELLS/L	40.5	53.7	487.2	444.0	37.1	39.1
CERATIUM SPP.	DF	%				6.4	11.5	7.6
CERATIUM SPP.	DF	CELLS/L				66.0	45.4	26.6
CERATIUM TRIPOS	DF	%	15.7	29.6	26.3	30.0	16.1	
CERATIUM TRIPOS	DF	CELLS/L	79.7	125.8	237.8	310.5	63.3	
DINOPHYSIS NORVEGICA	DF	%	11.7	20.0		9.1	16.8	
DINOPHYSIS NORVEGICA	DF	CELLS/L	59.4	85.1		94.5	66.0	
DISTEPHANUS SPECULUM	CR	%			7.4			
DISTEPHANUS SPECULUM	CR	CELLS/L			66.7			
GONYAULAX SPP.	DF	%						
GONYAULAX SPP.	DF	CELLS/L						
GYMNODINIUM SPP.	DF	%	5.9					
GYMNODINIUM SPP.	DF	CELLS/L	29.7					
GYRODINIUM SPIRALE	DF	%					8.7	17.2
GYRODINIUM SPIRALE	DF	CELLS/L					34.4	60.3
GYRODINIUM SPP.	DF	%						
GYRODINIUM SPP.	DF	CELLS/L						
PROTOPERIDINIUM DEPRESSUM	DF	%	10.1					8.1
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	51.3					28.4
PROTOPERIDINIUM PUNCTULATUM	DF	%						6.6
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L						23.1
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%					5.9	11.6
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L					23.4	40.8
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	10.9					9.6
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	55.4					33.7
THECATE DINOFLAGELLATE SPP.	DF	%						9.1
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L						32.0

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF994
(continued)**

			F25	F27	F30	F31	N04	N16	N18
ATHECATE DINOFLAGELLATE	DF	%		5.5	6.2	14.3			
ATHECATE DINOFLAGELLATE	DF	CELLS/L		12.2	23.3	18.2			
CERATIUM FUSUS	DF	%	8.7	14.5			7.6		7.3
CERATIUM FUSUS	DF	CELLS/L	10.8	32.4			31.4		18.6
CERATIUM LINEATUM	DF	%	5.4						
CERATIUM LINEATUM	DF	CELLS/L	6.8						
CERATIUM LONGIPES	DF	%	16.3	31.5		9.9	24.8	53.7	32.1
CERATIUM LONGIPES	DF	CELLS/L	20.3	70.2		12.6	102.3	274.1	82.2
CERATIUM SPP.	DF	%		10.3			10.4	6.1	6.7
CERATIUM SPP.	DF	CELLS/L		23.0			42.9	31.1	17.1
CERATIUM TRIPOS	DF	%	13.0	13.9	5.4		18.0	11.4	8.5
CERATIUM TRIPOS	DF	CELLS/L	16.2	31.1	20.2		74.3	58.1	21.7
DINOPHYSIS NORVEGICA	DF	%				34.1	20.8		9.1
DINOPHYSIS NORVEGICA	DF	CELLS/L				43.4	85.8		23.3
DISTEPHANUS SPECULUM	CR	%	17.4	15.2				12.2	
DISTEPHANUS SPECULUM	CR	CELLS/L	21.6	33.8				62.1	
GONYAULAX SPP.	DF	%						5.3	
GONYAULAX SPP.	DF	CELLS/L						27.0	
GYMNODINIUM SPP.	DF	%							
GYMNODINIUM SPP.	DF	CELLS/L							
GYRODINIUM SPIRALE	DF	%	8.7		29.3	13.2			6.7
GYRODINIUM SPIRALE	DF	CELLS/L	10.8		110.1	16.8			17.1
GYRODINIUM SPP.	DF	%			5.4				7.8
GYRODINIUM SPP.	DF	CELLS/L			20.2				20.2
PROTOPERIDINIUM DEPRESSUM	DF	%	9.8		5.4		9.2		
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	12.2		20.2		38.0		
PROTOPERIDINIUM PUNCTULATUM	DF	%							
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L							
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%			14.0				
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L			52.7				
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	8.7		12.0	13.2			12.7
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	10.8		45.0	16.8			32.6
THECATE DINOFLAGELLATE SPP.	DF	%			6.6	5.5			
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L			24.8	7.0			

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WN995**

			N04	N18
CERATIUM FUSUS	DF	%		6.1
CERATIUM FUSUS	DF	CELLS/L		37.2
CERATIUM LONGIPES	DF	%	37.1	43.0
CERATIUM LONGIPES	DF	CELLS/L	270.0	260.4
CERATIUM SPP.	DF	%	6.7	9.2
CERATIUM SPP.	DF	CELLS/L	48.6	55.8
CERATIUM TRIPOS	DF	%	18.7	28.6
CERATIUM TRIPOS	DF	CELLS/L	136.4	173.6
DINOPHYSIS NORVEGICA	DF	%		10.2
DINOPHYSIS NORVEGICA	DF	CELLS/L		62.0
DISTEPHANUS SPECULUM	CR	%	23.7	
DISTEPHANUS SPECULUM	CR	CELLS/L	172.8	

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WN996**

			N04	N18
CERATIUM LONGIPES	DF	%	16.3	26.4
CERATIUM LONGIPES	DF	CELLS/L	480.6	483.6
CERATIUM SPP.	DF	%		5.1
CERATIUM SPP.	DF	CELLS/L		93.6
CERATIUM TRIPOS	DF	%	9.0	12.2
CERATIUM TRIPOS	DF	CELLS/L	266.4	223.6
THECATE DINOFLAGELLATE SPP.	DF	%	56.6	35.4
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L	1670.4	648.7

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF997**

			F01	F02	F06	F13	F23	F24
CERATIUM FUSUS	DF	%	5.1	30.6	16.7		19.9	17.3
CERATIUM FUSUS	DF	CELLS/L	97.2	459.0	532.0		83.7	260.8
CERATIUM LINEATUM	DF	%				15.8		
CERATIUM LINEATUM	DF	CELLS/L				270.0		
CERATIUM LONGIPES	DF	%		10.2	19.3	27.1	18.8	13.4
CERATIUM LONGIPES	DF	CELLS/L		153.0	614.6	462.0	79.1	201.6
CERATIUM SPP.	DF	%					7.0	
CERATIUM SPP.	DF	CELLS/L					29.5	
CERATIUM TRIPOS	DF	%	26.7	38.0	21.4	47.3	38.0	45.9
CERATIUM TRIPOS	DF	CELLS/L	506.1	571.6	681.8	806.0	159.7	692.8
DINOPHYSIS NORVEGICA	DF	%	14.7		29.1			8.1
DINOPHYSIS NORVEGICA	DF	CELLS/L	278.4		924.0			121.6
GONYAULAX SPINIFERA	DF	%						
GONYAULAX SPINIFERA	DF	CELLS/L						
PROROCENTRUM MINIMUM	DF	%	25.4					
PROROCENTRUM MINIMUM	DF	CELLS/L	481.4					
PROTOPERIDINIUM PENTAGONUM	DF	%					8.1	
PROTOPERIDINIUM PENTAGONUM	DF	CELLS/L					34.1	

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WF997
(continued)**

			F25	F27	F30	F31	N04	N16	N18
CERATIUM FUSUS	DF	%	25.4	18.1		13.3	32.3	28.5	28.3
CERATIUM FUSUS	DF	CELLS/L	528.0	444.6		133.7	371.7	235.6	323.0
CERATIUM LINEATUM	DF	%							
CERATIUM LINEATUM	DF	CELLS/L							
CERATIUM LONGIPES	DF	%	31.6	8.7	29.5	26.5	7.2	14.8	19.1
CERATIUM LONGIPES	DF	CELLS/L	658.0	212.8	127.1	266.0	82.6	122.5	218.3
CERATIUM SPP.	DF	%		6.4	17.6		6.4	5.8	6.7
CERATIUM SPP.	DF	CELLS/L		157.7	75.9		73.8	48.1	76.7
CERATIUM TRIPOS	DF	%	14.6	65.8	9.2	37.8	42.5	49.1	37.9
CERATIUM TRIPOS	DF	CELLS/L	304.0	1616.9	39.6	379.3	488.2	406.1	433.7
DINOPHYSIS NORVEGICA	DF	%	11.5		25.7	9.0			
DINOPHYSIS NORVEGICA	DF	CELLS/L	240.0		111.0	90.5			
GONYAULAX SPINIFERA	DF	%	5.8						
GONYAULAX SPINIFERA	DF	CELLS/L	120.0						
PROROCENTRUM MINIMUM	DF	%							
PROROCENTRUM MINIMUM	DF	CELLS/L							
PROTOPERIDINIUM PENTAGONUM	DF	%			11.9				
PROTOPERIDINIUM PENTAGONUM	DF	CELLS/L			51.2				

Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WN998

			N04	N18
CERATIUM FUSUS	DF	%	9.9	
CERATIUM FUSUS	DF	CELLS/L	152.5	
CERATIUM LONGIPES	DF	%		6.6
CERATIUM LONGIPES	DF	CELLS/L		170.0
CERATIUM SPP.	DF	%	6.3	6.3
CERATIUM SPP.	DF	CELLS/L	97.5	160.0
CERATIUM TRIPOS	DF	%	75.9	82.5
CERATIUM TRIPOS	DF	CELLS/L	1170.0	2110.0

**Abundance of Prevalent Species (>5% Total Count) in Surface Sample
Screened Phytoplankton, Survey WN999**

			N04	N18
CERATIUM LONGIPES	DF	%	6.7	9.0
CERATIUM LONGIPES	DF	CELLS/L	146.0	321.8
CERATIUM TRIPOS	DF	%	84.7	81.3
CERATIUM TRIPOS	DF	CELLS/L	1859.1	2903.1

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WF991

			F01	F02	F06	F13	F23	F24
ATHECATE DINOFLAGELLATE	DF	%					8.0	
ATHECATE DINOFLAGELLATE	DF	CELLS/L					10.5	
CERATIUM FUSUS	DF	%	16.2	27.5	29.3	37.6	31.8	37.0
CERATIUM FUSUS	DF	CELLS/L	52.0	246.0	215.0	374.4	42.0	131.3
CERATIUM LINEATUM	DF	%					10.2	
CERATIUM LINEATUM	DF	CELLS/L					13.5	
CERATIUM LONGIPES	DF	%						
CERATIUM LONGIPES	DF	CELLS/L						
CERATIUM MACROCEROS	DF	%						
CERATIUM MACROCEROS	DF	CELLS/L						
CERATIUM TRIPOS	DF	%	46.5	26.2	35.4	33.9	5.7	27.8
CERATIUM TRIPOS	DF	CELLS/L	149.5	234.0	260.0	338.0	7.5	98.8
DICTYOCHA FIBULA	CR	%						
DICTYOCHA FIBULA	CR	CELLS/L						
DINOPHYSIS NORVEGICA	DF	%		5.5	8.2	6.8		5.9
DINOPHYSIS NORVEGICA	DF	CELLS/L		49.5	60.0	67.6		20.8
DISTEPHANUS SPECULUM	CR	%						
DISTEPHANUS SPECULUM	CR	CELLS/L						
GYMNODINIUM SP. GROUP 2 21-40UM W 21-50UM L	DF	%					9.1	
GYMNODINIUM SP. GROUP 2 21-40UM W 21-50UM L	DF	CELLS/L					12.0	
PROROCENTRUM MICANS	DF	%	12.1	10.1				
PROROCENTRUM MICANS	DF	CELLS/L	39.0	90.0				
PROTOPERIDINIUM DEPRESSUM	DF	%						7.7
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L						27.3
PROTOPERIDINIUM PALLIDUM	DF	%						
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L						
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	14.1	7.7	6.3		12.5	
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	45.5	69.0	46.3		16.5	
THECATE DINOFLAGELLATE SPP.	DF	%					6.8	
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L					9.0	

**Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WF991
(continued)**

			F25	F27	F30	F31	N04	N16	N18
ATHECATE DINOFLAGELLATE	DF	%							
ATHECATE DINOFLAGELLATE	DF	CELLS/L							
CERATIUM FUSUS	DF	%	26.9	32.4	40.9	5.8	34.4	25.4	34.2
CERATIUM FUSUS	DF	CELLS/L	30.0	135.4	45.9	7.0	264.6	185.5	260.0
CERATIUM LINEATUM	DF	%	5.4			8.1			
CERATIUM LINEATUM	DF	CELLS/L	6.3			9.8			
CERATIUM LONGIPES	DF	%				9.3			
CERATIUM LONGIPES	DF	CELLS/L				11.2			
CERATIUM MACROCEROS	DF	%		6.8					
CERATIUM MACROCEROS	DF	CELLS/L		28.5					
CERATIUM TRIPOS	DF	%	13.0	19.1	22.7	37.2	35.8	53.7	39.2
CERATIUM TRIPOS	DF	CELLS/L	15.0	79.8	25.5	44.8	275.4	392.2	298.8
DICTYOCHA FIBULA	CR	%				8.1			
DICTYOCHA FIBULA	CR	CELLS/L				9.8			
DINOPHYSIS NORVEGICA	DF	%	5.4		9.1				11.2
DINOPHYSIS NORVEGICA	DF	CELLS/L	6.3		10.2				85.0
DISTEPHANUS SPECULUM	CR	%	5.4	8.5				5.8	
DISTEPHANUS SPECULUM	CR	CELLS/L	6.3	35.6				42.4	
GYMNODINIUM SP. GROUP 2 21-40UM W 21-50UM L	DF	%							
GYMNODINIUM SP. GROUP 2 21-40UM W 21-50UM L	DF	CELLS/L							
PROROCENTRUM MICANS	DF	%							
PROROCENTRUM MICANS	DF	CELLS/L							
PROTOPERIDINIUM DEPRESSUM	DF	%	13.0						
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	15.0						
PROTOPERIDINIUM PALLIDUM	DF	%	8.7						
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L	10.0						
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	12.0	10.9	10.2	9.3	6.3		
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	13.8	45.6	11.5	11.2	48.6		
THECATE DINOFLAGELLATE SPP.	DF	%			8.0				
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L			8.9				

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WF992

			F01	F02	F06	F13	F23	F24
CERATIUM FUSUS	DF	%	7.2	14.2	7.9	11.9	23.4	17.1
CERATIUM FUSUS	DF	CELLS/L	62.9	35.7	33.0	59.8	120.4	72.0
CERATIUM LONGIPES	DF	%						6.2
CERATIUM LONGIPES	DF	CELLS/L						26.0
CERATIUM SPP.	DF	%					7.1	
CERATIUM SPP.	DF	CELLS/L					36.6	
CERATIUM TRIPOS	DF	%	28.3	25.7	38.6	17.8	11.7	18.6
CERATIUM TRIPOS	DF	CELLS/L	247.9	64.6	161.7	89.7	60.2	78.0
DICTYOCHA FIBULA	CR	%						
DICTYOCHA FIBULA	CR	CELLS/L						
DINOPHYSIS NORVEGICA	DF	%	25.6	8.1	17.7	7.5	13.8	10.5
DINOPHYSIS NORVEGICA	DF	CELLS/L	223.9	20.4	74.3	37.7	71.0	44.0
DISTEPHANUS SPECULUM	CR	%		5.4		7.5		
DISTEPHANUS SPECULUM	CR	CELLS/L		13.6		37.7		
GYRODINIUM SPIRALE	DF	%		5.4				
GYRODINIUM SPIRALE	DF	CELLS/L		13.6				
PROTOPERIDINIUM DEPRESSUM	DF	%	9.7	8.1	5.1	10.3	10.5	5.7
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	85.1	20.4	21.5	52.0	53.8	24.0
PROTOPERIDINIUM PALLIDUM	DF	%	5.3		5.1	5.7		
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L	46.3		21.5	28.6		
PROTOPERIDINIUM PENTAGONUM	DF	%				5.4		
PROTOPERIDINIUM PENTAGONUM	DF	CELLS/L				27.3		
PROTOPERIDINIUM PUNCTULATUM	DF	%		5.4				
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L		13.6				
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%				5.2		
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L				26.0		
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	13.1	25.0	15.0	17.0	17.2	21.4
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	114.7	62.9	62.7	85.8	88.2	90.0
THECATE DINOFLAGELLATE SPP.	DF	%						
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L						

**Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WF992
(continued)**

			F25	F27	F30	F31	N04	N16	N18
CERATIUM FUSUS	DF	%	9.0	26.3	12.3	28.6	17.0	19.2	12.4
CERATIUM FUSUS	DF	CELLS/L	27.6	106.8	12.6	75.9	93.0	104.0	63.0
CERATIUM LONGIPES	DF	%							
CERATIUM LONGIPES	DF	CELLS/L							
CERATIUM SPP.	DF	%						5.0	
CERATIUM SPP.	DF	CELLS/L						27.2	
CERATIUM TRIPOS	DF	%	8.1	28.4			26.1	26.5	17.4
CERATIUM TRIPOS	DF	CELLS/L	24.7	115.5			142.6	144.0	88.2
DICTYOCHA FIBULA	CR	%							6.0
DICTYOCHA FIBULA	CR	CELLS/L							30.6
DINOPHYSIS NORVEGICA	DF	%	23.3		23.1		6.5	5.3	7.1
DINOPHYSIS NORVEGICA	DF	CELLS/L	71.1		23.6		35.7	28.8	36.0
DISTEPHANUS SPECULUM	CR	%	8.1	9.5	6.2	13.7		6.2	20.9
DISTEPHANUS SPECULUM	CR	CELLS/L	24.7	38.5	6.3	36.3		33.6	106.2
GYRODINIUM SPIRALE	DF	%			6.2				
GYRODINIUM SPIRALE	DF	CELLS/L			6.3				
PROTOPERIDINIUM DEPRESSUM	DF	%		8.6	12.3	8.1	7.6	5.9	5.3
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L		35.0	12.6	21.5	41.9	32.0	27.0
PROTOPERIDINIUM PALLIDUM	DF	%				5.6			
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L				14.9			
PROTOPERIDINIUM PENTAGONUM	DF	%				8.7			
PROTOPERIDINIUM PENTAGONUM	DF	CELLS/L				23.1			
PROTOPERIDINIUM PUNCTULATUM	DF	%							
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L							
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%	10.0						
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L	30.5						
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	15.7	6.9	30.8	18.0	15.9	12.1	8.9
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	47.9	28.0	31.5	47.9	86.8	65.6	45.0
THECATE DINOFLAGELLATE SPP.	DF	%	8.6						
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L	26.1						

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytopolankton, Survey WN993

			N04	N18
CERATIUM FUSUS	DF	%	5.2	5.6
CERATIUM FUSUS	DF	CELLS/L	27.3	38.0
CERATIUM TRIPOS	DF	%	11.4	15.0
CERATIUM TRIPOS	DF	CELLS/L	59.8	100.7
DINOPHYSIS NORVEGICA	DF	%	9.7	5.1
DINOPHYSIS NORVEGICA	DF	CELLS/L	50.7	34.7
DISTEPHANUS SPECULUM	CR	%	10.2	8.3
DISTEPHANUS SPECULUM	CR	CELLS/L	53.3	56.1
PROTOPERIDINIUM DEPRESSUM	DF	%	8.0	8.8
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	41.6	59.4
PROTOPERIDINIUM PALLIDUM	DF	%		5.1
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L		34.7
PROTOPERIDINIUM PUNCTULATUM	DF	%	7.2	
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L	37.7	
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%	11.9	16.7
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L	62.4	112.2
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	14.7	7.8
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	76.7	52.8
THECATE DINOFLAGELLATE SPP.	DF	%	8.0	
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L	41.6	

Abundance of Prevalent Species (> 5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WF994

			F01	F02	F06	F13	F23	F24
CERATIUM FUSUS	DF	%	11.8	16.5	8.0	10.0	12.6	5.1
CERATIUM FUSUS	DF	CELLS/L	41.6	140.0	29.7	54.0	52.5	16.3
CERATIUM LONGIPES	DF	%			30.4	49.0	18.4	10.3
CERATIUM LONGIPES	DF	CELLS/L			112.2	264.0	76.5	32.5
CERATIUM SPP.	DF	%			9.4		9.0	9.5
CERATIUM SPP.	DF	CELLS/L			34.7		37.5	30.0
CERATIUM TRIPOS	DF	%	7.0	21.2	20.1	24.8	10.5	8.3
CERATIUM TRIPOS	DF	CELLS/L	24.7	180.0	74.3	133.5	43.5	26.3
DINOPHYSIS NORVEGICA	DF	%	29.8	32.9	6.7		7.6	28.5
DINOPHYSIS NORVEGICA	DF	CELLS/L	105.3	280.0	24.8		31.5	90.0
DISTEPHANUS SPECULUM	CR	%			13.0			
DISTEPHANUS SPECULUM	CR	CELLS/L			47.9			
GYMNODINIUM SPP.	DF	%						
GYMNODINIUM SPP.	DF	CELLS/L						
GYRODINIUM SPIRALE	DF	%					10.1	
GYRODINIUM SPIRALE	DF	CELLS/L					42.0	
GYRODINIUM SPP.	DF	%						
GYRODINIUM SPP.	DF	CELLS/L						
PROTOPERIDINIUM DEPRESSUM	DF	%	11.0					
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	39.0					
PROTOPERIDINIUM PALLIDUM	DF	%						
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L						
PROTOPERIDINIUM PUNCTULATUM	DF	%						5.1
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L						16.25
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%	7.0				5.8	7.1
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L	24.7				24.0	22.5
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	7.0		7.6		6.5	14.6
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	24.7		28.1		27.0	46.3
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	%						
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	CELLS/L						
THECATE DINOFLAGELLATE SPP.	DF	%	7.7					
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L	27.3					

**Abundance of Prevalent Species (> 5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WF994
(continued)**

			F25	F27	F30	F31	N04	N16	N18
CERATIUM FUSUS	DF	%		19.0		15.4	33.0	6.1	21.1
CERATIUM FUSUS	DF	CELLS/L		48.6		14.3	58.3	5.1	127.5
CERATIUM LONGIPES	DF	%	27.1	33.9		9.2	11.6	12.1	33.5
CERATIUM LONGIPES	DF	CELLS/L	35.7	86.4		8.6	20.5	10.2	202.5
CERATIUM SPP.	DF	%							8.3
CERATIUM SPP.	DF	CELLS/L							50.0
CERATIUM TRIPOS	DF	%	12.9	18.0		13.8	10.7	13.6	15.7
CERATIUM TRIPOS	DF	CELLS/L	17.1	45.9		12.9	18.9	11.5	95.0
DINOPHYSIS NORVEGICA	DF	%			7.8		7.1		
DINOPHYSIS NORVEGICA	DF	CELLS/L			14.0		12.6		
DISTEPHANUS SPECULUM	CR	%						21.2	
DISTEPHANUS SPECULUM	CR	CELLS/L						17.9	
GYMNODINIUM SPP.	DF	%						10.6	
GYMNODINIUM SPP.	DF	CELLS/L						8.9	
GYRODINIUM SPIRALE	DF	%	17.6			15.4			
GYRODINIUM SPIRALE	DF	CELLS/L	23.3			14.3			
GYRODINIUM SPP.	DF	%				21.5			
GYRODINIUM SPP.	DF	CELLS/L				20.0			
PROTOPERIDINIUM DEPRESSUM	DF	%					12.5	19.7	5.4
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L					22.1	16.6	32.5
PROTOPERIDINIUM PALLIDUM	DF	%					11.6		
PROTOPERIDINIUM PALLIDUM	DF	CELLS/L					20.1		
PROTOPERIDINIUM PUNCTULATUM	DF	%							
PROTOPERIDINIUM PUNCTULATUM	DF	CELLS/L							
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%			13.9				
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L			24.8				
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%	12.9	6.9	43.5	12.3			8.7
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L	17.1	17.6	77.5	11.4			52.5
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	%			5.2				
PROTOPERIDINIUM SP. GROUP 3 76-150W 81-150L	DF	CELLS/L			9.3				
THECATE DINOFLAGELLATE SPP.	DF	%	14.1		14.8			12.1	
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L	18.6		26.4			10.2	

**Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WN995**

			N04
CERATIUM FUSUS	DF	%	23.4
CERATIUM FUSUS	DF	CELLS/L	136.5
CERATIUM LONGIPES	DF	%	55.5
CERATIUM LONGIPES	DF	CELLS/L	324.0
DISTEPHANUS SPECULUM	CR	%	9.5
DISTEPHANUS SPECULUM	CR	CELLS/L	55.5

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample Screened Phytoplankton, Survey WN996

			N04	N18
CERATIUM FUSUS	DF	%	10.4	11.8
CERATIUM FUSUS	DF	CELLS/L	241.7	286.2
CERATIUM LONGIPES	DF	%	31.5	27.9
CERATIUM LONGIPES	DF	CELLS/L	734.4	680.4
CERATIUM SPP.	DF	%	5.2	6.9
CERATIUM SPP.	DF	CELLS/L	120.2	167.4
CERATIUM TRIPOS	DF	%	6.5	8.5
CERATIUM TRIPOS	DF	CELLS/L	151.2	207.9
DINOPHYSIS NORVEGICA	DF	%	5.7	10.3
DINOPHYSIS NORVEGICA	DF	CELLS/L	132.3	251.1
THECATE DINOFLAGELLATE SPP.	DF	%	25.3	21.8
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L	588.6	531.9

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample Screened Phytoplankton, Survey WF997

			F01	F02	F06	F13	F23	F24
CERATIUM FUSUS	DF	%		7.7			22.5	6.7
CERATIUM FUSUS	DF	CELLS/L		196.0			165.3	67.0
CERATIUM LINEATUM	DF	%						
CERATIUM LINEATUM	DF	CELLS/L						
CERATIUM LONGIPES	DF	%	52.3	29.9	21.9	37.4	23.5	29.1
CERATIUM LONGIPES	DF	CELLS/L	9800.0	763.0	1351.6	716.1	172.9	290.7
CERATIUM SPP.	DF	%	9.7	15.7			14.0	12.5
CERATIUM SPP.	DF	CELLS/L	1820.0	400.4			102.6	125.4
CERATIUM TRIPOS	DF	%	25.0	32.9	6.8	15.1	11.9	40.7
CERATIUM TRIPOS	DF	CELLS/L	4690.0	838.6	420.1	288.8	87.4	407.55
DINOPHYSIS NORVEGICA	DF	%			49.9	35.9	17.1	7.7
DINOPHYSIS NORVEGICA	DF	CELLS/L			3075.2	686.4	125.4	77.0
PROTOPERIDINIUM DEPRESSUM	DF	%		7.0				
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L		179.2				
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%						
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L						
THECATE DINOFLAGELLATE SPP.	DF	%						
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L						

**Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WF997
(continued)**

			F25	F27	F30	F31	N04	N16	N18
CERATIUM FUSUS	DF	%	6.4	9.7	9.5	33.9			8.6
CERATIUM FUSUS	DF	CELLS/L	17.5	564.0	165.0	289.8			249.9
CERATIUM LINEATUM	DF	%					7.4		
CERATIUM LINEATUM	DF	CELLS/L					257.3		
CERATIUM LONGIPES	DF	%	34.5	30.3	12.1	25.4	59.0	48.4	29.4
CERATIUM LONGIPES	DF	CELLS/L	95.0	1764.0	210.0	217.0	2056.9	1703.5	852.6
CERATIUM SPP.	DF	%			8.5			11.5	
CERATIUM SPP.	DF	CELLS/L			147.5			404.6	
CERATIUM TRIPOS	DF	%	14.5	56.3	40.5	21.6	17.9	32.5	49.9
CERATIUM TRIPOS	DF	CELLS/L	40.0	3276.0	705.0	184.8	623.1	1143.9	1446.9
DINOPHYSIS NORVEGICA	DF	%	17.3		17.2		8.5		7.0
DINOPHYSIS NORVEGICA	DF	CELLS/L	47.5		300.0		297.6		201.6
PROTOPERIDINIUM DEPRESSUM	DF	%							
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L							
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	%	5.5			8.0			
PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40L	DF	CELLS/L	15.0			68.6			
THECATE DINOFLAGELLATE SPP.	DF	%	8.2						
THECATE DINOFLAGELLATE SPP.	DF	CELLS/L	22.5						

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample Screened Phytoplankton, Survey WN998

			N04	N18
CERATIUM FUSUS	DF	%	5.4	13.9
CERATIUM FUSUS	DF	CELLS/L	92.5	376.6
CERATIUM LONGIPES	DF	%	19.1	30.2
CERATIUM LONGIPES	DF	CELLS/L	330.0	817.6
CERATIUM SPP.	DF	%		5.4
CERATIUM SPP.	DF	CELLS/L		145.6
CERATIUM TRIPOS	DF	%	66.9	38.3
CERATIUM TRIPOS	DF	CELLS/L	1155.0	1037.4

Abundance of Prevalent Species (>5% Total Count) in Chlorophyll a Maximum Sample
Screened Phytoplankton, Survey WN999

			N04	N18
CERATIUM FUSUS	DF	%	6.0	10.1
CERATIUM FUSUS	DF	CELLS/L	59.4	74.8
CERATIUM LONGIPES	DF	%	45.7	45.1
CERATIUM LONGIPES	DF	CELLS/L	453.6	333.2
CERATIUM SPP.	DF	%		10.8
CERATIUM SPP.	DF	CELLS/L		79.9
CERATIUM TRIPOS	DF	%	39.4	14.3
CERATIUM TRIPOS	DF	CELLS/L	390.6	105.4
PROTOPERIDINIUM DEPRESSUM	DF	%	5.1	
PROTOPERIDINIUM DEPRESSUM	DF	CELLS/L	50.4	
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	%		6.7
PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80L	DF	CELLS/L		49.3

APPENDIX H

Abundance of Prevalent Species in Zooplankton Tow Samples

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF991

				F01	F02	F06	F13	F23	F24	F25
ACARTIA SPP.	C	C	%							
ACARTIA SPP.	C	C	ind/m3							
BIVALVIA SPP.	V	OZ	%				6	6		10
BIVALVIA SPP.	V	OZ	ind/m3				688	483		2322
CIRRIPEDIA SPP.	N	B	%				25	30	17	38
CIRRIPEDIA SPP.	N	B	ind/m3				2730	2394	1683	8749
COPEPOD SPP.	N	C	%	56	49	32	36	33	36	23
COPEPOD SPP.	N	C	ind/m3	5961	15892	7155	3923	2601	3570	5239
GASTROPODA SPP.	V	OZ	%			39	6		8	12
GASTROPODA SPP.	V	OZ	ind/m3			8851	619		813	2646
MICROSETELLA NORVEGICA	null	C	%					6		
MICROSETELLA NORVEGICA	null	C	ind/m3					437		
OITHONA SIMILIS	C	C	%	16	23	10	9	6	14	7
OITHONA SIMILIS	C	C	ind/m3	1665	7594	2173	1009	437	1364	1566
OITHONA SIMILIS	F	C	%		6					
OITHONA SIMILIS	F	C	ind/m3		1957					
POLYCHAETE SPP.	L	OZ	%			6	6		9	
POLYCHAETE SPP.	L	OZ	ind/m3			1325	642		871	
PSEUDOCALANUS NEWMANI	C	C	%							
PSEUDOCALANUS NEWMANI	C	C	ind/m3							

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF991
(continued)

				F27	F30	F31	F32	F33	N04	N16	N18
ACARTIA SPP.	C	C	%		10						
ACARTIA SPP.	C	C	ind/m3		489						
BIVALVIA SPP.	V	OZ	%		7				6	6	
BIVALVIA SPP.	V	OZ	ind/m3		306				1166	1910	
CIRRIPEDIA SPP.	N	B	%		6	43					
CIRRIPEDIA SPP.	N	B	ind/m3		265	8104					
COPEPOD SPP.	N	C	%	46	45	28	55	52	35	21	25
COPEPOD SPP.	N	C	ind/m3	6487	2079	5226	13272	12580	6641	6750	9074
GASTROPODA SPP.	V	OZ	%	36				6	39	50	61
GASTROPODA SPP.	V	OZ	ind/m3	5039				1510	7503	15920	22501
MICROSETELLA NORVEGICA	null	C	%		5	7					
MICROSETELLA NORVEGICA	null	C	ind/m3		245	1404					
OITHONA SIMILIS	C	C	%	12		7	18	23	10	12	7
OITHONA SIMILIS	C	C	ind/m3	1709		1312	4276	5472	1926	3694	2582
OITHONA SIMILIS	F	C	%					8			
OITHONA SIMILIS	F	C	ind/m3					1824			
POLYCHAETE SPP.	L	OZ	%		6		11				
POLYCHAETE SPP.	L	OZ	ind/m3		265		2554				
PSEUDOCALANUS NEWMANI	C	C	%				6				
PSEUDOCALANUS NEWMANI	C	C	ind/m3				1444				

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF992

				F01	F02	F06	F13	F23	F24	F25
BIVALVIA SPP.	V	OZ	%							10
BIVALVIA SPP.	V	OZ	ind/m3							4306
CIRRIPEDIA SPP.	N	B	%	15	8			11	7	9
CIRRIPEDIA SPP.	N	B	ind/m3	3991	1381			2499	3099	4011
COPEPOD SPP.	N	C	%	34	43	35	11	17	15	16
COPEPOD SPP.	N	C	ind/m3	9222	7579	8121	7360	3647	6063	7255
GASTROPODA SPP.	V	OZ	%	25		27	80	58	64	58
GASTROPODA SPP.	V	OZ	ind/m3	6882		6346	54432	12699	26678	26308
OIKOPLEURA DIOICA	null	OZ	%			8				
OIKOPLEURA DIOICA	null	OZ	ind/m3			1775				
OITHONA SIMILIS	C	C	%	11	21	15		8		
OITHONA SIMILIS	C	C	ind/m3	3028	3638	3603		1756		
OITHONA SIMILIS	F	C	%		6					
OITHONA SIMILIS	F	C	ind/m3		1011					
POLYCHAETE SPP.	L	OZ	%							
POLYCHAETE SPP.	L	OZ	ind/m3							
POLYCHAETE SPP.	T	OZ	%						7	
POLYCHAETE SPP.	T	OZ	ind/m3						3099	
PSEUDOCALANUS NEWMANI	C	C	%		9					
PSEUDOCALANUS NEWMANI	C	C	ind/m3		1651					

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF992
(continued)

				F27	F30	F31	F32	F33	N04	N16	N18
BIVALVIA SPP.	V	OZ	%	6							
BIVALVIA SPP.	V	OZ	ind/m3	1987							
CIRRIPEDIA SPP.	N	B	%		19	13		7			
CIRRIPEDIA SPP.	N	B	ind/m3		2738	1707		1581			
COPEPOD SPP.	N	C	%	22	34	16	45	34	10	31	
COPEPOD SPP.	N	C	ind/m3	7666	5031	2035	5618	7215	7151	67	
GASTROPODA SPP.	V	OZ	%	53	27	53		14	83	53	90
GASTROPODA SPP.	V	OZ	ind/m3	18171	3970	6925		2916	59699	113	46851
OIKOPLEURA DIOICA	null	OZ	%								
OIKOPLEURA DIOICA	null	OZ	ind/m3								
OITHONA SIMILIS	C	C	%	10		7	16	21		6	
OITHONA SIMILIS	C	C	ind/m3	3596		853	1956	4398		12	
OITHONA SIMILIS	F	C	%				5				
OITHONA SIMILIS	F	C	ind/m3				640				
POLYCHAETE SPP.	L	OZ	%					9			
POLYCHAETE SPP.	L	OZ	ind/m3					1927			
POLYCHAETE SPP.	T	OZ	%								
POLYCHAETE SPP.	T	OZ	ind/m3								
PSEUDOCALANUS NEWMANI	C	C	%				12				
PSEUDOCALANUS NEWMANI	C	C	ind/m3				1458				

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WN993

				N04	N18
COPEPOD SPP.	N	C	%	29	36
COPEPOD SPP.	N	C	ind/m3	8867	11705
GASTROPODA SPP.	V	OZ	%	42	37
GASTROPODA SPP.	V	OZ	ind/m3	12648	12158
OIKOPLEURA DIOICA	null	OZ	%	6	11
OIKOPLEURA DIOICA	null	OZ	ind/m3	1695	3700
OITHONA SIMILIS	C	C	%	9	10
OITHONA SIMILIS	C	C	ind/m3	2869	3096

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF994

				F01	F02	F06	F13	F23	F24
ACARTIA SPP.	C	C	%						
ACARTIA SPP.	C	C	ind/m3						
CIRRIPEDIA SPP.	N	B	%						13
CIRRIPEDIA SPP.	N	B	ind/m3						3927
COPEPOD SPP.	N	C	%	22	15	40	35	30	28
COPEPOD SPP.	N	C	ind/m3	4365	2391	78860	40322	3413	8684
GASTROPODA SPP.	V	OZ	%	24	20	6			
GASTROPODA SPP.	V	OZ	ind/m3	4883	3235	12555			
HARPACTICOIDA SPP.	C	C	%						
HARPACTICOIDA SPP.	C	C	ind/m3						
OIKOPLEURA DIOICA	null	OZ	%	13	21			13	18
OIKOPLEURA DIOICA	null	OZ	ind/m3	2627	3329			1444	5513
OITHONA SIMILIS	C	C	%	16	17	28	19	41	19
OITHONA SIMILIS	C	C	ind/m3	3218	2813	54143	22130	4595	5815
OITHONA SIMILIS	F	C	%						
OITHONA SIMILIS	F	C	ind/m3						
POLYCHAETE SPP.	L	OZ	%						6
POLYCHAETE SPP.	L	OZ	ind/m3						1737
PSEUDOCALANUS NEWMANI	C	C	%			14	21		
PSEUDOCALANUS NEWMANI	C	C	ind/m3			28248	24568		

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF994
(continued)

				F25	F27	F30	F31	F32	F33	N04	N16	N18
ACARTIA SPP.	C	C	%			6.						
ACARTIA SPP.	C	C	ind/m3			844						
CIRRIPEDIA SPP.	N	B	%	28		8	30	12				11
CIRRIPEDIA SPP.	N	B	ind/m3	3360		1160	1234	1661				1437
COPEPOD SPP.	N	C	%	16	28	33	23	23	32	26	49	26
COPEPOD SPP.	N	C	ind/m3	1926	4605	4818	947	3200	1769	1496	54892	3559
GASTROPODA SPP.	V	OZ	%	15	12			25	10	6		
GASTROPODA SPP.	V	OZ	ind/m3	1775	2030			3565	534	379		
HARPACTICOIDA SPP.	C	C	%	5			8					
HARPACTICOIDA SPP.	C	C	ind/m3	642			316					
OIKOPLEURA DIOICA	null	OZ	%					8	20	6		8
OIKOPLEURA DIOICA	null	OZ	ind/m3					1175	1118	322		1019
OITHONA SIMILIS	C	C	%	12	27		6	12	15	31	29	26
OITHONA SIMILIS	C	C	ind/m3	1397	4506		230	1620	801	1818	32301	3442
OITHONA SIMILIS	F	C	%		7							6
OITHONA SIMILIS	F	C	ind/m3		1139							869
POLYCHAETE SPP.	L	OZ	%	5		42	13					
POLYCHAETE SPP.	L	OZ	ind/m3	604		6224	517					
PSEUDOCALANUS NEWMANI	C	C	%		12					7	13	
PSEUDOCALANUS NEWMANI	C	C	ind/m3		2030					417	15167	

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WN995

				N04	N18
COPEPOD SPP.	N	C	%	42	42
COPEPOD SPP.	N	C	ind/m3	31158	31370
OITHONA SIMILIS	C	C	%	34	26
OITHONA SIMILIS	C	C	ind/m3	25381	19318
PSEUDOCALANUS NEWMANI	C	C	%	10	17
PSEUDOCALANUS NEWMANI	C	C	ind/m3	7614	12821

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WN996

				N04	N18
BIVALVIA SPP.	V	OZ	%	8	
BIVALVIA SPP.	V	OZ	ind/m3	9901	
COPEPOD SPP.	N	C	%	31	61
COPEPOD SPP.	N	C	ind/m3	38654	71216
OITHONA SIMILIS	C	C	%	19	15
OITHONA SIMILIS	C	C	ind/m3	23871	17914
PSEUDOCALANUS NEWMANI	C	C	%	22	5
PSEUDOCALANUS NEWMANI	C	C	ind/m3	26583	6303

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF997

				F01	F02	F06	F13	F23	F24
ACARTIA SPP.	C	C	%						6
ACARTIA SPP.	C	C	ind/m3						5678
BIVALVIA SPP.	V	OZ	%	81	26	68	53	19	20
BIVALVIA SPP.	V	OZ	ind/m3	100517	37016	51303	111013	18708	18549
CALANUS FINMARCHICUS	C	C	%						
CALANUS FINMARCHICUS	C	C	ind/m3						
COPEPOD SPP.	N	C	%					16	22
COPEPOD SPP.	N	C	ind/m3					15262	20821
GASTROPODA SPP.	V	OZ	%	15	66				
GASTROPODA SPP.	V	OZ	ind/m3	18539	91932				
OITHONA SIMILIS	C	C	%			6		6	11
OITHONA SIMILIS	C	C	ind/m3			4224		6072	10221
POLYCHAETE SPP.	L	OZ	%					18	
POLYCHAETE SPP.	L	OZ	ind/m3					17395	
PSEUDOCALANUS NEWMANI	C	C	%			11	17	9	21
PSEUDOCALANUS NEWMANI	C	C	ind/m3			8447	36503	8862	20064
TEMORA LONGICORNIS	C	C	%			7	11	9	6
TEMORA LONGICORNIS	C	C	ind/m3			5151	23378	8205	5489

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WF997
(continued)

				F25	F27	F30	F31	N04	N16	N18
ACARTIA SPP.	C	C	%							
ACARTIA SPP.	C	C	ind/m3							
BIVALVIA SPP.	V	OZ	%	41		6	10	32	42	46
BIVALVIA SPP.	V	OZ	ind/m3	150905		32405	13401	64549	63872	56033
CALANUS FINMARCHICUS	C	C	%		13					10
CALANUS FINMARCHICUS	C	C	ind/m3		10266					12083
COPEPOD SPP.	N	C	%	8	40	7	8	13	12	7
COPEPOD SPP.	N	C	ind/m3	30027	30798	37590	10652	26935	17408	8760
GASTROPODA SPP.	V	OZ	%							
GASTROPODA SPP.	V	OZ	ind/m3							
OITHONA SIMILIS	C	C	%	7	14		11	12	12	11
OITHONA SIMILIS	C	C	ind/m3	24638	10525		14432	23375	17664	12838
POLYCHAETE SPP.	L	OZ	%			78				
POLYCHAETE SPP.	L	OZ	ind/m3			404415				
PSEUDOCALANUS NEWMANI	C	C	%	19	24		19	30	24	19
PSEUDOCALANUS NEWMANI	C	C	ind/m3	71603	18548		24397	60752	35968	23486
TEMORA LONGICORNIS	C	C	%	15			27			
TEMORA LONGICORNIS	C	C	ind/m3	56205			35050			

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WN998

				N04	N18
BIVALVIA SPP.	V	OZ	%		10
BIVALVIA SPP.	V	OZ	ind/m3		4709
CALANUS FINMARCHICUS	C	C	%	9	
CALANUS FINMARCHICUS	C	C	ind/m3	14905	
COPEPOD SPP.	N	C	%	11	22
COPEPOD SPP.	N	C	ind/m3	18769	10264
OITHONA SIMILIS	C	C	%	25	21
OITHONA SIMILIS	C	C	ind/m3	41402	9781
PSEUDOCALANUS NEWMANI	C	C	%	39	28
PSEUDOCALANUS NEWMANI	C	C	ind/m3	64311	12679

Abundance of Prevalent Species (>5% Total Count)
Zooplankton, Survey WN999

				N04	N18
BIVALVIA SPP.	V	OZ	%	11	17
BIVALVIA SPP.	V	OZ	ind/m3	12496	13374
CALANUS FINMARCHICUS	C	C	%		6
CALANUS FINMARCHICUS	C	C	ind/m3		4791
COPEPOD SPP.	N	C	%	18	18
COPEPOD SPP.	N	C	ind/m3	19959	14372
OITHONA SIMILIS	C	C	%	26	12
OITHONA SIMILIS	C	C	ind/m3	29332	9781
PSEUDOCALANUS NEWMANI	C	C	%	28	31
PSEUDOCALANUS NEWMANI	C	C	ind/m3	31067	24153

APPENDIX I

Satellite Images of Chlorophyll a Concentrations and Temperature

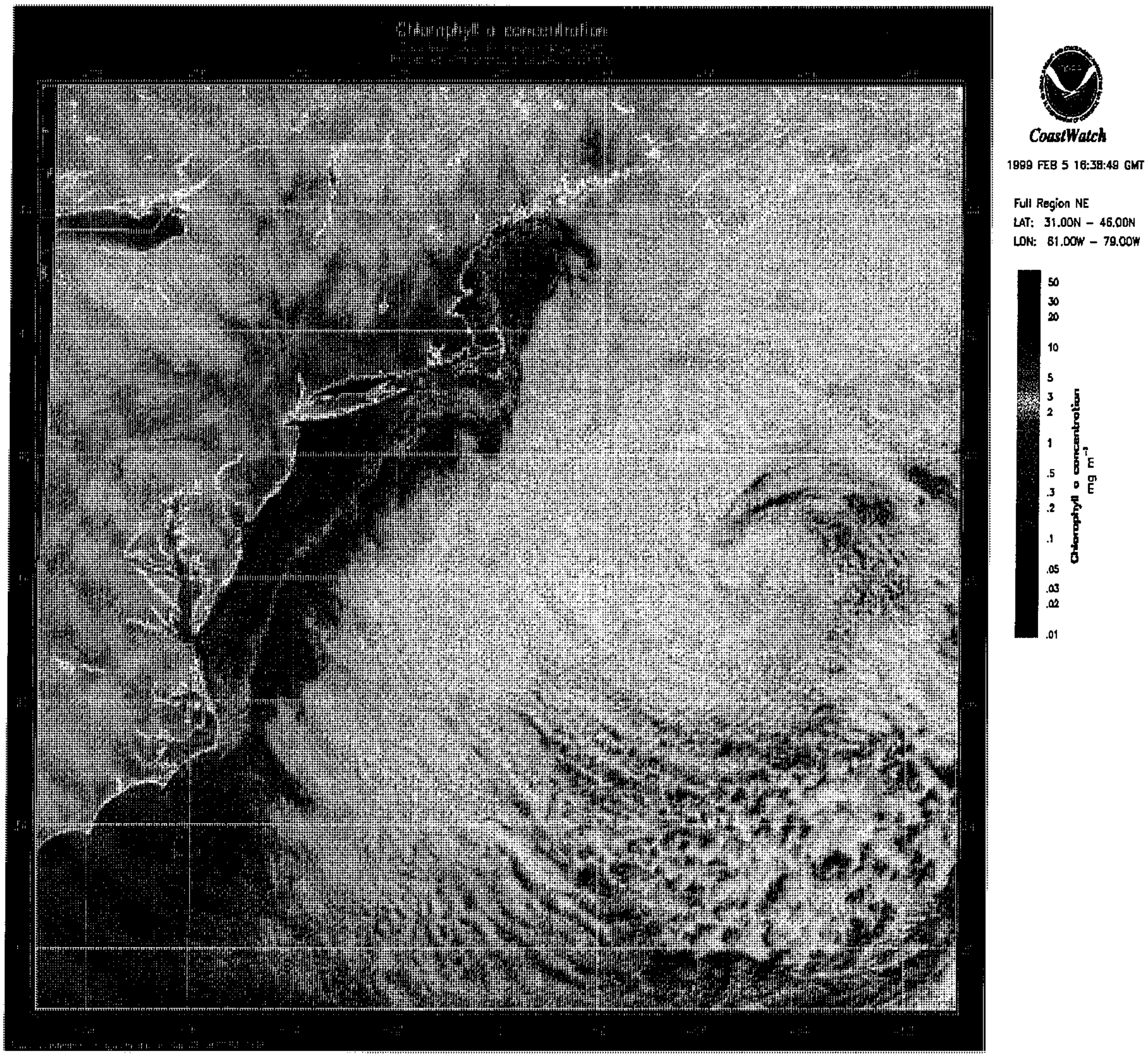


Figure I-1. Chlorophyll a Concentrations from February 5, 1999

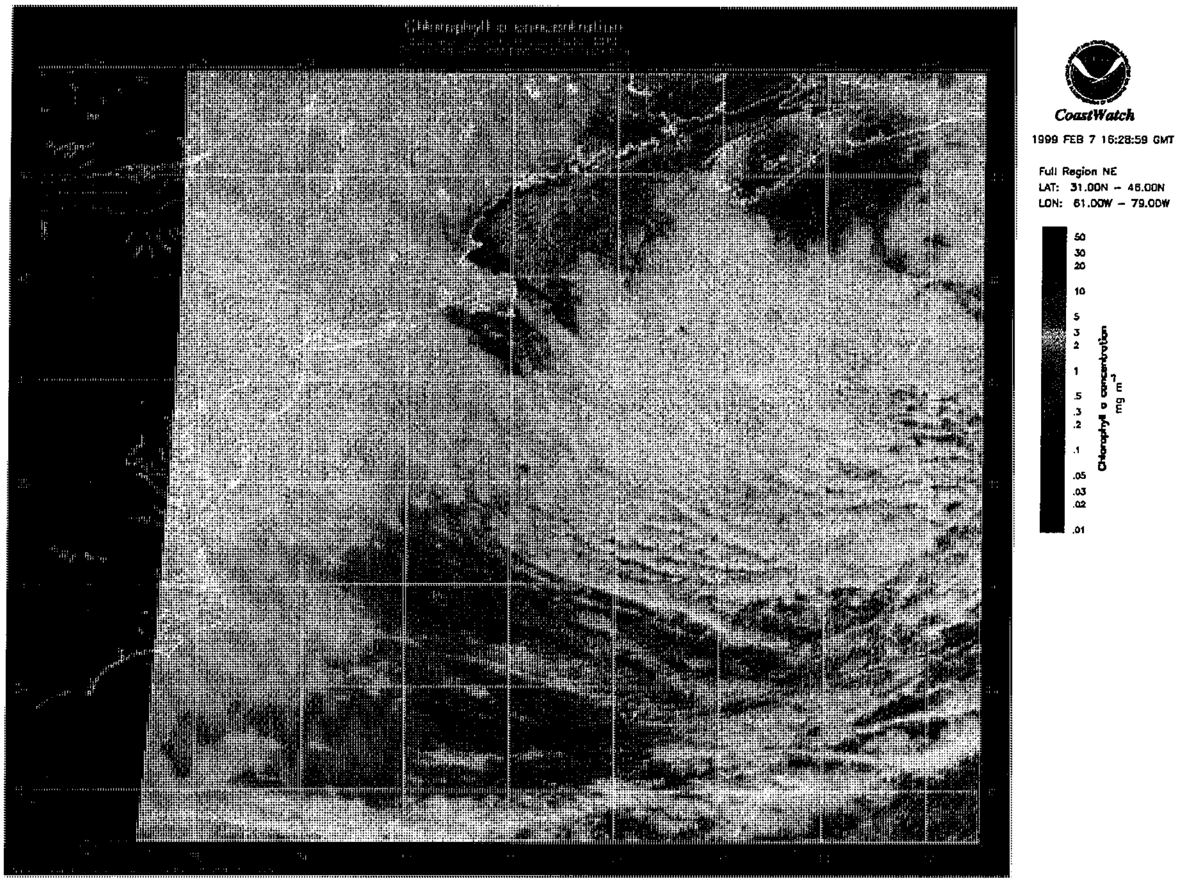


Figure I-2. Chlorophyll a Concentrations from February 7, 1999

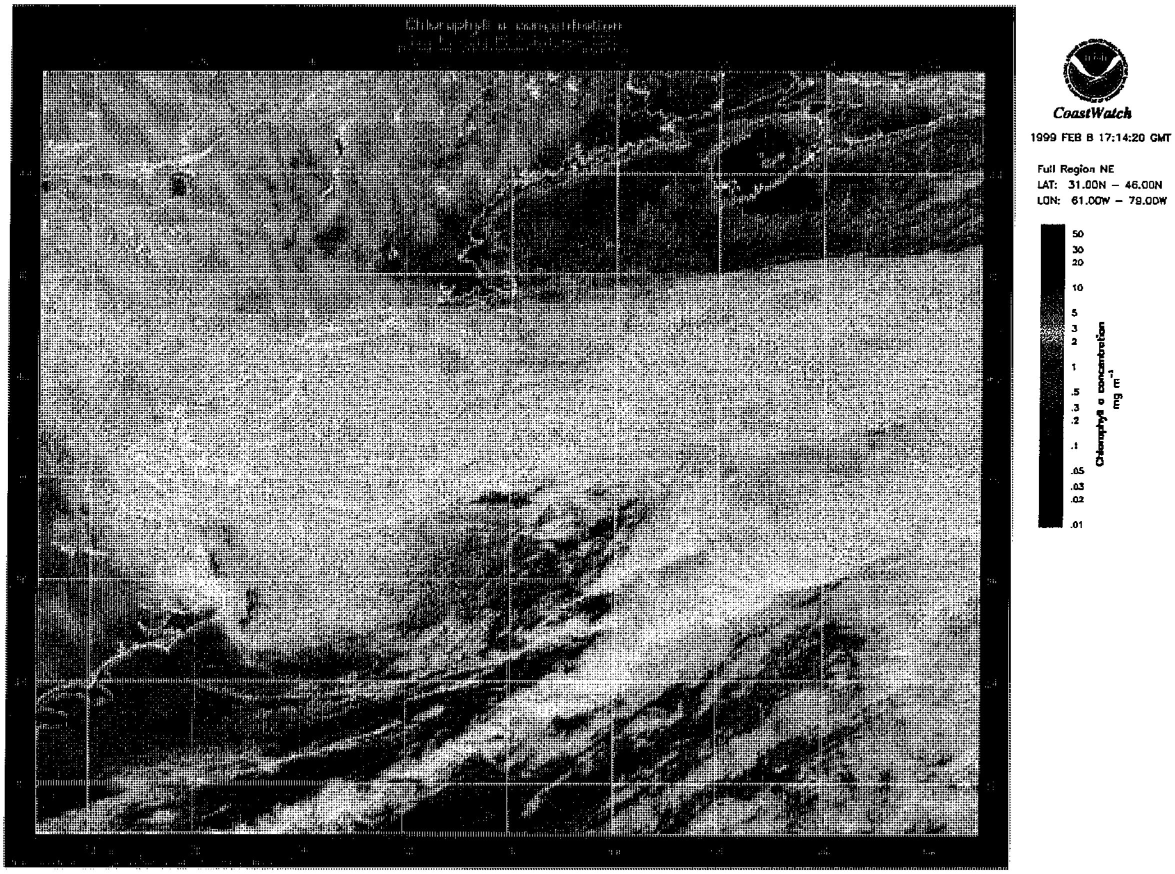


Figure I-3. Chlorophyll a Concentrations from February 8, 1999

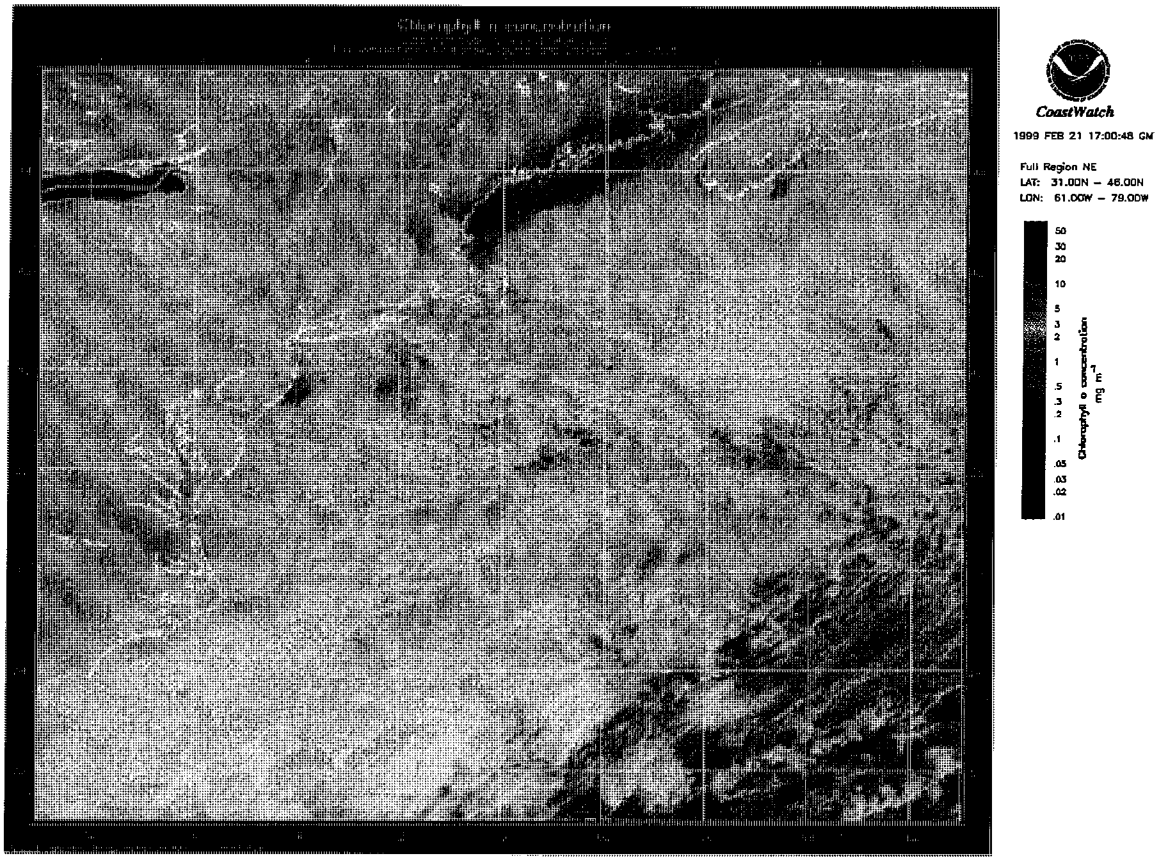


Figure I-4. Chlorophyll a Concentration from February 21, 1999

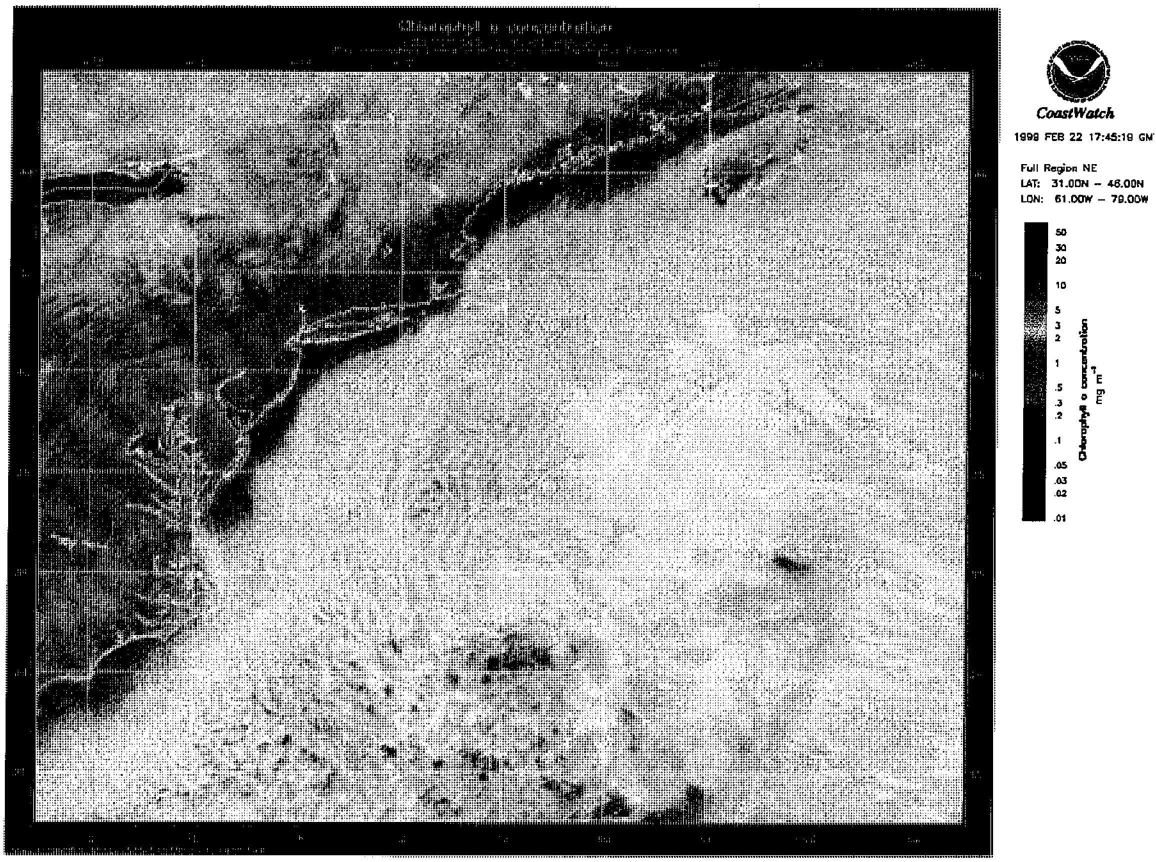


Figure I-5. Chlorophyll a Concentration from February 22, 1999

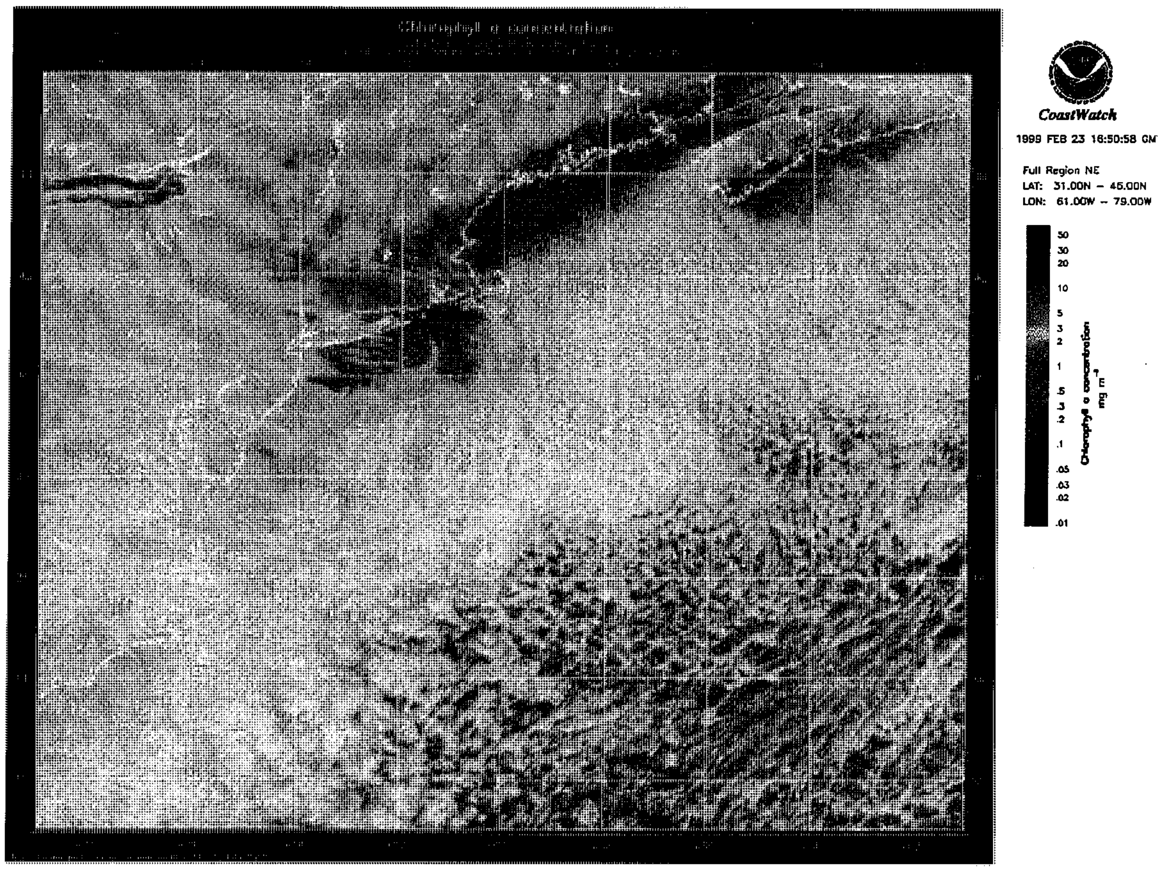


Figure I-6. Chlorophyll a Concentration from February 23, 1999

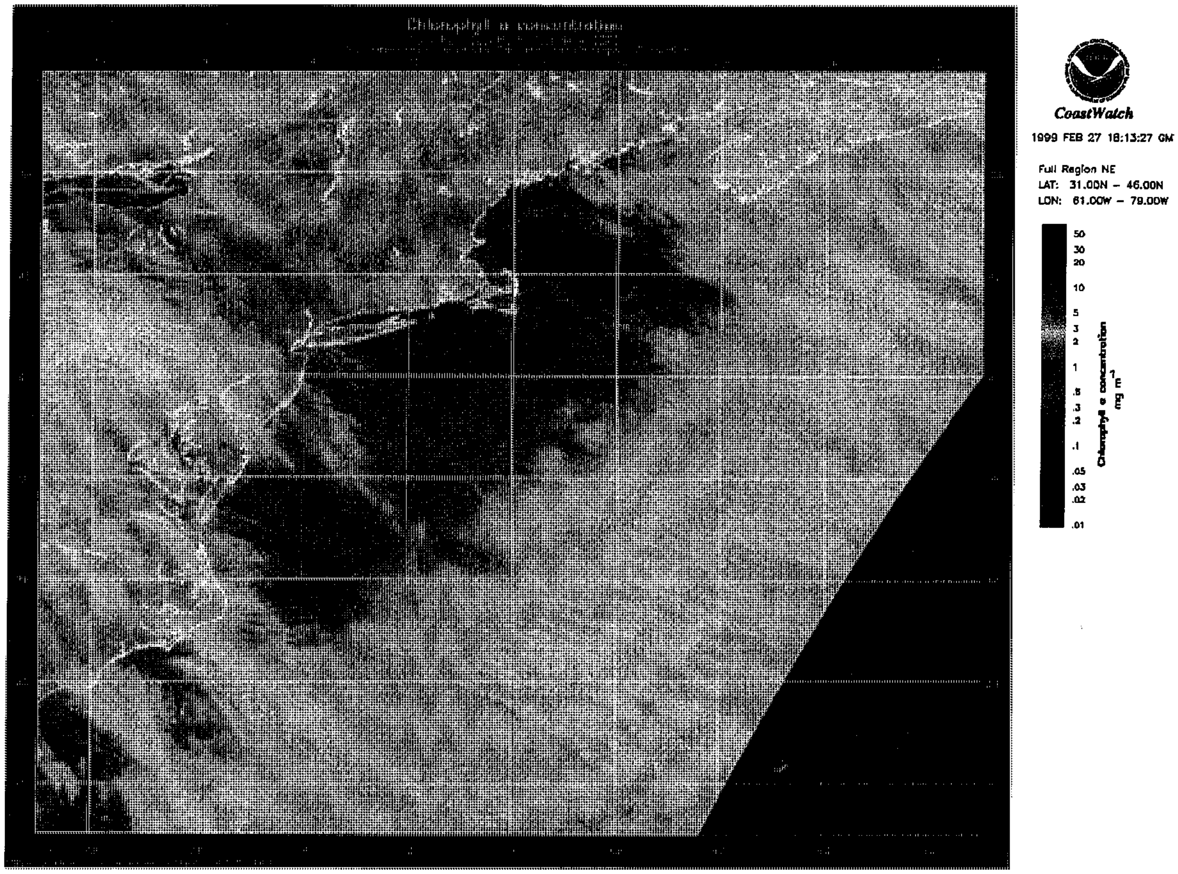


Figure I-7. Chlorophyll a Concentration from February 27, 1999

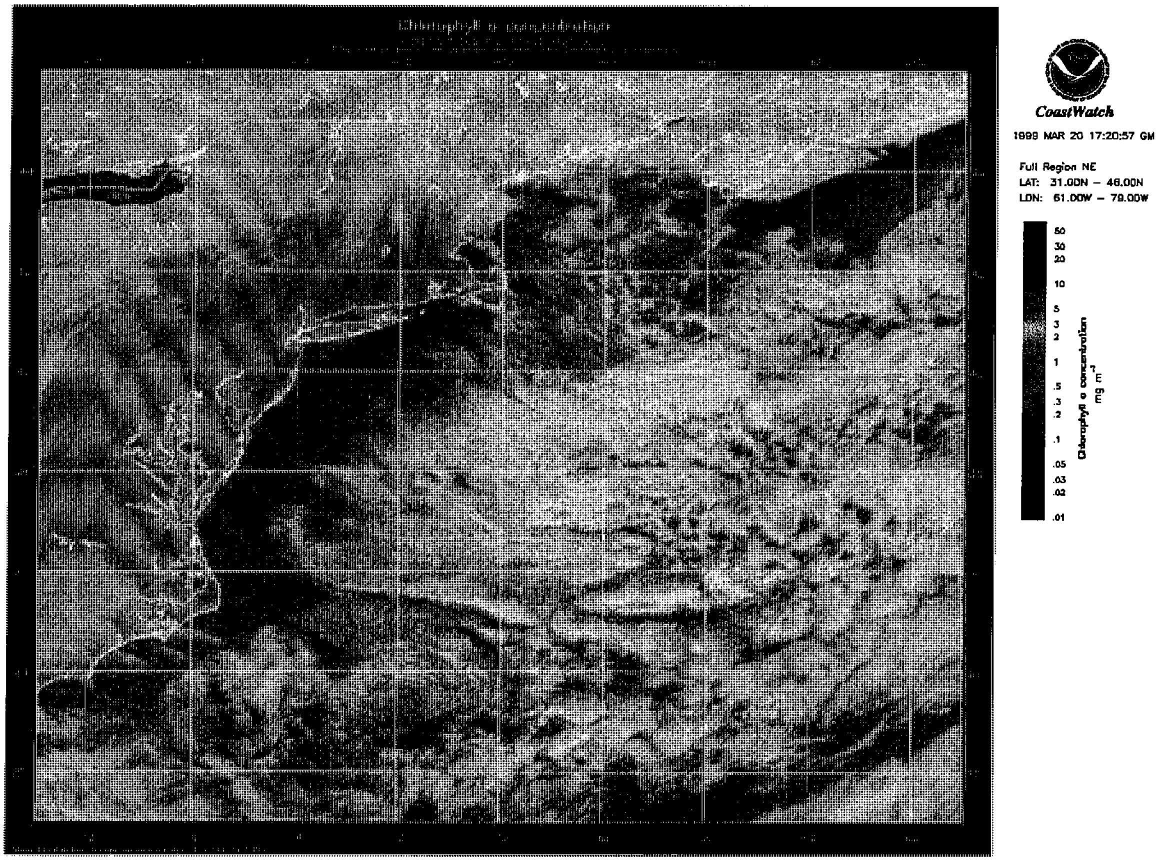


Figure I-8. Chlorophyll a Concentration from March 20, 1999

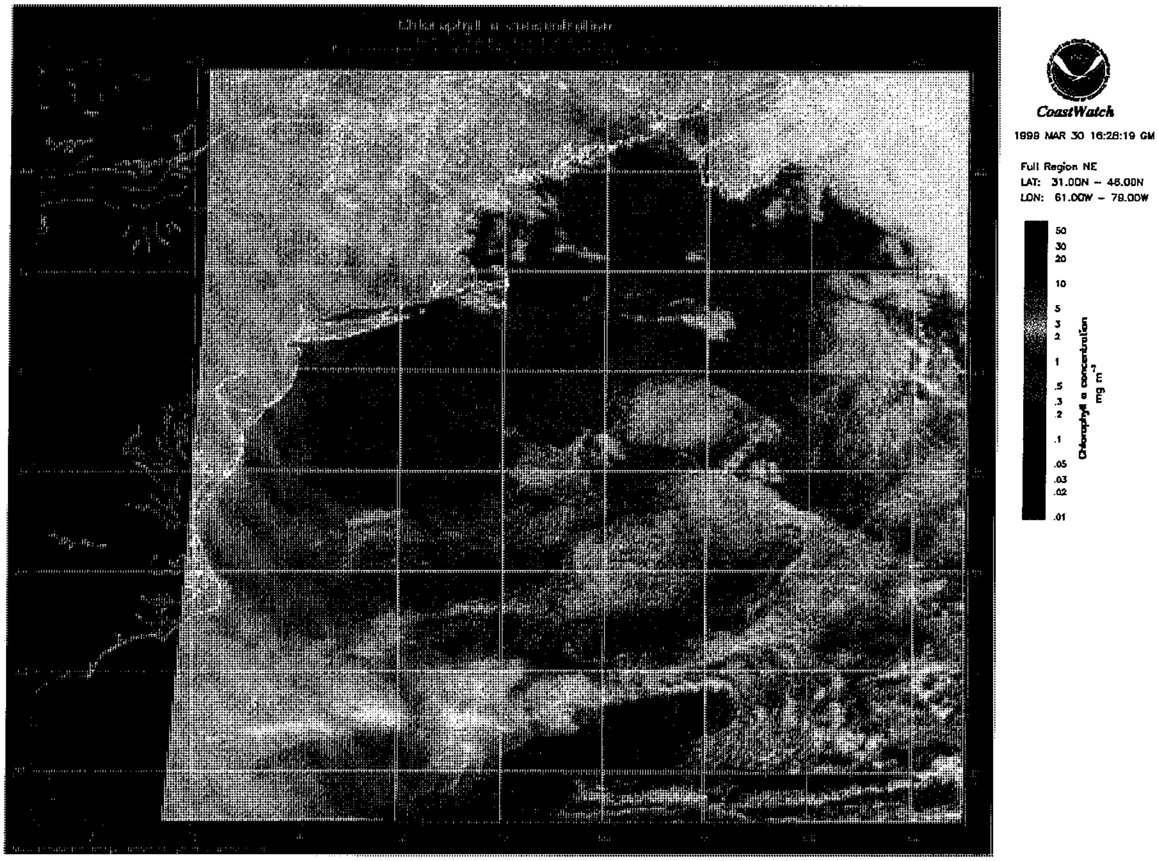


Figure I-9. Chlorophyll a Concentration from March 30, 1999

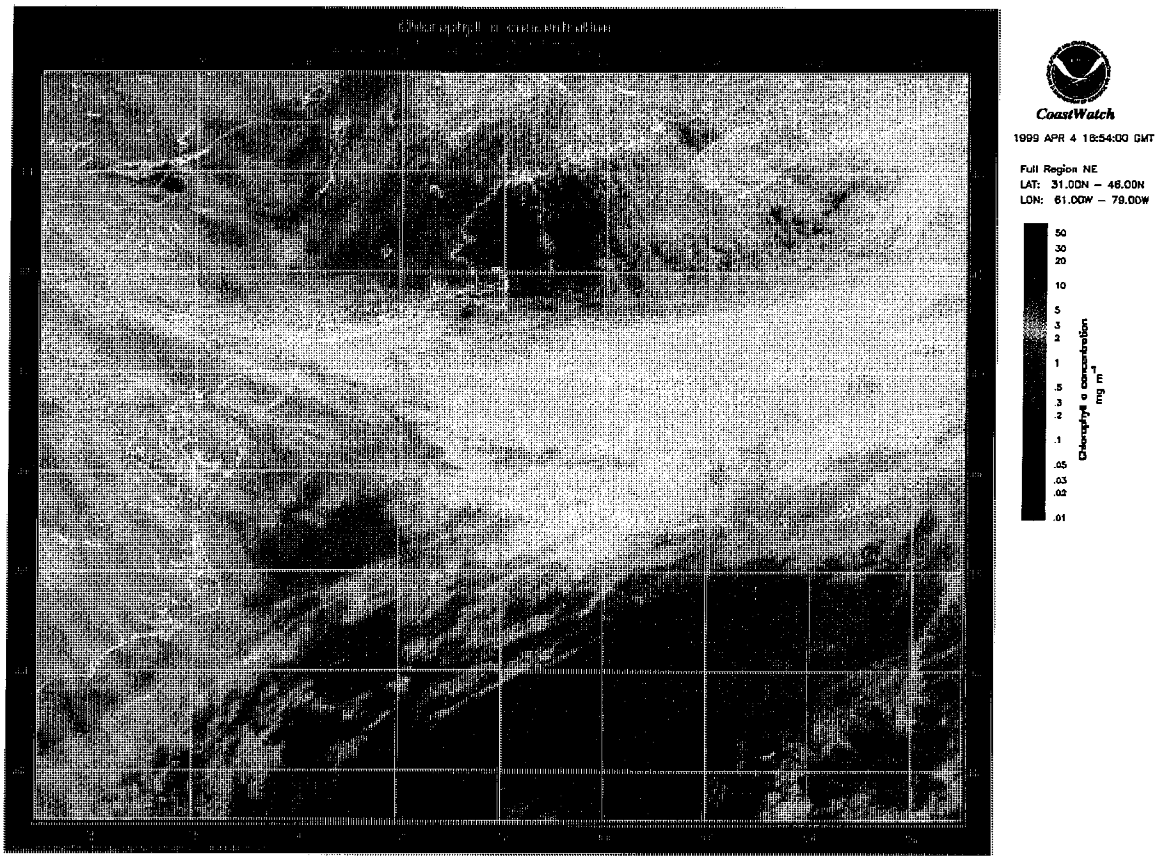


Figure I-10. Chlorophyll a Concentration from April 4, 1999

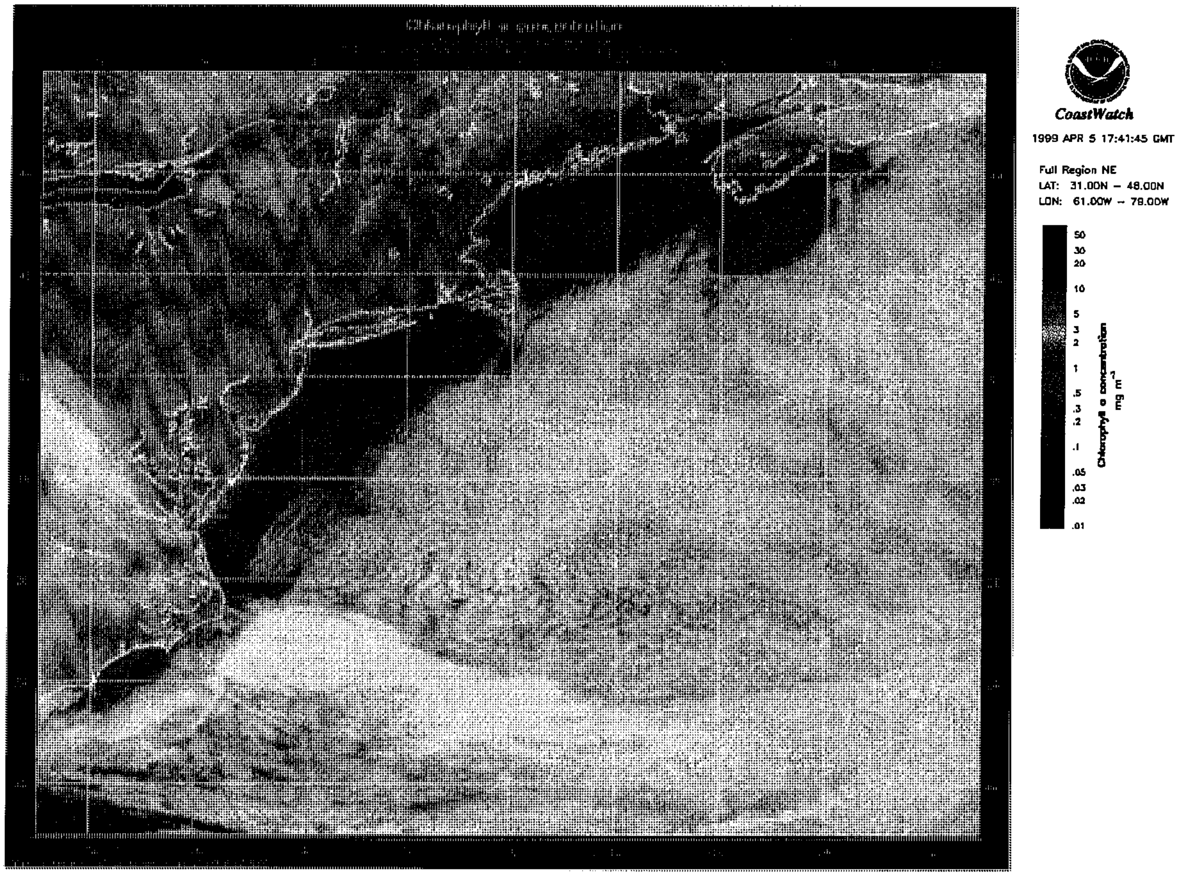


Figure I-11. Chlorophyll a Concentration from April 5, 1999

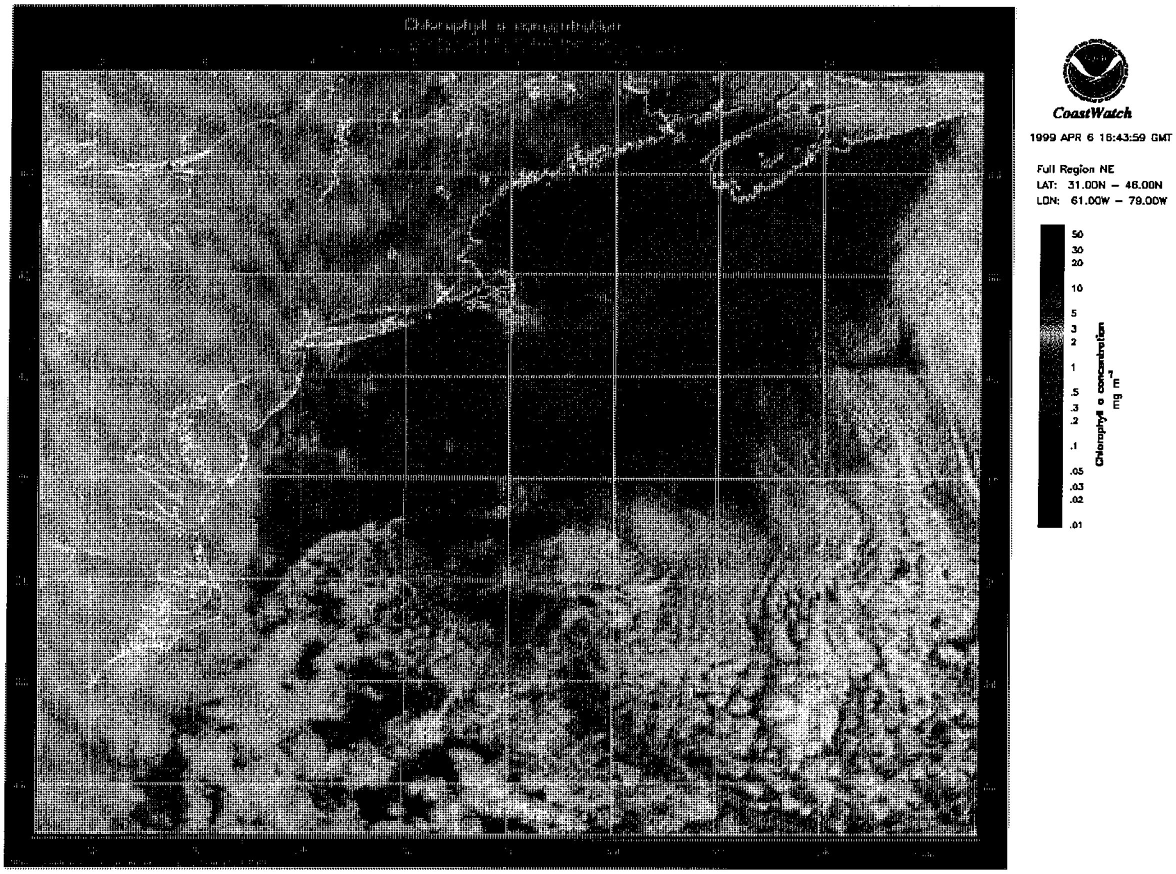


Figure I-12. Chlorophyll a Concentration from April 6, 1999

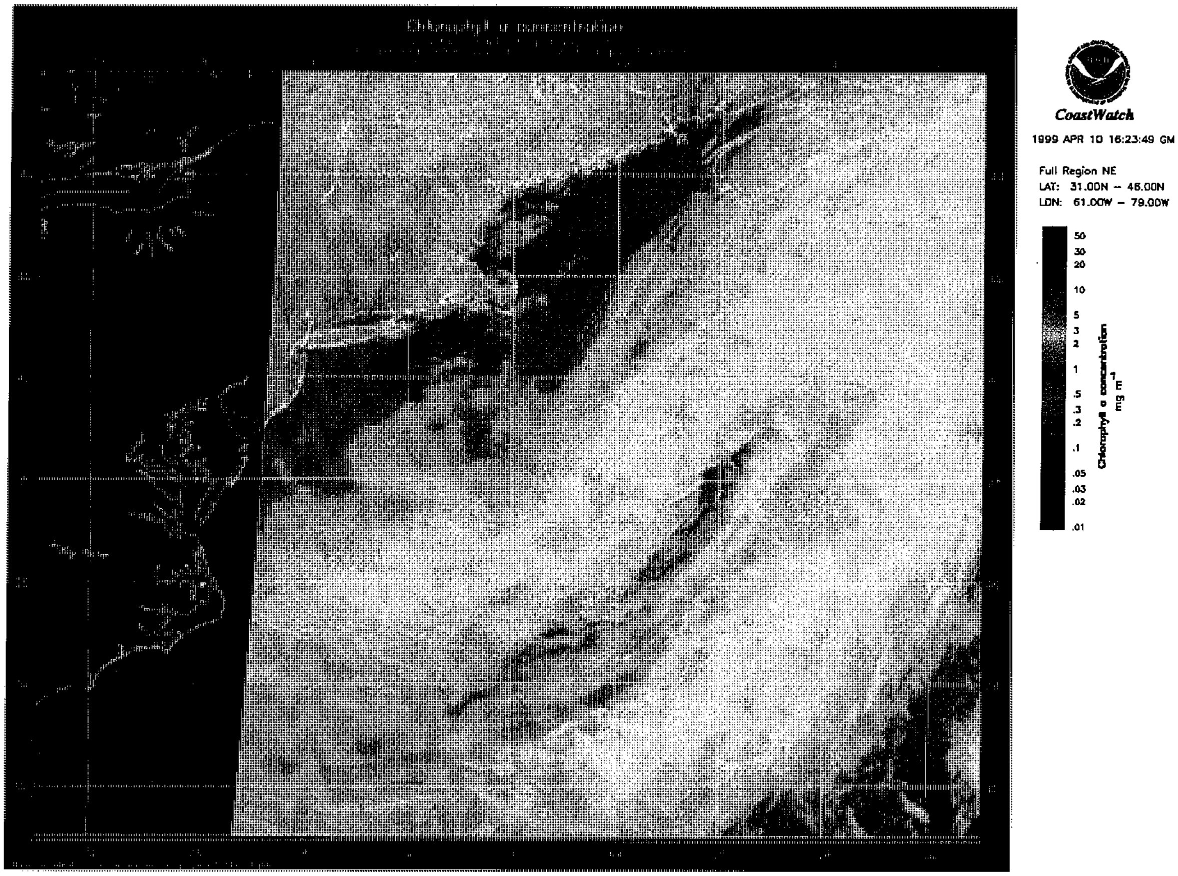


Figure I-13. Chlorophyll a Concentration from April 10, 1999

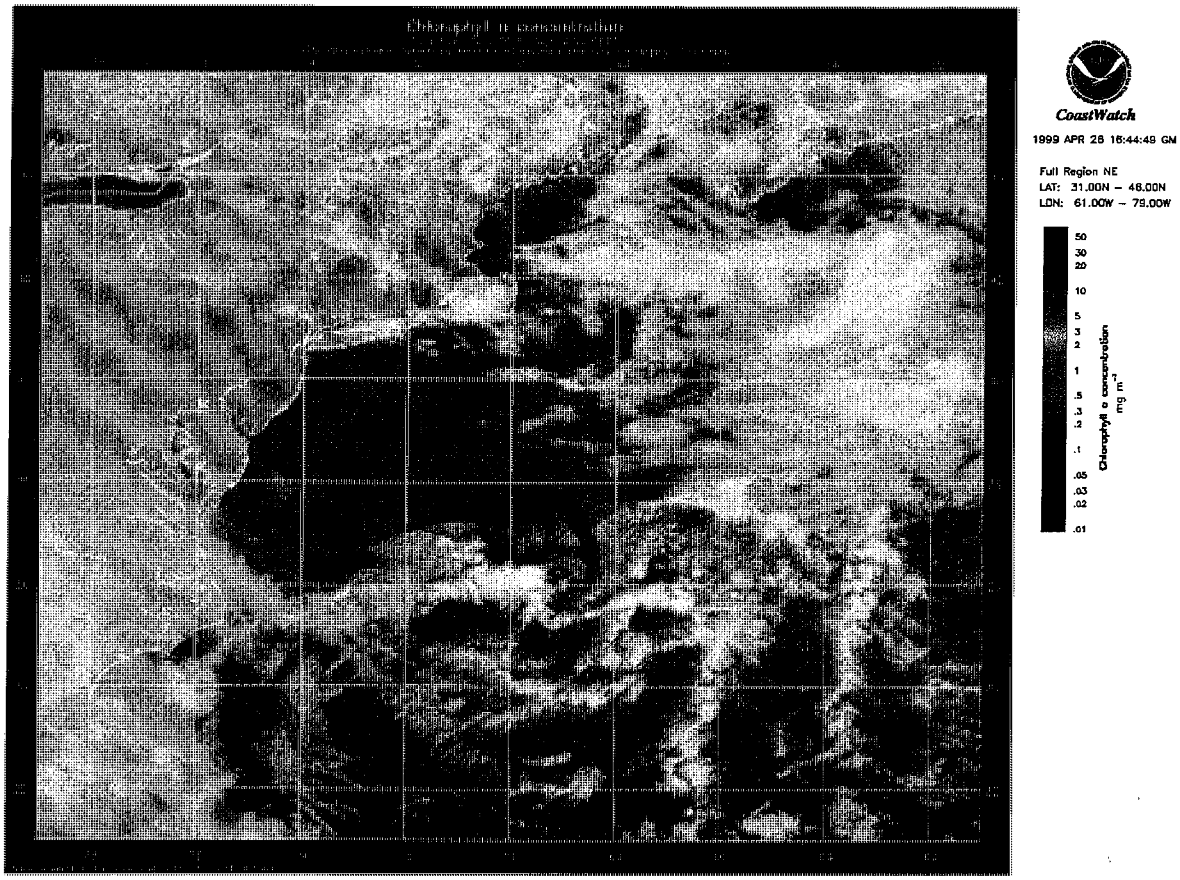


Figure I-14. Chlorophyll a Concentration from April 26, 1999

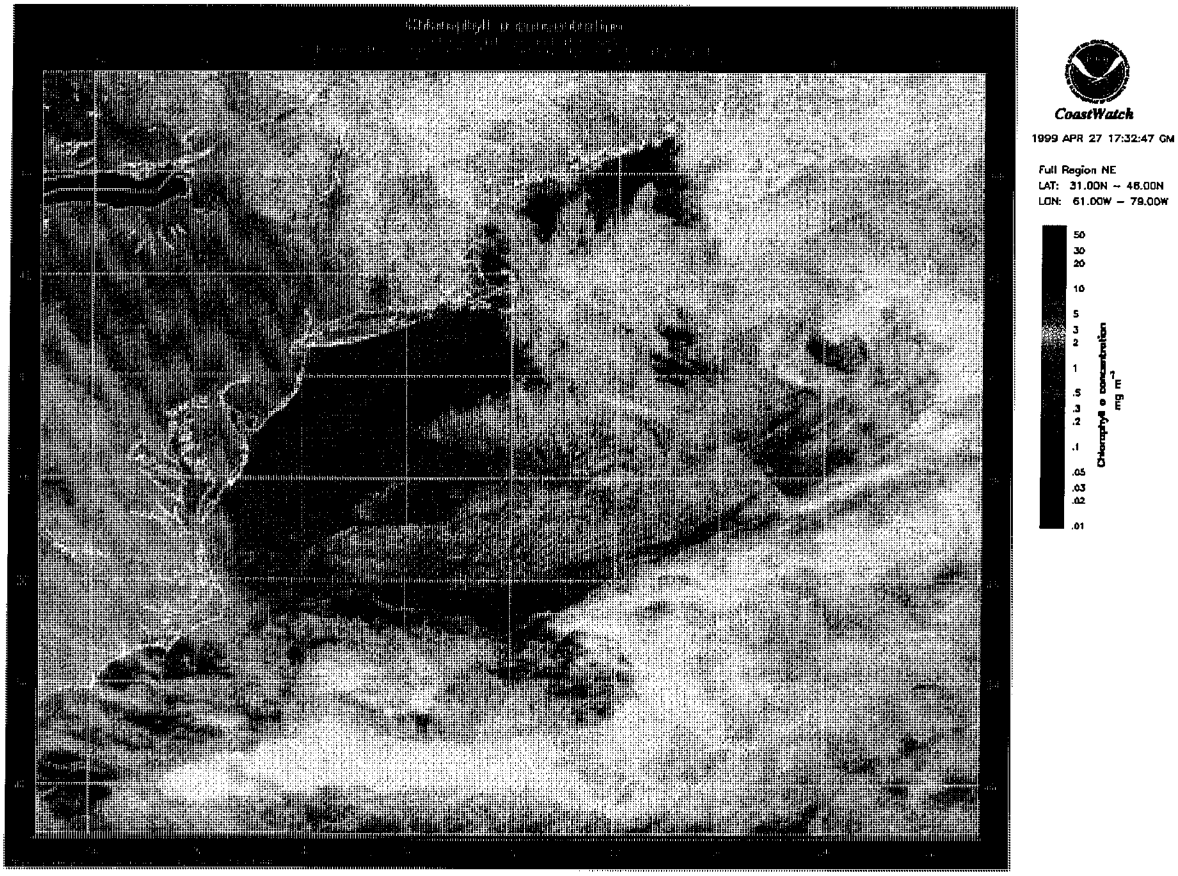


Figure I-15. Chlorophyll a Concentration from April 27, 1999

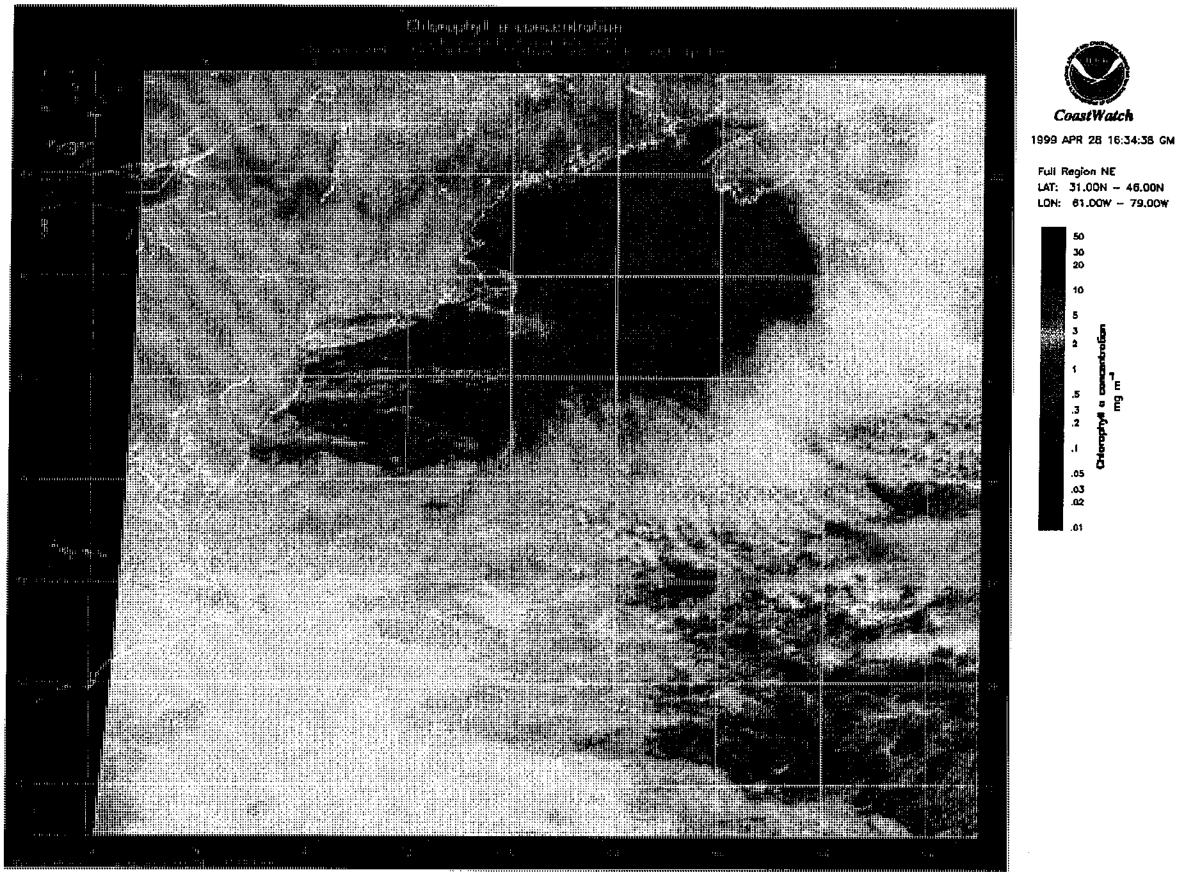


Figure I-16. Chlorophyll a Concentration from April 28, 1999

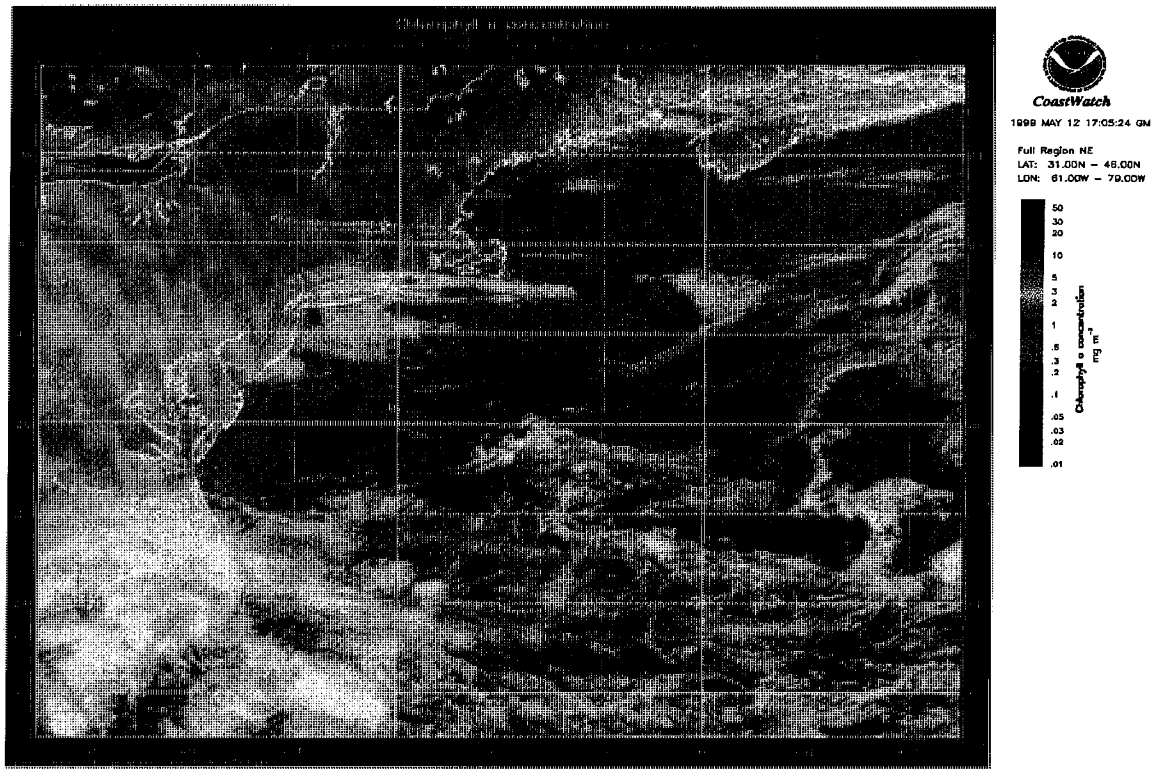


Figure I-17. Chlorophyll a Concentration from May 12, 1999

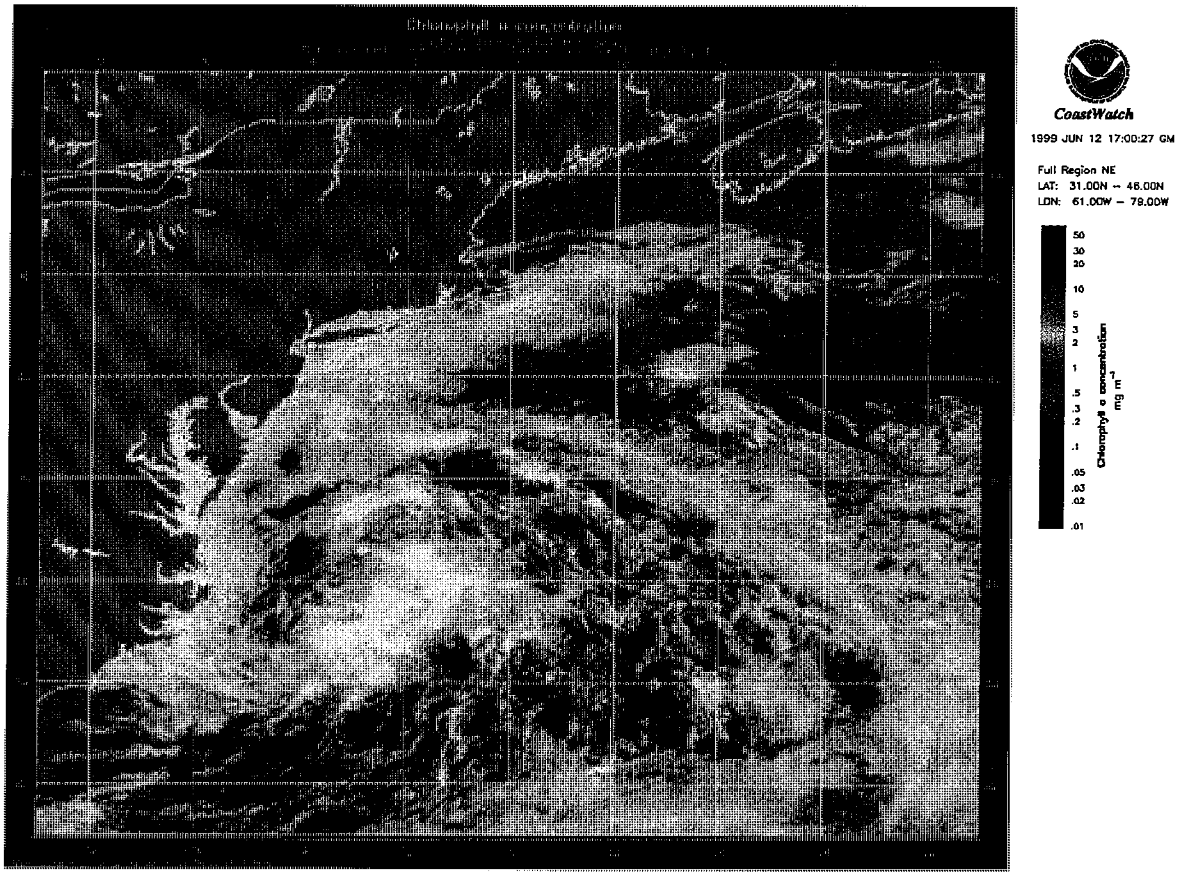


Figure I-18. Chlorophyll a Concentration from June 12, 1999

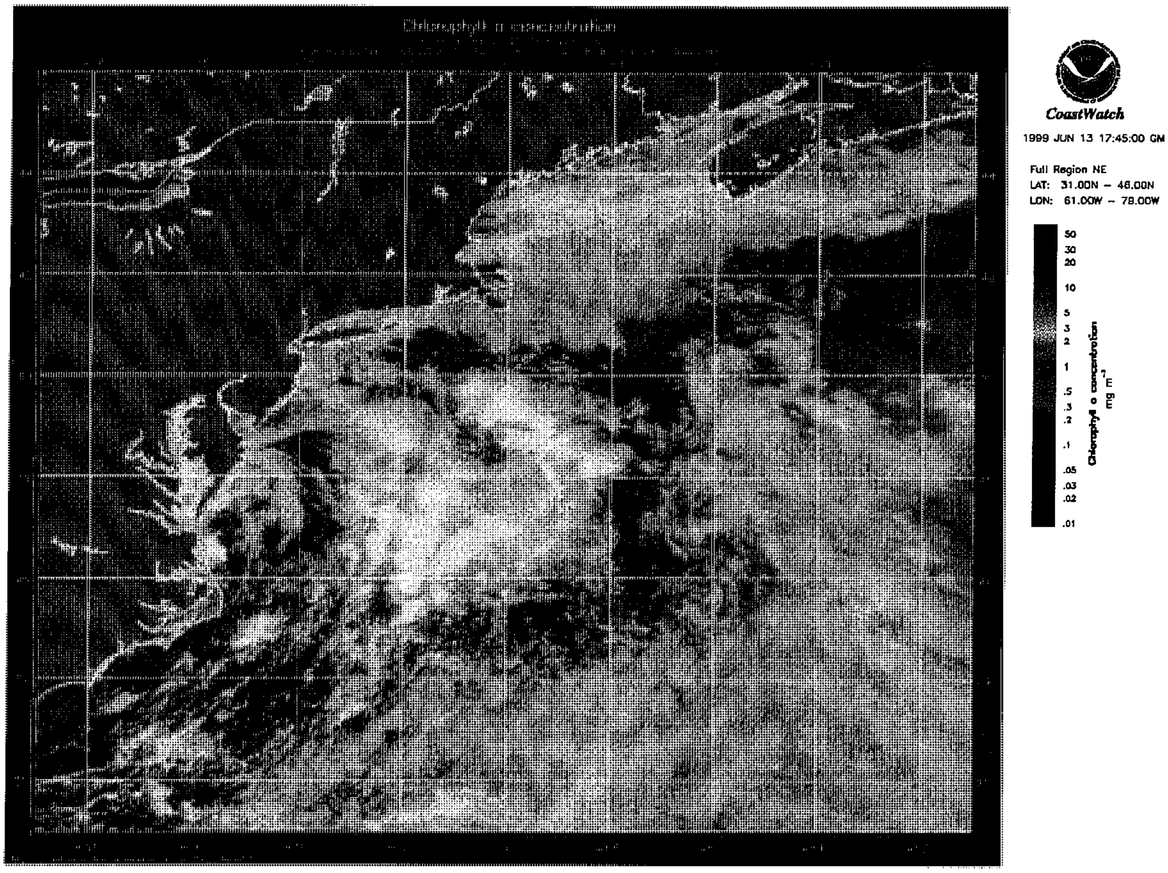


Figure I-19. Chlorophyll a Concentration from June 13, 1999

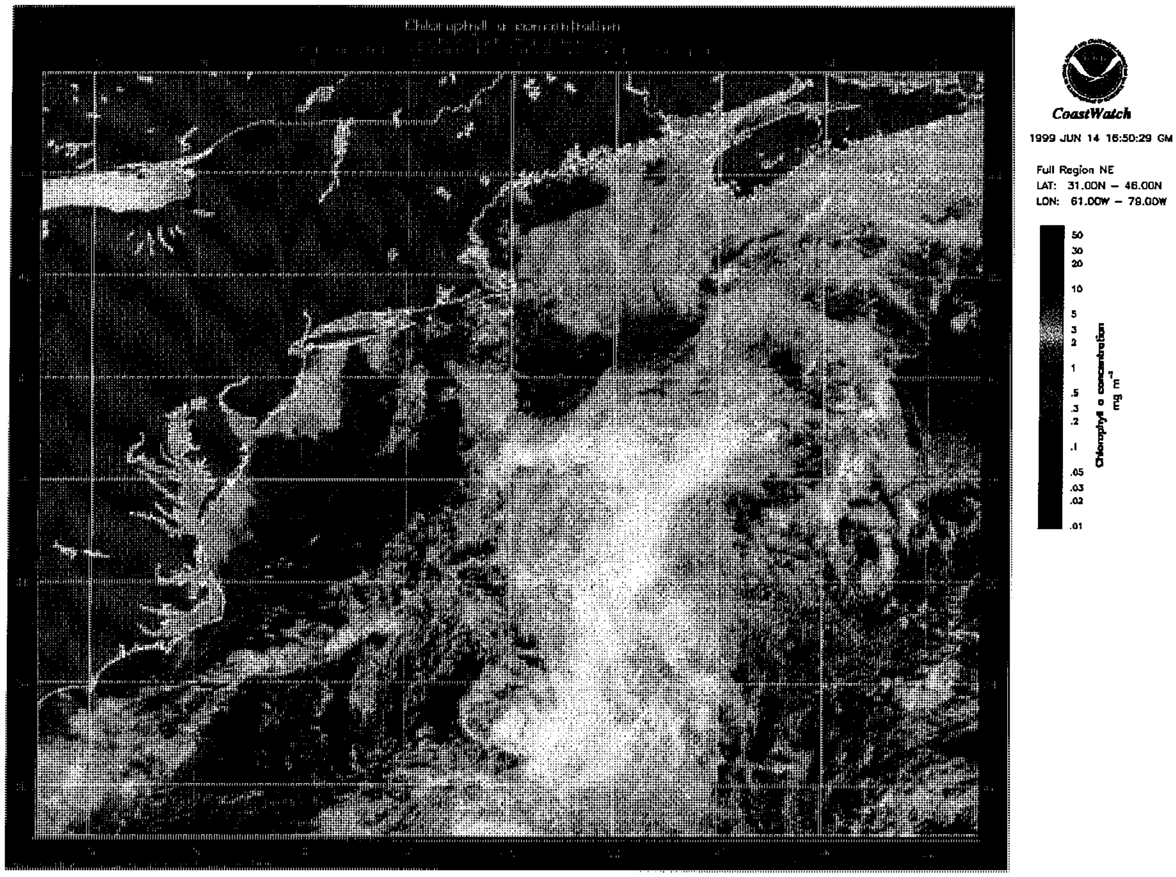


Figure I-20. Chlorophyll a Concentration from June 14, 1999

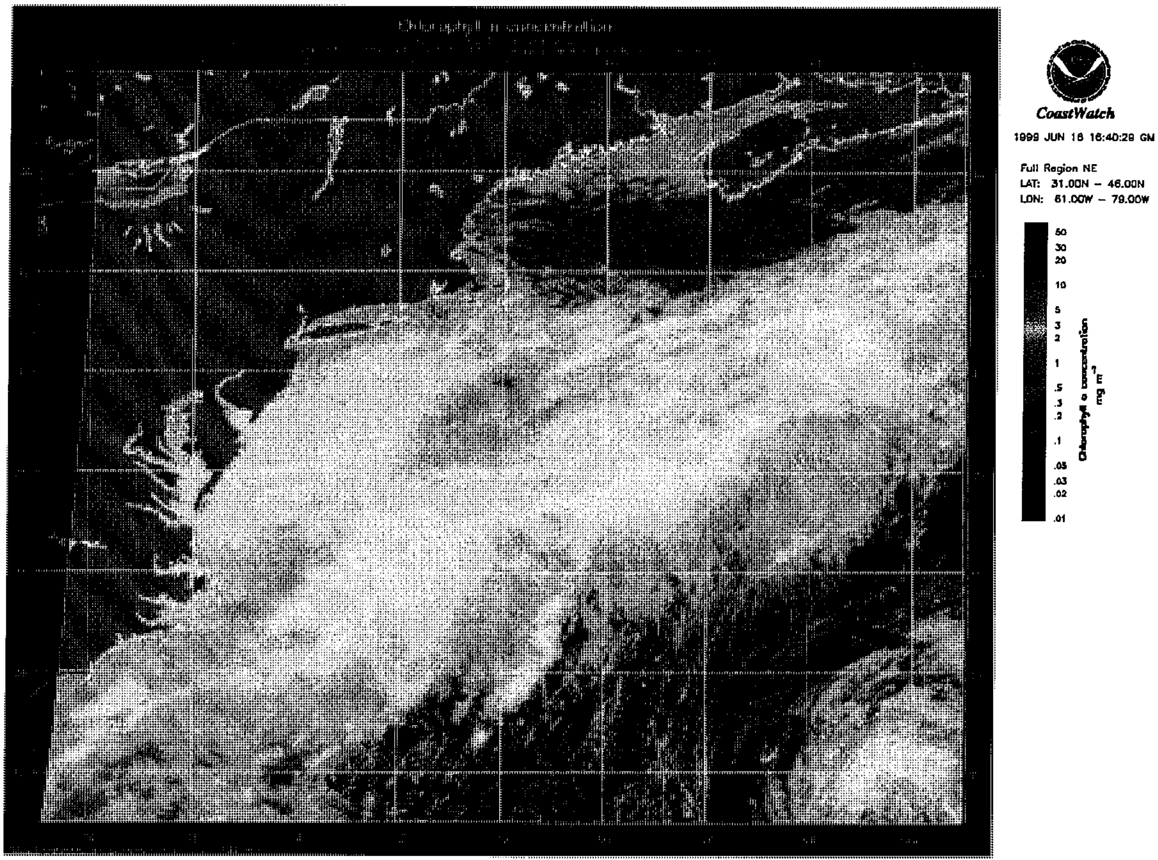


Figure I-21. Chlorophyll a Concentration from June 16, 1999

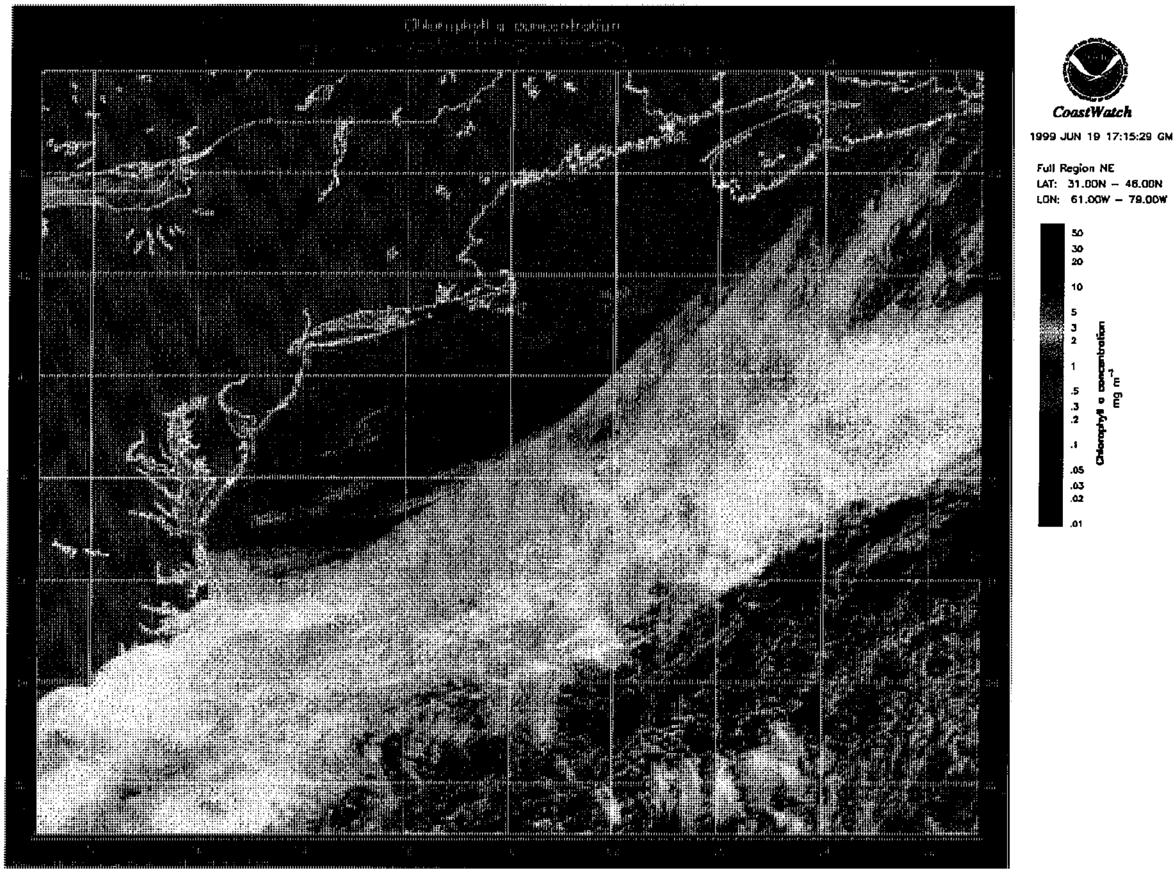


Figure I-22. Chlorophyll a Concentration from June 19, 1999

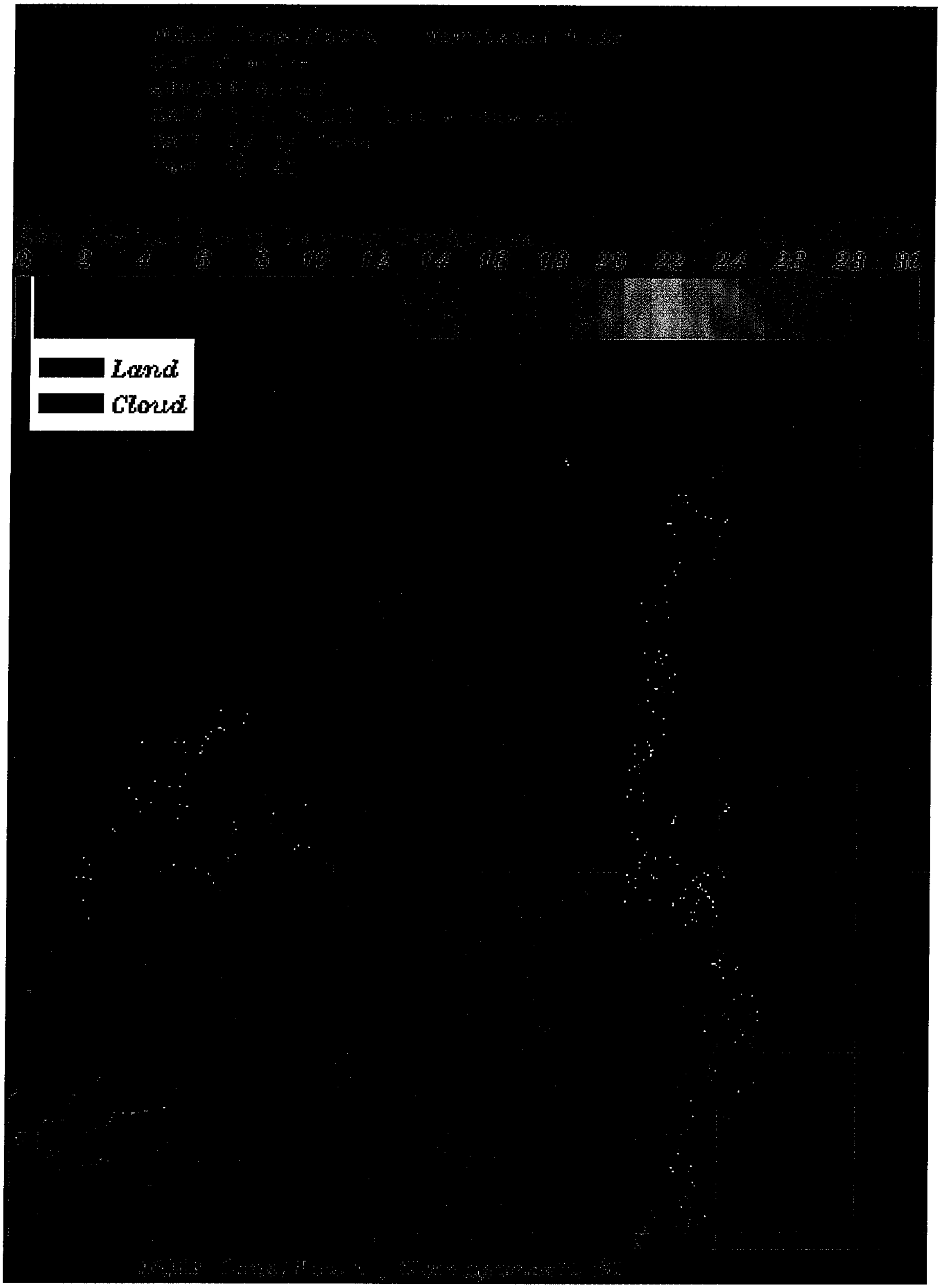


Figure I-23. Sea Surface Temperature from February 3, 1999 18:42

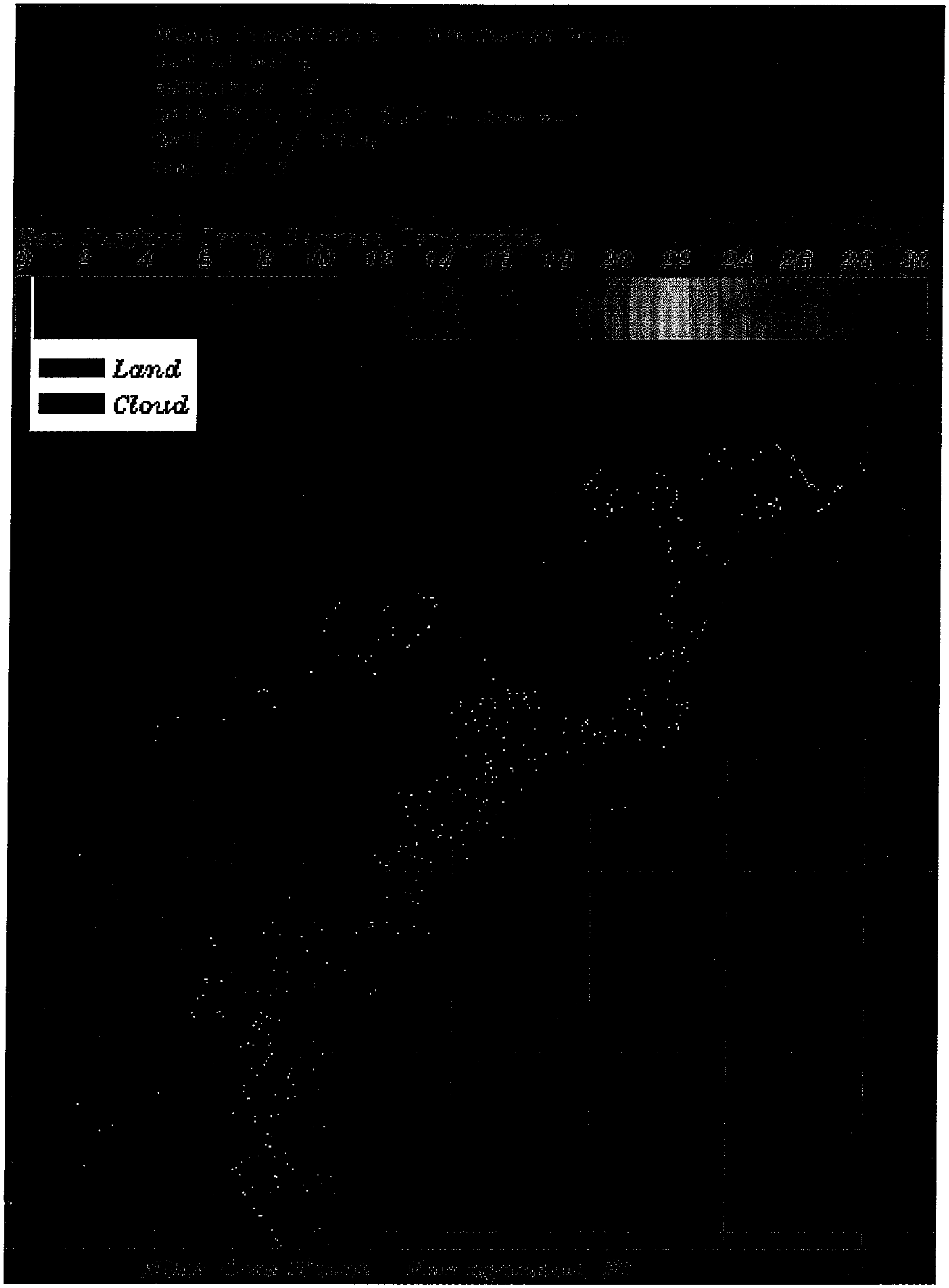


Figure I-24. Sea Surface Temperature from February 7, 1999 8:13

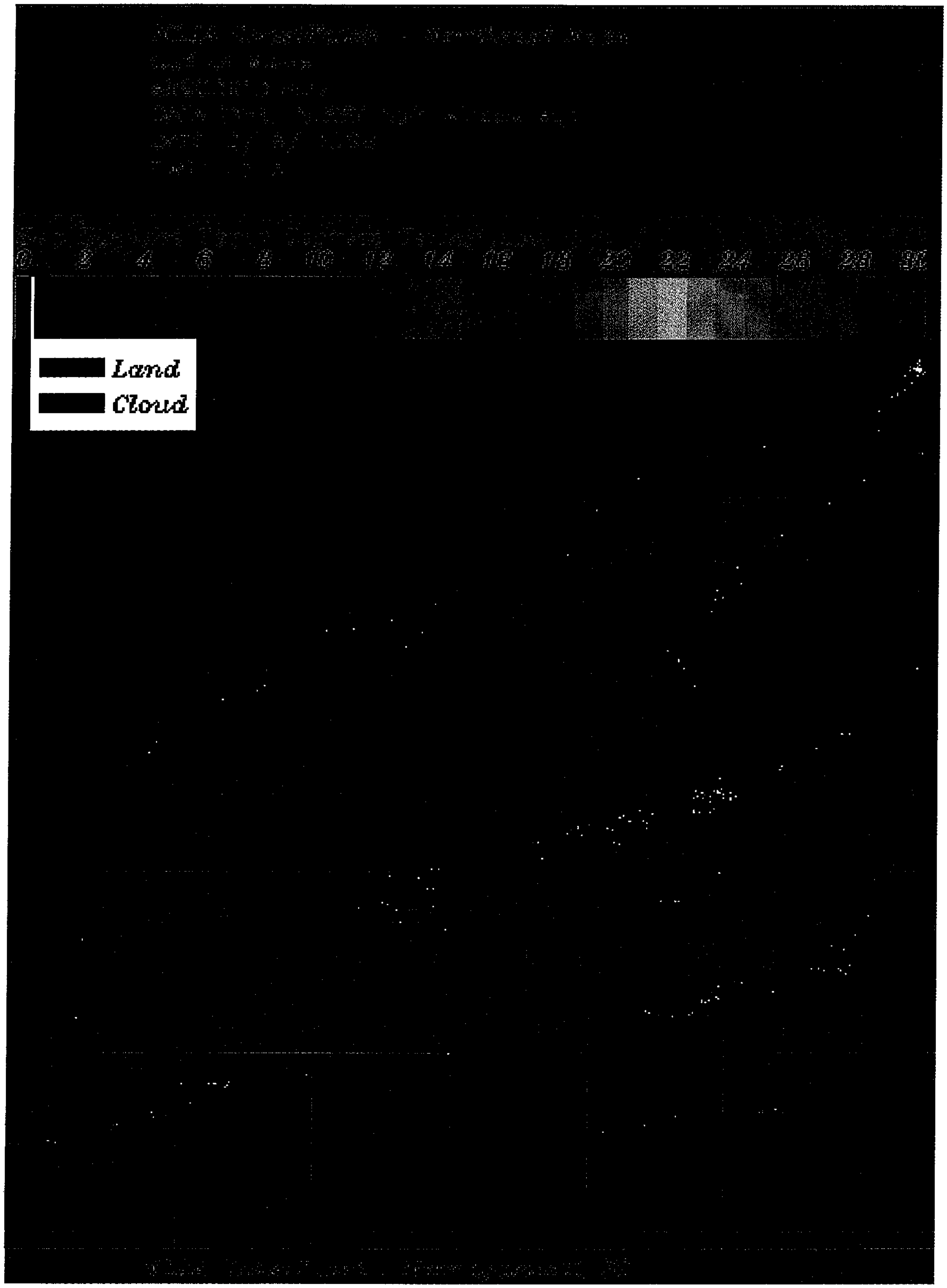


Figure I-25. Sea Surface Temperature from February 8, 1999 13:5

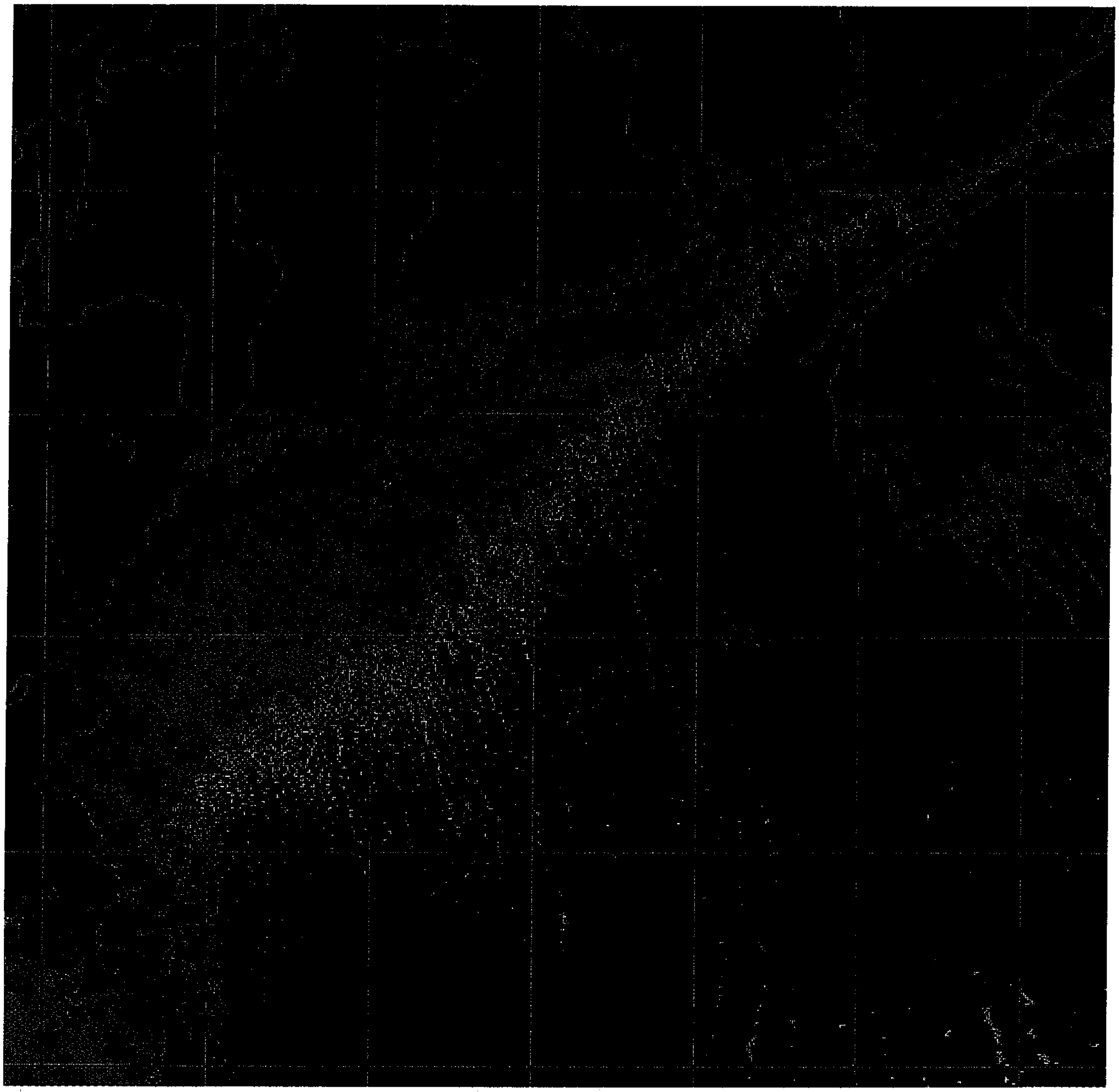


Figure I-26. Sea Surface Temperature from February 23, 1999

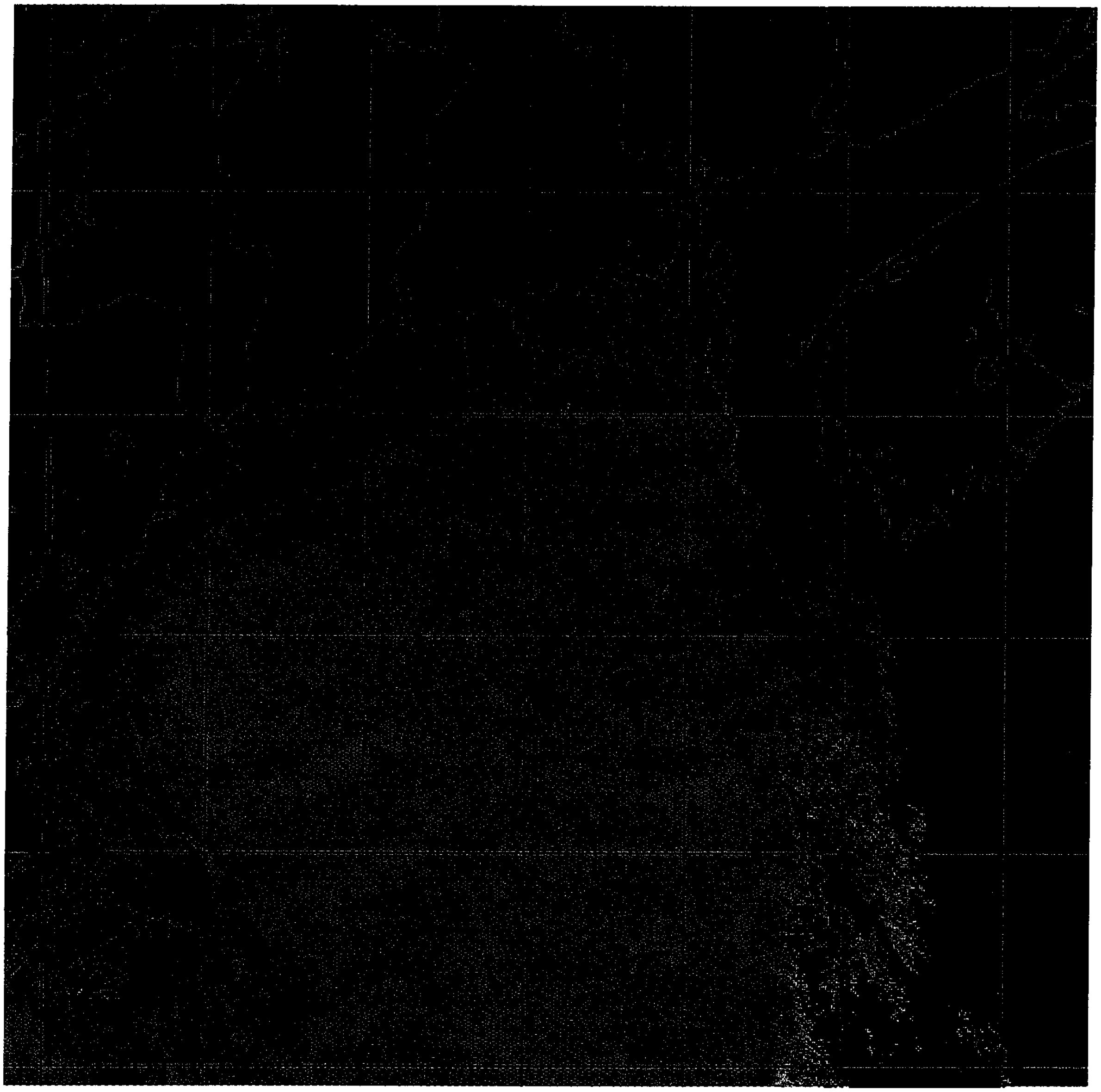


Figure I-27. Sea Surface Temperature from February 27, 1999

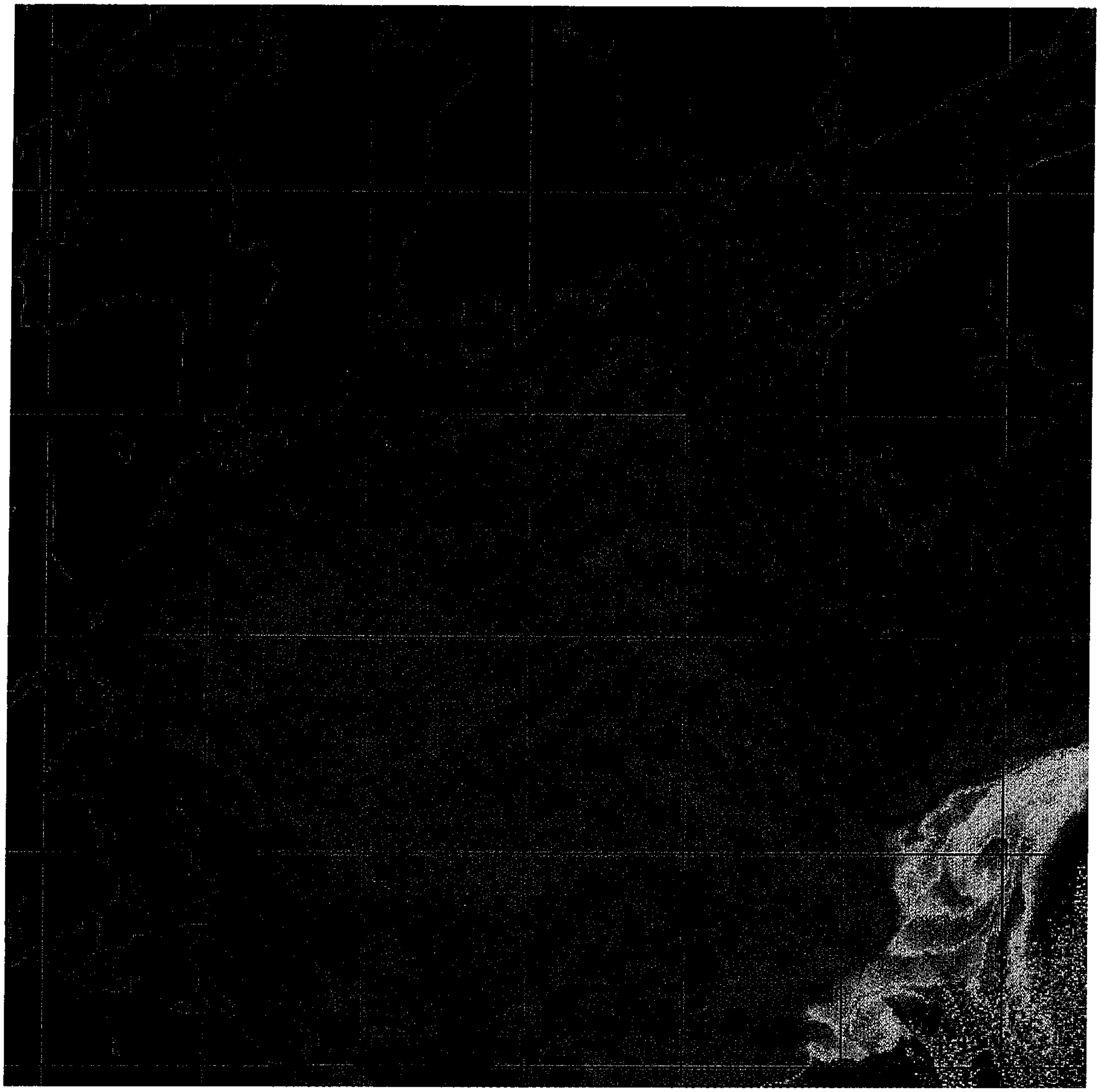


Figure I-28. Sea Surface Temperature from February 28, 1999

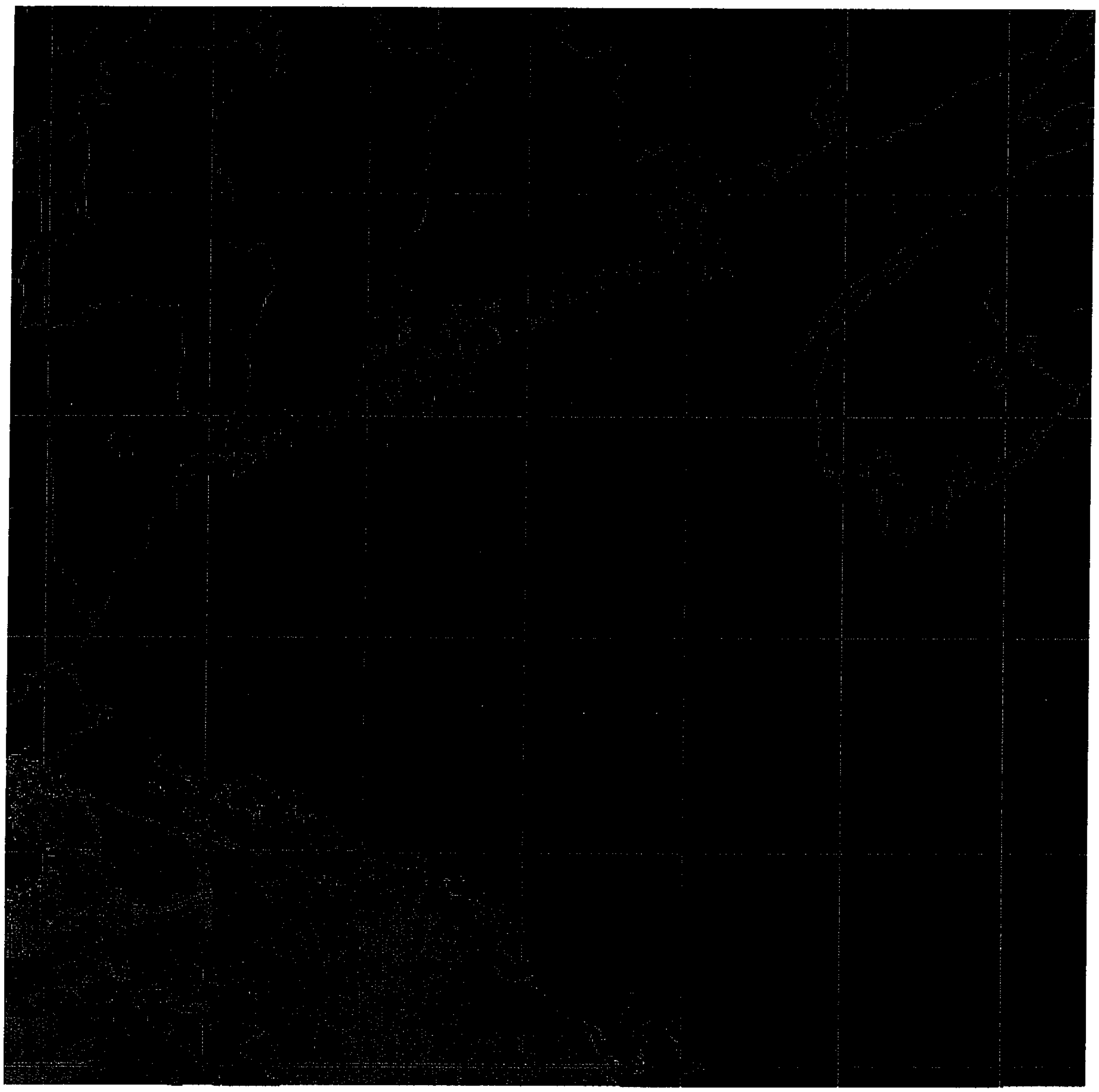


Figure I-29. Sea Surface Temperature from March 1, 1999

Figure I-30. Sea Surface Temperature from March 2, 1999

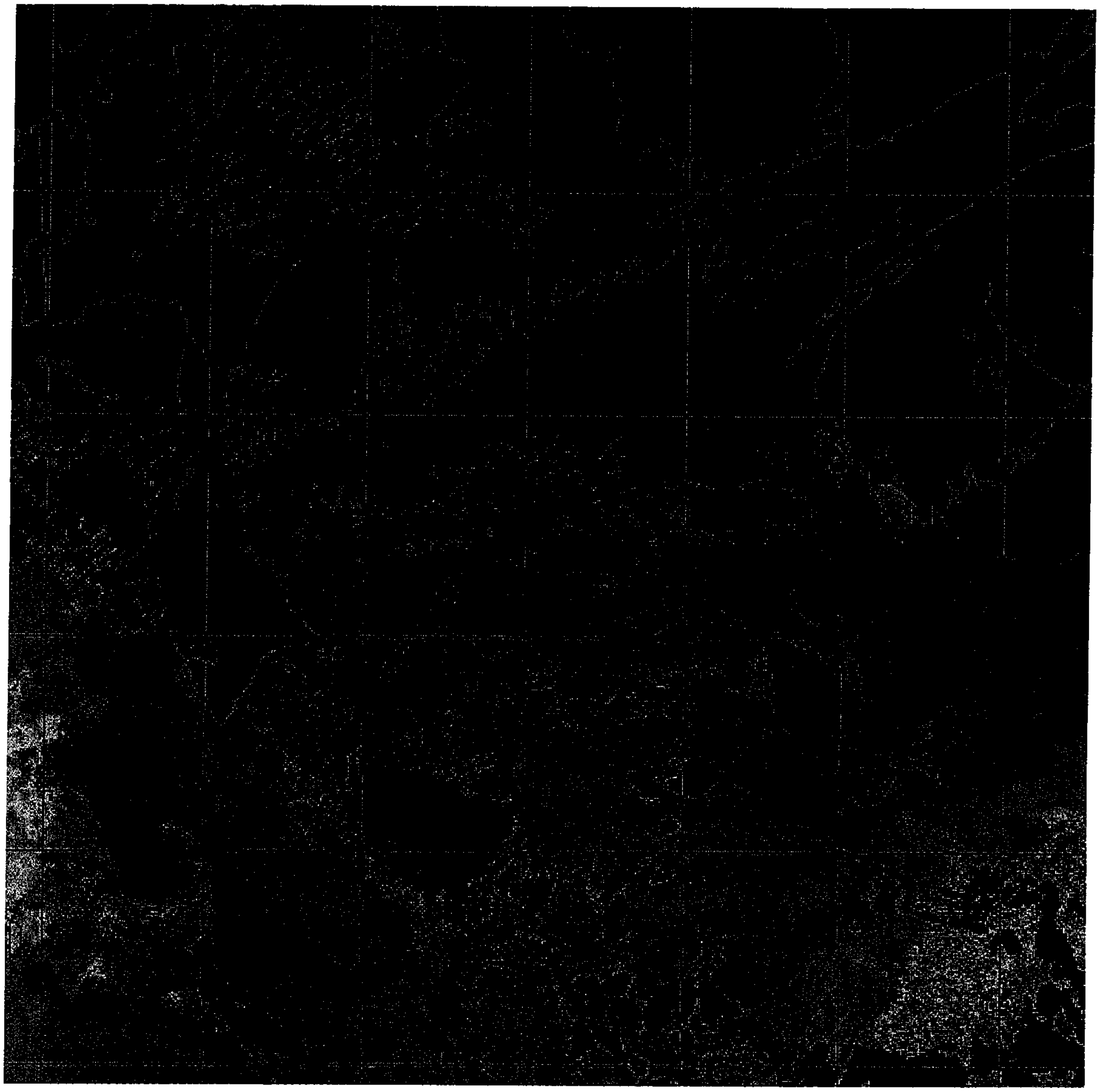


Figure I-31. Sea Surface Temperature from March 20, 1999

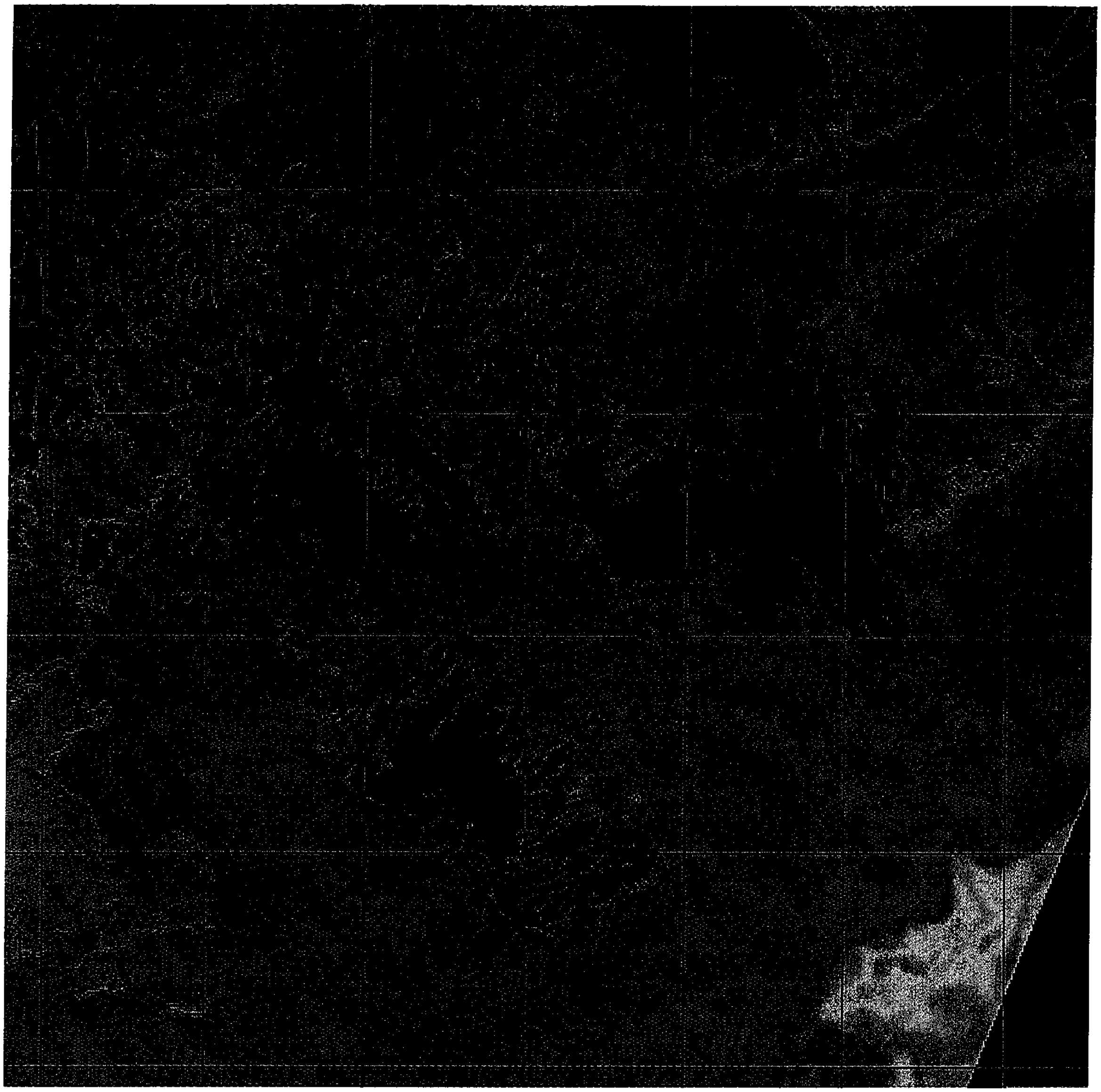


Figure I-32. Sea Surface Temperature from March 30, 1999

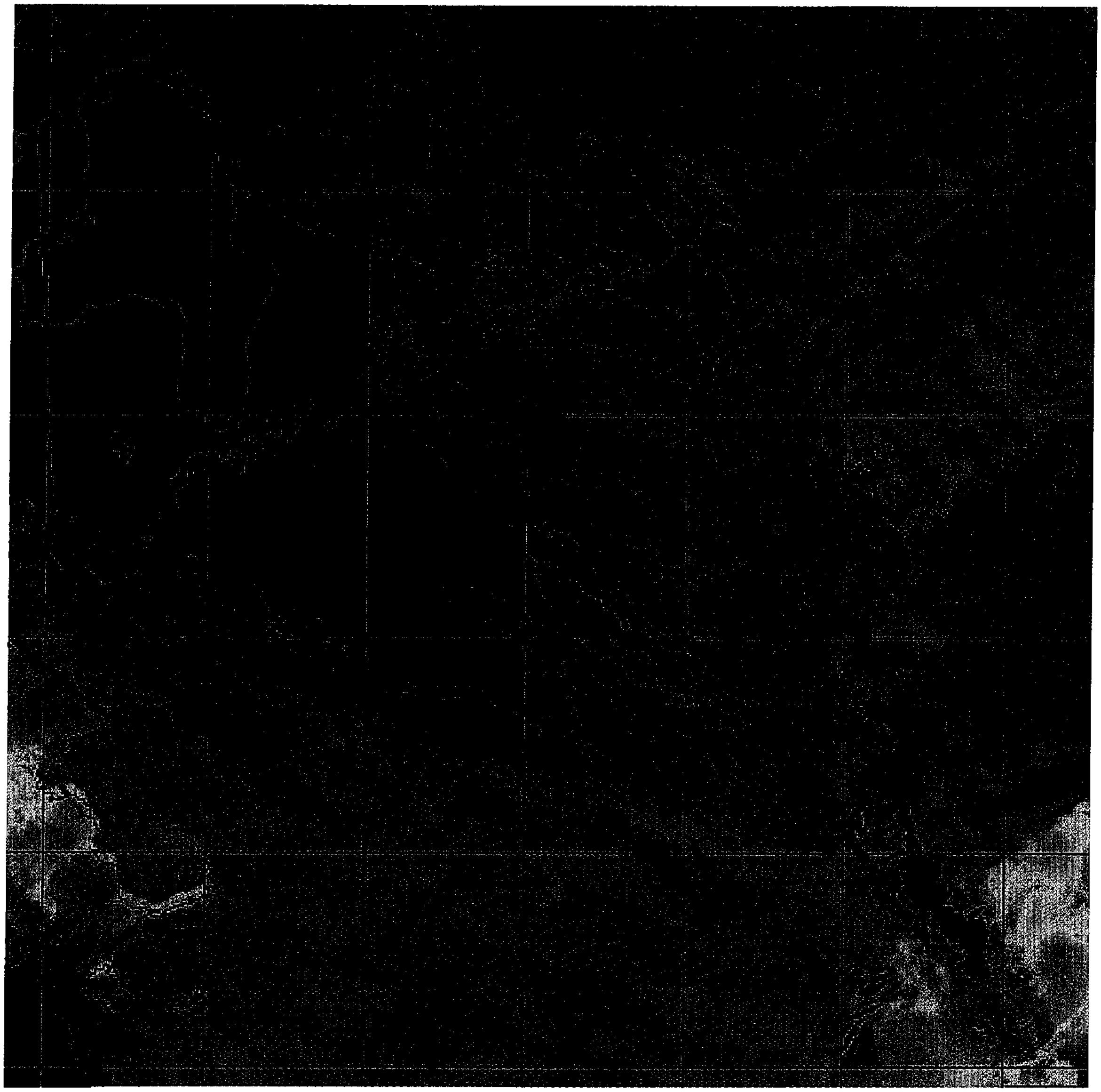


Figure I-33. Sea Surface Temperature from April 1, 1999

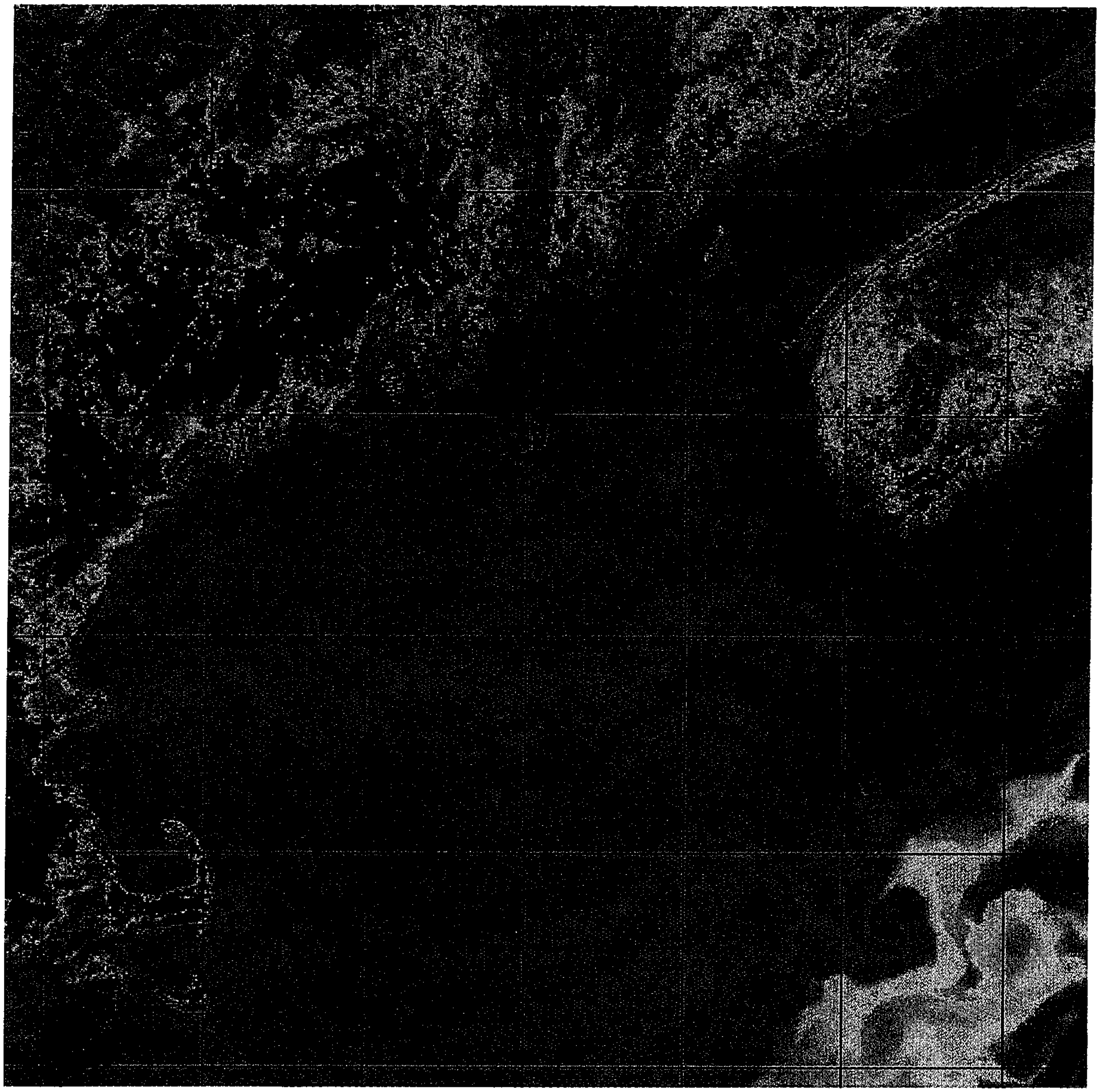


Figure I-34. Sea Surface Temperature from April 6, 1999

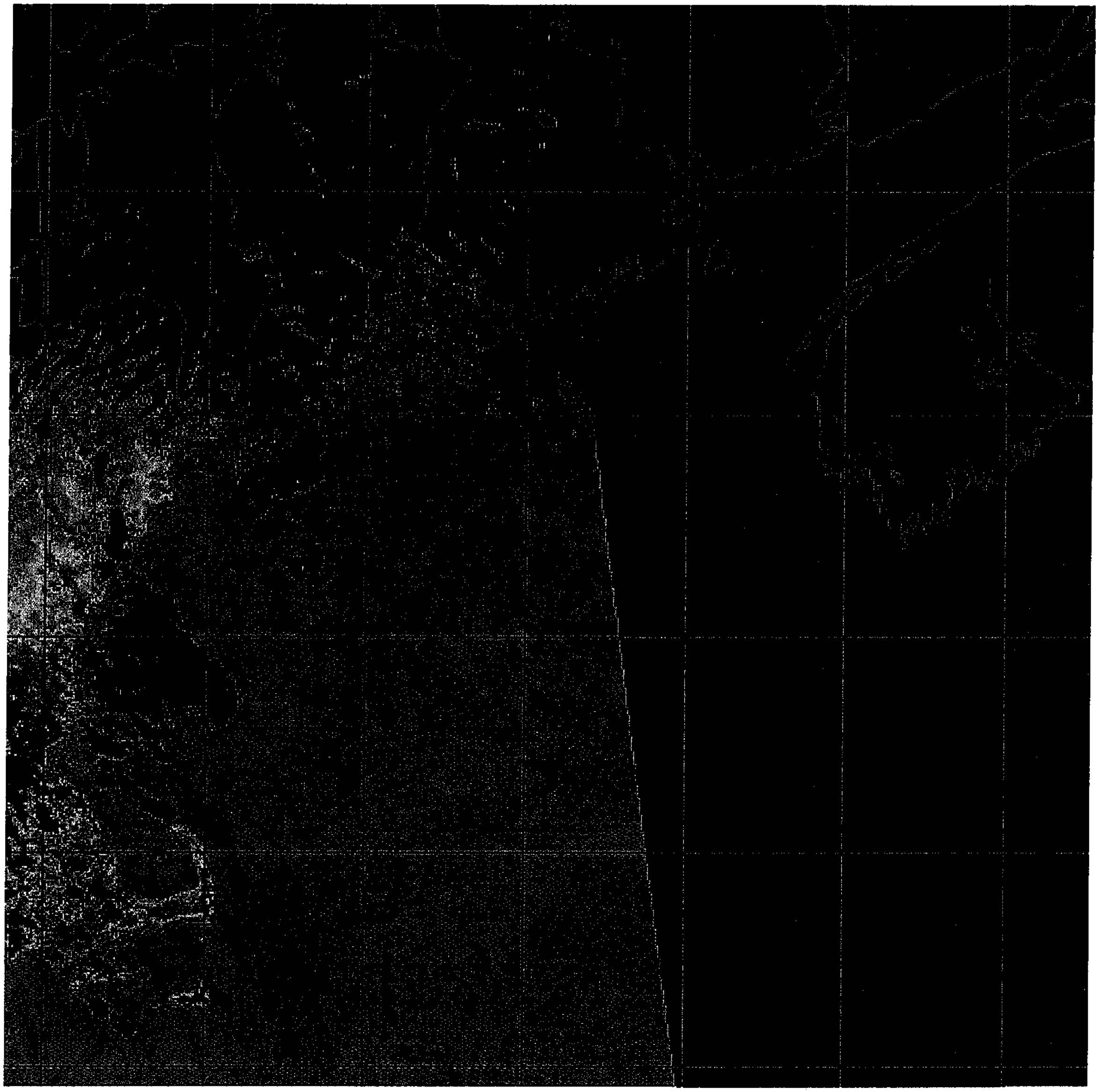


Figure I-35. Sea Surface Temperature from April 10, 1999

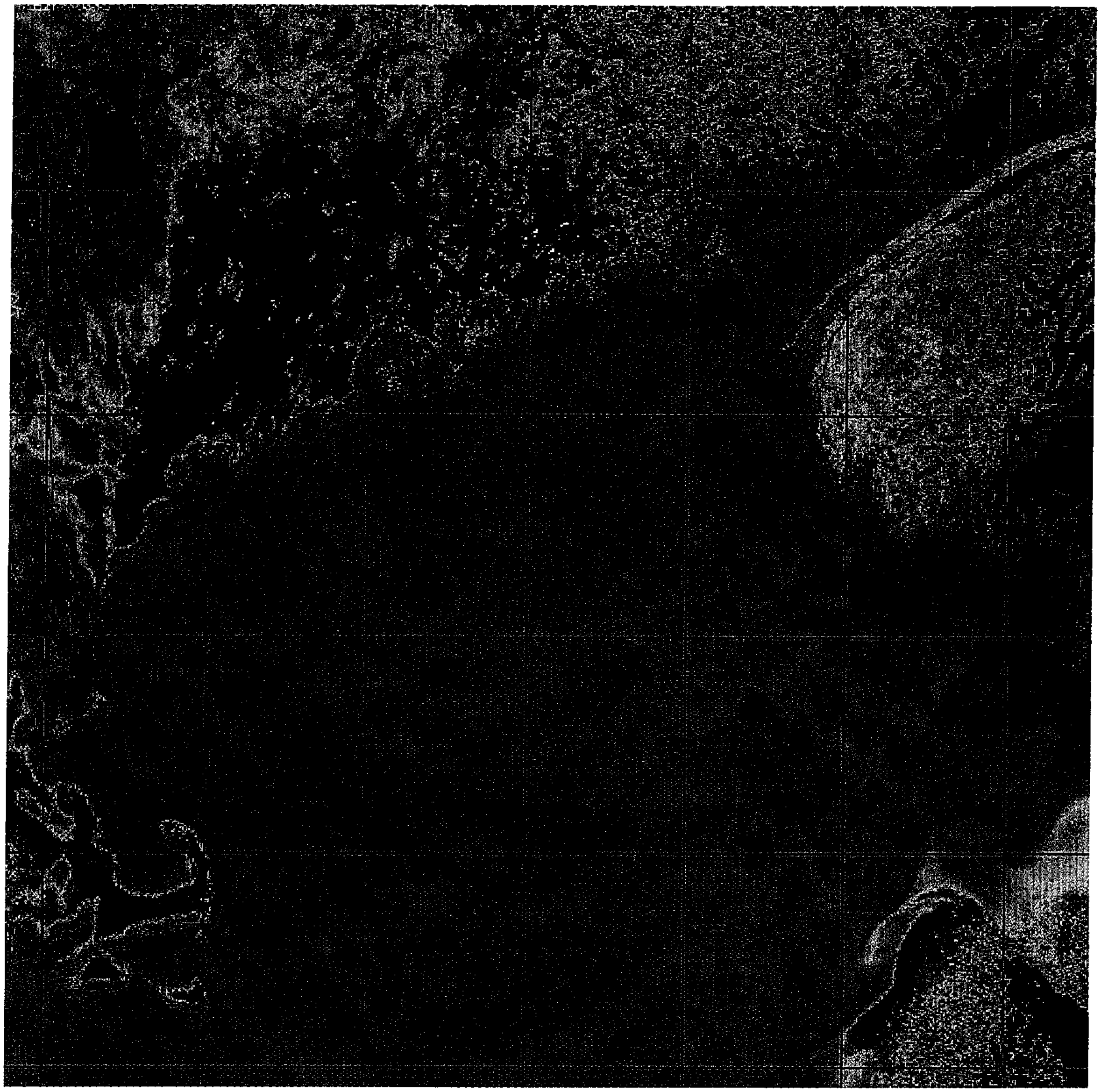


Figure I-36. Sea Surface Temperature from April 25, 1999

Figure I-37. Sea Surface Temperature from April 27, 1999

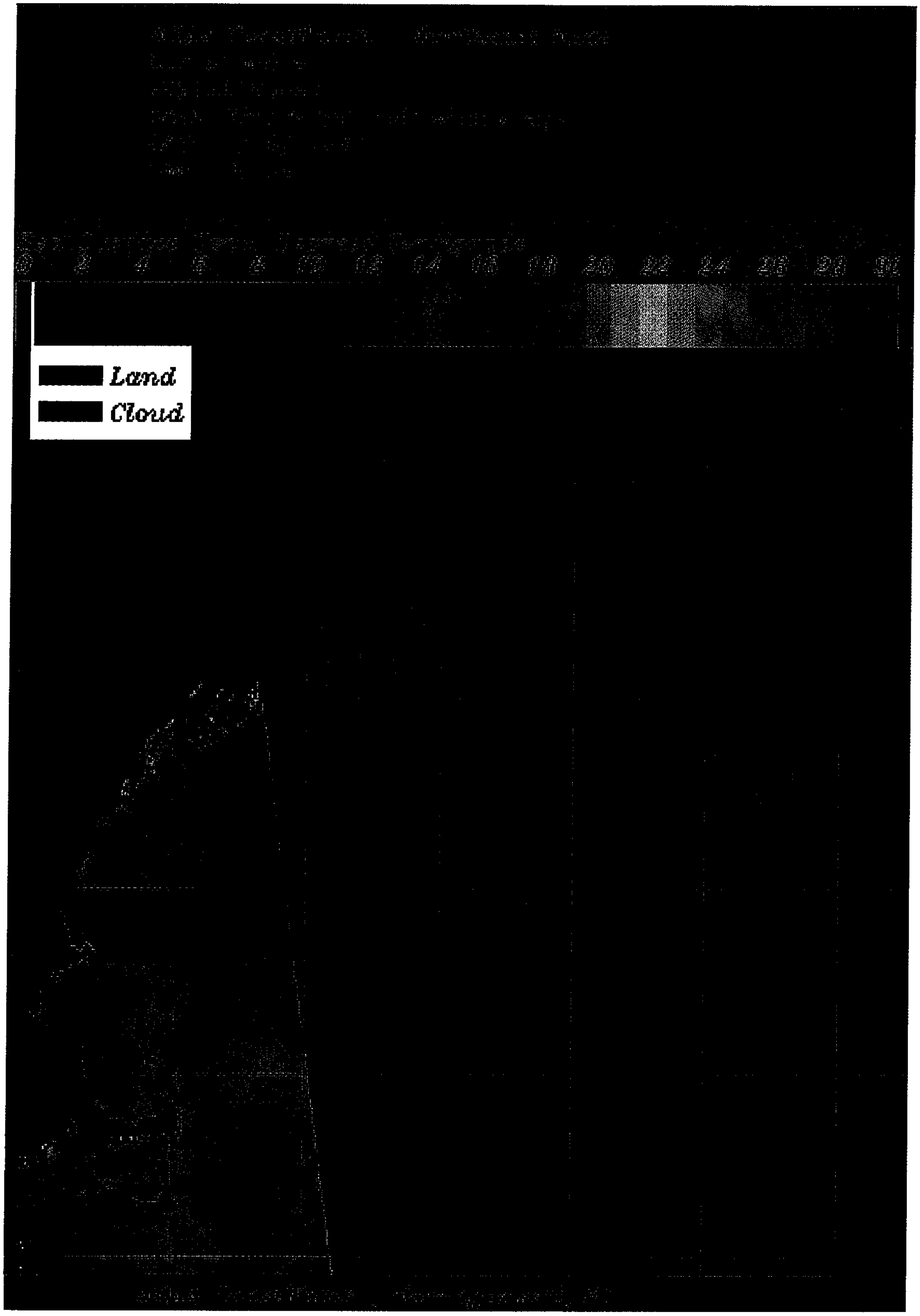


Figure I-38. Sea Surface Temperature from May 6, 1999 19:59

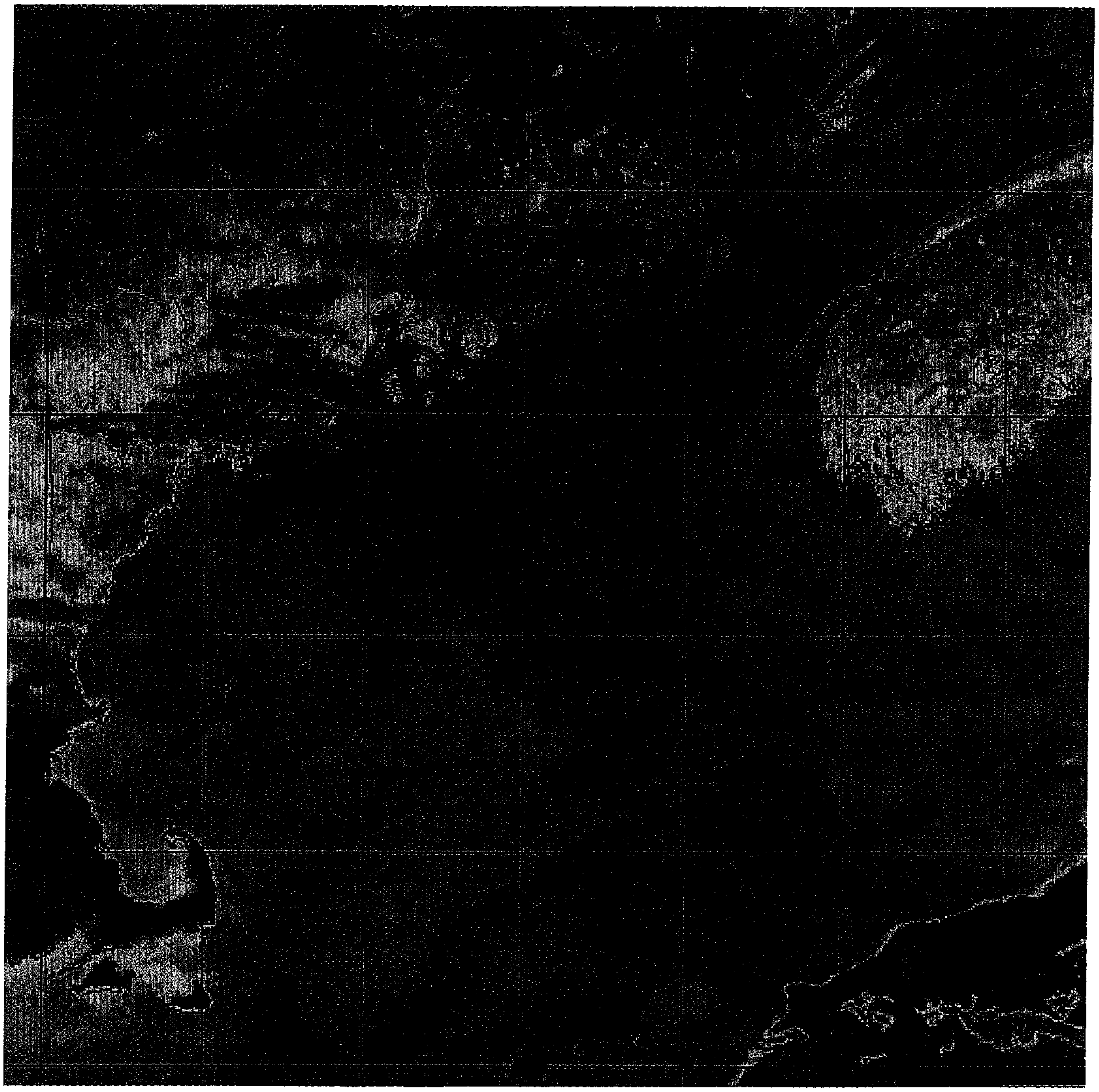


Figure I-39. Sea Surface Temperature from May 12, 1999

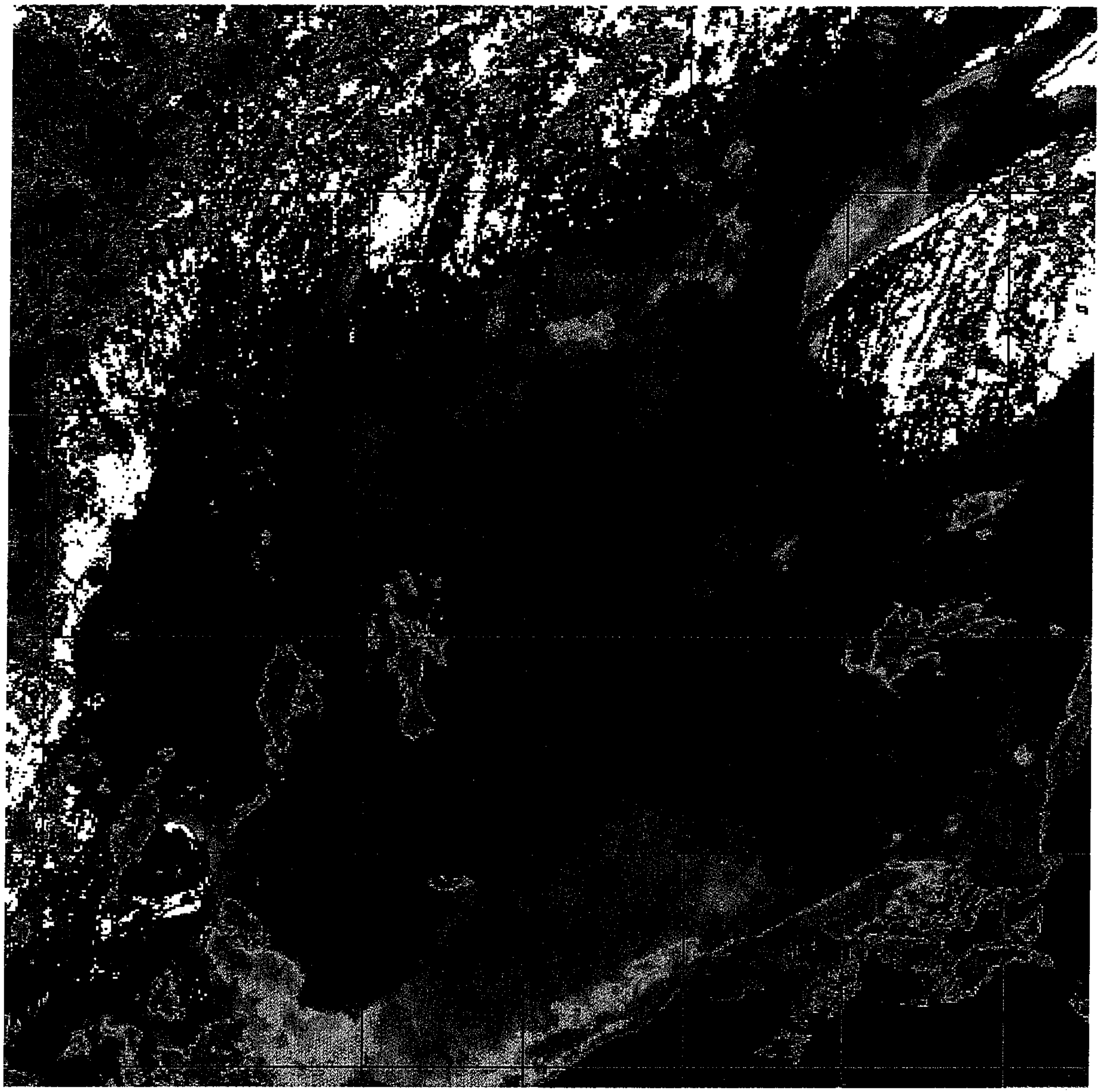


Figure I-40. Sea Surface Temperature from June 14, 1999

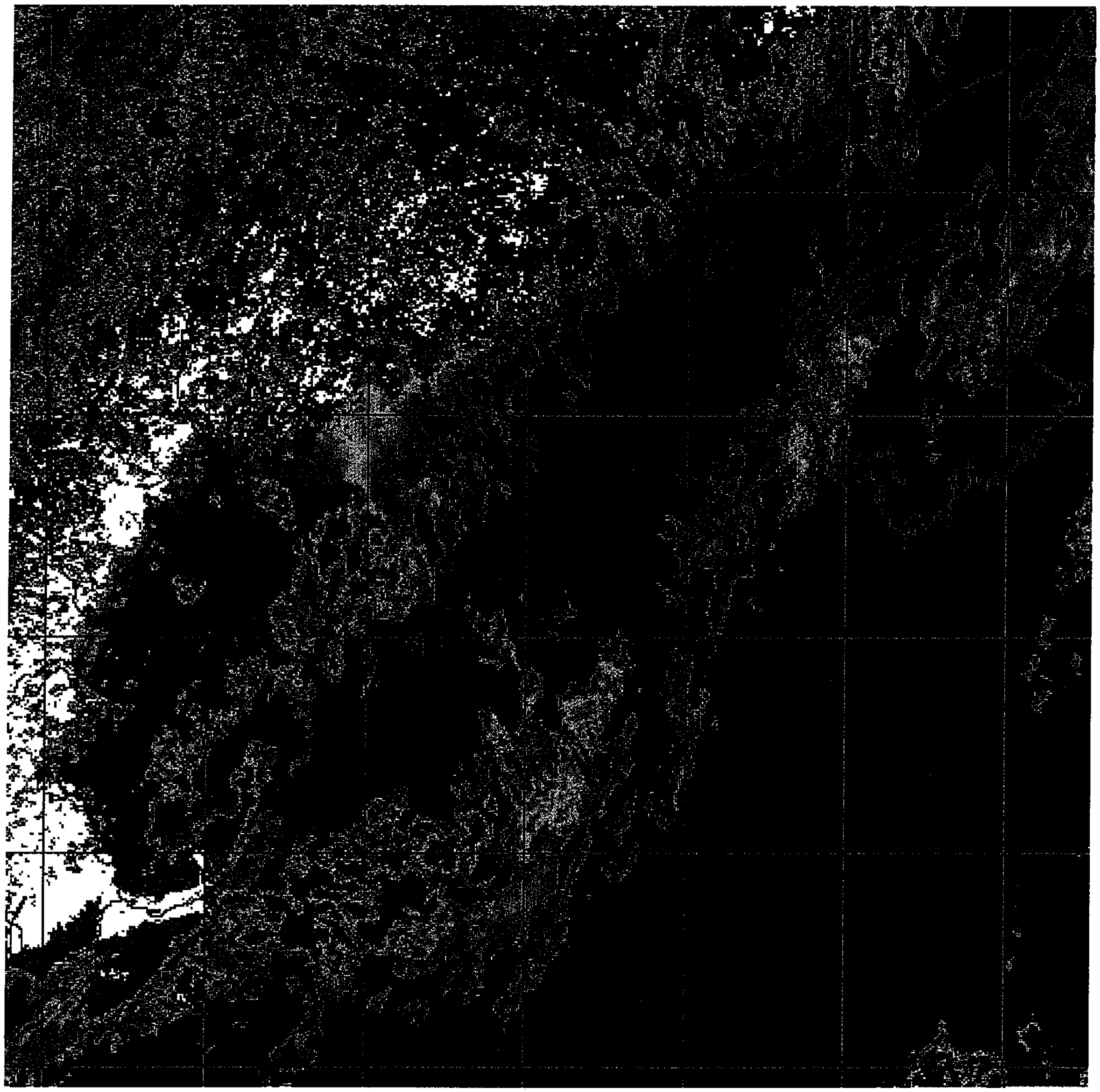


Figure I-41. Sea Surface Temperature from June 15, 1999

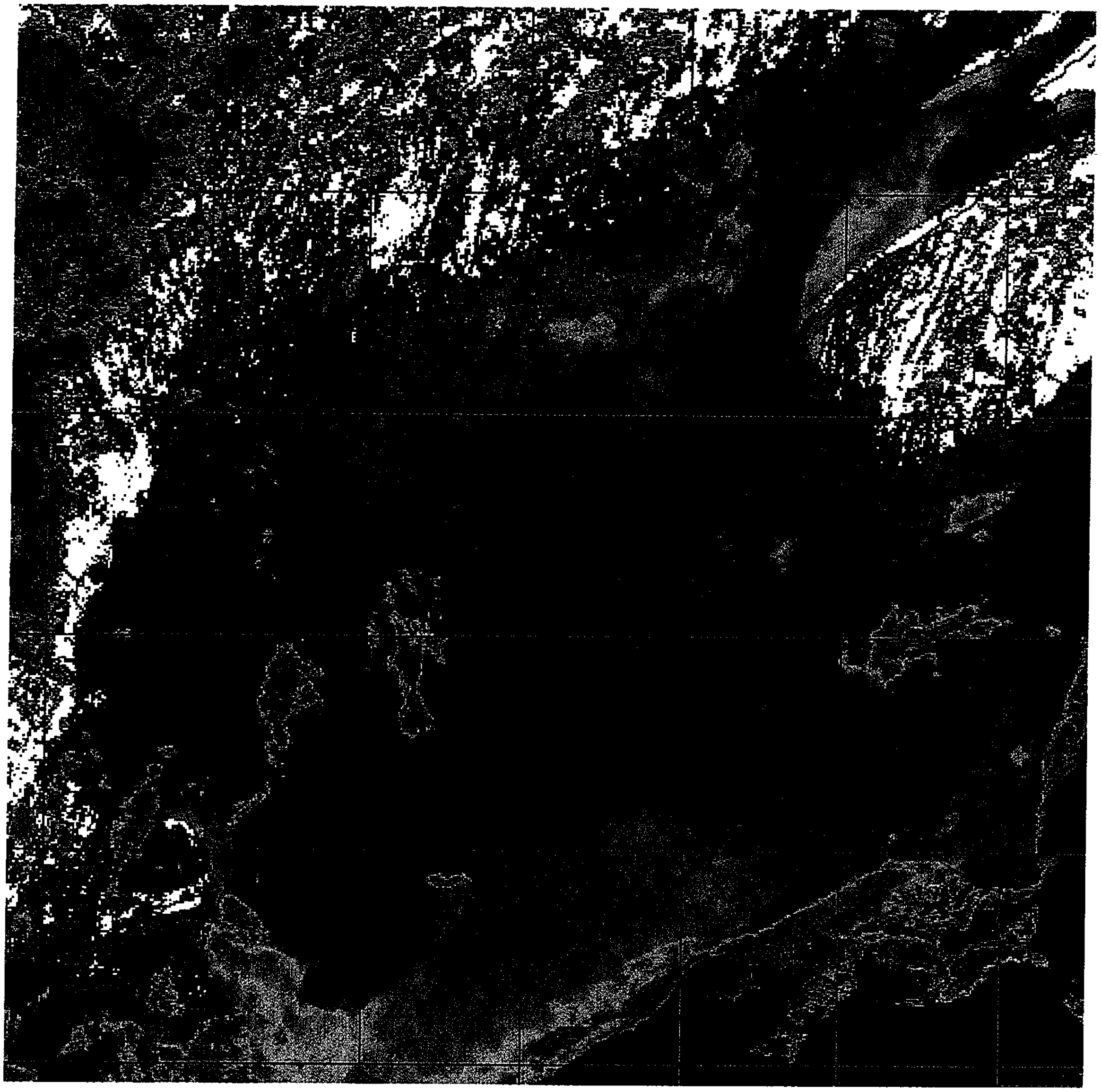


Figure I-42. Sea Surface Temperature from June 16, 1999

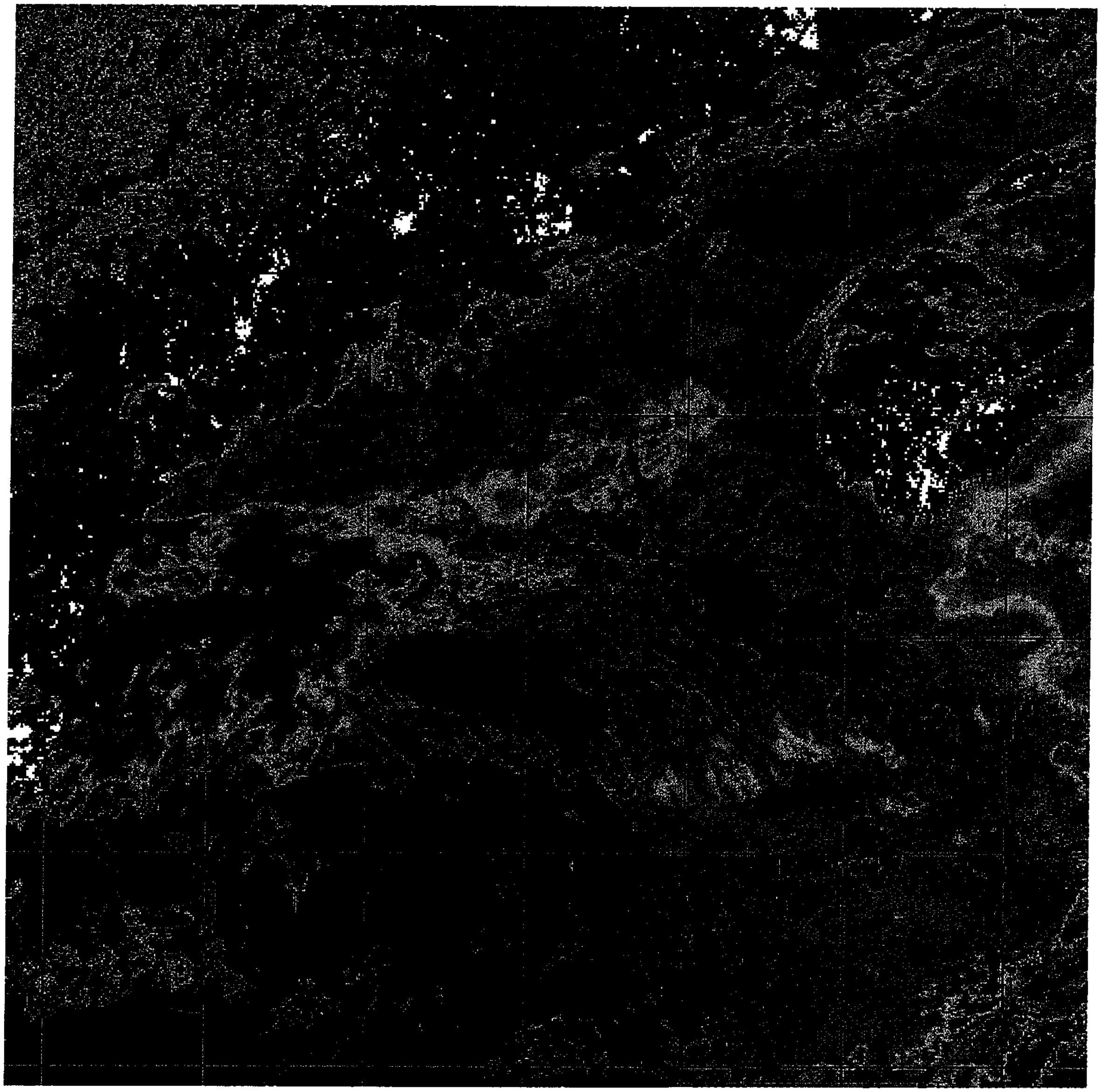


Figure I-43. Sea Surface Temperature from June 17, 1999

Figure I-44. Sea Surface Temperature from June 19, 1999

APPENDIX J

Secchi Disk Data

Survey ID	Station ID	Station Arrival Date and Time	Secchi Disk Depth (m)	Qualifier
WF991	F01	2/2/99 9:56 AM	8	v
WF991	F02	2/2/99 12:12 PM	8	v
WF991	F03	2/8/99 11:03 AM	4	v
WF991	F05	2/8/99 9:38 AM	3.75	v
WF991	F06	2/8/99 8:42 AM	7.75	v
WF991	F07	2/8/99 8:09 AM	8.75	v
WF991	F10	2/4/99 12:50 PM	7.5	v
WF991	F12	2/3/99 3:41 PM	8.25	v
WF991	F13	2/4/99 1:27 PM	6.5	v
WF991	F14	2/4/99 2:38 PM	4.25	v
WF991	F15	2/4/99 2:02 PM	6.25	v
WF991	F16	2/4/99 11:57 AM	8.75	v
WF991	F17	2/3/99 4:35 PM	8.25	v
WF991	F18	2/4/99 8:51 AM	4	v
WF991	F19	2/3/99 5:21 PM		e
WF991	F22	2/3/99 6:01 PM		e
WF991	F23	2/7/99 9:18 AM	2.375	v
WF991	F24	2/4/99 8:10 AM	4.25	v
WF991	F25	2/4/99 3:07 PM	4	v
WF991	F26	2/3/99 12:36 PM	5.25	v
WF991	F27	2/3/99 1:33 PM	9.25	v
WF991	F28	2/3/99 2:50 PM	8.75	v
WF991	F29	2/2/99 2:09 PM	7.25	v
WF991	F30	2/4/99 7:24 AM	2.375	v
WF991	F31	2/4/99 3:40 PM	4.75	v
WF991	F32	2/2/99 10:49 AM	5	v
WF991	F33	2/2/99 1:23 PM	6.75	v
WF991	N16	2/7/99 3:28 PM	8.25	v
WF992	F01	2/23/99 10:03 AM	3.25	v
WF992	F02	2/23/99 12:36 PM	4.75	v
WF992	F03	2/28/99 1:14 PM	2	v
WF992	F05	2/28/99 11:45 AM	2.75	v
WF992	F06	2/28/99 11:08 AM	7.75	v
WF992	F07	2/28/99 10:33 AM	7.25	v
WF992	F10	2/28/99 9:44 AM	7.75	v
WF992	F12	2/23/99 4:43 PM	8.25	v
WF992	F13	2/28/99 8:57 AM	2.75	v
WF992	F14	2/24/99 1:11 PM	4.75	v
WF992	F15	2/24/99 12:36 PM	5.25	v
WF992	F16	2/24/99 11:59 AM	9	v
WF992	F17	2/24/99 11:25 AM	10	v
WF992	F18	2/24/99 5:01 PM		e
WF992	F19	2/24/99 10:31 AM	8	v
WF992	F22	2/24/99 7:56 AM	5.25	v
WF992	F23	2/27/99 8:07 AM	0.75	v
WF992	F24	2/24/99 5:44 PM		e

Survey ID	Station ID	Station Arrival Date and Time	Secchi Disk Depth (m)	Qualifier
WF992	F25	2/24/99 1:47 PM	4.25	v
WF992	F26	2/23/99 8:01 PM		e
WF992	F27	2/23/99 7:05 PM		e
WF992	F28	2/23/99 5:50 PM		e
WF992	F29	2/23/99 2:53 PM	7.75	v
WF992	F30	2/24/99 6:37 PM		e
WF992	F31	2/28/99 7:30 AM	2.25	v
WF992	F32	2/23/99 11:42 AM	3.25	v
WF992	F33	2/23/99 1:45 PM	6.25	v
WF992	N16	2/24/99 3:45 PM	5.75	v
WF994	F01	4/1/99 8:37 AM	5.5	v
WF994	F02	4/1/99 10:34 AM	6.5	v
WF994	F03	4/1/99 7:57 AM	5.25	v
WF994	F05	5/6/99 10:34 AM	13	v
WF994	F06	5/6/99 9:47 AM	14	v
WF994	F07	5/6/99 9:24 AM	8	v
WF994	F10	5/6/99 8:31 AM	9.5	v
WF994	F12	4/1/99 1:28 PM	4.75	v
WF994	F13	5/6/99 7:34 AM	8.75	v
WF994	F14	5/6/99 7:08 AM	4	v
WF994	F15	4/1/99 3:06 PM	5.75	v
WF994	F16	4/1/99 2:36 PM	7.25	v
WF994	F17	4/1/99 2:07 PM	6.5	v
WF994	F18	4/6/99 8:33 AM	5.75	v
WF994	F19	4/26/99 9:38 AM	8.75	v
WF994	F22	4/6/99 9:34 AM	6	v
WF994	F23	4/7/99 6:45 AM		e
WF994	F24	4/6/99 7:51 AM	3	v
WF994	F25	4/1/99 3:47 PM	4	v
WF994	F26	4/6/99 10:26 AM	6.75	v
WF994	F27	4/6/99 11:09 AM		e
WF994	F28	4/6/99 12:27 PM	9.75	v
WF994	F29	4/1/99 12:09 PM	6.5	v
WF994	F30	4/6/99 7:12 AM	2.5	v
WF994	F31	4/6/99 6:30 AM	2.25	v
WF994	F32	4/1/99 9:33 AM		e
WF994	F33	4/1/99 11:23 AM		e
WF994	N16	4/26/99 10:34 AM	11	v
WF997	F01	6/14/99 9:58 AM	11.75	v
WF997	F02	6/14/99 11:20 AM	10.75	v
WF997	F03	6/14/99 9:02 AM	7.75	v
WF997	F05	6/18/99 7:30 AM	8.25	v
WF997	F06	6/18/99 8:16 AM	8.25	v
WF997	F07	6/18/99 8:56 AM	11.25	v
WF997	F10	6/18/99 9:57 AM	11.75	v
WF997	F12	6/14/99 2:43 PM	11.75	v

Survey ID	Station ID	Station Arrival Date and Time	Secchi Disk Depth (m)	Qualifier
WF997	F13	6/18/99 10:58 AM	5.75	v
WF997	F14	6/18/99 11:41 AM	4.75	v
WF997	F15	6/18/99 12:30 PM	10.25	v
WF997	F16	6/18/99 1:13 PM	8.75	v
WF997	F17	6/18/99 1:59 PM	10.25	v
WF997	F18	6/17/99 11:18 AM	6.25	v
WF997	F19	6/17/99 7:21 AM	9.75	v
WF997	F22	6/17/99 8:22 AM	10.25	v
WF997	F23	6/19/99 10:42 AM	2.25	v
WF997	F24	6/17/99 12:23 PM	6.5	v
WF997	F25	6/17/99 2:11 PM	3.25	v
WF997	F26	6/14/99 5:11 PM	7.75	v
WF997	F27	6/14/99 4:20 PM	11.25	v
WF997	F28	6/14/99 3:24 PM	11.25	v
WF997	F29	6/14/99 1:14 PM	8.75	v
WF997	F30	6/17/99 3:58 PM	1.75	v
WF997	F31	6/17/99 4:41 PM	3.75	v
WF997	N16	6/17/99 9:59 AM	9.75	v

e- Results not reported, value given is null
v- Arithmetic mean

APPENDIX K

Estimated Carbon Equivalence Data

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F01	WF991028	2.01	02/02/99	BACTERIASTRUM DELICATULUM	3,612.38
WF991	F01	WF991028	2.01	02/02/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	326.46716
WF991	F01	WF991028	2.01	02/02/99	CHAETOCEROS DEBILIS	32,784.65
WF991	F01	WF991028	2.01	02/02/99	CHAETOCEROS DIDYMUS	97.31199
WF991	F01	WF991028	2.01	02/02/99	CHAETOCEROS RADICANS	6,289.49
WF991	F01	WF991028	2.01	02/02/99	CHAETOCEROS SOCIALIS	1,269.27
WF991	F01	WF991028	2.01	02/02/99	CHAETOCEROS SPP. (10-20UM)	4,886.52
WF991	F01	WF991028	2.01	02/02/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	148.27214
WF991	F01	WF991028	2.01	02/02/99	CYLINDROTHECA CLOSTERIUM	99.98568
WF991	F01	WF991028	2.01	02/02/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,335.12
WF991	F01	WF991028	2.01	02/02/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	32.15296
WF991	F01	WF991028	2.01	02/02/99	POROSIRA GLACIALIS	2,451.43
WF991	F01	WF991028	2.01	02/02/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	1,807.75
WF991	F01	WF991028	2.01	02/02/99	PSEUDONITZSCHIA PUNGENS	426.95422
WF991	F01	WF991028	2.01	02/02/99	PSEUDONITZSCHIA SPP.	506.68128
WF991	F01	WF991028	2.01	02/02/99	RHIZOSOLENIA STOLTERFOTHII	394.13774
WF991	F01	WF991028	2.01	02/02/99	SKELETONEMA COSTATUM	449.96499
WF991	F01	WF991028	2.01	02/02/99	THALASSIONEMA NITZSCHIOIDES	504.55017
WF991	F01	WF991028	2.01	02/02/99	THALASSIOSIRA NORDENSKIOLDII	13.37501
WF991	F01	WF991028	2.01	02/02/99	THALASSIOSIRA ROTULA	1,201.51
WF991	F01	WF991028	2.01	02/02/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,333.62
WF991	F01	WF991026	10.02	02/02/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	272.05597
WF991	F01	WF991026	10.02	02/02/99	CERATIUM FUSUS	967.04687
WF991	F01	WF991026	10.02	02/02/99	CHAETOCEROS DEBILIS	25,803.37
WF991	F01	WF991026	10.02	02/02/99	CHAETOCEROS RADICANS	1,318.77
WF991	F01	WF991026	10.02	02/02/99	CHAETOCEROS SEPTENTRIONALIS	20.80774
WF991	F01	WF991026	10.02	02/02/99	CHAETOCEROS SOCIALIS	520.19357
WF991	F01	WF991026	10.02	02/02/99	CHAETOCEROS SPP. (10-20UM)	4,801.54
WF991	F01	WF991026	10.02	02/02/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	3,977.50
WF991	F01	WF991026	10.02	02/02/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	275.36255
WF991	F01	WF991026	10.02	02/02/99	CYLINDROTHECA CLOSTERIUM	99.98568
WF991	F01	WF991026	10.02	02/02/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,405.39
WF991	F01	WF991026	10.02	02/02/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	647.632
WF991	F01	WF991026	10.02	02/02/99	GYRODINIUM SPIRALE	2,850.33
WF991	F01	WF991026	10.02	02/02/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	107.34916
WF991	F01	WF991026	10.02	02/02/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	460.43263
WF991	F01	WF991026	10.02	02/02/99	POROSIRA GLACIALIS	1,634.29

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F01	WF991026	10.02	02/02/99	PSEUDONITZSCHIA PUNGENS	525.48212
WF991	F01	WF991026	10.02	02/02/99	PSEUDONITZSCHIA SPP.	422.2344
WF991	F01	WF991026	10.02	02/02/99	SKELETONEMA COSTATUM	262.47957
WF991	F01	WF991026	10.02	02/02/99	THALASSIONEMA NITZSCHIOIDES	218.18386
WF991	F01	WF991026	10.02	02/02/99	THALASSIOSIRA NORDENSKIOLDII	20.06251
WF991	F01	WF991026	10.02	02/02/99	THALASSIOSIRA ROTULA	961.2092
WF991	F01	WF991026	10.02	02/02/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	86.63356
WF991	F01	WF991026	10.02	02/02/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	8,379.81
WF991	F01	WF991026	10.02	02/02/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	412.50364
WF991	F02	WF99104B	1.87	02/02/99	BACTERIOSIRA BATHYOMPHALA	17,163.04
WF991	F02	WF99104B	1.87	02/02/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	106.80716
WF991	F02	WF99104B	1.87	02/02/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	611.71001
WF991	F02	WF99104B	1.87	02/02/99	CERATIUM TRIPOS	4,053.55
WF991	F02	WF99104B	1.87	02/02/99	CHAETOCEROS DEBILIS	45,679.99
WF991	F02	WF99104B	1.87	02/02/99	CHAETOCEROS DECIPIENS	1,592.92
WF991	F02	WF99104B	1.87	02/02/99	CHAETOCEROS RADICANS	1,908.33
WF991	F02	WF99104B	1.87	02/02/99	CHAETOCEROS SOCIALIS	9,053.94
WF991	F02	WF99104B	1.87	02/02/99	CHAETOCEROS SPP. (10-20UM)	4,865.53
WF991	F02	WF99104B	1.87	02/02/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	187.10532
WF991	F02	WF99104B	1.87	02/02/99	CYCLOTELLA SP. GROUP 1 DIAM <10 MICRONS	39.32971
WF991	F02	WF99104B	1.87	02/02/99	CYLINDROTHECA CLOSTERIUM	245.33524
WF991	F02	WF99104B	1.87	02/02/99	DICTYOCHA SPECULUM	128.42873
WF991	F02	WF99104B	1.87	02/02/99	DINOPHYSIS NORVEGICA	2,264.24
WF991	F02	WF99104B	1.87	02/02/99	DITYLUM BRIGHTWELLII	18,528.28
WF991	F02	WF99104B	1.87	02/02/99	EUCAMPIA ZOODIACUS	5,679.80
WF991	F02	WF99104B	1.87	02/02/99	GUINARDIA FLACCIDA	44,091.82
WF991	F02	WF99104B	1.87	02/02/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,118.80
WF991	F02	WF99104B	1.87	02/02/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	17.53197
WF991	F02	WF99104B	1.87	02/02/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	50.13105
WF991	F02	WF99104B	1.87	02/02/99	POROSIRA GLACIALIS	4,010.06
WF991	F02	WF99104B	1.87	02/02/99	PROROCENTRUM MICANS	330.54626
WF991	F02	WF99104B	1.87	02/02/99	PROTOPERIDINIUM BIPES	1,675.66
WF991	F02	WF99104B	1.87	02/02/99	PSEUDONITZSCHIA DELICATISSIMA	55.98038
WF991	F02	WF99104B	1.87	02/02/99	PSEUDONITZSCHIA PUNGENS	3,868.13
WF991	F02	WF99104B	1.87	02/02/99	PSEUDONITZSCHIA SPP.	690.69208
WF991	F02	WF99104B	1.87	02/02/99	RHIZOSOLENIA DELICATULA	2,177.08
WF991	F02	WF99104B	1.87	02/02/99	RHIZOSOLENIA FRAGILISSIMA	2,663.40
WF991	F02	WF99104B	1.87	02/02/99	RHIZOSOLENIA HEBETATA	1,486.90
WF991	F02	WF99104B	1.87	02/02/99	SKELETONEMA COSTATUM	132.89861
WF991	F02	WF99104B	1.87	02/02/99	THALASSIONEMA NITZSCHIOIDES	557.66515
WF991	F02	WF99104B	1.87	02/02/99	THALASSIOSIRA NORDENSKIOLDII	54.69717

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F02	WF99104B	1.87	02/02/99	THALASSIOTHRIX LONGISSIMA	3,208.04
WF991	F02	WF99104B	1.87	02/02/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,285.49
WF991	F02	WF991049	15.85	02/02/99	BACTERIOSIRA BATHYOMPHALA	12,452.73
WF991	F02	WF991049	15.85	02/02/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	226.14296
WF991	F02	WF991049	15.85	02/02/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	2,482.42
WF991	F02	WF991049	15.85	02/02/99	CHAETOCEROS DEBILIS	55,628.84
WF991	F02	WF991049	15.85	02/02/99	CHAETOCEROS DECIPIENS	6,183.28
WF991	F02	WF991049	15.85	02/02/99	CHAETOCEROS RADICANS	2,810.79
WF991	F02	WF991049	15.85	02/02/99	CHAETOCEROS SOCIALIS	8,215.68
WF991	F02	WF991049	15.85	02/02/99	CHAETOCEROS SPP. (10-20UM)	10,596.14
WF991	F02	WF991049	15.85	02/02/99	CORETHRON CRIOPHILUM	2,303.45
WF991	F02	WF991049	15.85	02/02/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	78.25351
WF991	F02	WF991049	15.85	02/02/99	CYLINDROTHECA CLOSTERIUM	115.43304
WF991	F02	WF991049	15.85	02/02/99	DINOPHYSIS NORVEGICA	3,196.05
WF991	F02	WF991049	15.85	02/02/99	DITYLUM BRIGHTWELLII	20,956.34
WF991	F02	WF991049	15.85	02/02/99	GUINARDIA FLACCIDA	69,152.35
WF991	F02	WF991049	15.85	02/02/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,622.52
WF991	F02	WF991049	15.85	02/02/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,495.38
WF991	F02	WF991049	15.85	02/02/99	GYRODINIUM SPIRALE	6,581.38
WF991	F02	WF991049	15.85	02/02/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	212.28509
WF991	F02	WF991049	15.85	02/02/99	PLEUROSIGMA SPP.	2,540.30
WF991	F02	WF991049	15.85	02/02/99	POROSIRA GLACIALIS	9,433.89
WF991	F02	WF991049	15.85	02/02/99	PROTOPERIDINIUM BIPES	393.57421
WF991	F02	WF991049	15.85	02/02/99	PSEUDONITZSCHIA DELICATISSIMA	94.82188
WF991	F02	WF991049	15.85	02/02/99	PSEUDONITZSCHIA PUNGENS	3,185.00
WF991	F02	WF991049	15.85	02/02/99	PSEUDONITZSCHIA SPP.	1,657.39
WF991	F02	WF991049	15.85	02/02/99	RHIZOSOLENIA DELICATULA	4,780.25
WF991	F02	WF991049	15.85	02/02/99	RHIZOSOLENIA FRAGILISSIMA	3,258.22
WF991	F02	WF991049	15.85	02/02/99	RHIZOSOLENIA HEBETATA	1,679.05
WF991	F02	WF991049	15.85	02/02/99	RHIZOSOLENIA SETIGERA	1,055.44
WF991	F02	WF991049	15.85	02/02/99	SKELETONEMA COSTATUM	317.46161
WF991	F02	WF991049	15.85	02/02/99	THALASSIONEMA NITZSCHIOIDES	755.67697
WF991	F02	WF991049	15.85	02/02/99	THALASSIOSIRA NORDENSKIOLDII	30.88277
WF991	F02	WF991049	15.85	02/02/99	THALASSIOSIRA ROTULA	1,109.71
WF991	F02	WF991049	15.85	02/02/99	THALASSIOTHRIX LONGISSIMA	1,509.42
WF991	F02	WF991049	15.85	02/02/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,739.57
WF991	F02	WF991049	15.85	02/02/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	380.98694
WF991	F06	WF9912A3	2.49	02/08/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	48.01765
WF991	F06	WF9912A3	2.49	02/08/99	CERATIUM FUSUS	976.90213
WF991	F06	WF9912A3	2.49	02/08/99	CERATIUM TRIPOS	2,503.27

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F06	WF9912A3	2.49	02/08/99	CHAETOCEROS BOREALIS	310.38374
WF991	F06	WF9912A3	2.49	02/08/99	CHAETOCEROS DEBILIS	7,121.57
WF991	F06	WF9912A3	2.49	02/08/99	CHAETOCEROS DIDYMUS	540.67037
WF991	F06	WF9912A3	2.49	02/08/99	CHAETOCEROS SPP. (10-20UM)	1,716.98
WF991	F06	WF9912A3	2.49	02/08/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	85.5904
WF991	F06	WF9912A3	2.49	02/08/99	CYLINDROTHECA CLOSTERIUM	404.01858
WF991	F06	WF9912A3	2.49	02/08/99	EUCAMPIA ZOODIACUS	291.82715
WF991	F06	WF9912A3	2.49	02/08/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	532.39343
WF991	F06	WF9912A3	2.49	02/08/99	GYRODINIUM SPIRALE	8,638.13
WF991	F06	WF9912A3	2.49	02/08/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	10.82688
WF991	F06	WF9912A3	2.49	02/08/99	PLEUROSIGMA SPP.	555.69394
WF991	F06	WF9912A3	2.49	02/08/99	PSEUDONITZSCHIA DELICATISSIMA	34.57073
WF991	F06	WF9912A3	2.49	02/08/99	PSEUDONITZSCHIA PUNGENS	2,720.54
WF991	F06	WF9912A3	2.49	02/08/99	PSEUDONITZSCHIA SPP.	3,966.80
WF991	F06	WF9912A3	2.49	02/08/99	RHIZOSOLENIA HEBETATA	183.64751
WF991	F06	WF9912A3	2.49	02/08/99	STEPHANOPYXIS TURRIS	17,189.00
WF991	F06	WF9912A3	2.49	02/08/99	THALASSIONEMA NITZSCHIOIDES	179.081
WF991	F06	WF9912A3	2.49	02/08/99	THALASSIOSIRA NORDENSKIOLDII	47.28959
WF991	F06	WF9912A3	2.49	02/08/99	THALASSIOSIRA PUNCTIGERA	264.15075
WF991	F06	WF9912A3	2.49	02/08/99	THALASSIOSIRA ROTULA	1,699.26
WF991	F06	WF9912A3	2.49	02/08/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	612.61512
WF991	F06	WF9912A3	2.49	02/08/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,613.20
WF991	F06	WF9912A0	17.39	02/08/99	CALYCOMONAS OVALIS	11.31996
WF991	F06	WF9912A0	17.39	02/08/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	146.41064
WF991	F06	WF9912A0	17.39	02/08/99	CERATIUM FUSUS	867.38249
WF991	F06	WF9912A0	17.39	02/08/99	CERATIUM TRIPOS	2,222.63
WF991	F06	WF9912A0	17.39	02/08/99	CHAETOCEROS BOREALIS	275.58689
WF991	F06	WF9912A0	17.39	02/08/99	CHAETOCEROS DEBILIS	7,121.25
WF991	F06	WF9912A0	17.39	02/08/99	CHAETOCEROS DIDYMUS	349.13185
WF991	F06	WF9912A0	17.39	02/08/99	CHAETOCEROS SOCIALIS	485.24542
WF991	F06	WF9912A0	17.39	02/08/99	CHAETOCEROS SPP. (10-20UM)	2,439.19
WF991	F06	WF9912A0	17.39	02/08/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	66.49557
WF991	F06	WF9912A0	17.39	02/08/99	CYLINDROTHECA CLOSTERIUM	224.20276
WF991	F06	WF9912A0	17.39	02/08/99	DITYLUM BRIGHTWELLII	3,047.81
WF991	F06	WF9912A0	17.39	02/08/99	EUCAMPIA ZOODIACUS	647.77666
WF991	F06	WF9912A0	17.39	02/08/99	GUINARDIA FLACCIDA	1,343.13
WF991	F06	WF9912A0	17.39	02/08/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	315.13819
WF991	F06	WF9912A0	17.39	02/08/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	580.8867
WF991	F06	WF9912A0	17.39	02/08/99	GYRODINIUM SPIRALE	2,556.57
WF991	F06	WF9912A0	17.39	02/08/99	PSEUDONITZSCHIA PUNGENS	2,710.12

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F06	WF9912A0	17.39	02/08/99	PSEUDONITZSCHIA SPP.	4,393.14
WF991	F06	WF9912A0	17.39	02/08/99	RHIZOSOLENIA HEBETATA	163.05895
WF991	F06	WF9912A0	17.39	02/08/99	SKELETONEMA COSTATUM	11.21087
WF991	F06	WF9912A0	17.39	02/08/99	STEPHANOPYXIS TURRIS	10,174.64
WF991	F06	WF9912A0	17.39	02/08/99	THALASSIONEMA NITZSCHIOIDES	183.4666
WF991	F06	WF9912A0	17.39	02/08/99	THALASSIOSIRA PUNCTIGERA	234.53705
WF991	F06	WF9912A0	17.39	02/08/99	THALASSIOSIRA ROTULA	2,586.44
WF991	F06	WF9912A0	17.39	02/08/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	606.09943
WF991	F06	WF9912A0	17.39	02/08/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,360.90
WF991	F13	WF991154	2.65	02/04/99	BACTERIOSIRA BATHYOMPHALA	2,099.98
WF991	F13	WF991154	2.65	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	49.9399
WF991	F13	WF991154	2.65	02/04/99	CHAETOCEROS DEBILIS	25,755.99
WF991	F13	WF991154	2.65	02/04/99	CHAETOCEROS DECIPIENS	4,096.42
WF991	F13	WF991154	2.65	02/04/99	CHAETOCEROS SOCIALIS	1,432.34
WF991	F13	WF991154	2.65	02/04/99	CHAETOCEROS SPP. (10-20UM)	2,859.98
WF991	F13	WF991154	2.65	02/04/99	CORETHRON CRIOPHILUM	1,526.03
WF991	F13	WF991154	2.65	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	174.96995
WF991	F13	WF991154	2.65	02/04/99	CYLINDROTHECA CLOSTERIUM	382.37194
WF991	F13	WF991154	2.65	02/04/99	EUCAMPIA ZOODIACUS	883.81293
WF991	F13	WF991154	2.65	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	322.47596
WF991	F13	WF991154	2.65	02/04/99	LEPTOCYLINDRUS MINIMUS	17.39986
WF991	F13	WF991154	2.65	02/04/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	32.78974
WF991	F13	WF991154	2.65	02/04/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	2,765.33
WF991	F13	WF991154	2.65	02/04/99	PSEUDONITZSCHIA PUNGENS	6,380.43
WF991	F13	WF991154	2.65	02/04/99	PSEUDONITZSCHIA SPP.	3,100.30
WF991	F13	WF991154	2.65	02/04/99	RHIZOSOLENIA STOLTERFOTHII	4,823.32
WF991	F13	WF991154	2.65	02/04/99	SKELETONEMA COSTATUM	200.75839
WF991	F13	WF991154	2.65	02/04/99	STEPHANOPYXIS TURRIS	13,014.44
WF991	F13	WF991154	2.65	02/04/99	THALASSIONEMA NITZSCHIOIDES	375.477
WF991	F13	WF991154	2.65	02/04/99	THALASSIOSIRA ROTULA	2,940.74
WF991	F13	WF991154	2.65	02/04/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	821.64843
WF991	F13	WF991154	2.65	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,877.34
WF991	F13	WF991152	7.77	02/04/99	BACTERIOSIRA BATHYOMPHALA	911.38511
WF991	F13	WF991152	7.77	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	164.35918
WF991	F13	WF991152	7.77	02/04/99	CERATIUM FUSUS	2,247.04
WF991	F13	WF991152	7.77	02/04/99	CHAETOCEROS COMPRESSUS	2,141.98
WF991	F13	WF991152	7.77	02/04/99	CHAETOCEROS DEBILIS	24,173.58
WF991	F13	WF991152	7.77	02/04/99	CHAETOCEROS DIDYMUS	960.98725
WF991	F13	WF991152	7.77	02/04/99	CHAETOCEROS SOCIALIS	1,498.82
WF991	F13	WF991152	7.77	02/04/99	CHAETOCEROS SPP.	184.06941
WF991	F13	WF991152	7.77	02/04/99	CHAETOCEROS SPP. (10-20UM)	5,232.87
WF991	F13	WF991152	7.77	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10	9.8436

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					MICRO	
WF991	F13	WF991152	7.77	02/04/99	CYLINDROTHECA CLOSTERIUM	348.49088
WF991	F13	WF991152	7.77	02/04/99	DITYLUM BRIGHTWELLII	2,631.88
WF991	F13	WF991152	7.77	02/04/99	EUCAMPIA ZOODIACUS	1,342.50
WF991	F13	WF991152	7.77	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	489.8369
WF991	F13	WF991152	7.77	02/04/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,009.68
WF991	F13	WF991152	7.77	02/04/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	24.9036
WF991	F13	WF991152	7.77	02/04/99	PSEUDONITZSCHIA PUNGENS	9,386.54
WF991	F13	WF991152	7.77	02/04/99	PSEUDONITZSCHIA SPP.	2,648.99
WF991	F13	WF991152	7.77	02/04/99	RHIZOSOLENIA FRAGILISSIMA	1,008.87
WF991	F13	WF991152	7.77	02/04/99	RHIZOSOLENIA HEBETATA	422.41941
WF991	F13	WF991152	7.77	02/04/99	SKELETONEMA COSTATUM	493.7277
WF991	F13	WF991152	7.77	02/04/99	STEPHANOPYXIS TURRIS	8,786.12
WF991	F13	WF991152	7.77	02/04/99	THALASSIONEMA NITZSCHIOIDES	855.51721
WF991	F13	WF991152	7.77	02/04/99	THALASSIOSIRA NORDENSKIOLDII	233.08674
WF991	F13	WF991152	7.77	02/04/99	THALASSIOSIRA ROTULA	6,700.41
WF991	F13	WF991152	7.77	02/04/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	1,368.85
WF991	F13	WF991152	7.77	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,337.53
WF991	F23	WF9911A8	1.97	02/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	129.96409
WF991	F23	WF9911A8	1.97	02/07/99	CHAETOCEROS DEBILIS	8,541.94
WF991	F23	WF9911A8	1.97	02/07/99	CHAETOCEROS DIDYMUS	29.05437
WF991	F23	WF9911A8	1.97	02/07/99	CHAETOCEROS SOCIALIS	546.70464
WF991	F23	WF9911A8	1.97	02/07/99	CHAETOCEROS SPP. (10-20UM)	228.35962
WF991	F23	WF9911A8	1.97	02/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	303.56233
WF991	F23	WF9911A8	1.97	02/07/99	CYLINDROTHECA CLOSTERIUM	29.85265
WF991	F23	WF9911A8	1.97	02/07/99	DITYLUM BRIGHTWELLII	676.36216
WF991	F23	WF9911A8	1.97	02/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,014.11
WF991	F23	WF9911A8	1.97	02/07/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	773.45208
WF991	F23	WF9911A8	1.97	02/07/99	GYRODINIUM SPIRALE	1,702.04
WF991	F23	WF9911A8	1.97	02/07/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	6.39992
WF991	F23	WF9911A8	1.97	02/07/99	PLEUROSIGMA SPP.	328.47872
WF991	F23	WF9911A8	1.97	02/07/99	PSEUDONITZSCHIA PUNGENS	1,706.21
WF991	F23	WF9911A8	1.97	02/07/99	PSEUDONITZSCHIA SPP.	1,966.63
WF991	F23	WF9911A8	1.97	02/07/99	SKELETONEMA COSTATUM	399.30534
WF991	F23	WF9911A8	1.97	02/07/99	STEPHANOPYXIS TURRIS	2,822.41
WF991	F23	WF9911A8	1.97	02/07/99	THALASSIONEMA NITZSCHIOIDES	130.28599
WF991	F23	WF9911A8	1.97	02/07/99	THALASSIOSIRA ROTULA	573.97507
WF991	F23	WF9911A8	1.97	02/07/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	248.31474
WF991	F23	WF9911A8	1.97	02/07/99	THALASSIOTHRIX LONGISSIMA	195.17916
WF991	F23	WF9911A8	1.97	02/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1	10,024.09

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					LENGTH	
WF991	F23	WF9911A6	10.19	02/07/99	CALYCOMONAS OVALIS	25.17779
WF991	F23	WF9911A6	10.19	02/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	81.41147
WF991	F23	WF9911A6	10.19	02/07/99	CHAETOCEROS COMPRESSUS	487.62085
WF991	F23	WF9911A6	10.19	02/07/99	CHAETOCEROS DEBILIS	11,321.73
WF991	F23	WF9911A6	10.19	02/07/99	CHAETOCEROS SOCIALIS	605.36572
WF991	F23	WF9911A6	10.19	02/07/99	CHAETOCEROS SPP. (10-20UM)	1,165.58
WF991	F23	WF9911A6	10.19	02/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	253.54136
WF991	F23	WF9911A6	10.19	02/07/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	135.68578
WF991	F23	WF9911A6	10.19	02/07/99	CYLINDROTHECA CLOSTERIUM	249.33536
WF991	F23	WF9911A6	10.19	02/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,401.86
WF991	F23	WF9911A6	10.19	02/07/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,076.67
WF991	F23	WF9911A6	10.19	02/07/99	LEPTOCYLINDRUS MINIMUS	18.91004
WF991	F23	WF9911A6	10.19	02/07/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	107.0791
WF991	F23	WF9911A6	10.19	02/07/99	PENNATE DIATOM SP. GROUP 4 61-100 MICRON	126.90917
WF991	F23	WF9911A6	10.19	02/07/99	PLEUROSIGMA SPP.	228.6267
WF991	F23	WF9911A6	10.19	02/07/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	1,502.67
WF991	F23	WF9911A6	10.19	02/07/99	PSEUDONITZSCHIA DELICATISSIMA	28.44656
WF991	F23	WF9911A6	10.19	02/07/99	PSEUDONITZSCHIA PUNGENS	2,470.65
WF991	F23	WF9911A6	10.19	02/07/99	PSEUDONITZSCHIA SPP.	2,772.72
WF991	F23	WF9911A6	10.19	02/07/99	SKELETONEMA COSTATUM	93.50687
WF991	F23	WF9911A6	10.19	02/07/99	STEPHANOPYXIS TURRIS	8,643.55
WF991	F23	WF9911A6	10.19	02/07/99	THALASSIONEMA NITZSCHIOIDES	113.35155
WF991	F23	WF9911A6	10.19	02/07/99	THALASSIOSIRA NORDENSKIOLDII	33.35339
WF991	F23	WF9911A6	10.19	02/07/99	THALASSIOSIRA ROTULA	399.49628
WF991	F23	WF9911A6	10.19	02/07/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	144.02602
WF991	F23	WF9911A6	10.19	02/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	8,358.73
WF991	F24	WF99110C	3	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	224.18011
WF991	F24	WF99110C	3	02/04/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	1,123.44
WF991	F24	WF99110C	3	02/04/99	CHAETOCEROS DEBILIS	14,883.15
WF991	F24	WF99110C	3	02/04/99	CHAETOCEROS DIDYMUS	278.42785
WF991	F24	WF99110C	3	02/04/99	CHAETOCEROS RADICANS	638.54731
WF991	F24	WF99110C	3	02/04/99	CHAETOCEROS SOCIALIS	1,405.02
WF991	F24	WF99110C	3	02/04/99	CHAETOCEROS SPP. (10-20UM)	2,139.74
WF991	F24	WF99110C	3	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	193.93573
WF991	F24	WF99110C	3	02/04/99	CYLINDROTHECA CLOSTERIUM	743.80224
WF991	F24	WF99110C	3	02/04/99	DITYLUM BRIGHTWELLII	1,296.31
WF991	F24	WF99110C	3	02/04/99	EUCAMPIA ZOODIACUS	661.23901
WF991	F24	WF99110C	3	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	120.43884

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F24	WF99110C	3	02/04/99	GYRODINIUM SPIRALE	3,262.13
WF991	F24	WF99110C	3	02/04/99	LEPTOCYLINDRUS MINIMUS	91.12592
WF991	F24	WF99110C	3	02/04/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	70.14751
WF991	F24	WF99110C	3	02/04/99	PROTOPERIDINIUM BIPES	390.1581
WF991	F24	WF99110C	3	02/04/99	PROTOPERIDINIUM DEPRESSUM	72,201.69
WF991	F24	WF99110C	3	02/04/99	PSEUDONITZSCHIA DELICATISSIMA	39.16619
WF991	F24	WF99110C	3	02/04/99	PSEUDONITZSCHIA PUNGENS	4,754.83
WF991	F24	WF99110C	3	02/04/99	PSEUDONITZSCHIA SPP.	3,769.25
WF991	F24	WF99110C	3	02/04/99	SKELETONEMA COSTATUM	300.40131
WF991	F24	WF99110C	3	02/04/99	THALASSIONEMA NITZSCHIOIDES	296.52584
WF991	F24	WF99110C	3	02/04/99	THALASSIOSIRA NORDENSKIOLDII	53.57576
WF991	F24	WF99110C	3	02/04/99	THALASSIOSIRA ROTULA	4,675.34
WF991	F24	WF99110C	3	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,799.11
WF991	F24	WF99110A	8.33	02/04/99	ASTERIONELLOPSIS GLACIALIS	27.44216
WF991	F24	WF99110A	8.33	02/04/99	BACTERIOSIRA BATHYOMPHALA	675.82281
WF991	F24	WF99110A	8.33	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	200.00472
WF991	F24	WF99110A	8.33	02/04/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	429.55298
WF991	F24	WF99110A	8.33	02/04/99	CERATIUM FUSUS	1,110.83
WF991	F24	WF99110A	8.33	02/04/99	CHAETOCEROS DEBILIS	19,812.42
WF991	F24	WF99110A	8.33	02/04/99	CHAETOCEROS DIDYMUS	167.67164
WF991	F24	WF99110A	8.33	02/04/99	CHAETOCEROS SEPTENTRIONALIS	23.9016
WF991	F24	WF99110A	8.33	02/04/99	CHAETOCEROS SOCIALIS	908.26081
WF991	F24	WF99110A	8.33	02/04/99	CHAETOCEROS SPP.	363.98315
WF991	F24	WF99110A	8.33	02/04/99	CHAETOCEROS SPP. (10-20UM)	1,659.52
WF991	F24	WF99110A	8.33	02/04/99	CORETHRON CRIOPHILUM	1,145.93
WF991	F24	WF99110A	8.33	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	311.43936
WF991	F24	WF99110A	8.33	02/04/99	CYLINDROTHECA CLOSTERIUM	57.42617
WF991	F24	WF99110A	8.33	02/04/99	DICTYOCHA SPECULUM	90.1848
WF991	F24	WF99110A	8.33	02/04/99	DITYLUM BRIGHTWELLII	2,602.17
WF991	F24	WF99110A	8.33	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	968.61491
WF991	F24	WF99110A	8.33	02/04/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	743.92698
WF991	F24	WF99110A	8.33	02/04/99	GYRODINIUM SPIRALE	3,274.14
WF991	F24	WF99110A	8.33	02/04/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	24.62248
WF991	F24	WF99110A	8.33	02/04/99	PENNATE DIATOM SP. GROUP 4 61-100 MICRON	87.68801
WF991	F24	WF99110A	8.33	02/04/99	PSEUDONITZSCHIA DELICATISSIMA	86.48279
WF991	F24	WF99110A	8.33	02/04/99	PSEUDONITZSCHIA PUNGENS	5,055.27
WF991	F24	WF99110A	8.33	02/04/99	PSEUDONITZSCHIA SPP.	4,316.64
WF991	F24	WF99110A	8.33	02/04/99	RHIZOSOLENIA DELICATULA	339.72862
WF991	F24	WF99110A	8.33	02/04/99	SKELETONEMA COSTATUM	294.32834
WF991	F24	WF99110A	8.33	02/04/99	THALASSIONEMA NITZSCHIOIDES	438.59399

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F24	WF99110A	8.33	02/04/99	THALASSIOSIRA ANGUSTE-LINEATA	706.50517
WF991	F24	WF99110A	8.33	02/04/99	THALASSIOSIRA ROTULA	6,624.78
WF991	F24	WF99110A	8.33	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,512.81
WF991	F25	WF991178	1.92	02/04/99	ACHNANTHES SPP.	6.80302
WF991	F25	WF991178	1.92	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	128.05104
WF991	F25	WF991178	1.92	02/04/99	CHAETOCEROS DEBILIS	4,381.26
WF991	F25	WF991178	1.92	02/04/99	CHAETOCEROS SOCIALIS	499.48216
WF991	F25	WF991178	1.92	02/04/99	CHAETOCEROS SPP. (10-20UM)	419.99664
WF991	F25	WF991178	1.92	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	279.15434
WF991	F25	WF991178	1.92	02/04/99	CYLINDROTHECA CLOSTERIUM	23.53058
WF991	F25	WF991178	1.92	02/04/99	EUCAMPIA ZOODIACUS	135.97122
WF991	F25	WF991178	1.92	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,653.72
WF991	F25	WF991178	1.92	02/04/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	609.65358
WF991	F25	WF991178	1.92	02/04/99	LEPTOCYLINDRUS MINIMUS	10.70761
WF991	F25	WF991178	1.92	02/04/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	43.2735
WF991	F25	WF991178	1.92	02/04/99	PSEUDONITZSCHIA DELICATISSIMA	6.44303
WF991	F25	WF991178	1.92	02/04/99	PSEUDONITZSCHIA PUNGENS	618.33351
WF991	F25	WF991178	1.92	02/04/99	PSEUDONITZSCHIA SPP.	1,987.37
WF991	F25	WF991178	1.92	02/04/99	RHIZOSOLENIA FRAGILISSIMA	153.27108
WF991	F25	WF991178	1.92	02/04/99	SKELETONEMA COSTATUM	182.37393
WF991	F25	WF991178	1.92	02/04/99	THALASSIONEMA NITZSCHIOIDES	64.1841
WF991	F25	WF991178	1.92	02/04/99	THALASSIOSIRA NORDENSKIOLDII	157.38336
WF991	F25	WF991178	1.92	02/04/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	40.7766
WF991	F25	WF991178	1.92	02/04/99	THALASSIOTHRIX LONGISSIMA	153.84492
WF991	F25	WF991178	1.92	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,220.94
WF991	F25	WF991176	6.29	02/04/99	CERATIUM TRIPOS	2,583.92
WF991	F25	WF991176	6.29	02/04/99	CHAETOCEROS DEBILIS	2,676.33
WF991	F25	WF991176	6.29	02/04/99	CHAETOCEROS SOCIALIS	509.87862
WF991	F25	WF991176	6.29	02/04/99	CHAETOCEROS SPP. (10-20UM)	575.99539
WF991	F25	WF991176	6.29	02/04/99	COCCONEIS SPP.	316.76149
WF991	F25	WF991176	6.29	02/04/99	CORETHRON CRIOPHILUM	520.11532
WF991	F25	WF991176	6.29	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	258.41716
WF991	F25	WF991176	6.29	02/04/99	CYLINDROTHECA CLOSTERIUM	78.19393
WF991	F25	WF991176	6.29	02/04/99	GUINARDIA FLACCIDA	1,561.45
WF991	F25	WF991176	6.29	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	989.1807
WF991	F25	WF991176	6.29	02/04/99	GYRODINIUM SPIRALE	1,486.07
WF991	F25	WF991176	6.29	02/04/99	LEPTOCYLINDRUS MINIMUS	20.75628
WF991	F25	WF991176	6.29	02/04/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	47.93372
WF991	F25	WF991176	6.29	02/04/99	PSEUDONITZSCHIA PUNGENS	1,061.63

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F25	WF991176	6.29	02/04/99	PSEUDONITZSCHIA SPP.	2,157.37
WF991	F25	WF991176	6.29	02/04/99	SKELETONEMA COSTATUM	345.37911
WF991	F25	WF991176	6.29	02/04/99	THALASSIONEMA NITZSCHIOIDES	42.65774
WF991	F25	WF991176	6.29	02/04/99	THALASSIOSIRA NORDENSKIOLDII	38.35311
WF991	F25	WF991176	6.29	02/04/99	THALASSIOSIRA ROTULA	626.42907
WF991	F25	WF991176	6.29	02/04/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	63.23509
WF991	F25	WF991176	6.29	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,096.90
WF991	F25	WF991176	6.29	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,161.36
WF991	F27	WF991099	2.14	02/03/99	BACTERIOSIRA BATHYOMPHALA	839.99328
WF991	F27	WF991099	2.14	02/03/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	213.07692
WF991	F27	WF991099	2.14	02/03/99	CERATIUM FUSUS	2,366.88
WF991	F27	WF991099	2.14	02/03/99	CHAETOCEROS DEBILIS	7,957.14
WF991	F27	WF991099	2.14	02/03/99	CHAETOCEROS DIDYMUS	59.54352
WF991	F27	WF991099	2.14	02/03/99	CHAETOCEROS SOCIALIS	1,451.44
WF991	F27	WF991099	2.14	02/03/99	CHAETOCEROS SPP. (10-20UM)	1,351.99
WF991	F27	WF991099	2.14	02/03/99	CYLINDROTHECA CLOSTERIUM	611.79511
WF991	F27	WF991099	2.14	02/03/99	DITYLUM BRIGHTWELLII	1,386.12
WF991	F27	WF991099	2.14	02/03/99	EUCAMPIA ZOODIACUS	883.81293
WF991	F27	WF991099	2.14	02/03/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	792.54966
WF991	F27	WF991099	2.14	02/03/99	GYRODINIUM SPIRALE	3,488.13
WF991	F27	WF991099	2.14	02/03/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	37.5037
WF991	F27	WF991099	2.14	02/03/99	PSEUDONITZSCHIA DELICATISSIMA	92.13526
WF991	F27	WF991099	2.14	02/03/99	PSEUDONITZSCHIA PUNGENS	9,103.42
WF991	F27	WF991099	2.14	02/03/99	PSEUDONITZSCHIA SPP.	4,082.06
WF991	F27	WF991099	2.14	02/03/99	RHIZOSOLENIA HEBETATA	444.94844
WF991	F27	WF991099	2.14	02/03/99	SKELETONEMA COSTATUM	298.26961
WF991	F27	WF991099	2.14	02/03/99	STEPHANOPYXIS TURRIS	4,627.35
WF991	F27	WF991099	2.14	02/03/99	THALASSIONEMA NITZSCHIOIDES	66.75147
WF991	F27	WF991099	2.14	02/03/99	THALASSIOSIRA ROTULA	2,352.59
WF991	F27	WF991099	2.14	02/03/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	318.05746
WF991	F27	WF991099	2.14	02/03/99	THALASSIOTHRIX LONGISSIMA	399.9968
WF991	F27	WF991099	2.14	02/03/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,835.18
WF991	F27	WF991097	54.86	02/03/99	BACTERIOSIRA BATHYOMPHALA	815.08782
WF991	F27	WF991097	54.86	02/03/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	402.03193
WF991	F27	WF991097	54.86	02/03/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	129.51745
WF991	F27	WF991097	54.86	02/03/99	CHAETOCEROS DEBILIS	2,338.94
WF991	F27	WF991097	54.86	02/03/99	CHAETOCEROS DECIPIENS	2,023.62
WF991	F27	WF991097	54.86	02/03/99	CHAETOCEROS DIDYMUS	112.34627
WF991	F27	WF991097	54.86	02/03/99	CHAETOCEROS SOCIALIS	614.9747
WF991	F27	WF991097	54.86	02/03/99	CHAETOCEROS SPP.	146.3294
WF991	F27	WF991097	54.86	02/03/99	CHAETOCEROS SPP. (10-20UM)	1,255.84
WF991	F27	WF991097	54.86	02/03/99	CYLINDROTHECA CLOSTERIUM	877.29109

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F27	WF991097	54.86	02/03/99	EUCAMPIA ZOODIACUS	1,334.06
WF991	F27	WF991097	54.86	02/03/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	649.00822
WF991	F27	WF991097	54.86	02/03/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	4,187.05
WF991	F27	WF991097	54.86	02/03/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	56.60936
WF991	F27	WF991097	54.86	02/03/99	PROROCENTRUM MICANS	186.63096
WF991	F27	WF991097	54.86	02/03/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	1,669.63
WF991	F27	WF991097	54.86	02/03/99	PSEUDONITZSCHIA PUNGENS	6,552.00
WF991	F27	WF991097	54.86	02/03/99	PSEUDONITZSCHIA SPP.	3,197.79
WF991	F27	WF991097	54.86	02/03/99	SKELETONEMA COSTATUM	92.35247
WF991	F27	WF991097	54.86	02/03/99	STEPHANOPYXIS TURRIS	17,461.72
WF991	F27	WF991097	54.86	02/03/99	THALASSIONEMA NITZSCHIOIDES	125.94616
WF991	F27	WF991097	54.86	02/03/99	THALASSIOSIRA ANGUSTE-LINEATA	568.06187
WF991	F27	WF991097	54.86	02/03/99	THALASSIOSIRA ROTULA	1,997.48
WF991	F27	WF991097	54.86	02/03/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	80.01445
WF991	F27	WF991097	54.86	02/03/99	THALASSIOTHRIX LONGISSIMA	1,207.54
WF991	F27	WF991097	54.86	02/03/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,096.79
WF991	F30	WF9910FC	2.42	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	276.39695
WF991	F30	WF9910FC	2.42	02/04/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	395.74778
WF991	F30	WF9910FC	2.42	02/04/99	CERATIUM FUSUS	744.30096
WF991	F30	WF9910FC	2.42	02/04/99	CHAETOCEROS COMPRESSUS	709.50124
WF991	F30	WF9910FC	2.42	02/04/99	CHAETOCEROS DEBILIS	10,799.16
WF991	F30	WF9910FC	2.42	02/04/99	CHAETOCEROS SOCIALIS	2,065.93
WF991	F30	WF9910FC	2.42	02/04/99	CHAETOCEROS SPP. (10-20UM)	1,733.32
WF991	F30	WF9910FC	2.42	02/04/99	CORETHRON CRIOPHILUM	767.81524
WF991	F30	WF9910FC	2.42	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	273.88728
WF991	F30	WF9910FC	2.42	02/04/99	CYLINDROTHECA CLOSTERIUM	346.29912
WF991	F30	WF9910FC	2.42	02/04/99	DINOBRYON SPP.	45.35813
WF991	F30	WF9910FC	2.42	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	324.50411
WF991	F30	WF9910FC	2.42	02/04/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,993.84
WF991	F30	WF9910FC	2.42	02/04/99	GYROSIGMA SPP.	211.69139
WF991	F30	WF9910FC	2.42	02/04/99	HETEROCAPSA ROTUNDATA	63.86067
WF991	F30	WF9910FC	2.42	02/04/99	PEDIASTRUM SPP.	76.51511
WF991	F30	WF9910FC	2.42	02/04/99	PENNATE DIATOM SP. GROUP 4 61-100 MICRON	117.50849
WF991	F30	WF9910FC	2.42	02/04/99	PLEUROSIGMA SPP.	211.69139
WF991	F30	WF9910FC	2.42	02/04/99	PSEUDONITZSCHIA DELICATISSIMA	31.60729
WF991	F30	WF9910FC	2.42	02/04/99	PSEUDONITZSCHIA PUNGENS	2,300.28
WF991	F30	WF9910FC	2.42	02/04/99	PSEUDONITZSCHIA SPP.	2,599.83
WF991	F30	WF9910FC	2.42	02/04/99	SKELETONEMA COSTATUM	432.9022
WF991	F30	WF9910FC	2.42	02/04/99	STEPHANOPYXIS TURRIS	1,455.14
WF991	F30	WF9910FC	2.42	02/04/99	THALASSIONEMA NITZSCHIOIDES	251.89232

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F30	WF9910FC	2.42	02/04/99	THALASSIOSIRA ROTULA	1,849.52
WF991	F30	WF9910FC	2.42	02/04/99	THALASSIOTHRIX LONGISSIMA	251.57031
WF991	F30	WF9910FC	2.42	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,865.41
WF991	F30	WF9910FC	2.42	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	380.98694
WF991	F30	WF9910FB	4.94	02/04/99	ASTERIONELLOPSIS GLACIALIS	22.26074
WF991	F30	WF9910FB	4.94	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	354.90287
WF991	F30	WF9910FB	4.94	02/04/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	348.44797
WF991	F30	WF9910FB	4.94	02/04/99	CERATIUM TRIPOS	2,309.02
WF991	F30	WF9910FB	4.94	02/04/99	CHAETOCEROS DEBILIS	12,053.69
WF991	F30	WF9910FB	4.94	02/04/99	CHAETOCEROS DECIPIENS	1,587.91
WF991	F30	WF9910FB	4.94	02/04/99	CHAETOCEROS DIDYMUS	181.35083
WF991	F30	WF9910FB	4.94	02/04/99	CHAETOCEROS SOCIALIS	620.43768
WF991	F30	WF9910FB	4.94	02/04/99	CHAETOCEROS SPP. (10-20UM)	1,821.31
WF991	F30	WF9910FB	4.94	02/04/99	COCCONEIS SPP.	314.51337
WF991	F30	WF9910FB	4.94	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	197.37163
WF991	F30	WF9910FB	4.94	02/04/99	CYLINDROTHECA CLOSTERIUM	93.16677
WF991	F30	WF9910FB	4.94	02/04/99	DITYLUM BRIGHTWELLII	1,055.43
WF991	F30	WF9910FB	4.94	02/04/99	GRAMMATOPHORA MARINA	29.39672
WF991	F30	WF9910FB	4.94	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,636.93
WF991	F30	WF9910FB	4.94	02/04/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,413.86
WF991	F30	WF9910FB	4.94	02/04/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	85.66835
WF991	F30	WF9910FB	4.94	02/04/99	PENNATE DIATOM SP. GROUP 4 61-100 MICRON	71.13141
WF991	F30	WF9910FB	4.94	02/04/99	PLEUROSIGMA SPP.	512.57255
WF991	F30	WF9910FB	4.94	02/04/99	PSEUDONITZSCHIA PUNGENS	3,840.65
WF991	F30	WF9910FB	4.94	02/04/99	PSEUDONITZSCHIA SPP.	3,068.82
WF991	F30	WF9910FB	4.94	02/04/99	RHIZOSOLENIA HEBETATA	169.39661
WF991	F30	WF9910FB	4.94	02/04/99	RHIZOSOLENIA STOLTERFOTHII	1,101.77
WF991	F30	WF9910FB	4.94	02/04/99	SKELETONEMA COSTATUM	256.22536
WF991	F30	WF9910FB	4.94	02/04/99	THALASSIONEMA NITZSCHIOIDES	254.12995
WF991	F30	WF9910FB	4.94	02/04/99	THALASSIOSIRA NORDENSKIOLDII	24.92569
WF991	F30	WF9910FB	4.94	02/04/99	THALASSIOSIRA ROTULA	4,254.36
WF991	F30	WF9910FB	4.94	02/04/99	THALASSIOTHRIX LONGISSIMA	304.56609
WF991	F30	WF9910FB	4.94	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	12,759.94
WF991	F31	WF991186	2.07	02/04/99	BACTERIOSIRA BATHYOMPHALA	225.28852
WF991	F31	WF991186	2.07	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	50.00434
WF991	F31	WF991186	2.07	02/04/99	CERATIUM TRIPOS	1,423.32
WF991	F31	WF991186	2.07	02/04/99	CHAETOCEROS COMPRESSUS	577.61724
WF991	F31	WF991186	2.07	02/04/99	CHAETOCEROS DEBILIS	5,149.98
WF991	F31	WF991186	2.07	02/04/99	CHAETOCEROS SOCIALIS	418.30446
WF991	F31	WF991186	2.07	02/04/99	CHAETOCEROS SPP. (10-20UM)	561.3439

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	F31	WF991186	2.07	02/04/99	CORETHRON CRIOPHILUM	573.0007
WF991	F31	WF991186	2.07	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	175.19572
WF991	F31	WF991186	2.07	02/04/99	CYLINDROTHECA CLOSTERIUM	172.2894
WF991	F31	WF991186	2.07	02/04/99	GRAMMATOPHORA MARINA	36.24141
WF991	F31	WF991186	2.07	02/04/99	LEPTOCYLINDRUS MINIMUS	19.6001
WF991	F31	WF991186	2.07	02/04/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	12.33185
WF991	F31	WF991186	2.07	02/04/99	PSEUDONITZSCHIA PUNGENS	2,150.51
WF991	F31	WF991186	2.07	02/04/99	PSEUDONITZSCHIA SPP.	824.57851
WF991	F31	WF991186	2.07	02/04/99	SKELETONEMA COSTATUM	218.96542
WF991	F31	WF991186	2.07	02/04/99	STEPHANOPYXIS TURRIS	3,800.78
WF991	F31	WF991186	2.07	02/04/99	THALASSIONEMA NITZSCHIOIDES	62.66025
WF991	F31	WF991186	2.07	02/04/99	THALASSIOSIRA NORDENSKIOLDII	11.52351
WF991	F31	WF991186	2.07	02/04/99	THALASSIOSIRA ROTULA	552.09956
WF991	F31	WF991186	2.07	02/04/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	189.09029
WF991	F31	WF991186	2.07	02/04/99	THALASSIOTHRIX LONGISSIMA	187.74043
WF991	F31	WF991186	2.07	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,883.64
WF991	N04	WF9911C7	1.42	02/07/99	BACTERIOSIRA BATHYOMPHALA	476.93886
WF991	N04	WF9911C7	1.42	02/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	158.78981
WF991	N04	WF9911C7	1.42	02/07/99	CHAETOCEROS DEBILIS	3,994.84
WF991	N04	WF9911C7	1.42	02/07/99	CHAETOCEROS DIDYMUS	118.32853
WF991	N04	WF9911C7	1.42	02/07/99	CHAETOCEROS SOCIALIS	17,407.51
WF991	N04	WF9911C7	1.42	02/07/99	CHAETOCEROS SPP. (10-20UM)	2,893.43
WF991	N04	WF9911C7	1.42	02/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	92.72293
WF991	N04	WF9911C7	1.42	02/07/99	CYLINDROTHECA CLOSTERIUM	486.31866
WF991	N04	WF9911C7	1.42	02/07/99	DICTYOCHA SPECULUM	190.93452
WF991	N04	WF9911C7	1.42	02/07/99	DITYLUM BRIGHTWELLII	2,754.59
WF991	N04	WF9911C7	1.42	02/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	512.67516
WF991	N04	WF9911C7	1.42	02/07/99	HETEROCAPSA ROTUNDATA	33.63057
WF991	N04	WF9911C7	1.42	02/07/99	HETEROCAPSA TRIQUETRA	300.43969
WF991	N04	WF9911C7	1.42	02/07/99	PSEUDONITZSCHIA PUNGENS	1,437.68
WF991	N04	WF9911C7	1.42	02/07/99	PSEUDONITZSCHIA SPP.	8,112.11
WF991	N04	WF9911C7	1.42	02/07/99	SKELETONEMA COSTATUM	319.16748
WF991	N04	WF9911C7	1.42	02/07/99	STEPHANOPYXIS TURRIS	6,896.82
WF991	N04	WF9911C7	1.42	02/07/99	THALASSIONEMA NITZSCHIOIDES	99.48945
WF991	N04	WF9911C7	1.42	02/07/99	THALASSIOSIRA NORDENSKIOLDII	81.31808
WF991	N04	WF9911C7	1.42	02/07/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	168.55019
WF991	N04	WF9911C7	1.42	02/07/99	THALASSIOTHRIX LONGISSIMA	794.8981
WF991	N04	WF9911C7	1.42	02/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,904.27
WF991	N04	WF9911C5	20.84	02/07/99	BACTERIOSIRA BATHYOMPHALA	1,146.49
WF991	N04	WF9911C5	20.84	02/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	356.25919
WF991	N04	WF9911C5	20.84	02/07/99	CERATIUM FUSUS	1,130.67

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	N04	WF9911C5	20.84	02/07/99	CERATIUM TRIPOS	8,691.91
WF991	N04	WF9911C5	20.84	02/07/99	CHAETOCEROS DEBILIS	35,851.13
WF991	N04	WF9911C5	20.84	02/07/99	CHAETOCEROS DECIPIENS	1,423.19
WF991	N04	WF9911C5	20.84	02/07/99	CHAETOCEROS SOCIALIS	875.82484
WF991	N04	WF9911C5	20.84	02/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	138.68814
WF991	N04	WF9911C5	20.84	02/07/99	CYLINDROTHECA CLOSTERIUM	175.35529
WF991	N04	WF9911C5	20.84	02/07/99	DITYLUM BRIGHTWELLII	1,324.32
WF991	N04	WF9911C5	20.84	02/07/99	EUCAMPIA ZOODIACUS	675.52581
WF991	N04	WF9911C5	20.84	02/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,643.19
WF991	N04	WF9911C5	20.84	02/07/99	PSEUDONITZSCHIA PUNGENS	4,415.96
WF991	N04	WF9911C5	20.84	02/07/99	PSEUDONITZSCHIA SPP.	3,850.69
WF991	N04	WF9911C5	20.84	02/07/99	SKELETONEMA COSTATUM	248.43623
WF991	N04	WF9911C5	20.84	02/07/99	STEPHANOPYXIS TURRIS	11,052.60
WF991	N04	WF9911C5	20.84	02/07/99	THALASSIONEMA NITZSCHIOIDES	159.43821
WF991	N04	WF9911C5	20.84	02/07/99	THALASSIOSIRA NORDENSKIOLDII	62.55237
WF991	N04	WF9911C5	20.84	02/07/99	THALASSIOSIRA ROTULA	3,090.58
WF991	N04	WF9911C5	20.84	02/07/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	324.13499
WF991	N04	WF9911C5	20.84	02/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,289.17
WF991	N16	WF99112C	1.93	02/04/99	BACTERIOSIRA BATHYOMPHALA	697.20961
WF991	N16	WF99112C	1.93	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	128.95874
WF991	N16	WF99112C	1.93	02/04/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	443.14643
WF991	N16	WF99112C	1.93	02/04/99	CERATIUM LONGIPES	7,618.34
WF991	N16	WF99112C	1.93	02/04/99	CHAETOCEROS DEBILIS	16,383.96
WF991	N16	WF99112C	1.93	02/04/99	CHAETOCEROS SOCIALIS	739.7394
WF991	N16	WF99112C	1.93	02/04/99	CHAETOCEROS SPP. (10-20UM)	1,409.91
WF991	N16	WF99112C	1.93	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	40.16188
WF991	N16	WF99112C	1.93	02/04/99	CYLINDROTHECA CLOSTERIUM	236.9738
WF991	N16	WF99112C	1.93	02/04/99	DITYLUM BRIGHTWELLII	2,684.52
WF991	N16	WF99112C	1.93	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	999.26728
WF991	N16	WF99112C	1.93	02/04/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,534.94
WF991	N16	WF99112C	1.93	02/04/99	LEPTOCYLINDRUS MINIMUS	53.91754
WF991	N16	WF99112C	1.93	02/04/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	25.40167
WF991	N16	WF99112C	1.93	02/04/99	PROTOPERIDINIUM BIPES	403.98649
WF991	N16	WF99112C	1.93	02/04/99	PROTOPERIDINIUM DEPRESSUM	37,380.37
WF991	N16	WF99112C	1.93	02/04/99	PSEUDONITZSCHIA DELICATISSIMA	48.66523
WF991	N16	WF99112C	1.93	02/04/99	PSEUDONITZSCHIA PUNGENS	8,056.40
WF991	N16	WF99112C	1.93	02/04/99	PSEUDONITZSCHIA SPP.	1,901.38
WF991	N16	WF99112C	1.93	02/04/99	STEPHANOPYXIS TURRIS	20,164.14
WF991	N16	WF99112C	1.93	02/04/99	THALASSIONEMA NITZSCHIOIDES	193.91723
WF991	N16	WF99112C	1.93	02/04/99	THALASSIOSIRA NORDENSKIOLDII	206.04868

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	N16	WF99112C	1.93	02/04/99	THALASSIOSIRA ROTULA	3,986.75
WF991	N16	WF99112C	1.93	02/04/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	780.24728
WF991	N16	WF99112C	1.93	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,587.98
WF991	N16	WF99112A	17.9	02/04/99	BACTERIOSIRA BATHYOMPHALA	2,370.35
WF991	N16	WF99112A	17.9	02/04/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	104.64361
WF991	N16	WF99112A	17.9	02/04/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	353.10829
WF991	N16	WF99112A	17.9	02/04/99	CERATIUM FUSUS	2,922.07
WF991	N16	WF99112A	17.9	02/04/99	CERATIUM TRIPOS	18,719.21
WF991	N16	WF99112A	17.9	02/04/99	CHAETOCEROS DEBILIS	14,993.95
WF991	N16	WF99112A	17.9	02/04/99	CHAETOCEROS DECIPIENS	1,839.02
WF991	N16	WF99112A	17.9	02/04/99	CHAETOCEROS DIDYMUS	220.53157
WF991	N16	WF99112A	17.9	02/04/99	CHAETOCEROS SEPTENTRIONALIS	31.43679
WF991	N16	WF99112A	17.9	02/04/99	CHAETOCEROS SOCIALIS	628.73571
WF991	N16	WF99112A	17.9	02/04/99	CHAETOCEROS SPP.	239.36599
WF991	N16	WF99112A	17.9	02/04/99	CHAETOCEROS SPP. (10-20UM)	3,017.26
WF991	N16	WF99112A	17.9	02/04/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	48.00273
WF991	N16	WF99112A	17.9	02/04/99	CYLINDROTHECA CLOSTERIUM	604.24208
WF991	N16	WF99112A	17.9	02/04/99	DITYLUM BRIGHTWELLII	1,711.27
WF991	N16	WF99112A	17.9	02/04/99	EUCAMPIA ZOODIACUS	2,618.70
WF991	N16	WF99112A	17.9	02/04/99	GUINARDIA FLACCIDA	2,262.39
WF991	N16	WF99112A	17.9	02/04/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	317.98264
WF991	N16	WF99112A	17.9	02/04/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	72.86608
WF991	N16	WF99112A	17.9	02/04/99	PSEUDONITZSCHIA PUNGENS	6,425.71
WF991	N16	WF99112A	17.9	02/04/99	PSEUDONITZSCHIA SPP.	4,911.99
WF991	N16	WF99112A	17.9	02/04/99	SKELETONEMA COSTATUM	377.67599
WF991	N16	WF99112A	17.9	02/04/99	STEPHANOPYXIS TURRIS	25,707.53
WF991	N16	WF99112A	17.9	02/04/99	THALASSIONEMA NITZSCHIOIDES	329.63687
WF991	N16	WF99112A	17.9	02/04/99	THALASSIOSIRA ANGUSTE-LINEATA	619.49134
WF991	N16	WF99112A	17.9	02/04/99	THALASSIOSIRA NORDENSKIOLDII	80.82898
WF991	N16	WF99112A	17.9	02/04/99	THALASSIOSIRA ROTULA	5,445.81
WF991	N16	WF99112A	17.9	02/04/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	287.95325
WF991	N16	WF99112A	17.9	02/04/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,983.40
WF991	N18	WF9911E2	1.96	02/07/99	BACTERIOSIRA BATHYOMPHALA	935.53392
WF991	N18	WF9911E2	1.96	02/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	97.17859
WF991	N18	WF9911E2	1.96	02/07/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	445.96902
WF991	N18	WF9911E2	1.96	02/07/99	CHAETOCEROS BOREALIS	1,465.70
WF991	N18	WF9911E2	1.96	02/07/99	CHAETOCEROS DEBILIS	6,856.53
WF991	N18	WF9911E2	1.96	02/07/99	CHAETOCEROS DIDYMUS	1,334.61
WF991	N18	WF9911E2	1.96	02/07/99	CHAETOCEROS SOCIALIS	595.56089
WF991	N18	WF9911E2	1.96	02/07/99	CHAETOCEROS SPP. (10-20UM)	5,574.22
WF991	N18	WF9911E2	1.96	02/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	50.52211

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF991	N18	WF9911E2	1.96	02/07/99	CYLINDROTHECA CLOSTERIUM	357.72478
WF991	N18	WF9911E2	1.96	02/07/99	EUCAMPIA ZOODIACUS	1,378.07
WF991	N18	WF9911E2	1.96	02/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	83.66792
WF991	N18	WF9911E2	1.96	02/07/99	GYRODINIUM SPIRALE	6,798.52
WF991	N18	WF9911E2	1.96	02/07/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	25.56346
WF991	N18	WF9911E2	1.96	02/07/99	PSEUDONITZSCHIA PUNGENS	7,872.71
WF991	N18	WF9911E2	1.96	02/07/99	PSEUDONITZSCHIA SPP.	9,265.34
WF991	N18	WF9911E2	1.96	02/07/99	RHIZOSOLENIA HEBETATA	433.61217
WF991	N18	WF9911E2	1.96	02/07/99	STEPHANOPYXIS TURRIS	9,018.92
WF991	N18	WF9911E2	1.96	02/07/99	THALASSIONEMA NITZSCHIOIDES	455.35554
WF991	N18	WF9911E2	1.96	02/07/99	THALASSIOSIRA NORDENSKIOLDII	334.96792
WF991	N18	WF9911E2	1.96	02/07/99	THALASSIOSIRA PUNCTIGERA	623.68928
WF991	N18	WF9911E2	1.96	02/07/99	THALASSIOSIRA ROTULA	8,597.44
WF991	N18	WF9911E2	1.96	02/07/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	1,074.51
WF991	N18	WF9911E2	1.96	02/07/99	THALASSIOTHRIX LONGISSIMA	3,118.45
WF991	N18	WF9911E2	1.96	02/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,379.97
WF991	N18	WF9911E0	10.49	02/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	212.76172
WF991	N18	WF9911E0	10.49	02/07/99	CHAETOCEROS BOREALIS	1,001.20
WF991	N18	WF9911E0	10.49	02/07/99	CHAETOCEROS DEBILIS	6,244.78
WF991	N18	WF9911E0	10.49	02/07/99	CHAETOCEROS DECIPIENS	1,057.71
WF991	N18	WF9911E0	10.49	02/07/99	CHAETOCEROS DIDYMUS	422.79425
WF991	N18	WF9911E0	10.49	02/07/99	CHAETOCEROS SOCIALIS	2,350.50
WF991	N18	WF9911E0	10.49	02/07/99	CHAETOCEROS SPP. (10-20UM)	4,338.43
WF991	N18	WF9911E0	10.49	02/07/99	CYLINDROTHECA CLOSTERIUM	325.80804
WF991	N18	WF9911E0	10.49	02/07/99	DINOPHYSIS NORVEGICA	3,006.93
WF991	N18	WF9911E0	10.49	02/07/99	GUINARDIA FLACCIDA	3,253.02
WF991	N18	WF9911E0	10.49	02/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	610.60537
WF991	N18	WF9911E0	10.49	02/07/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,406.89
WF991	N18	WF9911E0	10.49	02/07/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	66.57462
WF991	N18	WF9911E0	10.49	02/07/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	7,854.19
WF991	N18	WF9911E0	10.49	02/07/99	PSEUDONITZSCHIA PUNGENS	5,565.00
WF991	N18	WF9911E0	10.49	02/07/99	PSEUDONITZSCHIA SPP.	7,337.98
WF991	N18	WF9911E0	10.49	02/07/99	STEPHANOPYXIS TURRIS	12,321.36
WF991	N18	WF9911E0	10.49	02/07/99	THALASSIONEMA NITZSCHIOIDES	503.59834
WF991	N18	WF9911E0	10.49	02/07/99	THALASSIOSIRA NORDENSKIOLDII	334.13697
WF991	N18	WF9911E0	10.49	02/07/99	THALASSIOSIRA ROTULA	9,396.44
WF991	N18	WF9911E0	10.49	02/07/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	1,580.88
WF991	N18	WF9911E0	10.49	02/07/99	THALASSIOTHRIX LONGISSIMA	710.05349
WF991	N18	WF9911E0	10.49	02/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,268.80
WF991	N18	WF9911E0	10.49	02/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	358.44333

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F01	WF992029	2.97	02/23/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	195.21419
WF992	F01	WF992029	2.97	02/23/99	CHAETOCEROS BOREALIS	2,067.25
WF992	F01	WF992029	2.97	02/23/99	CHAETOCEROS DEBILIS	16,578.10
WF992	F01	WF992029	2.97	02/23/99	CHAETOCEROS DIDYMUS	1,091.22
WF992	F01	WF992029	2.97	02/23/99	CHAETOCEROS SOCIALIS	33,692.89
WF992	F01	WF992029	2.97	02/23/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	76,589.04
WF992	F01	WF992029	2.97	02/23/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	208.98607
WF992	F01	WF992029	2.97	02/23/99	CYLINDROTHECA CLOSTERIUM	224.24043
WF992	F01	WF992029	2.97	02/23/99	EUTREPTIA/EUTREPTIELLA SPP.	89.4616
WF992	F01	WF992029	2.97	02/23/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,575.69
WF992	F01	WF992029	2.97	02/23/99	HETEROCAPSA ROTUNDATA	30.96409
WF992	F01	WF992029	2.97	02/23/99	PARALIA SULCATA	584.40325
WF992	F01	WF992029	2.97	02/23/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	48.07351
WF992	F01	WF992029	2.97	02/23/99	PSEUDONITZSCHIA PUNGENS	4,051.14
WF992	F01	WF992029	2.97	02/23/99	PSEUDONITZSCHIA SPP.	1,704.52
WF992	F01	WF992029	2.97	02/23/99	RHIZOSOLENIA HEBETATA	815.43174
WF992	F01	WF992029	2.97	02/23/99	SKELETONEMA COSTATUM	84.09566
WF992	F01	WF992029	2.97	02/23/99	STEPHANOPYXIS TURRIS	42,401.45
WF992	F01	WF992029	2.97	02/23/99	THALASSIONEMA NITZSCHIOIDES	61.16581
WF992	F01	WF992029	2.97	02/23/99	THALASSIOSIRA NORDENSKIOLDII	89.98939
WF992	F01	WF992029	2.97	02/23/99	THALASSIOSIRA ROTULA	7,545.05
WF992	F01	WF992029	2.97	02/23/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	310.87245
WF992	F01	WF992029	2.97	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,821.72
WF992	F01	WF992029	2.97	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	369.99079
WF992	F01	WF992027	10.56	02/23/99	BACTERIOSIRA BATHYOMPHALA	1,278.31
WF992	F01	WF992027	10.56	02/23/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	378.24306
WF992	F01	WF992027	10.56	02/23/99	CHAETOCEROS DEBILIS	11,896.81
WF992	F01	WF992027	10.56	02/23/99	CHAETOCEROS SEPTENTRIONALIS	361.6768
WF992	F01	WF992027	10.56	02/23/99	CHAETOCEROS SOCIALIS	34,449.72
WF992	F01	WF992027	10.56	02/23/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	58,780.78
WF992	F01	WF992027	10.56	02/23/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	202.46359
WF992	F01	WF992027	10.56	02/23/99	CYLINDROTHECA CLOSTERIUM	434.48372
WF992	F01	WF992027	10.56	02/23/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	915.90806
WF992	F01	WF992027	10.56	02/23/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	8,442.78
WF992	F01	WF992027	10.56	02/23/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	2,814.26
WF992	F01	WF992027	10.56	02/23/99	GYRODINIUM SPIRALE	12,385.98
WF992	F01	WF992027	10.56	02/23/99	HETEROCAPSA TRIQUETRA	536.83382
WF992	F01	WF992027	10.56	02/23/99	LEPTOCYLINDRUS MINIMUS	271.85415

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F01	WF992027	10.56	02/23/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	93.14626
WF992	F01	WF992027	10.56	02/23/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	7,855.51
WF992	F01	WF992027	10.56	02/23/99	PSEUDONITZSCHIA DELICATISSIMA	89.22611
WF992	F01	WF992027	10.56	02/23/99	PSEUDONITZSCHIA PUNGENS	4,709.64
WF992	F01	WF992027	10.56	02/23/99	PSEUDONITZSCHIA SPP.	733.92098
WF992	F01	WF992027	10.56	02/23/99	RHIZOSOLENIA HEBETATA	789.98202
WF992	F01	WF992027	10.56	02/23/99	SKELETONEMA COSTATUM	162.94205
WF992	F01	WF992027	10.56	02/23/99	STEPHANOPYXIS TURRIS	45,185.91
WF992	F01	WF992027	10.56	02/23/99	THALASSIOSIRA NORDENSKIOLDII	406.84379
WF992	F01	WF992027	10.56	02/23/99	THALASSIOSIRA ROTULA	6,265.34
WF992	F01	WF992027	10.56	02/23/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	150.58504
WF992	F01	WF992027	10.56	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	8,465.61
WF992	F02	WF99203D	2.67	02/23/99	AMPHIDINIUM SPP.	582.95403
WF992	F02	WF99203D	2.67	02/23/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	236.40191
WF992	F02	WF99203D	2.67	02/23/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	812.4945
WF992	F02	WF99203D	2.67	02/23/99	CHAETOCEROS DEBILIS	23,793.63
WF992	F02	WF99203D	2.67	02/23/99	CHAETOCEROS DECIPIENS	2,115.78
WF992	F02	WF99203D	2.67	02/23/99	CHAETOCEROS SEPTENTRIONALIS	90.4192
WF992	F02	WF99203D	2.67	02/23/99	CHAETOCEROS SOCIALIS	44,214.99
WF992	F02	WF99203D	2.67	02/23/99	CHAETOCEROS SPP. (10-20UM)	26,034.93
WF992	F02	WF99203D	2.67	02/23/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	239.27515
WF992	F02	WF99203D	2.67	02/23/99	CYLINDROTHECA CLOSTERIUM	1,303.45
WF992	F02	WF99203D	2.67	02/23/99	DITYLUM BRIGHTWELLII	4,921.98
WF992	F02	WF99203D	2.67	02/23/99	EUTREPTIA/EUTREPTIELLA SPP.	173.58898
WF992	F02	WF99203D	2.67	02/23/99	GUINARDIA FLACCIDA	13,014.29
WF992	F02	WF99203D	2.67	02/23/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	610.60537
WF992	F02	WF99203D	2.67	02/23/99	LEPTOCYLINDRUS MINIMUS	49.42803
WF992	F02	WF99203D	2.67	02/23/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	46.57313
WF992	F02	WF99203D	2.67	02/23/99	POROSIRA GLACIALIS	14,203.46
WF992	F02	WF99203D	2.67	02/23/99	PSEUDONITZSCHIA PUNGENS	1,070.37
WF992	F02	WF99203D	2.67	02/23/99	PSEUDONITZSCHIA SPP.	550.44073
WF992	F02	WF99203D	2.67	02/23/99	RHIZOSOLENIA DELICATULA	1,927.78
WF992	F02	WF99203D	2.67	02/23/99	THALASSIONEMA NITZSCHIOIDES	59.25682
WF992	F02	WF99203D	2.67	02/23/99	THALASSIOSIRA NORDENSKIOLDII	116.24108
WF992	F02	WF99203D	2.67	02/23/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	75.29252
WF992	F02	WF99203D	2.67	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,636.81
WF992	F02	WF99203D	2.67	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	358.44333
WF992	F02	WF99203B	15.64	02/23/99	BACTERIOSIRA BATHYOMPHALA	1,234.48
WF992	F02	WF99203B	15.64	02/23/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	136.97802
WF992	F02	WF99203B	15.64	02/23/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	980.79693

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F02	WF99203B	15.64	02/23/99	CHAETOCEROS DEBILIS	30,445.65
WF992	F02	WF99203B	15.64	02/23/99	CHAETOCEROS SEPTENTRIONALIS	87.31911
WF992	F02	WF99203B	15.64	02/23/99	CHAETOCEROS SOCIALIS	42,437.09
WF992	F02	WF99203B	15.64	02/23/99	CHAETOCEROS SPP. (10-20UM)	22,289.28
WF992	F02	WF99203B	15.64	02/23/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	337.71978
WF992	F02	WF99203B	15.64	02/23/99	CYLINDROTHECA CLOSTERIUM	629.3807
WF992	F02	WF99203B	15.64	02/23/99	GUINARDIA FLACCIDA	25,136.16
WF992	F02	WF99203B	15.64	02/23/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	884.50549
WF992	F02	WF99203B	15.64	02/23/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,717.77
WF992	F02	WF99203B	15.64	02/23/99	HETEROCAPSA ROTUNDATA	58.02198
WF992	F02	WF99203B	15.64	02/23/99	LEPTOCYLINDRUS MINIMUS	71.60003
WF992	F02	WF99203B	15.64	02/23/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	44.97634
WF992	F02	WF99203B	15.64	02/23/99	PROTOPERIDINIUM BIPES	715.30073
WF992	F02	WF99203B	15.64	02/23/99	PSEUDONITZSCHIA PUNGENS	1,791.70
WF992	F02	WF99203B	15.64	02/23/99	PSEUDONITZSCHIA SPP.	354.37899
WF992	F02	WF99203B	15.64	02/23/99	THALASSIONEMA NITZSCHIOIDES	57.22516
WF992	F02	WF99203B	15.64	02/23/99	THALASSIOSIRA NORDENSKIOLDII	140.31959
WF992	F02	WF99203B	15.64	02/23/99	THALASSIOSIRA ROTULA	3,025.27
WF992	F02	WF99203B	15.64	02/23/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	72.71106
WF992	F02	WF99203B	15.64	02/23/99	THALASSIOTHRIX LONGISSIMA	1,371.65
WF992	F02	WF99203B	15.64	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,031.95
WF992	F06	WF9922E7	2.1	02/28/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	213.49162
WF992	F06	WF9922E7	2.1	02/28/99	CENTRIC DIATOM SP. GROUP 2 DIAM 10-30 MI	107.90495
WF992	F06	WF9922E7	2.1	02/28/99	CHAETOCEROS BOREALIS	709.27076
WF992	F06	WF9922E7	2.1	02/28/99	CHAETOCEROS DEBILIS	1,579.98
WF992	F06	WF9922E7	2.1	02/28/99	CHAETOCEROS DIDYMUS	336.9568
WF992	F06	WF9922E7	2.1	02/28/99	CHAETOCEROS SOCIALIS	10,999.60
WF992	F06	WF9922E7	2.1	02/28/99	CHAETOCEROS SPP. (10-20UM)	17,754.03
WF992	F06	WF9922E7	2.1	02/28/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	19.55533
WF992	F06	WF9922E7	2.1	02/28/99	CYLINDROTHECA CLOSTERIUM	461.61981
WF992	F06	WF9922E7	2.1	02/28/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	486.55597
WF992	F06	WF9922E7	2.1	02/28/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	7,475.06
WF992	F06	WF9922E7	2.1	02/28/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	148.65981
WF992	F06	WF9922E7	2.1	02/28/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	70.74448
WF992	F06	WF9922E7	2.1	02/28/99	PSEUDONITZSCHIA PUNGENS	1,554.21
WF992	F06	WF9922E7	2.1	02/28/99	STEPHANOPYXIS TURRIS	17,457.47
WF992	F06	WF9922E7	2.1	02/28/99	THALASSIONEMA NITZSCHIOIDES	598.0987
WF992	F06	WF9922E7	2.1	02/28/99	THALASSIOSIRA NORDENSKIOLDII	77.18814

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F06	WF9922E7	2.1	02/28/99	THALASSIOSIRA ROTULA	554.72093
WF992	F06	WF9922E7	2.1	02/28/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	39.99749
WF992	F06	WF9922E7	2.1	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,050.53
WF992	F06	WF9922E7	2.1	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	190.41512
WF992	F06	WF9922E5	15.62	02/28/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	301.75452
WF992	F06	WF9922E5	15.62	02/28/99	CERATIUM TRIPOS	11,454.12
WF992	F06	WF9922E5	15.62	02/28/99	CHAETOCEROS BOREALIS	1,420.21
WF992	F06	WF9922E5	15.62	02/28/99	CHAETOCEROS DEBILIS	632.73559
WF992	F06	WF9922E5	15.62	02/28/99	CHAETOCEROS SOCIALIS	22,409.81
WF992	F06	WF9922E5	15.62	02/28/99	CHAETOCEROS SPP. (10-20UM)	49,494.79
WF992	F06	WF9922E5	15.62	02/28/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	29.36751
WF992	F06	WF9922E5	15.62	02/28/99	CYLINDROTHECA CLOSTERIUM	462.16289
WF992	F06	WF9922E5	15.62	02/28/99	DITYLUM BRIGHTWELLII	5,235.54
WF992	F06	WF9922E5	15.62	02/28/99	EUCAMPIA ZOODIACUS	2,670.60
WF992	F06	WF9922E5	15.62	02/28/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	811.88066
WF992	F06	WF9922E5	15.62	02/28/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	8,980.63
WF992	F06	WF9922E5	15.62	02/28/99	PARALIA SULCATA	401.48796
WF992	F06	WF9922E5	15.62	02/28/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	148.8347
WF992	F06	WF9922E5	15.62	02/28/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	283.31084
WF992	F06	WF9922E5	15.62	02/28/99	PLEUROSIGMA SPP.	1,271.33
WF992	F06	WF9922E5	15.62	02/28/99	PSEUDONITZSCHIA PUNGENS	2,353.03
WF992	F06	WF9922E5	15.62	02/28/99	RHIZOSOLENIA HEBETATA	840.30852
WF992	F06	WF9922E5	15.62	02/28/99	STEPHANOPYXIS TURRIS	13,108.50
WF992	F06	WF9922E5	15.62	02/28/99	THALASSIOSIRA NORDENSKIOLDII	185.46949
WF992	F06	WF9922E5	15.62	02/28/99	THALASSIOSIRA ROTULA	4,442.99
WF992	F06	WF9922E5	15.62	02/28/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	160.17819
WF992	F06	WF9922E5	15.62	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,054.11
WF992	F13	WF9922C6	1.91	02/28/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	306.37688
WF992	F13	WF9922C6	1.91	02/28/99	CERATIUM TRIPOS	11,629.57
WF992	F13	WF9922C6	1.91	02/28/99	CHAETOCEROS COMPRESSUS	3,146.36
WF992	F13	WF9922C6	1.91	02/28/99	CHAETOCEROS DIDYMUS	228.34726
WF992	F13	WF9922C6	1.91	02/28/99	CHAETOCEROS SOCIALIS	28,612.25
WF992	F13	WF9922C6	1.91	02/28/99	CHAETOCEROS SPP. (10-20UM)	40,481.55
WF992	F13	WF9922C6	1.91	02/28/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	59.63473
WF992	F13	WF9922C6	1.91	02/28/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	127.65703
WF992	F13	WF9922C6	1.91	02/28/99	EUTREPTIA/EUTREPTIELLA SPP.	93.60305
WF992	F13	WF9922C6	1.91	02/28/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,648.63
WF992	F13	WF9922C6	1.91	02/28/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-	9,118.20

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					50U	
WF992	F13	WF9922C6	1.91	02/28/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	862.95199
WF992	F13	WF9922C6	1.91	02/28/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	8,483.95
WF992	F13	WF9922C6	1.91	02/28/99	PSEUDONITZSCHIA DELICATISSIMA	321.214
WF992	F13	WF9922C6	1.91	02/28/99	PSEUDONITZSCHIA PUNGENS	770.66816
WF992	F13	WF9922C6	1.91	02/28/99	STEPHANOPYXIS TURRIS	17,745.74
WF992	F13	WF9922C6	1.91	02/28/99	THALASSIONEMA NITZSCHIOIDES	63.99736
WF992	F13	WF9922C6	1.91	02/28/99	THALASSIOSIRA NORDENSKIOLDII	345.23602
WF992	F13	WF9922C6	1.91	02/28/99	THALASSIOSIRA ROTULA	5,638.81
WF992	F13	WF9922C6	1.91	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,050.95
WF992	F13	WF9922C4	12.08	02/28/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	304.57466
WF992	F13	WF9922C4	12.08	02/28/99	CHAETOCEROS COMPRESSUS	1,563.93
WF992	F13	WF9922C4	12.08	02/28/99	CHAETOCEROS DECIPIENS	2,271.60
WF992	F13	WF9922C4	12.08	02/28/99	CHAETOCEROS DIDYMUS	113.50202
WF992	F13	WF9922C4	12.08	02/28/99	CHAETOCEROS SOCIALIS	23,104.64
WF992	F13	WF9922C4	12.08	02/28/99	CHAETOCEROS SPP. (10-20UM)	30,331.25
WF992	F13	WF9922C4	12.08	02/28/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	177.85181
WF992	F13	WF9922C4	12.08	02/28/99	CYLINDROTHECA CLOSTERIUM	466.48217
WF992	F13	WF9922C4	12.08	02/28/99	DITYLUM BRIGHTWELLII	5,284.47
WF992	F13	WF9922C4	12.08	02/28/99	EUCAMPIA ZOODIACUS	2,695.56
WF992	F13	WF9922C4	12.08	02/28/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,638.94
WF992	F13	WF9922C4	12.08	02/28/99	GYRODINIUM SPIRALE	13,298.17
WF992	F13	WF9922C4	12.08	02/28/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	100.15045
WF992	F13	WF9922C4	12.08	02/28/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	1,000.86
WF992	F13	WF9922C4	12.08	02/28/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	8,434.04
WF992	F13	WF9922C4	12.08	02/28/99	PSEUDONITZSCHIA DELICATISSIMA	255.4596
WF992	F13	WF9922C4	12.08	02/28/99	PSEUDONITZSCHIA PUNGENS	1,455.66
WF992	F13	WF9922C4	12.08	02/28/99	STEPHANOPYXIS TURRIS	26,462.03
WF992	F13	WF9922C4	12.08	02/28/99	THALASSIONEMA NITZSCHIOIDES	254.48364
WF992	F13	WF9922C4	12.08	02/28/99	THALASSIOSIRA NORDENSKIOLDII	468.00712
WF992	F13	WF9922C4	12.08	02/28/99	THALASSIOSIRA ROTULA	3,363.38
WF992	F13	WF9922C4	12.08	02/28/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	161.67519
WF992	F13	WF9922C4	12.08	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,593.28
WF992	F23	WF992161	2.16	02/27/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	171.95682
WF992	F23	WF992161	2.16	02/27/99	CHAETOCEROS COMPRESSUS	4,304.44
WF992	F23	WF992161	2.16	02/27/99	CHAETOCEROS DEBILIS	2,704.26
WF992	F23	WF992161	2.16	02/27/99	CHAETOCEROS SOCIALIS	22,033.01
WF992	F23	WF992161	2.16	02/27/99	CHAETOCEROS SPP. (10-20UM)	34,248.85
WF992	F23	WF992161	2.16	02/27/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	301.23482
WF992	F23	WF992161	2.16	02/27/99	CYLINDROTHECA CLOSTERIUM	2,172.77

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F23	WF992161	2.16	02/27/99	GRAMMATOPHORA MARINA	249.65812
WF992	F23	WF992161	2.16	02/27/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	832.78003
WF992	F23	WF992161	2.16	02/27/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	10,235.34
WF992	F23	WF992161	2.16	02/27/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	169.62888
WF992	F23	WF992161	2.16	02/27/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	1,210.85
WF992	F23	WF992161	2.16	02/27/99	PSEUDONITZSCHIA DELICATISSIMA	54.08529
WF992	F23	WF992161	2.16	02/27/99	PSEUDONITZSCHIA PUNGENS	1,427.40
WF992	F23	WF992161	2.16	02/27/99	SKELETONEMA COSTATUM	172.84562
WF992	F23	WF992161	2.16	02/27/99	STEPHANOPYXIS TURRIS	18,674.92
WF992	F23	WF992161	2.16	02/27/99	THALASSIONEMA NITZSCHIOIDES	161.63597
WF992	F23	WF992161	2.16	02/27/99	THALASSIOSIRA NORDENSKIOLDII	184.95928
WF992	F23	WF992161	2.16	02/27/99	THALASSIOSIRA ROTULA	5,696.70
WF992	F23	WF992161	2.16	02/27/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	342.29477
WF992	F23	WF992161	2.16	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,513.07
WF992	F23	WF992161	2.16	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	651.82186
WF992	F23	WF99215F	13.86	02/27/99	ACHNANTHES SPP.	67.8323
WF992	F23	WF99215F	13.86	02/27/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	204.25125
WF992	F23	WF99215F	13.86	02/27/99	CHAETOCEROS DEBILIS	3,533.35
WF992	F23	WF99215F	13.86	02/27/99	CHAETOCEROS SEPTENTRIONALIS	97.65274
WF992	F23	WF99215F	13.86	02/27/99	CHAETOCEROS SOCIALIS	38,475.18
WF992	F23	WF99215F	13.86	02/27/99	CHAETOCEROS SPP. (10-20UM)	28,516.56
WF992	F23	WF99215F	13.86	02/27/99	COCCONEIS SPP.	158.15264
WF992	F23	WF99215F	13.86	02/27/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	337.93013
WF992	F23	WF99215F	13.86	02/27/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	382.9711
WF992	F23	WF99215F	13.86	02/27/99	CYLINDROTHECA CLOSTERIUM	234.62121
WF992	F23	WF99215F	13.86	02/27/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	989.1807
WF992	F23	WF99215F	13.86	02/27/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,039.40
WF992	F23	WF99215F	13.86	02/27/99	LICMOPHORA SPP.	140.41991
WF992	F23	WF99215F	13.86	02/27/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	302.22918
WF992	F23	WF99215F	13.86	02/27/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	431.47599
WF992	F23	WF99215F	13.86	02/27/99	PLEUROSIGMA SPP.	1,290.81
WF992	F23	WF99215F	13.86	02/27/99	POROSIRA GLACIALIS	15,339.73
WF992	F23	WF99215F	13.86	02/27/99	PSEUDONITZSCHIA DELICATISSIMA	289.0926
WF992	F23	WF99215F	13.86	02/27/99	PSEUDONITZSCHIA PUNGENS	1,618.40
WF992	F23	WF99215F	13.86	02/27/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	122.15749
WF992	F23	WF99215F	13.86	02/27/99	RHIZOSOLENIA DELICATULA	2,429.00

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F23	WF99215F	13.86	02/27/99	SKELETONEMA COSTATUM	58.65914
WF992	F23	WF99215F	13.86	02/27/99	STEPHANOPYXIS TURRIS	17,745.74
WF992	F23	WF99215F	13.86	02/27/99	THALASSIONEMA NITZSCHIOIDES	127.99473
WF992	F23	WF99215F	13.86	02/27/99	THALASSIOSIRA NORDENSKIOLDII	376.62111
WF992	F23	WF99215F	13.86	02/27/99	THALASSIOSIRA ROTULA	1,127.76
WF992	F23	WF99215F	13.86	02/27/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	325.26369
WF992	F23	WF99215F	13.86	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,905.09
WF992	F23	WF99215F	13.86	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,161.36
WF992	F24	WF99213D	2.4	02/24/99	ASTERIONELLOPSIS GLACIALIS	94.5507
WF992	F24	WF99213D	2.4	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	150.71684
WF992	F24	WF99213D	2.4	02/24/99	CHAETOCEROS DEBILIS	5,959.45
WF992	F24	WF99213D	2.4	02/24/99	CHAETOCEROS DIDYMUS	192.5683
WF992	F24	WF99213D	2.4	02/24/99	CHAETOCEROS SOCIALIS	75,846.06
WF992	F24	WF99213D	2.4	02/24/99	CHAETOCEROS SPP. (10-20UM)	85,430.67
WF992	F24	WF99213D	2.4	02/24/99	CORETHRON CRIOPHILUM	3,948.25
WF992	F24	WF99213D	2.4	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	217.92665
WF992	F24	WF99213D	2.4	02/24/99	CYLINDROTHECA CLOSTERIUM	791.43681
WF992	F24	WF99213D	2.4	02/24/99	EUCAMPIA ZOODIACUS	571.66368
WF992	F24	WF99213D	2.4	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	3,614.82
WF992	F24	WF99213D	2.4	02/24/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	10,252.66
WF992	F24	WF99213D	2.4	02/24/99	GYRODINIUM SPIRALE	11,280.89
WF992	F24	WF99213D	2.4	02/24/99	HETEROCAPSA ROTUNDATA	109.44265
WF992	F24	WF99213D	2.4	02/24/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	254.87391
WF992	F24	WF99213D	2.4	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	1,334.19
WF992	F24	WF99213D	2.4	02/24/99	PSEUDONITZSCHIA DELICATISSIMA	189.61884
WF992	F24	WF99213D	2.4	02/24/99	PSEUDONITZSCHIA PUNGENS	1,689.78
WF992	F24	WF99213D	2.4	02/24/99	SKELETONEMA COSTATUM	99.07877
WF992	F24	WF99213D	2.4	02/24/99	STEPHANOPYXIS TURRIS	48,636.96
WF992	F24	WF99213D	2.4	02/24/99	THALASSIONEMA NITZSCHIOIDES	269.84916
WF992	F24	WF99213D	2.4	02/24/99	THALASSIOSIRA NORDENSKIOLDII	846.95899
WF992	F24	WF99213D	2.4	02/24/99	THALASSIOSIRA ROTULA	11,412.68
WF992	F24	WF99213D	2.4	02/24/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,165.77
WF992	F24	WF99213D	2.4	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,710.29
WF992	F24	WF99213B	9.76	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	228.19515
WF992	F24	WF99213B	9.76	02/24/99	CERATIUM FUSUS	4,507.09
WF992	F24	WF99213B	9.76	02/24/99	CHAETOCEROS BOREALIS	3,580.01
WF992	F24	WF99213B	9.76	02/24/99	CHAETOCEROS DEBILIS	4,784.92
WF992	F24	WF99213B	9.76	02/24/99	CHAETOCEROS SOCIALIS	64,781.36
WF992	F24	WF99213B	9.76	02/24/99	CHAETOCEROS SPP. (10-20UM)	71,888.09
WF992	F24	WF99213B	9.76	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10	177.66818

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					MICRO	
WF992	F24	WF99213B	9.76	02/24/99	CYLINDROTHECA CLOSTERIUM	3,262.00
WF992	F24	WF99213B	9.76	02/24/99	EUCAMPIA ZOODIACUS	1,346.39
WF992	F24	WF99213B	9.76	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	654.8978
WF992	F24	WF99213B	9.76	02/24/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	6,036.80
WF992	F24	WF99213B	9.76	02/24/99	GYRODINIUM SPIRALE	26,607.21
WF992	F24	WF99213B	9.76	02/24/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	800.3764
WF992	F24	WF99213B	9.76	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	999.82175
WF992	F24	WF99213B	9.76	02/24/99	PSEUDONITZSCHIA DELICATISSIMA	255.19585
WF992	F24	WF99213B	9.76	02/24/99	PSEUDONITZSCHIA PUNGENS	2,296.03
WF992	F24	WF99213B	9.76	02/24/99	STEPHANOPYXIS TURRIS	48,463.63
WF992	F24	WF99213B	9.76	02/24/99	THALASSIONEMA NITZSCHIOIDES	254.22089
WF992	F24	WF99213B	9.76	02/24/99	THALASSIOSIRA NORDENSKIOLDII	716.87
WF992	F24	WF99213B	9.76	02/24/99	THALASSIOSIRA ROTULA	13,439.64
WF992	F24	WF99213B	9.76	02/24/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	807.54131
WF992	F24	WF99213B	9.76	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,079.55
WF992	F24	WF99213B	9.76	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	768.88858
WF992	F25	WF99210A	2.45	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	71.91346
WF992	F25	WF99210A	2.45	02/24/99	CHAETOCEROS DEBILIS	5,730.10
WF992	F25	WF99210A	2.45	02/24/99	CHAETOCEROS SEPTENTRIONALIS	183.37014
WF992	F25	WF99210A	2.45	02/24/99	CHAETOCEROS SOCIALIS	47,492.87
WF992	F25	WF99210A	2.45	02/24/99	CHAETOCEROS SPP. (10-20UM)	25,463.27
WF992	F25	WF99210A	2.45	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	205.29808
WF992	F25	WF99210A	2.45	02/24/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	239.71154
WF992	F25	WF99210A	2.45	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	619.15385
WF992	F25	WF99210A	2.45	02/24/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	94.58654
WF992	F25	WF99210A	2.45	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	135.03601
WF992	F25	WF99210A	2.45	02/24/99	PSEUDONITZSCHIA PUNGENS	1,591.86
WF992	F25	WF99210A	2.45	02/24/99	SKELETONEMA COSTATUM	413.05809
WF992	F25	WF99210A	2.45	02/24/99	STEPHANOPYXIS TURRIS	16,661.28
WF992	F25	WF99210A	2.45	02/24/99	THALASSIOSIRA NORDENSKIOLDII	353.60538
WF992	F25	WF99210A	2.45	02/24/99	THALASSIOSIRA ROTULA	4,235.37
WF992	F25	WF99210A	2.45	02/24/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	687.11954
WF992	F25	WF99210A	2.45	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,622.22
WF992	F25	WF992108	6.91	02/24/99	CALYCOMONAS OVALIS	21.6226
WF992	F25	WF992108	6.91	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	93.22115
WF992	F25	WF992108	6.91	02/24/99	CHAETOCEROS BOREALIS	1,974.36

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F25	WF992108	6.91	02/24/99	CHAETOCEROS COMPRESSUS	4,308.04
WF992	F25	WF992108	6.91	02/24/99	CHAETOCEROS DEBILIS	4,691.31
WF992	F25	WF992108	6.91	02/24/99	CHAETOCEROS SOCIALIS	42,073.26
WF992	F25	WF992108	6.91	02/24/99	CHAETOCEROS SPP. (10-20UM)	23,845.82
WF992	F25	WF992108	6.91	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	127.01522
WF992	F25	WF992108	6.91	02/24/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	116.52644
WF992	F25	WF992108	6.91	02/24/99	CYLINDROTHECA CLOSTERIUM	428.32853
WF992	F25	WF992108	6.91	02/24/99	EUCAMPIA ZOODIACUS	1,237.55
WF992	F25	WF992108	6.91	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,805.87
WF992	F25	WF992108	6.91	02/24/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	2,774.39
WF992	F25	WF992108	6.91	02/24/99	GYRODINIUM SPIRALE	12,210.51
WF992	F25	WF992108	6.91	02/24/99	HETEROCAPSA ROTUNDATA	59.23077
WF992	F25	WF992108	6.91	02/24/99	LICMOPHORA SPP.	256.72276
WF992	F25	WF992108	6.91	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	262.94872
WF992	F25	WF992108	6.91	02/24/99	PROTOPERIDINIUM BIPES	730.20283
WF992	F25	WF992108	6.91	02/24/99	PSEUDONITZSCHIA DELICATISSIMA	117.28277
WF992	F25	WF992108	6.91	02/24/99	PSEUDONITZSCHIA PUNGENS	1,406.95
WF992	F25	WF992108	6.91	02/24/99	SKELETONEMA COSTATUM	107.08913
WF992	F25	WF992108	6.91	02/24/99	STEPHANOPYXIS TURRIS	36,446.54
WF992	F25	WF992108	6.91	02/24/99	THALASSIOSIRA NORDENSKIOLDII	515.67451
WF992	F25	WF992108	6.91	02/24/99	THALASSIOSIRA ROTULA	6,176.58
WF992	F25	WF992108	6.91	02/24/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	742.25876
WF992	F25	WF992108	6.91	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,194.16
WF992	F27	WF992095	2.75	02/23/99	CALYCOMONAS OVALIS	22.74068
WF992	F27	WF992095	2.75	02/23/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	147.06229
WF992	F27	WF992095	2.75	02/23/99	CHAETOCEROS COMPRESSUS	4,908.37
WF992	F27	WF992095	2.75	02/23/99	CHAETOCEROS DEBILIS	1,850.21
WF992	F27	WF992095	2.75	02/23/99	CHAETOCEROS DIDYMUS	876.86177
WF992	F27	WF992095	2.75	02/23/99	CHAETOCEROS SEPTENTRIONALIS	375.53091
WF992	F27	WF992095	2.75	02/23/99	CHAETOCEROS SOCIALIS	36,936.52
WF992	F27	WF992095	2.75	02/23/99	CHAETOCEROS SPP. (10-20UM)	30,056.34
WF992	F27	WF992095	2.75	02/23/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	133.58306
WF992	F27	WF992095	2.75	02/23/99	CYLINDROTHECA CLOSTERIUM	1,576.67
WF992	F27	WF992095	2.75	02/23/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	949.62246
WF992	F27	WF992095	2.75	02/23/99	LEPTOCYLINDRUS MINIMUS	102.49493
WF992	F27	WF992095	2.75	02/23/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	193.4285
WF992	F27	WF992095	2.75	02/23/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	414.22088
WF992	F27	WF992095	2.75	02/23/99	PSEUDONITZSCHIA DELICATISSIMA	678.41039

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F27	WF992095	2.75	02/23/99	PSEUDONITZSCHIA PUNGENS	443.90906
WF992	F27	WF992095	2.75	02/23/99	THALASSIONEMA NITZSCHIOIDES	184.31415
WF992	F27	WF992095	2.75	02/23/99	THALASSIOSIRA ANGUSTE-LINEATA	3,694.77
WF992	F27	WF992095	2.75	02/23/99	THALASSIOSIRA NORDENSKIOLDII	421.81964
WF992	F27	WF992095	2.75	02/23/99	THALASSIOSIRA ROTULA	8,661.29
WF992	F27	WF992095	2.75	02/23/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,170.96
WF992	F27	WF992095	2.75	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,217.23
WF992	F27	WF992093	57.69	02/23/99	ASTERIONELLOPSIS GLACIALIS	107.6344
WF992	F27	WF992093	57.69	02/23/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	502.46284
WF992	F27	WF992093	57.69	02/23/99	CHAETOCEROS COMPRESSUS	4,153.24
WF992	F27	WF992093	57.69	02/23/99	CHAETOCEROS DEBILIS	2,158.58
WF992	F27	WF992093	57.69	02/23/99	CHAETOCEROS SOCIALIS	16,874.55
WF992	F27	WF992093	57.69	02/23/99	CHAETOCEROS SPP. (10-20UM)	15,698.22
WF992	F27	WF992093	57.69	02/23/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	47.70824
WF992	F27	WF992093	57.69	02/23/99	CYLINDROTHECA CLOSTERIUM	3,603.82
WF992	F27	WF992093	57.69	02/23/99	EUCAMPIA ZOODIACUS	1,301.54
WF992	F27	WF992093	57.69	02/23/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,899.24
WF992	F27	WF992093	57.69	02/23/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	145.07138
WF992	F27	WF992093	57.69	02/23/99	PROTOPERIDINIUM DEPRESSUM	71,058.47
WF992	F27	WF992093	57.69	02/23/99	PSEUDONITZSCHIA DELICATISSIMA	832.59456
WF992	F27	WF992093	57.69	02/23/99	PSEUDONITZSCHIA PUNGENS	2,885.41
WF992	F27	WF992093	57.69	02/23/99	RHIZOSOLENIA DELICATULA	333.12324
WF992	F27	WF992093	57.69	02/23/99	RHIZOSOLENIA STOLTERFOTHII	5,327.26
WF992	F27	WF992093	57.69	02/23/99	SKELETONEMA COSTATUM	112.62661
WF992	F27	WF992093	57.69	02/23/99	STEPHANOPYXIS TURRIS	17,036.07
WF992	F27	WF992093	57.69	02/23/99	THALASSIONEMA NITZSCHIOIDES	430.06636
WF992	F27	WF992093	57.69	02/23/99	THALASSIOSIRA ANGUSTE-LINEATA	1,847.38
WF992	F27	WF992093	57.69	02/23/99	THALASSIOSIRA NORDENSKIOLDII	572.46951
WF992	F27	WF992093	57.69	02/23/99	THALASSIOSIRA ROTULA	10,826.62
WF992	F27	WF992093	57.69	02/23/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,639.34
WF992	F27	WF992093	57.69	02/23/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,388.61
WF992	F30	WF99214B	2.06	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	147.06229
WF992	F30	WF99214B	2.06	02/24/99	CHAETOCEROS DEBILIS	7,400.84
WF992	F30	WF99214B	2.06	02/24/99	CHAETOCEROS DIDYMUS	657.64633
WF992	F30	WF99214B	2.06	02/24/99	CHAETOCEROS SOCIALIS	50,904.90
WF992	F30	WF99214B	2.06	02/24/99	CHAETOCEROS SPP. (10-20UM)	26,801.83
WF992	F30	WF99214B	2.06	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	267.16612
WF992	F30	WF99214B	2.06	02/24/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	612.75956
WF992	F30	WF99214B	2.06	02/24/99	CYLINDROTHECA CLOSTERIUM	450.47698
WF992	F30	WF99214B	2.06	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	633.08164

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F30	WF99214B	2.06	02/24/99	HETEROCAPSA ROTUNDATA	62.29353
WF992	F30	WF99214B	2.06	02/24/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	193.4285
WF992	F30	WF99214B	2.06	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	552.2945
WF992	F30	WF99214B	2.06	02/24/99	PSEUDONITZSCHIA DELICATISSIMA	123.34734
WF992	F30	WF99214B	2.06	02/24/99	PSEUDONITZSCHIA PUNGENS	1,331.73
WF992	F30	WF99214B	2.06	02/24/99	RHIZOSOLENIA DELICATULA	666.24648
WF992	F30	WF99214B	2.06	02/24/99	SKELETONEMA COSTATUM	309.72318
WF992	F30	WF99214B	2.06	02/24/99	STEPHANOPYXIS TURRIS	38,331.16
WF992	F30	WF99214B	2.06	02/24/99	THALASSIONEMA NITZSCHIOIDES	122.8761
WF992	F30	WF99214B	2.06	02/24/99	THALASSIOSIRA NORDENSKIOLDII	783.37933
WF992	F30	WF99214B	2.06	02/24/99	THALASSIOSIRA ROTULA	3,247.98
WF992	F30	WF99214B	2.06	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,935.85
WF992	F30	WF99214B	2.06	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	371.63756
WF992	F30	WF99214A	6.7	02/24/99	CALYCOMONAS OVALIS	23.36364
WF992	F30	WF99214A	6.7	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	176.27273
WF992	F30	WF99214A	6.7	02/24/99	CHAETOCEROS BOREALIS	2,844.44
WF992	F30	WF99214A	6.7	02/24/99	CHAETOCEROS DEBILIS	5,385.87
WF992	F30	WF99214A	6.7	02/24/99	CHAETOCEROS SOCIALIS	41,415.72
WF992	F30	WF99214A	6.7	02/24/99	CHAETOCEROS SPP. (10-20UM)	37,567.03
WF992	F30	WF99214A	6.7	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	254.87879
WF992	F30	WF99214A	6.7	02/24/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	377.72727
WF992	F30	WF99214A	6.7	02/24/99	CYLINDROTHECA CLOSTERIUM	925.63465
WF992	F30	WF99214A	6.7	02/24/99	EUCAMPIA ZOODIACUS	1,337.19
WF992	F30	WF99214A	6.7	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,626.06
WF992	F30	WF99214A	6.7	02/24/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,997.78
WF992	F30	WF99214A	6.7	02/24/99	GYRODINIUM SPIRALE	26,387.40
WF992	F30	WF99214A	6.7	02/24/99	HETEROCAPSA ROTUNDATA	64
WF992	F30	WF99214A	6.7	02/24/99	LEPTOCYLINDRUS MINIMUS	52.65133
WF992	F30	WF99214A	6.7	02/24/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	298.09091
WF992	F30	WF99214A	6.7	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	425.56802
WF992	F30	WF99214A	6.7	02/24/99	PROTOPERIDINIUM DEPRESSUM	73,005.04
WF992	F30	WF99214A	6.7	02/24/99	PSEUDONITZSCHIA DELICATISSIMA	31.68158
WF992	F30	WF99214A	6.7	02/24/99	PSEUDONITZSCHIA PUNGENS	1,596.24
WF992	F30	WF99214A	6.7	02/24/99	SKELETONEMA COSTATUM	115.87879
WF992	F30	WF99214A	6.7	02/24/99	STEPHANOPYXIS TURRIS	13,127.07
WF992	F30	WF99214A	6.7	02/24/99	THALASSIONEMA NITZSCHIOIDES	189.36324
WF992	F30	WF99214A	6.7	02/24/99	THALASSIOSIRA NORDENSKIOLDII	433.37494
WF992	F30	WF99214A	6.7	02/24/99	THALASSIOSIRA ROTULA	12,235.52

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F30	WF99214A	6.7	02/24/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	962.43006
WF992	F30	WF99214A	6.7	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	8,260.94
WF992	F31	WF9922AA	2.16	02/28/99	CHAETOCEROS BOREALIS	2,850.20
WF992	F31	WF9922AA	2.16	02/28/99	CHAETOCEROS COMPRESSUS	3,109.56
WF992	F31	WF9922AA	2.16	02/28/99	CHAETOCEROS DEBILIS	3,174.57
WF992	F31	WF9922AA	2.16	02/28/99	CHAETOCEROS SOCIALIS	24,803.22
WF992	F31	WF9922AA	2.16	02/28/99	CHAETOCEROS SPP. (10-20UM)	36,854.74
WF992	F31	WF9922AA	2.16	02/28/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	275.04049
WF992	F31	WF9922AA	2.16	02/28/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	252.32794
WF992	F31	WF9922AA	2.16	02/28/99	CYLINDROTHECA CLOSTERIUM	1,391.26
WF992	F31	WF9922AA	2.16	02/28/99	EUTREPTIA/EUTREPTIELLA SPP.	185.2834
WF992	F31	WF9922AA	2.16	02/28/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,281.09
WF992	F31	WF9922AA	2.16	02/28/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	9,011.55
WF992	F31	WF9922AA	2.16	02/28/99	GYRODINIUM SPIRALE	13,220.41
WF992	F31	WF9922AA	2.16	02/28/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	298.69433
WF992	F31	WF9922AA	2.16	02/28/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	284.28633
WF992	F31	WF9922AA	2.16	02/28/99	PLEUROSIGMA SPP.	1,275.71
WF992	F31	WF9922AA	2.16	02/28/99	PSEUDONITZSCHIA DELICATISSIMA	222.21998
WF992	F31	WF9922AA	2.16	02/28/99	PSEUDONITZSCHIA PUNGENS	1,218.65
WF992	F31	WF9922AA	2.16	02/28/99	SKELETONEMA COSTATUM	115.94613
WF992	F31	WF9922AA	2.16	02/28/99	STEPHANOPYXIS TURRIS	13,153.64
WF992	F31	WF9922AA	2.16	02/28/99	THALASSIONEMA NITZSCHIOIDES	442.742
WF992	F31	WF9922AA	2.16	02/28/99	THALASSIOSIRA NORDENSKIOLDII	434.25222
WF992	F31	WF9922AA	2.16	02/28/99	THALASSIOSIRA ROTULA	5,572.86
WF992	F31	WF9922AA	2.16	02/28/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	562.55401
WF992	F31	WF9922AA	2.16	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,013.90
WF992	F31	WF9922AA	2.16	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	382.59109
WF992	F31	WF9922A9	6.6	02/28/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	204.25125
WF992	F31	WF9922A9	6.6	02/28/99	CHAETOCEROS COMPRESSUS	786.5908
WF992	F31	WF9922A9	6.6	02/28/99	CHAETOCEROS DEBILIS	1,927.28
WF992	F31	WF9922A9	6.6	02/28/99	CHAETOCEROS SOCIALIS	30,272.35
WF992	F31	WF9922A9	6.6	02/28/99	CHAETOCEROS SPP. (10-20UM)	40,082.72
WF992	F31	WF9922A9	6.6	02/28/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	496.95608
WF992	F31	WF9922A9	6.6	02/28/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	382.9711
WF992	F31	WF9922A9	6.6	02/28/99	CYLINDROTHECA CLOSTERIUM	1,173.11
WF992	F31	WF9922A9	6.6	02/28/99	EUTREPTIA/EUTREPTIELLA SPP.	187.4761
WF992	F31	WF9922A9	6.6	02/28/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,318.91

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	F31	WF9922A9	6.6	02/28/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	15,197.00
WF992	F31	WF9922A9	6.6	02/28/99	LICMOPHORA SPP.	140.41991
WF992	F31	WF9922A9	6.6	02/28/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	201.48612
WF992	F31	WF9922A9	6.6	02/28/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	719.12666
WF992	F31	WF9922A9	6.6	02/28/99	PSEUDONITZSCHIA DELICATISSIMA	256.9712
WF992	F31	WF9922A9	6.6	02/28/99	PSEUDONITZSCHIA PUNGENS	924.80179
WF992	F31	WF9922A9	6.6	02/28/99	RHIZOSOLENIA HEBETATA	1,706.36
WF992	F31	WF9922A9	6.6	02/28/99	STEPHANOPYXIS TURRIS	26,618.61
WF992	F31	WF9922A9	6.6	02/28/99	THALASSIOSIRA NORDENSKIOLDII	313.85093
WF992	F31	WF9922A9	6.6	02/28/99	THALASSIOSIRA ROTULA	3,383.29
WF992	F31	WF9922A9	6.6	02/28/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	243.94777
WF992	F31	WF9922A9	6.6	02/28/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	8,503.49
WF992	N04	WF9921C3	2.37	02/27/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	209.05076
WF992	N04	WF9921C3	2.37	02/27/99	CHAETOCEROS COMPRESSUS	715.62148
WF992	N04	WF9921C3	2.37	02/27/99	CHAETOCEROS DEBILIS	2,337.86
WF992	N04	WF9921C3	2.37	02/27/99	CHAETOCEROS DIDYMUS	207.74487
WF992	N04	WF9921C3	2.37	02/27/99	CHAETOCEROS SEPTENTRIONALIS	88.84212
WF992	N04	WF9921C3	2.37	02/27/99	CHAETOCEROS SOCIALIS	32,338.53
WF992	N04	WF9921C3	2.37	02/27/99	CHAETOCEROS SPP. (10-20UM)	58,600.07
WF992	N04	WF9921C3	2.37	02/27/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	253.18649
WF992	N04	WF9921C3	2.37	02/27/99	CYLINDROTHECA CLOSTERIUM	2,347.98
WF992	N04	WF9921C3	2.37	02/27/99	DINOPHYSIS NORVEGICA	5,909.97
WF992	N04	WF9921C3	2.37	02/27/99	EUCAMPIA ZOODIACUS	3,700.30
WF992	N04	WF9921C3	2.37	02/27/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	299.97764
WF992	N04	WF9921C3	2.37	02/27/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,765.17
WF992	N04	WF9921C3	2.37	02/27/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	274.96087
WF992	N04	WF9921C3	2.37	02/27/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	654.24421
WF992	N04	WF9921C3	2.37	02/27/99	PROTOPERIDINIUM BIPES	727.77691
WF992	N04	WF9921C3	2.37	02/27/99	PSEUDONITZSCHIA DELICATISSIMA	438.34921
WF992	N04	WF9921C3	2.37	02/27/99	PSEUDONITZSCHIA PUNGENS	1,051.70
WF992	N04	WF9921C3	2.37	02/27/99	STEPHANOPYXIS TURRIS	36,325.46
WF992	N04	WF9921C3	2.37	02/27/99	THALASSIONEMA NITZSCHIOIDES	174.66981
WF992	N04	WF9921C3	2.37	02/27/99	THALASSIOSIRA ANGUSTE-LINEATA	2,626.08
WF992	N04	WF9921C3	2.37	02/27/99	THALASSIOSIRA NORDENSKIOLDII	913.70898
WF992	N04	WF9921C3	2.37	02/27/99	THALASSIOSIRA ROTULA	7,182.07
WF992	N04	WF9921C3	2.37	02/27/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	887.75134
WF992	N04	WF9921C3	2.37	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,235.07
WF992	N04	WF9921C1	23.83	02/27/99	AMPHIDINIUM SPP.	308.52065

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	N04	WF9921C1	23.83	02/27/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	476.11345
WF992	N04	WF9921C1	23.83	02/27/99	CHAETOCEROS DEBILIS	4,098.45
WF992	N04	WF9921C1	23.83	02/27/99	CHAETOCEROS DIDYMUS	112.0593
WF992	N04	WF9921C1	23.83	02/27/99	CHAETOCEROS SOCIALIS	38,050.21
WF992	N04	WF9921C1	23.83	02/27/99	CHAETOCEROS SPP. (10-20UM)	67,133.20
WF992	N04	WF9921C1	23.83	02/27/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	312.16204
WF992	N04	WF9921C1	23.83	02/27/99	CYLINDROTHECA CLOSTERIUM	2,993.59
WF992	N04	WF9921C1	23.83	02/27/99	DICTYOCHA SPECULUM	361.63703
WF992	N04	WF9921C1	23.83	02/27/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,294.48
WF992	N04	WF9921C1	23.83	02/27/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,966.23
WF992	N04	WF9921C1	23.83	02/27/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	296.63234
WF992	N04	WF9921C1	23.83	02/27/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	705.8095
WF992	N04	WF9921C1	23.83	02/27/99	PLEUROSIGMA SPP.	1,266.90
WF992	N04	WF9921C1	23.83	02/27/99	PSEUDONITZSCHIA DELICATISSIMA	346.79215
WF992	N04	WF9921C1	23.83	02/27/99	PSEUDONITZSCHIA PUNGENS	1,210.23
WF992	N04	WF9921C1	23.83	02/27/99	PSEUDONITZSCHIA SPP.	777.95624
WF992	N04	WF9921C1	23.83	02/27/99	STEPHANOPYXIS TURRIS	60,959.90
WF992	N04	WF9921C1	23.83	02/27/99	THALASSIONEMA NITZSCHIOIDES	188.43668
WF992	N04	WF9921C1	23.83	02/27/99	THALASSIOSIRA NORDENSKIOLDII	646.88163
WF992	N04	WF9921C1	23.83	02/27/99	THALASSIOSIRA ROTULA	8,855.02
WF992	N04	WF9921C1	23.83	02/27/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	558.6705
WF992	N04	WF9921C1	23.83	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,459.43
WF992	N16	WF992122	2.28	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	218.30872
WF992	N16	WF992122	2.28	02/24/99	CHAETOCEROS BOREALIS	2,175.82
WF992	N16	WF992122	2.28	02/24/99	CHAETOCEROS COMPRESSUS	791.27289
WF992	N16	WF992122	2.28	02/24/99	CHAETOCEROS DEBILIS	2,585.01
WF992	N16	WF992122	2.28	02/24/99	CHAETOCEROS DIDYMUS	114.85323
WF992	N16	WF992122	2.28	02/24/99	CHAETOCEROS SEPTENTRIONALIS	98.234
WF992	N16	WF992122	2.28	02/24/99	CHAETOCEROS SOCIALIS	34,480.14
WF992	N16	WF992122	2.28	02/24/99	CHAETOCEROS SPP. (10-20UM)	31,093.55
WF992	N16	WF992122	2.28	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	29.99485
WF992	N16	WF992122	2.28	02/24/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	64.20845
WF992	N16	WF992122	2.28	02/24/99	CYLINDROTHECA CLOSTERIUM	2,832.21
WF992	N16	WF992122	2.28	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	331.68956
WF992	N16	WF992122	2.28	02/24/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,057.49
WF992	N16	WF992122	2.28	02/24/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	202.68544
WF992	N16	WF992122	2.28	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	434.0443

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	N16	WF992122	2.28	02/24/99	PSEUDONITZSCHIA DELICATISSIMA	96.9378
WF992	N16	WF992122	2.28	02/24/99	PSEUDONITZSCHIA PUNGENS	1,705.56
WF992	N16	WF992122	2.28	02/24/99	STEPHANOPYXIS TURRIS	44,628.42
WF992	N16	WF992122	2.28	02/24/99	THALASSIONEMA NITZSCHIOIDES	321.8915
WF992	N16	WF992122	2.28	02/24/99	THALASSIOSIRA NORDENSKIOLDII	378.8629
WF992	N16	WF992122	2.28	02/24/99	THALASSIOSIRA ROTULA	10,210.27
WF992	N16	WF992122	2.28	02/24/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	817.99945
WF992	N16	WF992122	2.28	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,633.89
WF992	N16	WF992120	19.35	02/24/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	193.23784
WF992	N16	WF992120	19.35	02/24/99	CHAETOCEROS DEBILIS	6,381.77
WF992	N16	WF992120	19.35	02/24/99	CHAETOCEROS SEPTENTRIONALIS	92.52046
WF992	N16	WF992120	19.35	02/24/99	CHAETOCEROS SOCIALIS	37,509.21
WF992	N16	WF992120	19.35	02/24/99	CHAETOCEROS SPP. (10-20UM)	57,165.13
WF992	N16	WF992120	19.35	02/24/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	141.04793
WF992	N16	WF992120	19.35	02/24/99	CYLINDROTHECA CLOSTERIUM	1,997.73
WF992	N16	WF992120	19.35	02/24/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	623.89545
WF992	N16	WF992120	19.35	02/24/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,875.51
WF992	N16	WF992120	19.35	02/24/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	238.27725
WF992	N16	WF992120	19.35	02/24/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	1,224.63
WF992	N16	WF992120	19.35	02/24/99	POROSIRA GLACIALIS	3,628.15
WF992	N16	WF992120	19.35	02/24/99	PSEUDONITZSCHIA DELICATISSIMA	668.56646
WF992	N16	WF992120	19.35	02/24/99	PSEUDONITZSCHIA PUNGENS	2,333.16
WF992	N16	WF992120	19.35	02/24/99	SKELETONEMA COSTATUM	332.9771
WF992	N16	WF992120	19.35	02/24/99	STEPHANOPYXIS TURRIS	25,183.31
WF992	N16	WF992120	19.35	02/24/99	THALASSIONEMA NITZSCHIOIDES	121.09314
WF992	N16	WF992120	19.35	02/24/99	THALASSIOSIRA ANGUSTE-LINEATA	2,730.86
WF992	N16	WF992120	19.35	02/24/99	THALASSIOSIRA NORDENSKIOLDII	712.62672
WF992	N16	WF992120	19.35	02/24/99	THALASSIOSIRA ROTULA	6,401.71
WF992	N16	WF992120	19.35	02/24/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	230.79388
WF992	N16	WF992120	19.35	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,599.07
WF992	N16	WF992120	19.35	02/24/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	183.1225
WF992	N18	WF9921EA	2.13	02/27/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	175.41022
WF992	N18	WF9921EA	2.13	02/27/99	CERATIUM TRIPOS	11,414.21
WF992	N18	WF9921EA	2.13	02/27/99	CHAETOCEROS COMPRESSUS	4,246.13
WF992	N18	WF9921EA	2.13	02/27/99	CHAETOCEROS DEBILIS	2,206.86
WF992	N18	WF9921EA	2.13	02/27/99	CHAETOCEROS SOCIALIS	29,999.28
WF992	N18	WF9921EA	2.13	02/27/99	CHAETOCEROS SPP. (10-20UM)	55,585.51
WF992	N18	WF9921EA	2.13	02/27/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	117.06076
WF992	N18	WF9921EA	2.13	02/27/99	CYLINDROTHECA CLOSTERIUM	921.10548

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	N18	WF9921EA	2.13	02/27/99	EUCAMPIA ZOODIACUS	1,330.65
WF992	N18	WF9921EA	2.13	02/27/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,618.10
WF992	N18	WF9921EA	2.13	02/27/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,983.11
WF992	N18	WF9921EA	2.13	02/27/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	395.50979
WF992	N18	WF9921EA	2.13	02/27/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	1,129.30
WF992	N18	WF9921EA	2.13	02/27/99	PSEUDONITZSCHIA DELICATISSIMA	346.79215
WF992	N18	WF9921EA	2.13	02/27/99	PSEUDONITZSCHIA PUNGENS	1,058.96
WF992	N18	WF9921EA	2.13	02/27/99	STEPHANOPYXIS TURRIS	34,834.23
WF992	N18	WF9921EA	2.13	02/27/99	THALASSIONEMA NITZSCHIOIDES	251.24891
WF992	N18	WF9921EA	2.13	02/27/99	THALASSIOSIRA ANGUSTE-LINEATA	3,777.41
WF992	N18	WF9921EA	2.13	02/27/99	THALASSIOSIRA NORDENSKIOLDII	523.66608
WF992	N18	WF9921EA	2.13	02/27/99	THALASSIOSIRA PUNCTIGERA	1,204.45
WF992	N18	WF9921EA	2.13	02/27/99	THALASSIOSIRA ROTULA	4,427.51
WF992	N18	WF9921EA	2.13	02/27/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,117.34
WF992	N18	WF9921EA	2.13	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,459.43
WF992	N18	WF9921E8	15.17	02/27/99	AMPHIDINIUM SPP.	594.61311
WF992	N18	WF9921E8	15.17	02/27/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	289.35594
WF992	N18	WF9921E8	15.17	02/27/99	CHAETOCEROS COMPRESSUS	5,571.68
WF992	N18	WF9921E8	15.17	02/27/99	CHAETOCEROS DEBILIS	3,337.06
WF992	N18	WF9921E8	15.17	02/27/99	CHAETOCEROS DIDYMUS	215.6613
WF992	N18	WF9921E8	15.17	02/27/99	CHAETOCEROS SOCIALIS	36,706.58
WF992	N18	WF9921E8	15.17	02/27/99	CHAETOCEROS SPP. (10-20UM)	68,366.63
WF992	N18	WF9921E8	15.17	02/27/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	93.86948
WF992	N18	WF9921E8	15.17	02/27/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	120.56497
WF992	N18	WF9921E8	15.17	02/27/99	CYLINDROTHECA CLOSTERIUM	886.34679
WF992	N18	WF9921E8	15.17	02/27/99	EUCAMPIA ZOODIACUS	1,280.44
WF992	N18	WF9921E8	15.17	02/27/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,245.63
WF992	N18	WF9921E8	15.17	02/27/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	1,088.25
WF992	N18	WF9921E8	15.17	02/27/99	POROSIRA GLACIALIS	3,621.88
WF992	N18	WF9921E8	15.17	02/27/99	PSEUDONITZSCHIA DELICATISSIMA	576.40067
WF992	N18	WF9921E8	15.17	02/27/99	PSEUDONITZSCHIA PUNGENS	1,382.92
WF992	N18	WF9921E8	15.17	02/27/99	RHIZOSOLENIA DELICATULA	655.44461
WF992	N18	WF9921E8	15.17	02/27/99	SKELETONEMA COSTATUM	110.80059
WF992	N18	WF9921E8	15.17	02/27/99	STEPHANOPYXIS TURRIS	25,139.80
WF992	N18	WF9921E8	15.17	02/27/99	THALASSIOSIRA NORDENSKIOLDII	444.62215
WF992	N18	WF9921E8	15.17	02/27/99	THALASSIOSIRA ROTULA	5,325.54
WF992	N18	WF9921E8	15.17	02/27/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,151.98
WF992	N18	WF9921E8	15.17	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,823.40

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF992	N18	WF9921E8	15.17	02/27/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	365.6122
WF994	F01	WF994028	2.02	04/01/99	ASTERIONELLOPSIS GLACIALIS	235.71787
WF994	F01	WF994028	2.02	04/01/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	830.80148
WF994	F01	WF994028	2.02	04/01/99	CHAETOCEROS DEBILIS	4,382.22
WF994	F01	WF994028	2.02	04/01/99	CHAETOCEROS SOCIALIS	42,119.46
WF994	F01	WF994028	2.02	04/01/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	5,200.91
WF994	F01	WF994028	2.02	04/01/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	4,914.72
WF994	F01	WF994028	2.02	04/01/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	479.91758
WF994	F01	WF994028	2.02	04/01/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	134.00024
WF994	F01	WF994028	2.02	04/01/99	CYLINDROTHECA CLOSTERIUM	738.66091
WF994	F01	WF994028	2.02	04/01/99	DINOPHYSIS NORVEGICA	6,817.22
WF994	F01	WF994028	2.02	04/01/99	EUCAMPIA ZOODIACUS	1,422.78
WF994	F01	WF994028	2.02	04/01/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,730.55
WF994	F01	WF994028	2.02	04/01/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	9,568.98
WF994	F01	WF994028	2.02	04/01/99	GYRODINIUM SPIRALE	14,038.18
WF994	F01	WF994028	2.02	04/01/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	263.9282
WF994	F01	WF994028	2.02	04/01/99	PSEUDONITZSCHIA SPP.	415.91028
WF994	F01	WF994028	2.02	04/01/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	128.22742
WF994	F01	WF994028	2.02	04/01/99	STEPHANOPYXIS TURRIS	9,311.52
WF994	F01	WF994028	2.02	04/01/99	THALASSIOSIRA ROTULA	9,468.12
WF994	F01	WF994028	2.02	04/01/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,194.70
WF994	F01	WF994028	2.02	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,066.95
WF994	F01	WF994028	2.02	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,031.77
WF994	F01	WF994026	12.52	04/01/99	CERATAULINA PELAGICA	1,798.50
WF994	F01	WF994026	12.52	04/01/99	CHAETOCEROS BOREALIS	3,546.96
WF994	F01	WF994026	12.52	04/01/99	CHAETOCEROS DEBILIS	3,792.60
WF994	F01	WF994026	12.52	04/01/99	CHAETOCEROS DECIPIENS	5,620.76
WF994	F01	WF994026	12.52	04/01/99	CHAETOCEROS SOCIALIS	147,583.30
WF994	F01	WF994026	12.52	04/01/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	5,939.00
WF994	F01	WF994026	12.52	04/01/99	CHAETOCEROS SPP. (10-20UM)	3,139.37
WF994	F01	WF994026	12.52	04/01/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	410.83091
WF994	F01	WF994026	12.52	04/01/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	125.63498
WF994	F01	WF994026	12.52	04/01/99	DICTYOCHA SPECULUM	362.53703
WF994	F01	WF994026	12.52	04/01/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	6,165.58
WF994	F01	WF994026	12.52	04/01/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-	2,990.54

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					50UM	
WF994	F01	WF994026	12.52	04/01/99	LEPTOCYLINDRUS MINIMUS	157.83745
WF994	F01	WF994026	12.52	04/01/99	PENNATE DIATOM SP. GROUP 1 <10 MICRONS L	97.21214
WF994	F01	WF994026	12.52	04/01/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	197.96152
WF994	F01	WF994026	12.52	04/01/99	PROTOPERIDINIUM BIPES	1,576.83
WF994	F01	WF994026	12.52	04/01/99	PSEUDONITZSCHIA PUNGENS	227.48369
WF994	F01	WF994026	12.52	04/01/99	STEPHANOPYXIS TURRIS	8,730.23
WF994	F01	WF994026	12.52	04/01/99	THALASSIOSIRA NORDENSKIOLDII	185.28329
WF994	F01	WF994026	12.52	04/01/99	THALASSIOSIRA ROTULA	15,534.85
WF994	F01	WF994026	12.52	04/01/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	400.04347
WF994	F01	WF994026	12.52	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	11,137.43
WF994	F01	WF994026	12.52	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,904.93
WF994	F02	WF99403F	2.17	04/01/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	198.51887
WF994	F02	WF99403F	2.17	04/01/99	CHAETOCEROS DEBILIS	624.2482
WF994	F02	WF99403F	2.17	04/01/99	CHAETOCEROS DIDYMUS	110.94268
WF994	F02	WF99403F	2.17	04/01/99	CHAETOCEROS SOCIALIS	16,605.63
WF994	F02	WF99403F	2.17	04/01/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	2,870.87
WF994	F02	WF99403F	2.17	04/01/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	212.52389
WF994	F02	WF99403F	2.17	04/01/99	CYLINDROTHECA CLOSTERIUM	227.98176
WF994	F02	WF99403F	2.17	04/01/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,279.74
WF994	F02	WF99403F	2.17	04/01/99	HETEROCAPSA ROTUNDATA	31.48071
WF994	F02	WF99403F	2.17	04/01/99	LEPTOCYLINDRUS MINIMUS	51.87163
WF994	F02	WF99403F	2.17	04/01/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	195.83134
WF994	F02	WF99403F	2.17	04/01/99	PROROCENTRUM MINIMUM	229.48723
WF994	F02	WF99403F	2.17	04/01/99	PROTOPERIDINIUM DEPRESSUM	71,923.92
WF994	F02	WF99403F	2.17	04/01/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	1,168.35
WF994	F02	WF99403F	2.17	04/01/99	PSEUDONITZSCHIA PUNGENS	599.08748
WF994	F02	WF99403F	2.17	04/01/99	RHIZOSOLENIA DELICATULA	1,011.54
WF994	F02	WF99403F	2.17	04/01/99	SKELETONEMA COSTATUM	56.99917
WF994	F02	WF99403F	2.17	04/01/99	THALASSIOSIRA ROTULA	1,095.85
WF994	F02	WF99403F	2.17	04/01/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	237.04439
WF994	F02	WF99403F	2.17	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,501.94
WF994	F02	WF99403F	2.17	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,505.02
WF994	F02	WF99403D	16.55	04/01/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	410.07257
WF994	F02	WF99403D	16.55	04/01/99	CERATAULINA PELAGICA	3,668.94
WF994	F02	WF99403D	16.55	04/01/99	CHAETOCEROS DEBILIS	2,256.60
WF994	F02	WF99403D	16.55	04/01/99	CHAETOCEROS SOCIALIS	44,102.04
WF994	F02	WF99403D	16.55	04/01/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	11,796.72

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F02	WF99403D	16.55	04/01/99	CHAETOCEROS SPP. (10-20UM)	1,200.81
WF994	F02	WF99403D	16.55	04/01/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	18,734.02
WF994	F02	WF99403D	16.55	04/01/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	339.22896
WF994	F02	WF99403D	16.55	04/01/99	CYLINDROTHECA CLOSTERIUM	470.93289
WF994	F02	WF99403D	16.55	04/01/99	DINOPHYSIS NORVEGICA	6,519.47
WF994	F02	WF99403D	16.55	04/01/99	EUCAMPIA ZOODIACUS	1,360.64
WF994	F02	WF99403D	16.55	04/01/99	GUINARDIA FLACCIDA	7,053.03
WF994	F02	WF99403D	16.55	04/01/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,654.97
WF994	F02	WF99403D	16.55	04/01/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	21,352.44
WF994	F02	WF99403D	16.55	04/01/99	LEPTOCYLINDRUS MINIMUS	107.14916
WF994	F02	WF99403D	16.55	04/01/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	303.39078
WF994	F02	WF99403D	16.55	04/01/99	PSEUDONITZSCHIA PUNGENS	154.68891
WF994	F02	WF99403D	16.55	04/01/99	PSEUDONITZSCHIA SPP.	397.74509
WF994	F02	WF99403D	16.55	04/01/99	STEPHANOPYXIS TURRIS	8,904.83
WF994	F02	WF99403D	16.55	04/01/99	THALASSIONEMA NITZSCHIOIDES	128.45584
WF994	F02	WF99403D	16.55	04/01/99	THALASSIOSIRA ROTULA	4,527.30
WF994	F02	WF99403D	16.55	04/01/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	81.60887
WF994	F02	WF99403D	16.55	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	12,900.54
WF994	F02	WF99403D	16.55	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	777.21335
WF994	F06	WF994294	2.28	05/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	308.20055
WF994	F06	WF994294	2.28	05/06/99	CERATIUM LONGIPES	3,034.31
WF994	F06	WF994294	2.28	05/06/99	CHAETOCEROS DECIPIENS	459.6174
WF994	F06	WF994294	2.28	05/06/99	CHAETOCEROS SOCIALIS	137.4946
WF994	F06	WF994294	2.28	05/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	739.87294
WF994	F06	WF994294	2.28	05/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	385.25069
WF994	F06	WF994294	2.28	05/06/99	EBRIA TRIPARTITA	300.82073
WF994	F06	WF994294	2.28	05/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	3,648.59
WF994	F06	WF994294	2.28	05/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,222.70
WF994	F06	WF994294	2.28	05/06/99	HETEROCAPSA ROTUNDATA	13.03301
WF994	F06	WF994294	2.28	05/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	30.35174
WF994	F06	WF994294	2.28	05/06/99	PROROCENTRUM MINIMUM	5,842.97
WF994	F06	WF994294	2.28	05/06/99	THALASSIONEMA NITZSCHIOIDES	128.7257
WF994	F06	WF994294	2.28	05/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	32.71213
WF994	F06	WF994294	2.28	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,782.31
WF994	F06	WF994294	2.28	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	3,894.23
WF994	F06	WF994292	16.52	05/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	76.59422

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F06	WF994292	16.52	05/06/99	CERATIUM LONGIPES	3,016.36
WF994	F06	WF994292	16.52	05/06/99	CERATIUM TRIPOS	4,650.71
WF994	F06	WF994292	16.52	05/06/99	CHAETOCEROS SOCIALIS	117.15516
WF994	F06	WF994292	16.52	05/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	178.90419
WF994	F06	WF994292	16.52	05/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,648.63
WF994	F06	WF994292	16.52	05/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,215.47
WF994	F06	WF994292	16.52	05/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	30.17215
WF994	F06	WF994292	16.52	05/06/99	PROROCENTRUM MINIMUM	613.896
WF994	F06	WF994292	16.52	05/06/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	240.41714
WF994	F06	WF994292	16.52	05/06/99	SKELETONEMA COSTATUM	23.45802
WF994	F06	WF994292	16.52	05/06/99	THALASSIONEMA NITZSCHIOIDES	294.31723
WF994	F06	WF994292	16.52	05/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	65.03713
WF994	F06	WF994292	16.52	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,288.71
WF994	F06	WF994292	16.52	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	387.1188
WF994	F13	WF994270	2.4	05/06/99	CALYCOMONAS OVALIS	21.35931
WF994	F13	WF994270	2.4	05/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	161.15061
WF994	F13	WF994270	2.4	05/06/99	CERATIUM FUSUS	2,045.65
WF994	F13	WF994270	2.4	05/06/99	CERATIUM LONGIPES	6,799.58
WF994	F13	WF994270	2.4	05/06/99	CERATIUM TRIPOS	5,241.90
WF994	F13	WF994270	2.4	05/06/99	CHAETOCEROS SOCIALIS	8,803.18
WF994	F13	WF994270	2.4	05/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	1,188.50
WF994	F13	WF994270	2.4	05/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	268.86139
WF994	F13	WF994270	2.4	05/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	115.10758
WF994	F13	WF994270	2.4	05/06/99	EBRIA TRIPARTITA	1,011.16
WF994	F13	WF994270	2.4	05/06/99	GRAMMATOPHORA MARINA	267.39311
WF994	F13	WF994270	2.4	05/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,783.88
WF994	F13	WF994270	2.4	05/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,739.95
WF994	F13	WF994270	2.4	05/06/99	HETEROCAPSA ROTUNDATA	131.42536
WF994	F13	WF994270	2.4	05/06/99	PROROCENTRUM MINIMUM	4,364.50
WF994	F13	WF994270	2.4	05/06/99	SKELETONEMA COSTATUM	79.31985
WF994	F13	WF994270	2.4	05/06/99	THALASSIONEMA NITZSCHIOIDES	317.30705
WF994	F13	WF994270	2.4	05/06/99	THALASSIOSIRA ROTULA	508.32601
WF994	F13	WF994270	2.4	05/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	36.65224
WF994	F13	WF994270	2.4	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,436.95
WF994	F13	WF994270	2.4	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,047.19
WF994	F13	WF99426E	12.09	05/06/99	AMPHIDINIUM SPP.	597.08625

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F13	WF99426E	12.09	05/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	72.63986
WF994	F13	WF99426E	12.09	05/06/99	CERATIUM LONGIPES	21,454.74
WF994	F13	WF99426E	12.09	05/06/99	CHAETOCEROS SOCIALIS	8,147.83
WF994	F13	WF99426E	12.09	05/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	1,174.73
WF994	F13	WF99426E	12.09	05/06/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	246.68572
WF994	F13	WF99426E	12.09	05/06/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	8,849.40
WF994	F13	WF99426E	12.09	05/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,112.27
WF994	F13	WF99426E	12.09	05/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	121.06643
WF994	F13	WF99426E	12.09	05/06/99	CYLINDROTHECA CLOSTERIUM	111.22747
WF994	F13	WF99426E	12.09	05/06/99	EBRIA TRIPARTITA	1,420.40
WF994	F13	WF99426E	12.09	05/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,250.82
WF994	F13	WF99426E	12.09	05/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,440.90
WF994	F13	WF99426E	12.09	05/06/99	HETEROCAPSA ROTUNDATA	123.07692
WF994	F13	WF99426E	12.09	05/06/99	PENNATE DIATOM SP. GROUP 1 <10 MICRONS L	18.73543
WF994	F13	WF99426E	12.09	05/06/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	4,022.01
WF994	F13	WF99426E	12.09	05/06/99	THALASSIONEMA NITZSCHIOIDES	424.75147
WF994	F13	WF99426E	12.09	05/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	269.8475
WF994	F13	WF99426E	12.09	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	11,096.24
WF994	F13	WF99426E	12.09	05/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,569.93
WF994	F23	WF99417C	2.11	04/11/99	CALYCOMONAS WULFFII	24.58999
WF994	F23	WF99417C	2.11	04/11/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	217.09724
WF994	F23	WF99417C	2.11	04/11/99	CHAETOCEROS COMPRESSUS	835.86128
WF994	F23	WF99417C	2.11	04/11/99	CHAETOCEROS DEBILIS	12,970.70
WF994	F23	WF99417C	2.11	04/11/99	CHAETOCEROS SOCIALIS	26,772.53
WF994	F23	WF99417C	2.11	04/11/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	5,165.05
WF994	F23	WF99417C	2.11	04/11/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	6,635.38
WF994	F23	WF99417C	2.11	04/11/99	CHOANOFLAGELLATE SPP.	199.75689
WF994	F23	WF99417C	2.11	04/11/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	274.66981
WF994	F23	WF99417C	2.11	04/11/99	CYLINDROTHECA CLOSTERIUM	747.95224
WF994	F23	WF99417C	2.11	04/11/99	EUCAMPIA ZOODIACUS	1,440.68
WF994	F23	WF99417C	2.11	04/11/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,752.32
WF994	F23	WF99417C	2.11	04/11/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	9,689.34
WF994	F23	WF99417C	2.11	04/11/99	GYRODINIUM SPIRALE	42,644.28
WF994	F23	WF99417C	2.11	04/11/99	HETEROCAPSA TRIQUETRA	1,234.27
WF994	F23	WF99417C	2.11	04/11/99	PENNATE DIATOM SP. GROUP 1 <10 MICRONS	10.48127

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					L	
WF994	F23	WF99417C	2.11	04/11/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	320.69766
WF994	F23	WF99417C	2.11	04/11/99	PROROCENTRUM MINIMUM	1,508.32
WF994	F23	WF99417C	2.11	04/11/99	PROTOPERIDINIUM BIPES	3,405.96
WF994	F23	WF99417C	2.11	04/11/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	1,277.69
WF994	F23	WF99417C	2.11	04/11/99	PSEUDONITZSCHIA SPP.	421.14186
WF994	F23	WF99417C	2.11	04/11/99	RHIZOSOLENIA SETIGERA	2,279.59
WF994	F23	WF99417C	2.11	04/11/99	STEPHANOPYXIS TURRIS	14,142.97
WF994	F23	WF99417C	2.11	04/11/99	THALASSIOSIRA NORDENSKIOLDII	66.70198
WF994	F23	WF99417C	2.11	04/11/99	THALASSIOSIRA ROTULA	29,960.06
WF994	F23	WF99417C	2.11	04/11/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,728.19
WF994	F23	WF99417C	2.11	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	14,542.84
WF994	F23	WF99417C	2.11	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	3,703.19
WF994	F23	WF99417A	16.55	04/11/99	ASTERIONELLOPSIS GLACIALIS	107.60857
WF994	F23	WF99417A	16.55	04/11/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	318.63497
WF994	F23	WF99417A	16.55	04/11/99	CERATAULINA PELAGICA	1,754.36
WF994	F23	WF99417A	16.55	04/11/99	CHAETOCEROS DEBILIS	9,557.13
WF994	F23	WF99417A	16.55	04/11/99	CHAETOCEROS SOCIALIS	20,806.95
WF994	F23	WF99417A	16.55	04/11/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	5,518.84
WF994	F23	WF99417A	16.55	04/11/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	2,996.55
WF994	F23	WF99417A	16.55	04/11/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	114.49976
WF994	F23	WF99417A	16.55	04/11/99	CYLINDROTHECA CLOSTERIUM	675.55332
WF994	F23	WF99417A	16.55	04/11/99	EUCAMPIA ZOODIACUS	650.61298
WF994	F23	WF99417A	16.55	04/11/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,266.16
WF994	F23	WF99417A	16.55	04/11/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,917.15
WF994	F23	WF99417A	16.55	04/11/99	GYRODINIUM SPIRALE	12,838.83
WF994	F23	WF99417A	16.55	04/11/99	HETEROCAPSA TRIQUETRA	1,114.79
WF994	F23	WF99417A	16.55	04/11/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	482.75893
WF994	F23	WF99417A	16.55	04/11/99	PLEUROSIGMA SPP.	1,238.89
WF994	F23	WF99417A	16.55	04/11/99	PROTOPERIDINIUM BIPES	1,538.14
WF994	F23	WF99417A	16.55	04/11/99	PSEUDONITZSCHIA SPP.	380.37693
WF994	F23	WF99417A	16.55	04/11/99	THALASSIONEMA NITZSCHIOIDES	245.69323
WF994	F23	WF99417A	16.55	04/11/99	THALASSIOSIRA CONSTRICTA	58.89099
WF994	F23	WF99417A	16.55	04/11/99	THALASSIOSIRA NORDENSKIOLDII	361.47292
WF994	F23	WF99417A	16.55	04/11/99	THALASSIOSIRA ROTULA	21,648.04
WF994	F23	WF99417A	16.55	04/11/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,873.09
WF994	F23	WF99417A	16.55	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	16,019.97
WF994	F23	WF99417A	16.55	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	743.27513

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F24	WF9940C4	2.04	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	1,174.44
WF994	F24	WF9940C4	2.04	04/06/99	CHAETOCEROS BOREALIS	1,441.62
WF994	F24	WF9940C4	2.04	04/06/99	CHAETOCEROS DEBILIS	2,247.96
WF994	F24	WF9940C4	2.04	04/06/99	CHAETOCEROS SOCIALIS	22,161.85
WF994	F24	WF9940C4	2.04	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	4,764.14
WF994	F24	WF9940C4	2.04	04/06/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	4,682.07
WF994	F24	WF9940C4	2.04	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	815.00797
WF994	F24	WF9940C4	2.04	04/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	127.65703
WF994	F24	WF9940C4	2.04	04/06/99	CYLINDROTHECA CLOSTERIUM	469.91921
WF994	F24	WF9940C4	2.04	04/06/99	DITYLUM BRIGHTWELLII	5,314.46
WF994	F24	WF9940C4	2.04	04/06/99	EUTREPTIA/EUTREPTIELLA SPP.	187.4761
WF994	F24	WF9940C4	2.04	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,637.82
WF994	F24	WF9940C4	2.04	04/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,038.67
WF994	F24	WF9940C4	2.04	04/06/99	GYRODINIUM SPIRALE	13,373.65
WF994	F24	WF9940C4	2.04	04/06/99	HETEROCAPSA ROTUNDATA	32.38974
WF994	F24	WF9940C4	2.04	04/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	402.97223
WF994	F24	WF9940C4	2.04	04/06/99	PROROCENTRUM MINIMUM	708.34153
WF994	F24	WF9940C4	2.04	04/06/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	2,408.22
WF994	F24	WF9940C4	2.04	04/06/99	PSEUDONITZSCHIA SPP.	198.11111
WF994	F24	WF9940C4	2.04	04/06/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	60.97614
WF994	F24	WF9940C4	2.04	04/06/99	STEPHANOPYXIS TURRIS	8,870.74
WF994	F24	WF9940C4	2.04	04/06/99	THALASSIONEMA NITZSCHIOIDES	128.17934
WF994	F24	WF9940C4	2.04	04/06/99	THALASSIOSIRA ROTULA	46,227.14
WF994	F24	WF9940C4	2.04	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	2,195.00
WF994	F24	WF9940C4	2.04	04/06/99	THECATE DINOFLAGELLATE SPP.	4,841.99
WF994	F24	WF9940C4	2.04	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	13,554.44
WF994	F24	WF9940C4	2.04	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,161.36
WF994	F24	WF9940C2	10.59	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	1,419.71
WF994	F24	WF9940C2	10.59	04/06/99	CERATIUM FUSUS	4,947.18
WF994	F24	WF9940C2	10.59	04/06/99	CHAETOCEROS DEBILIS	700.28565
WF994	F24	WF9940C2	10.59	04/06/99	CHAETOCEROS DECIPIENS	2,490.83
WF994	F24	WF9940C2	10.59	04/06/99	CHAETOCEROS SOCIALIS	26,186.07
WF994	F24	WF9940C2	10.59	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	4,882.79
WF994	F24	WF9940C2	10.59	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,798.92
WF994	F24	WF9940C2	10.59	04/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	417.56203
WF994	F24	WF9940C2	10.59	04/06/99	CYLINDROTHECA CLOSTERIUM	767.25423

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F24	WF9940C2	10.59	04/06/99	EUCAMPIA ZOODIACUS	738.92845
WF994	F24	WF9940C2	10.59	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	3,595.09
WF994	F24	WF9940C2	10.59	04/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,313.13
WF994	F24	WF9940C2	10.59	04/06/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	6,626.26
WF994	F24	WF9940C2	10.59	04/06/99	HETEROCAPSA ROTUNDATA	282.99752
WF994	F24	WF9940C2	10.59	04/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	219.68486
WF994	F24	WF9940C2	10.59	04/06/99	PROROCENTRUM MINIMUM	1,547.24
WF994	F24	WF9940C2	10.59	04/06/99	PROTOPERIDINIUM BIPES	871.9961
WF994	F24	WF9940C2	10.59	04/06/99	PSEUDONITZSCHIA SPP.	648.01505
WF994	F24	WF9940C2	10.59	04/06/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	133.19107
WF994	F24	WF9940C2	10.59	04/06/99	STEPHANOPYXIS TURRIS	14,507.95
WF994	F24	WF9940C2	10.59	04/06/99	THALASSIONEMA NITZSCHIOIDES	69.76103
WF994	F24	WF9940C2	10.59	04/06/99	THALASSIOSIRA NORDENSKIOLDII	205.26998
WF994	F24	WF9940C2	10.59	04/06/99	THALASSIOSIRA ROTULA	35,650.54
WF994	F24	WF9940C2	10.59	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	2,481.90
WF994	F24	WF9940C2	10.59	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	15,684.96
WF994	F24	WF9940C2	10.59	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,266.25
WF994	F25	WF994098	1.76	04/01/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	259.81313
WF994	F25	WF994098	1.76	04/01/99	CHAETOCEROS COMPRESSUS	363.75445
WF994	F25	WF994098	1.76	04/01/99	CHAETOCEROS DEBILIS	8,021.35
WF994	F25	WF994098	1.76	04/01/99	CHAETOCEROS DECIPIENS	2,113.40
WF994	F25	WF994098	1.76	04/01/99	CHAETOCEROS SEPTENTRIONALIS	90.31791
WF994	F25	WF994098	1.76	04/01/99	CHAETOCEROS SOCIALIS	24,747.11
WF994	F25	WF994098	1.76	04/01/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	5,670.80
WF994	F25	WF994098	1.76	04/01/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	8,181.59
WF994	F25	WF994098	1.76	04/01/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	717.1934
WF994	F25	WF994098	1.76	04/01/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	826.67816
WF994	F25	WF994098	1.76	04/01/99	CYLINDROTHECA CLOSTERIUM	216.99849
WF994	F25	WF994098	1.76	04/01/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,745.30
WF994	F25	WF994098	1.76	04/01/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,811.11
WF994	F25	WF994098	1.76	04/01/99	LICMOPHORA SPP.	129.87278
WF994	F25	WF994098	1.76	04/01/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	559.19086
WF994	F25	WF994098	1.76	04/01/99	PLEUROSIGMA SPP.	1,193.85
WF994	F25	WF994098	1.76	04/01/99	PROROCENTRUM MINIMUM	436.86286
WF994	F25	WF994098	1.76	04/01/99	PROTOPERIDINIUM DEPRESSUM	68,458.90
WF994	F25	WF994098	1.76	04/01/99	PSEUDONITZSCHIA PUNGENS	142.55644

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F25	WF994098	1.76	04/01/99	SCRIPPSIELLA TROCHOIDEA	997.71067
WF994	F25	WF994098	1.76	04/01/99	THALASSIONEMA NITZSCHIOIDES	59.19043
WF994	F25	WF994098	1.76	04/01/99	THALASSIOSIRA NORDENSKIOLDII	261.24944
WF994	F25	WF994098	1.76	04/01/99	THALASSIOSIRA ROTULA	30,248.57
WF994	F25	WF994098	1.76	04/01/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,203.33
WF994	F25	WF994098	1.76	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,469.18
WF994	F25	WF994098	1.76	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,148.77
WF994	F25	WF994096	5.75	04/01/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	510.6898
WF994	F25	WF994096	5.75	04/01/99	CERATAULINA PELAGICA	3,481.27
WF994	F25	WF994096	5.75	04/01/99	CHAETOCEROS BOREALIS	2,059.71
WF994	F25	WF994096	5.75	04/01/99	CHAETOCEROS COMPRESSUS	7,115.93
WF994	F25	WF994096	5.75	04/01/99	CHAETOCEROS DEBILIS	3,364.70
WF994	F25	WF994096	5.75	04/01/99	CHAETOCEROS SOCIALIS	41,474.22
WF994	F25	WF994096	5.75	04/01/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	5,536.15
WF994	F25	WF994096	5.75	04/01/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	814.1597
WF994	F25	WF994096	5.75	04/01/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	364.77843
WF994	F25	WF994096	5.75	04/01/99	CYLINDROTHECA CLOSTERIUM	893.6885
WF994	F25	WF994096	5.75	04/01/99	DITYLUM BRIGHTWELLII	5,062.00
WF994	F25	WF994096	5.75	04/01/99	GRAMMATOPHORA MARINA	140.99185
WF994	F25	WF994096	5.75	04/01/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	5,339.08
WF994	F25	WF994096	5.75	04/01/99	GYRODINIUM SPIRALE	12,738.35
WF994	F25	WF994096	5.75	04/01/99	HETEROCAPSA ROTUNDATA	61.80602
WF994	F25	WF994096	5.75	04/01/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	622.67506
WF994	F25	WF994096	5.75	04/01/99	PENNATE DIATOM SP. GROUP 5 >100 MICRONS	3,684.36
WF994	F25	WF994096	5.75	04/01/99	PROROCENTRUM MINIMUM	899.58995
WF994	F25	WF994096	5.75	04/01/99	PSEUDONITZSCHIA PUNGENS	294.04682
WF994	F25	WF994096	5.75	04/01/99	STEPHANOPYXIS TURRIS	8,449.34
WF994	F25	WF994096	5.75	04/01/99	THALASSIONEMA NITZSCHIOIDES	60.9426
WF994	F25	WF994096	5.75	04/01/99	THALASSIOSIRA NORDENSKIOLDII	59.774
WF994	F25	WF994096	5.75	04/01/99	THALASSIOSIRA ROTULA	22,552.55
WF994	F25	WF994096	5.75	04/01/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	1,471.26
WF994	F25	WF994096	5.75	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	12,788.75
WF994	F25	WF994096	5.75	04/01/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,581.10
WF994	F27	WF9940F7	1.79	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	124.69988
WF994	F27	WF9940F7	1.79	04/06/99	CHAETOCEROS SOCIALIS	343.32385
WF994	F27	WF9940F7	1.79	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	74.46054
WF994	F27	WF9940F7	1.79	04/06/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	3,646.00
WF994	F27	WF9940F7	1.79	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10	135.92437

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					MICRO	
WF994	F27	WF9940F7	1.79	04/06/99	CYLINDROTHECA CLOSTERIUM	229.13125
WF994	F27	WF9940F7	1.79	04/06/99	GRAMMATOPHORA MARINA	28.91893
WF994	F27	WF9940F7	1.79	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,610.44
WF994	F27	WF9940F7	1.79	04/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,187.31
WF994	F27	WF9940F7	1.79	04/06/99	HETEROCAPSA ROTUNDATA	443.69748
WF994	F27	WF9940F7	1.79	04/06/99	HETEROCAPSA TRIQUETRA	1,134.33
WF994	F27	WF9940F7	1.79	04/06/99	PENNATE DIATOM SP. GROUP 5 >100 MICRONS	377.2164
WF994	F27	WF9940F7	1.79	04/06/99	PROROCENTRUM MINIMUM	924.12965
WF994	F27	WF9940F7	1.79	04/06/99	PSEUDONITZSCHIA SPP.	154.81752
WF994	F27	WF9940F7	1.79	04/06/99	THALASSIONEMA NITZSCHIOIDES	87.49982
WF994	F27	WF9940F7	1.79	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	460.59651
WF994	F27	WF9940F7	1.79	04/06/99	THECATE DINOFLAGELLATE SPP.	1,891.93
WF994	F27	WF9940F7	1.79	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,368.25
WF994	F27	WF9940F7	1.79	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,890.76
WF994	F27	WF9940F5	60.94	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	177.77424
WF994	F27	WF9940F5	60.94	04/06/99	CERATIUM FUSUS	789.83583
WF994	F27	WF9940F5	60.94	04/06/99	CHAETOCEROS SOCIALIS	1,733.46
WF994	F27	WF9940F5	60.94	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	442.30081
WF994	F27	WF9940F5	60.94	04/06/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	3,248.62
WF994	F27	WF9940F5	60.94	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	103.8086
WF994	F27	WF9940F5	60.94	04/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	111.1089
WF994	F27	WF9940F5	60.94	04/06/99	CYCLOTELLA SP. GROUP 2 DIAM 10-30 MICRON	452.91249
WF994	F27	WF9940F5	60.94	04/06/99	CYLINDROTHECA CLOSTERIUM	81.66334
WF994	F27	WF9940F5	60.94	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,434.92
WF994	F27	WF9940F5	60.94	04/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	17.5073
WF994	F27	WF9940F5	60.94	04/06/99	PENNATE DIATOM SP. GROUP 5 >100 MICRONS	336.10376
WF994	F27	WF9940F5	60.94	04/06/99	PLEUROSIGMA SPP.	224.64225
WF994	F27	WF9940F5	60.94	04/06/99	PROROCENTRUM MINIMUM	823.40919
WF994	F27	WF9940F5	60.94	04/06/99	PSEUDONITZSCHIA SPP.	34.48601
WF994	F27	WF9940F5	60.94	04/06/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	318.96677
WF994	F27	WF9940F5	60.94	04/06/99	THALASSIONEMA NITZSCHIOIDES	144.78891
WF994	F27	WF9940F5	60.94	04/06/99	THALASSIOSIRA ROTULA	3,729.07
WF994	F27	WF9940F5	60.94	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	169.81916
WF994	F27	WF9940F5	60.94	04/06/99	THECATE DINOFLAGELLATE SPP.	1,685.73
WF994	F27	WF9940F5	60.94	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,849.70
WF994	F27	WF9940F5	60.94	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2	1,010.81

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					LENGTH	
WF994	F30	WF9940B6	2	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	749.27798
WF994	F30	WF9940B6	2	04/06/99	CHAETOCEROS BOREALIS	3,647.21
WF994	F30	WF9940B6	2	04/06/99	CHAETOCEROS DEBILIS	974.94859
WF994	F30	WF9940B6	2	04/06/99	CHAETOCEROS DECIPIENS	2,311.85
WF994	F30	WF9940B6	2	04/06/99	CHAETOCEROS DIDYMUS	231.0265
WF994	F30	WF9940B6	2	04/06/99	CHAETOCEROS SOCIALIS	18,870.52
WF994	F30	WF9940B6	2	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	4,756.92
WF994	F30	WF9940B6	2	04/06/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	5,791.06
WF994	F30	WF9940B6	2	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,046.05
WF994	F30	WF9940B6	2	04/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	129.18586
WF994	F30	WF9940B6	2	04/06/99	CYLINDROTHECA CLOSTERIUM	712.12219
WF994	F30	WF9940B6	2	04/06/99	EUCAMPIA ZOODIACUS	685.83179
WF994	F30	WF9940B6	2	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,334.70
WF994	F30	WF9940B6	2	04/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,075.06
WF994	F30	WF9940B6	2	04/06/99	GYRODINIUM SPIRALE	13,533.81
WF994	F30	WF9940B6	2	04/06/99	GYROSIGMA SPP.	1,305.95
WF994	F30	WF9940B6	2	04/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	712.44811
WF994	F30	WF9940B6	2	04/06/99	PENNATE DIATOM SP. GROUP 5 >100 MICRONS	1,953.93
WF994	F30	WF9940B6	2	04/06/99	PROTOPERIDINIUM BIPES	1,621.40
WF994	F30	WF9940B6	2	04/06/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	8,583.49
WF994	F30	WF9940B6	2	04/06/99	PSEUDONITZSCHIA SPP.	200.4837
WF994	F30	WF9940B6	2	04/06/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	123.62045
WF994	F30	WF9940B6	2	04/06/99	STEPHANOPYXIS TURRIS	4,488.49
WF994	F30	WF9940B6	2	04/06/99	THALASSIOSIRA NORDENSKIOLDII	158.7667
WF994	F30	WF9940B6	2	04/06/99	THALASSIOSIRA ROTULA	71,882.62
WF994	F30	WF9940B6	2	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	3,537.61
WF994	F30	WF9940B6	2	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,899.37
WF994	F30	WF9940B6	2	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	783.5099
WF994	F30	WF9940B5	5.31	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	532.04268
WF994	F30	WF9940B5	5.31	04/06/99	CHAETOCEROS DEBILIS	637.34218
WF994	F30	WF9940B5	5.31	04/06/99	CHAETOCEROS SEPTENTRIONALIS	96.87966
WF994	F30	WF9940B5	5.31	04/06/99	CHAETOCEROS SOCIALIS	30,420.21
WF994	F30	WF9940B5	5.31	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	5,137.29
WF994	F30	WF9940B5	5.31	04/06/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	7,227.29
WF994	F30	WF9940B5	5.31	04/06/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	18,518.99

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F30	WF9940B5	5.31	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,578.05
WF994	F30	WF9940B5	5.31	04/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	633.38415
WF994	F30	WF9940B5	5.31	04/06/99	CYLINDROTHECA CLOSTERIUM	232.76382
WF994	F30	WF9940B5	5.31	04/06/99	EUCAMPIA ZOODIACUS	1,345.02
WF994	F30	WF9940B5	5.31	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,617.56
WF994	F30	WF9940B5	5.31	04/06/99	GYRODINIUM SPIRALE	13,270.96
WF994	F30	WF9940B5	5.31	04/06/99	HETEROCAPSA ROTUNDATA	64.39024
WF994	F30	WF9940B5	5.31	04/06/99	HETEROCAPSA TRIQUETRA	575.19067
WF994	F30	WF9940B5	5.31	04/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	399.20631
WF994	F30	WF9940B5	5.31	04/06/99	PROTOPERIDINIUM BIPES	793.61885
WF994	F30	WF9940B5	5.31	04/06/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	121.21951
WF994	F30	WF9940B5	5.31	04/06/99	STEPHANOPYXIS TURRIS	13,203.94
WF994	F30	WF9940B5	5.31	04/06/99	THALASSIONEMA NITZSCHIOIDES	63.49073
WF994	F30	WF9940B5	5.31	04/06/99	THALASSIOSIRA NORDENSKIOLDII	373.63957
WF994	F30	WF9940B5	5.31	04/06/99	THALASSIOSIRA ROTULA	76,080.70
WF994	F30	WF9940B5	5.31	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	2,097.48
WF994	F30	WF9940B5	5.31	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	11,610.46
WF994	F31	WF9940AA	2.11	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	215.30977
WF994	F31	WF9940AA	2.11	04/06/99	CHAETOCEROS BOREALIS	4,059.28
WF994	F31	WF9940AA	2.11	04/06/99	CHAETOCEROS COMPRESSUS	9,947.75
WF994	F31	WF9940AA	2.11	04/06/99	CHAETOCEROS DEBILIS	11,133.67
WF994	F31	WF9940AA	2.11	04/06/99	CHAETOCEROS SOCIALIS	42,721.21
WF994	F31	WF9940AA	2.11	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	10,773.30
WF994	F31	WF9940AA	2.11	04/06/99	CHOANOFLAGELLATE SPP.	58.69991
WF994	F31	WF9940AA	2.11	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,024.44
WF994	F31	WF9940AA	2.11	04/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	837.31575
WF994	F31	WF9940AA	2.11	04/06/99	CYLINDROTHECA CLOSTERIUM	1,318.74
WF994	F31	WF9940AA	2.11	04/06/99	EUCAMPIA ZOODIACUS	635.02944
WF994	F31	WF9940AA	2.11	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,471.67
WF994	F31	WF9940AA	2.11	04/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	8,541.84
WF994	F31	WF9940AA	2.11	04/06/99	HETEROCAPSA ROTUNDATA	121.60295
WF994	F31	WF9940AA	2.11	04/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	566.38646
WF994	F31	WF9940AA	2.11	04/06/99	PSEUDONITZSCHIA SPP.	185.63305
WF994	F31	WF9940AA	2.11	04/06/99	THALASSIONEMA NITZSCHIOIDES	59.95209
WF994	F31	WF9940AA	2.11	04/06/99	THALASSIOSIRA NORDENSKIOLDII	382.21613
WF994	F31	WF9940AA	2.11	04/06/99	THALASSIOSIRA ROTULA	43,315.51
WF994	F31	WF9940AA	2.11	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	76.17594

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	F31	WF9940AA	2.11	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,004.81
WF994	F31	WF9940AA	2.11	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	362.73607
WF994	F31	WF9940A9	6.27	04/06/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	334.9263
WF994	F31	WF9940A9	6.27	04/06/99	CHAETOCEROS COMPRESSUS	5,894.96
WF994	F31	WF9940A9	6.27	04/06/99	CHAETOCEROS DEBILIS	16,550.05
WF994	F31	WF9940A9	6.27	04/06/99	CHAETOCEROS DECIPIENS	4,281.20
WF994	F31	WF9940A9	6.27	04/06/99	CHAETOCEROS SEPTENTRIONALIS	548.88064
WF994	F31	WF9940A9	6.27	04/06/99	CHAETOCEROS SOCIALIS	67,237.88
WF994	F31	WF9940A9	6.27	04/06/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	10,713.78
WF994	F31	WF9940A9	6.27	04/06/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	1,949.85
WF994	F31	WF9940A9	6.27	04/06/99	CHOANOFLAGELLATE SPP.	117.2026
WF994	F31	WF9940A9	6.27	04/06/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,881.25
WF994	F31	WF9940A9	6.27	04/06/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	2,751.18
WF994	F31	WF9940A9	6.27	04/06/99	CYLINDROTHECA CLOSTERIUM	659.3724
WF994	F31	WF9940A9	6.27	04/06/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	5,870.22
WF994	F31	WF9940A9	6.27	04/06/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	31,320.07
WF994	F31	WF9940A9	6.27	04/06/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	2,847.28
WF994	F31	WF9940A9	6.27	04/06/99	GYRODINIUM SPIRALE	12,531.31
WF994	F31	WF9940A9	6.27	04/06/99	HETEROCAPSA ROTUNDATA	121.60295
WF994	F31	WF9940A9	6.27	04/06/99	HETEROCAPSA TRIQUETRA	1,086.27
WF994	F31	WF9940A9	6.27	04/06/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	471.98871
WF994	F31	WF9940A9	6.27	04/06/99	SKELETONEMA COSTATUM	219.80517
WF994	F31	WF9940A9	6.27	04/06/99	THALASSIOSIRA NORDENSKIOLDII	235.20993
WF994	F31	WF9940A9	6.27	04/06/99	THALASSIOSIRA ROTULA	22,186.00
WF994	F31	WF9940A9	6.27	04/06/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	533.23159
WF994	F31	WF9940A9	6.27	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	14,917.35
WF994	F31	WF9940A9	6.27	04/06/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,813.68
WF994	N04	WF9941A4	2.36	04/11/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	295.88636
WF994	N04	WF9941A4	2.36	04/11/99	CHAETOCEROS SOCIALIS	35,074.55
WF994	N04	WF9941A4	2.36	04/11/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	2,576.57
WF994	N04	WF9941A4	2.36	04/11/99	CHOANOFLAGELLATE SPP.	55.84674
WF994	N04	WF9941A4	2.36	04/11/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	620.23019
WF994	N04	WF9941A4	2.36	04/11/99	CYLINDROTHECA CLOSTERIUM	209.10764
WF994	N04	WF9941A4	2.36	04/11/99	EBRIA TRIPARTITA	2,670.34
WF994	N04	WF9941A4	2.36	04/11/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,057.59

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	N04	WF9941A4	2.36	04/11/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,417.77
WF994	N04	WF9941A4	2.36	04/11/99	GYRODINIUM SPIRALE	11,922.21
WF994	N04	WF9941A4	2.36	04/11/99	HETEROCAPSA TRIQUETRA	1,550.20
WF994	N04	WF9941A4	2.36	04/11/99	PROROCENTRUM MINIMUM	5,262.21
WF994	N04	WF9941A4	2.36	04/11/99	PROTOPERIDINIUM BIPES	712.96202
WF994	N04	WF9941A4	2.36	04/11/99	PSEUDONITZSCHIA SPP.	1,059.66
WF994	N04	WF9941A4	2.36	04/11/99	STEPHANOPYXIS TURRIS	7,908.00
WF994	N04	WF9941A4	2.36	04/11/99	THALASSIONEMA NITZSCHIOIDES	342.22833
WF994	N04	WF9941A4	2.36	04/11/99	THALASSIOSIRA NORDENSKIOLDII	111.88865
WF994	N04	WF9941A4	2.36	04/11/99	THALASSIOSIRA ROTULA	14,071.75
WF994	N04	WF9941A4	2.36	04/11/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	289.89332
WF994	N04	WF9941A4	2.36	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	25,249.71
WF994	N04	WF9941A4	2.36	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	4,831.47
WF994	N04	WF9941A3	9.1	04/11/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	434.03391
WF994	N04	WF9941A3	9.1	04/11/99	CERATIUM LONGIPES	15,081.79
WF994	N04	WF9941A3	9.1	04/11/99	CHAETOCEROS BOREALIS	1,441.62
WF994	N04	WF9941A3	9.1	04/11/99	CHAETOCEROS SOCIALIS	47,154.95
WF994	N04	WF9941A3	9.1	04/11/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	3,906.60
WF994	N04	WF9941A3	9.1	04/11/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	1,040.46
WF994	N04	WF9941A3	9.1	04/11/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	596.34729
WF994	N04	WF9941A3	9.1	04/11/99	CYLINDROTHECA CLOSTERIUM	234.5649
WF994	N04	WF9941A3	9.1	04/11/99	EUCAMPIA ZOODIACUS	2,033.15
WF994	N04	WF9941A3	9.1	04/11/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	3,956.72
WF994	N04	WF9941A3	9.1	04/11/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,038.67
WF994	N04	WF9941A3	9.1	04/11/99	HETEROCAPSA ROTUNDATA	324.44242
WF994	N04	WF9941A3	9.1	04/11/99	LICMOPHORA SPP.	140.38621
WF994	N04	WF9941A3	9.1	04/11/99	PROROCENTRUM MINIMUM	473.0223
WF994	N04	WF9941A3	9.1	04/11/99	PROTOPERIDINIUM DEPRESSUM	74,000.77
WF994	N04	WF9941A3	9.1	04/11/99	PSEUDONITZSCHIA SPP.	1,981.11
WF994	N04	WF9941A3	9.1	04/11/99	SKELETONEMA COSTATUM	410.51542
WF994	N04	WF9941A3	9.1	04/11/99	STEPHANOPYXIS TURRIS	8,870.74
WF994	N04	WF9941A3	9.1	04/11/99	THALASSIONEMA NITZSCHIOIDES	191.94602
WF994	N04	WF9941A3	9.1	04/11/99	THALASSIOSIRA NORDENSKIOLDII	31.37756
WF994	N04	WF9941A3	9.1	04/11/99	THALASSIOSIRA ROTULA	12,402.40
WF994	N04	WF9941A3	9.1	04/11/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	243.88922
WF994	N04	WF9941A3	9.1	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	37,146.84
WF994	N04	WF9941A3	9.1	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,161.36
WF994	N16	WF994255	2.18	04/26/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	395.79411

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	N16	WF994255	2.18	04/26/99	CERATAULINA PELAGICA	833.22006
WF994	N16	WF994255	2.18	04/26/99	CERATIUM FUSUS	1,034.40
WF994	N16	WF994255	2.18	04/26/99	CERATIUM TRIPOS	2,650.61
WF994	N16	WF994255	2.18	04/26/99	CHAETOCEROS DECIPIENS	520.80449
WF994	N16	WF994255	2.18	04/26/99	CHAETOCEROS SOCIALIS	178.05569
WF994	N16	WF994255	2.18	04/26/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	173.77631
WF994	N16	WF994255	2.18	04/26/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	4,254.52
WF994	N16	WF994255	2.18	04/26/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	851.96454
WF994	N16	WF994255	2.18	04/26/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	116.41003
WF994	N16	WF994255	2.18	04/26/99	EBRIA TRIPARTITA	681.73567
WF994	N16	WF994255	2.18	04/26/99	EUTREPTIA/EUTREPTIELLA SPP.	170.95885
WF994	N16	WF994255	2.18	04/26/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	6,314.21
WF994	N16	WF994255	2.18	04/26/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	6,234.64
WF994	N16	WF994255	2.18	04/26/99	HETEROCAPSA ROTUNDATA	414.20118
WF994	N16	WF994255	2.18	04/26/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	11.46412
WF994	N16	WF994255	2.18	04/26/99	PROROCENTRUM MINIMUM	4,360.06
WF994	N16	WF994255	2.18	04/26/99	THALASSIONEMA NITZSCHIOIDES	102.10372
WF994	N16	WF994255	2.18	04/26/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,436.25
WF994	N16	WF994255	2.18	04/26/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,118.07
WF994	N16	WF994253	25.25	04/26/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	371.48279
WF994	N16	WF994253	25.25	04/26/99	CHAETOCEROS BOREALIS	1,398.37
WF994	N16	WF994253	25.25	04/26/99	CHAETOCEROS SOCIALIS	23,391.06
WF994	N16	WF994253	25.25	04/26/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	2,649.51
WF994	N16	WF994253	25.25	04/26/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	250.6652
WF994	N16	WF994253	25.25	04/26/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	959.50742
WF994	N16	WF994253	25.25	04/26/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,947.52
WF994	N16	WF994253	25.25	04/26/99	HETEROCAPSA ROTUNDATA	62.83624
WF994	N16	WF994253	25.25	04/26/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	48.77841
WF994	N16	WF994253	25.25	04/26/99	PROROCENTRUM MINIMUM	1,374.19
WF994	N16	WF994253	25.25	04/26/99	PSEUDONITZSCHIA SPP.	192.16821
WF994	N16	WF994253	25.25	04/26/99	RHIZOSOLENIA HEBETATA	827.38841
WF994	N16	WF994253	25.25	04/26/99	STEPHANOPYXIS TURRIS	8,604.64
WF994	N16	WF994253	25.25	04/26/99	THALASSIONEMA NITZSCHIOIDES	124.12537
WF994	N16	WF994253	25.25	04/26/99	THALASSIOSIRA ROTULA	3,281.01
WF994	N16	WF994253	25.25	04/26/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	394.28846
WF994	N16	WF994253	25.25	04/26/99	THALASSIOTHRIX LONGISSIMA	1,487.60

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	N16	WF994253	25.25	04/26/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	18,977.54
WF994	N16	WF994253	25.25	04/26/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	375.50607
WF994	N18	WF9941C5	2.16	04/11/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	307.55443
WF994	N18	WF9941C5	2.16	04/11/99	CHAETOCEROS BOREALIS	289.43206
WF994	N18	WF9941C5	2.16	04/11/99	CHAETOCEROS SOCIALIS	58.80272
WF994	N18	WF9941C5	2.16	04/11/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	146.66196
WF994	N18	WF9941C5	2.16	04/11/99	COCCOLITHOPHORE SPP.	718.82983
WF994	N18	WF9941C5	2.16	04/11/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	199.54644
WF994	N18	WF9941C5	2.16	04/11/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	128.14768
WF994	N18	WF9941C5	2.16	04/11/99	CYLINDROTHECA CLOSTERIUM	565.11947
WF994	N18	WF9941C5	2.16	04/11/99	EBRIA TRIPARTITA	150.09504
WF994	N18	WF9941C5	2.16	04/11/99	EUTREPTIA/EUTREPTIELLA SPP.	18.78805
WF994	N18	WF9941C5	2.16	04/11/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,654.97
WF994	N18	WF9941C5	2.16	04/11/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	10,981.26
WF994	N18	WF9941C5	2.16	04/11/99	GYRODINIUM SPIRALE	2,685.01
WF994	N18	WF9941C5	2.16	04/11/99	HETEROCAPSA ROTUNDATA	651.37881
WF994	N18	WF9941C5	2.16	04/11/99	HETEROCAPSA TRIQUETRA	232.74769
WF994	N18	WF9941C5	2.16	04/11/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	30.28811
WF994	N18	WF9941C5	2.16	04/11/99	PENNATE DIATOM SP. GROUP 5 >100 MICRONS	1,938.23
WF994	N18	WF9941C5	2.16	04/11/99	PLEUROSIGMA SPP.	259.0916
WF994	N18	WF9941C5	2.16	04/11/99	PROROCENTRUM MINIMUM	4,361.19
WF994	N18	WF9941C5	2.16	04/11/99	PROTOPERIDINIUM BIPES	160.56672
WF994	N18	WF9941C5	2.16	04/11/99	PSEUDONITZSCHIA SPP.	238.64705
WF994	N18	WF9941C5	2.16	04/11/99	STEPHANOPYXIS TURRIS	2,671.45
WF994	N18	WF9941C5	2.16	04/11/99	THALASSIONEMA NITZSCHIOIDES	166.99259
WF994	N18	WF9941C5	2.16	04/11/99	THALASSIOSIRA ROTULA	9,733.69
WF994	N18	WF9941C5	2.16	04/11/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	408.04434
WF994	N18	WF9941C5	2.16	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	27,020.53
WF994	N18	WF9941C5	2.16	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	777.21335
WF994	N18	WF9941C4	7.42	04/11/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	552.7939
WF994	N18	WF9941C4	7.42	04/11/99	CERATIUM LONGIPES	14,842.90
WF994	N18	WF9941C4	7.42	04/11/99	CERATIUM TRIPOS	11,442.62
WF994	N18	WF9941C4	7.42	04/11/99	CHAETOCEROS BOREALIS	1,418.78
WF994	N18	WF9941C4	7.42	04/11/99	CHAETOCEROS DEBILIS	1,896.30
WF994	N18	WF9941C4	7.42	04/11/99	CHAETOCEROS SOCIALIS	16,045.84
WF994	N18	WF9941C4	7.42	04/11/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	2,188.05
WF994	N18	WF9941C4	7.42	04/11/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	1,023.98

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF994	N18	WF9941C4	7.42	04/11/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	567.33793
WF994	N18	WF9941C4	7.42	04/11/99	CYLINDROTHECA CLOSTERIUM	1,385.10
WF994	N18	WF9941C4	7.42	04/11/99	DINOPHYSIS NORVEGICA	6,391.64
WF994	N18	WF9941C4	7.42	04/11/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,298.02
WF994	N18	WF9941C4	7.42	04/11/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,981.08
WF994	N18	WF9941C4	7.42	04/11/99	GYRODINIUM SPIRALE	13,161.81
WF994	N18	WF9941C4	7.42	04/11/99	HETEROCAPSA ROTUNDATA	191.582
WF994	N18	WF9941C4	7.42	04/11/99	PENNATE DIATOM SP. GROUP 1 <10 MICRONS L	19.44243
WF994	N18	WF9941C4	7.42	04/11/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	49.49038
WF994	N18	WF9941C4	7.42	04/11/99	PENNATE DIATOM SP. GROUP 5 >100 MICRONS	1,900.23
WF994	N18	WF9941C4	7.42	04/11/99	PROROCENTRUM MINIMUM	5,120.83
WF994	N18	WF9941C4	7.42	04/11/99	PROTOPERIDINIUM BIPES	1,576.83
WF994	N18	WF9941C4	7.42	04/11/99	PSEUDONITZSCHIA SPP.	389.94616
WF994	N18	WF9941C4	7.42	04/11/99	RHIZOSOLENIA DELICATULA	341.42174
WF994	N18	WF9941C4	7.42	04/11/99	STEPHANOPYXIS TURRIS	17,460.46
WF994	N18	WF9941C4	7.42	04/11/99	THALASSIONEMA NITZSCHIOIDES	251.87419
WF994	N18	WF9941C4	7.42	04/11/99	THALASSIOSIRA ROTULA	15,534.85
WF994	N18	WF9941C4	7.42	04/11/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	320.03477
WF994	N18	WF9941C4	7.42	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	49,268.96
WF994	N18	WF9941C4	7.42	04/11/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,142.96
WF997	F01	WF997024	2.34	06/14/99	AMPHIDINIUM SPP.	92.5771
WF997	F01	WF997024	2.34	06/14/99	CALYCOMONAS OVALIS	83.72851
WF997	F01	WF997024	2.34	06/14/99	CALYCOMONAS WULFFII	20.44344
WF997	F01	WF997024	2.34	06/14/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	67.68326
WF997	F01	WF997024	2.34	06/14/99	CERATAULINA PELAGICA	5,383.31
WF997	F01	WF997024	2.34	06/14/99	CERATIUM FUSUS	1,336.62
WF997	F01	WF997024	2.34	06/14/99	CERATIUM TRIPOS	6,850.07
WF997	F01	WF997024	2.34	06/14/99	CHAETOCEROS SOCIALIS	345.11762
WF997	F01	WF997024	2.34	06/14/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	3,678.00
WF997	F01	WF997024	2.34	06/14/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	210.78733
WF997	F01	WF997024	2.34	06/14/99	CYLINDROTHECA CLOSTERIUM	138.19703
WF997	F01	WF997024	2.34	06/14/99	GUINARDIA FLACCIDA	12,418.43
WF997	F01	WF997024	2.34	06/14/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,748.20
WF997	F01	WF997024	2.34	06/14/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,580.55
WF997	F01	WF997024	2.34	06/14/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	1,790.27
WF997	F01	WF997024	2.34	06/14/99	GYRODINIUM SPIRALE	3,939.63
WF997	F01	WF997024	2.34	06/14/99	LEPTOCYLINDRUS DANICUS	4,037.09

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F01	WF997024	2.34	06/14/99	LEPTOCYLINDRUS MINIMUS	393.04158
WF997	F01	WF997024	2.34	06/14/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	89.02262
WF997	F01	WF997024	2.34	06/14/99	PLEUROSIGMA SPP.	380.15705
WF997	F01	WF997024	2.34	06/14/99	PROBOSCIA ALATA	2,462.31
WF997	F01	WF997024	2.34	06/14/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	708.22479
WF997	F01	WF997024	2.34	06/14/99	PSEUDONITZSCHIA SPP.	4,902.23
WF997	F01	WF997024	2.34	06/14/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	107.9457
WF997	F01	WF997024	2.34	06/14/99	RHIZOSOLENIA DELICATULA	613.17198
WF997	F01	WF997024	2.34	06/14/99	RHIZOSOLENIA SETIGERA	631.7895
WF997	F01	WF997024	2.34	06/14/99	SKELETONEMA COSTATUM	241.86062
WF997	F01	WF997024	2.34	06/14/99	THALASSIONEMA NITZSCHIOIDES	94.23963
WF997	F01	WF997024	2.34	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,435.12
WF997	F01	WF997024	2.34	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	342.08145
WF997	F01	WF997021	19.2	06/14/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	157.9276
WF997	F01	WF997021	19.2	06/14/99	CERATAULINA PELAGICA	2,422.49
WF997	F01	WF997021	19.2	06/14/99	CERATIUM FUSUS	6,014.80
WF997	F01	WF997021	19.2	06/14/99	CERATIUM LONGIPES	366,532.66
WF997	F01	WF997021	19.2	06/14/99	CERATIUM MACROCEROS	1,991.80
WF997	F01	WF997021	19.2	06/14/99	CERATIUM TRIPOS	15,412.66
WF997	F01	WF997021	19.2	06/14/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	689.62534
WF997	F01	WF997021	19.2	06/14/99	CHOANOFLAGELLATE SPP.	110.71493
WF997	F01	WF997021	19.2	06/14/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	368.87783
WF997	F01	WF997021	19.2	06/14/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	225.61086
WF997	F01	WF997021	19.2	06/14/99	CYLINDROTHECA CLOSTERIUM	518.23888
WF997	F01	WF997021	19.2	06/14/99	DICTYOCHA SPECULUM	976.64057
WF997	F01	WF997021	19.2	06/14/99	DINOBRYON SPP.	81.45448
WF997	F01	WF997021	19.2	06/14/99	DINOPHYSIS NORVEGICA	2,869.75
WF997	F01	WF997021	19.2	06/14/99	GRAMMATOPHORA MARINA	65.40754
WF997	F01	WF997021	19.2	06/14/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	582.73303
WF997	F01	WF997021	19.2	06/14/99	GYRODINIUM SPIRALE	5,909.45
WF997	F01	WF997021	19.2	06/14/99	LEPTOCYLINDRUS DANICUS	2,966.03
WF997	F01	WF997021	19.2	06/14/99	LEPTOCYLINDRUS MINIMUS	47.16499
WF997	F01	WF997021	19.2	06/14/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	89.02262
WF997	F01	WF997021	19.2	06/14/99	PROBOSCIA ALATA	1,846.73
WF997	F01	WF997021	19.2	06/14/99	PROTOPERIDINIUM DEPRESSUM	32,698.90
WF997	F01	WF997021	19.2	06/14/99	PSEUDONITZSCHIA SPP.	8,403.83
WF997	F01	WF997021	19.2	06/14/99	RHIZOSOLENIA DELICATULA	153.29299
WF997	F01	WF997021	19.2	06/14/99	RHIZOSOLENIA FRAGILISSIMA	225.04341
WF997	F01	WF997021	19.2	06/14/99	SKELETONEMA COSTATUM	116.61137

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F01	WF997021	19.2	06/14/99	THALASSIONEMA NITZSCHIOIDES	197.90321
WF997	F01	WF997021	19.2	06/14/99	THALASSIOSIRA NORDENSKIOLDII	111.09502
WF997	F01	WF997021	19.2	06/14/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	107.76794
WF997	F01	WF997021	19.2	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,056.60
WF997	F02	WF997036	1.84	06/14/99	CALYCOMONAS OVALIS	21.30815
WF997	F02	WF997036	1.84	06/14/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	172.24781
WF997	F02	WF997036	1.84	06/14/99	CERATAULINA PELAGICA	4,110.02
WF997	F02	WF997036	1.84	06/14/99	CERATIUM FUSUS	2,040.95
WF997	F02	WF997036	1.84	06/14/99	CERATIUM TRIPOS	10,459.69
WF997	F02	WF997036	1.84	06/14/99	CHAETOCEROS SOCIALIS	175.65867
WF997	F02	WF997036	1.84	06/14/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	3,281.26
WF997	F02	WF997036	1.84	06/14/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	706.30585
WF997	F02	WF997036	1.84	06/14/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	746.40719
WF997	F02	WF997036	1.84	06/14/99	CYLINDROTHECA CLOSTERIUM	211.01942
WF997	F02	WF997036	1.84	06/14/99	DINOPHYSIS NORVEGICA	2,921.30
WF997	F02	WF997036	1.84	06/14/99	EUCAMPIA CORNUTA	
WF997	F02	WF997036	1.84	06/14/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	9,639.52
WF997	F02	WF997036	1.84	06/14/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	10,951.95
WF997	F02	WF997036	1.84	06/14/99	LEPTOCYLINDRUS MINIMUS	1,200.31
WF997	F02	WF997036	1.84	06/14/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	135.93275
WF997	F02	WF997036	1.84	06/14/99	PROBOSCIA ALATA	5,639.72
WF997	F02	WF997036	1.84	06/14/99	PROTOPERIDINIUM PELLUCIDUM	8,323.65
WF997	F02	WF997036	1.84	06/14/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	540.71054
WF997	F02	WF997036	1.84	06/14/99	PSEUDONITZSCHIA SPP.	1,604.02
WF997	F02	WF997036	1.84	06/14/99	RHIZOSOLENIA DELICATULA	1,716.51
WF997	F02	WF997036	1.84	06/14/99	RHIZOSOLENIA FRAGILISSIMA	2,749.03
WF997	F02	WF997036	1.84	06/14/99	SCRIPPSIELLA TROCHOIDEA	485.11013
WF997	F02	WF997036	1.84	06/14/99	SKELETONEMA COSTATUM	105.68402
WF997	F02	WF997036	1.84	06/14/99	THALASSIONEMA NITZSCHIOIDES	57.65085
WF997	F02	WF997036	1.84	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	18,432.81
WF997	F02	WF997036	1.84	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,392.91
WF997	F02	WF997034	19.43	06/14/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	95.32389
WF997	F02	WF997034	19.43	06/14/99	CERATAULINA PELAGICA	6,834.41
WF997	F02	WF997034	19.43	06/14/99	CERATIUM LONGIPES	14,078.67
WF997	F02	WF997034	19.43	06/14/99	CHAETOCEROS COMPRESSUS	2,569.34
WF997	F02	WF997034	19.43	06/14/99	CHAETOCEROS SEPTENTRIONALIS	182.56073
WF997	F02	WF997034	19.43	06/14/99	CHAETOCEROS SOCIALIS	2,369.53
WF997	F02	WF997034	19.43	06/14/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	9,712.56

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F02	WF997034	19.43	06/14/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	389.64069
WF997	F02	WF997034	19.43	06/14/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	119.15486
WF997	F02	WF997034	19.43	06/14/99	CYLINDROTHECA CLOSTERIUM	4,379.27
WF997	F02	WF997034	19.43	06/14/99	EUCAMPIA CORNUTA	
WF997	F02	WF997034	19.43	06/14/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,231.07
WF997	F02	WF997034	19.43	06/14/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,673.12
WF997	F02	WF997034	19.43	06/14/99	LEPTOCYLINDRUS MINIMUS	6,576.21
WF997	F02	WF997034	19.43	06/14/99	PARALIA SULCATA	570.65081
WF997	F02	WF997034	19.43	06/14/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	268.87989
WF997	F02	WF997034	19.43	06/14/99	PROTOPERIDINIUM BIPES	1,495.50
WF997	F02	WF997034	19.43	06/14/99	PROTOPERIDINIUM DEPRESSUM	69,078.83
WF997	F02	WF997034	19.43	06/14/99	PSEUDONITZSCHIA PUNGENS	864.45344
WF997	F02	WF997034	19.43	06/14/99	PSEUDONITZSCHIA SPP.	34,081.90
WF997	F02	WF997034	19.43	06/14/99	RHIZOSOLENIA DELICATULA	2,266.90
WF997	F02	WF997034	19.43	06/14/99	SKELETONEMA COSTATUM	328.46673
WF997	F02	WF997034	19.43	06/14/99	THALASSIONEMA NITZSCHIOIDES	477.81143
WF997	F02	WF997034	19.43	06/14/99	THALASSIOSIRA ROTULA	2,105.00
WF997	F02	WF997034	19.43	06/14/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	455.33529
WF997	F02	WF997034	19.43	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,146.81
WF997	F02	WF997034	19.43	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	361.33603
WF997	F06	WF997169	2.38	06/18/99	CERATIUM FUSUS	2,690.83
WF997	F06	WF997169	2.38	06/18/99	CERATIUM LONGIPES	13,416.15
WF997	F06	WF997169	2.38	06/18/99	CERATIUM TRIPOS	1,149.19
WF997	F06	WF997169	2.38	06/18/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	90.2273
WF997	F06	WF997169	2.38	06/18/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	651.74089
WF997	F06	WF997169	2.38	06/18/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	300.34182
WF997	F06	WF997169	2.38	06/18/99	LEPTOCYLINDRUS MINIMUS	5.27503
WF997	F06	WF997169	2.38	06/18/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	118.81403
WF997	F06	WF997169	2.38	06/18/99	RHIZOSOLENIA DELICATULA	686.87247
WF997	F06	WF997169	2.38	06/18/99	SKELETONEMA COSTATUM	116.11336
WF997	F06	WF997169	2.38	06/18/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,991.87
WF997	F06	WF997169	2.38	06/18/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	382.59109
WF997	F06	WF997167	10.73	06/18/99	CALYCOMONAS OVALIS	21.6226
WF997	F06	WF997167	10.73	06/18/99	CALYCOMONAS WULFFII	21.11779
WF997	F06	WF997167	10.73	06/18/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	139.83173
WF997	F06	WF997167	10.73	06/18/99	CERATAULINA PELAGICA	333.65334
WF997	F06	WF997167	10.73	06/18/99	CERATIUM FUSUS	414.21343

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F06	WF997167	10.73	06/18/99	CERATIUM LONGIPES	50,942.02
WF997	F06	WF997167	10.73	06/18/99	CERATIUM TRIPOS	1,061.40
WF997	F06	WF997167	10.73	06/18/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	116.16186
WF997	F06	WF997167	10.73	06/18/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	142.21288
WF997	F06	WF997167	10.73	06/18/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	17.45128
WF997	F06	WF997167	10.73	06/18/99	CYLINDROTHECA CLOSTERIUM	21.41334
WF997	F06	WF997167	10.73	06/18/99	DICTYOCHA SPECULUM	67.25708
WF997	F06	WF997167	10.73	06/18/99	DINOPHYSIS NORVEGICA	22,529.50
WF997	F06	WF997167	10.73	06/18/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	601.95513
WF997	F06	WF997167	10.73	06/18/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,387.00
WF997	F06	WF997167	10.73	06/18/99	GYRODINIUM SPIRALE	6,104.38
WF997	F06	WF997167	10.73	06/18/99	HETEROCAPSA TRIQUETRA	52.91525
WF997	F06	WF997167	10.73	06/18/99	LEPTOCYLINDRUS MINIMUS	29.23247
WF997	F06	WF997167	10.73	06/18/99	PROTOPERIDINIUM DEPRESSUM	13,511.01
WF997	F06	WF997167	10.73	06/18/99	PROTOPERIDINIUM PELLUCIDUM	3,373.24
WF997	F06	WF997167	10.73	06/18/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	548.68978
WF997	F06	WF997167	10.73	06/18/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	14.84304
WF997	F06	WF997167	10.73	06/18/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,069.58
WF997	F13	WF99719C	2.47	06/18/99	CALYCOMONAS OVALIS	91.69281
WF997	F13	WF99719C	2.47	06/18/99	CALYCOMONAS WULFFII	29.85071
WF997	F13	WF99719C	2.47	06/18/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	126.08075
WF997	F13	WF99719C	2.47	06/18/99	CERATIUM FUSUS	780.67293
WF997	F13	WF99719C	2.47	06/18/99	CERATIUM LONGIPES	6,487.23
WF997	F13	WF99719C	2.47	06/18/99	CERATIUM TRIPOS	7,001.55
WF997	F13	WF99719C	2.47	06/18/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	134.26185
WF997	F13	WF99719C	2.47	06/18/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	803.65666
WF997	F13	WF99719C	2.47	06/18/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	439.23752
WF997	F13	WF99719C	2.47	06/18/99	CYLINDROTHECA CLOSTERIUM	202.11004
WF997	F13	WF99719C	2.47	06/18/99	EUTREPTIA/EUTREPTIELLA SPP.	16.10097
WF997	F13	WF99719C	2.47	06/18/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	992.69793
WF997	F13	WF99719C	2.47	06/18/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,307.04
WF997	F13	WF99719C	2.47	06/18/99	HETEROCAPSA ROTUNDATA	27.90823
WF997	F13	WF99719C	2.47	06/18/99	LEPTOCYLINDRUS DANICUS	96.24171
WF997	F13	WF99719C	2.47	06/18/99	LICMOPHORA SPP.	120.9621
WF997	F13	WF99719C	2.47	06/18/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	43.32912
WF997	F13	WF99719C	2.47	06/18/99	PROTOPERIDINIUM DEPRESSUM	6,366.09
WF997	F13	WF99719C	2.47	06/18/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS	262.69681

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					LE	
WF997	F13	WF99719C	2.47	06/18/99	THALASSIOSIRA ROTULA	96.99504
WF997	F13	WF99719C	2.47	06/18/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,489.67
WF997	F13	WF99719C	2.47	06/18/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	665.9919
WF997	F13	WF99719A	8.74	06/18/99	CALYCOMONAS OVALIS	63.16796
WF997	F13	WF99719A	8.74	06/18/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	408.5025
WF997	F13	WF99719A	8.74	06/18/99	CERATIUM FUSUS	403.35914
WF997	F13	WF99719A	8.74	06/18/99	CERATIUM LONGIPES	12,066.59
WF997	F13	WF99719A	8.74	06/18/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	138.74119
WF997	F13	WF99719A	8.74	06/18/99	CHOANOFLAGELLATE SPP.	55.68503
WF997	F13	WF99719A	8.74	06/18/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,678.61
WF997	F13	WF99719A	8.74	06/18/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	1,702.09
WF997	F13	WF99719A	8.74	06/18/99	CYLINDROTHECA CLOSTERIUM	20.85222
WF997	F13	WF99719A	8.74	06/18/99	DINOPHYSIS NORVEGICA	1,732.04
WF997	F13	WF99719A	8.74	06/18/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,758.54
WF997	F13	WF99719A	8.74	06/18/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	540.25983
WF997	F13	WF99719A	8.74	06/18/99	GYRODINIUM SPIRALE	1,188.88
WF997	F13	WF99719A	8.74	06/18/99	LICMOPHORA SPP.	249.99545
WF997	F13	WF99719A	8.74	06/18/99	PROTOPERIDINIUM PELLUCIDUM	821.21191
WF997	F13	WF99719A	8.74	06/18/99	THALASSIONEMA NITZSCHIOIDES	113.93719
WF997	F13	WF99719A	8.74	06/18/99	THALASSIOSIRA ROTULA	701.6174
WF997	F13	WF99719A	8.74	06/18/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	21.68112
WF997	F13	WF99719A	8.74	06/18/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	12,900.87
WF997	F13	WF99719A	8.74	06/18/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,032.32
WF997	F23	WF99723E	1.95	06/19/99	CALYCOMONAS OVALIS	83.95968
WF997	F23	WF99723E	1.95	06/19/99	CALYCOMONAS WULFFII	20.49988
WF997	F23	WF99723E	1.95	06/19/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	1,018.05
WF997	F23	WF99723E	1.95	06/19/99	CHAETOCEROS DIDYMUS	202.30936
WF997	F23	WF99723E	1.95	06/19/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	22,128.94
WF997	F23	WF99723E	1.95	06/19/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	2,325.06
WF997	F23	WF99723E	1.95	06/19/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	1,131.17
WF997	F23	WF99723E	1.95	06/19/99	CYLINDROTHECA CLOSTERIUM	1,039.34
WF997	F23	WF99723E	1.95	06/19/99	EUCAMPIA CORNUTA	
WF997	F23	WF99723E	1.95	06/19/99	EUTREPTIA/EUTREPTIELLA SPP.	1,575.66
WF997	F23	WF99723E	1.95	06/19/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,460.85
WF997	F23	WF99723E	1.95	06/19/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,385.65

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F23	WF99723E	1.95	06/19/99	HETEROCAPSA TRIQUETRA	1,027.34
WF997	F23	WF99723E	1.95	06/19/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	178.25403
WF997	F23	WF99723E	1.95	06/19/99	PROROCENTRUM MINIMUM	419.14504
WF997	F23	WF99723E	1.95	06/19/99	PSEUDONITZSCHIA SPP.	526.68929
WF997	F23	WF99723E	1.95	06/19/99	RHIZOSOLENIA DELICATULA	1,229.73
WF997	F23	WF99723E	1.95	06/19/99	SKELETONEMA COSTATUM	3,767.85
WF997	F23	WF99723E	1.95	06/19/99	THALASSIOSIRA ROTULA	83,929.92
WF997	F23	WF99723E	1.95	06/19/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	576.34927
WF997	F23	WF99723E	1.95	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	11,614.01
WF997	F23	WF99723E	1.95	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,744.21
WF997	F23	WF99723C	10.36	06/19/99	ASTERIONELLOPSIS GLACIALIS	98.73873
WF997	F23	WF99723C	10.36	06/19/99	CALYCOMONAS WULFFII	20.37713
WF997	F23	WF99723C	10.36	06/19/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	652.14936
WF997	F23	WF99723C	10.36	06/19/99	CERATAULINA PELAGICA	1,609.76
WF997	F23	WF99723C	10.36	06/19/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	16,497.32
WF997	F23	WF99723C	10.36	06/19/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,768.37
WF997	F23	WF99723C	10.36	06/19/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	1,011.96
WF997	F23	WF99723C	10.36	06/19/99	CYLINDROTHECA CLOSTERIUM	826.49274
WF997	F23	WF99723C	10.36	06/19/99	EBRIA TRIPARTITA	1,317.09
WF997	F23	WF99723C	10.36	06/19/99	EUTREPTIA/EUTREPTIELLA SPP.	1,071.63
WF997	F23	WF99723C	10.36	06/19/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,161.69
WF997	F23	WF99723C	10.36	06/19/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,353.40
WF997	F23	WF99723C	10.36	06/19/99	LEPTOCYLINDRUS MINIMUS	47.01201
WF997	F23	WF99723C	10.36	06/19/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	265.77997
WF997	F23	WF99723C	10.36	06/19/99	RHIZOSOLENIA DELICATULA	305.59157
WF997	F23	WF99723C	10.36	06/19/99	SKELETONEMA COSTATUM	1,730.58
WF997	F23	WF99723C	10.36	06/19/99	THALASSIONEMA NITZSCHIOIDES	169.08112
WF997	F23	WF99723C	10.36	06/19/99	THALASSIOSIRA ROTULA	94,352.36
WF997	F23	WF99723C	10.36	06/19/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	143.22452
WF997	F23	WF99723C	10.36	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,474.49
WF997	F23	WF99723C	10.36	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,386.80
WF997	F24	WF9970FD	2.02	06/17/99	CALYCOMONAS OVALIS	164.22225
WF997	F24	WF9970FD	2.02	06/17/99	CALYCOMONAS WULFFII	45.82522
WF997	F24	WF9970FD	2.02	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	379.29041
WF997	F24	WF9970FD	2.02	06/17/99	CERATIUM FUSUS	2,996.12
WF997	F24	WF9970FD	2.02	06/17/99	CERATIUM TRIPOS	3,838.71
WF997	F24	WF9970FD	2.02	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	5,496.31

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F24	WF9970FD	2.02	06/17/99	CHOANOFLAGELLATE SPP.	124.08715
WF997	F24	WF9970FD	2.02	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,634.04
WF997	F24	WF9970FD	2.02	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	885.01095
WF997	F24	WF9970FD	2.02	06/17/99	CYLINDROTHECA CLOSTERIUM	464.66566
WF997	F24	WF9970FD	2.02	06/17/99	DIPLOPSALIS SPP.	184.5346
WF997	F24	WF9970FD	2.02	06/17/99	EBRIA TRIPARTITA	246.82927
WF997	F24	WF9970FD	2.02	06/17/99	EUCAMPIA CORNUTA	
WF997	F24	WF9970FD	2.02	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	216.27688
WF997	F24	WF9970FD	2.02	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,306.23
WF997	F24	WF9970FD	2.02	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	10,032.51
WF997	F24	WF9970FD	2.02	06/17/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	2,006.50
WF997	F24	WF9970FD	2.02	06/17/99	LEPTOCYLINDRUS DANICUS	461.70359
WF997	F24	WF9970FD	2.02	06/17/99	LEPTOCYLINDRUS MINIMUS	88.10268
WF997	F24	WF9970FD	2.02	06/17/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	47.47418
WF997	F24	WF9970FD	2.02	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	2,385.07
WF997	F24	WF9970FD	2.02	06/17/99	PSEUDONITZSCHIA SPP.	196.22592
WF997	F24	WF9970FD	2.02	06/17/99	RHIZOSOLENIA DELICATULA	2,061.69
WF997	F24	WF9970FD	2.02	06/17/99	SKELETONEMA COSTATUM	183.94218
WF997	F24	WF9970FD	2.02	06/17/99	THALASSIOSIRA ROTULA	30,524.83
WF997	F24	WF9970FD	2.02	06/17/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	187.88655
WF997	F24	WF9970FD	2.02	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	12,031.10
WF997	F24	WF9970FD	2.02	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	3,450.58
WF997	F24	WF9970FC	5.39	06/17/99	CALYCOMONAS OVALIS	176.81796
WF997	F24	WF9970FC	5.39	06/17/99	CALYCOMONAS WULFFII	129.51744
WF997	F24	WF9970FC	5.39	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	357.33397
WF997	F24	WF9970FC	5.39	06/17/99	CERATAULINA PELAGICA	852.63675
WF997	F24	WF9970FC	5.39	06/17/99	CERATIUM LONGIPES	7,036.76
WF997	F24	WF9970FC	5.39	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	5,097.23
WF997	F24	WF9970FC	5.39	06/17/99	CHOANOFLAGELLATE SPP.	58.45198
WF997	F24	WF9970FC	5.39	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,465.26
WF997	F24	WF9970FC	5.39	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	595.55662
WF997	F24	WF9970FC	5.39	06/17/99	CYLINDROTHECA CLOSTERIUM	876.92308
WF997	F24	WF9970FC	5.39	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	218.31107
WF997	F24	WF9970FC	5.39	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,153.58
WF997	F24	WF9970FC	5.39	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,671.05
WF997	F24	WF9970FC	5.39	06/17/99	GYRODINIUM SP. GROUP 2 21-40UM W 21-50UM	2,835.53

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F24	WF9970FC	5.39	06/17/99	GYRODINIUM SPIRALE	6,239.79
WF997	F24	WF9970FC	5.39	06/17/99	LEPTOCYLINDRUS MINIMUS	99.60308
WF997	F24	WF9970FC	5.39	06/17/99	PROTOPERIDINIUM DEPRESSUM	34,526.79
WF997	F24	WF9970FC	5.39	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	2,247.00
WF997	F24	WF9970FC	5.39	06/17/99	PSEUDONITZSCHIA PUNGENS	107.8461
WF997	F24	WF9970FC	5.39	06/17/99	PSEUDONITZSCHIA SPP.	369.73352
WF997	F24	WF9970FC	5.39	06/17/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	113.97993
WF997	F24	WF9970FC	5.39	06/17/99	RHIZOSOLENIA DELICATULA	647.44867
WF997	F24	WF9970FC	5.39	06/17/99	SKELETONEMA COSTATUM	314.66561
WF997	F24	WF9970FC	5.39	06/17/99	THALASSIONEMA NITZSCHIOIDES	59.70461
WF997	F24	WF9970FC	5.39	06/17/99	THALASSIOSIRA NORDENSKIOLDII	14.63994
WF997	F24	WF9970FC	5.39	06/17/99	THALASSIOSIRA ROTULA	43,136.71
WF997	F24	WF9970FC	5.39	06/17/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	379.30744
WF997	F24	WF9970FC	5.39	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	16,584.37
WF997	F24	WF9970FC	5.39	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	4,334.45
WF997	F25	WF99711F	2.03	06/17/99	ACHNANTHES SPP.	5.80011
WF997	F25	WF99711F	2.03	06/17/99	CALYCOMONAS OVALIS	60.77314
WF997	F25	WF99711F	2.03	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	305.67867
WF997	F25	WF99711F	2.03	06/17/99	CERATIUM FUSUS	776.13413
WF997	F25	WF99711F	2.03	06/17/99	CERATIUM LONGIPES	6,449.52
WF997	F25	WF99711F	2.03	06/17/99	CERATIUM TRIPOS	994.40562
WF997	F25	WF99711F	2.03	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	5,347.72
WF997	F25	WF99711F	2.03	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	2,430.95
WF997	F25	WF99711F	2.03	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	5,131.03
WF997	F25	WF99711F	2.03	06/17/99	CYLINDROTHECA CLOSTERIUM	60.18501
WF997	F25	WF99711F	2.03	06/17/99	DINOPHYSIS NORVEGICA	555.45707
WF997	F25	WF99711F	2.03	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	24.01104
WF997	F25	WF99711F	2.03	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	3,101.77
WF997	F25	WF99711F	2.03	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,858.78
WF997	F25	WF99711F	2.03	06/17/99	HETEROCAPSA ROTUNDATA	443.9356
WF997	F25	WF99711F	2.03	06/17/99	LEPTOCYLINDRUS DANICUS	119.6027
WF997	F25	WF99711F	2.03	06/17/99	PROTOPERIDINIUM DEPRESSUM	12,658.15
WF997	F25	WF99711F	2.03	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	514.05488
WF997	F25	WF99711F	2.03	06/17/99	PSEUDONITZSCHIA SPP.	118.60716
WF997	F25	WF99711F	2.03	06/17/99	SKELETONEMA COSTATUM	253.29514
WF997	F25	WF99711F	2.03	06/17/99	THALASSIOSIRA ROTULA	2,025.05
WF997	F25	WF99711F	2.03	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,131.13
WF997	F25	WF99711F	2.03	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,655.30

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F25	WF99711D	6.63	06/17/99	CALYCOMONAS OVALIS	43.86664
WF997	F25	WF99711D	6.63	06/17/99	CALYCOMONAS WULFFII	21.42126
WF997	F25	WF99711D	6.63	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	224.58182
WF997	F25	WF99711D	6.63	06/17/99	CERATIUM FUSUS	420.16578
WF997	F25	WF99711D	6.63	06/17/99	CERATIUM LONGIPES	9,776.18
WF997	F25	WF99711D	6.63	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	96.34805
WF997	F25	WF99711D	6.63	06/17/99	CHOANOFLAGELLATE SPP.	87.00785
WF997	F25	WF99711D	6.63	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	819.05724
WF997	F25	WF99711D	6.63	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	1,713.91
WF997	F25	WF99711D	6.63	06/17/99	CYLINDROTHECA CLOSTERIUM	217.55519
WF997	F25	WF99711D	6.63	06/17/99	DINOPHYSIS NORVEGICA	2,405.61
WF997	F25	WF99711D	6.63	06/17/99	EUCAMPIA CORNUTA	
WF997	F25	WF99711D	6.63	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	8.6657
WF997	F25	WF99711D	6.63	06/17/99	GRAMMATOPHORA MARINA	137.28949
WF997	F25	WF99711D	6.63	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,289.77
WF997	F25	WF99711D	6.63	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	6,190.48
WF997	F25	WF99711D	6.63	06/17/99	GYRODINIUM SPIRALE	1,238.42
WF997	F25	WF99711D	6.63	06/17/99	HETEROCAPSA ROTUNDATA	30.04096
WF997	F25	WF99711D	6.63	06/17/99	LEPTOCYLINDRUS MINIMUS	7.41314
WF997	F25	WF99711D	6.63	06/17/99	PARALIA SULCATA	56.60824
WF997	F25	WF99711D	6.63	06/17/99	PROROCENTRUM MINIMUM	218.99181
WF997	F25	WF99711D	6.63	06/17/99	PROTOPERIDINIUM DEPRESSUM	6,852.58
WF997	F25	WF99711D	6.63	06/17/99	PROTOPERIDINIUM PELLUCIDUM	1,710.86
WF997	F25	WF99711D	6.63	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	111.31492
WF997	F25	WF99711D	6.63	06/17/99	PSEUDONITZSCHIA SPP.	55.03615
WF997	F25	WF99711D	6.63	06/17/99	RHIZOSOLENIA DELICATULA	96.37503
WF997	F25	WF99711D	6.63	06/17/99	SKELETONEMA COSTATUM	73.31336
WF997	F25	WF99711D	6.63	06/17/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	30.11267
WF997	F25	WF99711D	6.63	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,856.81
WF997	F25	WF99711D	6.63	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,254.55
WF997	F27	WF997088	2.45	06/14/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	34.75108
WF997	F27	WF997088	2.45	06/14/99	CERATIUM FUSUS	1,235.29
WF997	F27	WF997088	2.45	06/14/99	CERATIUM LONGIPES	13,686.65
WF997	F27	WF997088	2.45	06/14/99	CERATIUM TRIPOS	9,496.12
WF997	F27	WF997088	2.45	06/14/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	51.32591
WF997	F27	WF997088	2.45	06/14/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	149.59832
WF997	F27	WF997088	2.45	06/14/99	LICMOPHORA SPP.	12.73997
WF997	F27	WF997088	2.45	06/14/99	PSEUDONITZSCHIA SPP.	35.95695
WF997	F27	WF997088	2.45	06/14/99	THALASSIONEMA NITZSCHIOIDES	5.80633

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F27	WF997088	2.45	06/14/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	14.75521
WF997	F27	WF997088	2.45	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,874.90
WF997	F27	WF997088	2.45	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	175.63723
WF997	F27	WF997086	23.28	06/14/99	CALYCOMONAS OVALIS	19.53247
WF997	F27	WF997086	23.28	06/14/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	21.05251
WF997	F27	WF997086	23.28	06/14/99	CERATIUM FUSUS	2,993.39
WF997	F27	WF997086	23.28	06/14/99	CERATIUM LONGIPES	36,067.98
WF997	F27	WF997086	23.28	06/14/99	CERATIUM TRIPOS	47,940.26
WF997	F27	WF997086	23.28	06/14/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	144.83114
WF997	F27	WF997086	23.28	06/14/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	105.26255
WF997	F27	WF997086	23.28	06/14/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	250.58459
WF997	F27	WF997086	23.28	06/14/99	THALASSIONEMA NITZSCHIOIDES	10.55258
WF997	F27	WF997086	23.28	06/14/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,695.43
WF997	F30	WF997131	1.81	06/17/99	CALYCOMONAS OVALIS	44.74397
WF997	F30	WF997131	1.81	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	1,277.99
WF997	F30	WF997131	1.81	06/17/99	CHAETOCEROS SOCIALIS	3,504.14
WF997	F30	WF997131	1.81	06/17/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	1,619.96
WF997	F30	WF997131	1.81	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	17,198.13
WF997	F30	WF997131	1.81	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,577.01
WF997	F30	WF997131	1.81	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	1,085.08
WF997	F30	WF997131	1.81	06/17/99	CYLINDROTHECA CLOSTERIUM	221.55479
WF997	F30	WF997131	1.81	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	2,121.36
WF997	F30	WF997131	1.81	06/17/99	GRAMMATOPHORA MARINA	139.81346
WF997	F30	WF997131	1.81	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,868.45
WF997	F30	WF997131	1.81	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,870.13
WF997	F30	WF997131	1.81	06/17/99	GYRODINIUM SPIRALE	12,631.88
WF997	F30	WF997131	1.81	06/17/99	HETEROCAPSA TRIQUETRA	2,193.44
WF997	F30	WF997131	1.81	06/17/99	LITHODESMIUM UNDULATUM	2,376.58
WF997	F30	WF997131	1.81	06/17/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	95.14622
WF997	F30	WF997131	1.81	06/17/99	PROROCENTRUM MINIMUM	446.74329
WF997	F30	WF997131	1.81	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	1,135.41
WF997	F30	WF997131	1.81	06/17/99	PSEUDONITZSCHIA SPP.	187.1229
WF997	F30	WF997131	1.81	06/17/99	RHIZOSOLENIA DELICATULA	327.67511
WF997	F30	WF997131	1.81	06/17/99	SKELETONEMA COSTATUM	2,409.57
WF997	F30	WF997131	1.81	06/17/99	THALASSIOSIRA ROTULA	100,105.77
WF997	F30	WF997131	1.81	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	13,827.95

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F30	WF997131	1.81	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,828.06
WF997	F30	WF997130	6.18	06/17/99	CALYCOMONAS OVALIS	165.81589
WF997	F30	WF997130	6.18	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	459.56532
WF997	F30	WF997130	6.18	06/17/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	412.93215
WF997	F30	WF997130	6.18	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	9,104.89
WF997	F30	WF997130	6.18	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,510.75
WF997	F30	WF997130	6.18	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	510.62813
WF997	F30	WF997130	6.18	06/17/99	CYLINDROTHECA CLOSTERIUM	351.88113
WF997	F30	WF997130	6.18	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	374.95221
WF997	F30	WF997130	6.18	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,978.36
WF997	F30	WF997130	6.18	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,038.96
WF997	F30	WF997130	6.18	06/17/99	HETEROCAPSA ROTUNDATA	64.88848
WF997	F30	WF997130	6.18	06/17/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	100.74306
WF997	F30	WF997130	6.18	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	1,202.20
WF997	F30	WF997130	6.18	06/17/99	PSEUDONITZSCHIA PUNGENS	77.05572
WF997	F30	WF997130	6.18	06/17/99	PSEUDONITZSCHIA SPP.	99.06506
WF997	F30	WF997130	6.18	06/17/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	122.15749
WF997	F30	WF997130	6.18	06/17/99	RHIZOSOLENIA DELICATULA	4,170.01
WF997	F30	WF997130	6.18	06/17/99	SCENEDESMUS SPP.	37.3392
WF997	F30	WF997130	6.18	06/17/99	SKELETONEMA COSTATUM	806.44699
WF997	F30	WF997130	6.18	06/17/99	THALASSIOSIRA ROTULA	52,433.37
WF997	F30	WF997130	6.18	06/17/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	81.30421
WF997	F30	WF997130	6.18	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	14,065.93
WF997	F30	WF997130	6.18	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,322.71
WF997	F31	WF99713D	2.14	06/17/99	CALYCOMONAS OVALIS	86.70715
WF997	F31	WF99713D	2.14	06/17/99	CALYCOMONAS WULFFII	21.17072
WF997	F31	WF99713D	2.14	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	934.54791
WF997	F31	WF99713D	2.14	06/17/99	CERATIUM FUSUS	1,245.75
WF997	F31	WF99713D	2.14	06/17/99	CERATIUM TRIPOS	2,128.13
WF997	F31	WF99713D	2.14	06/17/99	CHAETOCEROS SOCIALIS	44.6744
WF997	F31	WF99713D	2.14	06/17/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	11.62685
WF997	F31	WF99713D	2.14	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	3,814.89
WF997	F31	WF99713D	2.14	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	1,437.05
WF997	F31	WF99713D	2.14	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	1,168.18
WF997	F31	WF99713D	2.14	06/17/99	CYLINDROTHECA CLOSTERIUM	150.26907

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F31	WF99713D	2.14	06/17/99	DINOPHYSIS NORVEGICA	594.3674
WF997	F31	WF99713D	2.14	06/17/99	DIPLONEIS CRABRO	34.66722
WF997	F31	WF99713D	2.14	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	51.38609
WF997	F31	WF99713D	2.14	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	301.73189
WF997	F31	WF99713D	2.14	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	278.09427
WF997	F31	WF99713D	2.14	06/17/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	9.20436
WF997	F31	WF99713D	2.14	06/17/99	RHIZOSOLENIA DELICATULA	635.99303
WF997	F31	WF99713D	2.14	06/17/99	SKELETONEMA COSTATUM	244.20321
WF997	F31	WF99713D	2.14	06/17/99	THALASSIOSIRA ROTULA	5,468.87
WF997	F31	WF99713D	2.14	06/17/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	22.32036
WF997	F31	WF99713D	2.14	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	12,930.19
WF997	F31	WF99713D	2.14	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	2,479.76
WF997	F31	WF99713C	5.8	06/17/99	CALYCOMONAS OVALIS	25.99525
WF997	F31	WF99713C	5.8	06/17/99	CALYCOMONAS WULFFII	38.08254
WF997	F31	WF99713C	5.8	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	406.26436
WF997	F31	WF99713C	5.8	06/17/99	CERATIUM FUSUS	1,493.93
WF997	F31	WF99713C	5.8	06/17/99	CERATIUM LONGIPES	1,655.24
WF997	F31	WF99713C	5.8	06/17/99	CERATIUM TRIPOS	2,552.10
WF997	F31	WF99713C	5.8	06/17/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	69.71582
WF997	F31	WF99713C	5.8	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	228.38242
WF997	F31	WF99713C	5.8	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	959.83516
WF997	F31	WF99713C	5.8	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	1,330.87
WF997	F31	WF99713C	5.8	06/17/99	CYLINDROTHECA CLOSTERIUM	77.23105
WF997	F31	WF99713C	5.8	06/17/99	EUTREPTIA/EUTREPTIELLA SPP.	51.35272
WF997	F31	WF99713C	5.8	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,085.53
WF997	F31	WF99713C	5.8	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,333.99
WF997	F31	WF99713C	5.8	06/17/99	PENNATE DIATOM SP. GROUP 1 <10 MICRONS L	1.08226
WF997	F31	WF99713C	5.8	06/17/99	PROTOPERIDINIUM PELLUCIDUM	1,013.85
WF997	F31	WF99713C	5.8	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	131.92986
WF997	F31	WF99713C	5.8	06/17/99	PSEUDONITZSCHIA SPP.	43.4857
WF997	F31	WF99713C	5.8	06/17/99	PYRAMIMONAS SP. GROUP 1 10-20 MICRONS LE	67.02797
WF997	F31	WF99713C	5.8	06/17/99	SCRIPPSIELLA TROCHOIDEA	1,185.52
WF997	F31	WF99713C	5.8	06/17/99	SKELETONEMA COSTATUM	61.14525
WF997	F31	WF99713C	5.8	06/17/99	THALASSIOSIRA ROTULA	3,588.55
WF997	F31	WF99713C	5.8	06/17/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	53.53407
WF997	F31	WF99713C	5.8	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	14,664.19

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	F31	WF99713C	5.8	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,486.89
WF997	N04	WF997209	2.45	06/19/99	CALYCOMONAS WULFFII	66.44118
WF997	N04	WF997209	2.45	06/19/99	CERATIUM LONGIPES	2,887.83
WF997	N04	WF997209	2.45	06/19/99	CERATIUM TRIPOS	5,565.68
WF997	N04	WF997209	2.45	06/19/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	183.34294
WF997	N04	WF997209	2.45	06/19/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	631.29412
WF997	N04	WF997209	2.45	06/19/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	290.91933
WF997	N04	WF997209	2.45	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,344.71
WF997	N04	WF997209	2.45	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	741.17647
WF997	N04	WF997207	22.75	06/19/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	17.52277
WF997	N04	WF997207	22.75	06/19/99	CERATIUM FUSUS	1,661.01
WF997	N04	WF997207	22.75	06/19/99	CERATIUM LONGIPES	31,746.03
WF997	N04	WF997207	22.75	06/19/99	CERATIUM TRIPOS	6,384.39
WF997	N04	WF997207	22.75	06/19/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	404.73881
WF997	N04	WF997207	22.75	06/19/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	29.20462
WF997	N04	WF997207	22.75	06/19/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	528.03081
WF997	N04	WF997207	22.75	06/19/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	7.44012
WF997	N04	WF997207	22.75	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,812.25
WF997	N04	WF997207	22.75	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	88.56275
WF997	N16	WF9970DA	2.22	06/16/99	CALYCOMONAS WULFFII	77.12584
WF997	N16	WF9970DA	2.22	06/16/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	170.22993
WF997	N16	WF9970DA	2.22	06/16/99	CERATIUM FUSUS	864.44541
WF997	N16	WF9970DA	2.22	06/16/99	CERATIUM TRIPOS	5,537.76
WF997	N16	WF9970DA	2.22	06/16/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	99.11282
WF997	N16	WF9970DA	2.22	06/16/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	378.67893
WF997	N16	WF9970DA	2.22	06/16/99	CYLINDROTHECA CLOSTERIUM	44.68872
WF997	N16	WF9970DA	2.22	06/16/99	DINOPHYSIS NORVEGICA	3,098.20
WF997	N16	WF9970DA	2.22	06/16/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,256.25
WF997	N16	WF9970DA	2.22	06/16/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	578.91973
WF997	N16	WF9970DA	2.22	06/16/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	4.79027
WF997	N16	WF9970DA	2.22	06/16/99	PROROCENTRUM MINIMUM	22.49191
WF997	N16	WF9970DA	2.22	06/16/99	PROTOPERIDINIUM DEPRESSUM	7,049.22
WF997	N16	WF9970DA	2.22	06/16/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	114.50917
WF997	N16	WF9970DA	2.22	06/16/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,760.50

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	N16	WF9970D7	21.1	06/17/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	52.76669
WF997	N16	WF9970D7	21.1	06/17/99	CERATIUM LONGIPES	28,055.78
WF997	N16	WF9970D7	21.1	06/17/99	CERATIUM TRIPOS	1,029.93
WF997	N16	WF9970D7	21.1	06/17/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	46.08345
WF997	N16	WF9970D7	21.1	06/17/99	COCCOLITHOPHORE SPP.	211.42054
WF997	N16	WF9970D7	21.1	06/17/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	539.9492
WF997	N16	WF9970D7	21.1	06/17/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	527.66691
WF997	N16	WF9970D7	21.1	06/17/99	CYLINDROTHECA CLOSTERIUM	207.78446
WF997	N16	WF9970D7	21.1	06/17/99	DINOPHYSIS NORVEGICA	1,150.61
WF997	N16	WF9970D7	21.1	06/17/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,070.86
WF997	N16	WF9970D7	21.1	06/17/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	269.17427
WF997	N16	WF9970D7	21.1	06/17/99	PENNATE DIATOM SP. GROUP 1 <10 MICRONS L	5.83273
WF997	N16	WF9970D7	21.1	06/17/99	PROTOPERIDINIUM SP. GROUP 1 10-30W 10-40	106.48427
WF997	N16	WF9970D7	21.1	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	13,610.31
WF997	N16	WF9970D7	21.1	06/17/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	342.88824
WF997	N18	WF9971EC	2.12	06/19/99	CALYCOMONAS WULFFII	80.54392
WF997	N18	WF9971EC	2.12	06/19/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	22.22178
WF997	N18	WF9971EC	2.12	06/19/99	CERATIUM FUSUS	394.95583
WF997	N18	WF9971EC	2.12	06/19/99	CERATIUM LONGIPES	2,625.60
WF997	N18	WF9971EC	2.12	06/19/99	CERATIUM TRIPOS	1,012.06
WF997	N18	WF9971EC	2.12	06/19/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	140.78333
WF997	N18	WF9971EC	2.12	06/19/99	DINOPHYSIS NORVEGICA	565.31726
WF997	N18	WF9971EC	2.12	06/19/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	573.96905
WF997	N18	WF9971EC	2.12	06/19/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	264.50221
WF997	N18	WF9971EC	2.12	06/19/99	SKELETONEMA COSTATUM	5.10478
WF997	N18	WF9971EC	2.12	06/19/99	THALASSIONEMA NITZSCHIOIDES	5.56934
WF997	N18	WF9971EC	2.12	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,288.23
WF997	N18	WF9971EC	2.12	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	336.93673
WF997	N18	WF9971E9	16.56	06/19/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	16.44532
WF997	N18	WF9971E9	16.56	06/19/99	CERATIUM FUSUS	1,171.01
WF997	N18	WF9971E9	16.56	06/19/99	CERATIUM LONGIPES	18,164.25
WF997	N18	WF9971E9	16.56	06/19/99	CERATIUM TRIPOS	7,001.55
WF997	N18	WF9971E9	16.56	06/19/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	154.50153
WF997	N18	WF9971E9	16.56	06/19/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	164.71407
WF997	N18	WF9971E9	16.56	06/19/99	DINOPHYSIS NORVEGICA	1,676.12

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WF997	N18	WF9971E9	16.56	06/19/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	141.81399
WF997	N18	WF9971E9	16.56	06/19/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	522.81724
WF997	N18	WF9971E9	16.56	06/19/99	GYRODINIUM SPIRALE	1,150.50
WF997	N18	WF9971E9	16.56	06/19/99	PSEUDONITZSCHIA SPP.	170.70007
WF997	N18	WF9971E9	16.56	06/19/99	SKELETONEMA COSTATUM	12.61269
WF997	N18	WF9971E9	16.56	06/19/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	6.99371
WF997	N18	WF9971E9	16.56	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	2,942.35
WF997	N18	WF9971E9	16.56	06/19/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	166.49798
WN993	N04	WN99333B	2.4	03/20/99	CALYCOMONAS OVALIS	13.27101
WN993	N04	WN99333B	2.4	03/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	243.16417
WN993	N04	WN99333B	2.4	03/20/99	CHAETOCEROS DEBILIS	1,439.66
WN993	N04	WN99333B	2.4	03/20/99	CHAETOCEROS DIDYMUS	255.8596
WN993	N04	WN99333B	2.4	03/20/99	CHAETOCEROS SEPTENTRIONALIS	219.15242
WN993	N04	WN99333B	2.4	03/20/99	CHAETOCEROS SOCIALIS	34,466.79
WN993	N04	WN99333B	2.4	03/20/99	CHAETOCEROS SPP. (10-20UM)	25,249.08
WN993	N04	WN99333B	2.4	03/20/99	COSCINODISCUS SP. GROUP 2 DIAM 40-100 MI	4,472.27
WN993	N04	WN99333B	2.4	03/20/99	DICTYOCHA SPECULUM	412.8542
WN993	N04	WN99333B	2.4	03/20/99	EUCAMPIA ZOODIACUS	3,038.21
WN993	N04	WN99333B	2.4	03/20/99	EUTREPTIA/EUTREPTIELLA SPP.	104.88078
WN993	N04	WN99333B	2.4	03/20/99	GUINARDIA FLACCIDA	7,874.45
WN993	N04	WN99333B	2.4	03/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,293.09
WN993	N04	WN99333B	2.4	03/20/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	20,433.60
WN993	N04	WN99333B	2.4	03/20/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	56.44053
WN993	N04	WN99333B	2.4	03/20/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	483.46224
WN993	N04	WN99333B	2.4	03/20/99	PSEUDONITZSCHIA DELICATISSIMA	71.98307
WN993	N04	WN99333B	2.4	03/20/99	SKELETONEMA COSTATUM	131.45333
WN993	N04	WN99333B	2.4	03/20/99	THALASSIONEMA NITZSCHIOIDES	143.41613
WN993	N04	WN99333B	2.4	03/20/99	THALASSIOSIRA NORDENSKIOLDII	175.83258
WN993	N04	WN99333B	2.4	03/20/99	THALASSIOSIRA ROTULA	6,318.20
WN993	N04	WN99333B	2.4	03/20/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	364.45298
WN993	N04	WN99333B	2.4	03/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,653.61
WN993	N04	WN99333A	12.39	03/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	129.18586
WN993	N04	WN99333A	12.39	03/20/99	CERATAULINA PELAGICA	5,549.32
WN993	N04	WN99333A	12.39	03/20/99	CERATIUM LONGIPES	15,266.08
WN993	N04	WN99333A	12.39	03/20/99	CERATIUM TRIPOS	11,768.85
WN993	N04	WN99333A	12.39	03/20/99	CHAETOCEROS DEBILIS	1,300.24
WN993	N04	WN99333A	12.39	03/20/99	CHAETOCEROS DIDYMUS	346.62293
WN993	N04	WN99333A	12.39	03/20/99	CHAETOCEROS SEPTENTRIONALIS	197.64446
WN993	N04	WN99333A	12.39	03/20/99	CHAETOCEROS SOCIALIS	32,413.69

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN993	N04	WN99333A	12.39	03/20/99	CHAETOCEROS SPP. (10-20UM)	24,821.98
WN993	N04	WN99333A	12.39	03/20/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	100.58153
WN993	N04	WN99333A	12.39	03/20/99	CYLINDROTHECA CLOSTERIUM	949.72417
WN993	N04	WN99333A	12.39	03/20/99	EUTREPTIA/EUTREPTIELLA SPP.	94.72404
WN993	N04	WN99333A	12.39	03/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,001.03
WN993	N04	WN99333A	12.39	03/20/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	12,303.20
WN993	N04	WN99333A	12.39	03/20/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	101.94956
WN993	N04	WN99333A	12.39	03/20/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	1,309.93
WN993	N04	WN99333A	12.39	03/20/99	PSEUDONITZSCHIA PUNGENS	233.96932
WN993	N04	WN99333A	12.39	03/20/99	THALASSIONEMA NITZSCHIOIDES	194.2914
WN993	N04	WN99333A	12.39	03/20/99	THALASSIOSIRA ANGUSTE-LINEATA	1,947.38
WN993	N04	WN99333A	12.39	03/20/99	THALASSIOSIRA NORDENSKIOLDII	158.80481
WN993	N04	WN99333A	12.39	03/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,982.03
WN993	N18	WN99335F	2.68	03/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	94.56076
WN993	N18	WN99335F	2.68	03/20/99	CHAETOCEROS DEBILIS	4,163.89
WN993	N18	WN99335F	2.68	03/20/99	CHAETOCEROS SEPTENTRIONALIS	181.09923
WN993	N18	WN99335F	2.68	03/20/99	CHAETOCEROS SOCIALIS	42,406.61
WN993	N18	WN99335F	2.68	03/20/99	CHAETOCEROS SPP. (10-20UM)	37,482.92
WN993	N18	WN99335F	2.68	03/20/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	257.68093
WN993	N18	WN99335F	2.68	03/20/99	CYLINDROTHECA CLOSTERIUM	1,303.45
WN993	N18	WN99335F	2.68	03/20/99	EUCAMPIA ZOODIACUS	1,882.99
WN993	N18	WN99335F	2.68	03/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,831.82
WN993	N18	WN99335F	2.68	03/20/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	11,257.03
WN993	N18	WN99335F	2.68	03/20/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	186.56122
WN993	N18	WN99335F	2.68	03/20/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	799.02962
WN993	N18	WN99335F	2.68	03/20/99	PSEUDONITZSCHIA PUNGENS	499.50714
WN993	N18	WN99335F	2.68	03/20/99	STEPHANOPYXIS TURRIS	28,754.67
WN993	N18	WN99335F	2.68	03/20/99	THALASSIONEMA NITZSCHIOIDES	296.28409
WN993	N18	WN99335F	2.68	03/20/99	THALASSIOSIRA NORDENSKIOLDII	203.4219
WN993	N18	WN99335F	2.68	03/20/99	THALASSIOSIRA ROTULA	4,176.90
WN993	N18	WN99335F	2.68	03/20/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	301.17008
WN993	N18	WN99335F	2.68	03/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,321.60
WN993	N18	WN99335D	13.86	03/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	225.27108
WN993	N18	WN99335D	13.86	03/20/99	CHAETOCEROS DEBILIS	2,204.35
WN993	N18	WN99335D	13.86	03/20/99	CHAETOCEROS DECIPIENS	4,480.35
WN993	N18	WN99335D	13.86	03/20/99	CHAETOCEROS DIDYMUS	559.65967
WN993	N18	WN99335D	13.86	03/20/99	CHAETOCEROS SOCIALIS	35,039.16

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN993	N18	WN99335D	13.86	03/20/99	CHAETOCEROS SPP. (10-20UM)	44,183.26
WN993	N18	WN99335D	13.86	03/20/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	58.46386
WN993	N18	WN99335D	13.86	03/20/99	CYLINDROTHECA CLOSTERIUM	460.02927
WN993	N18	WN99335D	13.86	03/20/99	EUCAMPIA ZOODIACUS	2,658.27
WN993	N18	WN99335D	13.86	03/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,939.52
WN993	N18	WN99335D	13.86	03/20/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	197.53012
WN993	N18	WN99335D	13.86	03/20/99	PENNATE DIATOM SP. GROUP 3 31-60 MICRONS	423.00436
WN993	N18	WN99335D	13.86	03/20/99	PLEUROSIGMA SPP.	1,265.46
WN993	N18	WN99335D	13.86	03/20/99	PSEUDONITZSCHIA DELICATISSIMA	62.98145
WN993	N18	WN99335D	13.86	03/20/99	PSEUDONITZSCHIA PUNGENS	302.21472
WN993	N18	WN99335D	13.86	03/20/99	STEPHANOPYXIS TURRIS	8,698.66
WN993	N18	WN99335D	13.86	03/20/99	THALASSIONEMA NITZSCHIOIDES	250.96333
WN993	N18	WN99335D	13.86	03/20/99	THALASSIOSIRA ANGUSTE-LINEATA	3,778.55
WN993	N18	WN99335D	13.86	03/20/99	THALASSIOSIRA NORDENSKIOLDII	61.53775
WN993	N18	WN99335D	13.86	03/20/99	THALASSIOSIRA ROTULA	3,316.86
WN993	N18	WN99335D	13.86	03/20/99	THALASSIOSIRA SP. GROUP 1 DIAM <20 MICRO	239.15807
WN993	N18	WN99335D	13.86	03/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,077.14
WN995	N04	WN99508B	2.74	05/05/99	CERATIUM FUSUS	916.14451
WN995	N04	WN99508B	2.74	05/05/99	CERATIUM LONGIPES	3,045.19
WN995	N04	WN99508B	2.74	05/05/99	CERATIUM TRIPOS	2,347.58
WN995	N04	WN99508B	2.74	05/05/99	CHAETOCEROS BOREALIS	291.07968
WN995	N04	WN99508B	2.74	05/05/99	CHAETOCEROS SOCIALIS	433.67473
WN995	N04	WN99508B	2.74	05/05/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	38.47744
WN995	N04	WN99508B	2.74	05/05/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	105.04037
WN995	N04	WN99508B	2.74	05/05/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	3,768.13
WN995	N04	WN99508B	2.74	05/05/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	341.16005
WN995	N04	WN99508B	2.74	05/05/99	CYLINDROTHECA CLOSTERIUM	474.41067
WN995	N04	WN99508B	2.74	05/05/99	DICTYOCHA SPECULUM	223.1357
WN995	N04	WN99508B	2.74	05/05/99	EBRIA TRIPARTITA	301.89894
WN995	N04	WN99508B	2.74	05/05/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,330.15
WN995	N04	WN99508B	2.74	05/05/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	12,884.40
WN995	N04	WN99508B	2.74	05/05/99	HETEROCAPSA ROTUNDATA	65.50868
WN995	N04	WN99508B	2.74	05/05/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	101.70596
WN995	N04	WN99508B	2.74	05/05/99	PROROCENTRUM MINIMUM	8,962.73
WN995	N04	WN99508B	2.74	05/05/99	PROTOPERIDINIUM BIPES	322.96152
WN995	N04	WN99508B	2.74	05/05/99	SKELETONEMA COSTATUM	751.91094
WN995	N04	WN99508B	2.74	05/05/99	THALASSIONEMA NITZSCHIOIDES	310.049

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN995	N04	WN99508B	2.74	05/05/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	49.24406
WN995	N04	WN99508B	2.74	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,874.75
WN995	N04	WN99508B	2.74	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	5,080.65
WN995	N04	WN995089	23.57	05/05/99	AMPHIDINIUM SPP.	578.1368
WN995	N04	WN995089	23.57	05/05/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	70.33452
WN995	N04	WN995089	23.57	05/05/99	CERATIUM FUSUS	833.3075
WN995	N04	WN995089	23.57	05/05/99	CERATIUM LONGIPES	2,769.85
WN995	N04	WN995089	23.57	05/05/99	CHAETOCEROS BOREALIS	397.14075
WN995	N04	WN995089	23.57	05/05/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	191.08542
WN995	N04	WN995089	23.57	05/05/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	127.77579
WN995	N04	WN995089	23.57	05/05/99	EBRIA TRIPARTITA	549.20299
WN995	N04	WN995089	23.57	05/05/99	EUCAMPIA ZOODIACUS	4,729.70
WN995	N04	WN995089	23.57	05/05/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,513.90
WN995	N04	WN995089	23.57	05/05/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	1,674.20
WN995	N04	WN995089	23.57	05/05/99	HETEROCAPSA ROTUNDATA	5.94853
WN995	N04	WN995089	23.57	05/05/99	PROROCENTRUM MINIMUM	3,599.17
WN995	N04	WN995089	23.57	05/05/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	1,557.74
WN995	N04	WN995089	23.57	05/05/99	SKELETONEMA COSTATUM	21.54091
WN995	N04	WN995089	23.57	05/05/99	THALASSIONEMA NITZSCHIOIDES	94.00488
WN995	N04	WN995089	23.57	05/05/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	14.93048
WN995	N04	WN995089	23.57	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	4,873.00
WN995	N04	WN995089	23.57	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	710.96269
WN995	N18	WN9950BE	2.33	05/05/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	131.06949
WN995	N18	WN9950BE	2.33	05/05/99	CERATIUM FUSUS	931.72899
WN995	N18	WN9950BE	2.33	05/05/99	CHAETOCEROS SOCIALIS	1,102.63
WN995	N18	WN9950BE	2.33	05/05/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	58.69796
WN995	N18	WN9950BE	2.33	05/05/99	COSCINODISCUS SP. GROUP 3 DIAM >100 MICR	3,832.23
WN995	N18	WN9950BE	2.33	05/05/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	306.14427
WN995	N18	WN9950BE	2.33	05/05/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	131.06949
WN995	N18	WN9950BE	2.33	05/05/99	EBRIA TRIPARTITA	307.03453
WN995	N18	WN9950BE	2.33	05/05/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	3,046.87
WN995	N18	WN9950BE	2.33	05/05/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	9,983.67
WN995	N18	WN9950BE	2.33	05/05/99	HETEROCAPSA ROTUNDATA	133.2461
WN995	N18	WN9950BE	2.33	05/05/99	LICMOPHORA SPP.	28.82779
WN995	N18	WN9950BE	2.33	05/05/99	PROROCENTRUM MINIMUM	3,975.78
WN995	N18	WN9950BE	2.33	05/05/99	PSEUDONITZSCHIA PUNGENS	126.5727

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN995	N18	WN9950BE	2.33	05/05/99	PSEUDONITZSCHIA SPP.	162.72553
WN995	N18	WN9950BE	2.33	05/05/99	SKELETONEMA COSTATUM	180.94214
WN995	N18	WN9950BE	2.33	05/05/99	THALASSIONEMA NITZSCHIOIDES	315.32323
WN995	N18	WN9950BE	2.33	05/05/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	16.69392
WN995	N18	WN9950BE	2.33	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	5,054.68
WN995	N18	WN9950BE	2.33	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,192.40
WN995	N18	WN9950BC	10.7	05/05/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	154.65261
WN995	N18	WN9950BC	10.7	05/05/99	CERATIUM LONGIPES	12,180.76
WN995	N18	WN9950BC	10.7	05/05/99	CERATIUM TRIPOS	2,347.58
WN995	N18	WN9950BC	10.7	05/05/99	CHAETOCEROS SOCIALIS	59.13746
WN995	N18	WN9950BC	10.7	05/05/99	CHAETOCEROS SP. GROUP 1 DIAM <10 MICRONS	38.47744
WN995	N18	WN9950BC	10.7	05/05/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	260.8871
WN995	N18	WN9950BC	10.7	05/05/99	DINOPHYSIS NORVEGICA	1,311.32
WN995	N18	WN9950BC	10.7	05/05/99	EBRIA TRIPARTITA	3,024.07
WN995	N18	WN9950BC	10.7	05/05/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	2,330.15
WN995	N18	WN9950BC	10.7	05/05/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	9,203.14
WN995	N18	WN9950BC	10.7	05/05/99	HETEROCAPSA ROTUNDATA	131.01737
WN995	N18	WN9950BC	10.7	05/05/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	10.15351
WN995	N18	WN9950BC	10.7	05/05/99	PROROCENTRUM MINIMUM	7,103.44
WN995	N18	WN9950BC	10.7	05/05/99	PROTOPERIDINIUM DEPRESSUM	14,941.61
WN995	N18	WN9950BC	10.7	05/05/99	THALASSIONEMA NITZSCHIOIDES	284.21159
WN995	N18	WN9950BC	10.7	05/05/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	49.24406
WN995	N18	WN9950BC	10.7	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,002.88
WN995	N18	WN9950BC	10.7	05/05/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,563.28
WN996	N04	WN99603C	2.88	05/12/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	180.8602
WN996	N04	WN99603C	2.88	05/12/99	CERATIUM LONGIPES	15,262.42
WN996	N04	WN99603C	2.88	05/12/99	CHAETOCEROS SEPTENTRIONALIS	197.92953
WN996	N04	WN99603C	2.88	05/12/99	CHAETOCEROS SOCIALIS	23,217.65
WN996	N04	WN99603C	2.88	05/12/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	1,052.92
WN996	N04	WN99603C	2.88	05/12/99	CHAETOCEROS SPP.(<10UM)	3,246.27
WN996	N04	WN99603C	2.88	05/12/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	341.9772
WN996	N04	WN99603C	2.88	05/12/99	CYLINDROTHECA CLOSTERIUM	237.37406
WN996	N04	WN99603C	2.88	05/12/99	DICTYOCHA SPECULUM	372.78359
WN996	N04	WN99603C	2.88	05/12/99	EUCAMPIA ZOODIACUS	4,800.82
WN996	N04	WN99603C	2.88	05/12/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,001.03
WN996	N04	WN99603C	2.88	05/12/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,075.06

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN996	N04	WN99603C	2.88	05/12/99	HETEROCAPSA ROTUNDATA	131.33118
WN996	N04	WN99603C	2.88	05/12/99	LEPTOCYLINDRUS MINIMUS	108.01723
WN996	N04	WN99603C	2.88	05/12/99	PROROCENTRUM MINIMUM	3,584.12
WN996	N04	WN99603C	2.88	05/12/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	8,583.49
WN996	N04	WN99603C	2.88	05/12/99	SKELETONEMA COSTATUM	4,273.01
WN996	N04	WN99603C	2.88	05/12/99	THALASSIONEMA NITZSCHIOIDES	517.98606
WN996	N04	WN99603C	2.88	05/12/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	164.54003
WN996	N04	WN99603C	2.88	05/12/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	12,228.63
WN996	N04	WN99603A	14.81	05/12/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	283.29545
WN996	N04	WN99603A	14.81	05/12/99	CERATAULINA PELAGICA	779.89397
WN996	N04	WN99603A	14.81	05/12/99	CERATIUM LONGIPES	25,789.01
WN996	N04	WN99603A	14.81	05/12/99	CHAETOCEROS DEBILIS	959.35598
WN996	N04	WN99603A	14.81	05/12/99	CHAETOCEROS DECIPIENS	2,924.84
WN996	N04	WN99603A	14.81	05/12/99	CHAETOCEROS SOCIALIS	8,208.01
WN996	N04	WN99603A	14.81	05/12/99	CHAETOCEROS SPP.(<10UM)	2,860.01
WN996	N04	WN99603A	14.81	05/12/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	458.10315
WN996	N04	WN99603A	14.81	05/12/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	653.75874
WN996	N04	WN99603A	14.81	05/12/99	CYLINDROTHECA CLOSTERIUM	300.31416
WN996	N04	WN99603A	14.81	05/12/99	DICTYOCHA SPECULUM	314.41848
WN996	N04	WN99603A	14.81	05/12/99	DINOPHYSIS NORVEGICA	5,543.29
WN996	N04	WN99603A	14.81	05/12/99	EUCAMPIA ZOODIACUS	3,470.72
WN996	N04	WN99603A	14.81	05/12/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,970.03
WN996	N04	WN99603A	14.81	05/12/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,593.61
WN996	N04	WN99603A	14.81	05/12/99	HETEROCAPSA ROTUNDATA	221.53846
WN996	N04	WN99603A	14.81	05/12/99	LEPTOCYLINDRUS MINIMUS	34.16454
WN996	N04	WN99603A	14.81	05/12/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	85.98776
WN996	N04	WN99603A	14.81	05/12/99	PROROCENTRUM MINIMUM	8,162.03
WN996	N04	WN99603A	14.81	05/12/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	3,619.80
WN996	N04	WN99603A	14.81	05/12/99	PSEUDONITZSCHIA SPP.	253.64225
WN996	N04	WN99603A	14.81	05/12/99	SKELETONEMA COSTATUM	926.02919
WN996	N04	WN99603A	14.81	05/12/99	THALASSIONEMA NITZSCHIOIDES	245.74907
WN996	N04	WN99603A	14.81	05/12/99	THALASSIOSIRA ROTULA	962.35356
WN996	N04	WN99603A	14.81	05/12/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,368.62
WN996	N18	WN996059	2.12	05/12/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	62.47028
WN996	N18	WN996059	2.12	05/12/99	CERATIUM LONGIPES	4,100.24
WN996	N18	WN996059	2.12	05/12/99	CHAETOCEROS DECIPIENS	621.07671
WN996	N18	WN996059	2.12	05/12/99	CHAETOCEROS SOCIALIS	663.55419
WN996	N18	WN996059	2.12	05/12/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	1,838.63
WN996	N18	WN996059	2.12	05/12/99	CHAETOCEROS SPP.(<10UM)	699.41488
WN996	N18	WN996059	2.12	05/12/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10	210.76515

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					MICRO	
WN996	N18	WN996059	2.12	05/12/99	CYLINDROTHECA CLOSTERIUM	318.85207
WN996	N18	WN996059	2.12	05/12/99	EBRIA TRIPARTITA	203.24813
WN996	N18	WN996059	2.12	05/12/99	EUCAMPIA ZOODIACUS	7,922.68
WN996	N18	WN996059	2.12	05/12/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,075.70
WN996	N18	WN996059	2.12	05/12/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	4,130.57
WN996	N18	WN996059	2.12	05/12/99	HETEROCAPSA TRIQUETRA	1,894.21
WN996	N18	WN996059	2.12	05/12/99	HETEROSIGMA AKASHIWO	95.74943
WN996	N18	WN996059	2.12	05/12/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	82.16608
WN996	N18	WN996059	2.12	05/12/99	PROROCENTRUM MINIMUM	2,700.58
WN996	N18	WN996059	2.12	05/12/99	RHIZOSOLENIA FRAGILISSIMA	138.46039
WN996	N18	WN996059	2.12	05/12/99	SKELETONEMA COSTATUM	15,762.86
WN996	N18	WN996059	2.12	05/12/99	THALASSIONEMA NITZSCHIOIDES	347.89168
WN996	N18	WN996059	2.12	05/12/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	44.20359
WN996	N18	WN996059	2.12	05/12/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,637.84
WN996	N18	WN996059	2.12	05/12/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	315.73427
WN996	N18	WN996057	12.44	05/12/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	575.30769
WN996	N18	WN996057	12.44	05/12/99	CERATIUM FUSUS	2,323.68
WN996	N18	WN996057	12.44	05/12/99	CERATIUM LONGIPES	7,723.71
WN996	N18	WN996057	12.44	05/12/99	CHAETOCEROS DEBILIS	493.38307
WN996	N18	WN996057	12.44	05/12/99	CHAETOCEROS SEPTENTRIONALIS	200.32867
WN996	N18	WN996057	12.44	05/12/99	CHAETOCEROS SOCIALIS	3,449.86
WN996	N18	WN996057	12.44	05/12/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	20,780.81
WN996	N18	WN996057	12.44	05/12/99	CHAETOCEROS SPP.(<10UM)	2,797.66
WN996	N18	WN996057	12.44	05/12/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	590.44406
WN996	N18	WN996057	12.44	05/12/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	261.5035
WN996	N18	WN996057	12.44	05/12/99	CYLINDROTHECA CLOSTERIUM	120.12566
WN996	N18	WN996057	12.44	05/12/99	DICTYOCHA SPECULUM	188.65109
WN996	N18	WN996057	12.44	05/12/99	DINOPHYSIS NORVEGICA	3,325.98
WN996	N18	WN996057	12.44	05/12/99	EBRIA TRIPARTITA	765.72551
WN996	N18	WN996057	12.44	05/12/99	EUCAMPIA ZOODIACUS	3,470.72
WN996	N18	WN996057	12.44	05/12/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,350.88
WN996	N18	WN996057	12.44	05/12/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	10,893.17
WN996	N18	WN996057	12.44	05/12/99	HETEROCAPSA ROTUNDATA	199.38462
WN996	N18	WN996057	12.44	05/12/99	PROROCENTRUM MINIMUM	9,552.59
WN996	N18	WN996057	12.44	05/12/99	PSEUDONITZSCHIA SPP.	101.4569
WN996	N18	WN996057	12.44	05/12/99	RHIZOSOLENIA DELICATULA	1,423.70
WN996	N18	WN996057	12.44	05/12/99	RHIZOSOLENIA FRAGILISSIMA	521.64147

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN996	N18	WN996057	12.44	05/12/99	SKELETONEMA COSTATUM	570.6342
WN996	N18	WN996057	12.44	05/12/99	THALASSIONEMA NITZSCHIOIDES	524.26468
WN996	N18	WN996057	12.44	05/12/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	41.63361
WN996	N18	WN996057	12.44	05/12/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,674.22
WN996	N18	WN996057	12.44	05/12/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	4,758.04
WN998	N04	WN998026	2.13	07/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	31.30735
WN998	N04	WN998026	2.13	07/07/99	CERATIUM TRIPOS	17,109.75
WN998	N04	WN998026	2.13	07/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	70.57465
WN998	N04	WN998026	2.13	07/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	404.32074
WN998	N04	WN998026	2.13	07/07/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	372.63738
WN998	N04	WN998026	2.13	07/07/99	LEPTOCYLINDRUS MINIMUS	131.10661
WN998	N04	WN998026	2.13	07/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,507.22
WN998	N04	WN998026	2.13	07/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	474.69636
WN998	N04	WN998024	17.87	07/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	61.4645
WN998	N04	WN998024	17.87	07/07/99	CERATIUM FUSUS	546.2024
WN998	N04	WN998024	17.87	07/07/99	CERATIUM LONGIPES	7,262.13
WN998	N04	WN998024	17.87	07/07/99	CERATIUM TRIPOS	9,797.35
WN998	N04	WN998024	17.87	07/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	99.13951
WN998	N04	WN998024	17.87	07/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	793.78698
WN998	N04	WN998024	17.87	07/07/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	365.79215
WN998	N04	WN998024	17.87	07/07/99	LICMOPHORA SPP.	50.69867
WN998	N04	WN998024	17.87	07/07/99	PROTOPERIDINIUM DEPRESSUM	8,908.14
WN998	N04	WN998024	17.87	07/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	8,927.37
WN998	N18	WN99804E	2.23	07/07/99	CALYCOMONAS OVALIS	21.93332
WN998	N18	WN99804E	2.23	07/07/99	CALYCOMONAS WULFFII	21.42126
WN998	N18	WN99804E	2.23	07/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	874.68707
WN998	N18	WN99804E	2.23	07/07/99	CERATIUM TRIPOS	21,532.63
WN998	N18	WN99804E	2.23	07/07/99	CHAETOCEROS DIDYMUS	211.39713
WN998	N18	WN99804E	2.23	07/07/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	4,817.29
WN998	N18	WN99804E	2.23	07/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	716.67119
WN998	N18	WN99804E	2.23	07/07/99	DINOPHYSIS NORVEGICA	12,047.11
WN998	N18	WN99804E	2.23	07/07/99	EUCAMPIA CORNUTA	
WN998	N18	WN99804E	2.23	07/07/99	EUTREPTIA/EUTREPTIELLA SPP.	173.30986
WN998	N18	WN99804E	2.23	07/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	610.60537
WN998	N18	WN99804E	2.23	07/07/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	11,255.14

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN998	N18	WN99804E	2.23	07/07/99	HETEROCAPSA TRIQUETRA	1,073.49
WN998	N18	WN99804E	2.23	07/07/99	LEPTOCYLINDRUS MINIMUS	271.80848
WN998	N18	WN99804E	2.23	07/07/99	LICMOPHORA SPP.	259.99319
WN998	N18	WN99804E	2.23	07/07/99	PROROCENTRUM MINIMUM	437.98361
WN998	N18	WN99804E	2.23	07/07/99	PROTOPERIDINIUM SP. GROUP 2 31-75W 41-80	7,854.19
WN998	N18	WN99804E	2.23	07/07/99	PSEUDONITZSCHIA SPP.	2,751.74
WN998	N18	WN99804E	2.23	07/07/99	RHIZOSOLENIA DELICATULA	27,948.09
WN998	N18	WN99804E	2.23	07/07/99	SKELETONEMA COSTATUM	652.70824
WN998	N18	WN99804E	2.23	07/07/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	225.83961
WN998	N18	WN99804E	2.23	07/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	9,768.01
WN998	N18	WN99804E	2.23	07/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	716.88666
WN998	N18	WN99804C	11.13	07/07/99	CALYCOMONAS WULFFII	20.13598
WN998	N18	WN99804C	11.13	07/07/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	88.88712
WN998	N18	WN99804C	11.13	07/07/99	CERATIUM FUSUS	1,974.73
WN998	N18	WN99804C	11.13	07/07/99	CERATIUM LONGIPES	26,255.38
WN998	N18	WN99804C	11.13	07/07/99	CERATIUM TRIPOS	1,686.72
WN998	N18	WN99804C	11.13	07/07/99	CHAETOCEROS DECIPIENS	3,983.39
WN998	N18	WN99804C	11.13	07/07/99	CHAETOCEROS DIDYMUS	16.55944
WN998	N18	WN99804C	11.13	07/07/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	754.70828
WN998	N18	WN99804C	11.13	07/07/99	CHOANOFLAGELLATE SPP.	54.52492
WN998	N18	WN99804C	11.13	07/07/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	194.32815
WN998	N18	WN99804C	11.13	07/07/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	111.1089
WN998	N18	WN99804C	11.13	07/07/99	CYLINDROTHECA CLOSTERIUM	136.11536
WN998	N18	WN99804C	11.13	07/07/99	DINOPHYSIS NORVEGICA	1,884.35
WN998	N18	WN99804C	11.13	07/07/99	EBRIA TRIPARTITA	1,303.57
WN998	N18	WN99804C	11.13	07/07/99	EUTREPTIA/EUTREPTIELLA SPP.	27.15188
WN998	N18	WN99804C	11.13	07/07/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,147.94
WN998	N18	WN99804C	11.13	07/07/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	3,085.79
WN998	N18	WN99804C	11.13	07/07/99	GYRODINIUM SPIRALE	1,940.14
WN998	N18	WN99804C	11.13	07/07/99	LEPTOCYLINDRUS MINIMUS	23.22727
WN998	N18	WN99804C	11.13	07/07/99	LICMOPHORA SPP.	20.36613
WN998	N18	WN99804C	11.13	07/07/99	PROTOPERIDINIUM DEPRESSUM	32,206.36
WN998	N18	WN99804C	11.13	07/07/99	PSEUDONITZSCHIA SPP.	718.51023
WN998	N18	WN99804C	11.13	07/07/99	RHIZOSOLENIA DELICATULA	4,579.85
WN998	N18	WN99804C	11.13	07/07/99	SKELETONEMA COSTATUM	102.0932
WN998	N18	WN99804C	11.13	07/07/99	THALASSIOSIRA ROTULA	490.70277
WN998	N18	WN99804C	11.13	07/07/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	82.55693
WN998	N18	WN99804C	11.13	07/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	7,178.60
WN998	N18	WN99804C	11.13	07/07/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	673.87346

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
WN999	N04	WN999026	2.35	07/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	146.33553
WN999	N04	WN999026	2.35	07/20/99	CERATIUM FUSUS	1,114.55
WN999	N04	WN999026	2.35	07/20/99	CERATIUM LONGIPES	2,469.79
WN999	N04	WN999026	2.35	07/20/99	CERATIUM TRIPOS	19,039.98
WN999	N04	WN999026	2.35	07/20/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30 MICRO	42.59631
WN999	N04	WN999026	2.35	07/20/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	146.48647
WN999	N04	WN999026	2.35	07/20/99	CYLINDROTHECA CLOSTERIUM	19.20614
WN999	N04	WN999026	2.35	07/20/99	DINOPHYSIS NORVEGICA	531.76955
WN999	N04	WN999026	2.35	07/20/99	EBRIA TRIPARTITA	61.21352
WN999	N04	WN999026	2.35	07/20/99	EUCAMPIA CORNUTA	
WN999	N04	WN999026	2.35	07/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	269.97987
WN999	N04	WN999026	2.35	07/20/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	2,985.67
WN999	N04	WN999026	2.35	07/20/99	PEDIASTRUM SPP.	49.10468
WN999	N04	WN999026	2.35	07/20/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	4.11748
WN999	N04	WN999026	2.35	07/20/99	PSEUDONITZSCHIA SPP.	16.22131
WN999	N04	WN999026	2.35	07/20/99	RHIZOSOLENIA DELICATULA	142.02748
WN999	N04	WN999026	2.35	07/20/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	206.35265
WN999	N04	WN999026	2.35	07/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	6,857.95
WN999	N04	WN999024	16.93	07/20/99	CALYCOMONAS WULFFII	8.5639
WN999	N04	WN999024	16.93	07/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	9.45099
WN999	N04	WN999024	16.93	07/20/99	CERATIUM FUSUS	335.91966
WN999	N04	WN999024	16.93	07/20/99	CERATIUM LONGIPES	2,233.14
WN999	N04	WN999024	16.93	07/20/99	CERATIUM TRIPOS	6,025.46
WN999	N04	WN999024	16.93	07/20/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	66.22519
WN999	N04	WN999024	16.93	07/20/99	CYLINDROTHECA CLOSTERIUM	225.75588
WN999	N04	WN999024	16.93	07/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	122.05542
WN999	N04	WN999024	16.93	07/20/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	224.96564
WN999	N04	WN999024	16.93	07/20/99	LICMOPHORA SPP.	124.72065
WN999	N04	WN999024	16.93	07/20/99	RHIZOSOLENIA DELICATULA	51.36745
WN999	N04	WN999024	16.93	07/20/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	6.01872
WN999	N04	WN999024	16.93	07/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	3,763.10
WN999	N04	WN999024	16.93	07/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	143.30025
WN999	N18	WN99904A	1.84	07/20/99	CALYCOMONAS WULFFII	217.63249
WN999	N18	WN99904A	1.84	07/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	807.86505
WN999	N18	WN99904A	1.84	07/20/99	CERATIUM LINEATUM	2,508.12
WN999	N18	WN99904A	1.84	07/20/99	CERATIUM LONGIPES	8,598.53
WN999	N18	WN99904A	1.84	07/20/99	CERATIUM TRIPOS	19,886.20
WN999	N18	WN99904A	1.84	07/20/99	CHAETOCEROS SP. GROUP 2 DIAM 10-30	1,186.39

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)
					MICRO	
WN999	N18	WN99904A	1.84	07/20/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	271.99463
WN999	N18	WN99904A	1.84	07/20/99	CYLINDROTHECA CLOSTERIUM	66.86581
WN999	N18	WN99904A	1.84	07/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	1,127.92
WN999	N18	WN99904A	1.84	07/20/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	5,197.28
WN999	N18	WN99904A	1.84	07/20/99	HETEROCAPSA TRIQUETRA	165.23441
WN999	N18	WN99904A	1.84	07/20/99	LEPTOCYLINDRUS DANICUS	1,036.46
WN999	N18	WN99904A	1.84	07/20/99	LEPTOCYLINDRUS MINIMUS	646.58083
WN999	N18	WN99904A	1.84	07/20/99	PENNATE DIATOM SP. GROUP 2 10-30 MICRONS	43.00484
WN999	N18	WN99904A	1.84	07/20/99	PSEUDONITZSCHIA SPP.	282.3709
WN999	N18	WN99904A	1.84	07/20/99	RHIZOSOLENIA DELICATULA	3,065.69
WN999	N18	WN99904A	1.84	07/20/99	SKELETONEMA COSTATUM	16.71755
WN999	N18	WN99904A	1.84	07/20/99	THALASSIOSIRA ROTULA	964.21858
WN999	N18	WN99904A	1.84	07/20/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	2,456.51
WN999	N18	WN99904A	1.84	07/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	10,388.71
WN999	N18	WN99904A	1.84	07/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	1,655.30
WN999	N18	WN999048	14.06	07/20/99	CENTRIC DIATOM SP. GROUP 1 DIAM <10 MICR	61.68016
WN999	N18	WN999048	14.06	07/20/99	CERATIUM LONGIPES	1,214.51
WN999	N18	WN999048	14.06	07/20/99	CERATIUM TRIPOS	16,853.17
WN999	N18	WN999048	14.06	07/20/99	CRYPTOMONAS SP. GROUP 1 LENGTH <10 MICRO	72.03441
WN999	N18	WN999048	14.06	07/20/99	CRYPTOMONAS SP. GROUP 2 LENGTH >10 MICRO	51.40013
WN999	N18	WN999048	14.06	07/20/99	CYLINDROTHECA CLOSTERIUM	56.66747
WN999	N18	WN999048	14.06	07/20/99	GYMNODINIUM SP. GROUP 1 5-20UM W 10-20UM	66.26951
WN999	N18	WN999048	14.06	07/20/99	GYMNODINIUM SP. GROUP 2 21-40UM W 21-50U	489.39894
WN999	N18	WN999048	14.06	07/20/99	HETEROCAPSA TRIQUETRA	46.67764
WN999	N18	WN999048	14.06	07/20/99	LICMOPHORA SPP.	11.30509
WN999	N18	WN999048	14.06	07/20/99	PROTOPERIDINIUM DEPRESSUM	5,959.17
WN999	N18	WN999048	14.06	07/20/99	PSEUDONITZSCHIA SPP.	303.11815
WN999	N18	WN999048	14.06	07/20/99	RHIZOSOLENIA DELICATULA	1,620.33
WN999	N18	WN999048	14.06	07/20/99	SCRIPPSIELLA TROCHOIDEA	173.69625
WN999	N18	WN999048	14.06	07/20/99	THALASSIOSIRA SP. GROUP 3 10-20 MICRONS	176.76026
WN999	N18	WN999048	14.06	07/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 1 LENGTH	2,909.00
WN999	N18	WN999048	14.06	07/20/99	UNID. MICRO-PHYTOFLAG SP. GROUP 2 LENGTH	155.87045intf A

Survey	Sta.	Sample Number	Depth (m)	Sampling Date	Plankton	Estimated Carbon Equivalence (ng Carbon/L)

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