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US ARMY CORPS  
OF ENGINEERS  
New England District

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\_\_\_\_\_ August 2008

## *Field Report*

# **BOSTON HARBOR INNER HARBOR MAINTENANCE DREDGING PLUME MONITORING**

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**FIELD REPORT**

**BOSTON HARBOR INNER HARBOR  
MAINTENANCE DREDGING PLUME MONITORING**

**Submitted to:**

**Department of the Army  
U.S. Army Corps of Engineers  
North Atlantic Division  
New England District**

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## ACRONYMS AND ABBREVIATIONS

ADCP	Acoustic Doppler Current Profiler
CAD	Confined Aquatic Disposal
CTD	Conductivity Temperature Depth
DO	Dissolved Oxygen
GF/F	Glass Fiber Filter
EPA	Environmental Protection Agency
HS	High Slack
LS	Low Slack
MBDS	Massachusetts Bay Disposal Site
ME	Maximum Ebb
MF	Maximum Flood
NAE	New England District
NTU	Nephelometric Turbidity Units
OBS	Optical Back-Scatter
SAP	Sampling and Analysis Plan
SRM	Standard Reference Materials
TSS	Total Suspended Solids
USACE	U.S. Army Corps of Engineers

## 1.0 INTRODUCTION

This report covers the field and laboratory activities conducted at the request of the U.S. Army Corps of Engineers, New England District (NAE) to support a maintenance dredging project for the Boston Harbor Inner Harbor. This field report includes a description of work performed during water quality monitoring conducted in Boston Harbor's Inner Harbor during removal of silty material, unsuitable for ocean placement, during the opening of a potential CAD cell in a portion of the Federal navigation channel and placement of the resulting dredged material into the Mystic River CAD cell.

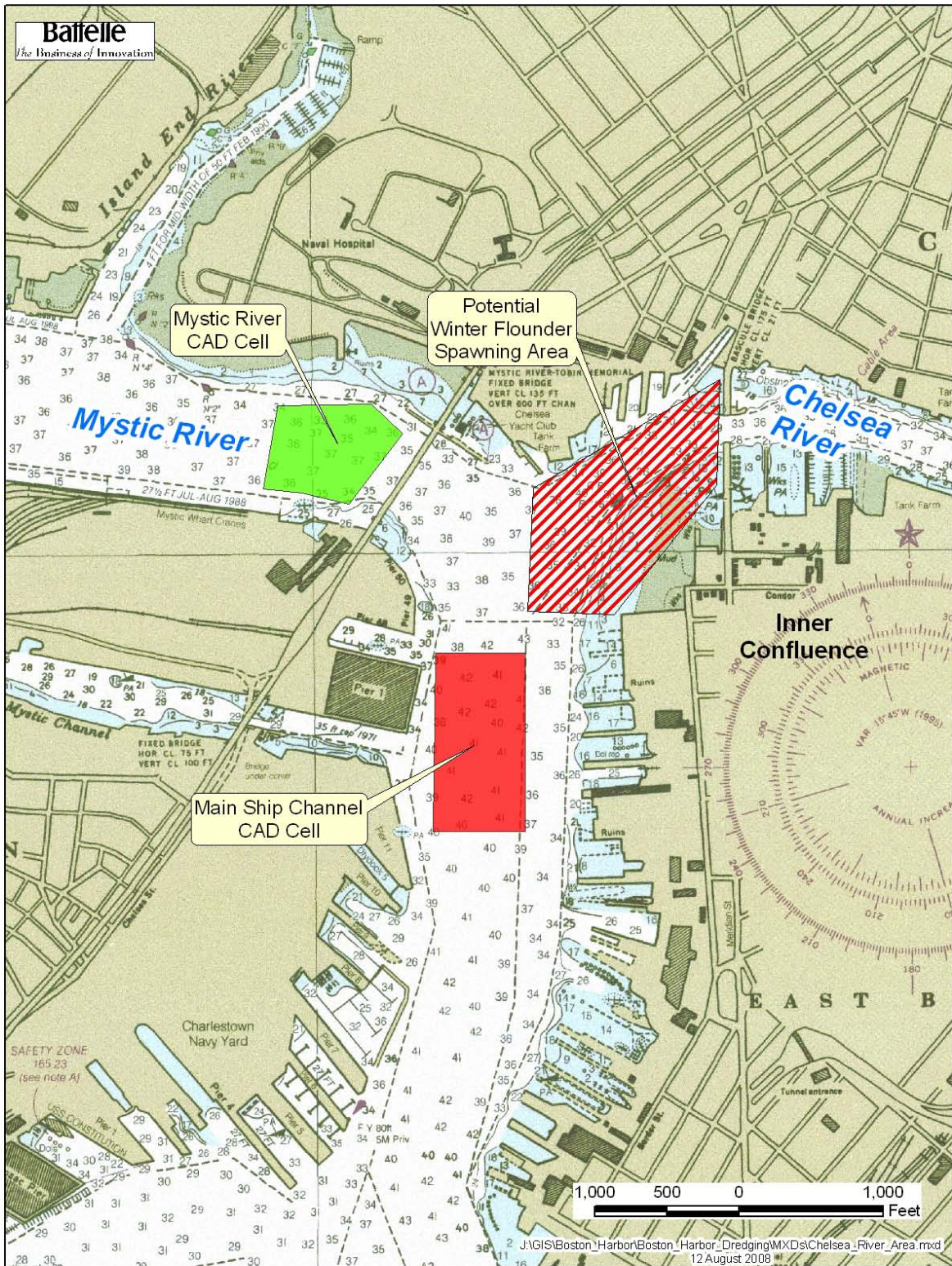
### 1.1 Site Description

Boston Harbor is the largest port in New England and serves as a major hub for national and international shipping and commerce. Beginning in the spring of 2008, USACE has been conducting maintenance dredging of the inner portion of the Federal navigation channels in Boston Harbor. The maintenance dredging has been broken into base work and optional contract work. The base work involves dredging the Main Ship Channel from a location approximately half-way between Spectacle Island and Castle Island upstream to approximately the North Jetty, the upper Reserved Channel, and the approach channel to the Navy Dry Dock, all to their authorized depths. The base plan also involves the dredging of a CAD cell in the Mystic River and the removal of the silty layer over another potential CAD cell in the Main Ship Channel. (Figure 1). Approximately 1.3 million cubic yards (cy) of the 1.7 million cy to be dredged from the Federal channels is unsuitable for ocean placement and will be placed into CAD cells located beneath the Federal channels. The remaining 400,000 cy of dredged material, plus the parent material excavated in constructing the CAD cells, will be placed at the Massachusetts Bay Disposal Site (MBDS).

### 1.2 Project Objectives

The primary objective of this monitoring effort was to conduct shipboard field monitoring to gauge the extent of potential water quality impacts and to track plume trajectories resulting from dredging and disposal operations. In particular, sediment resuspension, transport, and subsequent deposition on potential winter flounder spawning grounds has been identified by the resource agencies as an environmental concern. In order to identify any potential project related impacts relative to these resources, this monitoring effort used proven methods from similar past dredge monitoring projects to track dredging plume migration in real-time. Monitoring was performed over multiple tidal cycles at those times when dredging activities had the greatest potential to impact sensitive resource areas. This information could have been used to make to make operational adjustments during dredging operations as may have been necessary to minimize impacts either to water quality or sediment transport to potential winter flounder spawning habitat. Turbidity from placement of material in the CAD cell was also monitored to comply with the Water Quality Certification requirement to monitor during the first week of disposal.





**Figure 1. Map of Boston Harbor Confluence Area Showing the Main Ship Channel CAD Cell, Mystic CAD Cell and Potential Winter Flounder Spawning Area.**



### 1.3 Field Activity Summary

Water quality monitoring was conducted in Boston Harbor's Inner Harbor from June 30 through July 3, 2008 during dredging and CAD cell disposal operations. All planned field monitoring activities were completed during the removal of the unsuitable, silty material over the potential CAD cell in the Main Ship Channel and during the placement of that dredged material into the Mystic River CAD cell. This included plume tracking and turbidity monitoring throughout two complete tidal cycles (8 tide phase events) during dredging operations at the Main Ship Channel CAD cell (Figure 2) and one slack tide plume monitoring during the first week of material placement into the Mystic River CAD cell. Dredged material plumes were observed during each monitoring event. Turbidity values never exceeded the established threshold criteria and consequently no monitoring exceedance protocols were initiated. All planned samples were collected for laboratory TSS analysis.

Table 1 presents the timeline of field activities performed and a list of on-site field personnel during all survey activities. Dredge plume monitoring was performed over three days (June 30, July 2, and July 3). Slack tide disposal plume monitoring was performed at the Mystic River CAD Cell on July 1. July 3 was authorized by NAE as an additional dredging monitoring day (standby day) to sample during tide phases that were not sampled on June 30 or July 2 when dredging operations were suspended for ship passages. This field report describes field sampling activities and provides a synopsis of some preliminary observations from the survey. A description of survey methods is provided in Section 2. A chronological summary of survey activities for sampling is provided in Section 3. Preliminary survey results are provided in Section 4. A description of survey problems, corrective actions, and recommendations for future surveys, can be found in Section 5. Supporting information such as field logs and TSS data are provided in Attachments 1-5 of this document.

**Table 1. Survey Personnel for Boston Harbor Inner Harbor Maintenance Dredging Plume Monitoring.**

Personnel	Field Activity	Main Ship Channel CAD Cell Dredge Monitoring	Mystic River CAD Cell Disposal Plume Monitoring	Main Ship Channel CAD Cell Dredge Monitoring	Main Ship Channel CAD Cell Dredge Monitoring
	Date	06/30/2008	07/01/2008	07/02/2008	07/03/2008 <sup>a</sup>
<b>Battelle Staff</b>					
Chief Scientist		Paul Dragos	Paul Dragos	Paul Dragos	Paul Dragos
ADCP Technician		Matt Fitzpatrick	Matt Fitzpatrick	Matt Fitzpatrick	Matt Fitzpatrick
Sample Collector		Michael McKee	Michael McKee	Michael McKee	Anne Murphy
NAVSAM Operator		Bob Mandeville	Bob Mandeville	Bob Mandeville	Mike Walsh
Vessel Captain		Bob Carr	Bob Carr	Bob Carr	Bob Carr
<b>NAE</b>					
Observer				Catherine Rogers	

<sup>a</sup> Standby day used to sample during tide phases not sampled earlier due to suspension of dredging operations.



**Figure 2. Dredging Operations During Removal of Material Over the Main Ship Channel CAD Cell.**

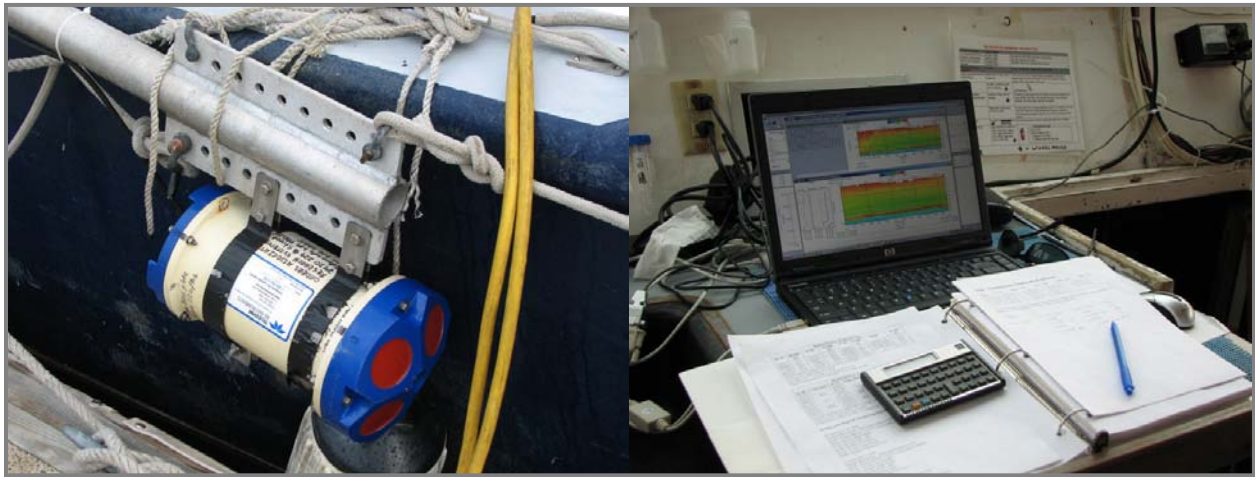
## 2.0 METHODS

Details on the survey/sampling methods can be found in the final project Sampling and Analysis Plan (Battelle, 2008).

The study design incorporated a broad scale monitoring of sediment plumes using a ship-mounted ADCP combined with discrete location water column profiling for in situ turbidity using a CTD/Turbidity sensor and rosette, including whole water sample collection for TSS analysis.

### 2.1 Plume Tracking using ADCP

Plume tracking was conducted using RD Instruments 1200kHz Workhorse Sentinel ADCP mounted on the Battelle R/V *Aquamonitor* (Figure 3). The ADCP measured acoustic backscatter intensity in decibels (db), as a surrogate measure of suspended sediment concentration, at 0.5 m vertical intervals throughout the water column while the vessel was underway. As the vessel ran transects across the ship channel and the adjacent shallow areas or longitudinally along the ship channel, the ADCP mapped out vertical slices of suspended sediment concentration along those transects. These cross sections provided a real-time map of plume location, movement, and dispersion which provided the information needed to select CTD/Turbidity water column vertical profile locations. **Table 2** presents a summary of ADCP transects performed.



**Figure 3. RD Instruments 1200kHz Workhorse Sentinel ADCP Mounted on the Battelle R/V Aquamonitor and ADCP Real-Time Display / Data Collection PC.**

## **2.2 Vertical CTD/Turbidity/Dissolved Oxygen Profiling and TSS Sampling**

A CTD/Turbidity sensor and rosette water sampler was lowered over the stern of the R/V *Aquamonitor* (Figure 4) to perform vertical profiles at discrete locations (summarized in Table 3). The profiler was equipped with an underwater instrument package consisting of the CTD, a Dissolved Oxygen (DO) sensor, optical backscatter turbidity sensors (OBS) and a water-sampling system including 9L Rosette sampling bottles. Three OBS's were included in the sensor suite, each configured for a different range of potential turbidity measurements (0– 25, 0– 125, and 0–500 NTU).

**Table 2. Type and Approximate Locations of ADCP Transects**

Tide Stage <sup>a</sup>	ADCP File ID	Route Start Time	Transect Type and Approximate Locations
<b>Main Ship Channel CAD Cell Dredge Monitoring 30-Jun-2008</b>			
HS (weak ebb)	BH081021	10:46	cross-channel 300 ft up, 250, 500, 1000 ft down-current
ME	BH081024	13:17	cross-channel 300 ft up, 300, 500, 1000 ft down-current
Ship Passage	BH081029	16:35	cross-channel 500 ft behind ship
LS (weak flood)	BH081030	16:53	cross-channel 300 ft up, 200, 300, 500 ft down-current
	BH081031	17:11	along-channel transect
	BH081033	17:36	cross-channel 1000 ft down-current
<b>Mystic CAD Cell Disposal Plume Monitoring 01-Jul-2008</b>			
HS (weak ebb)	BH081041	11:07	multiple cross-channel 300 ft down-current multiple cross-channel 500 ft down-current
	BH081042	11:25	multiple cross-channel 500 ft up-current
	BH081043	11:38	multiple cross-channel 500 ft up-current
	BH081044	11:43	along-channel transect plus various
<b>Main Ship Channel CAD Cell Dredge Monitoring 02-Jul-2008</b>			
MF	BH081049	8:18	cross-channel 300 ft up, 150, 300, 600, 1000 ft down-current
	BH081050	8:43	along-channel transect
Ship Passage	BH081063	12:47	cross-channel 500 ft behind ship
ME	BH081065	14:54	cross-channel 300 ft up, 200, 300, 500, 1000, 1500 ft down-current
	BH081066	15:14	along-channel transect
LS (weak ebb)	BH081075	17:09	cross-channel 300 ft up, 300, 500, 1000 ft down-current
<b>Main Ship Channel CAD Cell Dredge Monitoring 03-Jul-2008</b>			
MF	BH081086	9:01	cross-channel 300 ft up, 200, 300, 500, 1000 ft down-current
	BH081087	9:19	cross-channel 1500 ft down-current
	BH081088	9:23	along-channel transect
HS (weak flood)	BH081101	11:31	cross-channel 300 ft up, 150, 300, 500, 1000 ft down-current
	BH081102	11:50	along-channel transect

<sup>a</sup> HS = High Slack. MF = Max Flood. LS = Low Slack. ME = Max Ebb.





**Figure 4. CTD/Turbidity/Dissolved Oxygen Profiler and Water Sample Rosette System Being Deployed from the R/V *Aquamonitor*.**



**Figure 5. Bench Top Turbidimeter.**

Whole water samples were collected using the Rosette sample bottles for laboratory TSS analysis and for shipboard measurement of turbidity using a bench top LaMotte Model 2020e Turbidimeter. Samples were collected by triggering the Rosette bottles at designated depths. After the Rosette was recovered and on deck, samples were transferred to 1-L opaque bottles and stored on ice (~4°C) and in the dark until they were delivered to Alpha Analytical for processing and TSS analysis. Water samples were also transferred from the Rosette bottles to 10ml glass vials for immediate onboard turbidity analysis (Figure 5). The outside of the vials were cleaned and dried prior to insertion into the Turbidimeter to prevent particles and condensation on the outside of the vial from interfering with the measurements. The instrument was set up to collect two separate readings from each sample and average the result. The averaged result was transcribed onto the field data sheet.

**Table 3. Summary of CTD/Turbidity Profiles and TSS Samples**

Date	Type of Monitoring	Location	Monitoring Period	Number of Profile Stations	Number of TSS Samples (including QC)	Total Number of Samples Per Day
6/30/2008	Dredging	Inner Confluence	High Slack	6	18 + 1 dup	60
			Max Ebb	6	18 + 1 dup	
			Low Slack	6	18 + 1 dup	
	Ship Passage	Inner Confluence	Ship Passage	1	3	
7/1/2008	Disposal	Mystic River	Disposal Monitoring	5	10	10
7/2/2008	Dredging	Inner Confluence	Max Flood	6	18 + 1 dup + 2 cal	62
			Max Ebb	6	18 + 2 dup	
			Low Slack	6	18 + 1 dup	
	Ship Passage	Inner Confluence	Ship Passage	1	2 <sup>a</sup>	
7/3/2008	Dredging	Inner Confluence	Max Flood	6	18 + 1 dup	38
			High Slack	6	18 + 1 dup	

<sup>a</sup> The near-surface sample not taken.

### 2.3 Laboratory TSS Processing

The whole water samples collected during the survey were analyzed by Alpha Analytical Laboratory for TSS using EPA method 160.2. A well-mixed sample was filtered through a standard GF/F glass fiber filter and the residual retained on the filter was dried and weighed. For each batch of 20 or fewer samples, a laboratory method blank, duplicate, and SRM was processed and analyzed with the field samples. Results are reported on a dry-weight basis.



## 2.4 Deviations

While sampling in the wake of the tanker *Nor-easter* on July 2, the near-surface sample was inadvertently not collected due to a procedural error.

Other deviations from planned activities are described in Section 5.

## 3.0 SURVEY CHRONOLOGY

Note: All times are recorded as Eastern Standard Time

### **Main Ship Channel CAD Cell Dredge Monitoring: Monday, June 30, 2008**

- 0618 Crew arrives at Hewitt's Cove Marina, begins setup, system checks, navigation check.
- 0702 Depart Hewitt's Cove Marina for Boston Inner Harbor Dredge area.
- 0758 Arrive Boston Inner Harbor Dredge area.
- 0845 Determine current direction, get navigation fix on dredge and begin ADCP transects.
- 0920 Transects complete, but the scow is ready to dump and dredge operations are suspended.  
Perform a few transects behind scow while dumping to determine how the operation will work during disposal monitoring.
- 1045 Get navigation fix on dredge, repeat ADCP transects due to change in current direction.
- 1104 ADCP transects completed start CTD profiles and TSS/turbidity sample collection.
- 1204 CTD profile completed. Notice a leak in the hydraulic lines for the A-frame. Tie up at dock and replace the line.
- 1315 Begin max ebb monitoring and ADCP transects
- 1330 ADCP transects complete.
- 1345 Begin CTD profiles and TSS/turbidity sample collection.
- 1438 CTD profiles and TSS/turbidity sample collection completed.
- 1552 Begin low slack monitoring.
- 1555 Determine current direction, get navigation fix on dredge and collect reference samples
- 1635 Conduct ship passage monitoring.
- 1653 Conduct ADCP transects.
- 1714 ADCP transects complete, begin CTD profiles and TSS/turbidity sample collection.
- 1742 CTD profiles and TSS/turbidity sample collection completed.
- 1800 LNG tanker begins approach into the Mystic River and all operations are shut down.
- 2000 Dredge operations still suspended. Begin transit back to Hewitt's Cove Marina.
- 2129 Arrive Hewitt's Cove Marina, navigation check completed, shut down for the night.

### **Mystic CAD Cell Disposal Monitoring: Tuesday, July 1, 2008**

- 0638 Crew arrives at Hewitt's Cove Marina, begins setup, system checks, navigation check.
- 0705 Depart Hewitt's Cove Marina for Boston Inner Harbor Dredge area.
- 0820 Arrive Mystic River CAD cell disposal area. Determine current direction.
- 0842 Begin reference sample collection. Note: the 1500 foot down current location could not be accessed due to LNG tanker tied up, but there hadn't been any disposals for at least 6 hours.
- 1106 Scow releases dredged material and ADCP transects immediately begin.
- 1130 Begin CTD profiles and TSS/turbidity sample collection.
- 1158 CTD profiles and TSS/turbidity sample collection completed.
- 1207 Depart for Hewitt's Cove Marina.
- 1313 Arrive Hewitt's Cove Marina, navigation check completed, shut down for the day.

### **Main Ship Channel CAD Cell Dredge Monitoring: Wednesday, July 2, 2008**

- 0643 Crew arrives at Hewitt's Cove Marina, begins setup, system checks, navigation check.
- 0700 Depart Hewitt's Cove Marina for Boston Inner Harbor Dredge area.
- 0805 Arrive Boston Inner Harbor Dredge area. Begin max flood monitoring.
- 0808 Determine current direction, get navigation fix on dredge and begin ADCP transects.
- 0845 Transects complete, begin CTD profiles and TSS/turbidity sample collection.
- 0937 CTD profiles and TSS/turbidity sample collection completed.
- 1030 Return to dock to pick up NAE observer.
- 1125 Conduct one profile during disposal (calibration sample).
- 1230 Ship "*Nor'Easter*" passes. Dredge operations are shut down to allow passage. No high slack monitoring is possible.
- 1247 Conduct ship passage monitoring
- 1454 Begin max ebb monitoring. Determine current direction, get navigation fix on dredge and begin ADCP transects.
- 1517 ADCP transect complete. Begin CTD profiles and TSS/turbidity sample collection.
- 1604 CTD profiles and TSS/turbidity sample collection completed.
- 1709 Begin low slack monitoring. Determine current direction, get navigation fix on dredge and begin ADCP transects.
- 1723 ADCP transect complete. Begin CTD profiles and TSS/turbidity sample collection.
- 1806 CTD profiles and TSS/turbidity sample collection completed.
- 1810 Depart for Hewitt's Cove Marina.
- 1915 Arrive Hewitt's Cove Marina, Navigation check completed, shut down for the day.

## **Main Ship Channel CAD Cell Dredge Monitoring: Thursday, July 3, 2008**

- 0656 Crew arrives at Hewitt's Cove Marina, begins setup, system checks, navigation check.
- 0730 Depart Hewitt's Cove Marina for Boston Inner Harbor Dredge area.
- 0845 Arrive Boston Inner Harbor Dredge area. Begin max flood monitoring.
- 0852 Determine current direction, get navigation fix on dredge and begin ADCP transects.
- 0925 ADCP transect complete. Begin CTD profiles and TSS/turbidity sample collection.
- 1037 CTD profiles and TSS/turbidity sample collection completed.
- 1130 Begin high slack monitoring. Determine current direction, get navigation fix on dredge and begin ADCP transects.
- 1145 ADCP transects interrupted by USACE bathymetry boat. Battelle operations put on hold until the bathymetry boat exits the area.
- 1215 Get new navigation fix on dredge and begin ADCP transects to confirm current direction hasn't changed.
- 1220 Begin CTD profiles and TSS/turbidity sample collection.
- 1311 CTD profiles and TSS/turbidity sample collection completed.
- 1325 Conduct a CTD profile 1NM south of dredge to see if background levels were lower further from dredge operations. Depart for Hewitt's Cove Marina.
- 1429 Arrive Hewitt's Cove Marina, conduct navigation check and breakdown and pack up all equipment.

## **4.0 SURVEY RESULTS**

### **4.1 Field Observations**

During the first day of monitoring, June 30, 2008, dredge plumes were surveyed during HS, LS, and ME. Using ADCP, plumes were observed as far as the 500 ft down-current transects during HS and LS, and as far as the 1000 ft down-current transect during ME. The plumes were located in the channel directly down-current of dredging operations and were narrow relative to the channel width. They were estimated to range from roughly 25 ft wide near the dredge to 150 ft wide at the furthest observed down-current transects. Approximately 400 ft down-current of the dredging operation, at the approximate plume centroid, turbidity was measured using OBS up to approximately 10 NTU above background. OBS data received preliminary calibration using the bench top turbidimeter. Turbidity returned to background (approximately 2-3 NTU) by the 1000 ft or 1500 ft down-current transects. At lateral stations located outside the channel on the centroid transect (approximately 400 ft down-current), turbidity values were at or near background (2-3 NTU). Turbidity values at background reference stations located on the 1000 ft up- and the 1500 ft down-current transects were approximately 2-3 NTU throughout the water column with occasionally higher values detected near bottom. No exceedances were measured during any of the plume surveys. No fish were observed during the day but gulls and terns were observed working in and around the area.

During the passage of the container ship *Raykjafoss*, a transect was run, a vertical profile taken, and samples were collected in the wake of the ship. These observations were made at a location beyond any previously observed dredge plume (> 2000 ft south of the dredging operation). The draft of the *Raykjafoss* could not be observed but it was loaded with containers stacked up to 5 tall above her deck. No sediment plume was observed in the wake of the ship using the ADCP or in the vertical profile.

On July 1, 2008 a disposal plume was surveyed during a dredged material release from a split hull scow at the Mystic River CAD cell. The survey was performed during HS. The disposal plume was tracked using ADCP in the immediate vicinity of the release. A distinct signal was observed using the ADCP but the plume dissipated so quickly that measurements of turbidity and TSS in vertical profiles at the 500 ft line did not show comparably high turbidity values. The tide was ebbing weakly but the plume was observed using ADCP out to a distance of approximately 500 ft on both the up- and down-current sides of the release. Turbidity values measured by OBS mid-channel at the 500 ft line were only 1-2 NTU above background with highest values from mid-depth to near-bottom. Profiles at lateral stations located outside the channel on the 500 ft line showed that turbidity values remained near background. No exceedances were observed during the release. A striped bass was observed feeding shortly after the release at a location outside the channel. No large vessels passed during the survey.

On July 2, 2008, dredge plumes were monitored during LS, MF and ME. Using ADCP, a plume was observed as far as the 500 ft down-current transect during LS, as far as the 1000 ft down-current transect during the MF, and as far as the 1500 ft down-current transect during the ME. The plumes were located in the channel directly down-current of dredging operations and were narrow relative to the channel width. They were estimated to range from roughly 25 ft wide near the dredge to 200 or 250 ft wide at the furthest observed down-current transects. Approximately 400 ft down-current of the dredging operation, at the approximate plume centroid, turbidity was measured by OBS up to approximately 8 NTU above background. Turbidity was observed as high as 20 NTU above background near bottom at 1000 ft down-current transect during MF. Turbidity values were at or near background (2-3 NTU) at both the lateral stations. Lateral stations were located outside of the channel on the centroid transect (approximately 400 ft down-current). Turbidity values at reference stations located outside the channel on the 1000 ft up- and the 1500 ft down-current transects were approximately 2-3 NTU throughout the water. No exceedances were observed during any of the plume surveys. Gulls and terns were observed working in and around the area and menhaden were observed jumping. Schools of fish (probably menhaden) were also observed on the boat echosounder and on the ADCP.

An ADCP transect was run, a vertical profile taken, and samples were collected in the wake of the tanker ship *Nor-easter* (34.5 ft draft). As with the *Raykjafoss*, these observations were made at a location beyond any previously observed dredge plume (greater than 2000 ft south of the dredging operation). No sediment plume was observed in the wake of the ship using the ADCP or in the vertical profile.

On July 3, 2008, dredge plumes were monitored during HS and MF. Using ADCP, a plume was observed as far as the 1000 ft down-current transect during HS and as far as the 1500 ft down-

current transect during MF. The plumes were located in the channel directly down-current of dredging operations and were narrow relative to the channel width. They were estimated to range from roughly 25 ft wide near the dredge to 200 or 250 ft wide at the furthest observed down-current transects. Approximately 400 ft down-current of the dredging operation, at the approximate plume centroid, turbidity was measured by OBS up to approximately 11 NTU above background. Turbidity values were at or near background (2-4 NTU) at both the lateral stations. Turbidity values at reference stations located outside the channel on the 1000 ft up- and the 1500 ft down-current transects were approximately 2-4 NTU throughout the water column. No exceedances were observed during either of the plume surveys. Gulls and terns were observed working in and around the area and pogies were observed jumping near the scow. Schools of fish (probably menhaden) were observed on the boat echosounder and on the ADCP. No large vessels passed during the survey.

#### 4.2 Results

CTD/Turbidity profiles and whole water samples were collected at each planned location during both dredge plume and disposal plume monitoring. A summary of the profiles taken and the samples collected is presented in Table 4. All the *in situ* CTD, OBS turbidity, and DO profile data are presented in Appendix 3. Turbidity data presented in Appendix 3 have been calibrated using the bench top turbidimeter measurements made in the field but have not been corrected for background.

All field bench top turbidimeter measurements are presented in Appendix 4. These include measurements taken at each profile at the turbidity profile peak depth and near bottom.

Results of the laboratory analysis of TSS are provided in Appendix 5.

**Table 4. CTD/Turbidity Vertical Profile Locations and Samples Collected**

Station ID	Station Type	NAVSAM File ID	Longitude	Latitude	Sample Time	Observed Echo Sounder Depth (ft)	Number of TSS Samples Collected
<b>Main Ship Channel CAD Cell Dredge Monitoring 30-Jun-2008</b>							
HS1	Plume Centroid	BH081039	-71.046516	42.376816	11:03	47.9	4
HS2	Lateral Extent	BH081042	-71.047966	42.376583	11:12	22.6	3
HS3	Lateral Extent	BH081044	-71.043182	42.375301	11:22	28.5	3
HS4	Plume Down Current	BH081047	-71.046654	42.375484	11:35	47.6	3
HS5	Reference	BH081050	-71.047134	42.371250	11:46	49.5	3
HS6	Reference	BH081054	-71.044380	42.381485	12:04	49.2	3
ME1	Plume Centroid	BH081067	-71.046532	42.375965	13:46	43.6	3
ME2	Lateral Extent	BH081069	-71.047966	42.376034	13:55	27.6	4
ME3	Lateral Extent	BH081072	-71.043915	42.375851	14:04	31.8	3
ME4	Plume Down Current	BH081076	-71.046204	42.375515	14:13	43.0	3

**Table 4. CTD/Turbidity Vertical Profile Locations and Samples Collected, continued**

Station ID	Station Type	NAVSAM File ID	Longitude	Latitude	Sample Time	Observed Echo Sounder Depth (ft)	Number of TSS Samples Collected
ME5	Reference	BH081083	-71.044037	42.380932	14:28	41.0	3
ME6	Reference	BH081086	-71.047218	42.372051	14:38	43.0	3
LS1	Reference	BH081091	-71.045418	42.382133	16:00	44.3	3
LS2	Reference	BH081095	-71.047249	42.372684	16:13	43.6	3
LS3	Plume Centroid	BH081106	-71.046051	42.378967	17:17	45.3	3
LS4	Lateral Extent	BH081110	-71.048019	42.378918	17:24	29.2	4
LS5	Lateral Extent	BH081113	-71.043335	42.378883	17:32	27.9	3
LS6	Plume Down Current	BH081116	-71.046036	42.379684	17:42	45.9	3
Ship1	Ship Passage		-71.045502	42.374199	16:40	42.0	3
<b>Mystic CAD Cell Disposal Plume Monitoring 01-Jul-2008</b>							
REF1	Disposal Reference	BH081145	-71.046570	42.384132	08:49	52.2	2
REF2	Disposal Reference	BH081148	-71.051353	42.385448	09:07	57.4	2
DD1	Disposal 500 ft	BH081164	-71.051651	42.385666	11:29	48.9	2
DD2	Disposal 500 ft	BH081167	-71.051582	42.384865	11:35	55.1	2
DD3	Disposal 500 ft	BH081170	-71.051598	42.386566	11:41	32.2	2
<b>Main Ship Channel CAD Cell Dredge Monitoring 02-Jul-2008</b>							
MF1	Plume Centroid	BH081188	-71.045715	42.380283	08:48	48.2	4
MF2	Lateral Extent	BH081191	-71.047050	42.380585	08:57	42.0	3
MF3	Lateral Extent	BH081195	-71.043167	42.381065	09:05	30.8	3
MF4	Plume Down Current	BH081200	-71.045631	42.380650	09:18	50.9	3
MF5	Reference	BH081203	-71.044670	42.383301	09:26	48.9	3
MF6	Reference	BH081206	-71.045570	42.376701	09:37	48.2	3
DX	Calibration	BH081214	-71.049751	42.384567	11:30	NA	2
Ship2	Ship Passage	BH081223	-71.044563	42.382450	12:43	50.9	2
ME1	Plume Centroid	BH081231	-71.045715	42.379116	15:21	44.0	3
ME2	Lateral Extent	BH081235	-71.047997	42.379066	15:30	38.1	4
ME3	Lateral Extent	BH081238	-71.043465	42.379135	15:37	36.7	3
ME4	Plume Down Current	BH081241	-71.045914	42.377567	15:46	44.0	3
ME5	Reference	BH081245	-71.043564	42.376148	15:55	24.3	3
ME6	Reference	BH081248	-71.042816	42.382984	16:04	41.0	3
LS1	Plume Centroid	BH081255	-71.044968	42.379650	17:26	41.0	3
LS2	Lateral Extent	BH081258	-71.047432	42.379581	17:32	35.1	3
LS3	Plume Down Current	BH081260	-71.045067	42.379166	17:40	40.4	3
LS4	Lateral Extent	BH081263	-71.043381	42.379700	17:46	34.4	4
LS5	Reference	BH081266	-71.042480	42.383583	17:55	41.3	3
LS6	Reference	BH081271	-71.047348	42.376816	18:06	35.1	3
<b>Main Ship Channel CAD Cell Dredge Monitoring 03-Jul-2008</b>							
MF1	Plume Centroid	BH081294	-71.045334	42.379032	09:28	46.6	3



**Table 4. CTD/Turbidity Vertical Profile Locations and Samples Collected, continued**

Station ID	Station Type	NAVSAM File ID	Longitude	Latitude	Sample Time	Observed Echo Sounder Depth (ft)	Number of TSS Samples Collected
MF2	Plume Down Current	BH081301	-71.045967	42.380482	09:52	50.5	4
MF3	Lateral Extent	BH081304	-71.047653	42.378666	10:01	38.1	3
MF4	Lateral Extent	BH081308	-71.043335	42.378933	10:10	32.8	3
MF5	Reference	BH081311	-71.043900	42.375233	10:20	38.7	3
MF6	Reference	BH081315	-71.042984	42.381882	10:37	25.9	3
HS1	Plume Centroid	BH081321	-71.045815	42.378883	12:26	50.2	3
HS2	Plume Down Current	BH081324	-71.045700	42.379601	12:34	51.8	3
HS3	Lateral Extent	BH081326	-71.047768	42.379616	12:42	44.3	3
HS4	Lateral Extent	BH081329	-71.043320	42.379833	12:49	31.2	3
HS5	Reference	BH081333	-71.043053	42.382000	12:59	25.3	3
HS6	Reference	BH081336	-71.043350	42.375366	13:11	30.5	4

## 5.0 PROBLEMS EXPERIENCED, ACTIONS TAKEN, AND RECOMMENDATIONS

### 5.1 Logistical

The passage of an LNG tanker coincident with the MF on the first day of the survey, June 30, suspended dredging operations for several hours and prevented sampling during the MF. On July 2 dredging was suspended around HS for a ship passage and disposal did not resume for several hours which prevented sampling during the HS. A standby day was used on July 3 to sample during MF and HS tide phases not sampled earlier.

Dredge 54 operated by Great Lakes Dredge and Dock Company is 185 ft long and 60 wide. During dredging a 200 ft scow was tied to the dredge with the scow set forward of the barge approximately 50 ft for an approximate total length of 235 ft (Figure 6). Both were oriented lengthwise along the channel with the business end of the dredge and the bow of the scow oriented up-channel. This configuration meant that while the tide was ebbing, it was not possible to run across channel transects 100 ft from the operation of the dredge bucket since that line ran through the scow and dredge. Instead transects were run as close as possible but usually no closer than approximately 250 ft. During flood tide, although the course of the 100 ft transect line was clear of the scow, safety considerations prohibited running transects any closer than approximately 150 ft from the dredge bucket operation.



**Figure 6. Dredge 54 Operated by Great Lakes Dredge and Dock Company and Scow During Dredging of Silty Layer Over the Main Ship Channel CAD Cell.**

## 5.2 Technical

Reference samples were initially collected at mid-channel locations on the 1000 ft up-current transect and on the 1500 ft down-current transect, as specified in the SAP. Turbidity profiles at these locations showed elevated turbidity near bottom (approximately 8 NTU) during several profiles, possibly reflecting the presence of a persistent turbidity signal in the deep channel caused by dredging operations. ADCP measurements showed the clear presence of the plume 1500 ft down-current during the MF and ME on the second and third days of dredging plume monitoring. As a result, reference sample locations were changed to locations outside the channel on the 1000 ft up- and 1500 ft down-current transects where conditions were more representative of background.

## 6.0 REFERENCES

Sampling and Analysis Plan for Boston Harbor Inner Harbor Maintenance Dredging Plume Monitoring. (Battelle, 2008)

**Appendix 1**

**Sampling Logs**

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# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Duxbury Project Number: G606407

Survey ID: ~~BHmmm~~ BH081

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 06/30/08 INITIALS: PMD WEATHER: cloudy, 5-10 kts

MONITORING PERIOD (hh:mm) From: 1020 To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

Dredging  Disposal

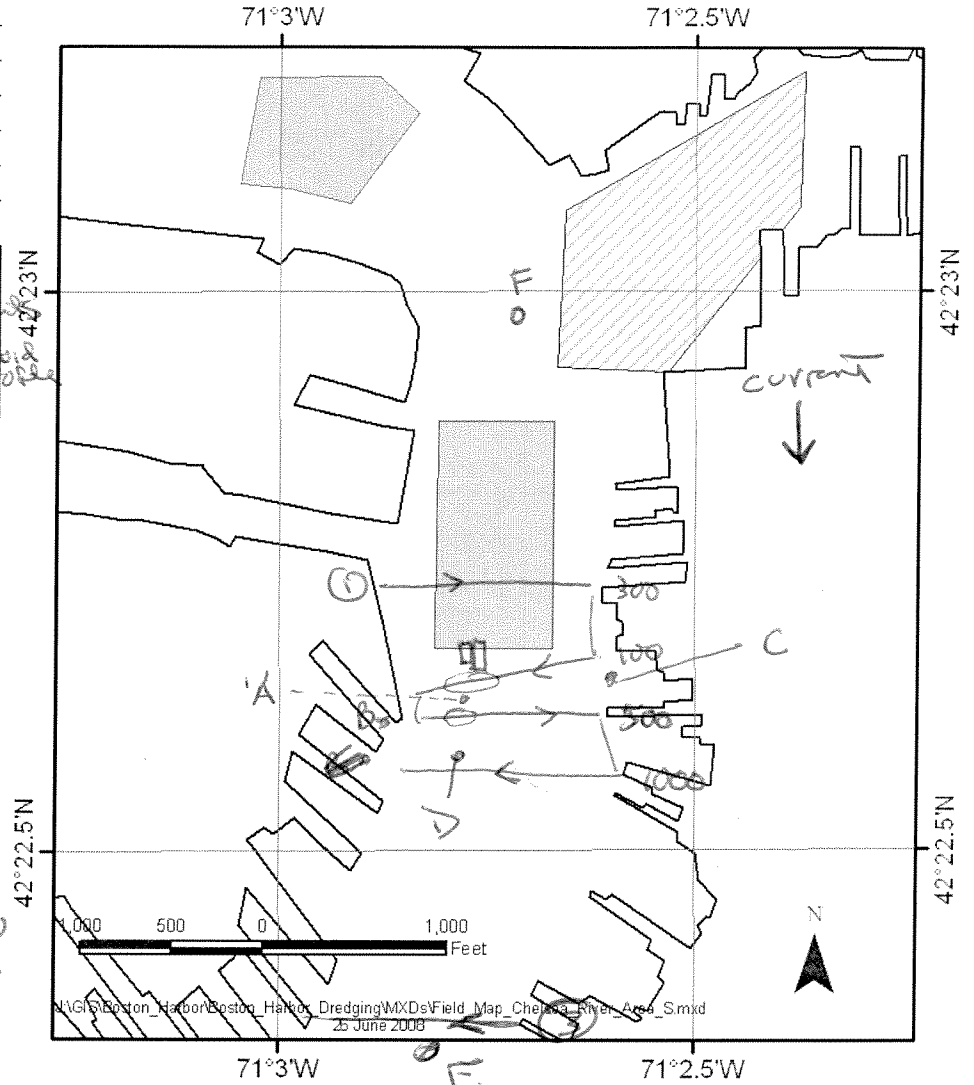
Weak current to S.

**ADCP TRANSECTS:**

Map Ref	File Name/Notes
1	BH081021 1045 - Transect
2	022 1100 during center of plume
③	023 Ref transect

**CTD PROFILES:**

Map Ref	Station ID/Notes
A	centroid ~ 25 NTU
B	H502 ~ 9 NTU
C	H503 ~ 6 NTU
D	H504 ~ 22 NTU
E	H505 - Ref ~ 8 NTU
F	H506 - Ref ~ 7 NTU



**FISH PASSAGE:**

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ 0906 ME @ \_\_\_\_\_ LS @ 1509 MF @ \_\_\_\_\_

Finished last profile + found hydraulic leak.

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Survey ID: ~~BH081~~ **BH081**

Duxbury Project Number: G606407 <sup>#4</sup>

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 06/30/08 INITIALS: AMD WEATHER: cloudy, 5-10 kts, sun showers

MONITORING PERIOD (hh:mm) From: 1305 To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

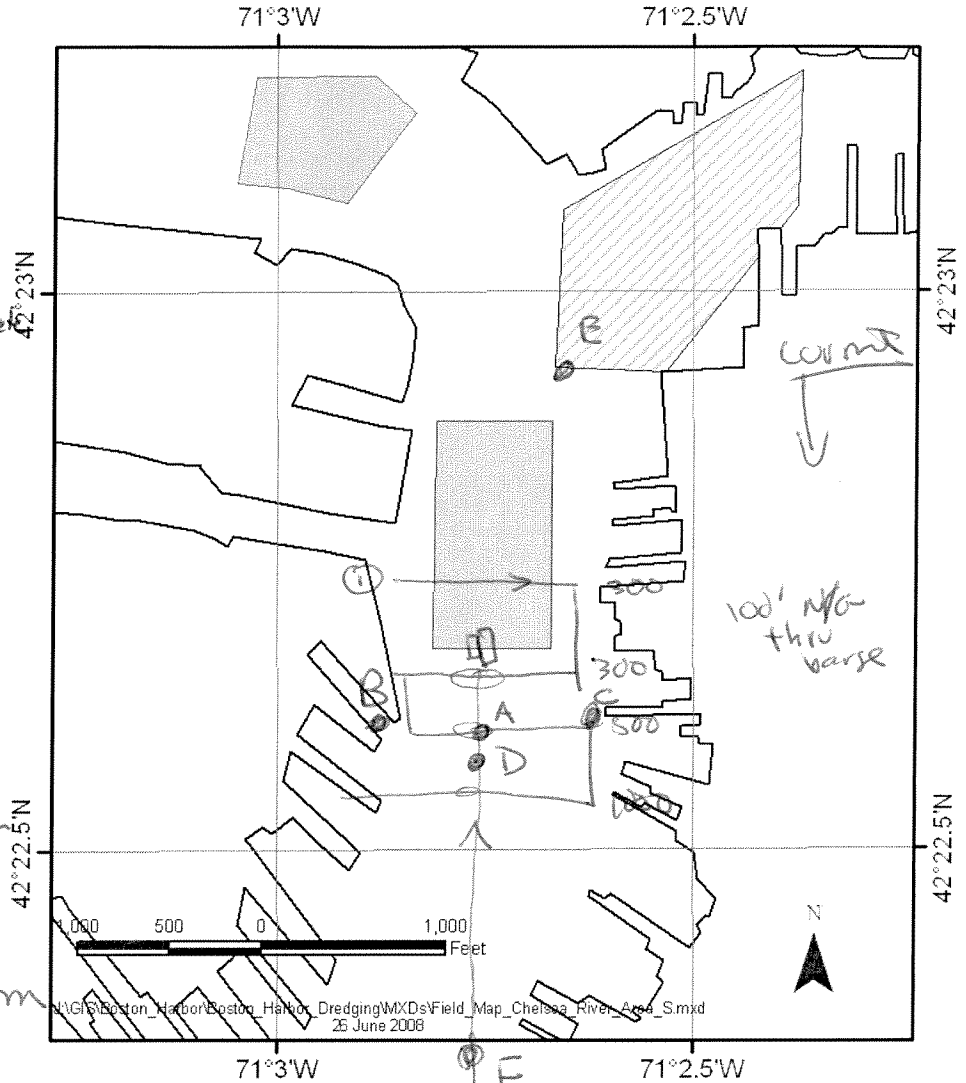
Dredging Disposal

**ADCP TRANSECTS:**

Map Ref	File Name/Notes
1	BH081024 - 1330 comm
2	BH081026

**CTD PROFILES:**

Map Ref	Station ID/Notes
A	<del>ME1</del> ME01 - 22 NTU max at water
B	ME2 - 4 NTU well mixed
C	ME3
D	ME4 - 30 NTU bottom
E	ME5 - Ref 10 NTU
F	ME6 - Ref - 27 NTU bottom



**FISH PASSAGE:**

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ ME @ LS @ MF @

1322 - Dredge stopped. Will finish transect see what they do.  
 suspended ops for 10min. waited 10min after restart.  
 operation intermittent but still dredging



# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Survey ID: ~~BH0000~~ BH081

Duxbury Project Number: G606407 <sup>44</sup>

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 06/30/08 INITIALS: PMD WEATHER: Partly cloudy, 5-10kts  
 MONITORING PERIOD (hh:mm) From: 1555 To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

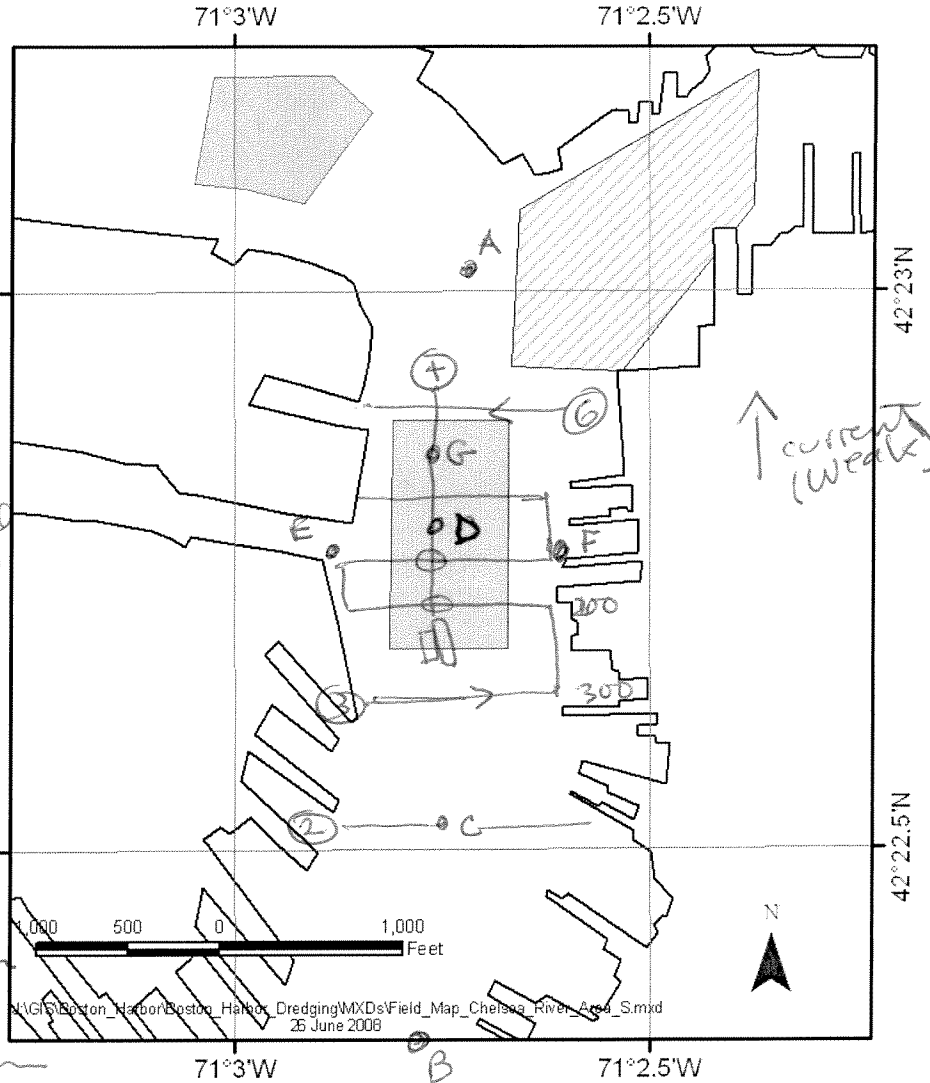
Dredging  Disposal  
scow dump complete.  
Begin w/ ref station  
while wait for dredge  
ops to begin.

**ADCP TRANSECTS:**

Map Ref	File Name/Notes
1	BH081028 1552 Back-ground velocity.
②	1635 029 Ship Passage
3	1653 030
④	1710 031 - <del>longitudinal</del>
5	1715 032 during Central Profile
⑥	1736 033 1000 line

**CTD PROFILES:**

Map Ref	Time	Station ID/Notes
A	1555	LS1 <sup>Ref</sup> - 3NTU Bottom
B	1610	LS2 - Ref - 10NTU Bottom
C	1637	LSSHIP7 - 8 5NTU
D	1715	LS3 - 30-35NTU Bottom
E	1720	LS4 - 6NTU Bottom
F	1730	LS5 - 7NTU Mid
G	1739	LS6 - 40NTU Bottom



**FISH PASSAGE:**

\_\_\_\_\_

\_\_\_\_\_

**NOTES:**

PREDICTED TIDES (stage @ hh:mm)	HS @	ME @	LS @	MF @
---------------------------------	------	------	------	------

Ref station B see 10NTU near bottom. Same as last time.  
Dredge restart 1628  
ship "RAYKJAFOS" <sup>Groningen</sup> container ship, moderate size. under power  
with tug escort. prop wash from ship + tug  
prop wash.  
18:00 - 20:00 LNG!  
20:00 Return to Hyman

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Duxbury Project Number: G606407<sup>44</sup>

Survey ID: BHMmm B4081

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 07/01/08 INITIALS: PMD WEATHER: Sunny, Hot, Hazy  
 MONITORING PERIOD (hh:mm) From: 0907 To: 1207 TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

Dredging (Disposal)

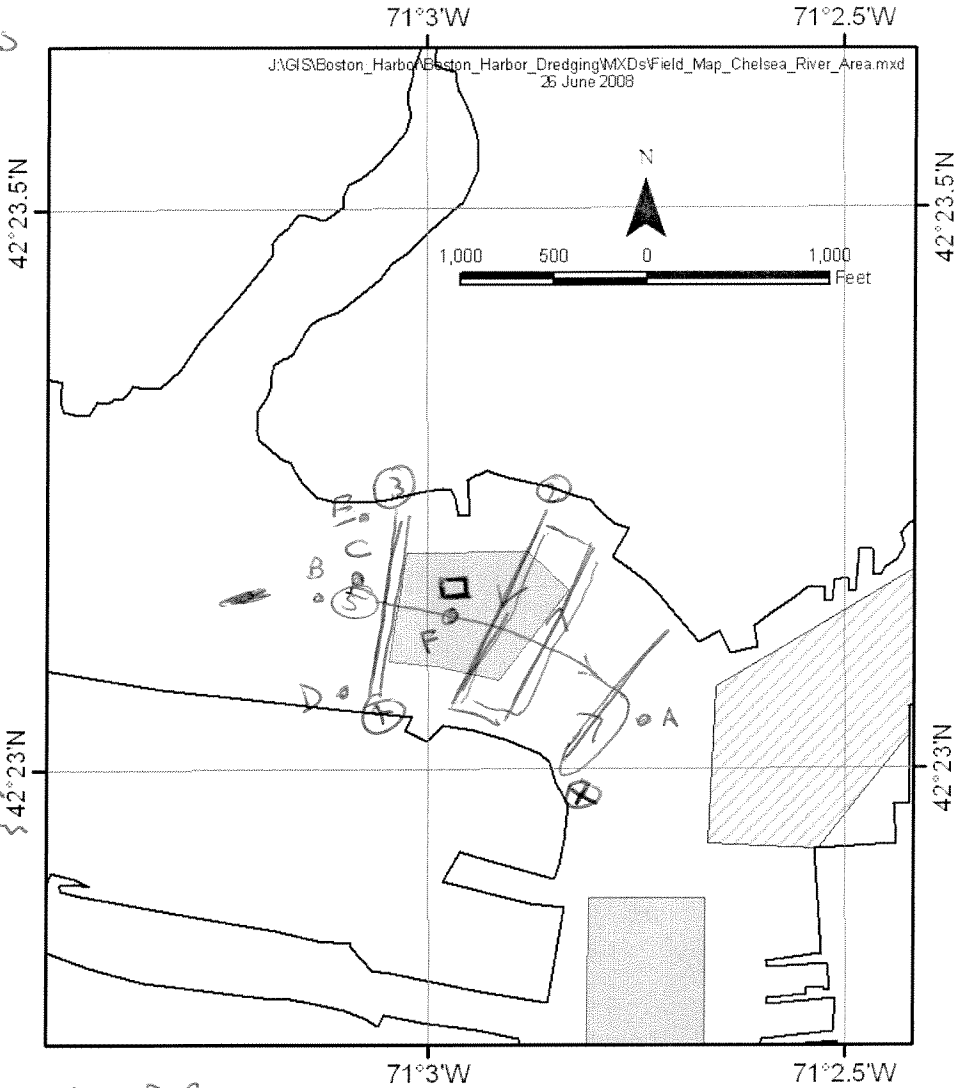
023 B4081036 - Background counts  
 1045 40 - Background

**ADCP TRANSECTS:**

Map Ref	Time	File Name/Notes
1	11:06	Disposal
2	11:06	B4081041
3	11:35	42
4	11:37	43
5	11:43	44

**CTD PROFILES:**

Map Ref	Time	Station ID/Notes
A	0842	Ref 1 25NTU Bottom
* B	0903	Ref 2 12NTU Bot
C	1130	DD1 12NTU
D		DD2
E		DD3
F	1158	DD4



\* Ref B not 1500 down current because of LNG. But no dumps for at least 6 hrs.

**FISH PASSAGE:**

⊗ 1 striped bass feedy ~1200

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ ME @ LS @ MF @  
 Depart Wingham 0705. Modified ADCP setup from 30 to 46 bins (75 FT).  
 0820 Tide still coming in slightly

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Duxbury Project Number: G606407 <sup>44</sup>

Survey ID: BHmmm 64081

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 07/02/08 INITIALS: pmo WEATHER: Hazy, Hot, 05 kts

MONITORING PERIOD (hh:mm) From: 0808 To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

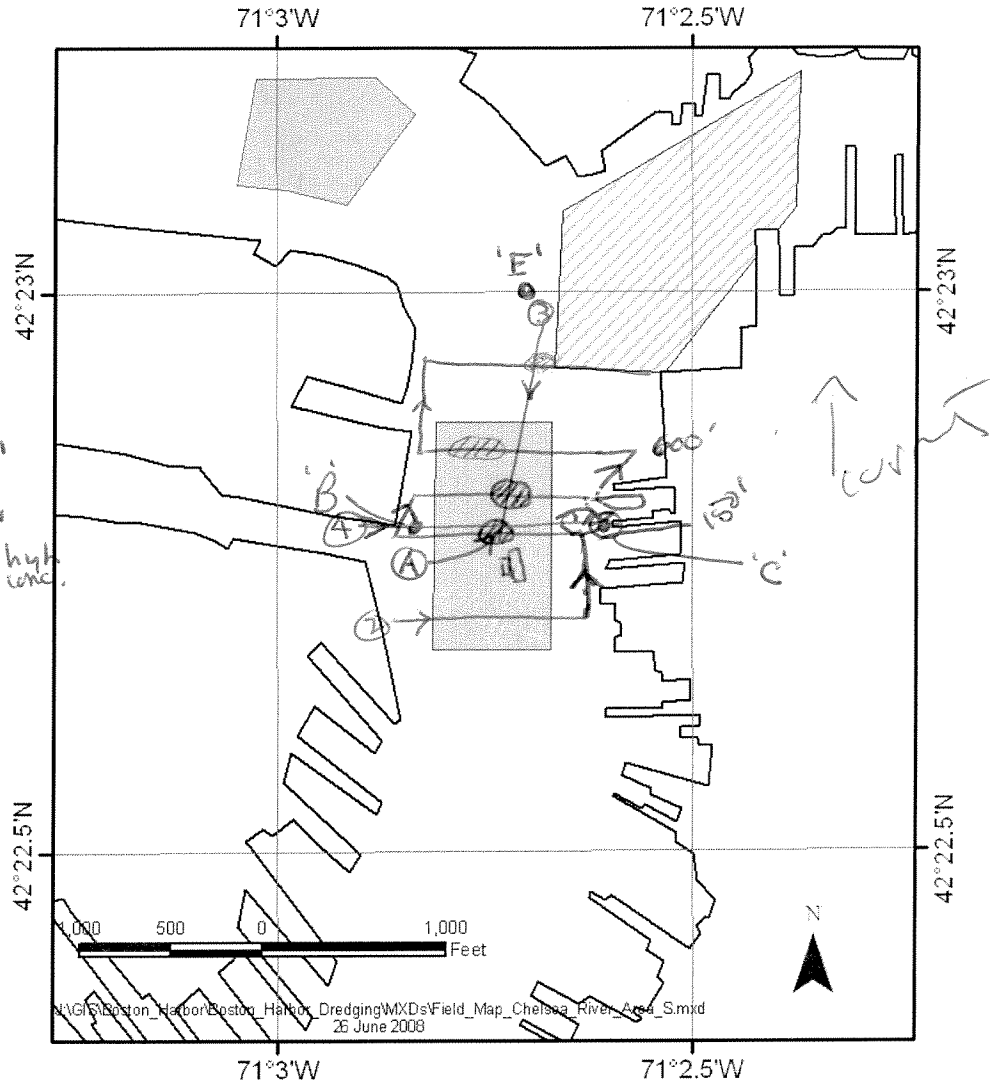
Dredging  Disposal

**ADCP TRANSECTS:**

Map Ref	Time	File Name/Notes
1	0808	B1081048 - BKGD
2	0817	049
3	0842	050
4	0859	051
5	0911	052 - during D
6	0925	053 - during E
7	0935	054 - during F
8	0944	055 - code for

**CTD PROFILES:**

Map Ref	Time	Station ID/Notes
A	0847	MF1 - central
B	0852	MF2 - lat.
C	0900	MF3 - lat.
D	0915	MF4 - down (500')
E	0935	MF5 - down Ref
F	0935	MF6 - up Ref



**FISH PASSAGE:**

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ \_\_\_\_\_ ME @ 837 AD LS @ \_\_\_\_\_ MF @ 837

0700 Depart Hingham Arrive 0805.

strong signal on ADCP close to dredge 100' 300' long transect. Not so strong during profiles. At 500' profile, SONAR bottom reading not showing on ADCP

Test Disposal runs. 059.

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Survey ID: BHmmm BH081

Duxbury Project Number: G606407 <sup>14</sup>

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 07/02/08 INITIALS: PMD WEATHER: Hot + Hazy 0-5kts

MONITORING PERIOD (hh:mm) From: \_\_\_\_\_ To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

Dredging Disposal

\_\_\_\_\_

\_\_\_\_\_

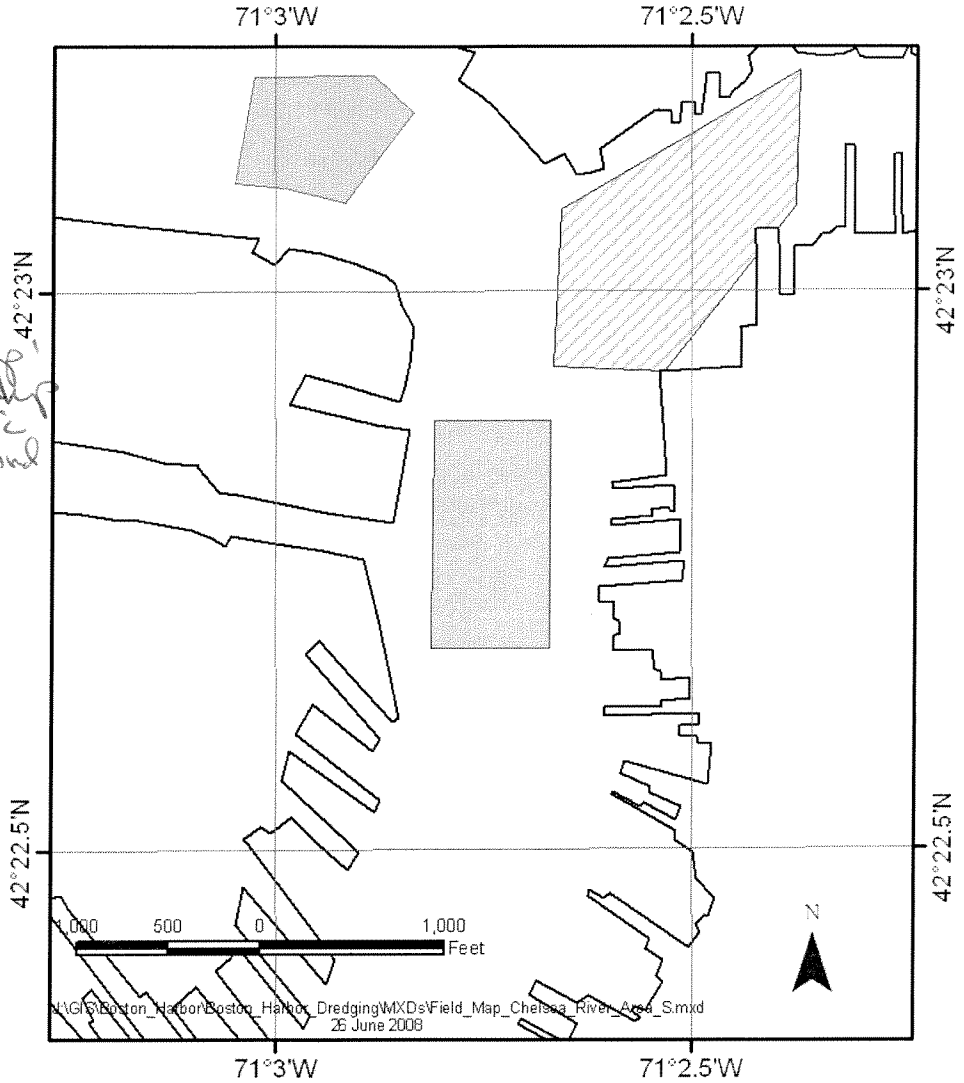
\_\_\_\_\_

**ADCP TRANSECTS:**

Map Ref	File Name/Notes
1	
	<u>062 - Transect behind ship</u>
	<u>062 - Transect behind ship</u>
	<u>at turn into Mystic</u>
	<u>003 - Full Transect behind</u>
	<u>ship at turn.</u>

**CTD PROFILES:**

Map Ref	Station ID/Notes
A	<u>311P2 - 215NTU</u>
	<u>DX1 - Test</u>
	<u>Dredge Profile</u>



**FISH PASSAGE:**

1152 Minkegen school

1230 ~~Pass~~ Vessel Pass. 'Nor'easter', 'Majora', 10.5m draft

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ 1107 ME @ \_\_\_\_\_ LS @ \_\_\_\_\_ MF @ \_\_\_\_\_

1030 Picked up Cully R. Depart to begin ops. 1045 Dredge Stops ops

in prep for disposal. Ran a test disposal transect and collected

1 profile. High Turb samples.

No HS sampling! No dredge ops.

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Survey ID: ~~BH081~~ **BH081**

Duxbury Project Number: G606407 **44**

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 07/02/08 INITIALS: PmD WEATHER: Scattered showers, 0-54fs, <sup>showers</sup>

MONITORING PERIOD (hh:mm) From: 1454 To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

Dredging Disposal

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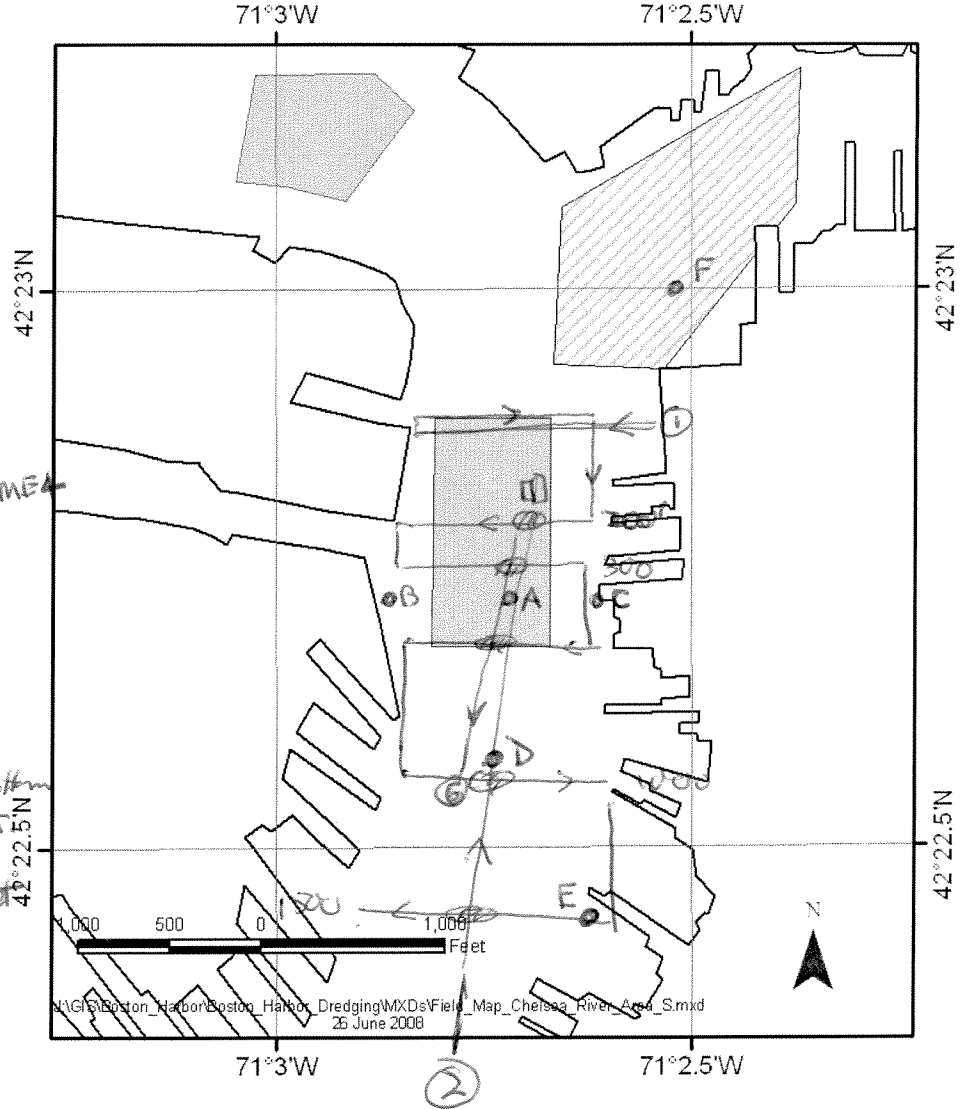
---

**ADCP TRANSECTS:**

Map Ref	Time	File Name/Notes
①	1454	BH081065
②	1514	066
3	1518	067 - ME1
4	1527	068 - ME2
⑤	1536	069 - ME3
⑥	1541	070 - Long Trans + ME4
7	1553	071 - ME5
8	1602	072 - ME6

**CTD PROFILES:**

Map Ref	Time	Station ID/Notes
A	1518	ME1 - 25NTU <sup>Bottom</sup>
B	1527	ME2 - 7NTU <sup>bot</sup>
C	1536	ME3 - 5NTU
D	1541	ME4 - 12 mid/25 <sup>bot</sup>
E	1553	ME5 Ref - 5NTU
F	1602	ME6 Ref - 6NTU



But there is good correlation between coherent flow + coherent plume.

**FISH PASSAGE:**

ME4 - Minhadern  
 ME5 - school of fish on echosounder.

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ \_\_\_\_\_ ME @ 1547 LS @ \_\_\_\_\_ MF @ \_\_\_\_\_  
 'C' ADCP hit @ 8m not seen on OBS. Maybe OBS not quite deep enough.

Think this is too late.  
 ←

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Survey ID: ~~BH081~~ **BH081**

Duxbury Project Number: G606407 <sup>44</sup>

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 07/02/08 INITIALS: PMD WEATHER: Scattered Clouds, 0-5kts

MONITORING PERIOD (hh:mm) From: \_\_\_\_\_ To: \_\_\_\_\_ TIDE STAGE HS ME **LS** MF

**DREDGING ACTIVITY:**

Dredging Disposal

\_\_\_\_\_

\_\_\_\_\_

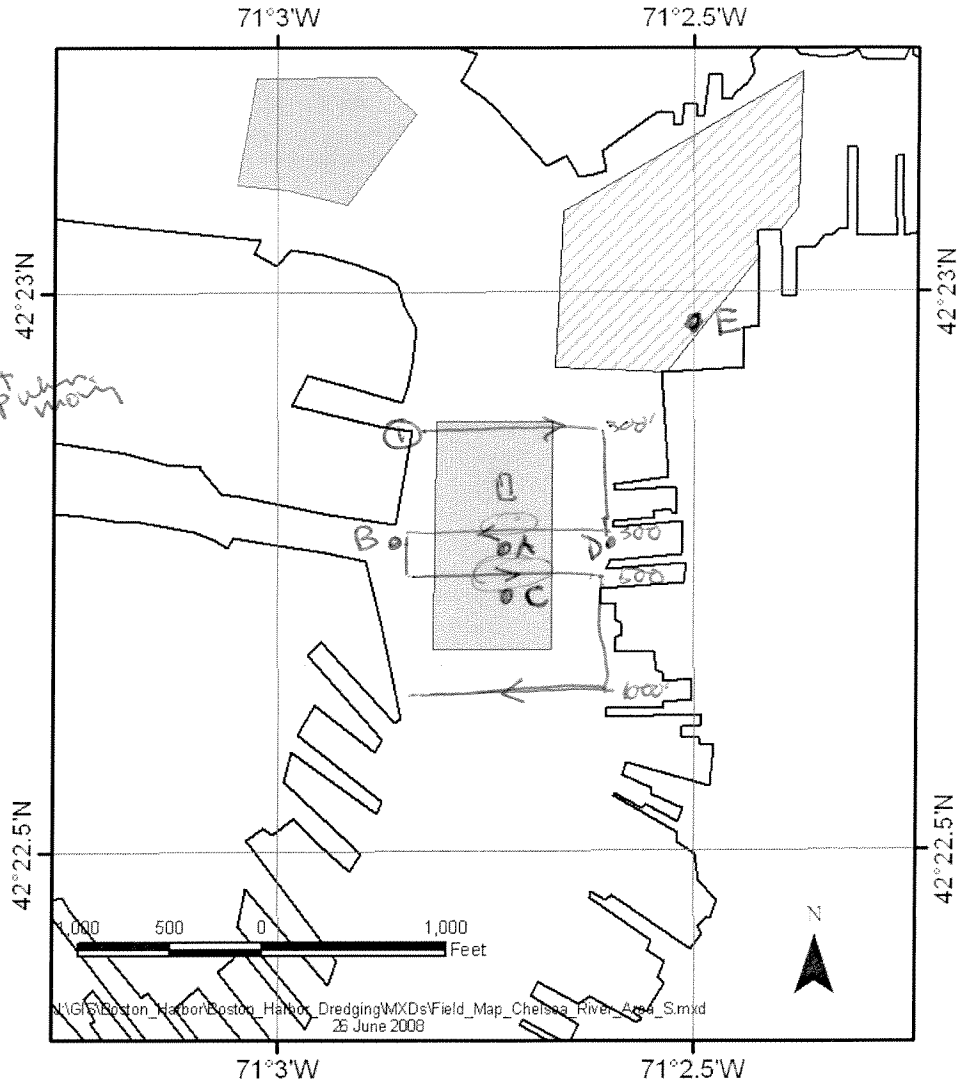
\_\_\_\_\_

**ADCP TRANSECTS:**

Map Ref	Time	File Name/Notes
1	1709	BH081075
2	1725	076 - LS1
3	1731	077 - LS2 - didn't stop when known
A	1740	078 - LS3
5	1745	079 - LS4
6	1753	080 - LS5
7	1805	081 - LSC

**CTD PROFILES:**

Map Ref	Time	Station ID/Notes
A	1725	LS1 10 mid/25 Bot.
B	1731	LS2 5NTU
C	1740	LS3 15NTU Bot
D	1745	LS4 5NTU
E	1753	LS5 5NTU
F	1805	LSC 5NTU



Limited time so didn't have time to run additional transects. SCOW will be moving soon.

**FISH PASSAGE:**

Fish school W end 200' line.

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ ME @ LS @ MF @ 1703

Tide still Ebbing when we started. 1731 Surface now flooding but deeper is ebbing. 1750 Now all depths appear to be flooding.

0610 Depart for Hingham

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Survey ID: ~~BH081~~ BH081

Duxbury Project Number: G606407 <sup>44</sup>

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 07/03/08 INITIALS: PMD WEATHER: sunny, light haze, 10-15 SW

MONITORING PERIOD (hh:mm) From: \_\_\_\_\_ To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

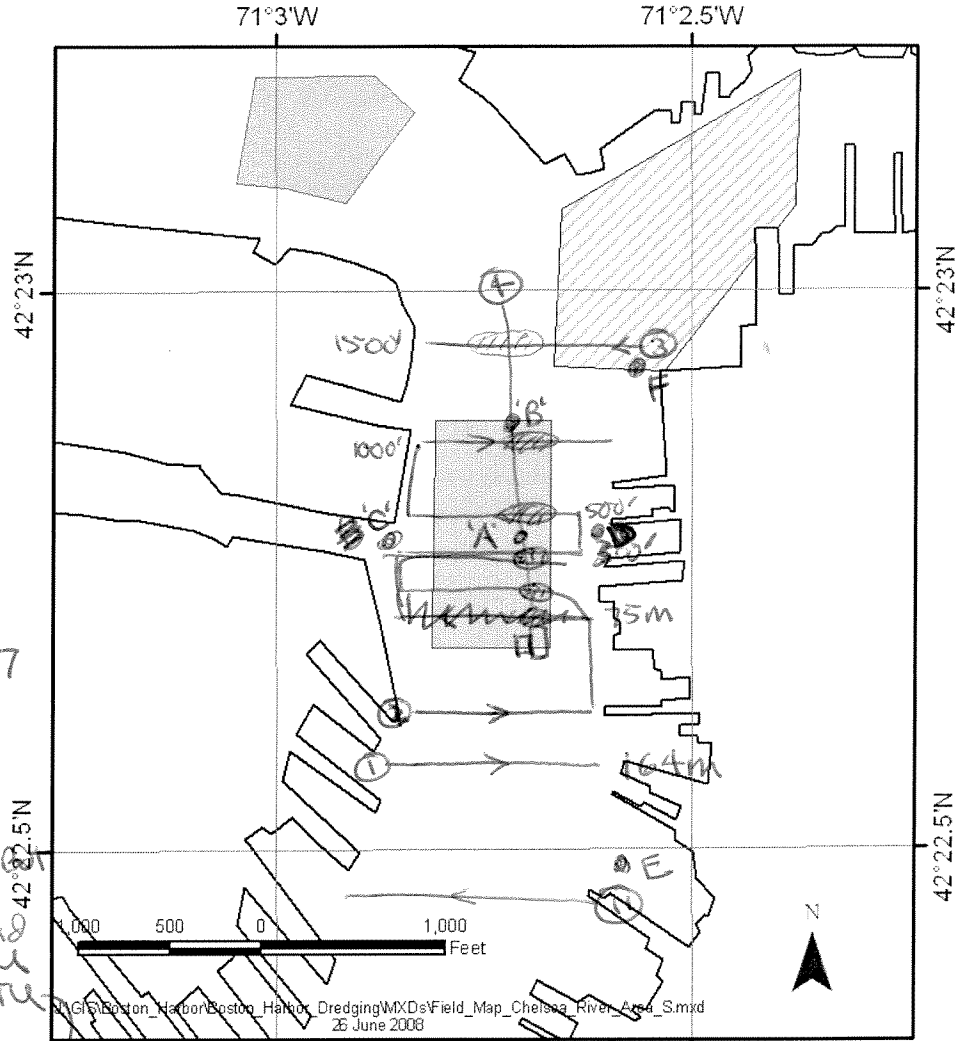
Dredging  Disposal

**ADCP TRANSECTS:**

Map Ref	Time	File Name/Notes
1	0852	BH081085 M/G
2	0900	86
3	0919	87
4	0922	88
5	0926	89 - MF1
<del>6</del>	<del>0938</del>	<del>90 - MF2</del>
7	0950	93 - MF2
8	1000	94 - MF3
9	1006	95 - MF4
10	1019	96 - MF5
11	1027	Ship Passage - 97
12	1035	98 MF6

**CTD PROFILES:**

Map Ref	Time	Station ID/Notes
A	0926	MF1 - 5NTU mid
<del>B</del>	<del>0938</del>	<del>MF2 - 0NTU bot.</del>
B	0950	MF2 - 20NTU mid
C	1000	MF3 - 5NTU
D	1006	MF4 - 7NTU mid
E	1019	MF5 - Ref - 5NTU
F	1035	MF6 - Ref - 10NTU



**FISH PASSAGE:**

0845 Pogies jump next to scow.

1035 ship Pass: 'Jasmine Express' Draw 6M Tug ASSIST  
Pandama school of fish on Echo S. + ADCP

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ ME @ LS @ MF @ ~ 9:00

0730 Depart Hingham, 0835 Arrive in station.

# DREDGE PLUME WATER QUALITY MONITORING FIELD LOG

BATTELLE

Survey ID: ~~BH0811~~ BH081

Duxbury Project Number: G606407 <sup>49</sup>

Project Title: Boston Harbor Dredge Plume Monitoring

DATE (mm/dd/yy): 07/03/08 INITIALS: PMD WEATHER: Sunny, Thin high clouds, 10-15 SW

MONITORING PERIOD (hh:mm) From: \_\_\_\_\_ To: \_\_\_\_\_ TIDE STAGE HS ME LS MF

**DREDGING ACTIVITY:**

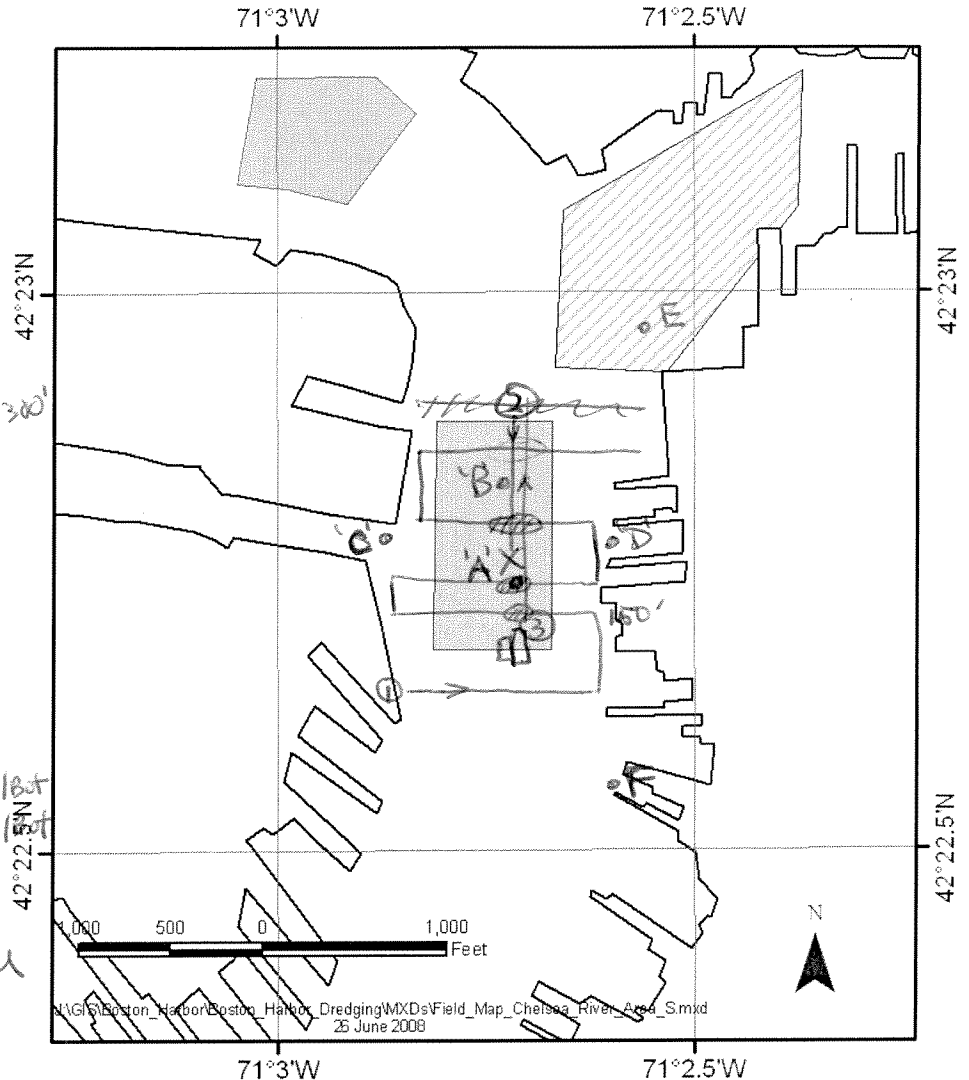
Dredging Disposal  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**ADCP TRANSECTS:**

Map Ref	Time	File Name/Notes
①	1130	BH081101
②	<del>1119</del> 102	
③	1220	104
4	1224	<del>105</del> 105 - H51
5	1232	106 - H52 - 750'
6	1239	107 - H53
7	1248	108 - H54
8	1258	110 - H55
9	1308	111 - H56

**CTD PROFILES:**

Map Ref	Time	Station ID/Notes
A	1224	H51 - 12/22 Mid/Bot
B	1232	H52 - 10/23 Mid/Bot
C	1239	H53 - 7 @ Bot.
D	1248	H54 - 6 NTU
E	1258	H55 - REF - CNTU
F	1308	H56 - REF - 5 NTU



called Tim. Great Lakes has ~~not~~ not changed buckets all week

**FISH PASSAGE:**

\_\_\_\_\_  
 \_\_\_\_\_

**NOTES:**

PREDICTED TIDES (stage @ hh:mm) HS @ 1202 ME @ LS @ MF @

Towed 2 interrupted by corps bulky sunny boat.  
 1215 Reset position of dredge. Tide still coming in slightly.  
 Restart ~~1220~~ ② ③  
 1230 Tide now turned. Increased # bins to 34 for 107, 108, 109.  
 1325 Profile 1 Nmi S of dredge BH081112 - Profile file # 339. 24 NTU  
 1415 Arrive Hingham



## **Appendix 2**

# **Chain of Custody Records**

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BOSTON HARBOR DREDGE MONITORING\*

~~MWRA Harbor and Outfall Monitoring Program~~

~~Contract No. OP 44A~~

Sample Custody Form

DACW33-03-D-0004

TO #44

Lab: Alpha Analytical  
Westborough, MA  
508-898-9220

Today's Date : 6/30/2008 7:58:47 P

Laboratory : ~~MWRA~~

~~Dept. Lab Services~~

~~400 Tafts Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~647-660-7841 (Phone)~~













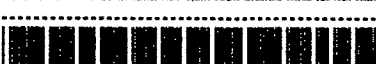

(Fax)

Chain-of-Custody # : BH081-TS-0001

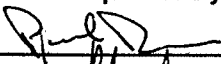
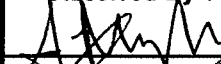
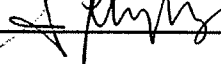

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH081057TS1	6/30/2008 11:03:35 AM	HS1	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081058TS1	6/30/2008 11:04:18 AM	HS1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081058TS2	6/30/2008 11:04:18 AM	HS1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081059TS1	6/30/2008 11:04:55 AM	HS1	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081061TS1	6/30/2008 11:12:46 AM	HS2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081062TS1	6/30/2008 11:13:29 AM	HS2	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081063TS1	6/30/2008 11:14:04 AM	HS2	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081068TS1	6/30/2008 11:22:35 AM	HS3	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081069TS1	6/30/2008 11:23:16 AM	HS3	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08106ATS1	6/30/2008 11:23:49 AM	HS3	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081073TS1	6/30/2008 11:35:24 AM	HS4	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081074TS1	6/30/2008 11:36:12 AM	HS4	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081075TS1	6/30/2008 11:36:44 AM	HS4	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08107ETS1	6/30/2008 11:46:33 AM	HS5	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice):  Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
 6/30/08 22:10 BDO	 7/1/08 12:00 BDO
 7/1/08 230 BDO	 7/1/08 1430

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD

**MWRA Harbor and Outfall Monitoring Program**

~~Contract No. OP-44A~~  
**Sample Custody Form**

DACW33-03-D-0004  
 TO #44  
 Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 6/30/2008 7:58:47 P

Laboratory : ~~MWRA~~

Chain-of-Custody # : BH081-TS-0001

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

~~Dept. Lab Services~~















~~190 Tafts Ave~~

~~Winthrop MA 02162~~

~~Yong Lao~~

~~617-660-7844 (Phone)~~

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH08107FTS1	6/30/2008 11:47:09 AM	HS5	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081080TS1	6/30/2008 11:47:48 AM	HS5	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08108BTS1	6/30/2008 12:04:26 PM	HS6	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08108CTS1	6/30/2008 12:06:03 PM	HS6	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08108DTS1	6/30/2008 12:08:42 PM	HS6	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810ADTS1	6/30/2008 1:46:52 PM	ME1	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810AETS1	6/30/2008 1:47:23 PM	ME1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810AFTS1	6/30/2008 1:48:02 PM	ME1	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810B4TS1	6/30/2008 1:55:45 PM	ME2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810B5TS1	6/30/2008 1:56:17 PM	ME2	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810B6TS1	6/30/2008 1:56:48 PM	ME2	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810BETS1	6/30/2008 2:04:14 PM	ME3	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810BFTS1	6/30/2008 2:04:45 PM	ME3	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810C0TS1	6/30/2008 2:05:27 PM	ME3	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice): X Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>[Signature]</i> 6/30/08 22:10 BDO	<i>[Signature]</i> 7/1/08 1200 BDO
<i>[Signature]</i> 7/1/08 230 BDO	<i>[Signature]</i> 7/1/08 1430

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BOSTON HARBOR DREDGE MONITORING\*

~~MWRA Harbor and Outfall Monitoring Program~~

~~Contract No. OP-44A~~

Sample Custody Form

DACW33-03-D-0004  
TO #44

Lab: Alpha Analytical  
Westborough, MA  
508-898-9220

Today's Date : 6/30/2008 7:58:47 P

Laboratory : ~~MWRA~~

Chain-of-Custody # : BH081-TS-0001

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

~~Dept. Lab Services~~













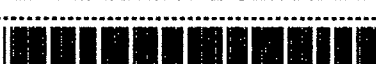

~~190 Taffs Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~617-666-7844 (Phone)~~

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH0810CBTS1	6/30/2008 2:13:12 PM	ME4	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810CBTS2	6/30/2008 2:13:12 PM	ME4	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810CCTS2	6/30/2008 2:13:50 PM	ME4	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810CDTS1	6/30/2008 2:14:27 PM	ME4	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810DFTS1	6/30/2008 2:28:49 PM	ME5	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810E0TS1	6/30/2008 2:29:29 PM	ME5	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810E1TS1	6/30/2008 2:30:08 PM	ME5	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810EATS1	6/30/2008 2:38:59 PM	ME6	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810EBTS1	6/30/2008 2:39:48 PM	ME6	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810ECTS1	6/30/2008 2:40:43 PM	ME6	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810F9TS1	6/30/2008 4:00:50 PM	LS1	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810F9TS2	6/30/2008 4:00:50 PM	LS1	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810FATS1	6/30/2008 4:01:33 PM	LS1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0810FBTS1	6/30/2008 4:02:14 PM	LS1	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice):  Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>Paul R</i> 6/30/08 22:10 BDO	<i>[Signature]</i> 7/1/08 1200 BDO
<i>[Signature]</i> 7/1/08 230 BDO	<i>[Signature]</i> 7/1/08 1430

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 AMD

**BOSTON HARBOR DREDGE MONITORING\***  
**MWRA Harbor and Outfall Monitoring Program**

**Contract No. OP 44A**  
**Sample Custody Form**

DACW33-03-D-0004  
 TO #44  
 Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 6/30/2008 7:58:47 P

Laboratory : ~~MWRA~~

Chain-of-Custody # : BH081-TS-0001

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

~~Dept. Lab Services~~















~~190 Tefft Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~647-668-7844 (Phone)~~

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH081106TS1	6/30/2008 4:13:13 PM	LS2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081107TS1	6/30/2008 4:13:52 PM	LS2	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081108TS1	6/30/2008 4:14:19 PM	LS2	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081118TS1	6/30/2008 4:40:57 PM	LS7 Ship	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081119TS1	6/30/2008 4:41:27 PM	LS7 Ship	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08111ATS1	6/30/2008 4:41:56 PM	LS7 Ship	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081128TS1	6/30/2008 5:17:16 PM	LS3	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081129TS1	6/30/2008 5:17:51 PM	LS3	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08112ATS1	6/30/2008 5:18:32 PM	LS3	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081135TS1	6/30/2008 5:24:34 PM	LS4	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081136TS1	6/30/2008 5:24:56 PM	LS4	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081137TS1	6/30/2008 5:25:36 PM	LS4	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081140TS1	6/30/2008 5:32:52 PM	LS5	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081141TS1	6/30/2008 5:33:23 PM	LS5	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice): X Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>[Signature]</i> 6/30/08 2210 BDD	<i>[Signature]</i> 7/1/08 1200 BDD
<i>[Signature]</i> 7/1/08 230 BDD	<i>[Signature]</i> 7/1/08 1430

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD

BOSTON HARBOR DREDGE MONITORING\*

~~MWRA Harbor and Outfall Monitoring Program~~

~~Contract No. OP 44A~~

Sample Custody Form

DACW33-03-D-0004

TO #44

Lab: Alpha Analytical  
Westborough, MA  
508-898-9220

Today's Date : 6/30/2008 7:58:47 P

Laboratory : ~~MWRA~~

~~Dept. Lab Services~~

~~100 Taffs Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~617-660-7844 (Phone)~~





(Fax)

Chain-of-Custody # : BH081-TS-0001

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH081142TS1	6/30/2008 5:34:03 PM	LS5	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08114BTS1	6/30/2008 5:42:31 PM	LS6	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08114CTS1	6/30/2008 5:43:00 PM	LS6	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08114DTS1	6/30/2008 5:43:52 PM	LS6	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice): X Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>[Signature]</i> 6/30/08 22:10 BDO	<i>[Signature]</i> 7/1/08 1200 BDO
<i>[Signature]</i> 7/1/08 230 BDO	<i>[Signature]</i> 7/1/08 1430

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD



BOSTON HARBOR DREDGE MONITORING\*

~~MWRA Harbor and Outfall Monitoring Program~~

~~Contract No. OP-44A~~

Sample Custody Form

DACW33-03-D-0004

TO #44

Lab: Alpha Analytical  
Westborough, MA  
508-898-9220

Today's Date : 7/1/2008 12:15:41 P

Laboratory : ~~MWRA~~

~~Dept Lab Services~~

~~100 Tafts Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~617-660-7844 (Phone)~~











(Fax)

Chain-of-Custody # : BH081-TS-0002

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH081194TS1	7/1/2008 8:49:16 AM	REF1	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081195TS1	7/1/2008 8:49:47 AM	REF1	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08119DTS1	7/1/2008 9:07:12 AM	REF2	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08119ETS1	7/1/2008 9:07:42 AM	REF2	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0811C3TS1	7/1/2008 11:29:55 AM	DD1	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0811C4TS1	7/1/2008 11:30:47 AM	DD1	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0811CCTS1	7/1/2008 11:35:58 AM	DD2	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0811CDTS1	7/1/2008 11:36:31 AM	DD2	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0811D5TS1	7/1/2008 11:41:05 AM	DD3	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0811D6TS1	7/1/2008 11:41:34 AM	DD3	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice): X Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>[Signature]</i> 7/1/08 1220 BDO	<i>[Signature]</i> 7/1/08 100 BDO
<i>[Signature]</i> 7/1/08 230 BDO	<i>[Signature]</i> 7/1/08 1430

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD

**BOSTON HARBOR DREDGE MONITORING\***  
**MWRA Harbor and Outfall Monitoring Program**

~~Contract No. GP-44A~~  
**Sample Custody Form**

DACW33-03-D-0004  
 TO #44  
 Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 7/2/2008 6:45:20 PM

Laboratory : ~~MWRA~~

Chain-of-Custody # : BH081-TS-0003

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

~~Dept. Lab Services~~


















~~190 Tafts Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~617-660-7841 (Phone)~~

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH081203TS1	7/2/2008 8:48:59 AM	MF1	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081204TS1	7/2/2008 8:49:36 AM	MF1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081204TS2	7/2/2008 8:49:36 AM	MF1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081205TS1	7/2/2008 8:50:00 AM	MF1	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08120DTS1	7/2/2008 8:57:03 AM	MF2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08120ETS1	7/2/2008 8:57:38 AM	MF2	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08120FTS1	7/2/2008 8:58:12 AM	MF2	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08121ATS1	7/2/2008 9:05:43 AM	MF3	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08121BTS1	7/2/2008 9:06:14 AM	MF3	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08121CTS1	7/2/2008 9:06:37 AM	MF3	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081229TS1	7/2/2008 9:18:32 AM	MF4	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08122ATS1	7/2/2008 9:19:10 AM	MF4	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08122BTS1	7/2/2008 9:19:35 AM	MF4	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081233TS1	7/2/2008 9:26:47 AM	MF5	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081234TS1	7/2/2008 9:27:23 AM	MF5	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081235TS1	7/2/2008 9:28:03 AM	MF5	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08123DTS1	7/2/2008 9:37:02 AM	MF6	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(Ice):  Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(Ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>Paul D...</i> / 7/2/08 / 1850 / BDO	<i>James M. J...</i> 7/2/08 1800 BDO
<i>James M. J...</i> 7/3/08 12:00 BDO	<i>James M. J...</i> 7/3/08 1200

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 *PMD*

**BOSTON HARBOR DREDGE MONITORING\***  
**— MWRA Harbor and Outfall Monitoring Program —**

~~Contract No. OP 44A~~  
**Sample Custody Form**

DACW33-03-D-0004  
 TO #44  
 Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 7/2/2008 6:45:20 PM

Laboratory : ~~MWRA~~

Chain-of-Custody # : BH081-TS-0003

~~Dept. Lab Services~~

Survey ID : BH081

~~190 Taft Ave~~

Analysis ID : TS

















~~Winthrop MA 02152~~

~~Yong-Lac~~

Analysis Description : Total Suspended Solids

~~647-660-7844~~ (Phone)

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH08123ETS1	7/2/2008 9:37:37 AM	MF6	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08123FTS1	7/2/2008 9:38:04 AM	MF6	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081251TS1	7/2/2008 11:30:38 AM	DX	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081252TS1	7/2/2008 11:31:01 AM	DX	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081267TS1	7/2/2008 12:43:50 PM	Ship2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081268TS1	7/2/2008 12:44:12 PM	Ship2	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08127CTS1	7/2/2008 3:21:20 PM	ME1	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08127DTS1	7/2/2008 3:21:55 PM	ME1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08127ETS1	7/2/2008 3:22:33 PM	ME1	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081289TS1	7/2/2008 3:30:18 PM	ME2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081289TS2	7/2/2008 3:30:18 PM	ME2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08128ATS1	7/2/2008 3:30:43 PM	ME2	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08128BTS1	7/2/2008 3:31:11 PM	ME2	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081293TS1	7/2/2008 3:37:47 PM	ME3	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081294TS1	7/2/2008 3:38:22 PM	ME3	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH081295TS1	7/2/2008 3:38:56 PM	ME3	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice):  Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>Paul D...</i> / 7-2-08 / 1850 / BDO	<i>John Lee</i> / 7/3/08 / 1000 / BDO
<i>Paul D...</i> / 7/3/08 / 12:00 / BDO	<i>John Lee</i> / 7/3/08 / 1200

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD

**BOSTON HARBOR DREDGE MONITORING\***  
**MWRA Harbor and Outfall Monitoring Program**

Contract No. OP-44A  
**Sample Custody Form**

DACW33-03-D-0004  
 TO #44  
 Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 7/2/2008 6:45:20 PM

Laboratory : MWRA


















Chain-of-Custody # : BH081-TS-0003

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

~~Dept. Lab Services~~  
~~190 Tafts Ave~~  
~~Winthrop~~ MA ~~02152~~  
~~Yong-Lao~~  
~~647-660-7844~~ (Phone) (Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH08129DTS1	7/2/2008 3:46:24 PM	ME4	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08129ETS1	7/2/2008 3:47:08 PM	ME4	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH08129FTS1	7/2/2008 3:47:37 PM	ME4	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812A9TS1	7/2/2008 3:55:01 PM	ME5	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812AATS1	7/2/2008 3:55:26 PM	ME5	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812ABTS1	7/2/2008 3:55:58 PM	ME5	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812B3TS1	7/2/2008 4:04:46 PM	ME6	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812B4TS1	7/2/2008 4:05:17 PM	ME6	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812B5TS1	7/2/2008 4:05:53 PM	ME6	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812C7TS1	7/2/2008 5:26:41 PM	LS1	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812C8TS1	7/2/2008 5:27:12 PM	LS1	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812C9TS1	7/2/2008 5:27:45 PM	LS1	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812D1TS1	7/2/2008 5:32:15 PM	LS2	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812D2TS1	7/2/2008 5:32:43 PM	LS2	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812D3TS1	7/2/2008 5:33:13 PM	LS2	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812D8TS1	7/2/2008 5:40:24 PM	LS3	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812D9TS1	7/2/2008 5:40:55 PM	LS3	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice): X Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill # <i>Raul D...</i> / 7-2-08 / 1850 / BDO	Received By / Date / Time / Company <i>[Signature]</i> 7/3/08 1000 BDO
<i>[Signature]</i> 7/3/08 12:00 BDO	<i>[Signature]</i> 7/3/08 1200

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 RMD

**MWRA Harbor and Outfall Monitoring Program**

~~Contract No. OP 44A~~

**Sample Custody Form**

DACW33-03-D-0004  
TO #44

Lab: Alpha Analytical  
Westborough, MA  
508-898-9220

Today's Date : 7/2/2008 6:45:20 PM

Laboratory : ~~MWRA~~

Chain-of-Custody # : BH081-TS-0003

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

~~Dept. Lab Services~~












~~100 Taft Ave~~

~~Winthrop MA 02152~~

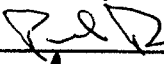

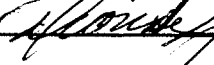
~~Yong Lao~~

~~617-660-7841 (Phone)~~

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH0812DATS1	7/2/2008 5:41:32 PM	LS3	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812E2TS1	7/2/2008 5:46:36 PM	LS4	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812E3TS1	7/2/2008 5:47:09 PM	LS4	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812E3TS2	7/2/2008 5:47:09 PM	LS4	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812E4TS1	7/2/2008 5:47:38 PM	LS4	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812ECTS1	7/2/2008 5:55:18 PM	LS5	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812EDTS1	7/2/2008 5:56:04 PM	LS5	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812EETS1	7/2/2008 5:56:44 PM	LS5	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812FATS1	7/2/2008 6:06:41 PM	LS6	E	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812FBTS1	7/2/2008 6:07:15 PM	LS6	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	BH0812FCTS1	7/2/2008 6:07:52 PM	LS6	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice):  Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
 / 7-2-08 / 1850 / BDO	 7/3/08 1600 BDO
Jessica McJahay 7/3/08 12:00 BDO	 7/3/08 1800

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMP



**BOSTON HARBOR DREDGE MONITORING\***  
**MWRA Harbor and Outfall Monitoring Program**

~~Contract No. OP 44A~~  
**Sample Custody Form**

DACW33-03-D-0004

TO #44

Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 7/7/2008 8:31:19 AM

Laboratory : ~~MWRA~~

~~Dept. Lab Services~~

~~190 Tafts Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~617-660-7841 (Phone)~~

(Fax)

Chain-of-Custody # : BH081-TS-0004

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH08132FTS1	7/3/2008 9:28:51 AM	MF1	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081330TS1	7/3/2008 9:29:42 AM	MF1	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081331TS1	7/3/2008 9:30:12 AM	MF1	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081345TS1	7/3/2008 9:52:45 AM	MF2	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081346TS1	7/3/2008 9:53:52 AM	MF2	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081346TS2	7/3/2008 9:53:52 AM	MF2	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081347TS1	7/3/2008 9:54:18 AM	MF2	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08134FTS1	7/3/2008 10:01:40 AM	MF3	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081350TS1	7/3/2008 10:02:08 AM	MF3	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081351TS1	7/3/2008 10:02:35 AM	MF3	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08135CTS1	7/3/2008 10:10:34 AM	MF4	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08135DTS1	7/3/2008 10:11:02 AM	MF4	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08135ETS1	7/3/2008 10:11:49 AM	MF4	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081366TS1	7/3/2008 10:20:26 AM	MF5	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081367TS1	7/3/2008 10:20:50 AM	MF5	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice):  Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>Matthew R. M. [Signature]</i> 7/7/08 0840 BDO	<i>Jessie M. [Signature]</i> 7/7/08 0840 BDO
<i>Jessie M. [Signature]</i> 7/7/08 1700 BDO	<i>Manoj D. [Signature]</i> 7/7/08 1710

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD



**BOSTON HARBOR DREDGE MONITORING\***  
**MWRA Harbor and Outfall Monitoring Program**

Contract No. OP-44A  
**Sample Custody Form**

DACW33-03-D-0004  
 TO #44  
 Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 7/7/2008 8:31:23 AM

Laboratory : MWRA

Chain-of-Custody # : BH081-TS-0004

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

~~Dept. Lab Services~~

~~190 Tafts Ave~~

~~Winthrop MA 02152~~

~~Yong Lao~~

~~617-660-7841 (Phone)~~

(Fax)

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH081368TS1	7/3/2008 10:21:10 AM	MF5	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081373TS1	7/3/2008 10:37:21 AM	MF6	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081374TS1	7/3/2008 10:38:03 AM	MF6	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081375TS1	7/3/2008 10:38:29 AM	MF6	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081385TS1	7/3/2008 12:26:16 PM	HS1	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081386TS1	7/3/2008 12:26:53 PM	HS1	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081387TS1	7/3/2008 12:27:30 PM	HS1	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH08138FTS1	7/3/2008 12:34:39 PM	HS2	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081390TS1	7/3/2008 12:35:03 PM	HS2	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081391TS1	7/3/2008 12:35:32 PM	HS2	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081396TS1	7/3/2008 12:42:23 PM	HS3	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081397TS1	7/3/2008 12:42:50 PM	HS3	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH081398TS1	7/3/2008 12:43:13 PM	HS3	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813A0TS1	7/3/2008 12:49:45 PM	HS4	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice):  Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>Madhu K. Tytler</i> 7/7/08 0840 BDO	<i>Jan M. Kelly</i> 7/7/08 0840 BDO
<i>Jan M. Kelly</i> 7/7/08 1700 BDO	<i>Manoj A. Bose</i> 7/7/08 1710

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD

**BOSTON HARBOR DREDGE MONITORING\***  
**MWRA Harbor and Outfall Monitoring Program**

~~Contract No. OP-44A~~  
**Sample Custody Form**

DACW33-03-D-0004

TO #44

Lab: Alpha Analytical  
 Westborough, MA  
 508-898-9220

Today's Date : 7/7/2008 8:31:23 AM

Laboratory : ~~MWRA~~

~~Dept. Lab Services~~

~~190 Tafts Ave~~

~~Winthrop MA 02152~~

~~Yong-Lao~~

~~617-660-7844~~ (Phone)










(Fax)

Chain-of-Custody # : BH081-TS-0004

Survey ID : BH081

Analysis ID : TS

Analysis Description : Total Suspended Solids

Bottle ID :	Bottle ID :	Sampling Date :	Station ID :	Depth Code:	Ck 1	Ck 2	Ck 3
	BH0813A1TS1	7/3/2008 12:50:14 PM	HS4	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813A2TS1	7/3/2008 12:50:40 PM	HS4	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813ACTS1	7/3/2008 12:59:54 PM	HS5	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813ADTS1	7/3/2008 1:00:20 PM	HS5	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813AETS1	7/3/2008 1:00:44 PM	HS5	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813B6TS1	7/3/2008 1:11:58 PM	HS6	E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813B7TS1	7/3/2008 1:12:34 PM	HS6	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813B8TS1	7/3/2008 1:13:14 PM	HS6	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	BH0813B8TS2	7/3/2008 1:13:14 PM	HS6	A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Shipping Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_  
 Received Condition - Room Temperature: \_\_\_\_\_ Cold(ice): \_\_\_\_\_ Frozen(dry ice): \_\_\_\_\_

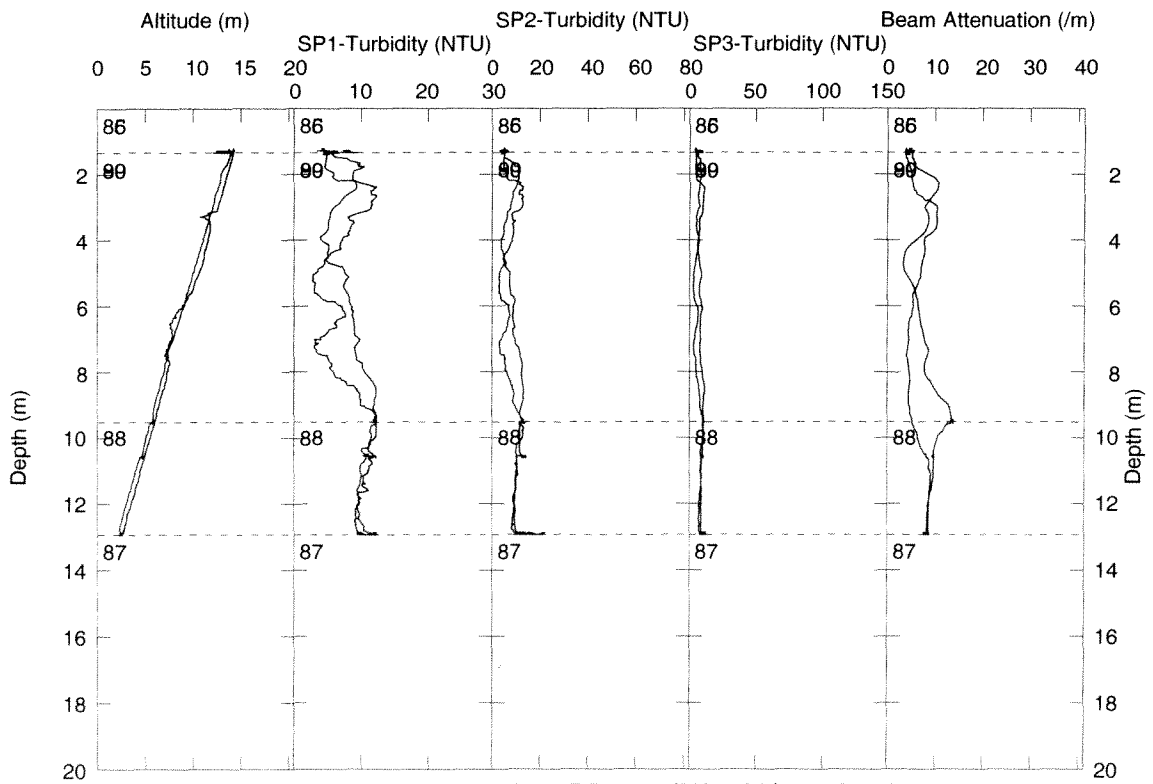
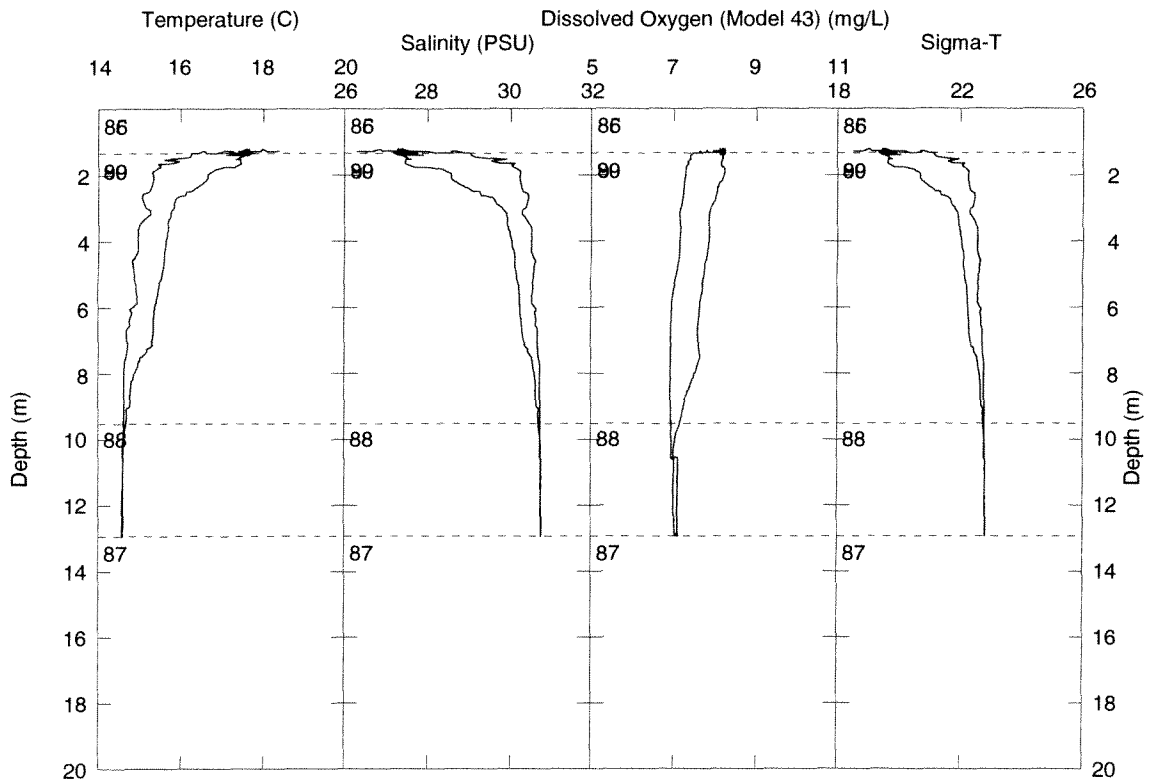
Relinquished By / Date / Time / Company / Transport-Airbill #	Received By / Date / Time / Company
<i>Matthew L. Lytle</i> 7/7/08 0840 BDO	<i>Janis M. July</i> 7/7/08 0840 BDO
<i>Janis M. July</i> 7/7/08 1700 BDO	<i>Manya D. Rose</i> 7/7/08 1710

\*This COC form was generated in the field by NAVSAM during the Boston Harbor Program with the wrong program identifier and lab. These errors corrected 7-31-08 PMD

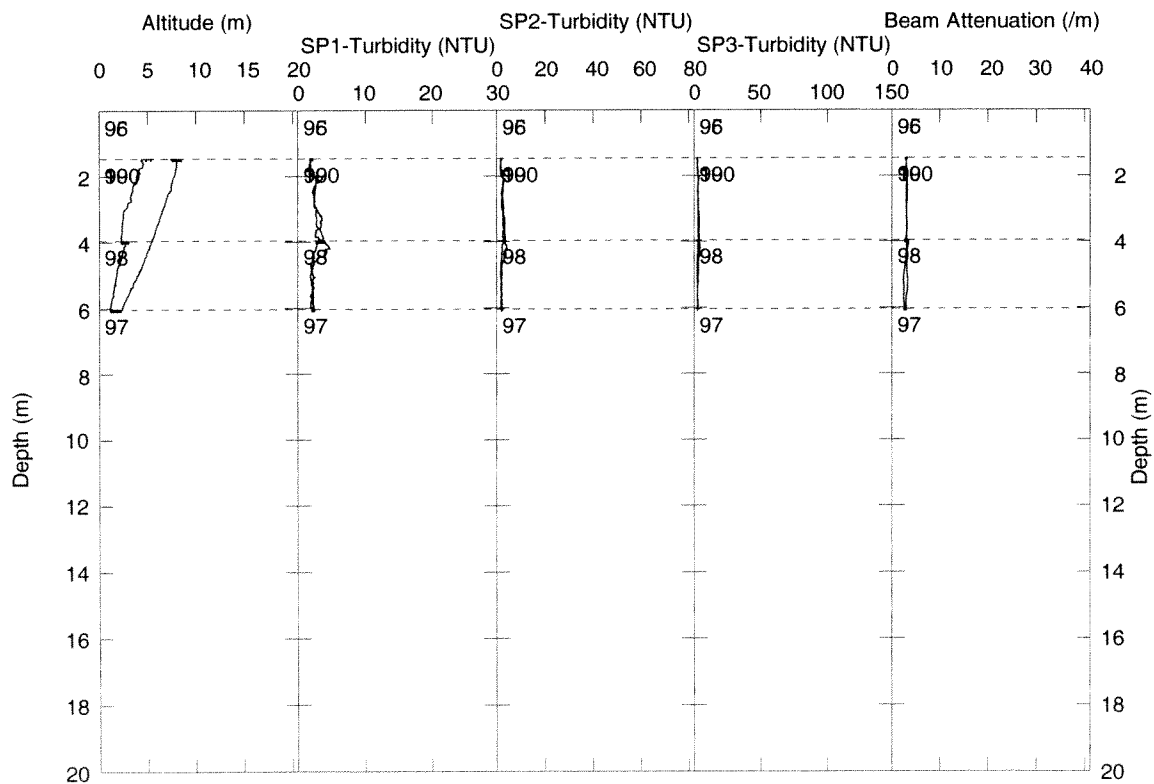
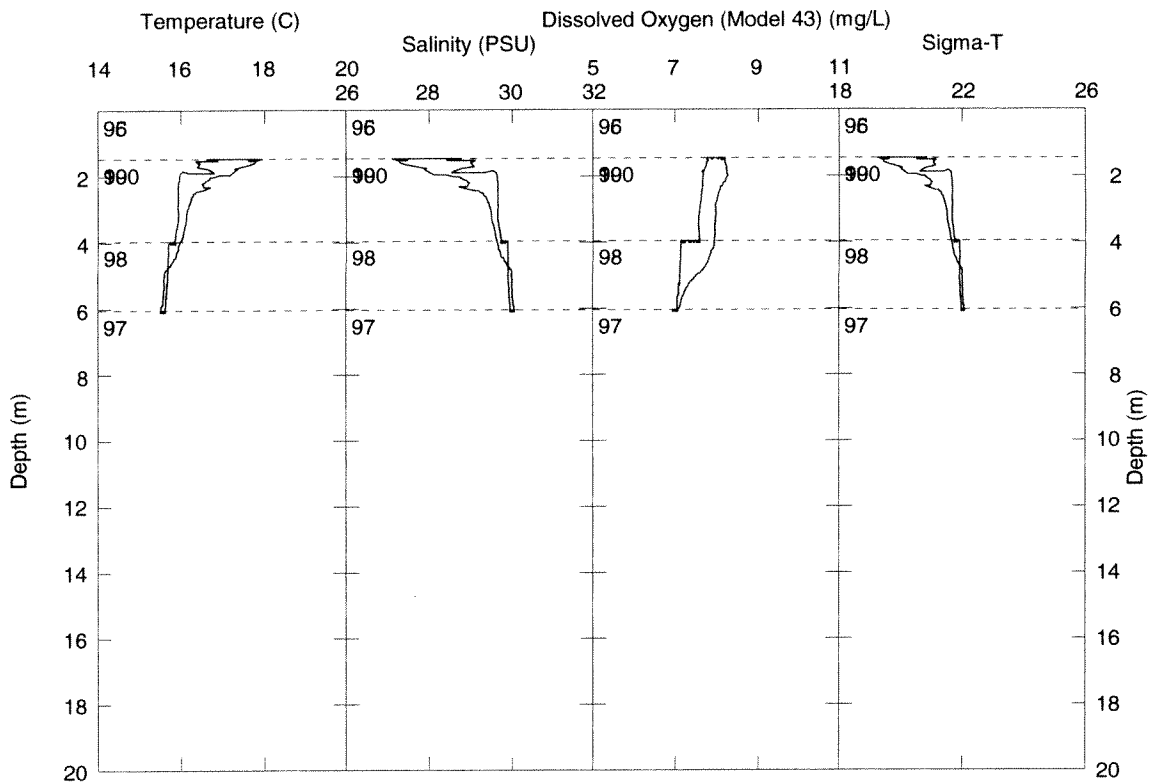
## **Appendix 3**

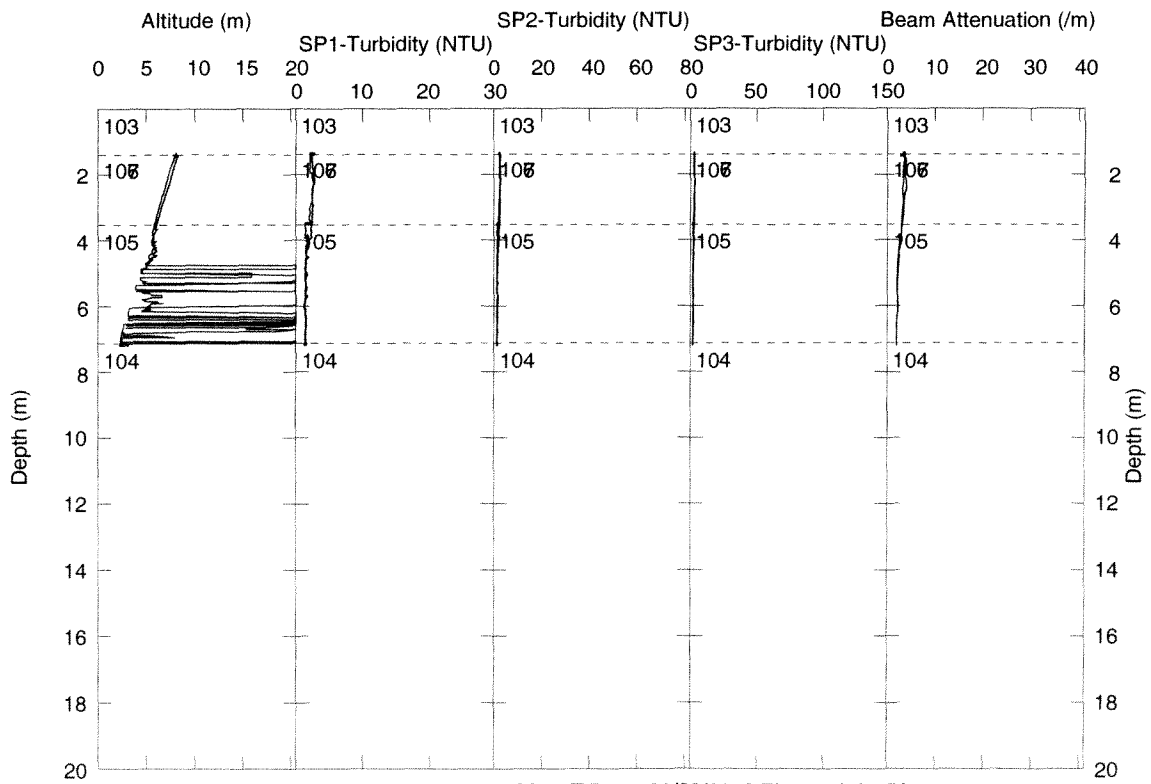
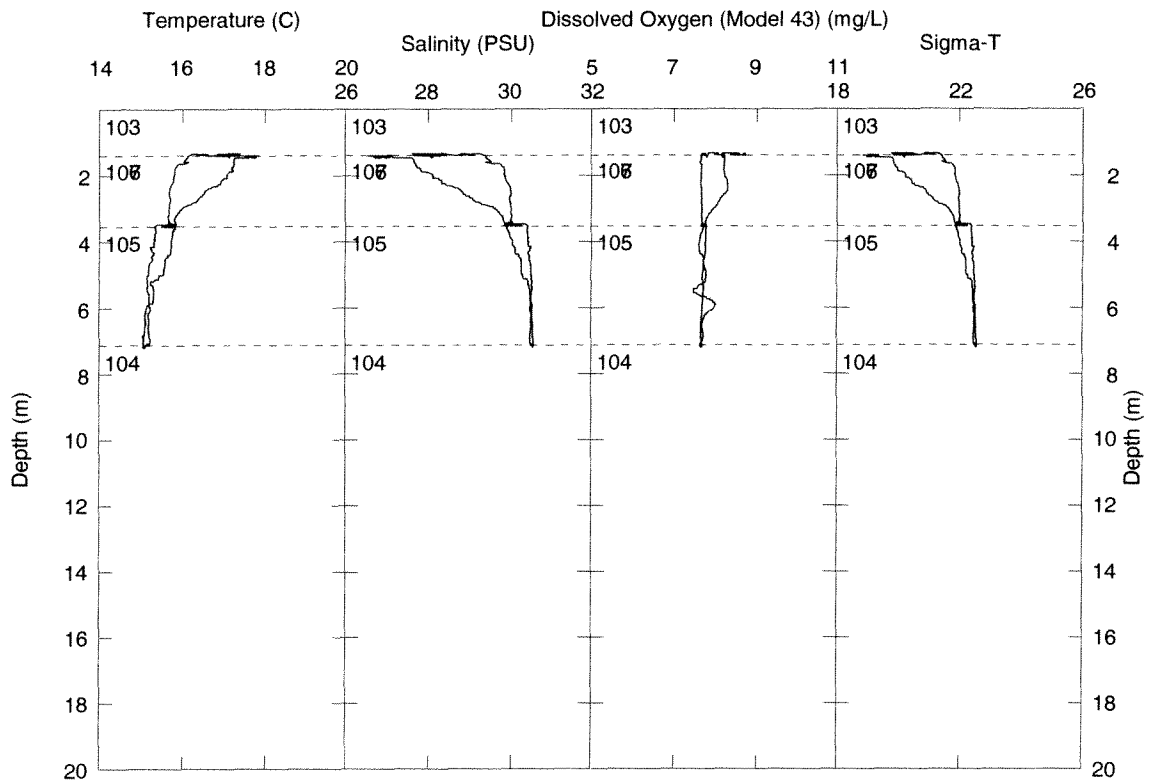
### ***In situ* CTD/Turbidity Profile Results**

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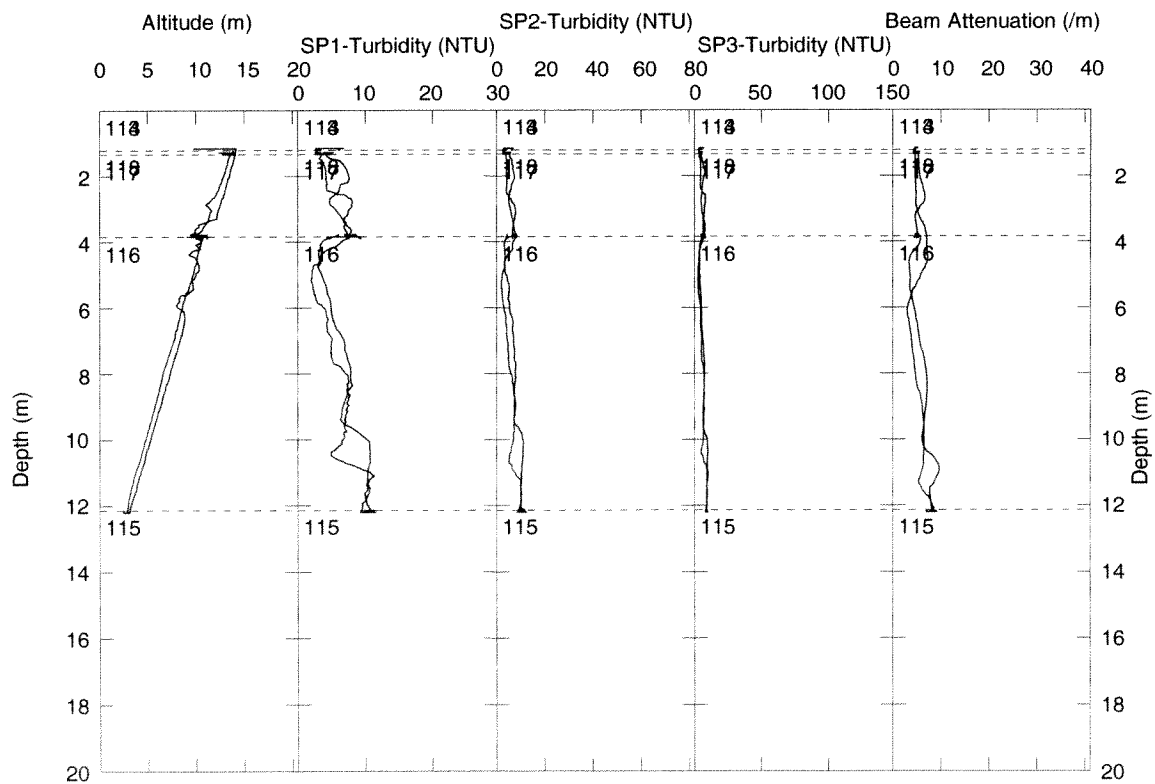
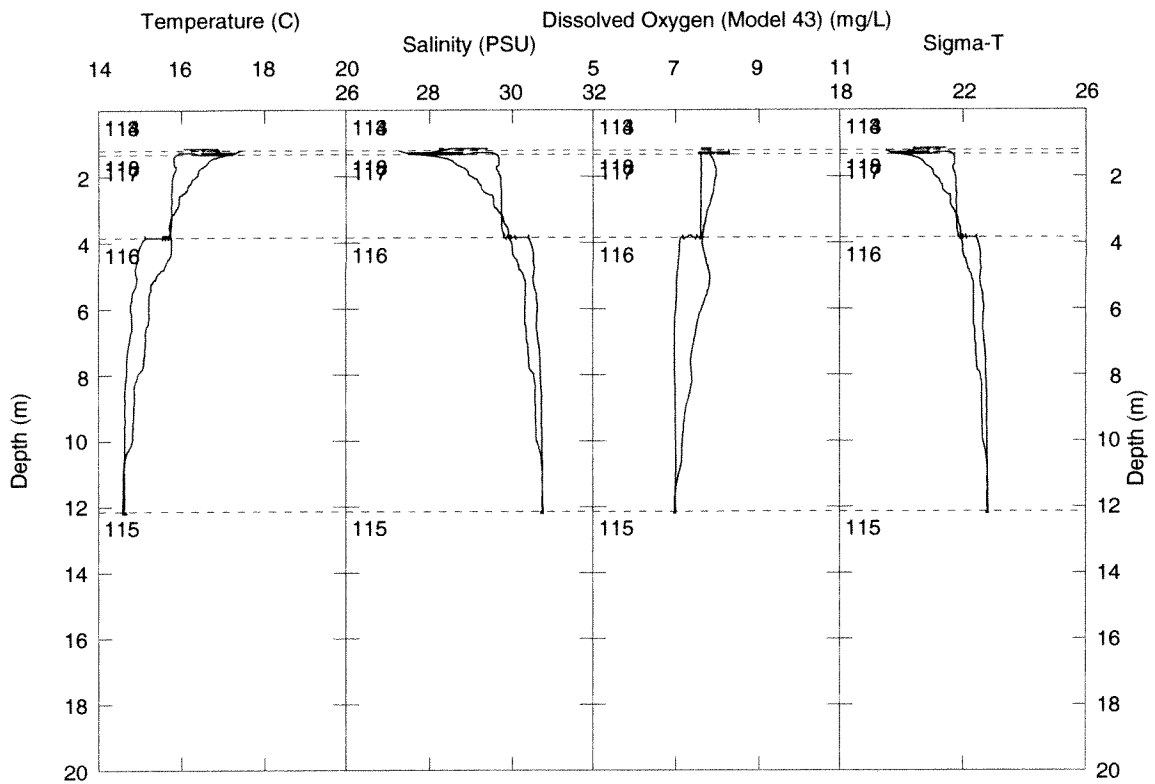


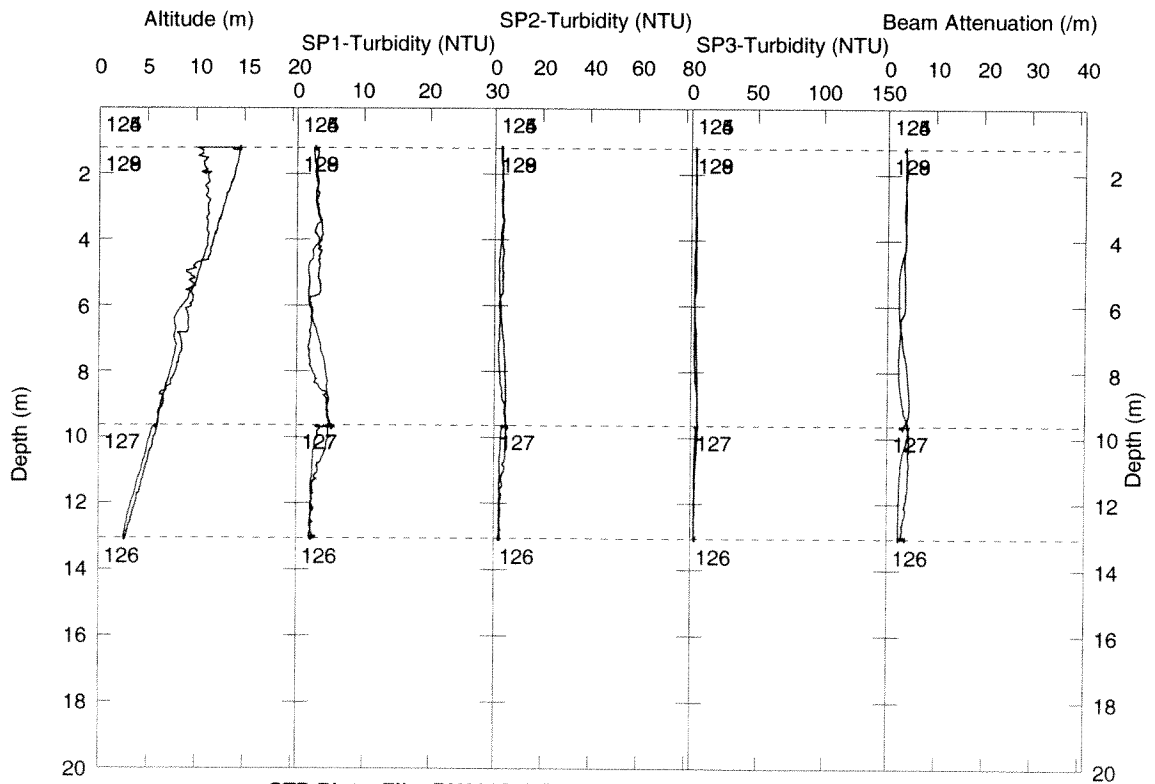
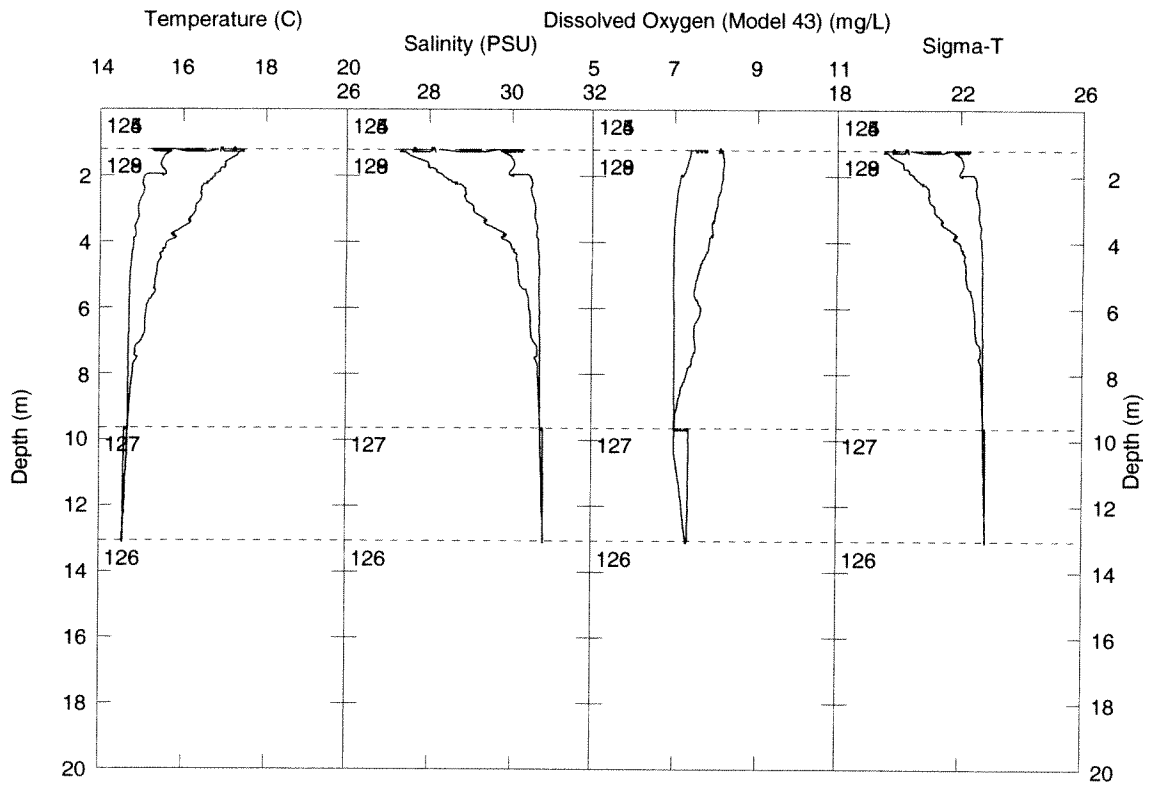
CTD Plots File: BH081039.PAT Date: 06/30/2008 Time: 11:02:01



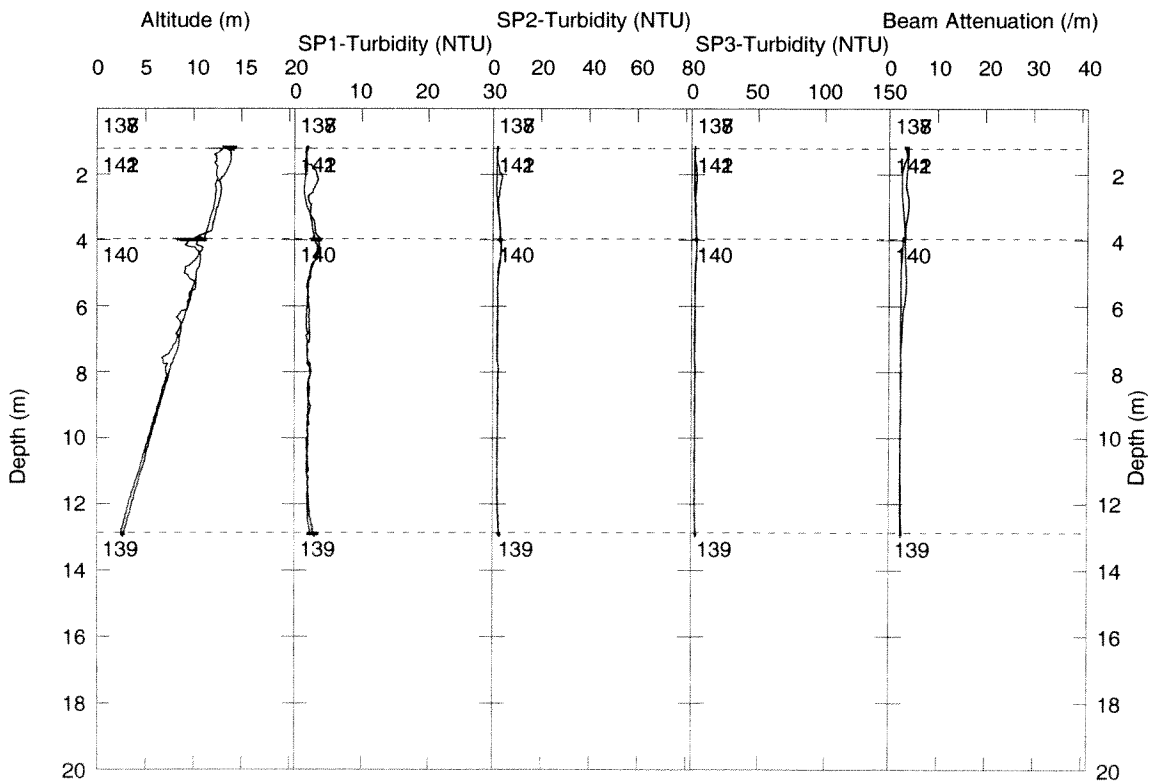
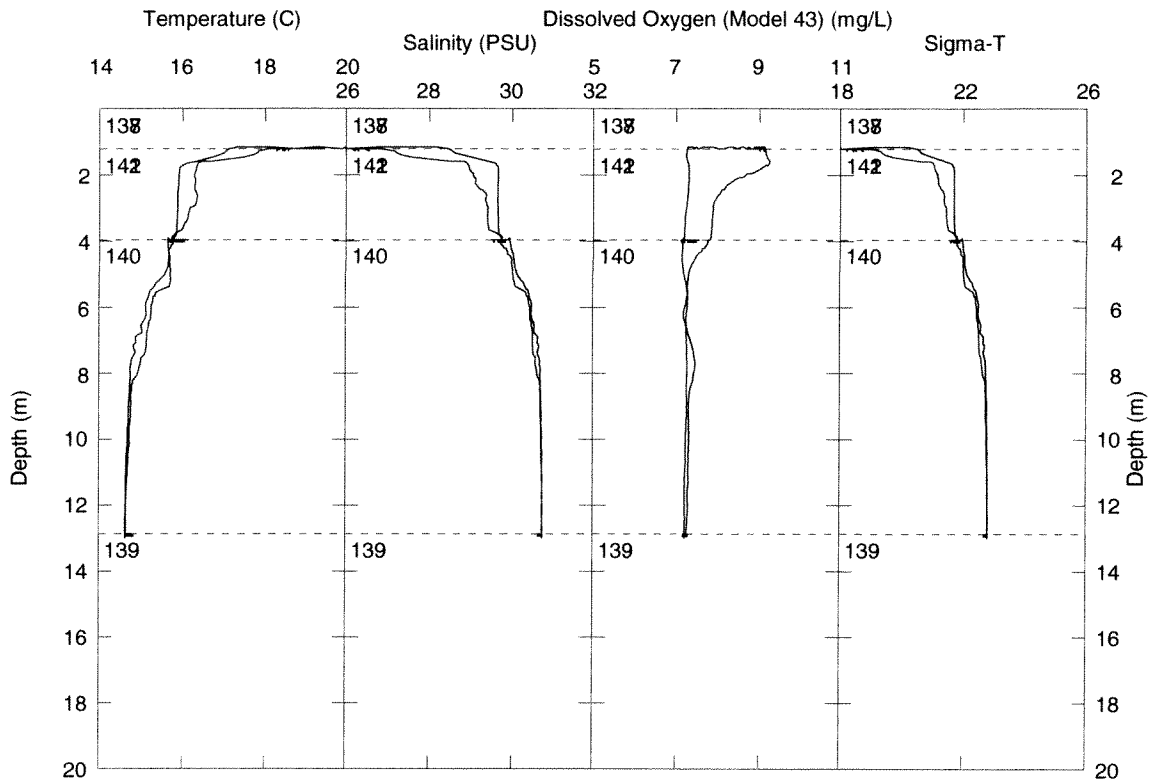




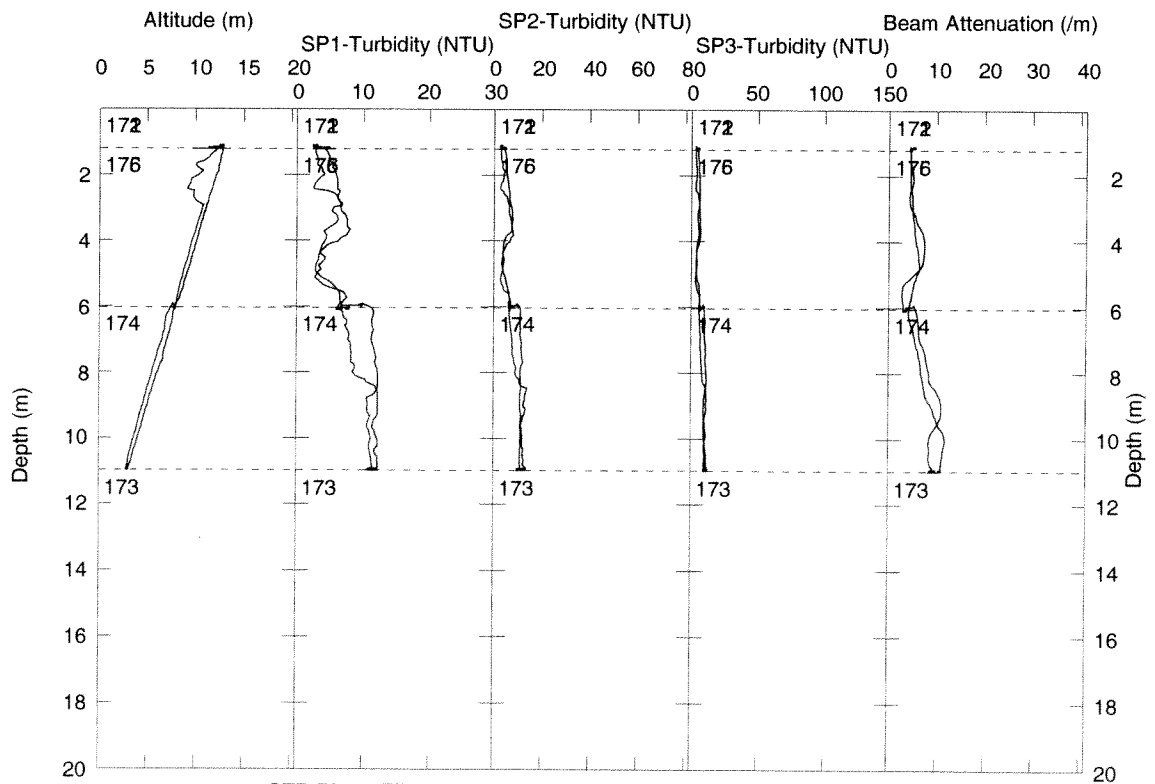
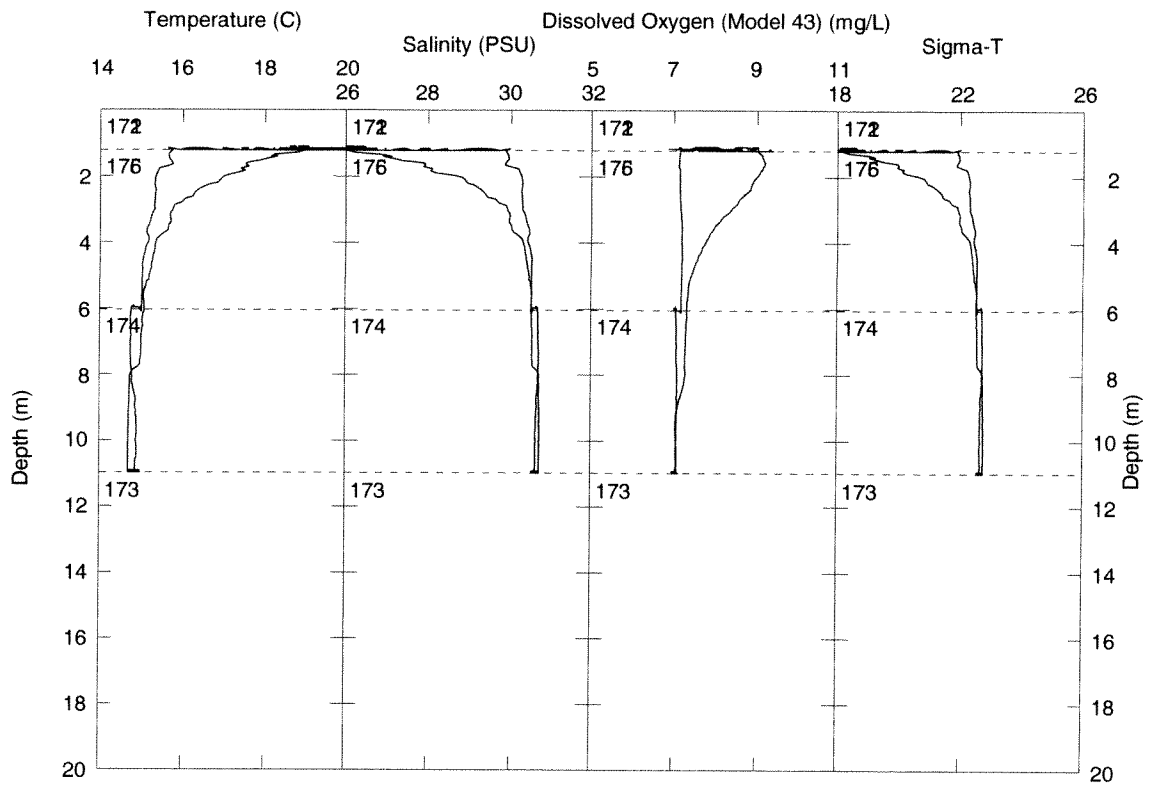




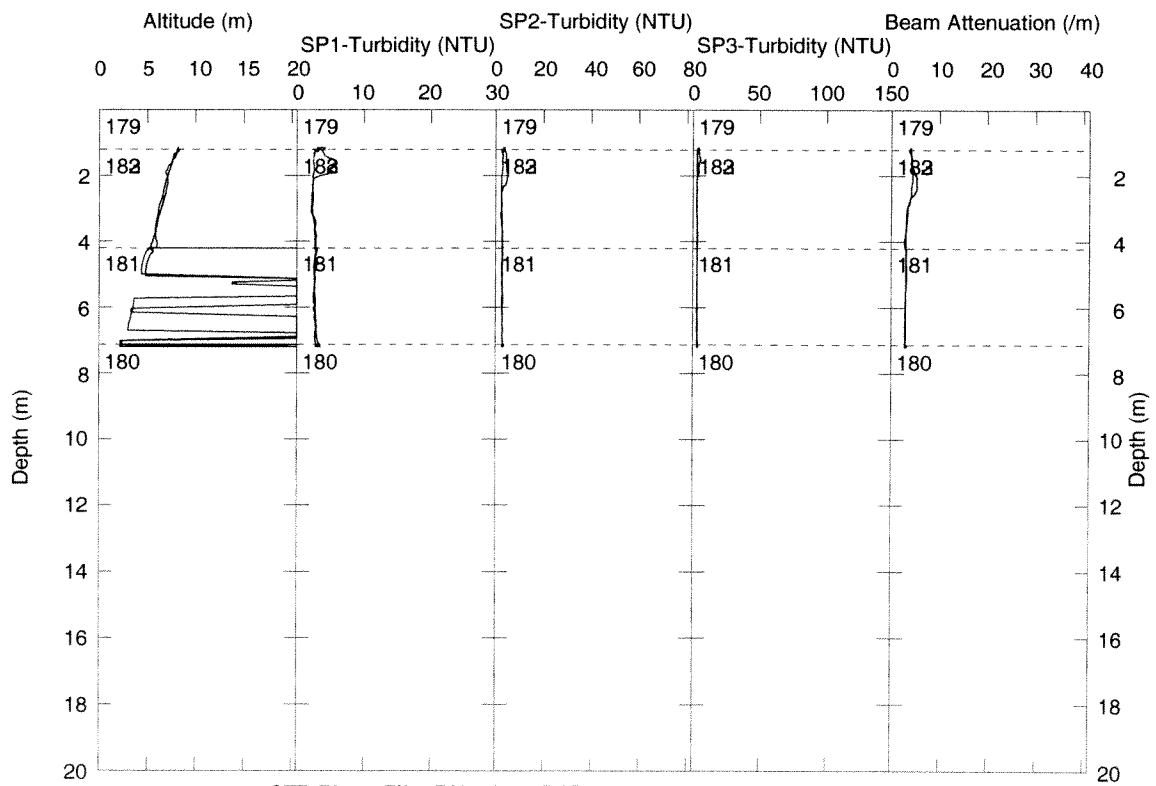
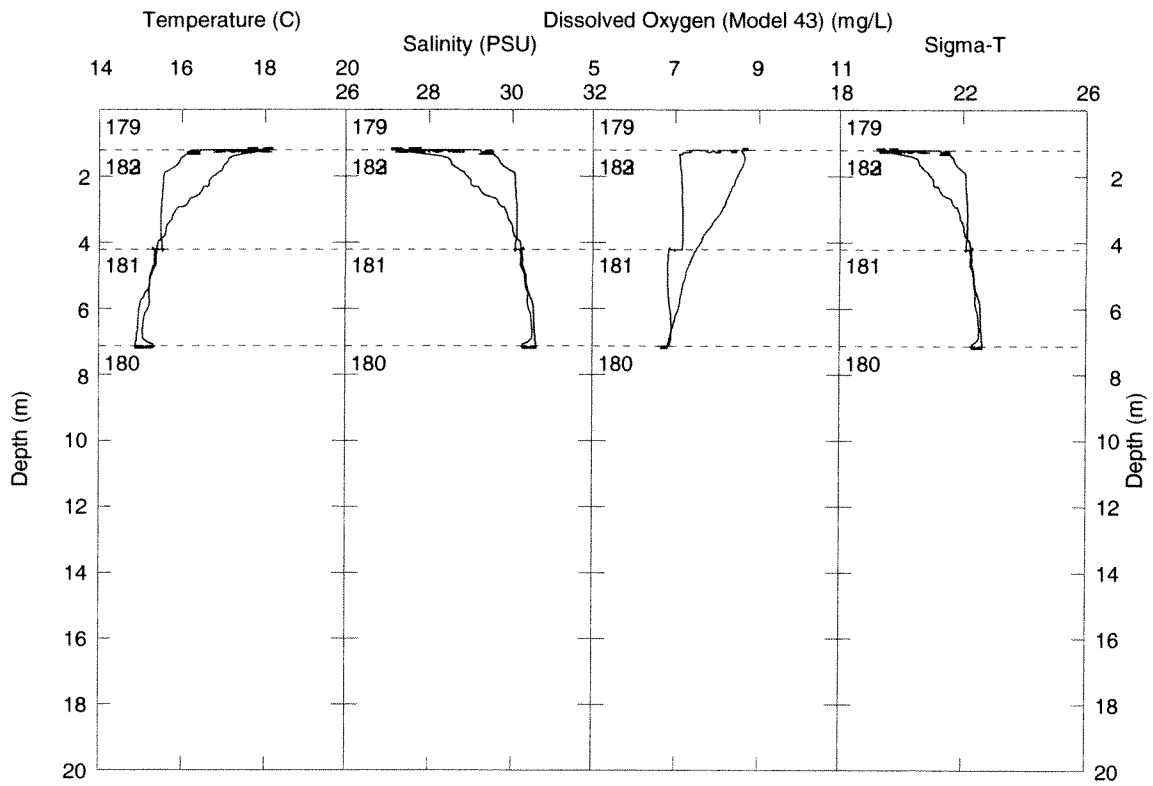
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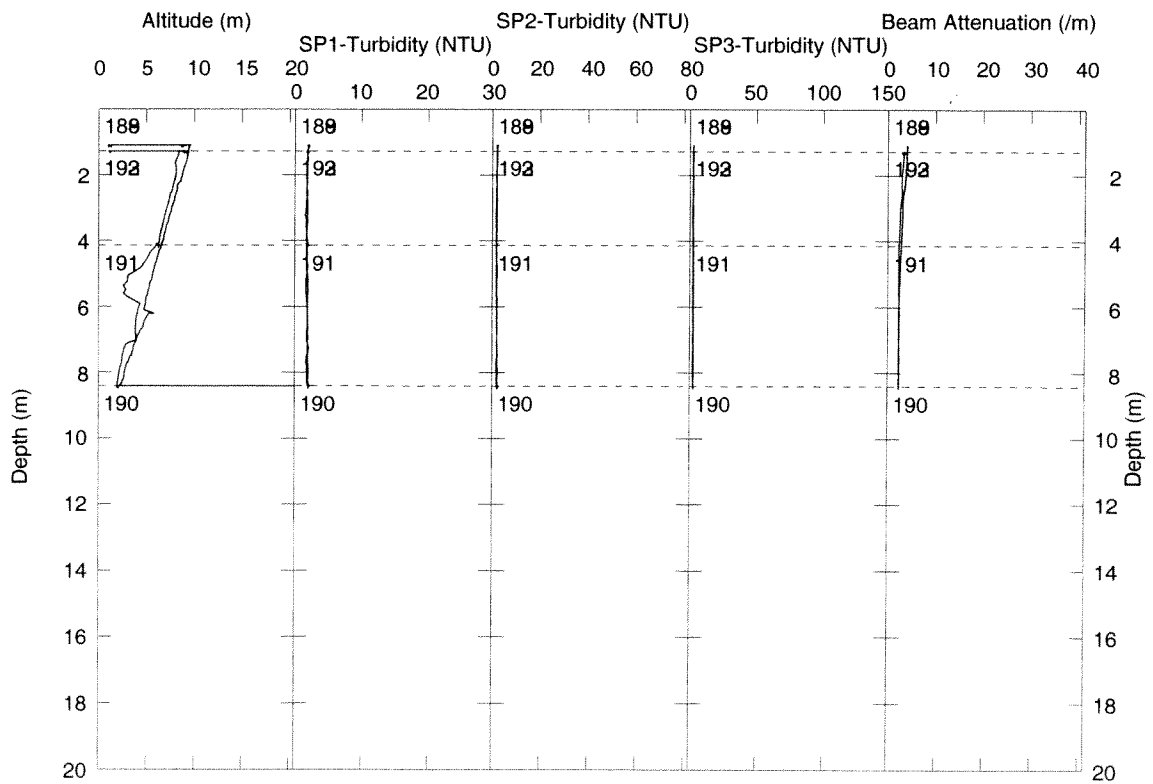
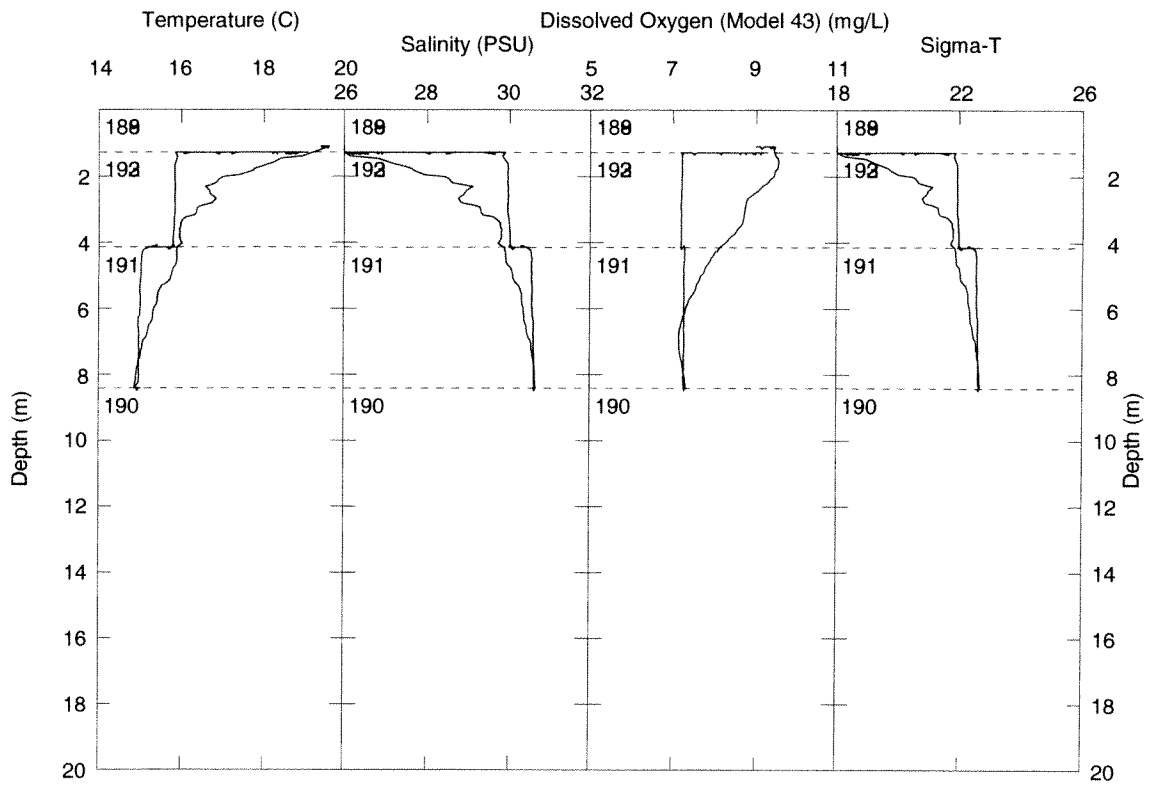
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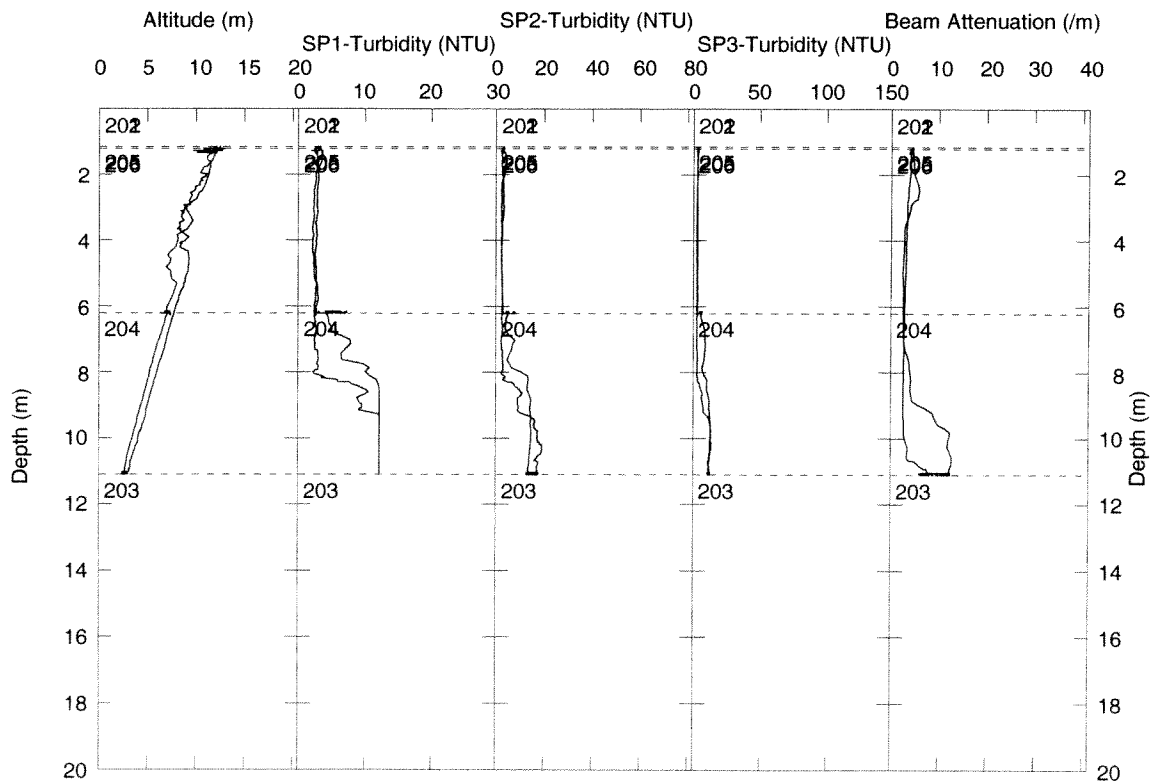
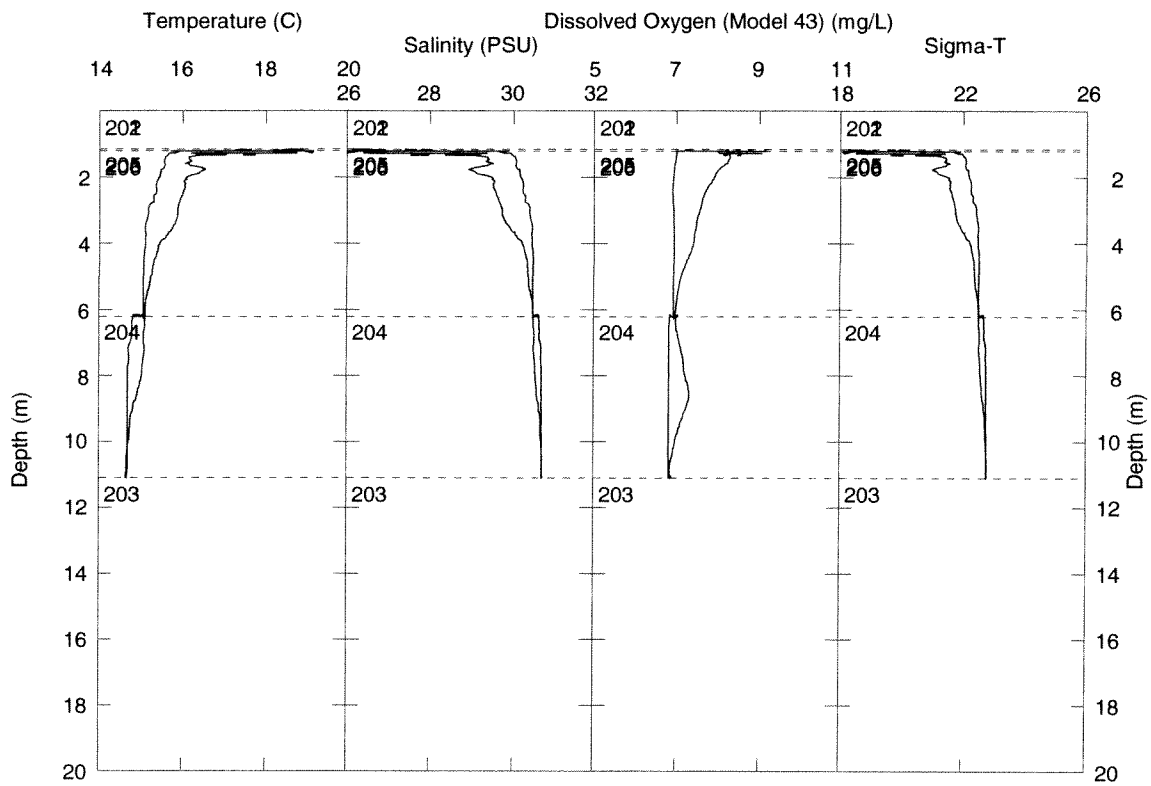


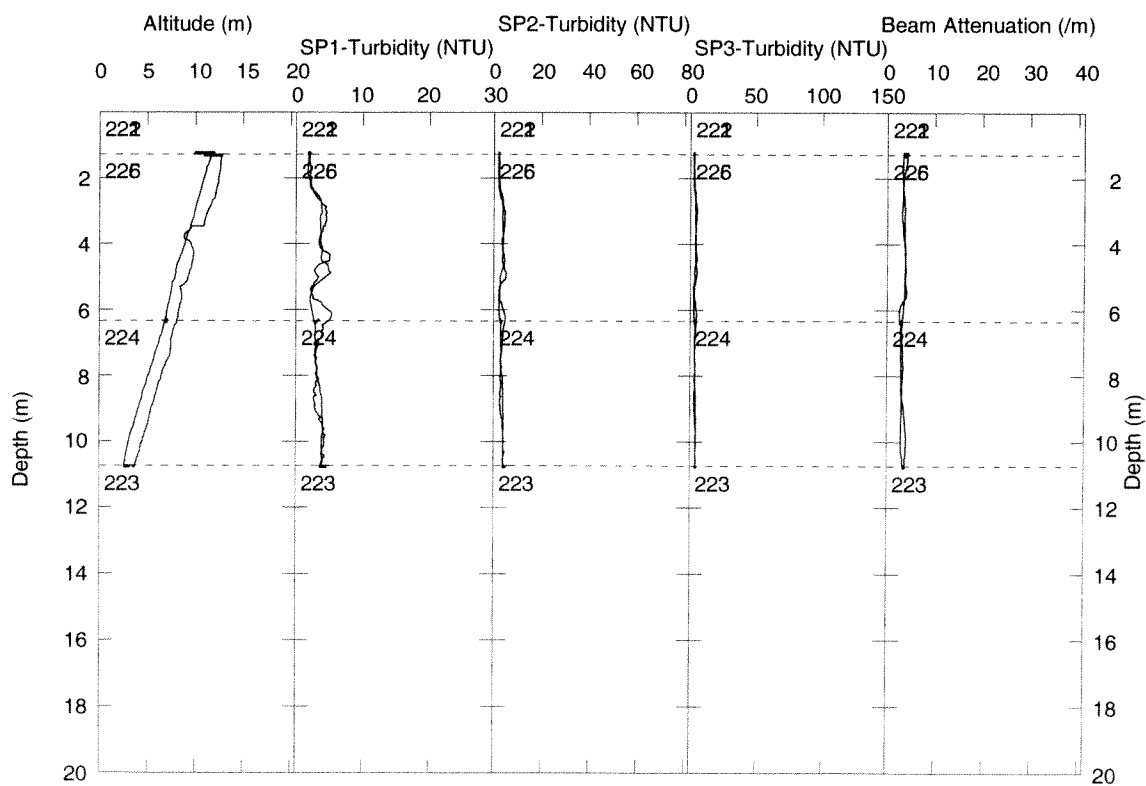
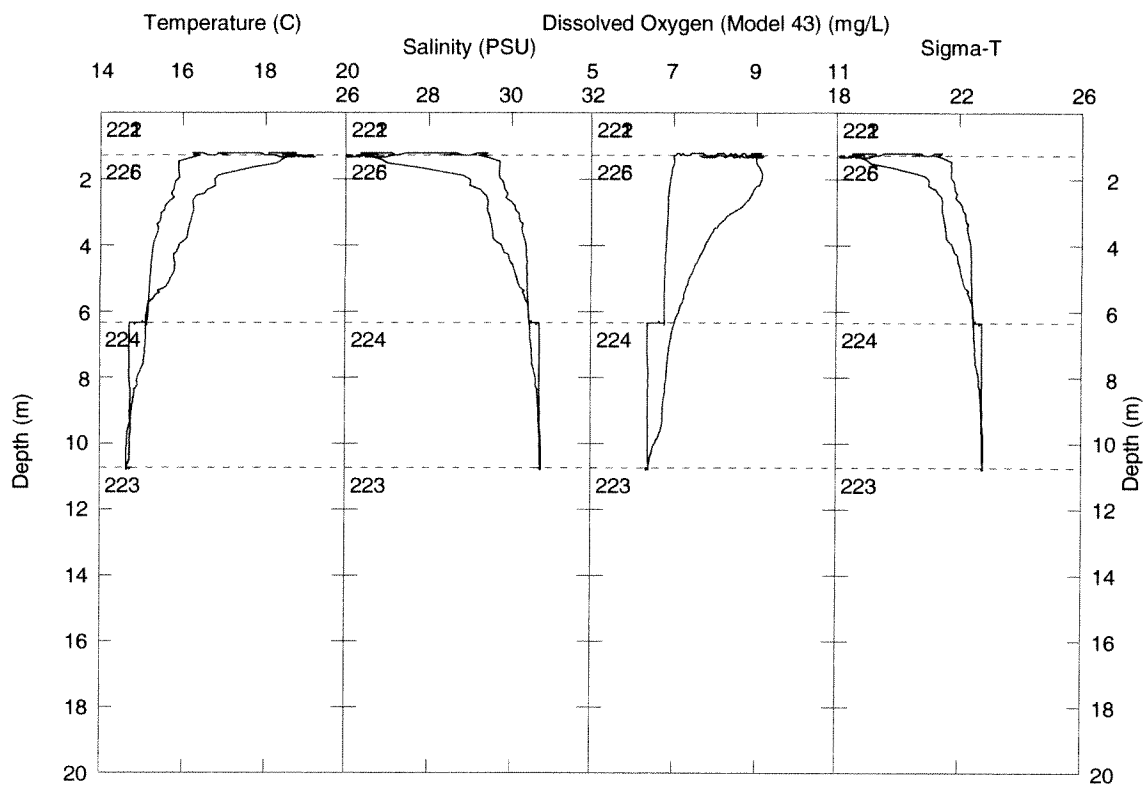
CTD Plots File: BH081067.PAT Date: 06/30/2008 Time: 13:45:34



CTD Plots File: BH081069.PAT Date: 06/30/2008 Time: 13:54:53

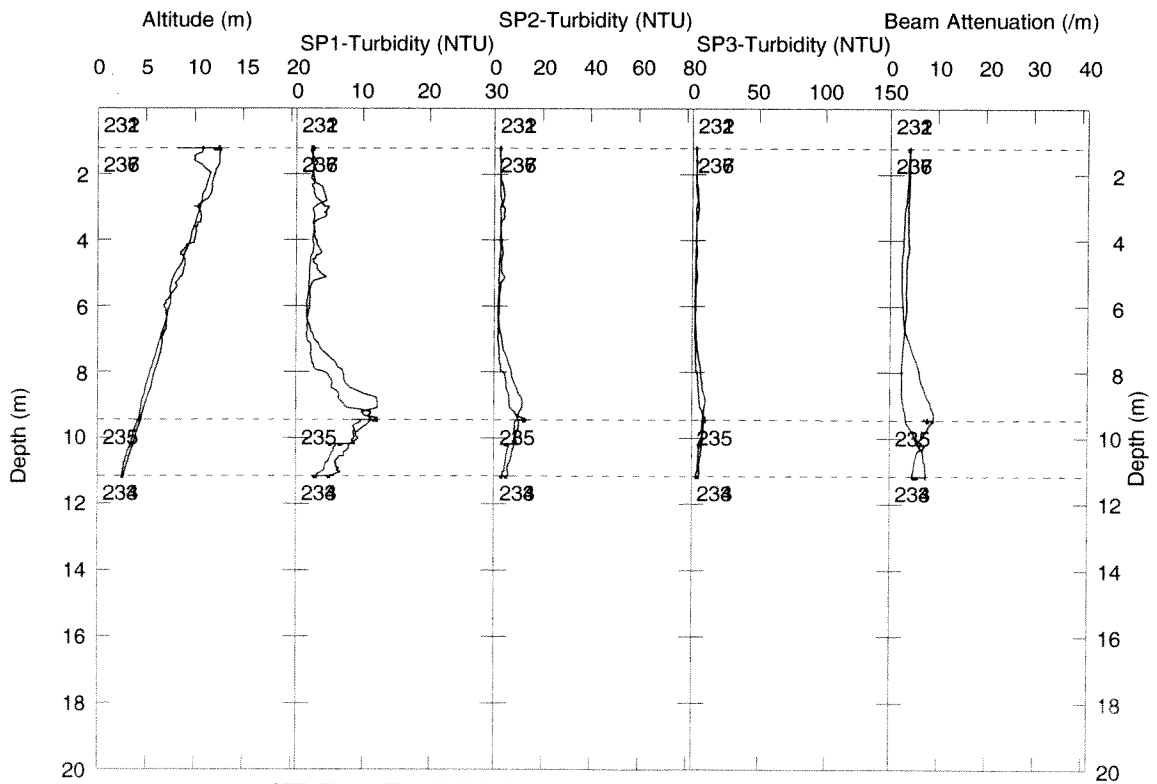
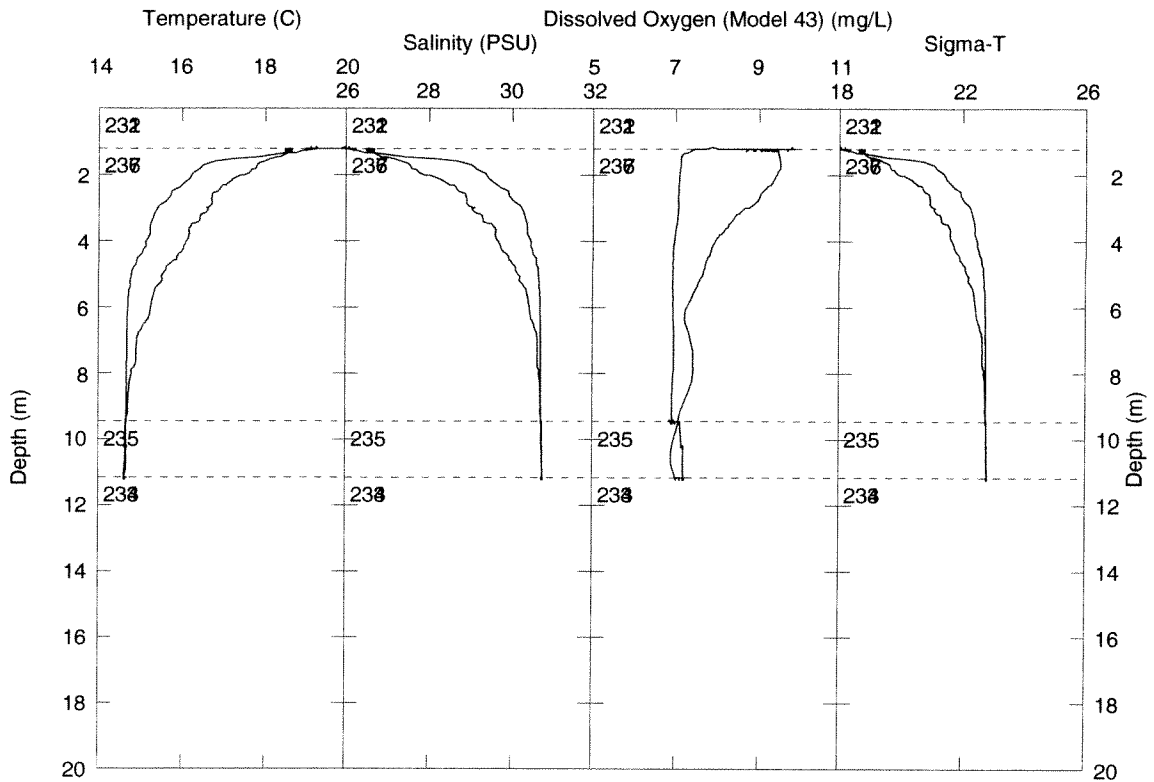




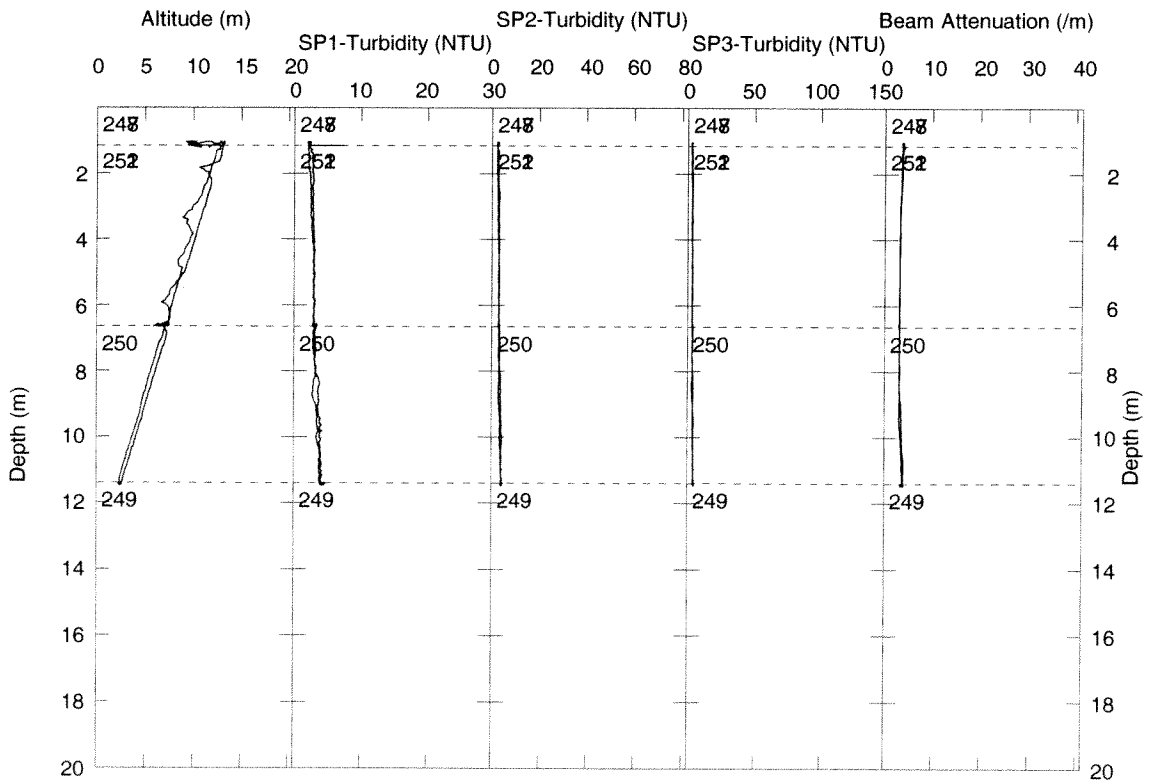
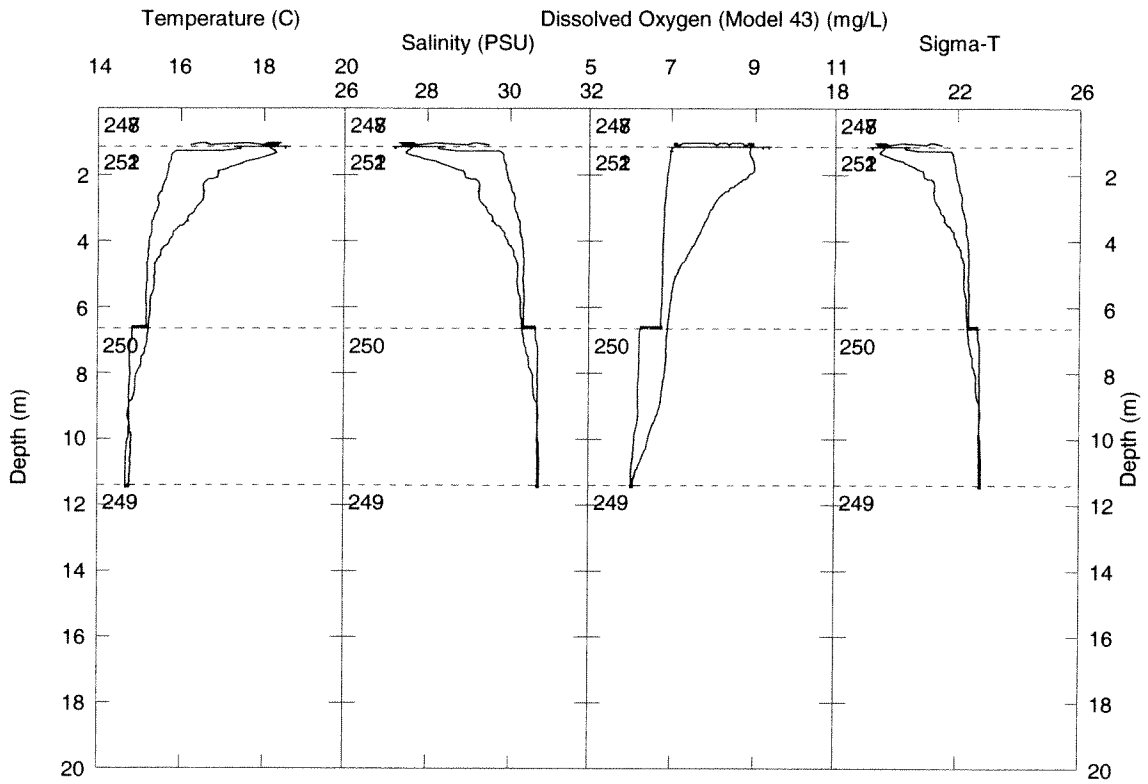


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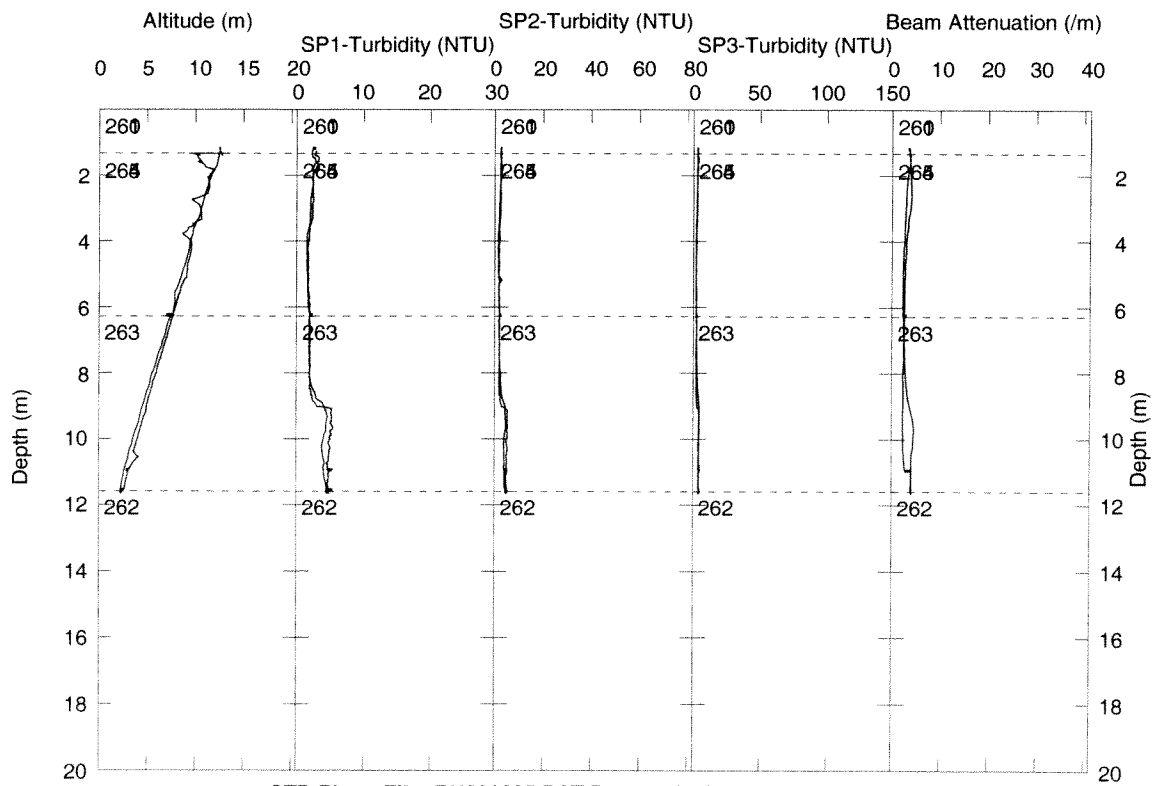
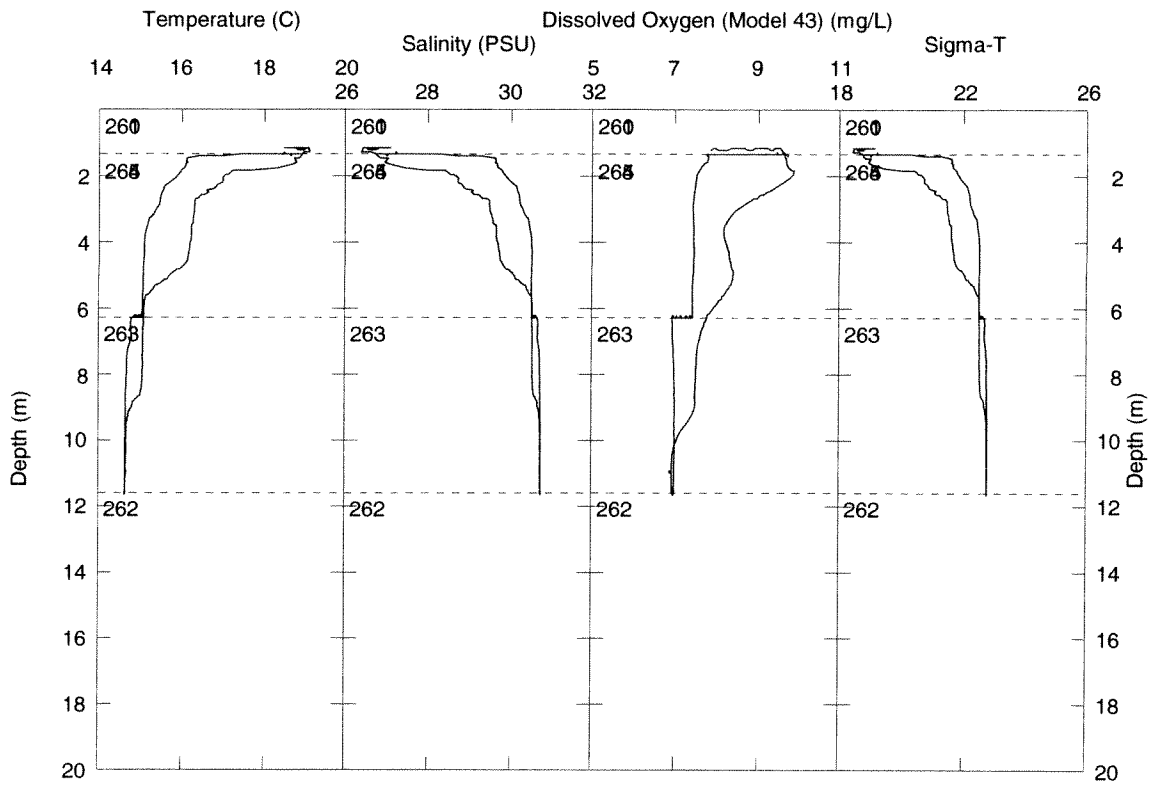




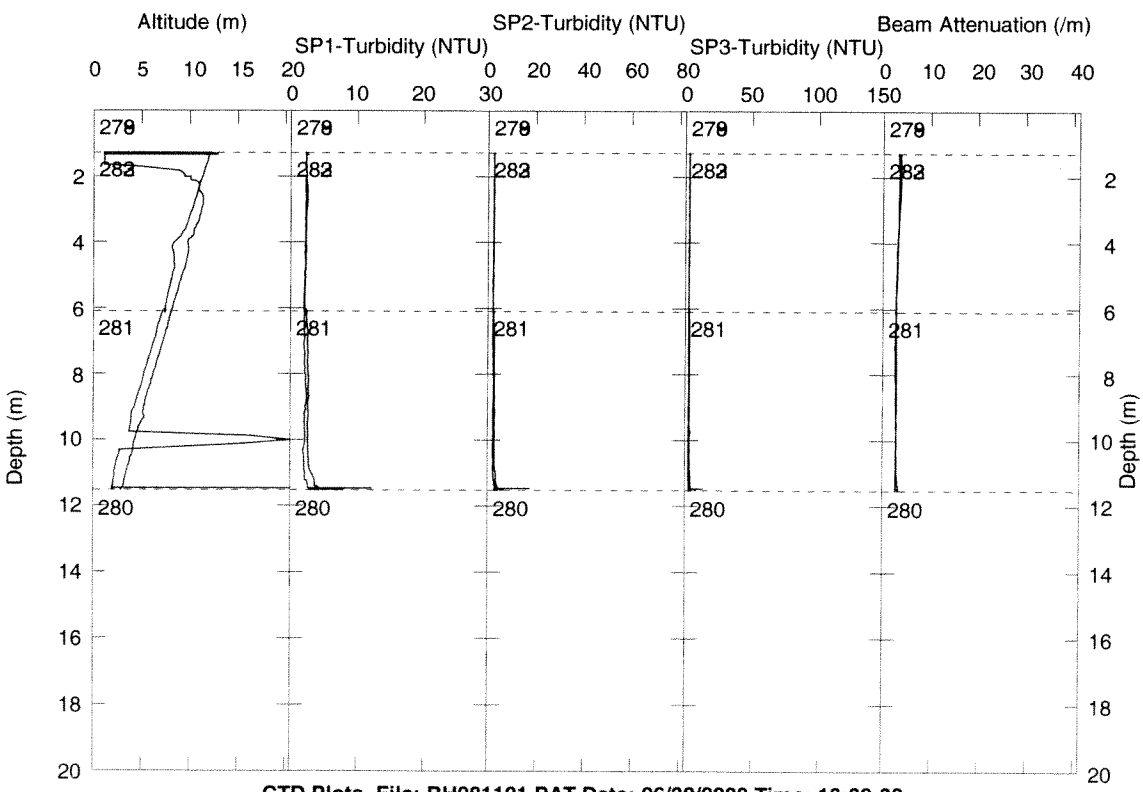
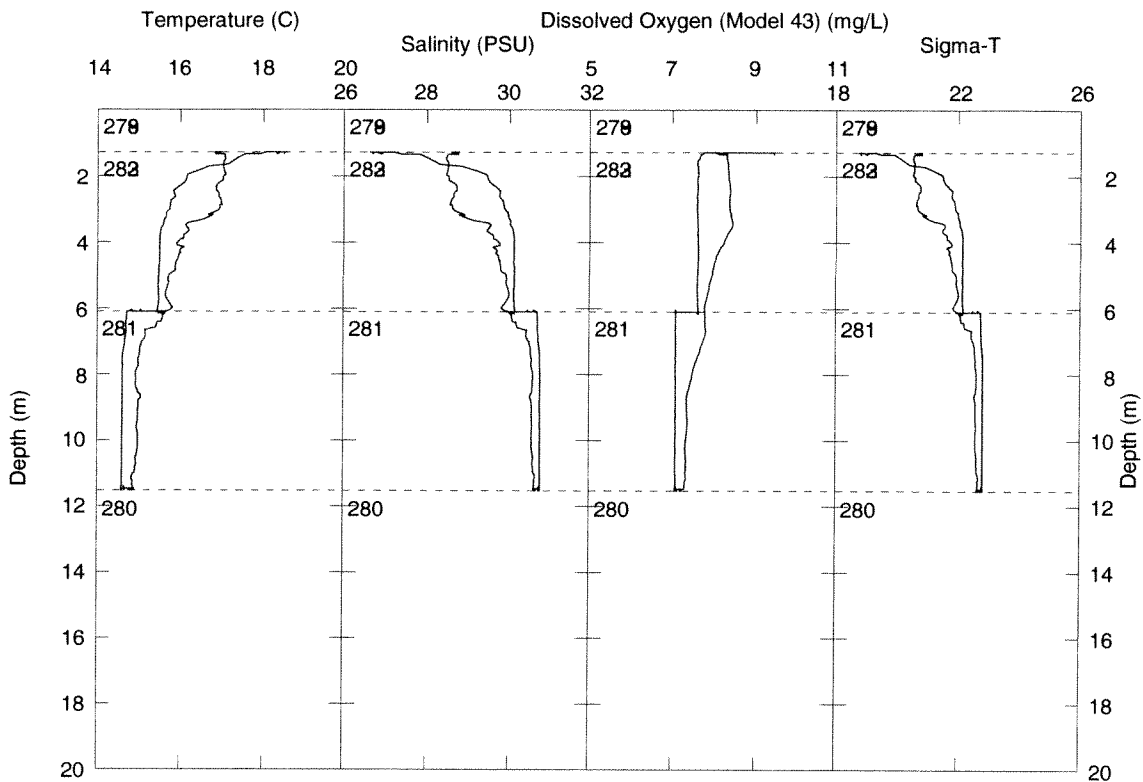
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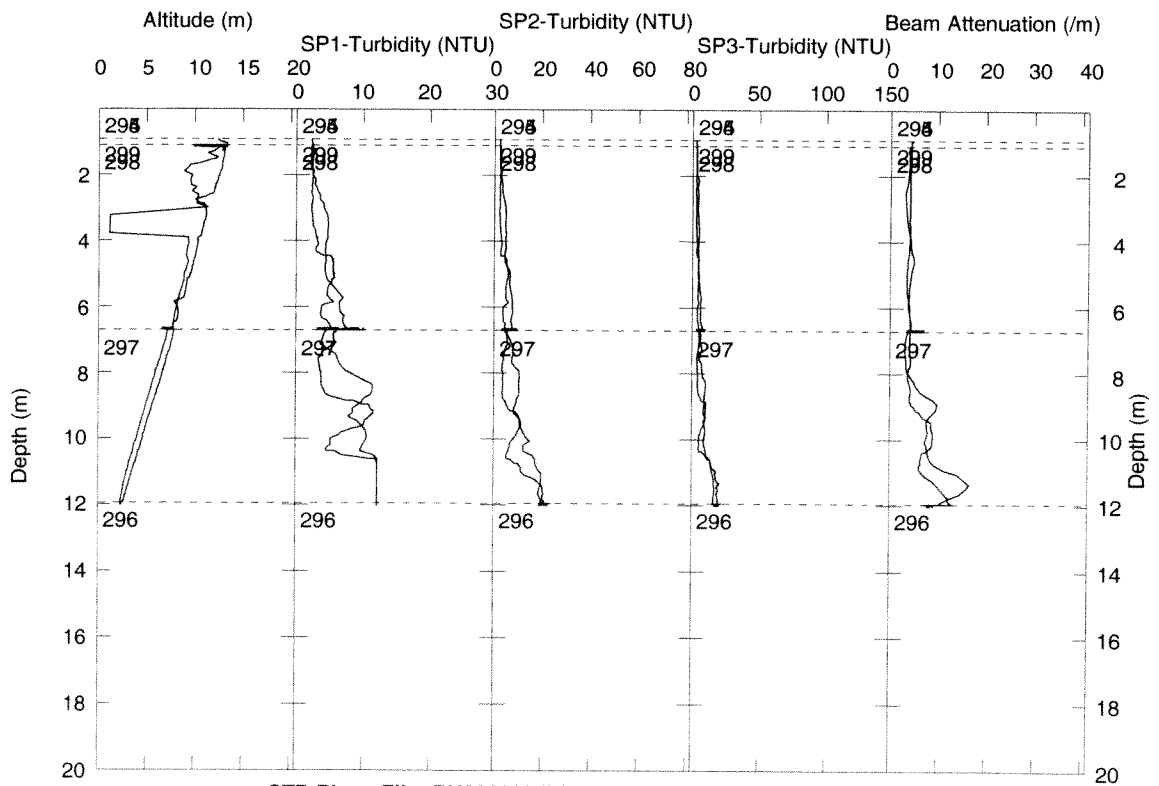
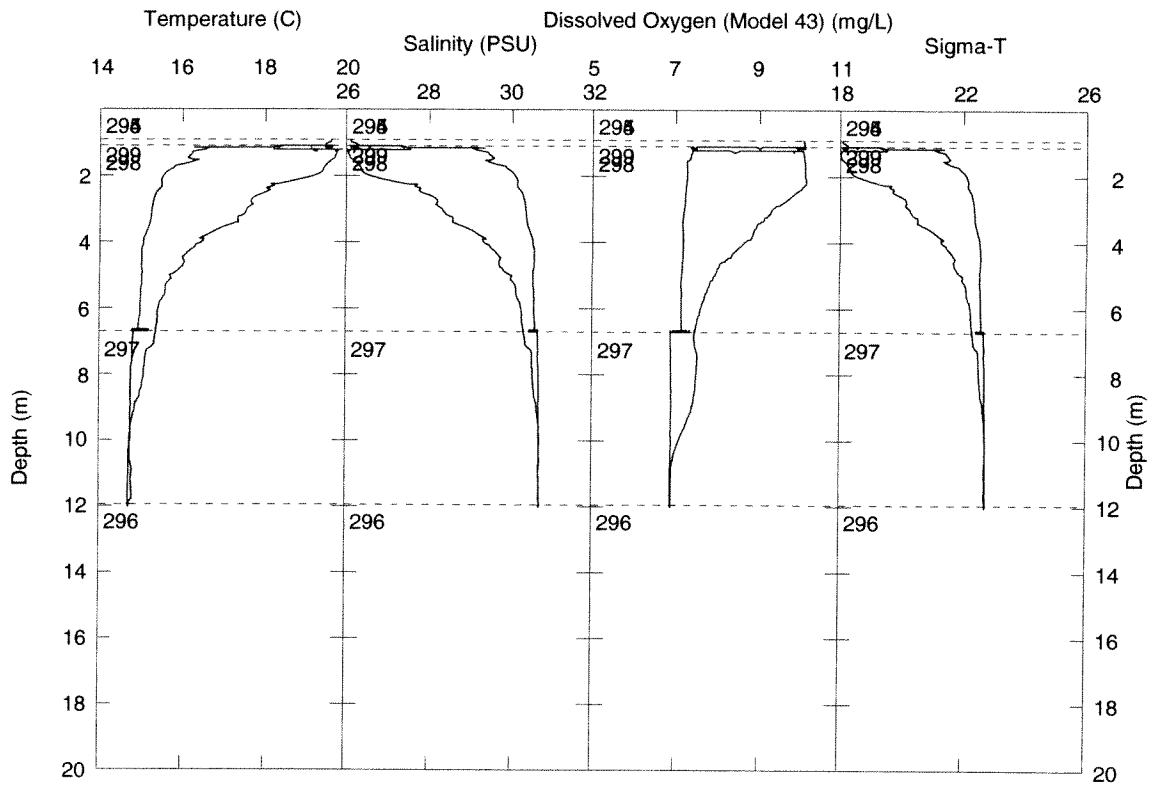
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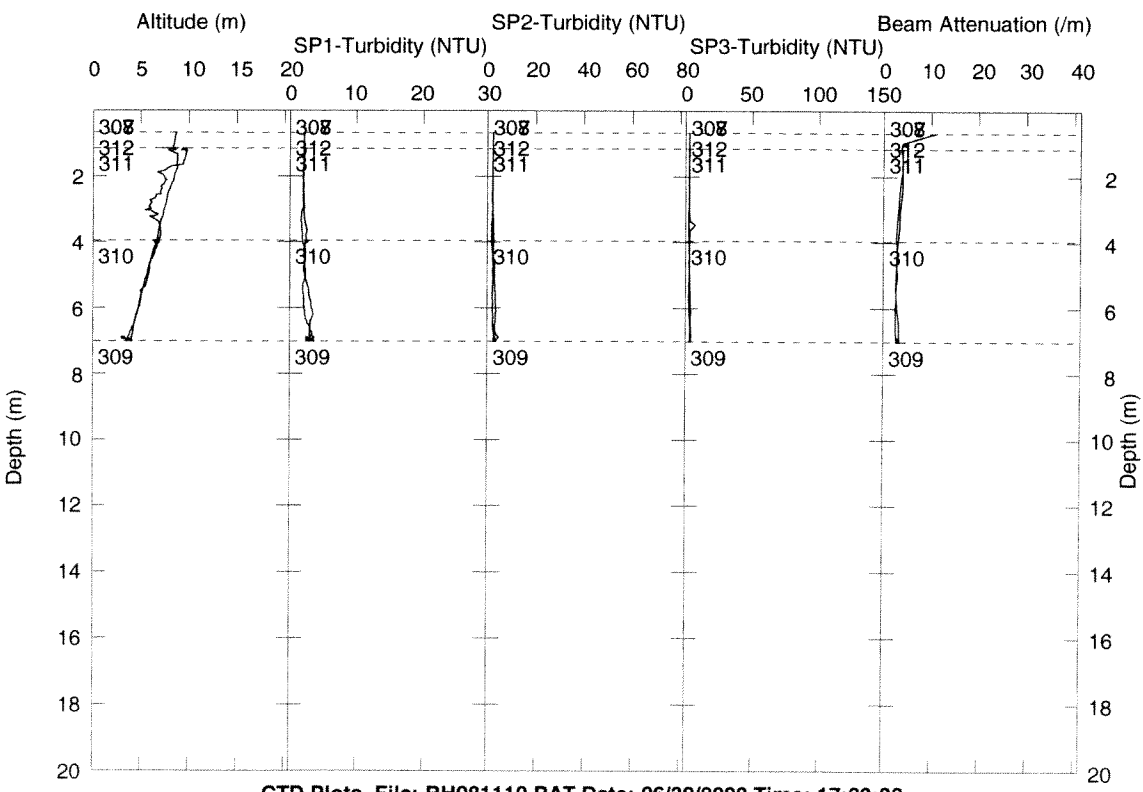
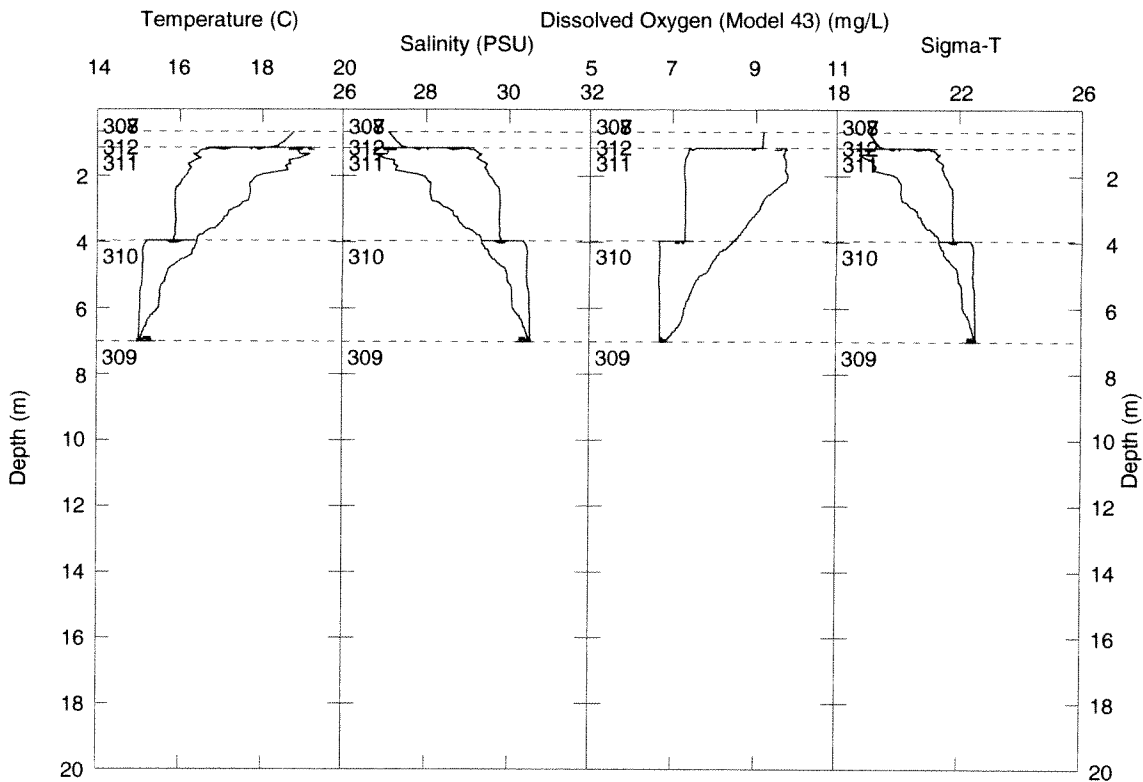
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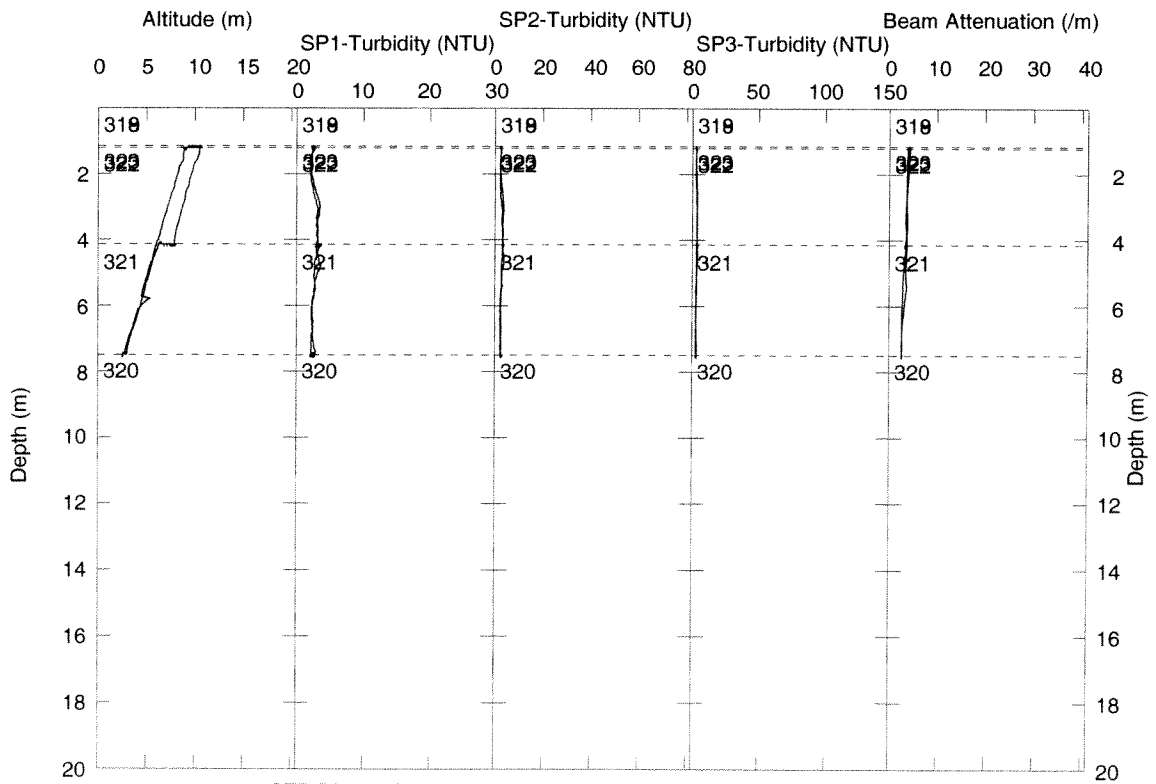
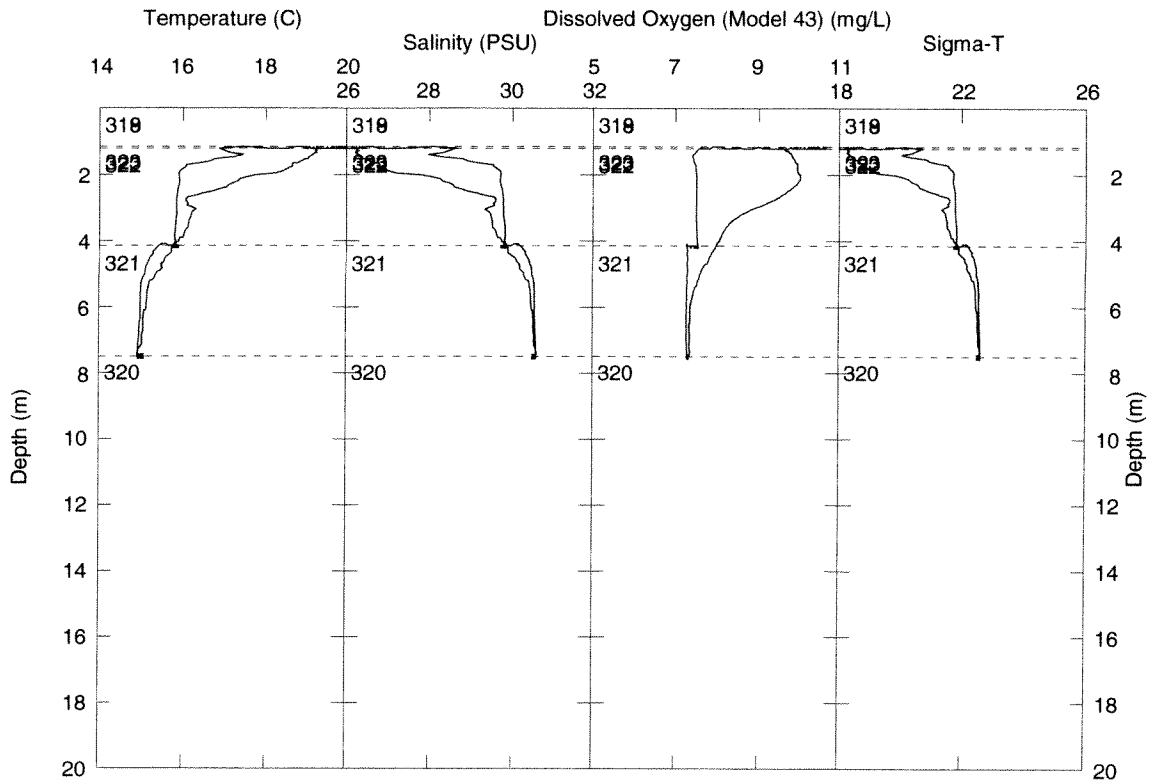
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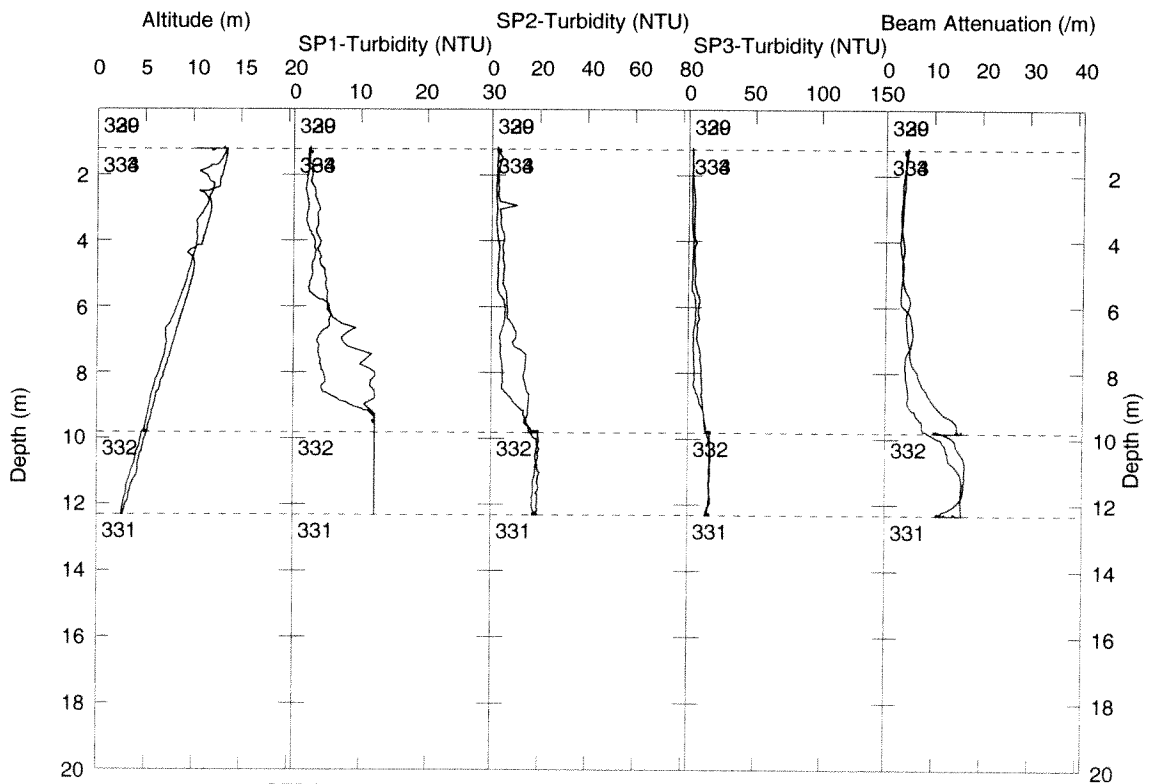
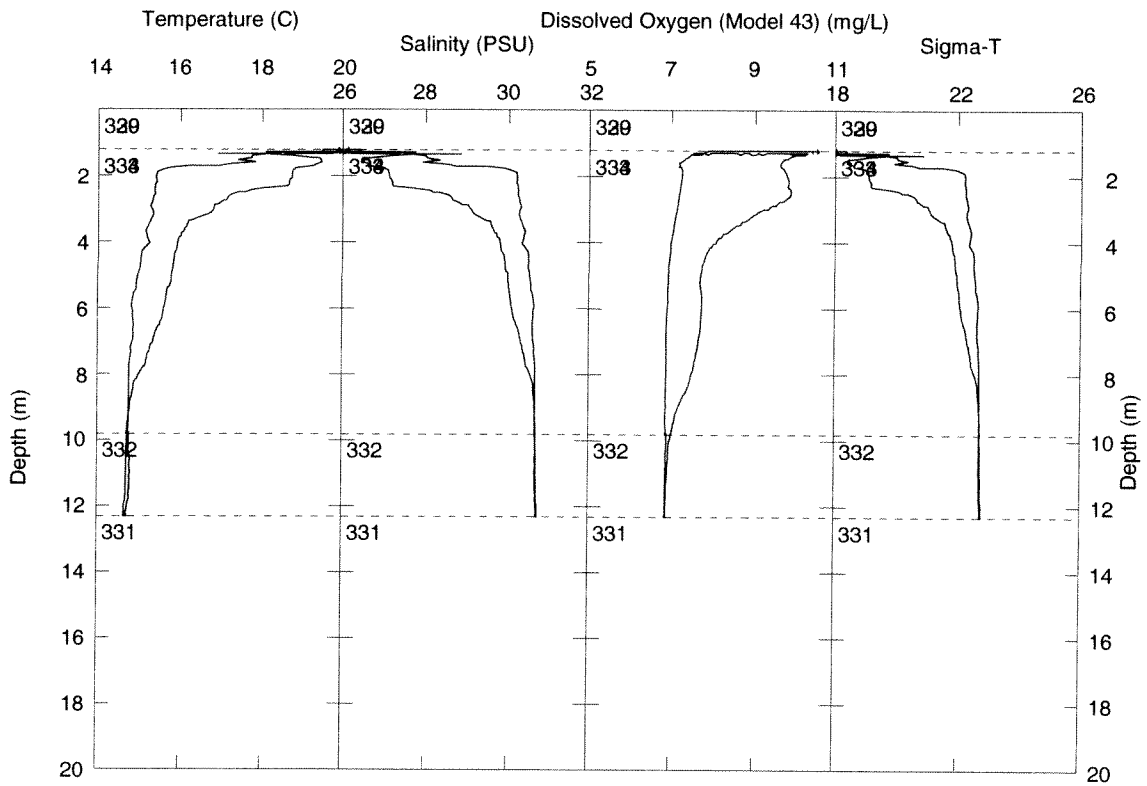
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CTD Plots File: BH081110.PAT Date: 06/30/2008 Time: 17:23:32

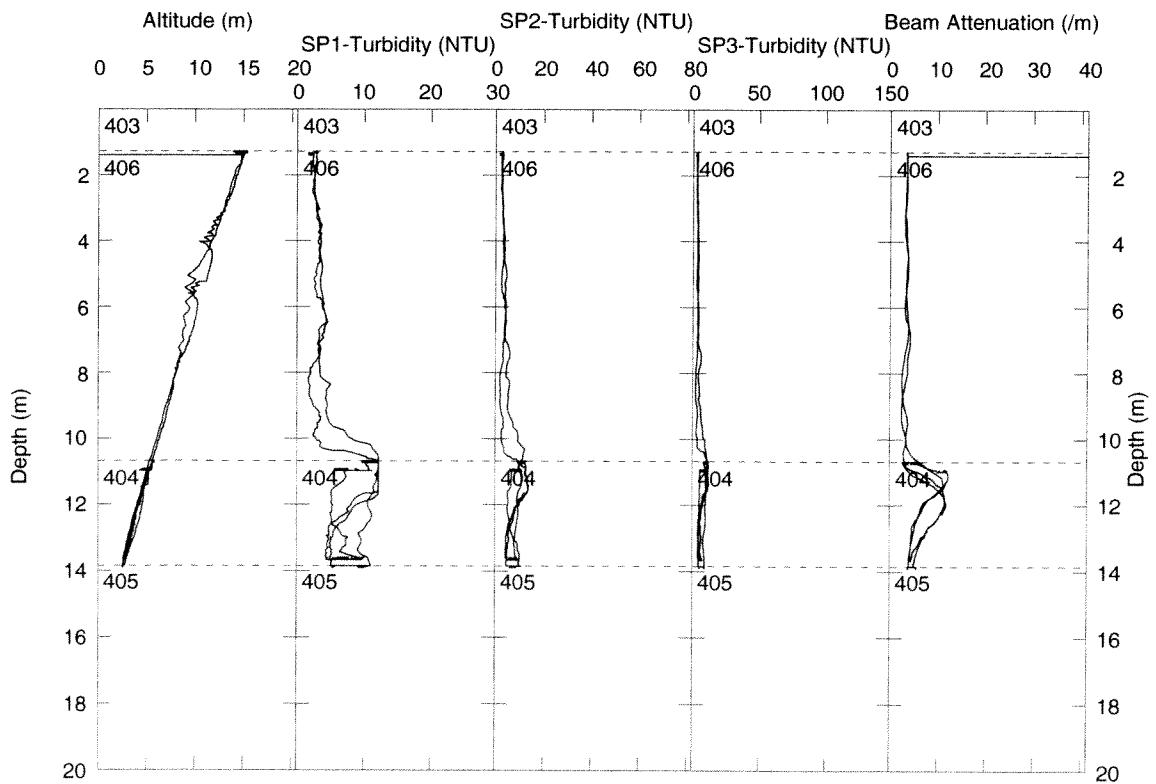
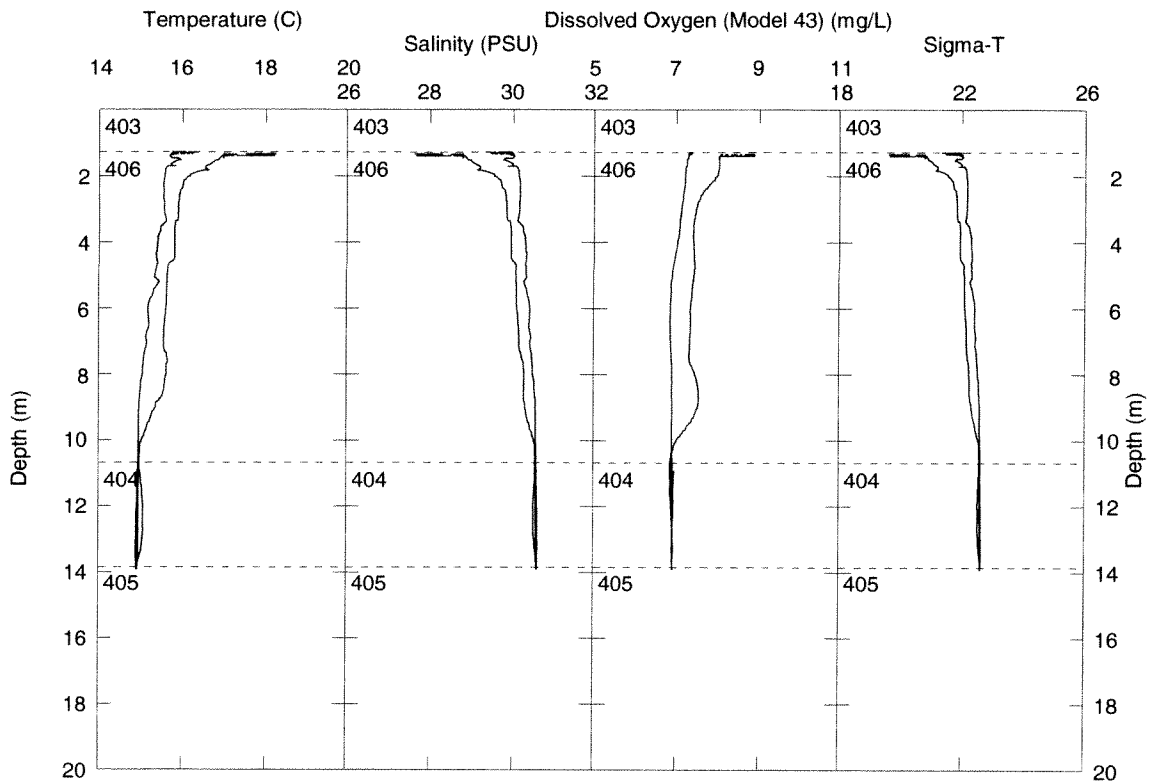


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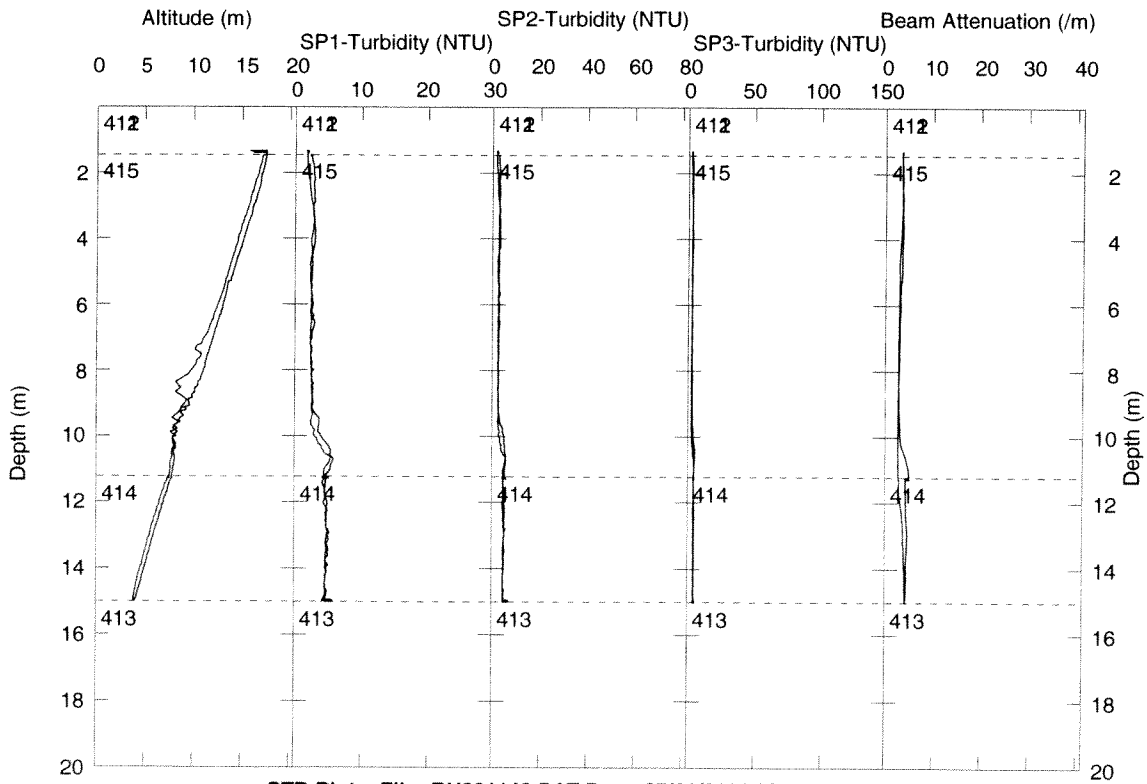
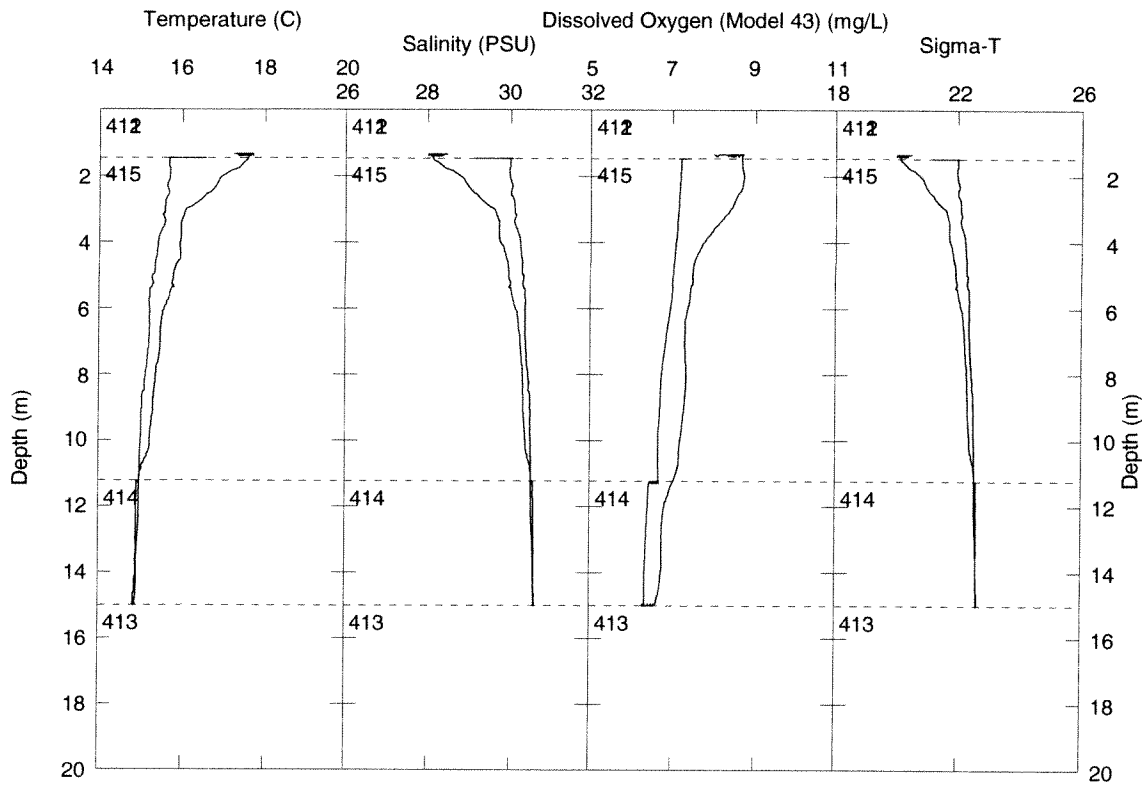


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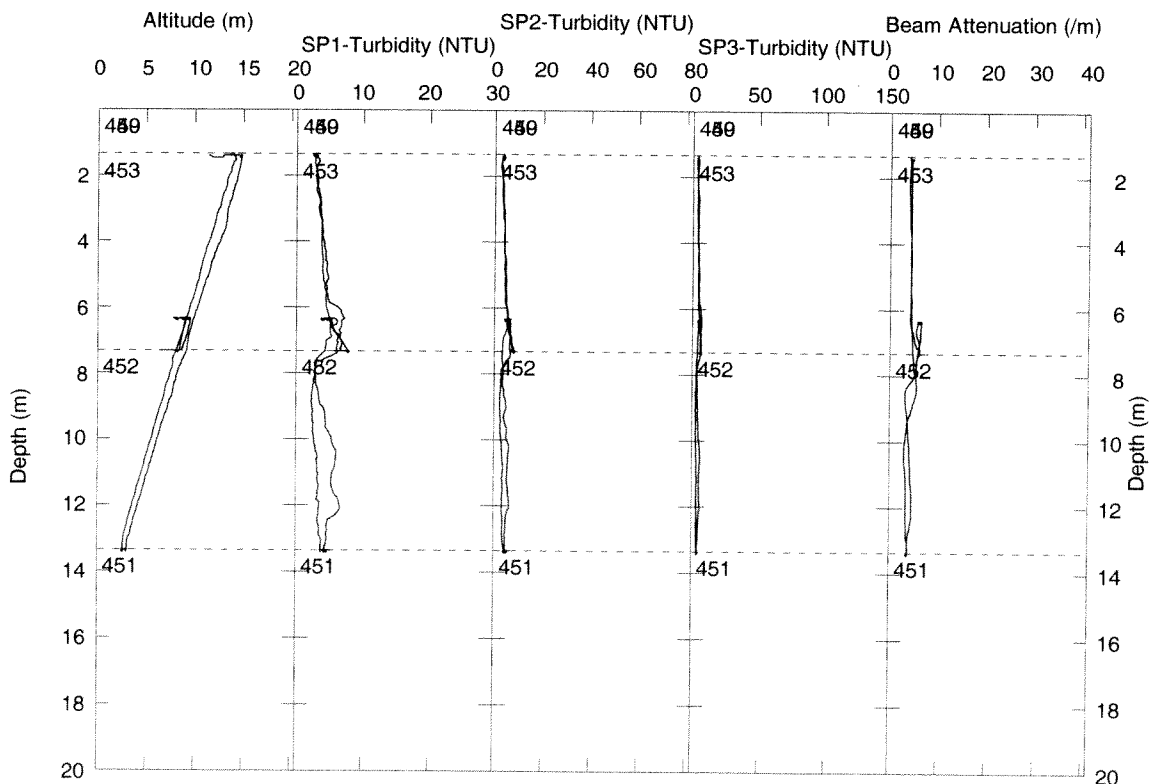
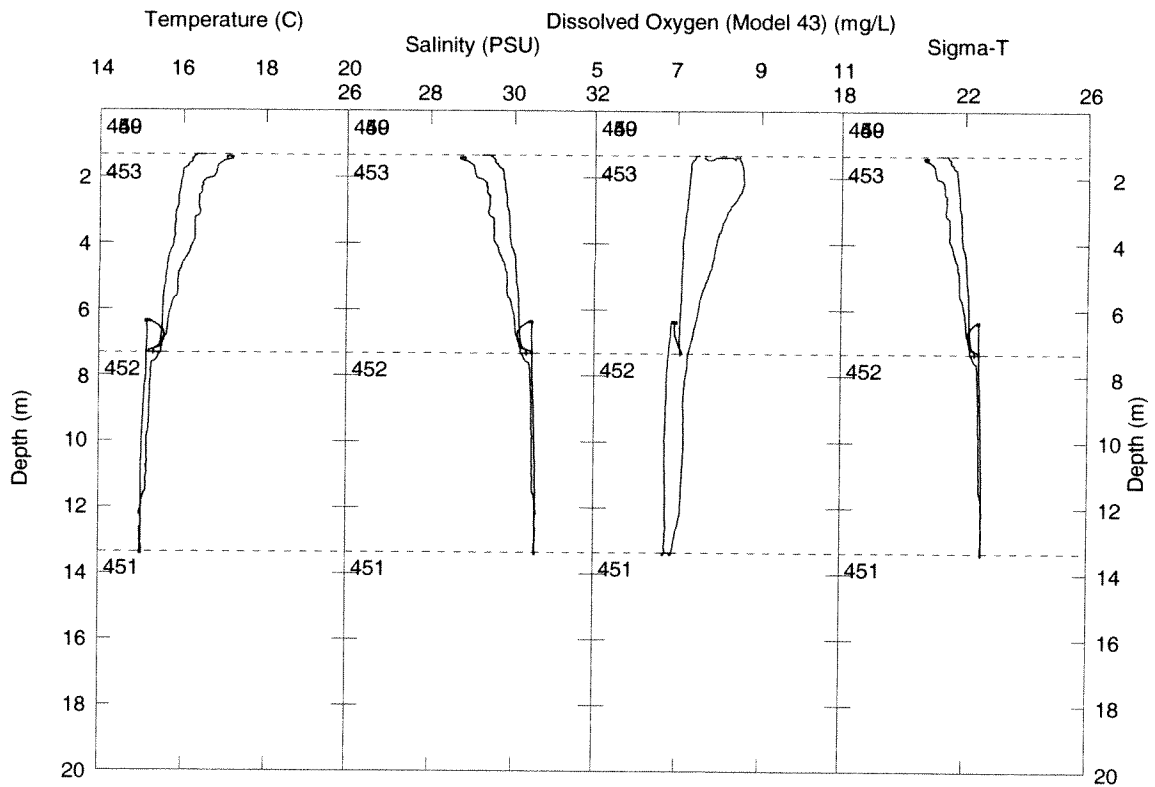




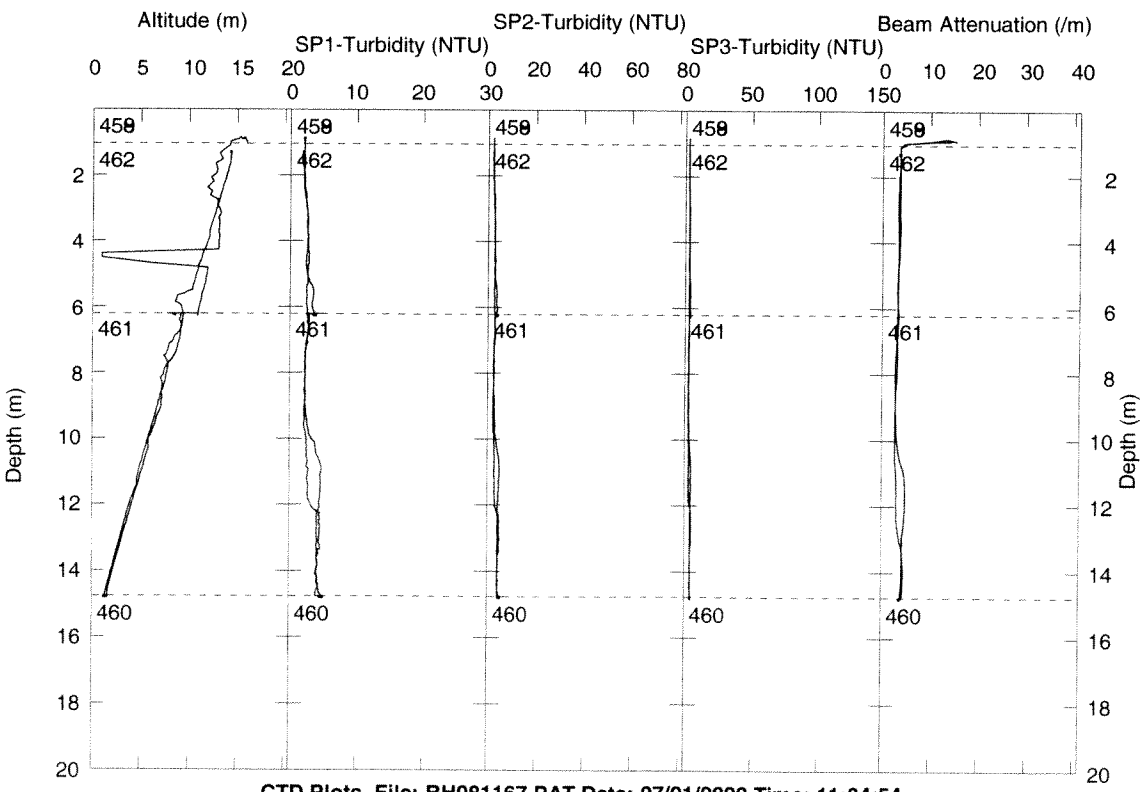
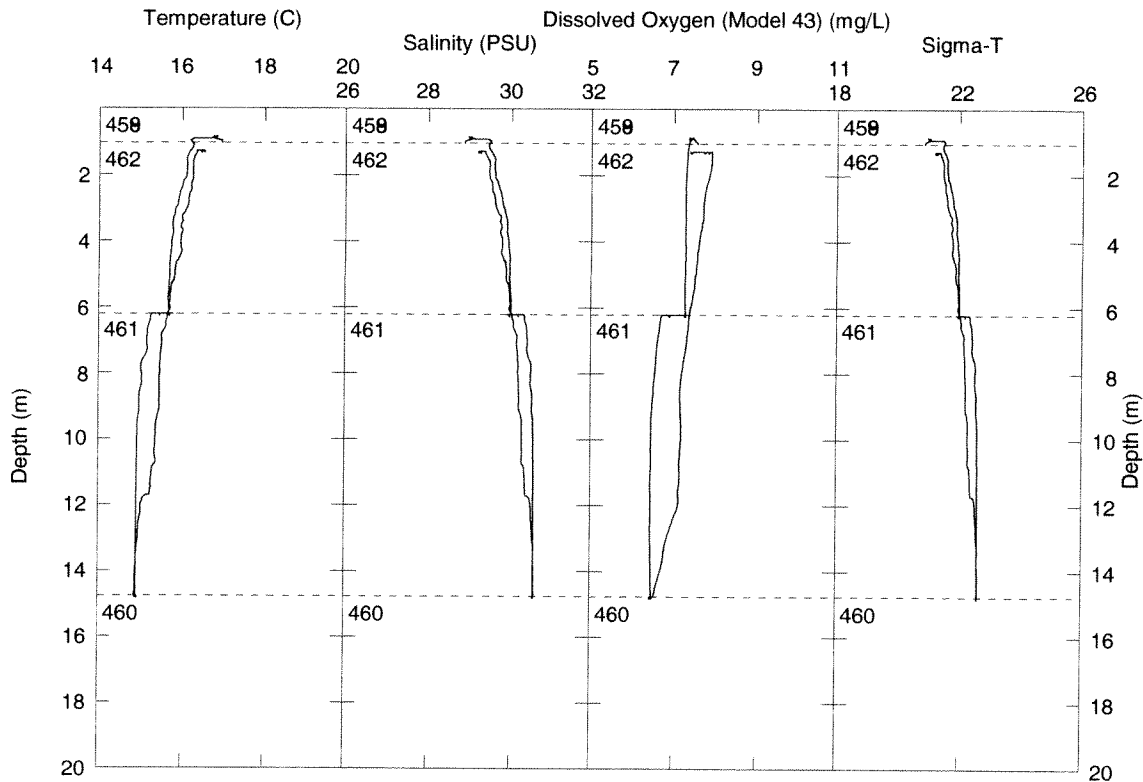
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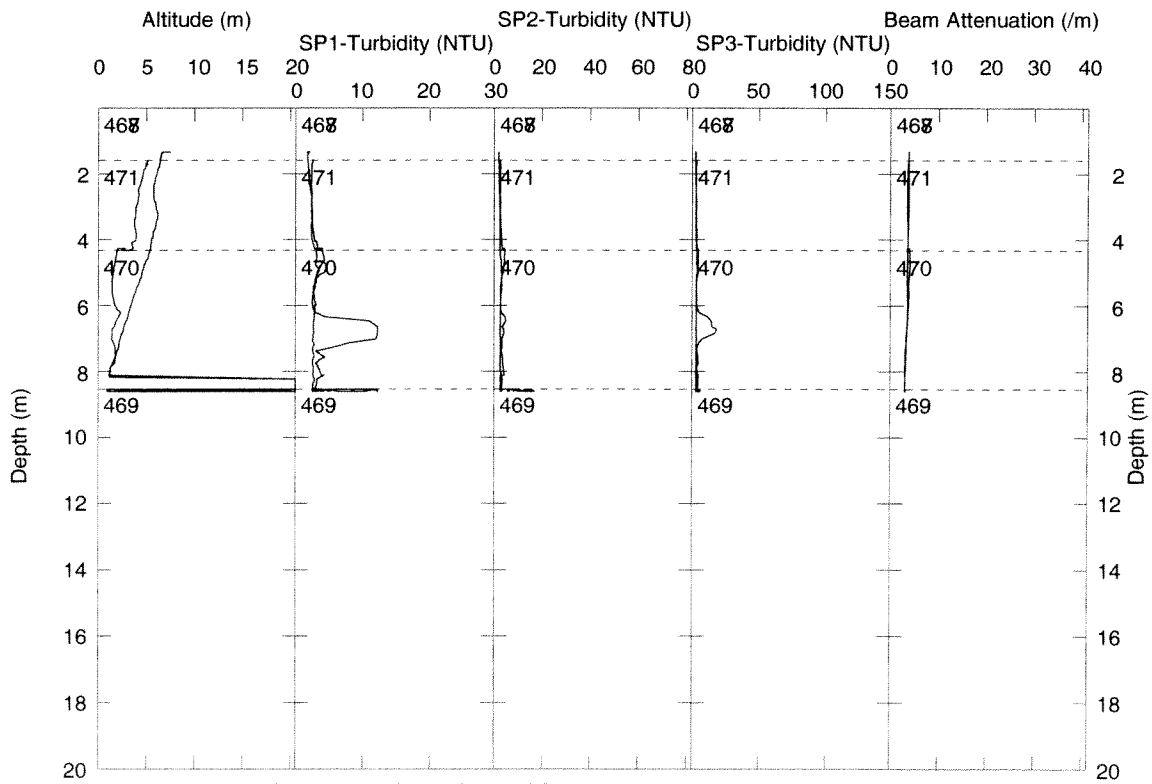
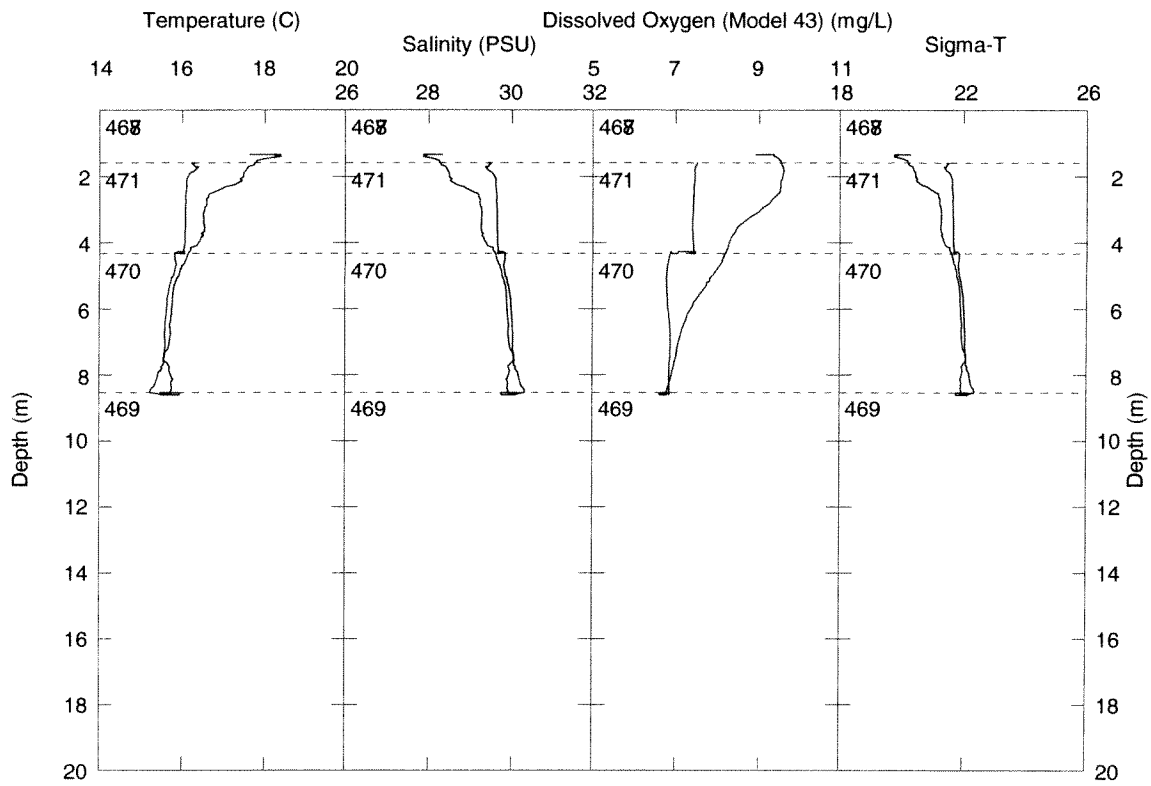
CTD Plots File: BH081148.PAT Date: 07/01/2008 Time: 09:05:47



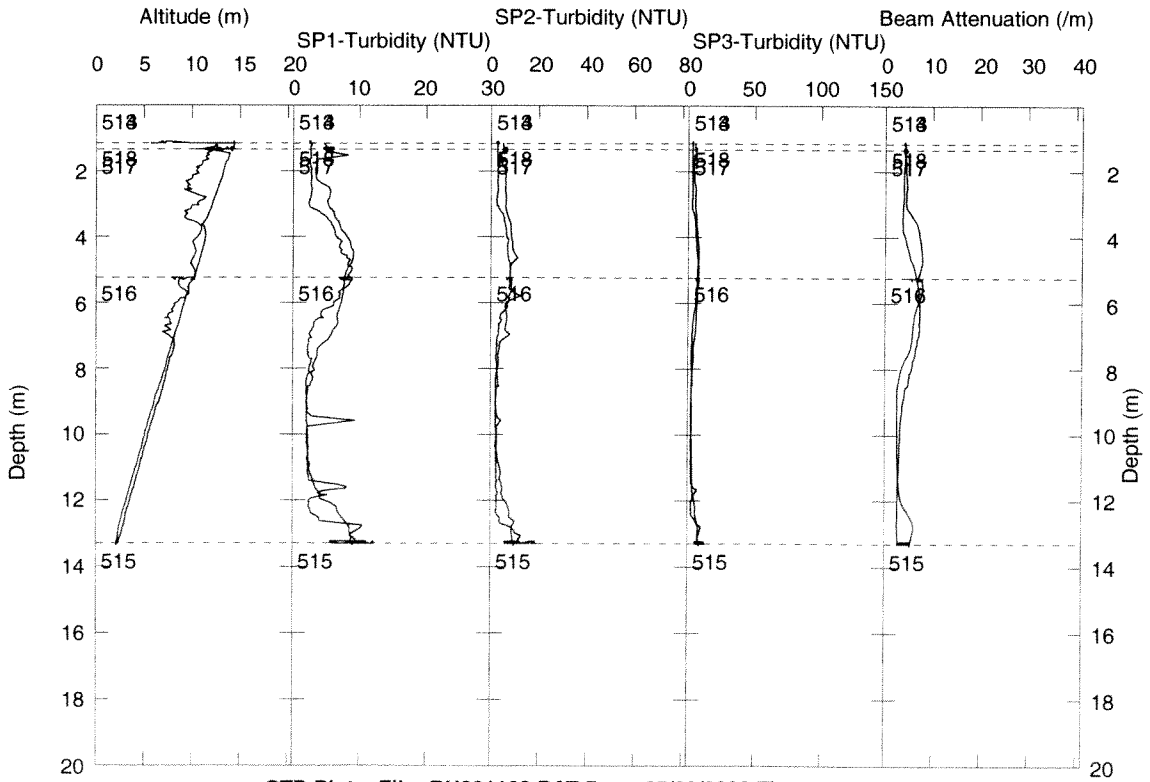
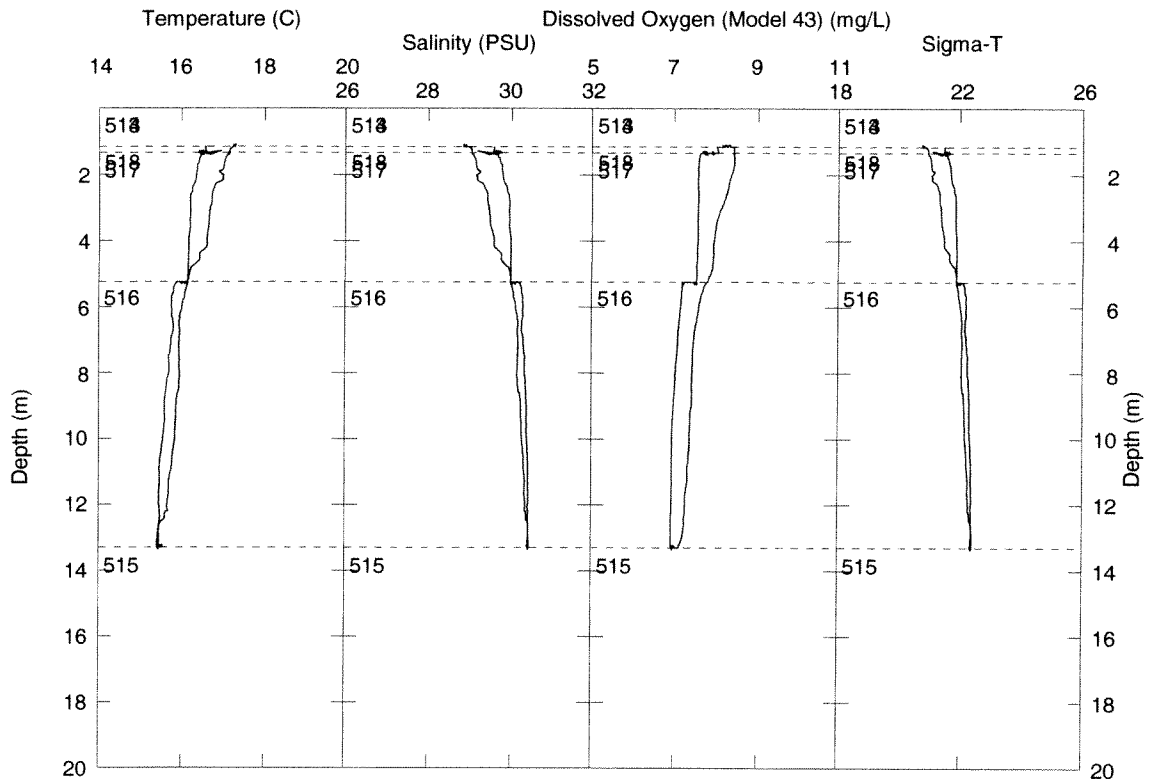
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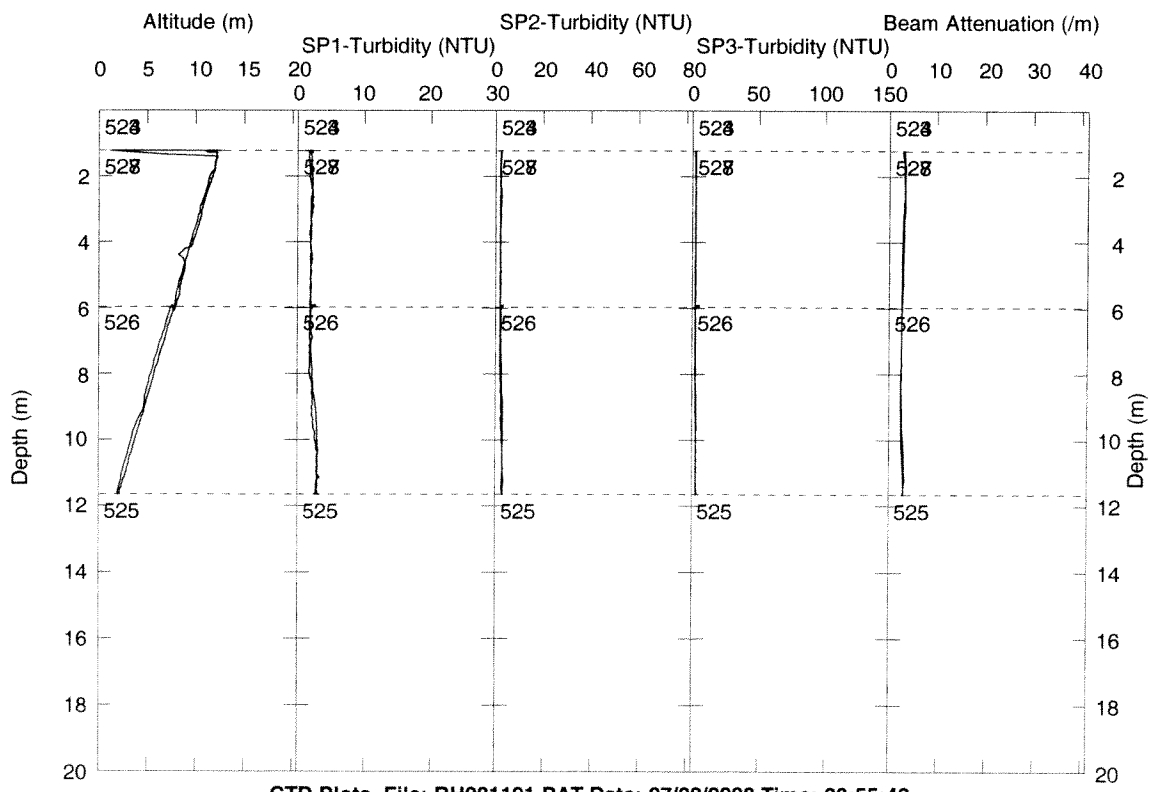
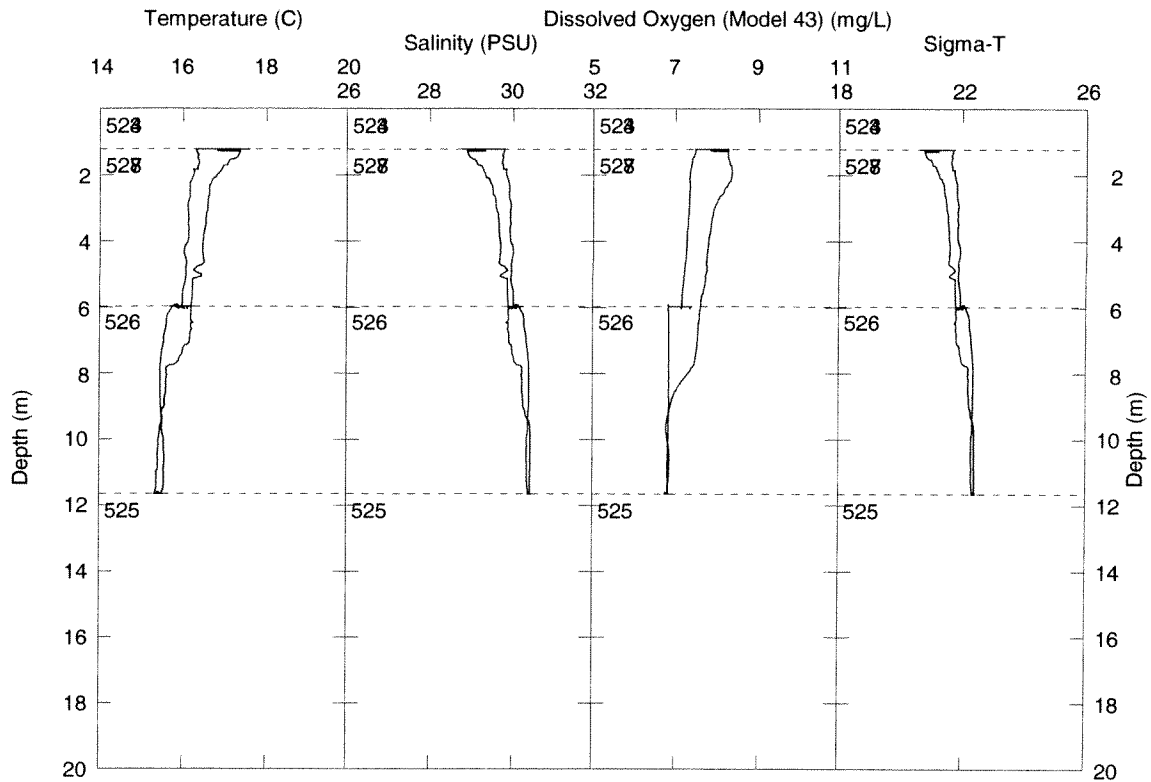
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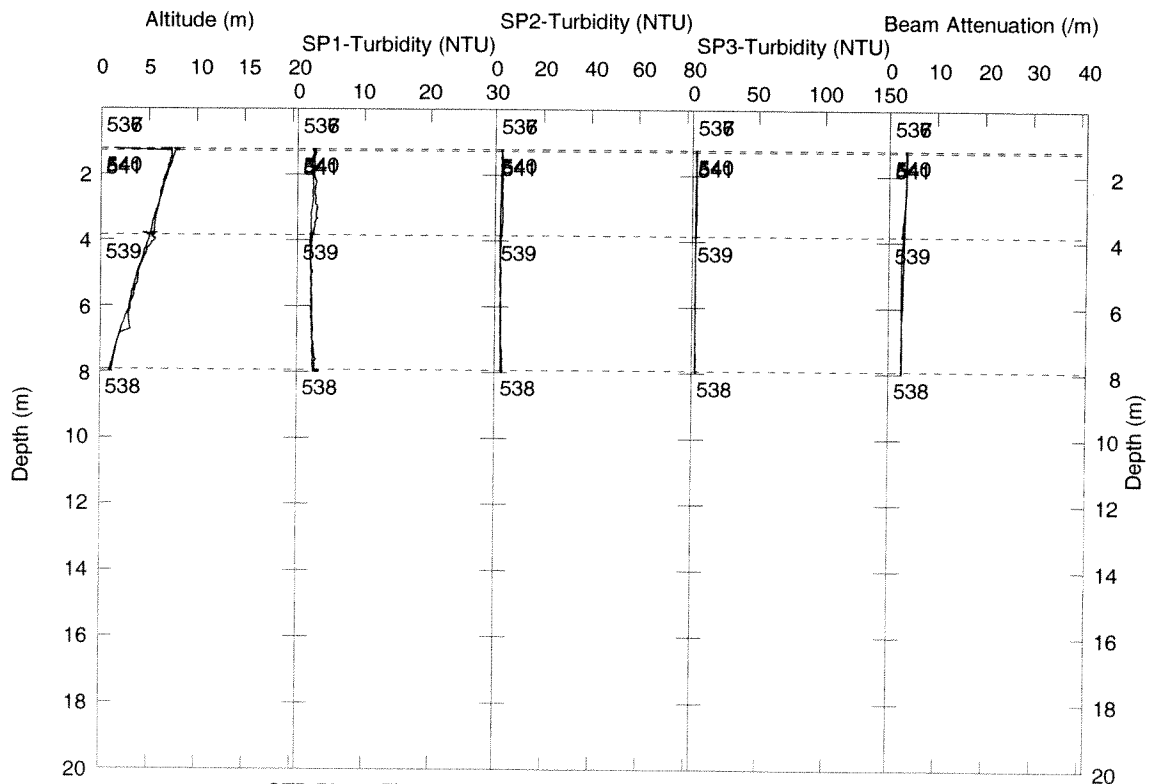
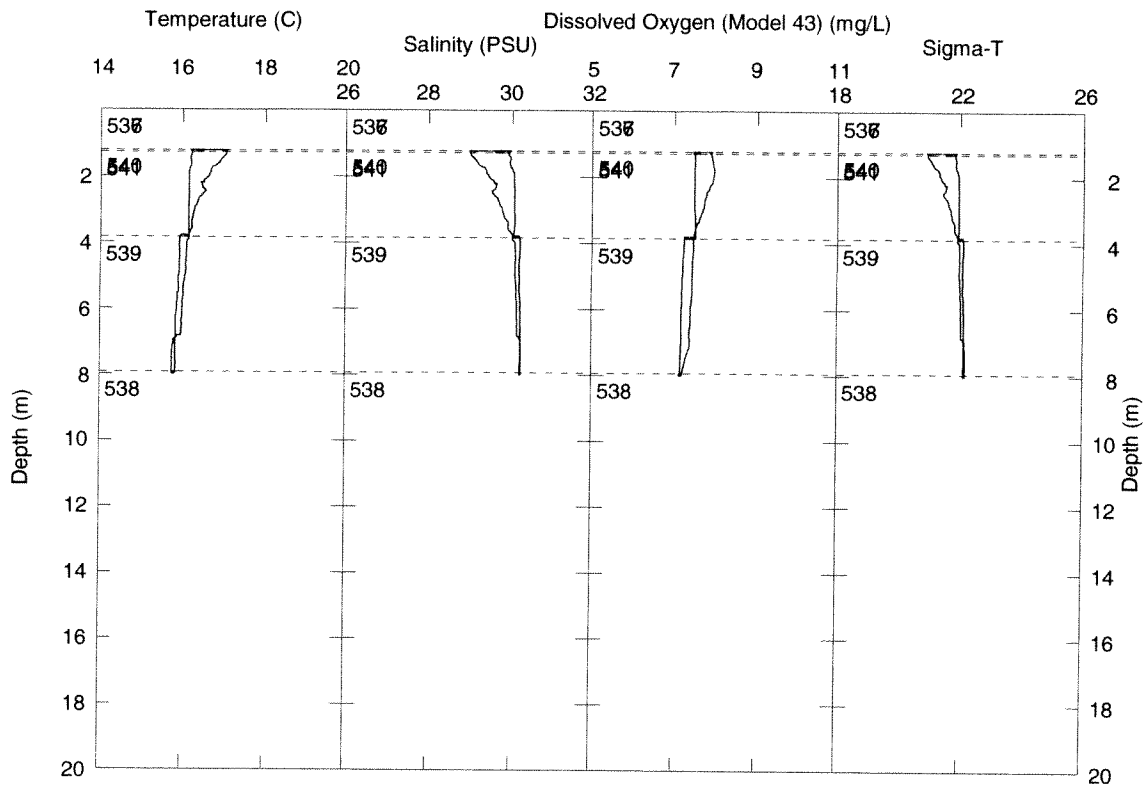
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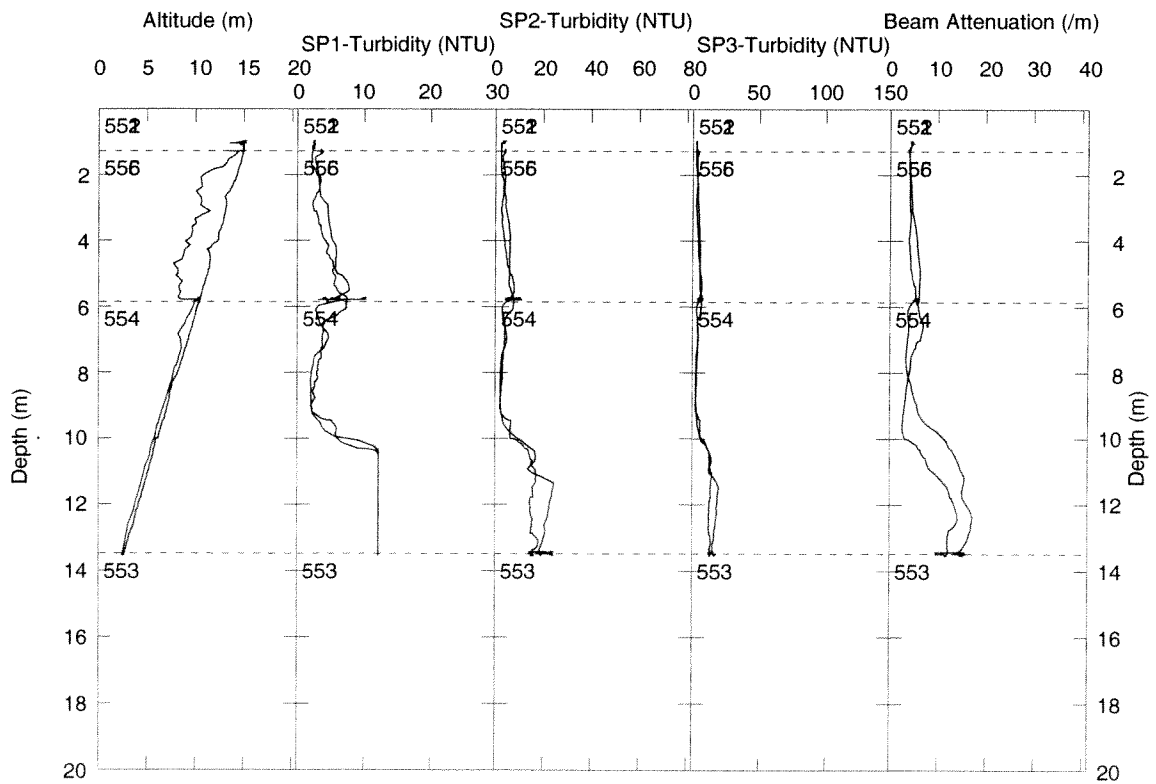
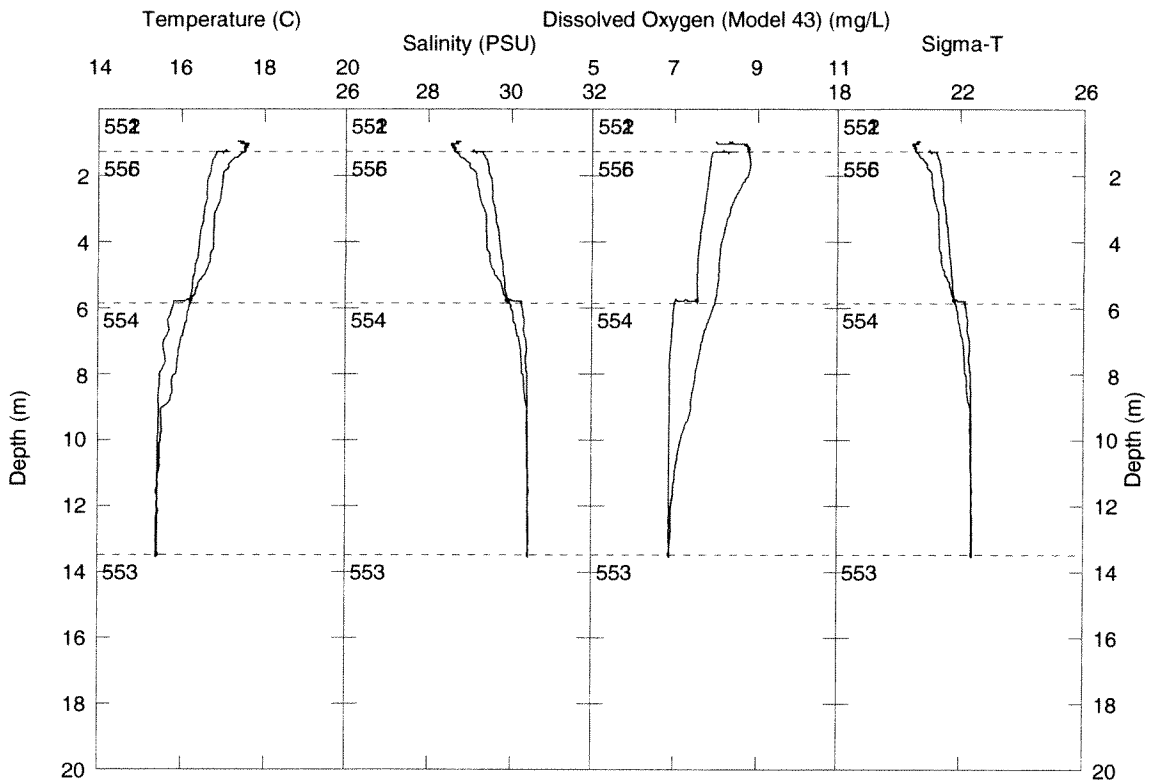


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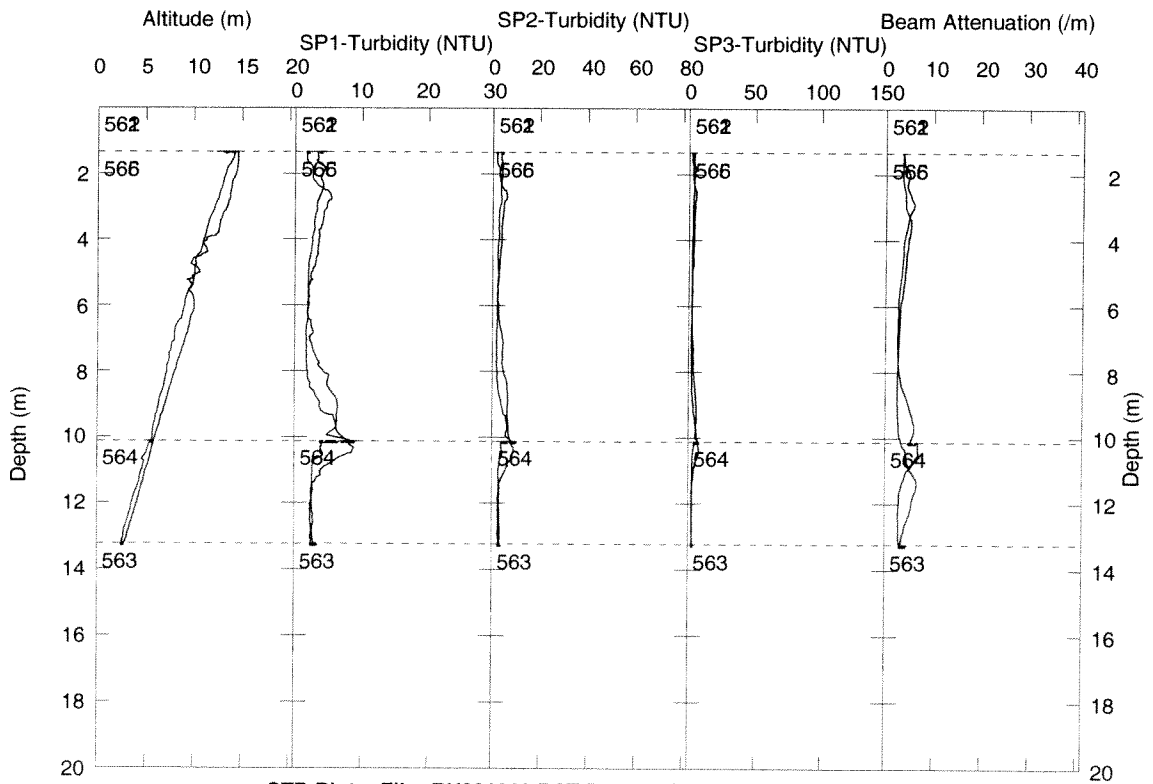
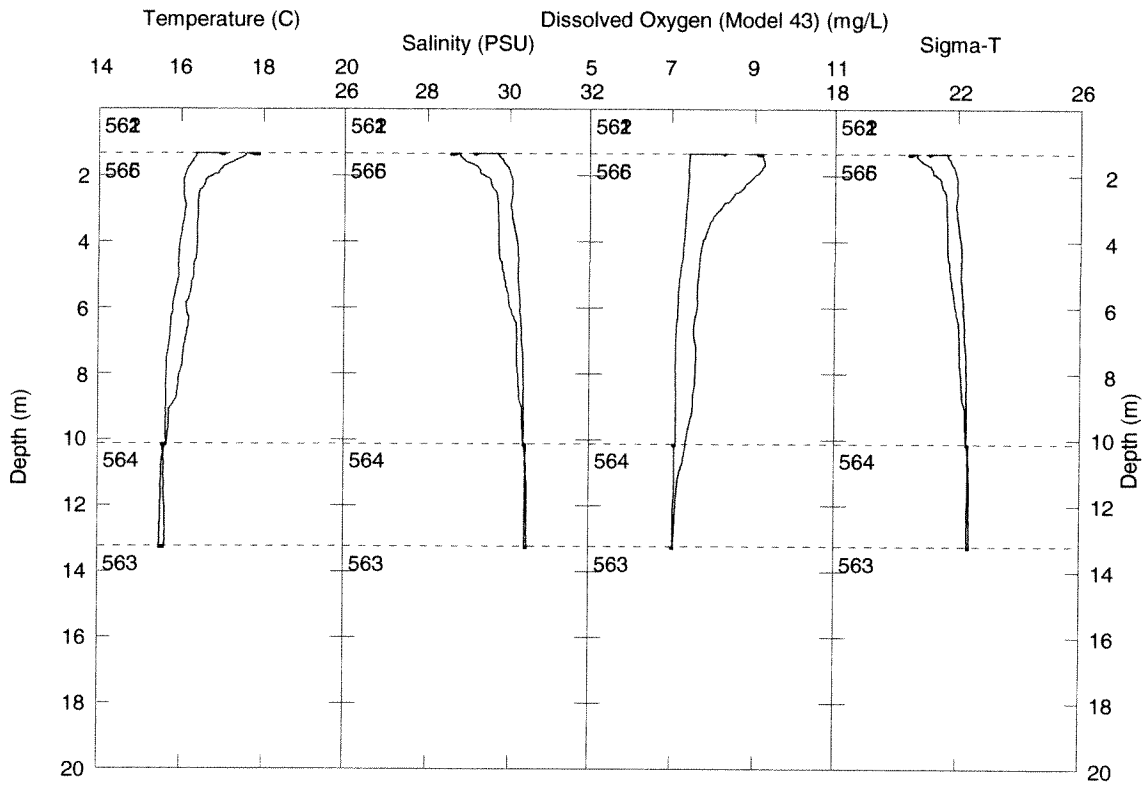


CTD Plots File: BH081195.PAT Date: 07/02/2008 Time: 09:04:53

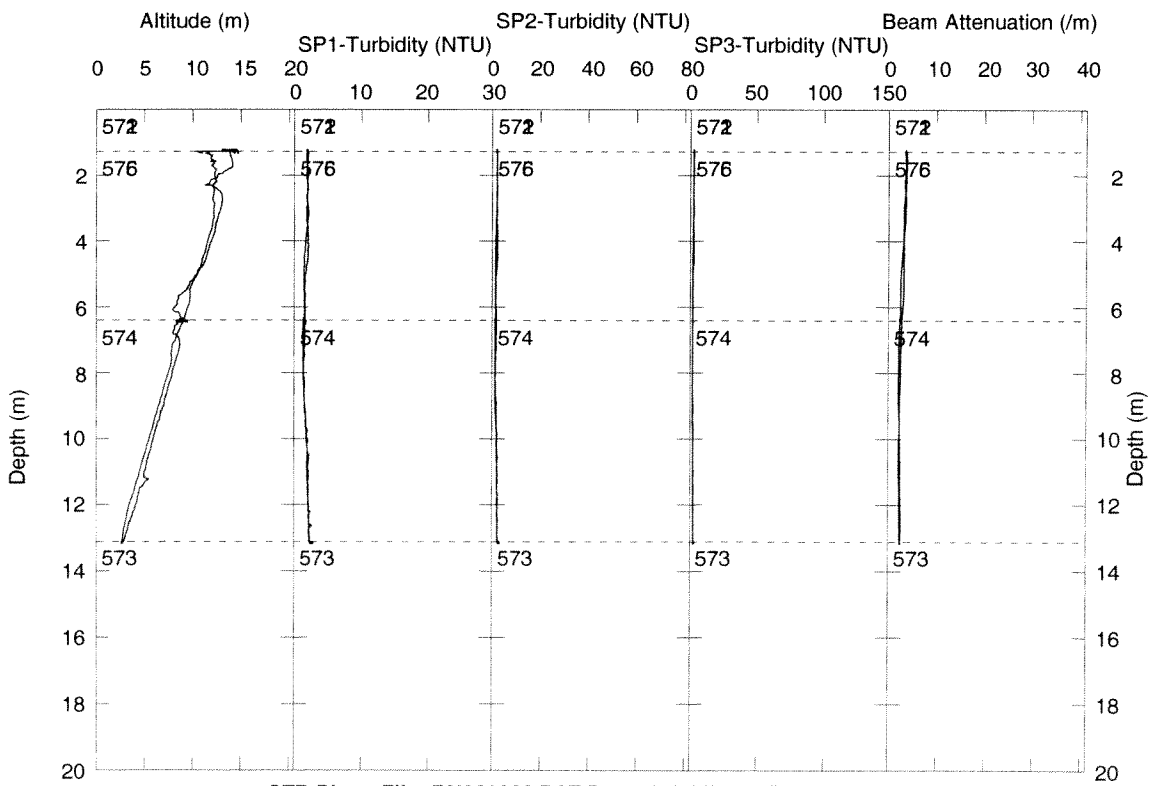
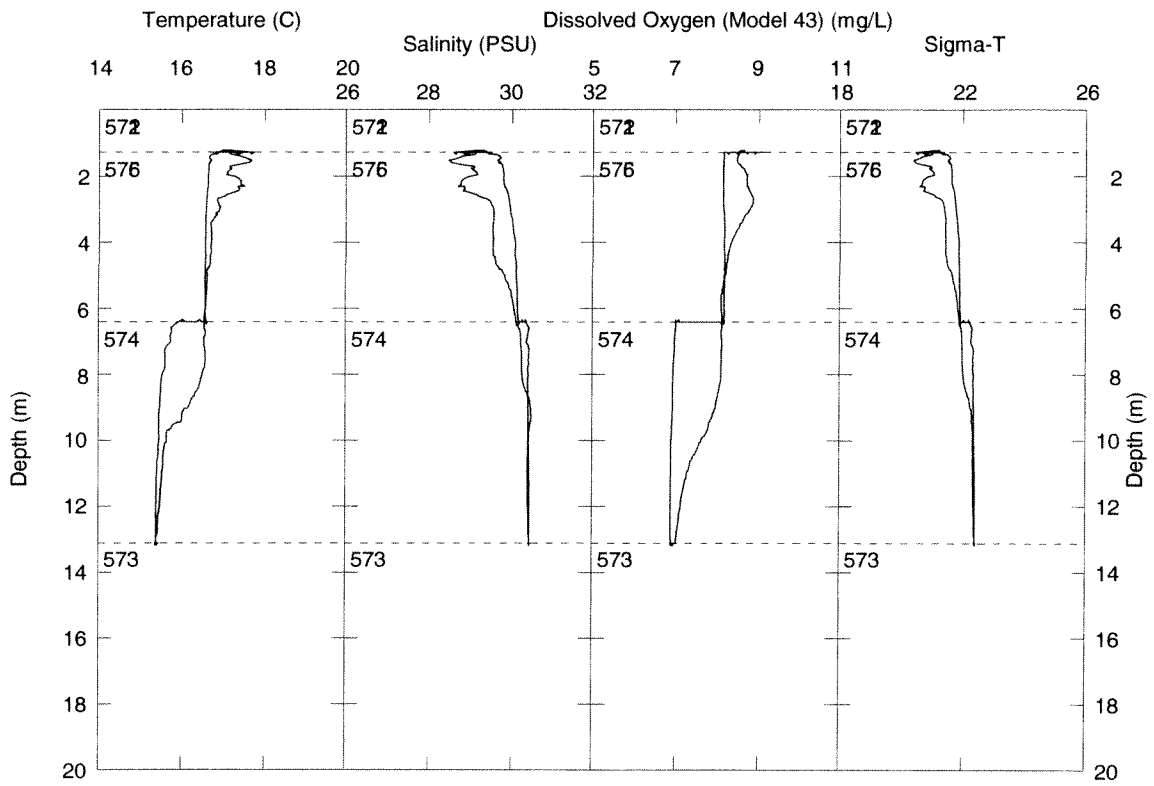


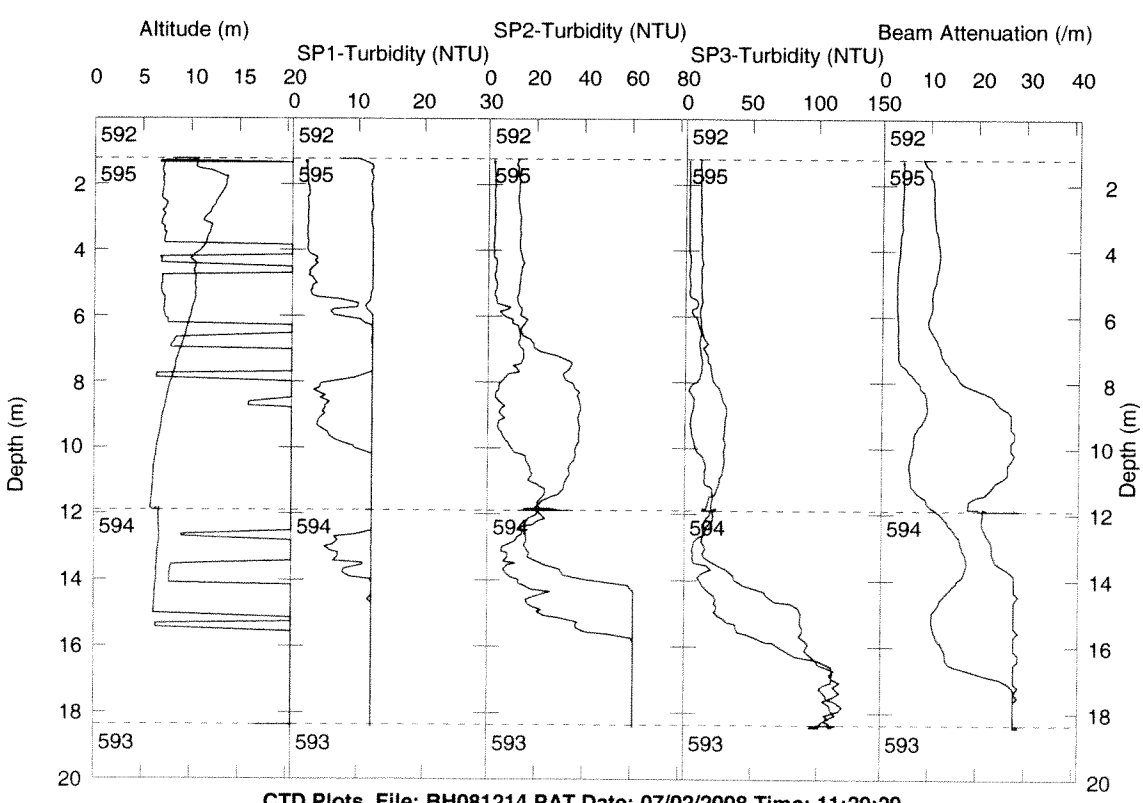
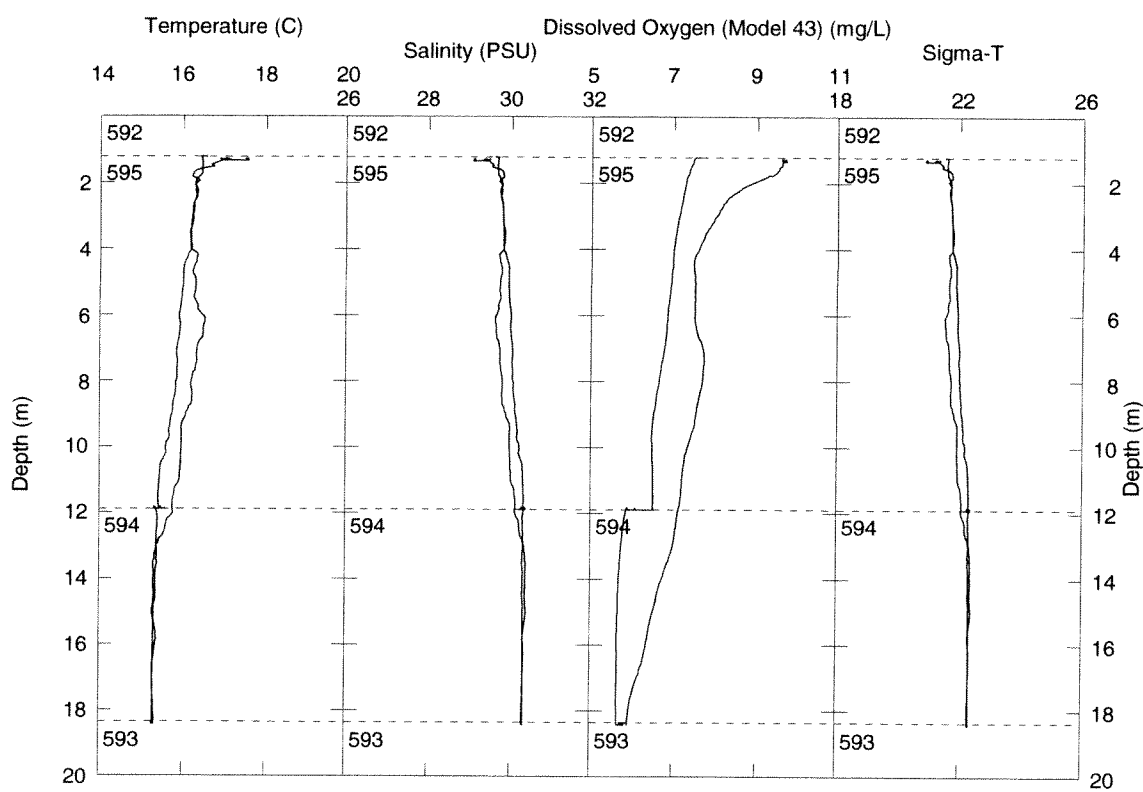


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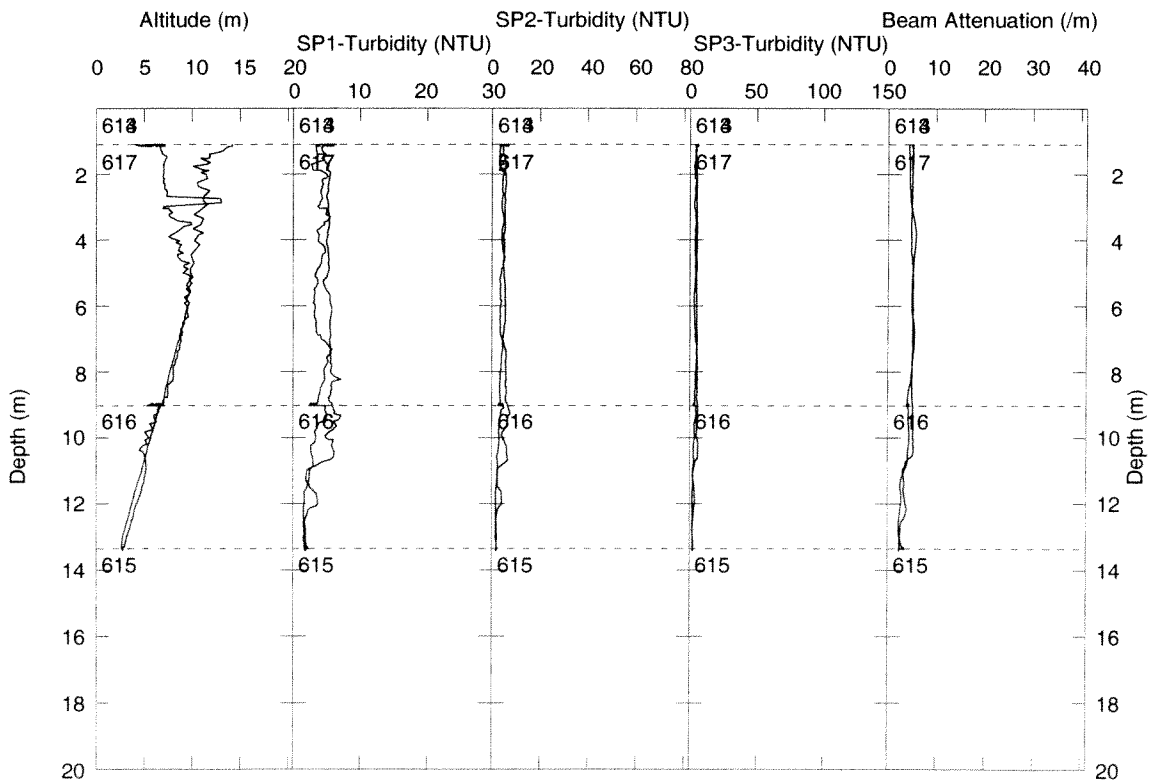
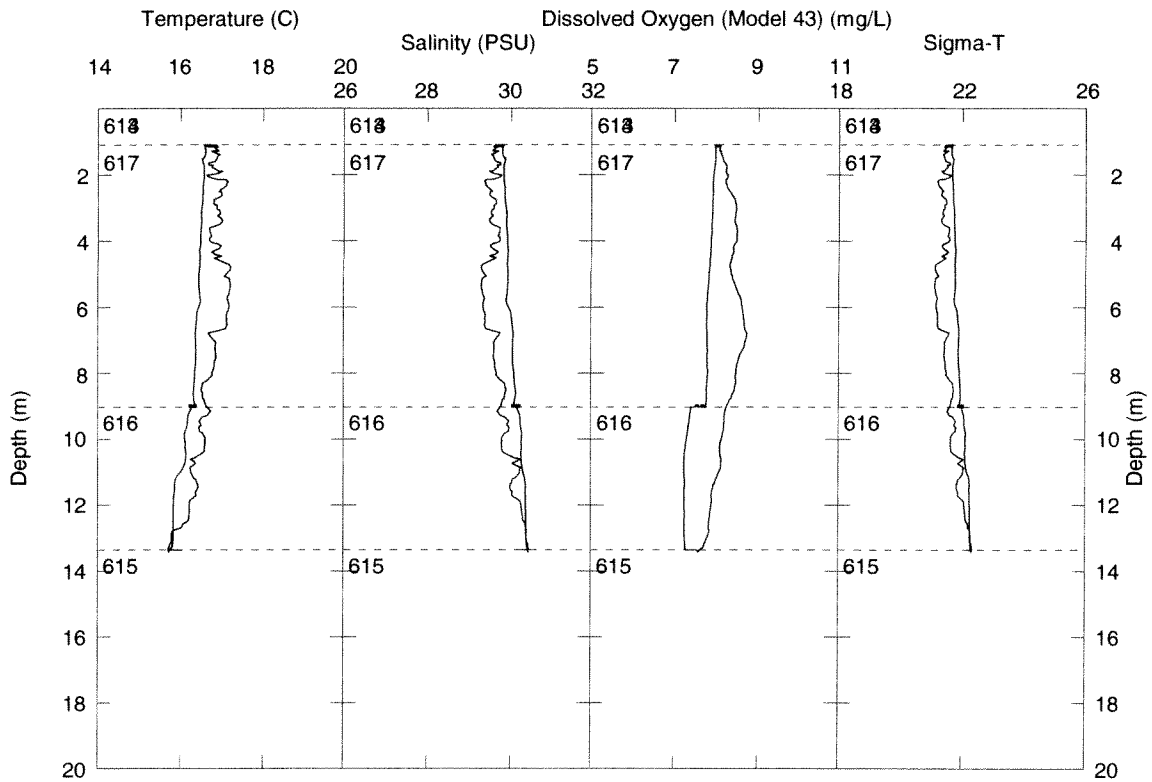


CTD Plots File: BH081203.PAT Date: 07/02/2008 Time: 09:25:25

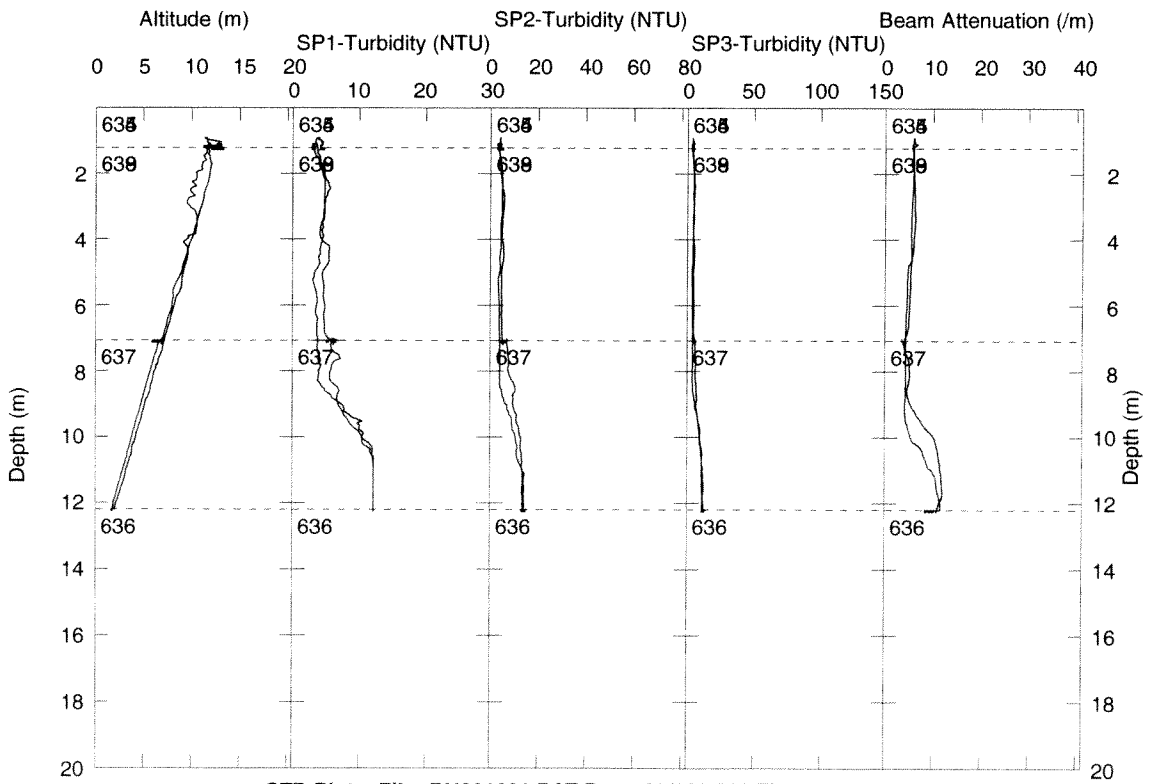
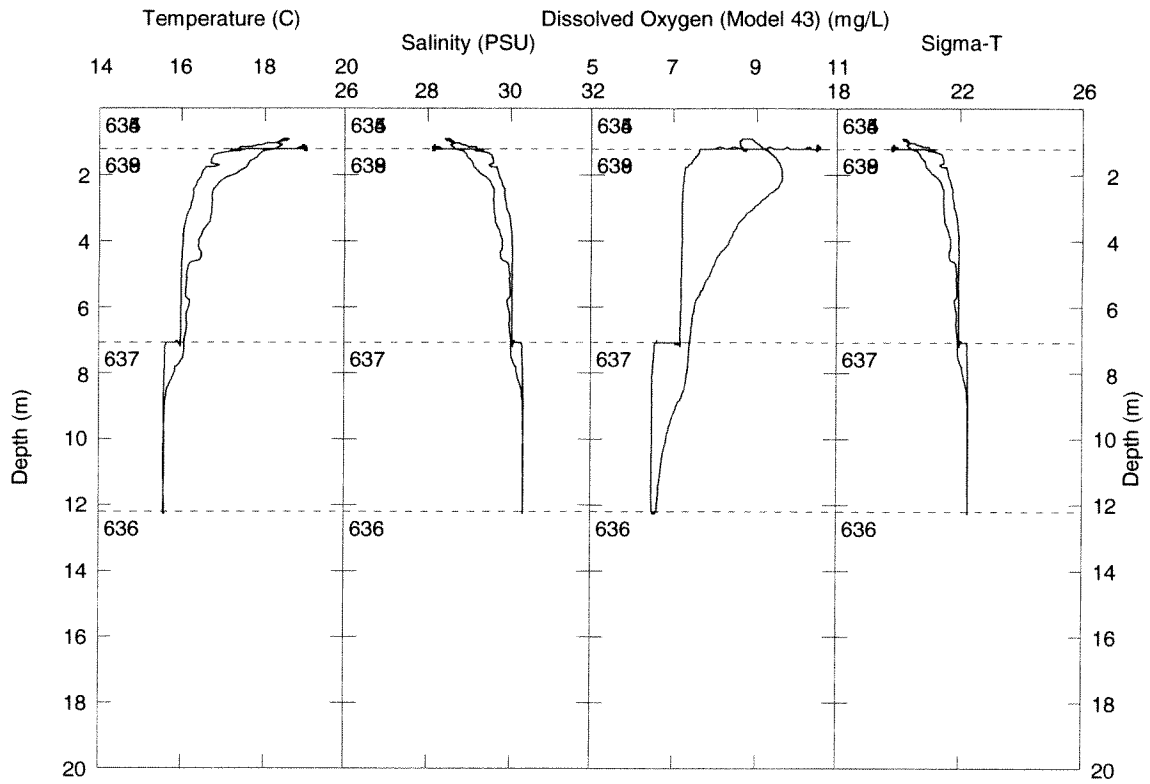


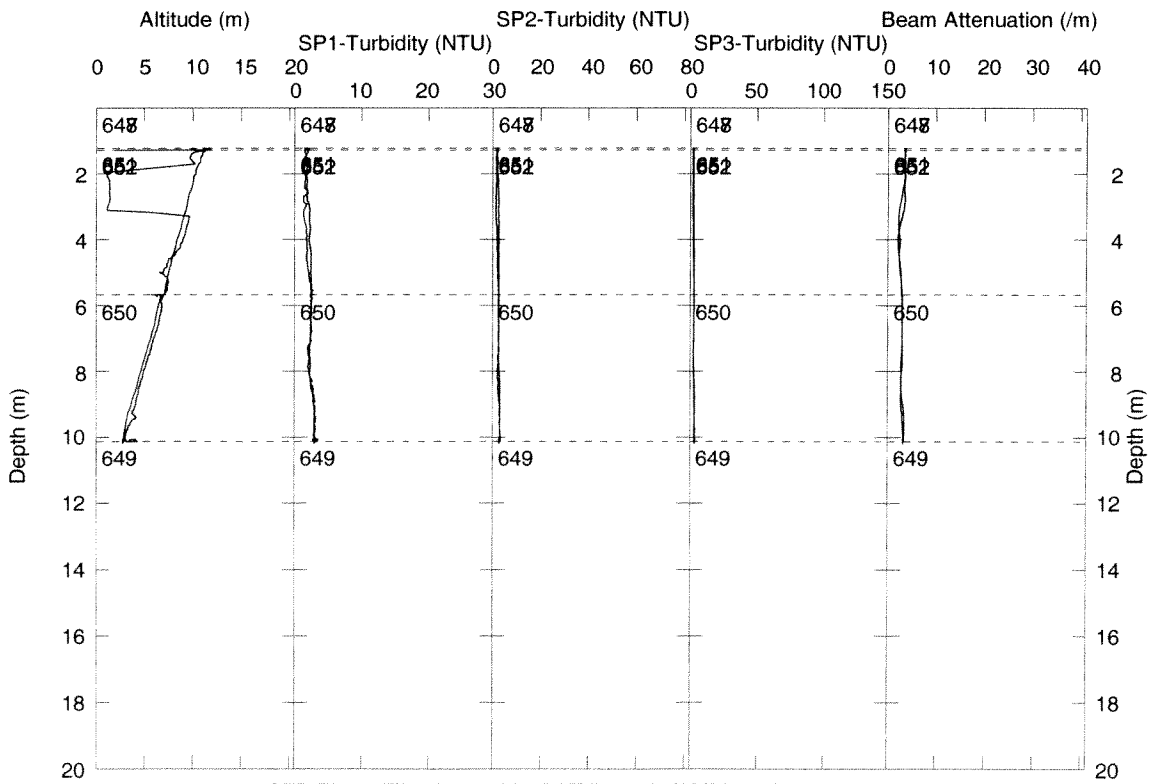
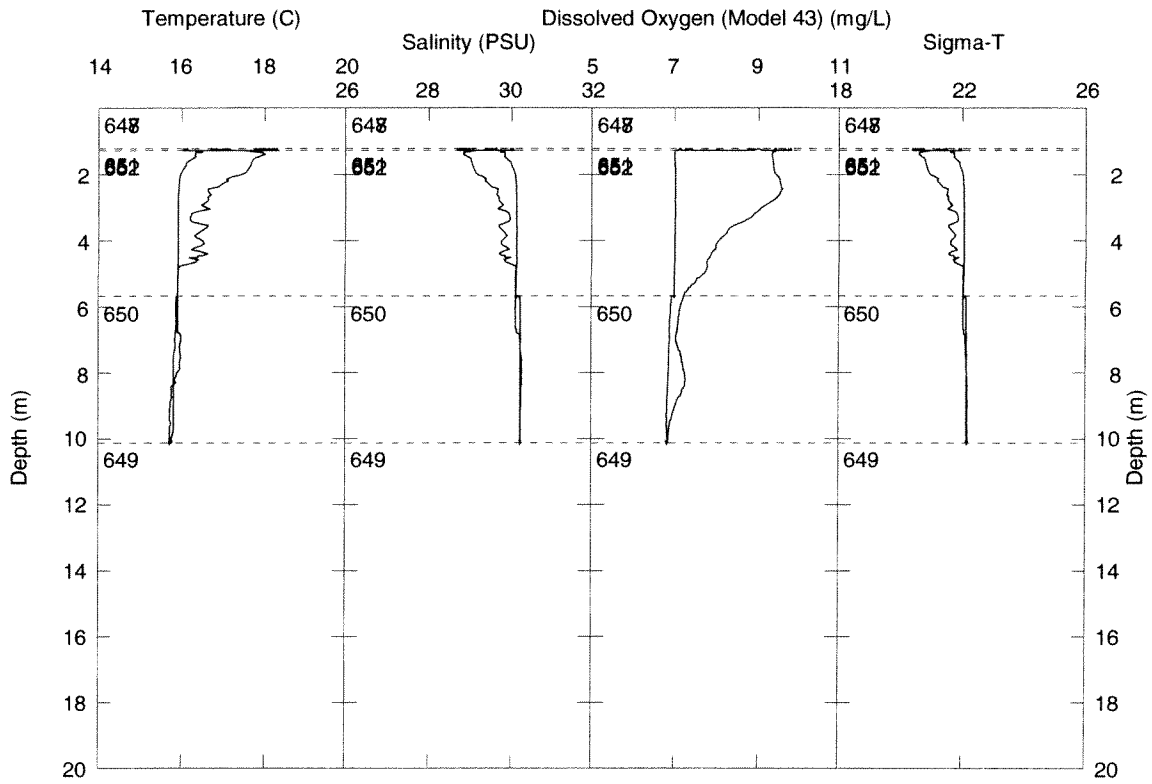


CTD Plots File: BH081214.PAT Date: 07/02/2008 Time: 11:29:29

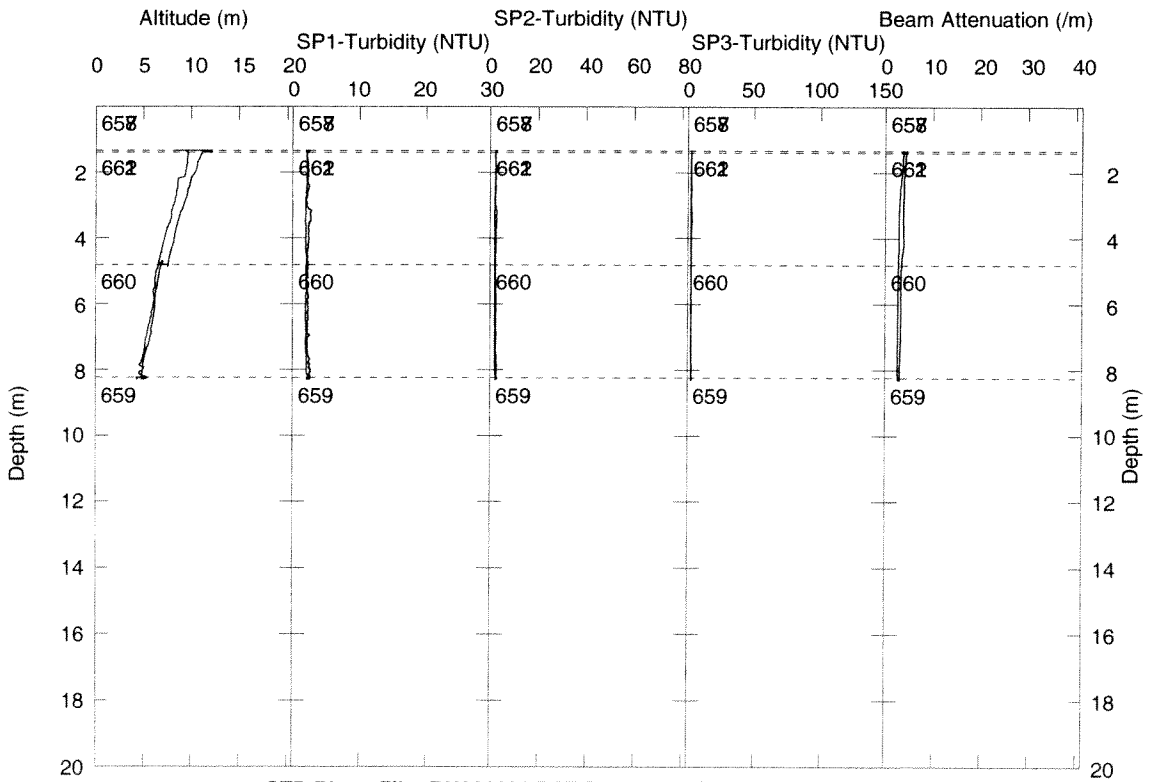
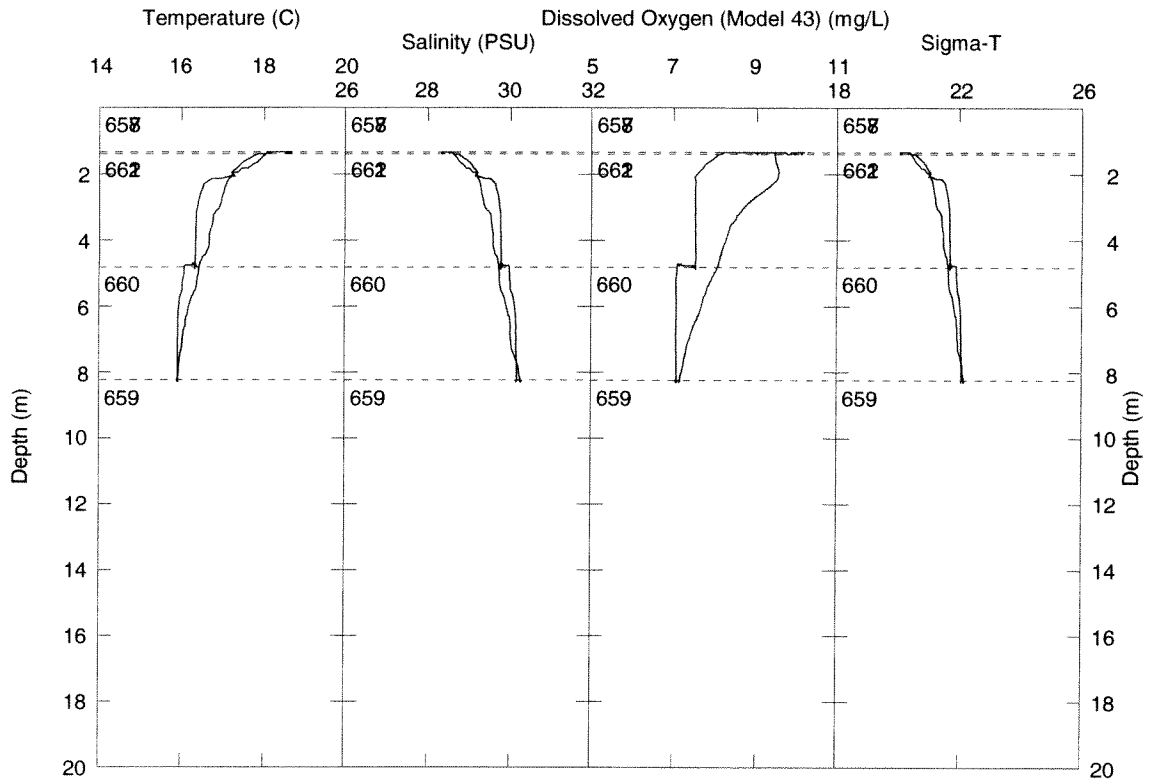


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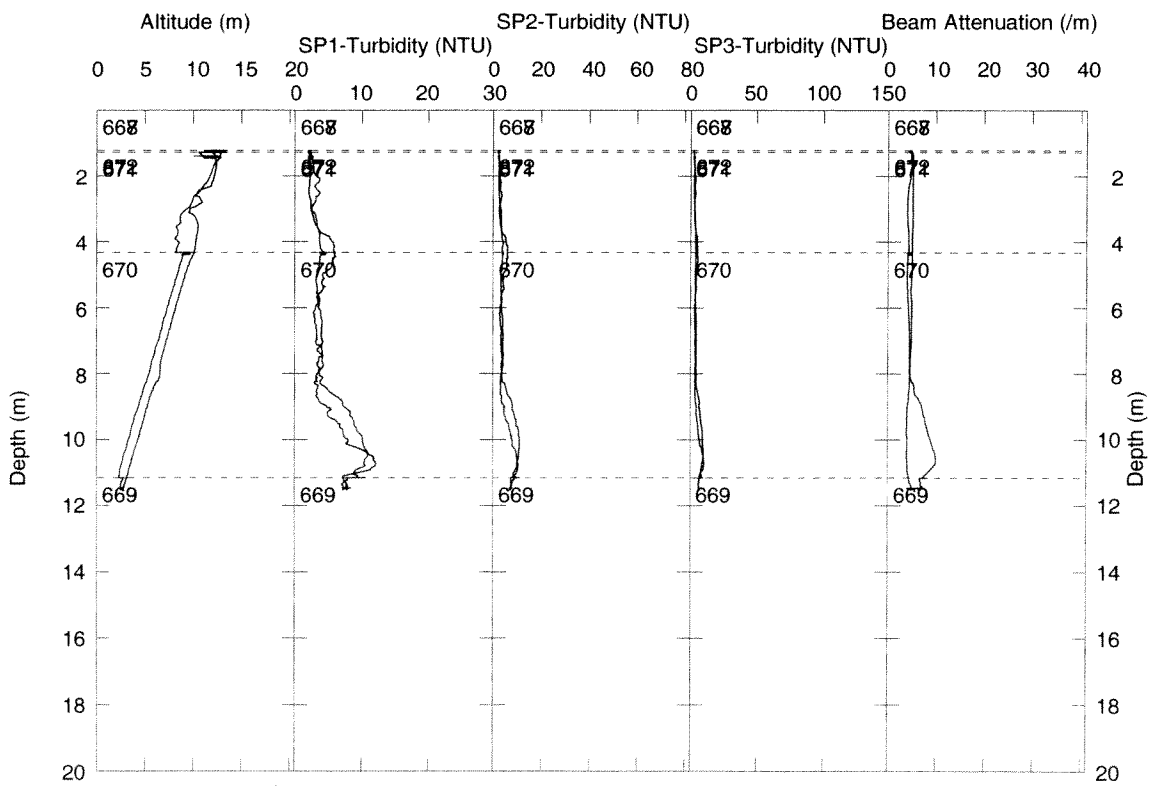
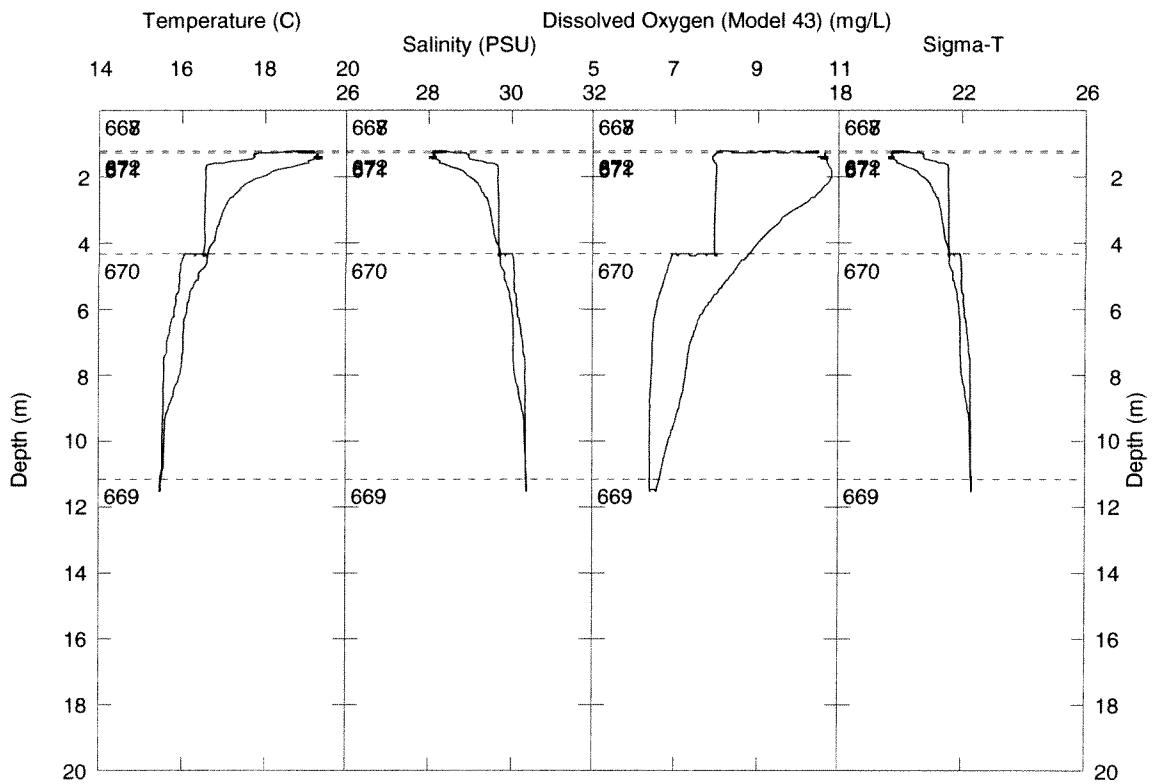


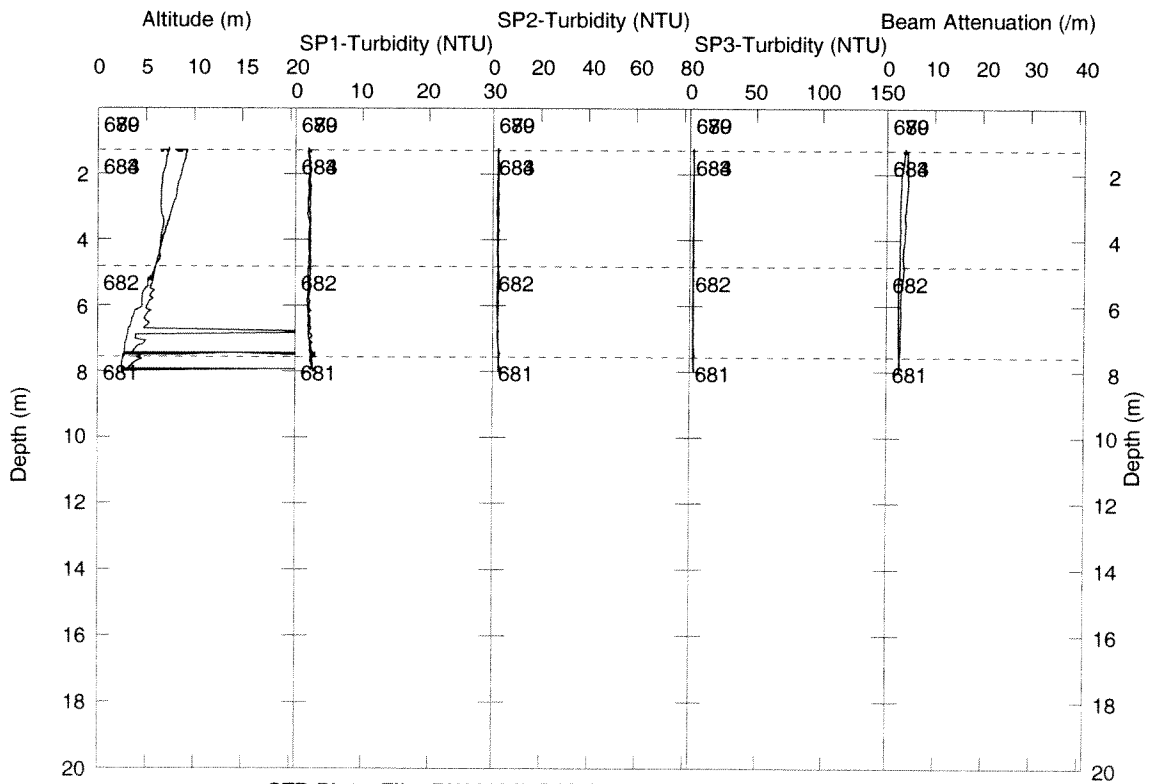
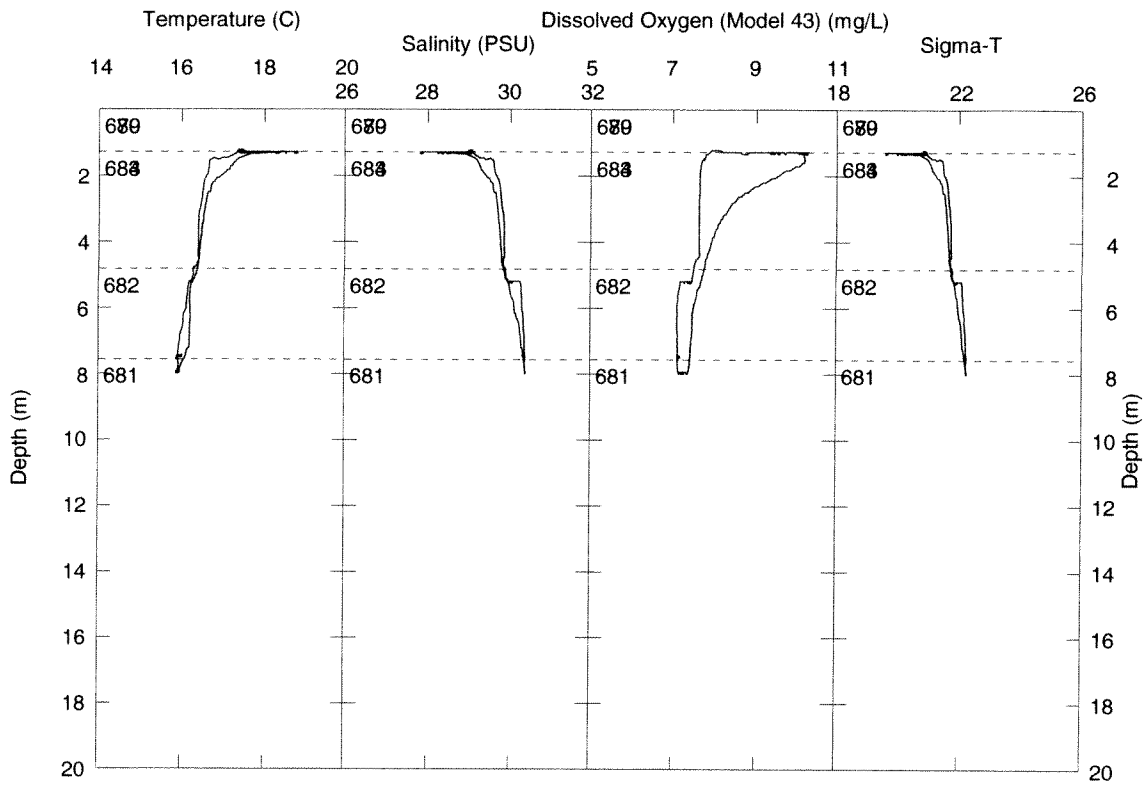


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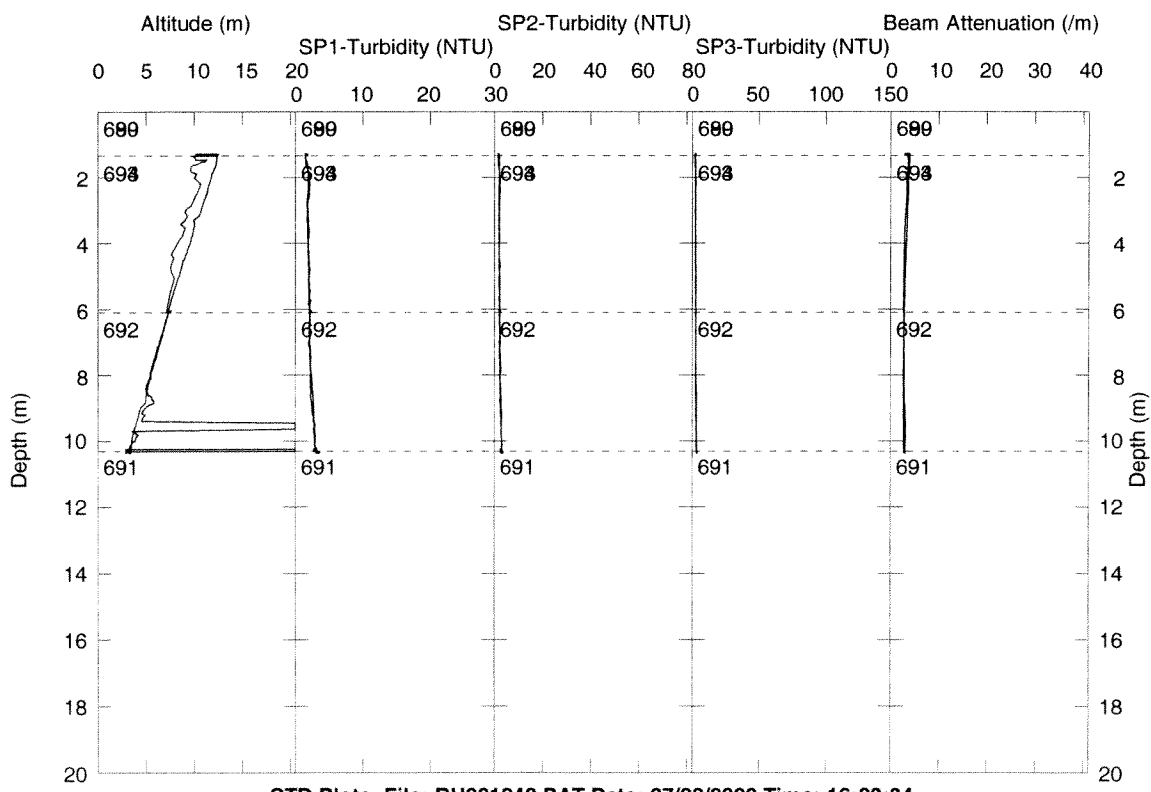
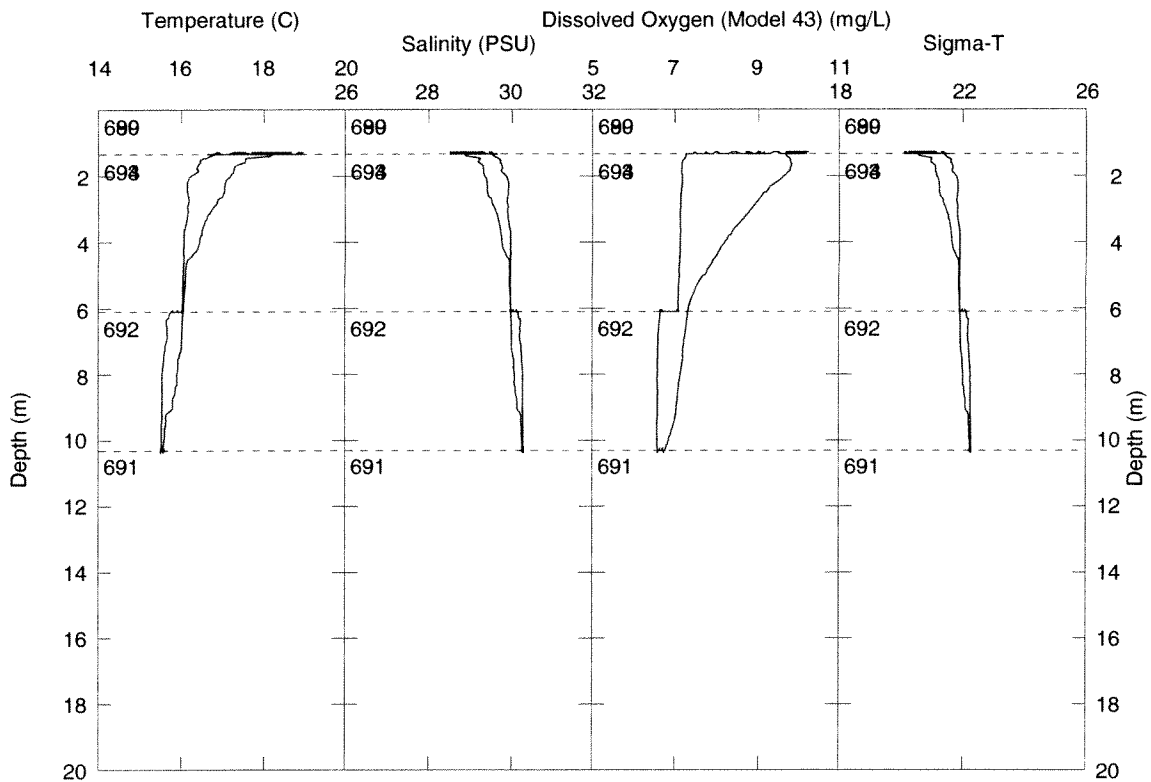




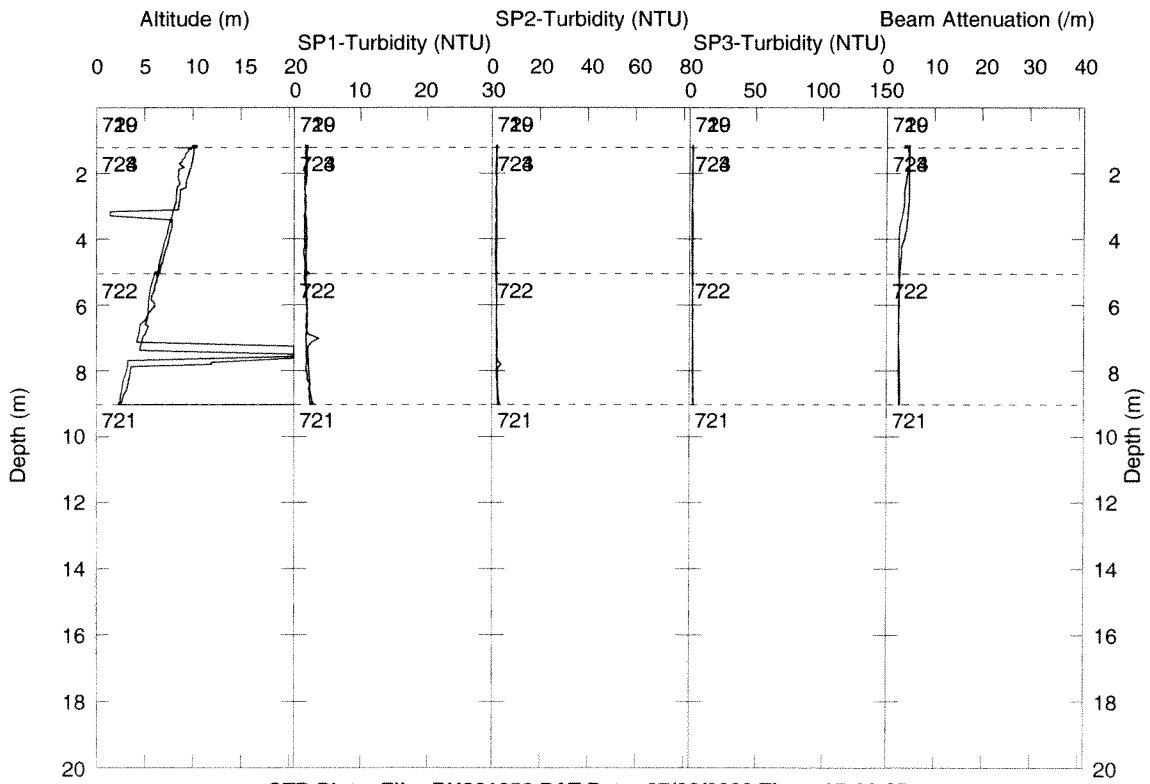
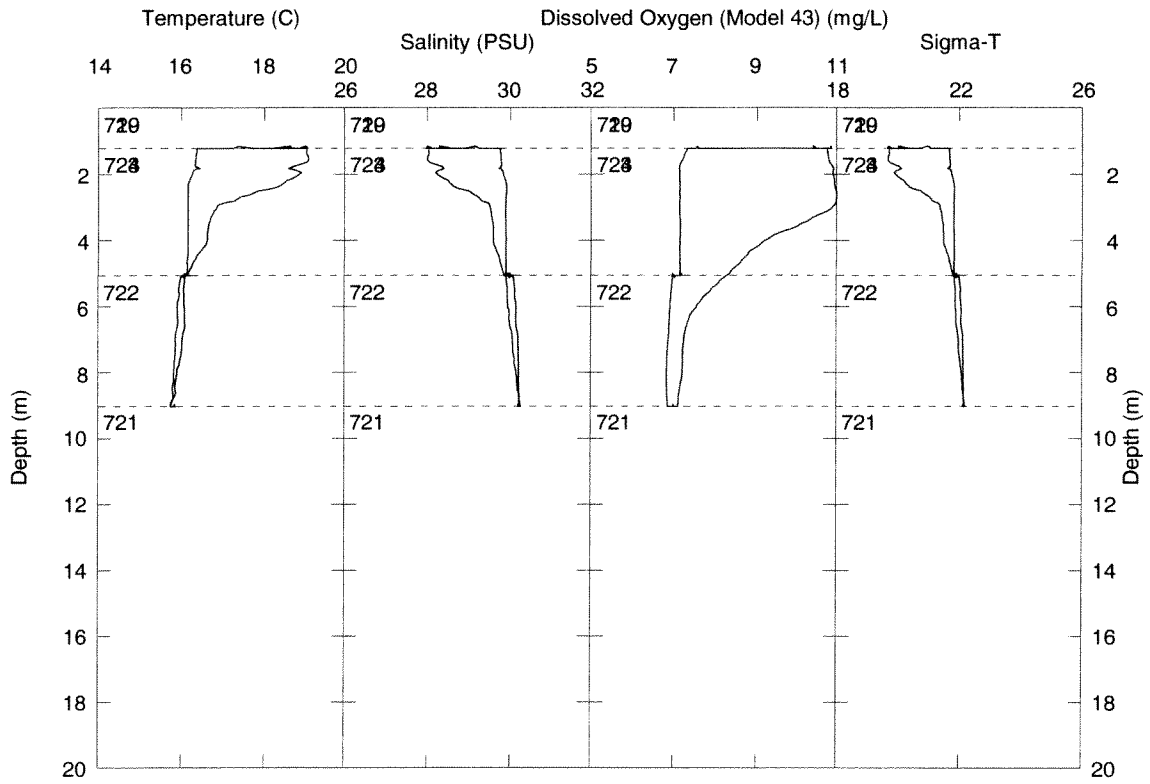


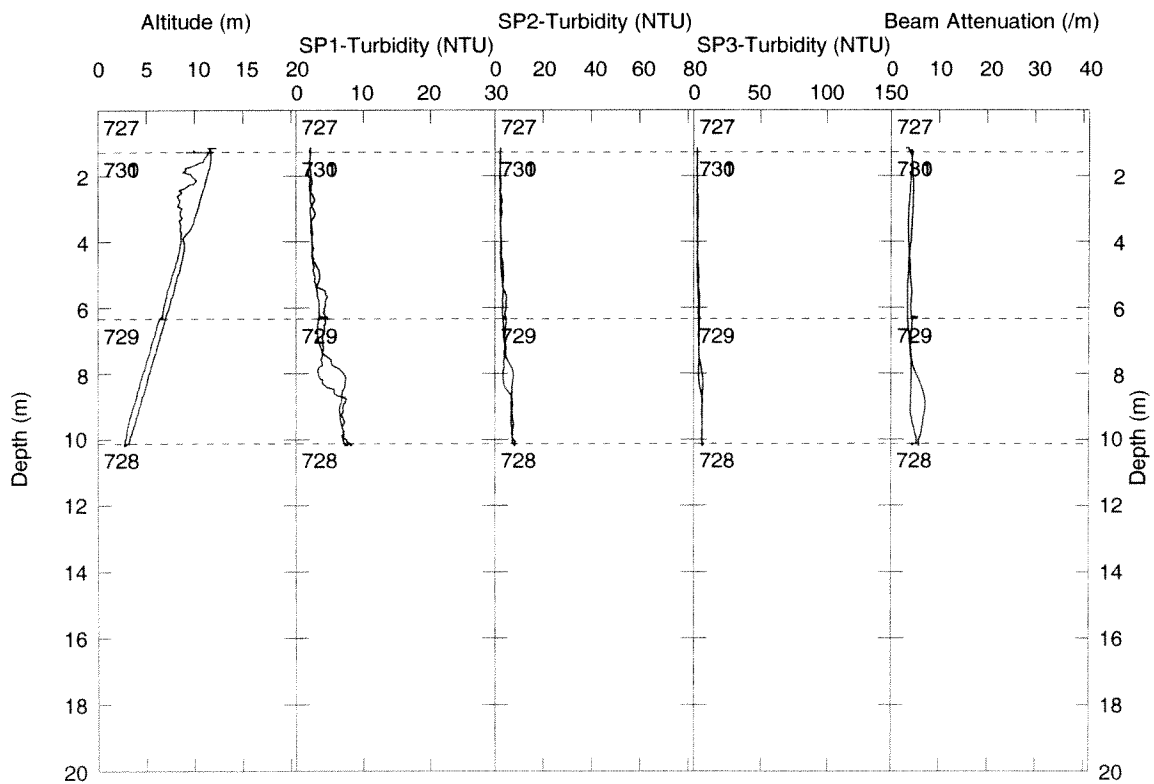
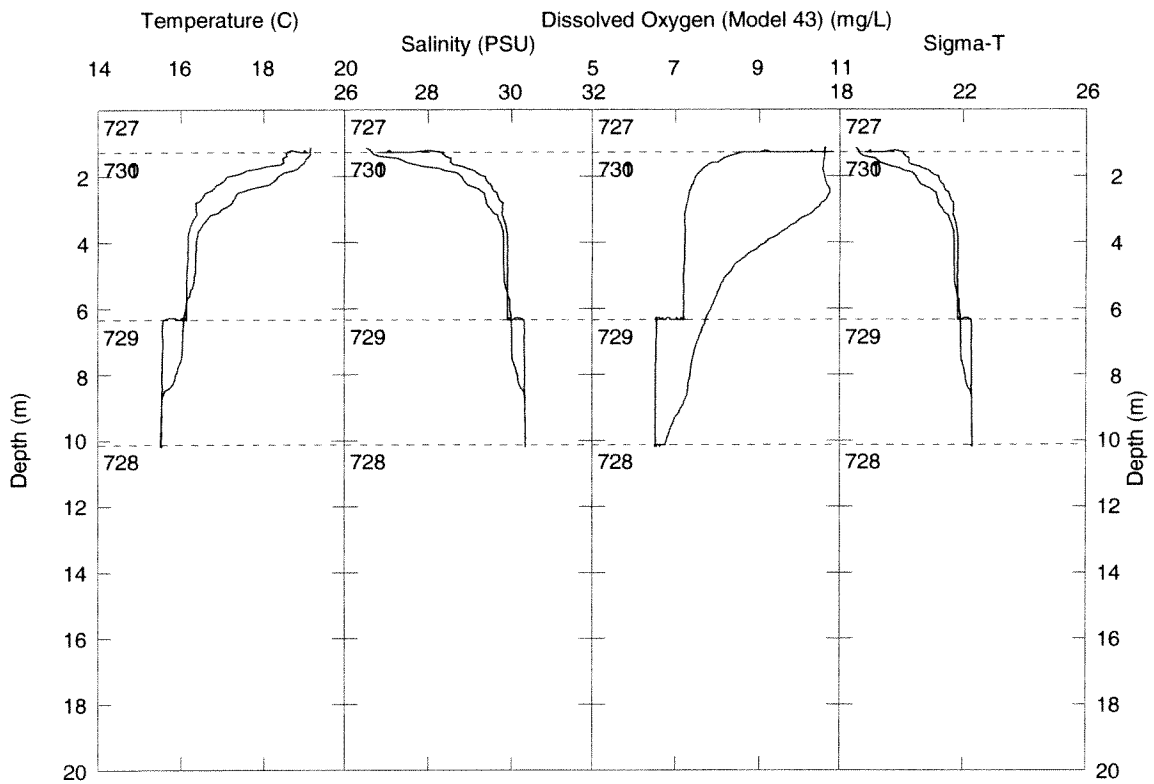


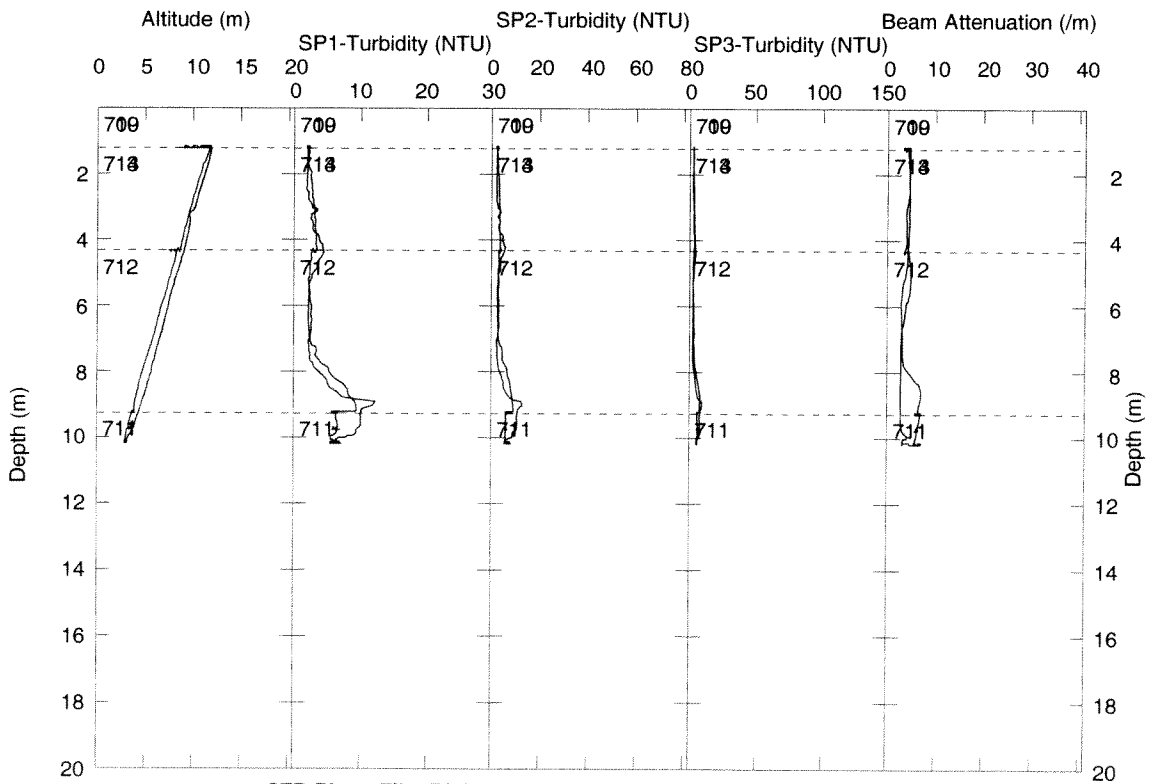
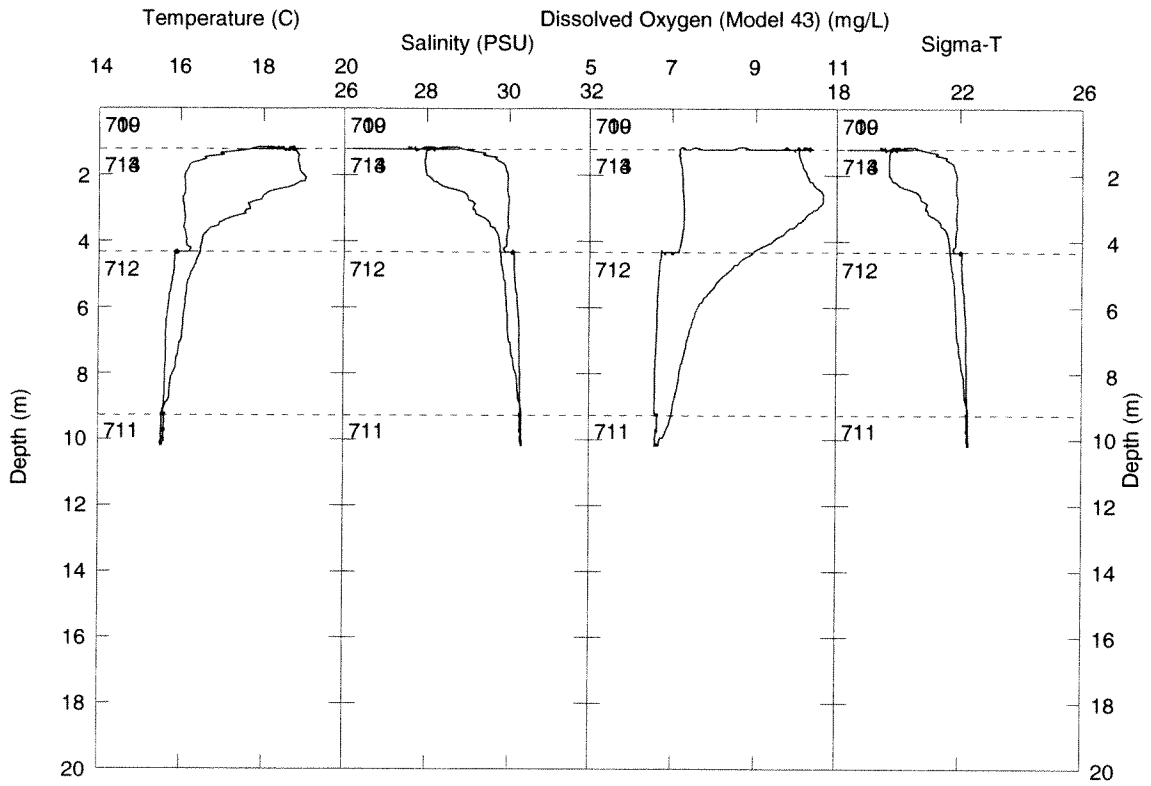
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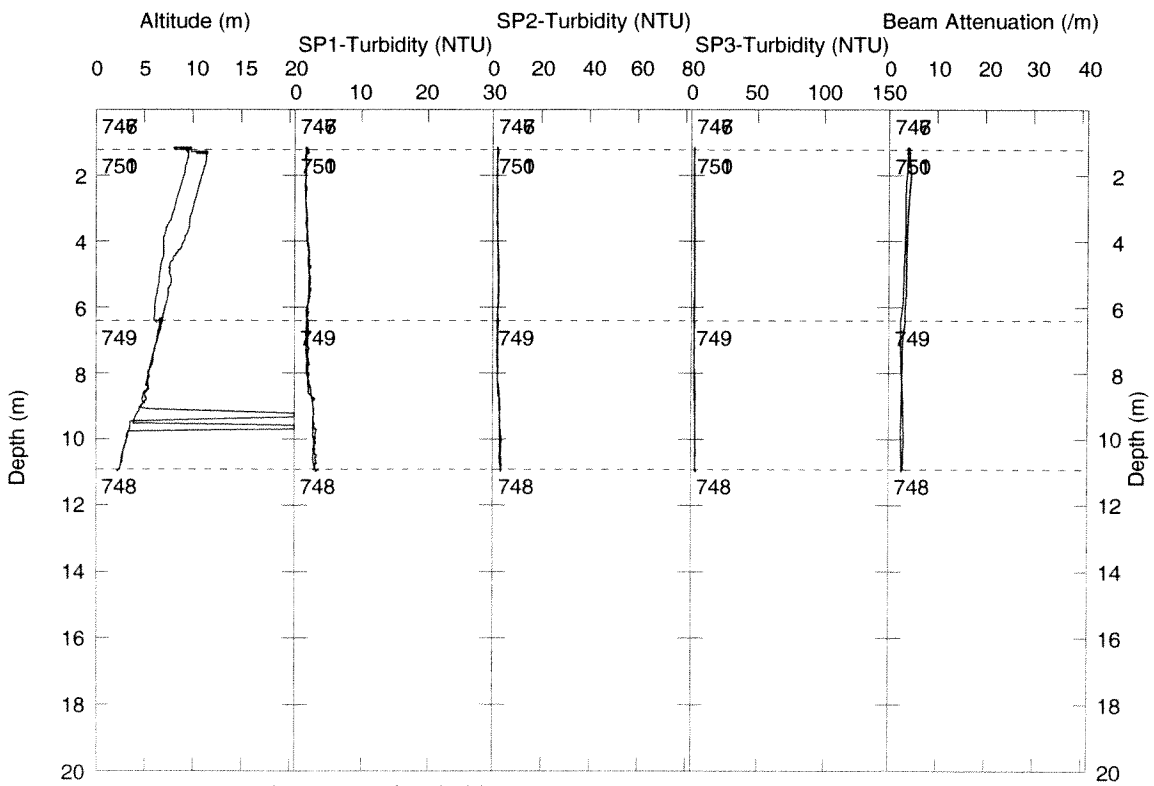
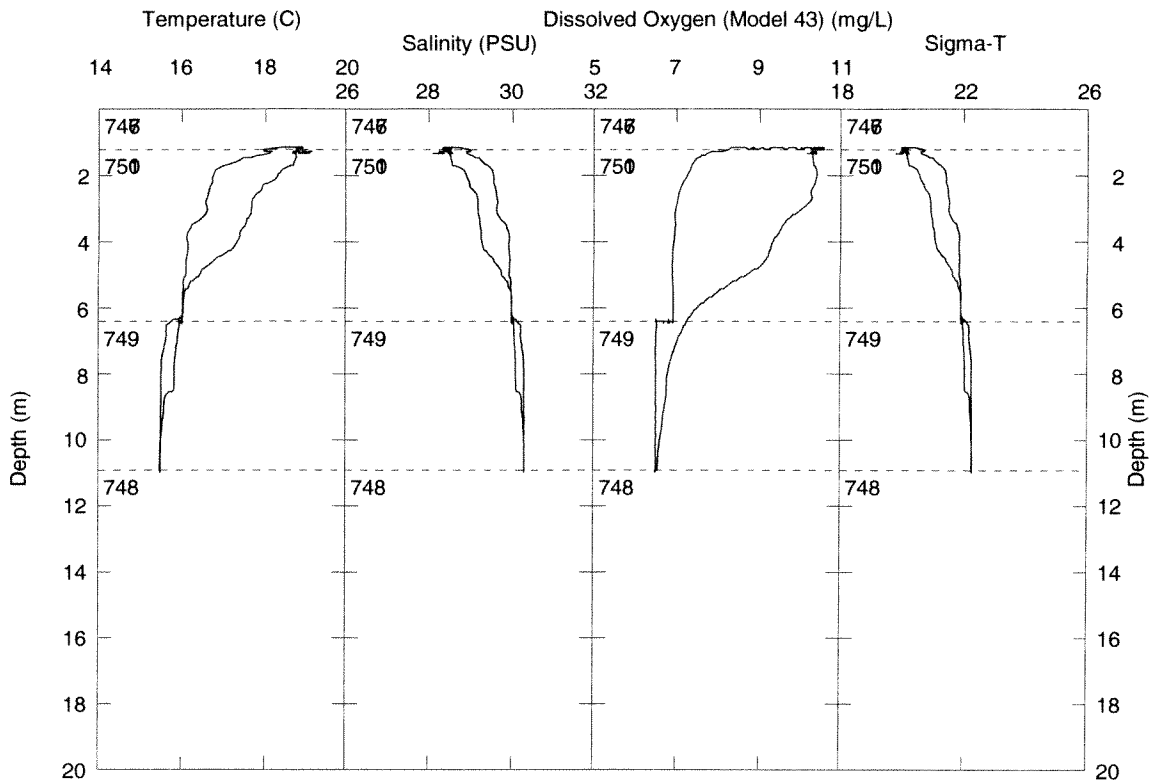


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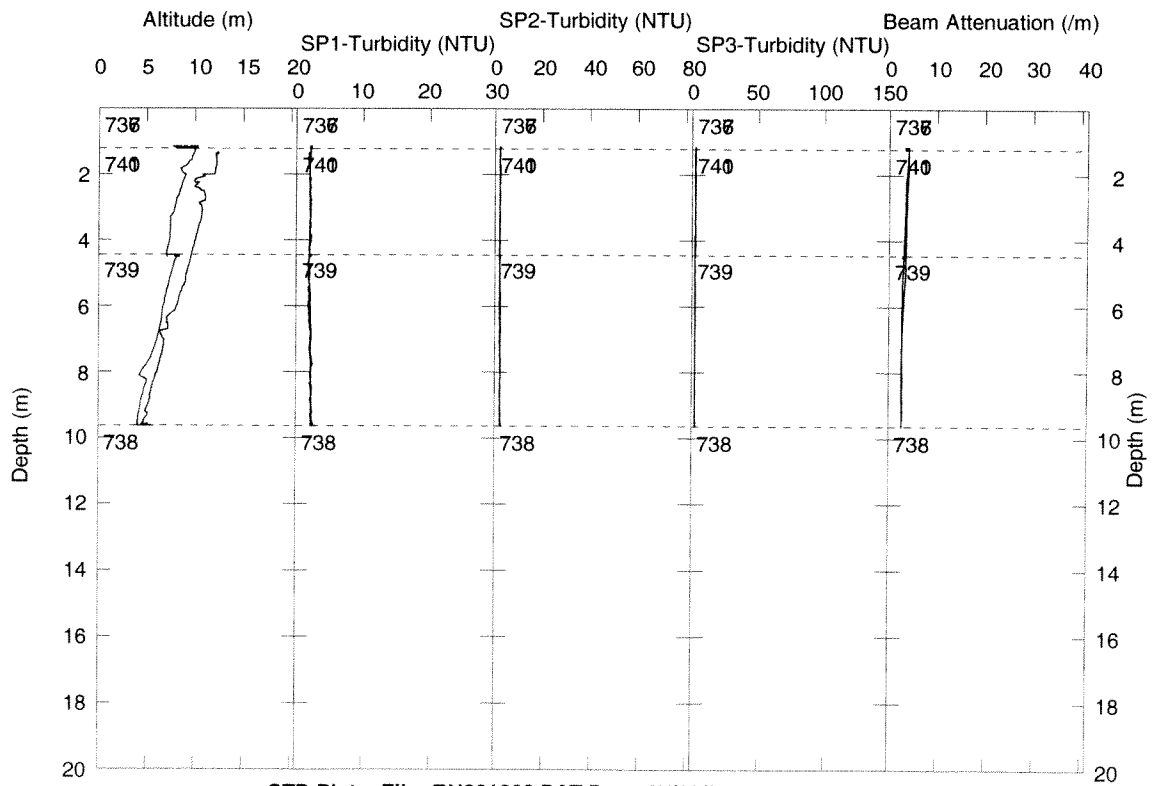
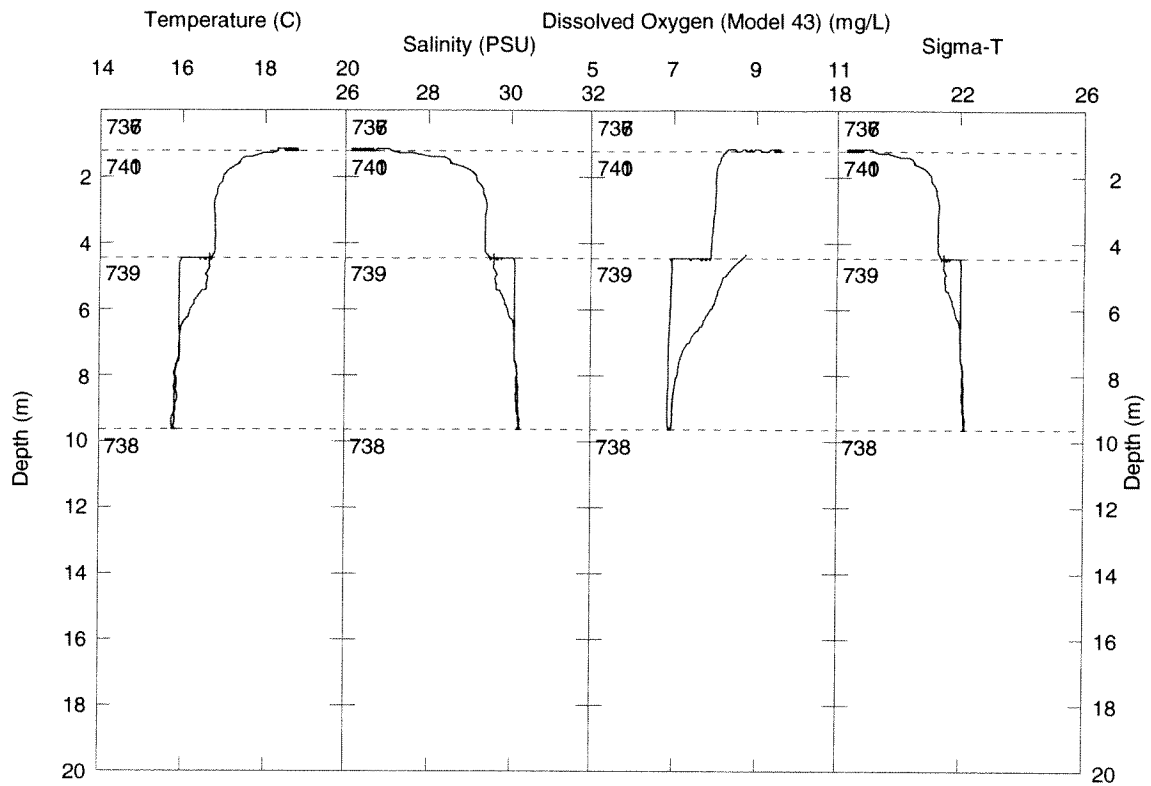




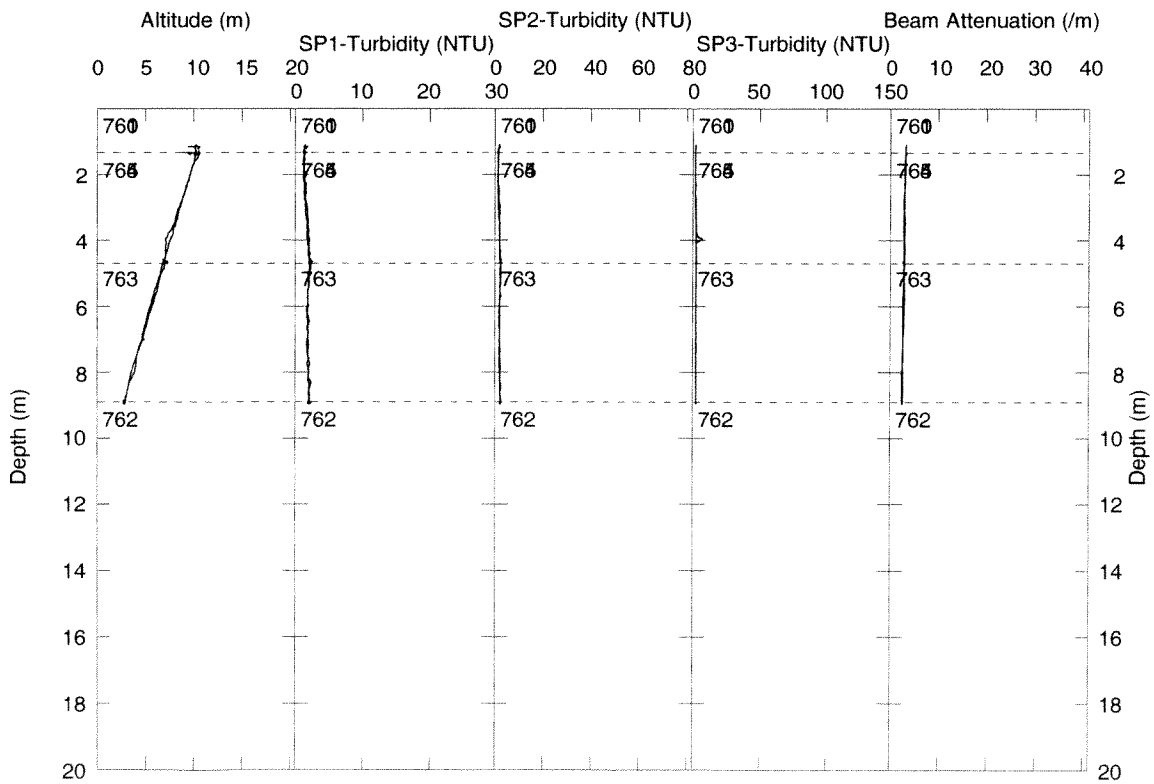
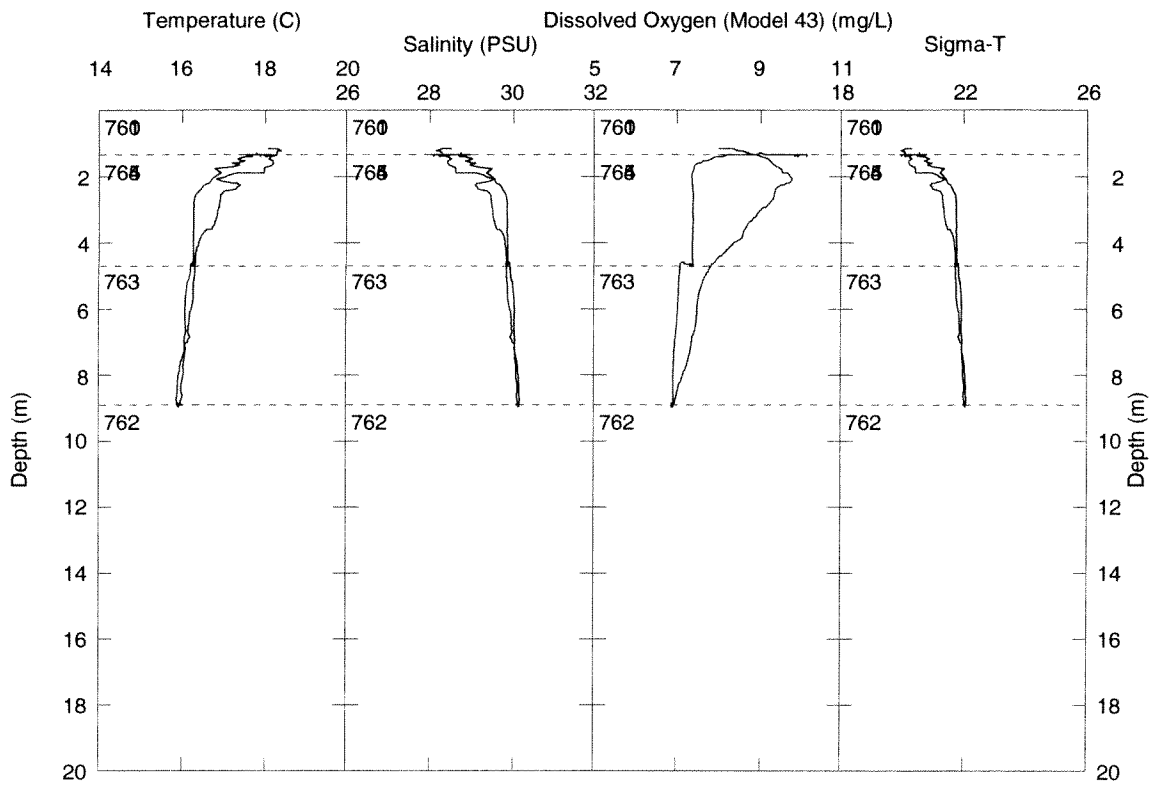




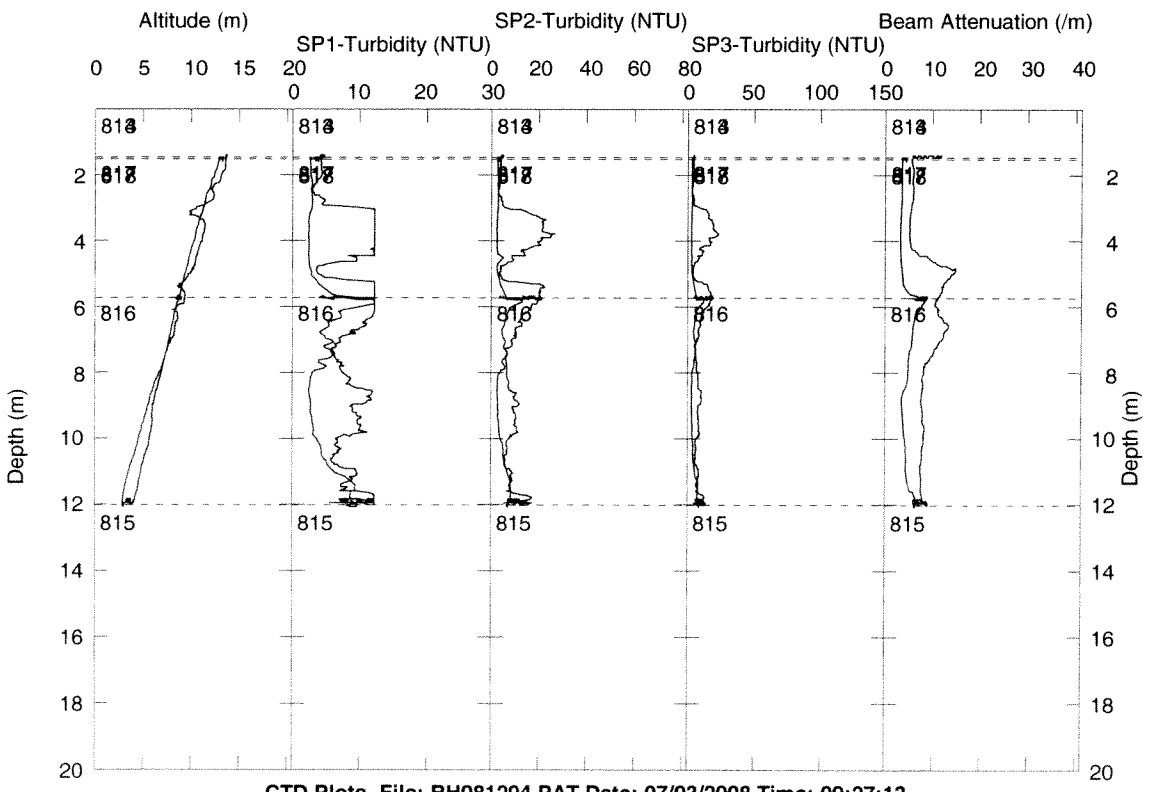
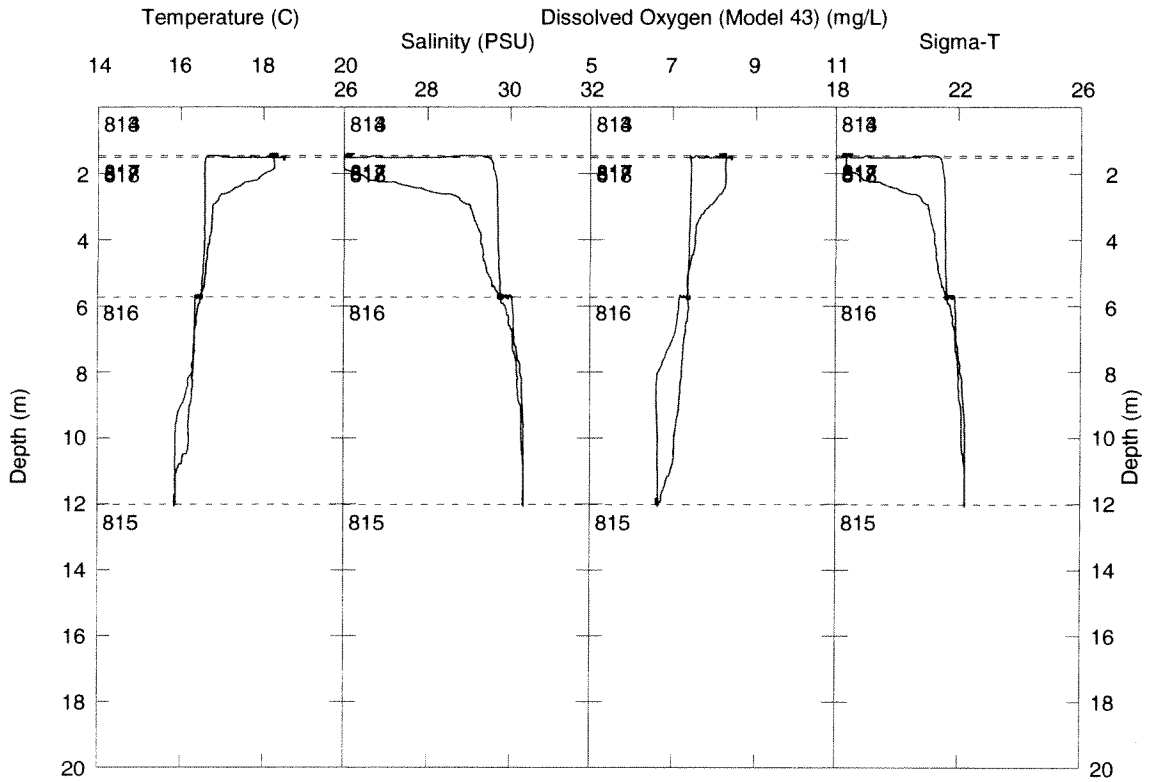
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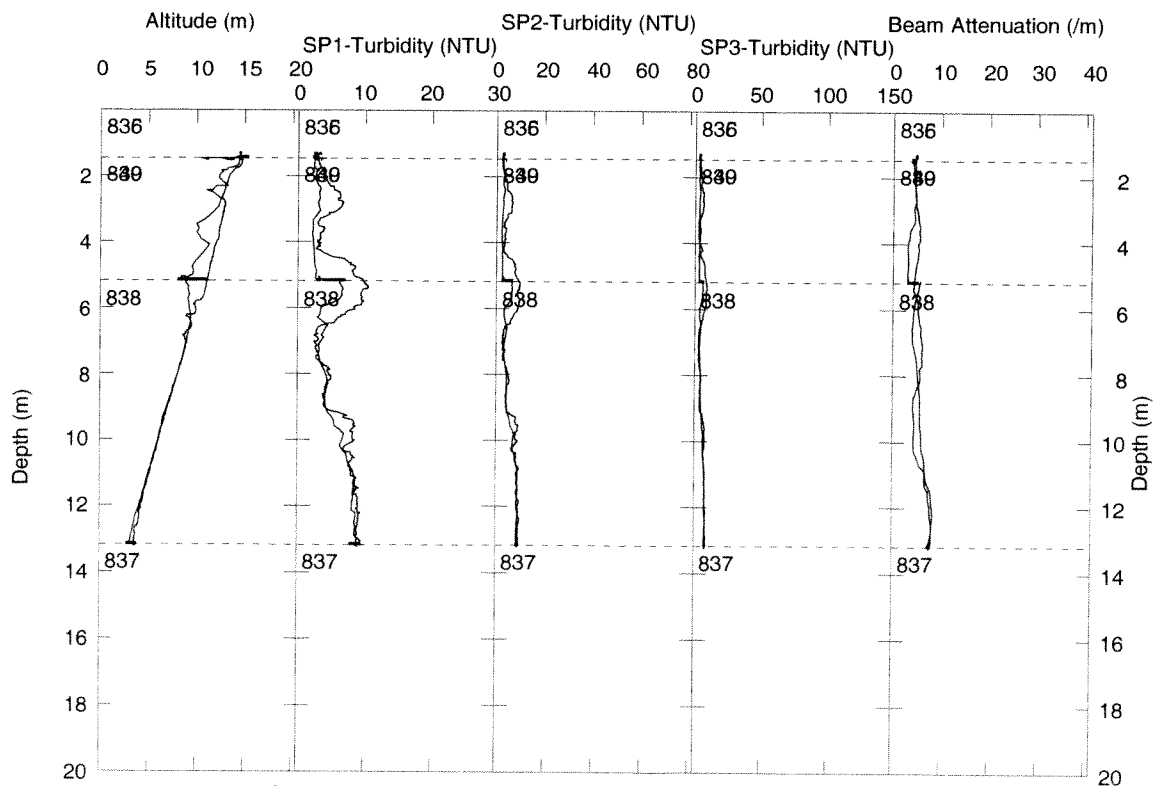
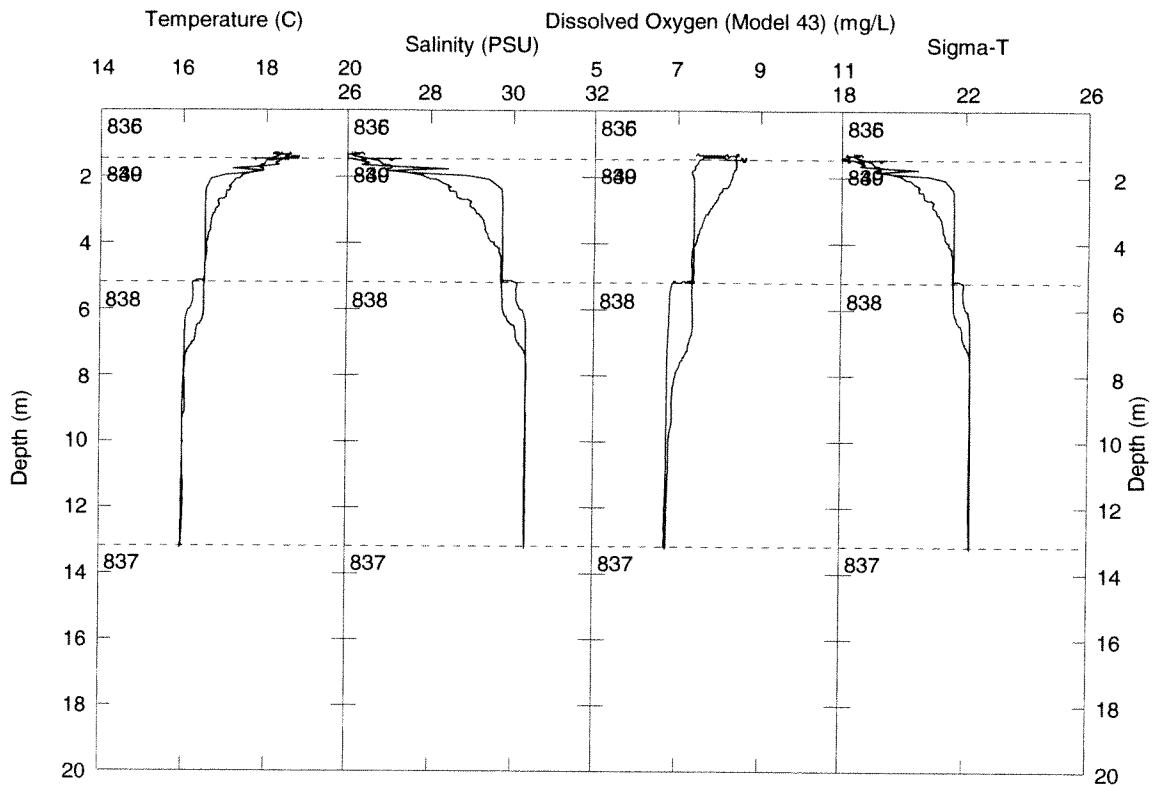




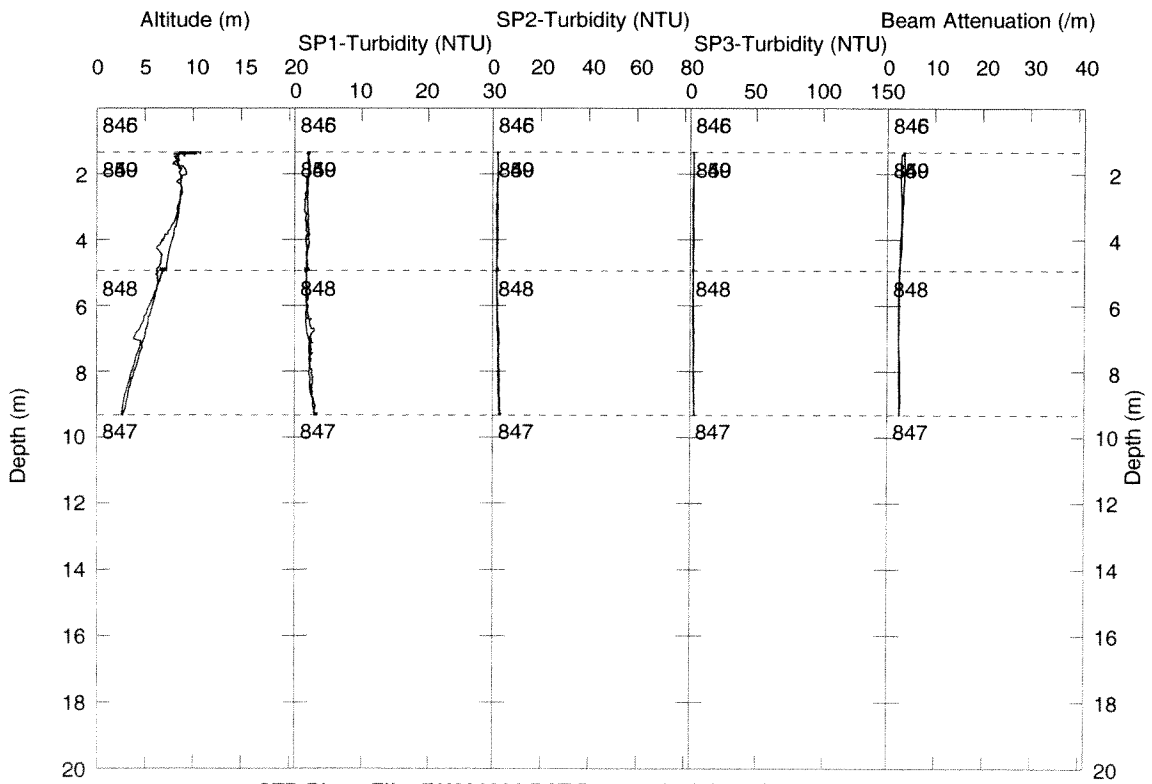
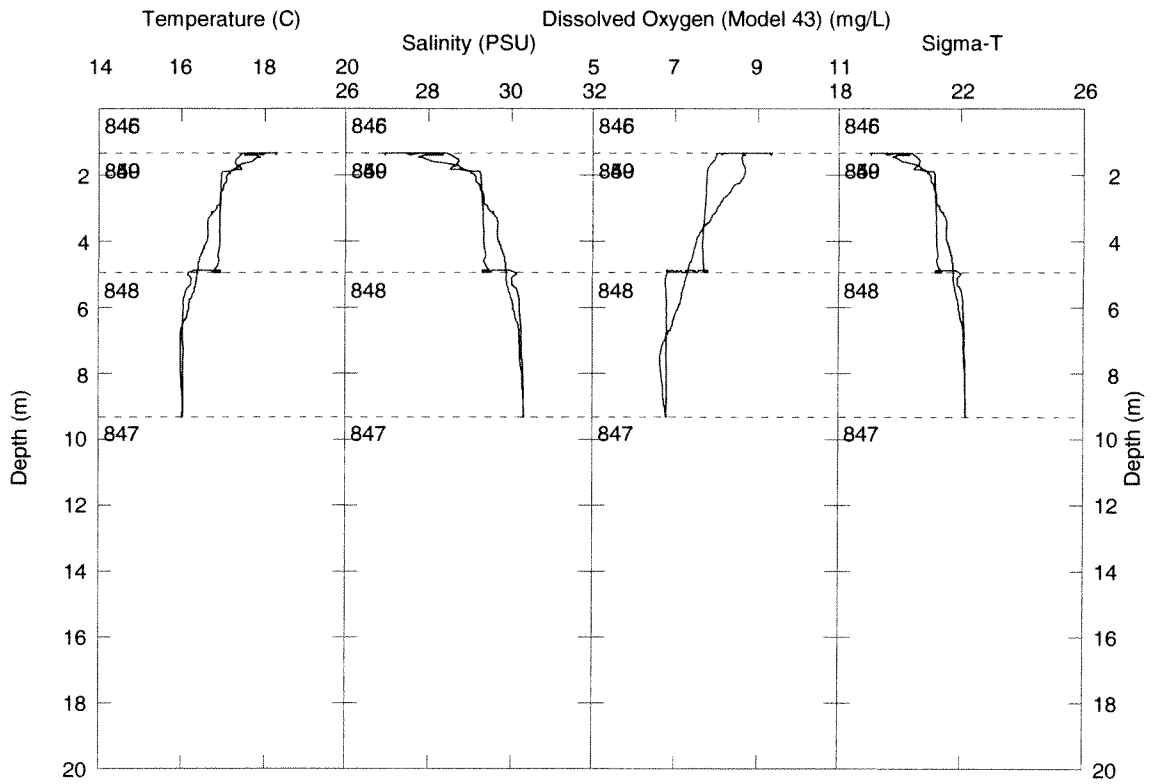
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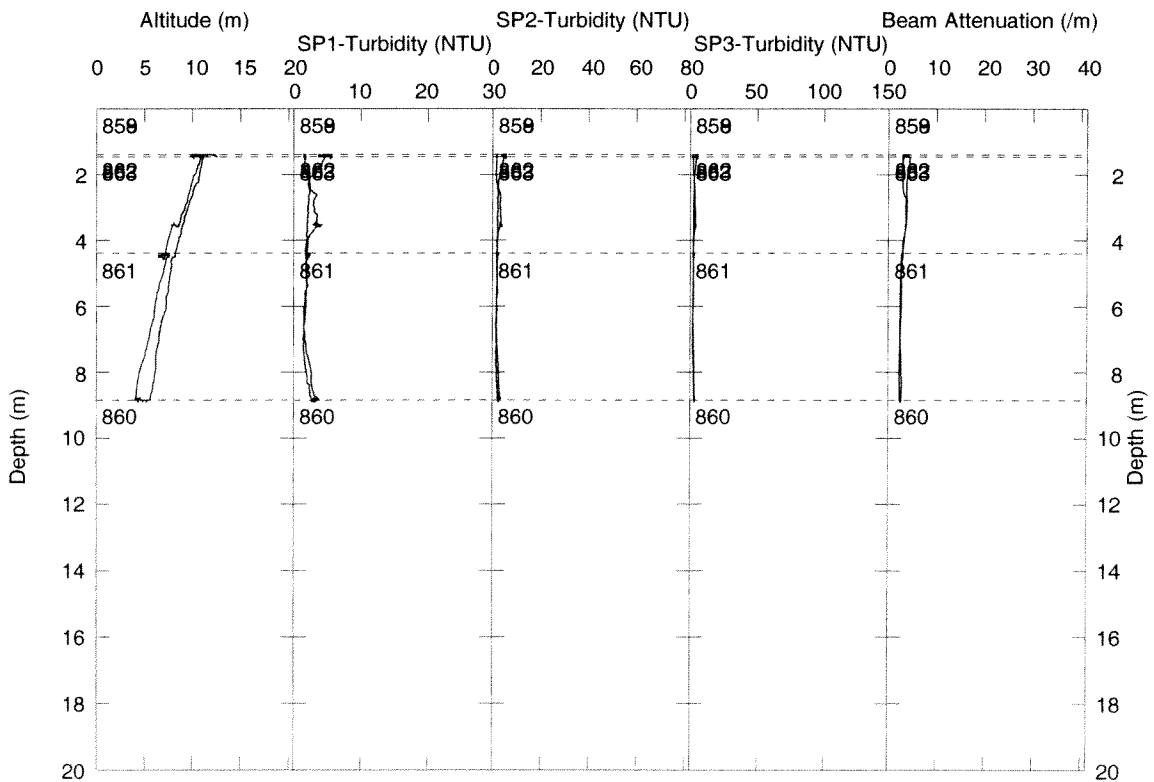
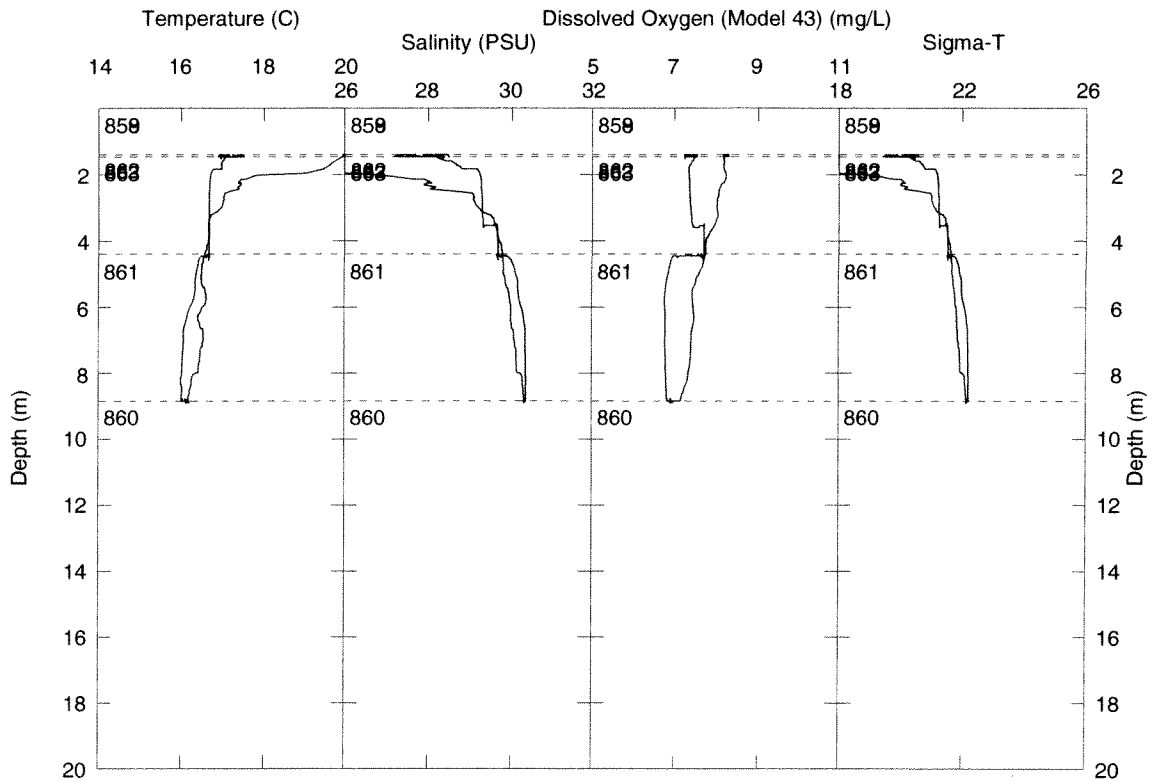


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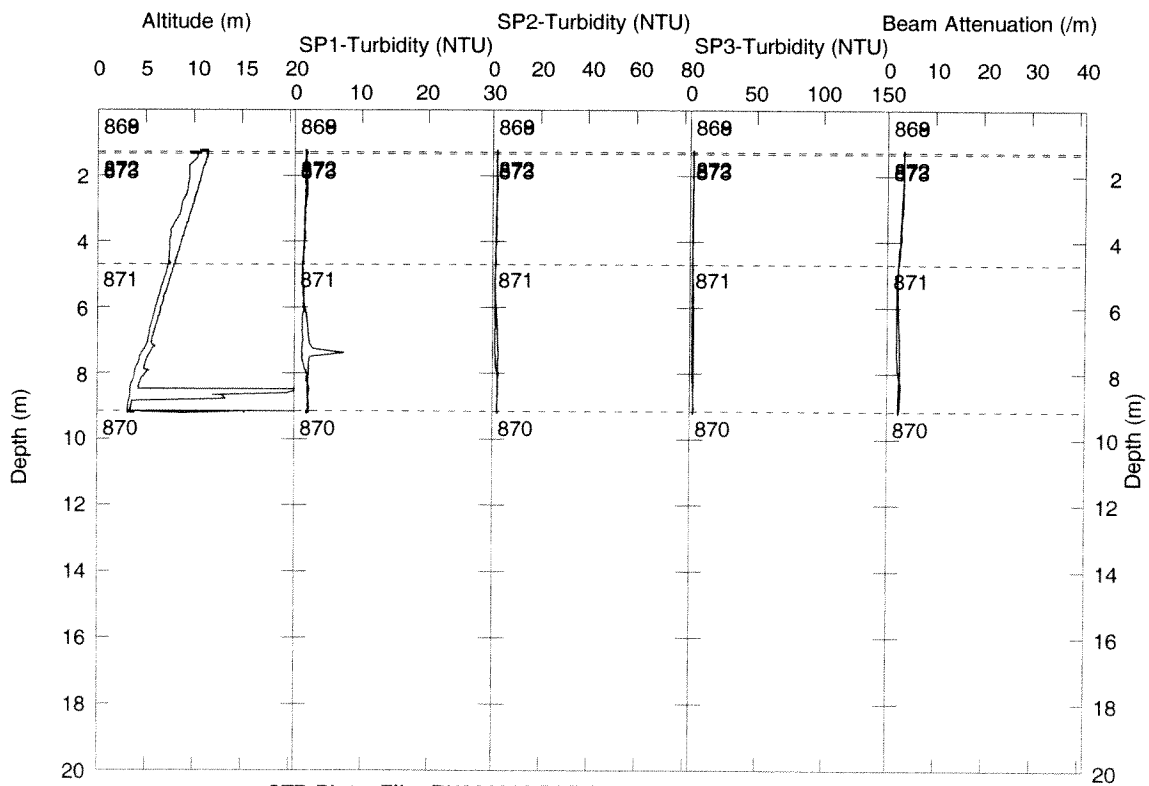
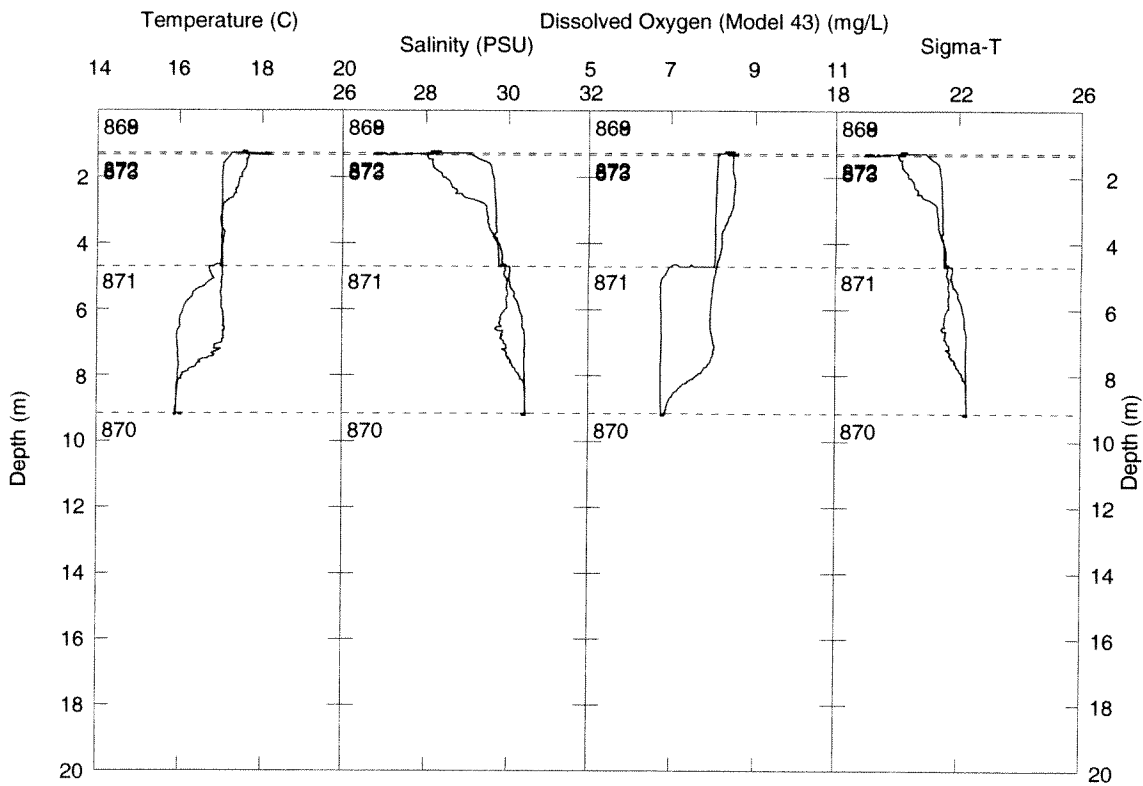


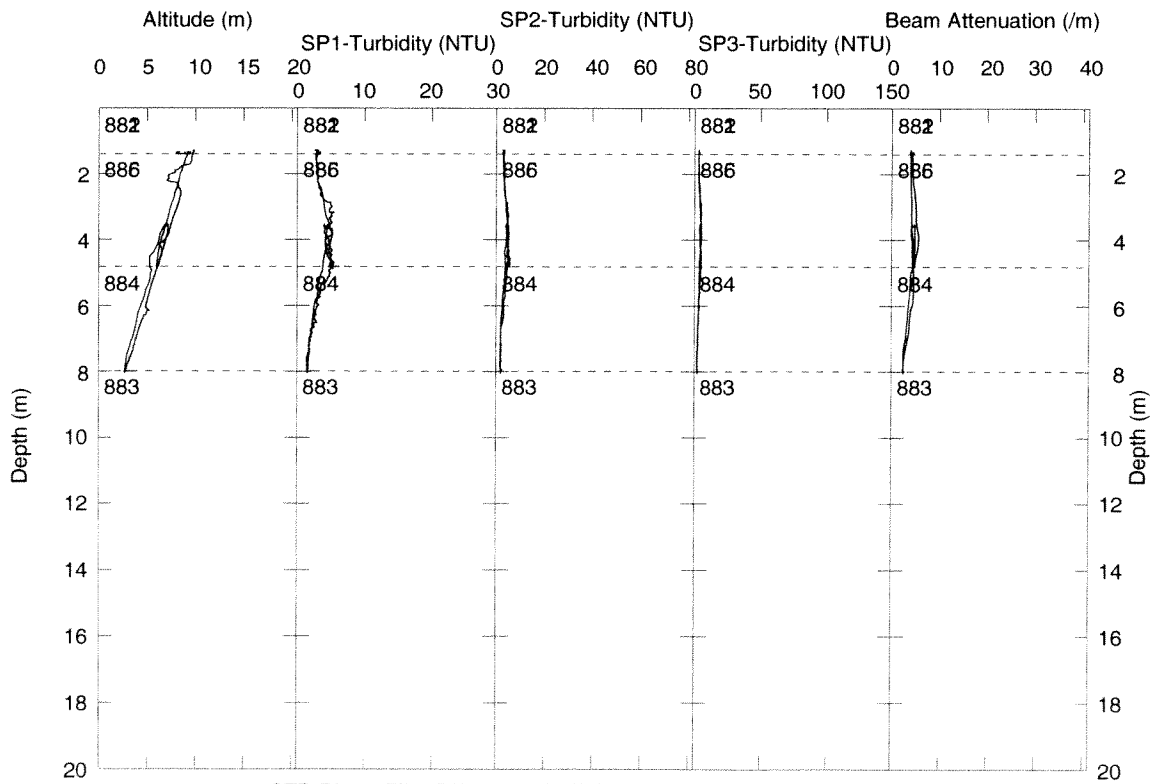
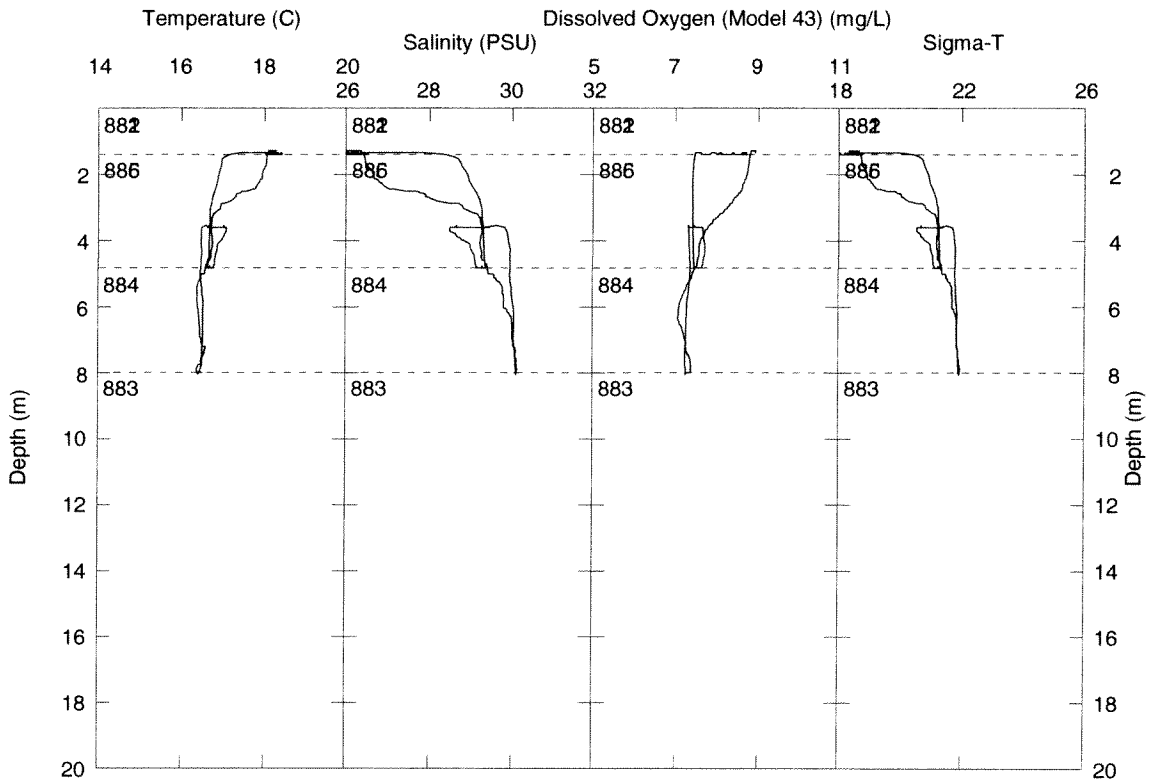
CTD Plots File: BH081301.PAT Date: 07/03/2008 Time: 09:51:15



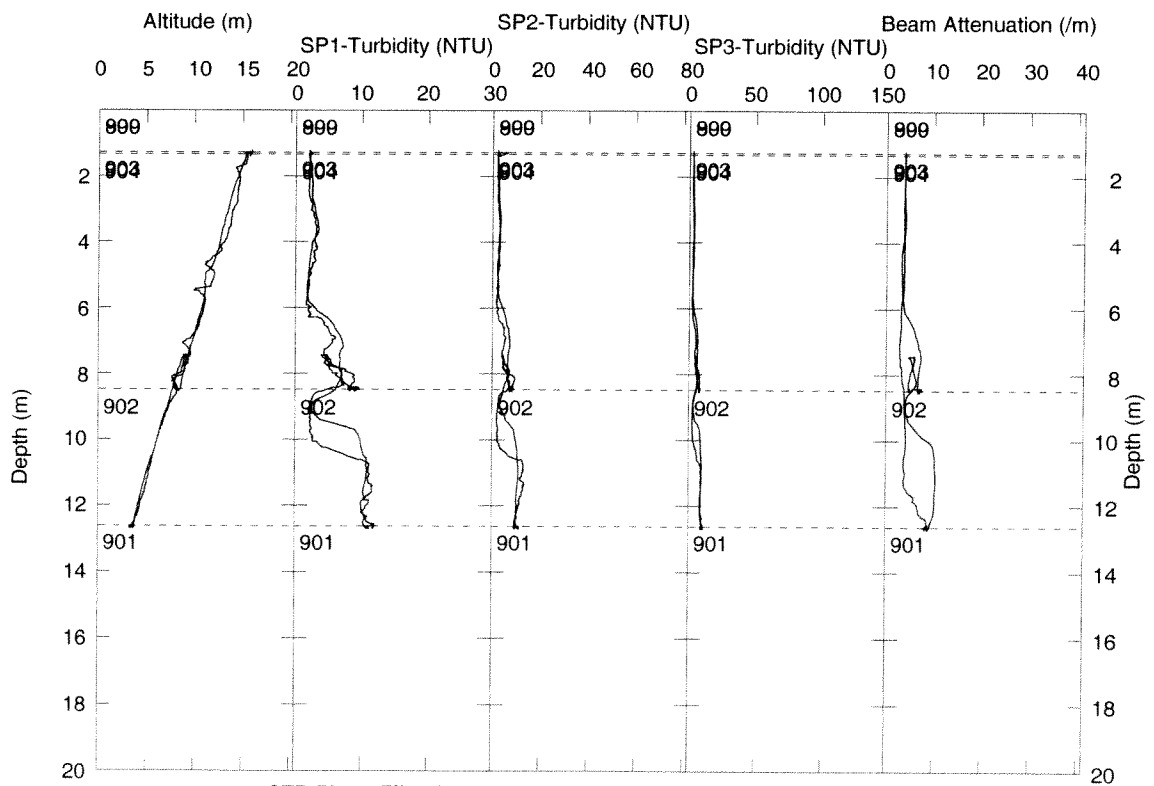
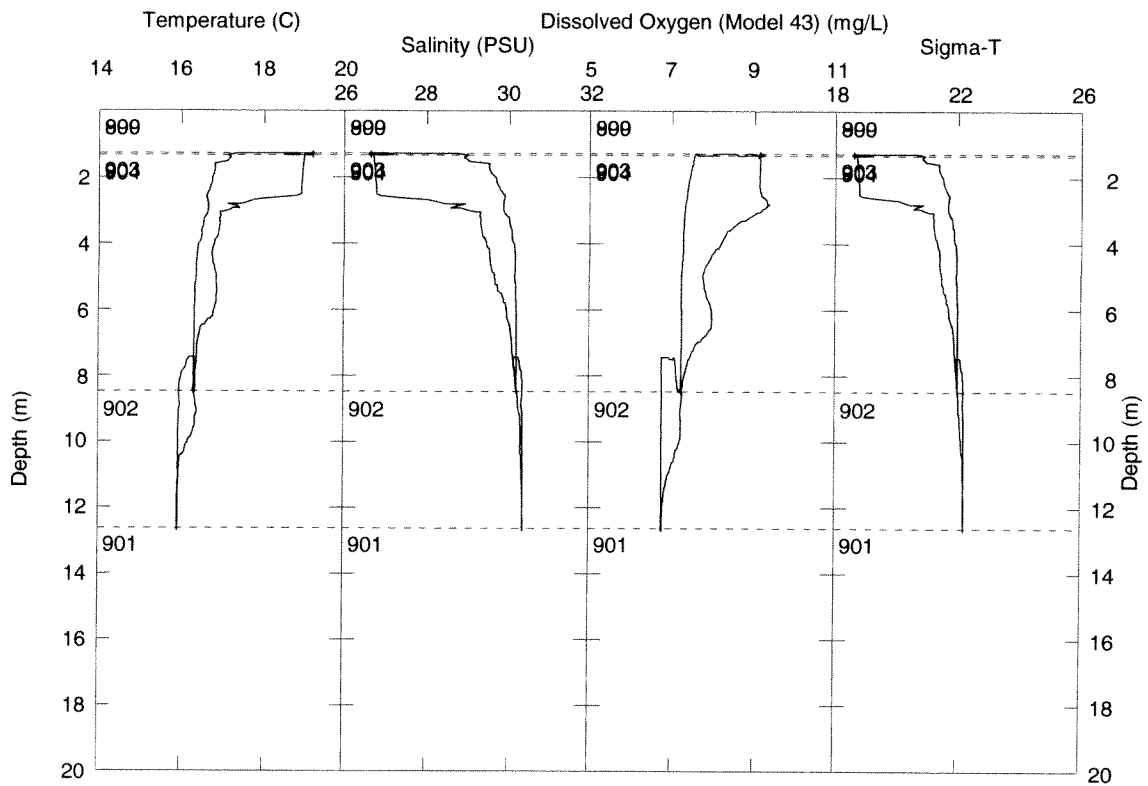


CTD Plots File: BH081308.PAT Date: 07/03/2008 Time: 10:09:21



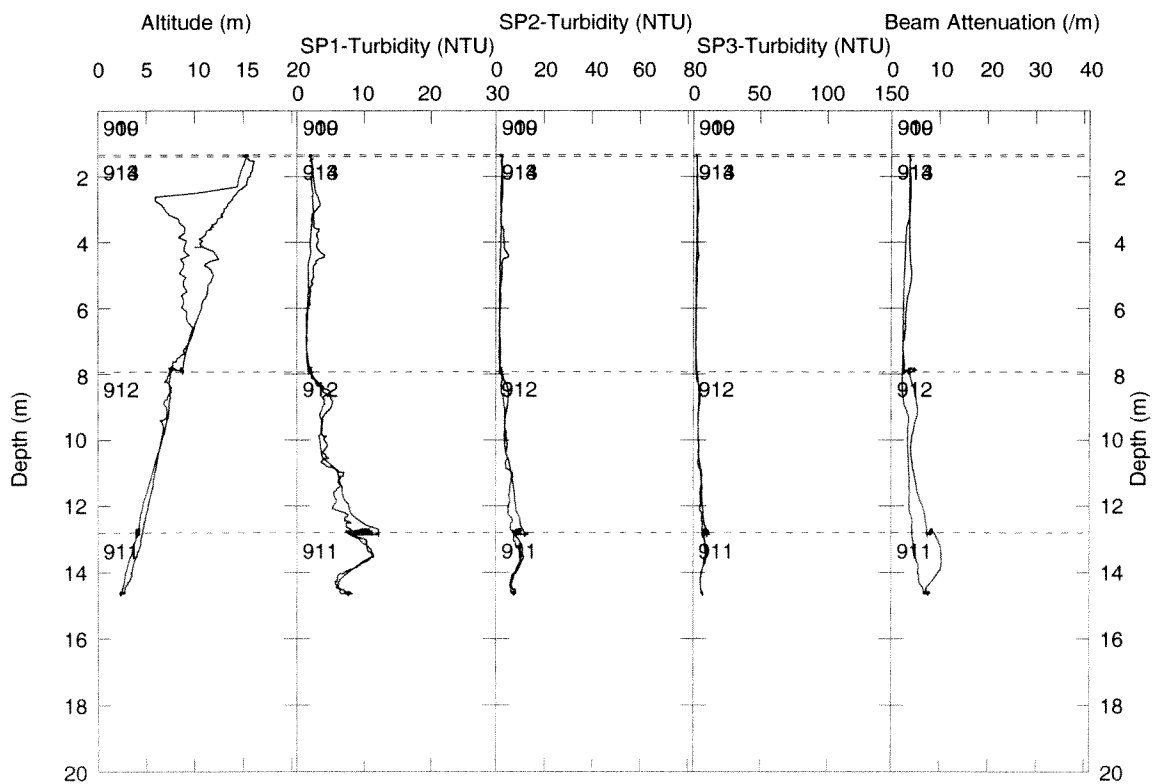
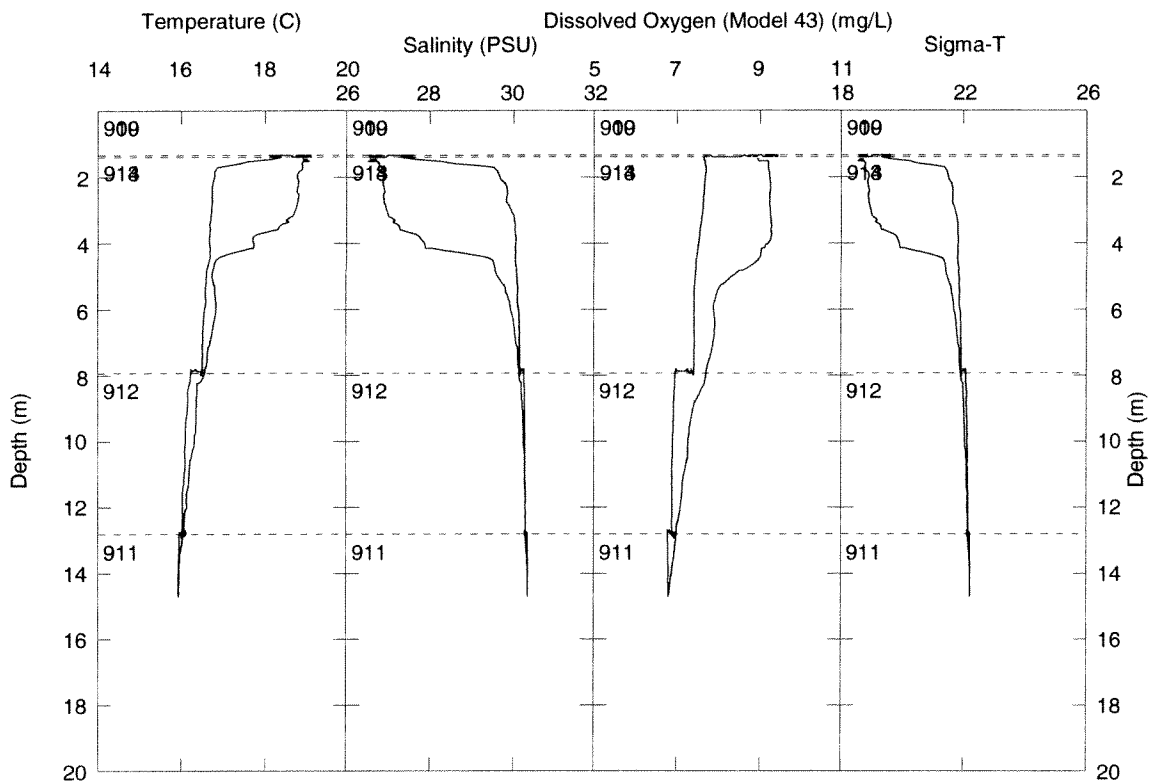


CTD Plots File: BH081315.PAT Date: 07/03/2008 Time: 10:36:23

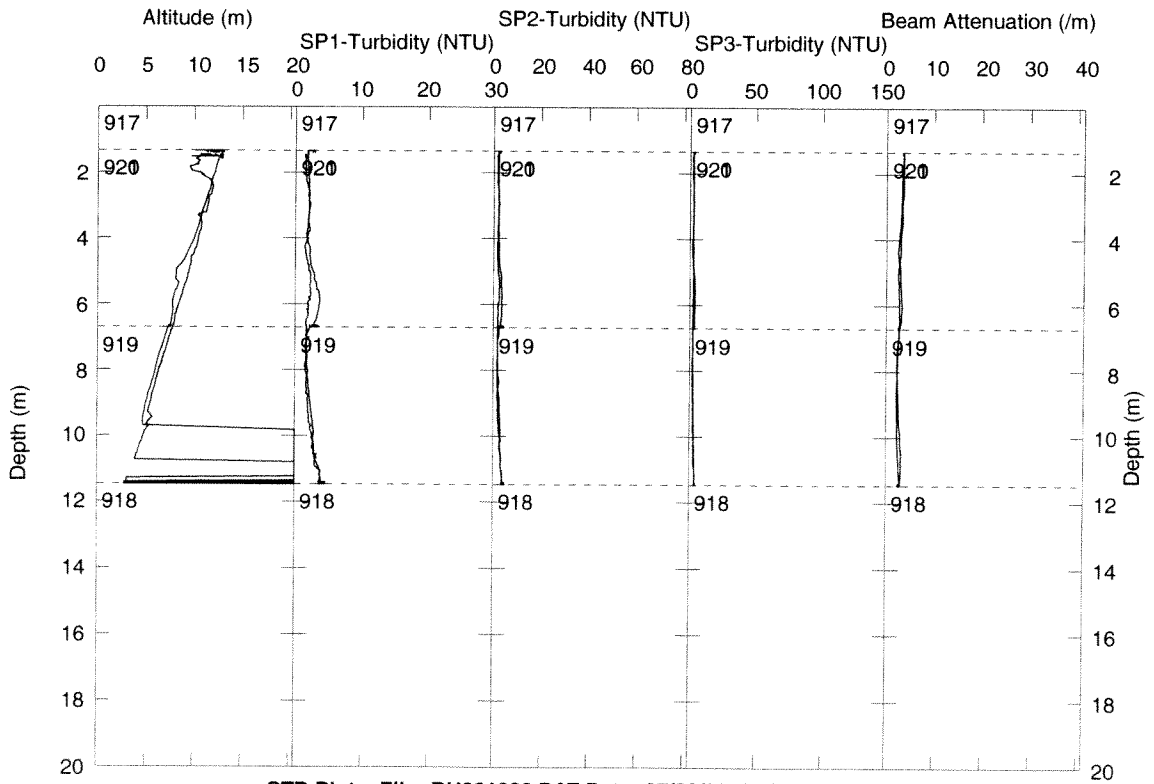
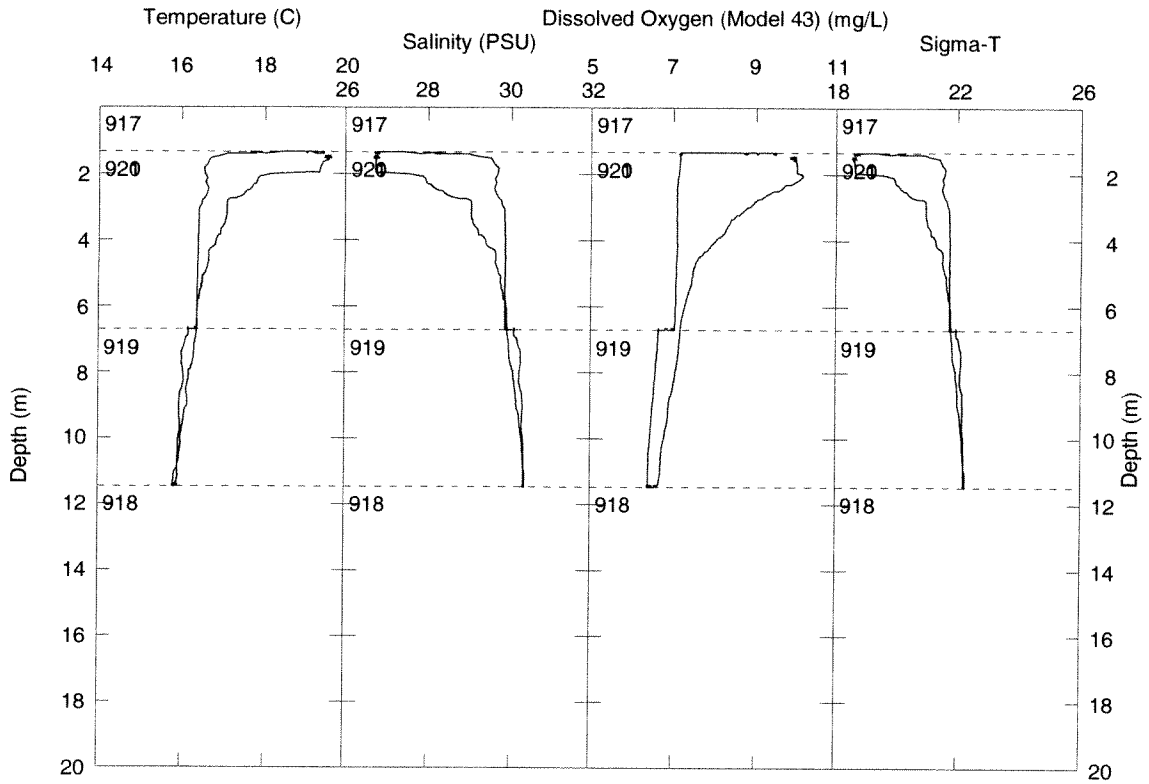


CTD Plots File: BH081321.PAT Date: 07/03/2008 Time: 12:24:51

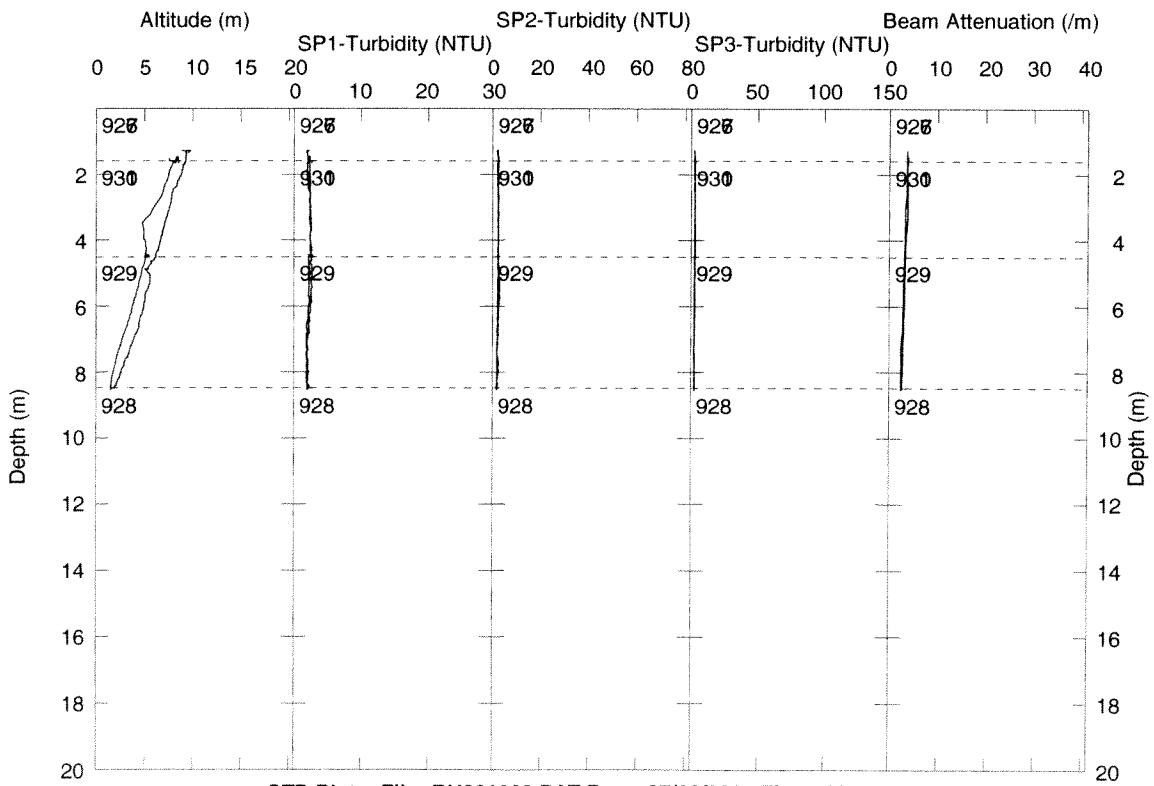
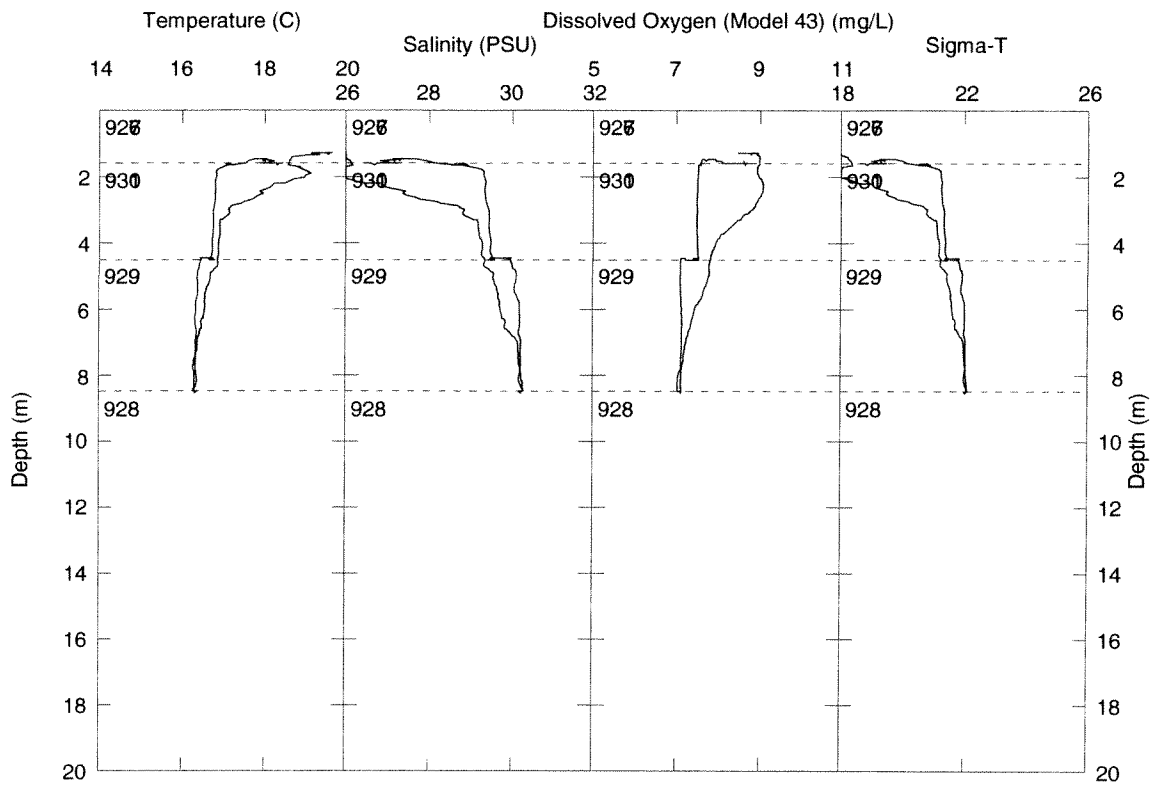


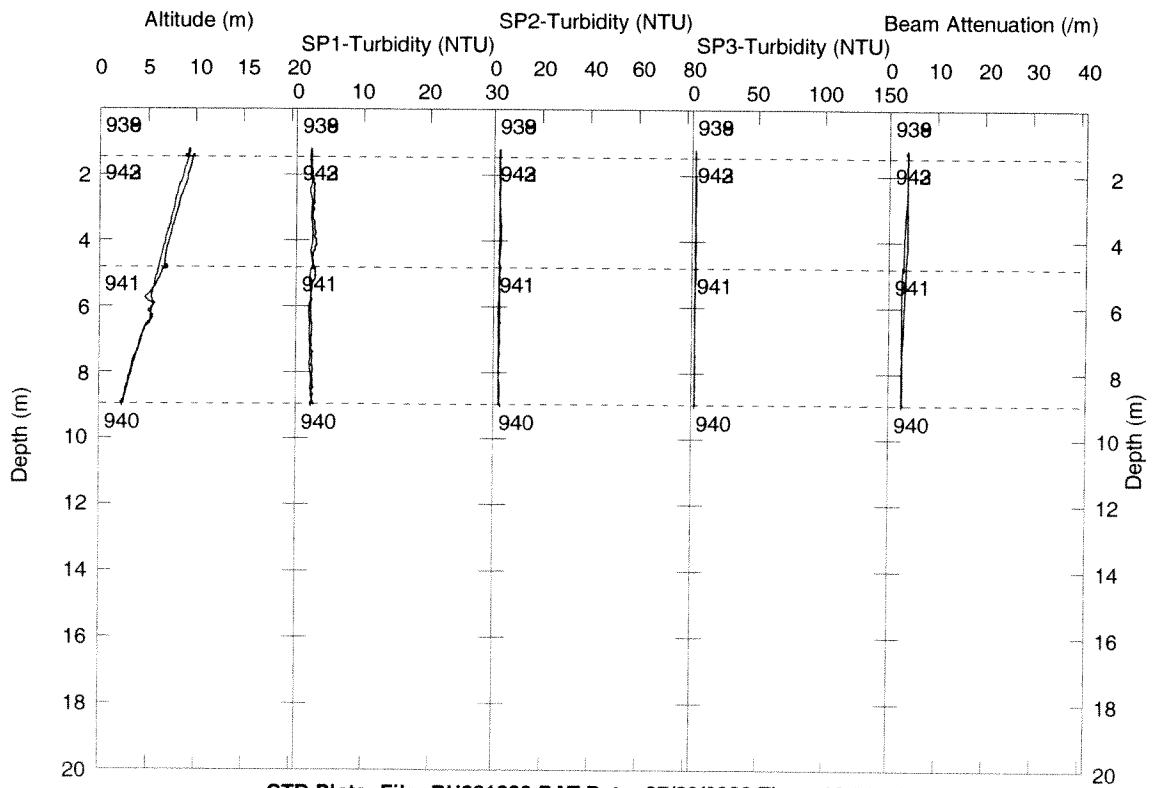
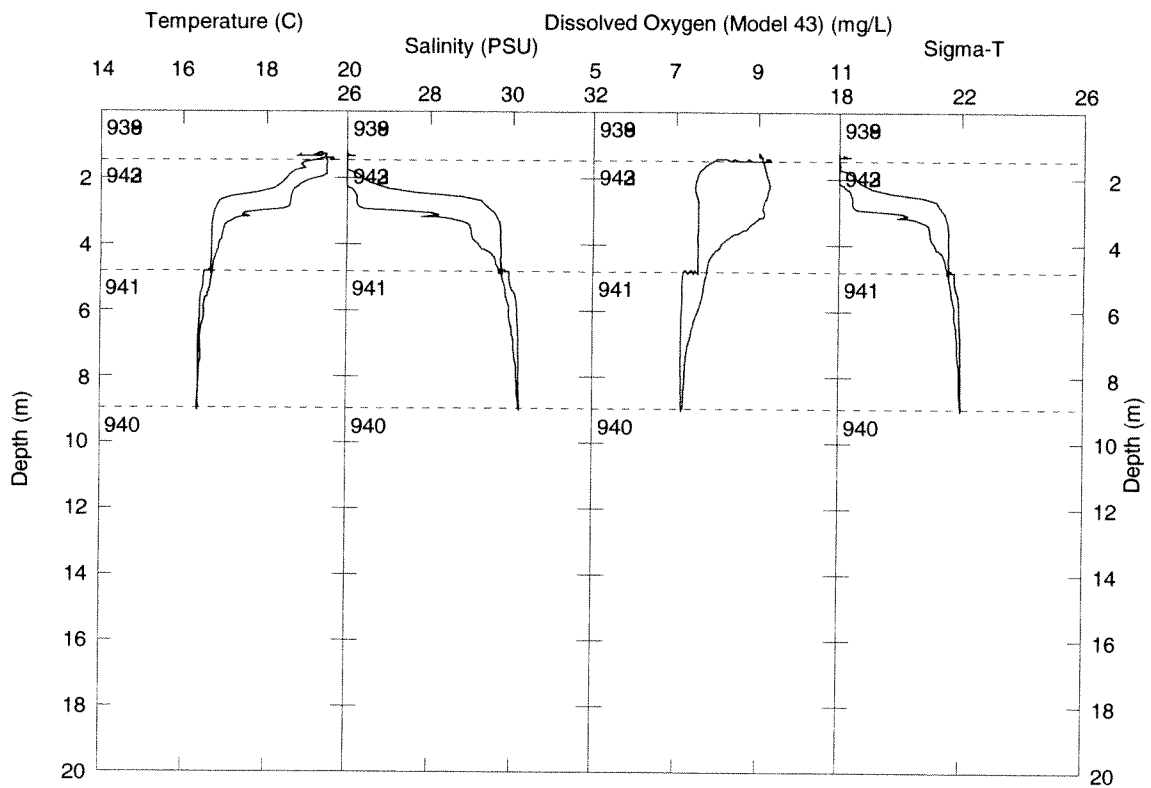


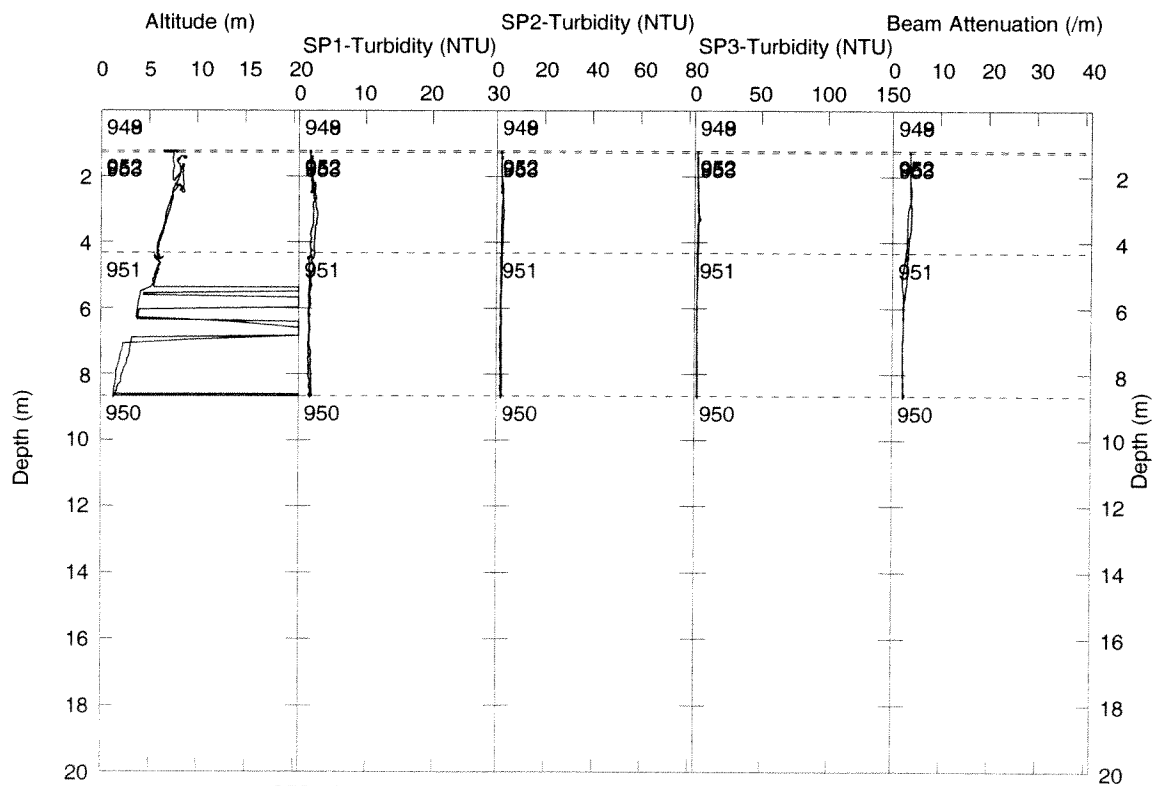
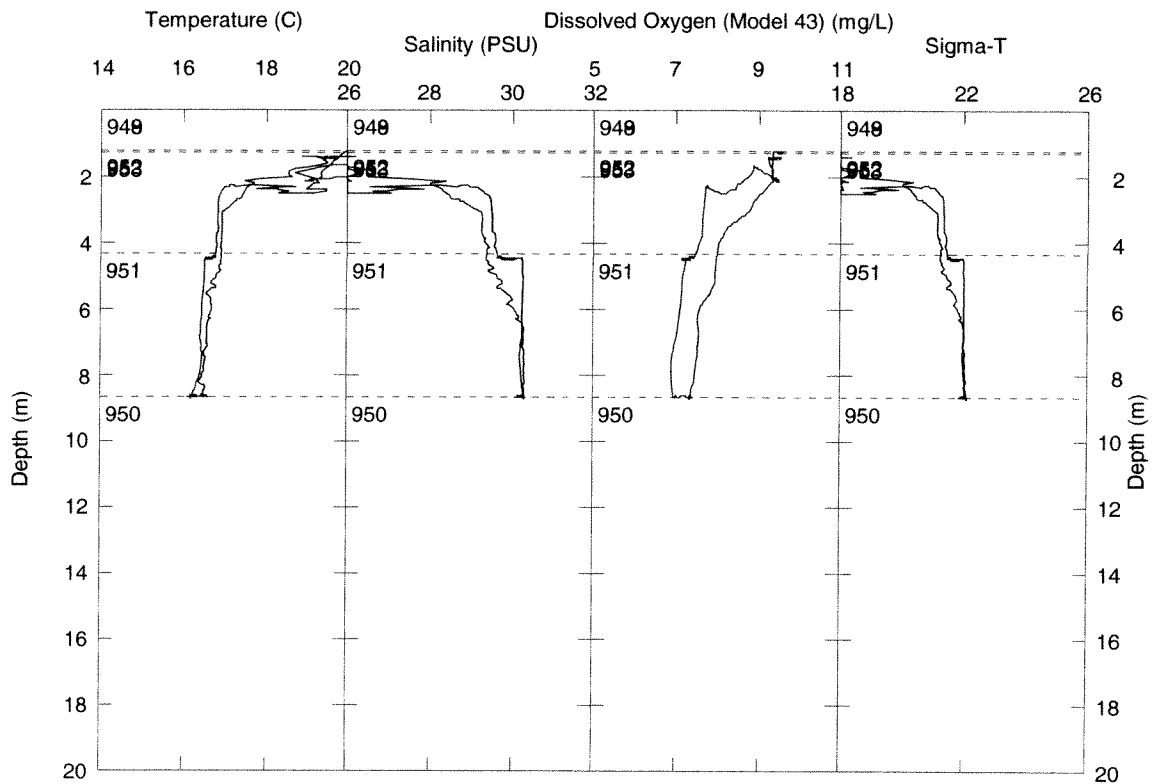
CTD Plots File: BH081324.PAT Date: 07/03/2008 Time: 12:33:03



CTD Plots File: BH081326.PAT Date: 07/03/2008 Time: 12:40:58







CTD Plots File: BH081336.PAT Date: 07/03/2008 Time: 13:11:00

## **Appendix 4**

### **Bench Top Turbidimeter Results**

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Station	Station Type	SampleID	Depth (m)	Turbidity	SampleDateTime	Sample depth
<b>Main Ship Channel CAD Cell Dredge Monitoring 30-Jun-2008</b>						
HS1	Plume Centroid	BH081057	42.43	11.3	6/30/08 11:03	Near Bottom
HS1	Plume Centroid	BH081058	31.22	12.6	6/30/08 11:04	Mid Depth
HS2	Lateral Extent	BH081061	19.81	1.91	6/30/08 11:12	Near Bottom
HS2	Lateral Extent	BH081062	13.01	3.06	6/30/08 11:13	Mid Depth
HS3	Lateral Extent	BH081068	23.41	1.35	6/30/08 11:22	Near Bottom
HS3	Lateral Extent	BH081069	11.60	1.83	6/30/08 11:23	Mid Depth
HS4	Plume Down Current	BH081073	39.83	9.03	6/30/08 11:35	Near Bottom
HS4	Plume Down Current	BH081074	12.60	5.15	6/30/08 11:36	Mid Depth
HS5	Reference	BH08107E	42.83	3.39	6/30/08 11:46	Near Bottom
HS5	Reference	BH08107F	31.62	2.66	6/30/08 11:47	Mid Depth
HS6	Reference	BH08108B	42.23	1.61	6/30/08 12:04	Near Bottom
HS6	Reference	BH08108C	13.01	1.67	6/30/08 12:06	Mid Depth
ME1	Plume Centroid	BH0810AD	36.02	11.2	6/30/08 13:46	Near Bottom
ME1	Plume Centroid	BH0810AE	19.81	10.02	6/30/08 13:47	Mid Depth
ME2	Lateral Extent	BH0810B4	23.41	2.73	6/30/08 13:55	Near Bottom
ME2	Lateral Extent	BH0810B5	13.81	3.21	6/30/08 13:56	Mid Depth
ME3	Lateral Extent	BH0810BE	27.62	1.83	6/30/08 14:04	Near Bottom
ME3	Lateral Extent	BH0810BF	13.61	2.25	6/30/08 14:04	Mid Depth
ME4	Plume Down Current	BH0810CB	36.43	12.2	6/30/08 14:13	Near Bottom
ME4	Plume Down Current	BH0810CC	20.41	5.1	6/30/08 14:13	Mid Depth
ME5	Reference	BH0810DF	35.22	4.17	6/30/08 14:28	Near Bottom
ME5	Reference	BH0810E0	20.81	3.47	6/30/08 14:29	Mid Depth
ME6	Reference	BH0810EA	36.63	5.06	6/30/08 14:38	Near Bottom
ME6	Reference	BH0810EB	31.02	8.16	6/30/08 14:39	Mid Depth
LS1	Reference	BH0810F9	37.43	4.31	6/30/08 16:00	Near Bottom
LS1	Reference	BH0810FA	21.81	2.97	6/30/08 16:01	Mid Depth
LS2	Reference	BH081106	38.03	3.27	6/30/08 16:13	Near Bottom
LS2	Reference	BH081107	20.61	3.05	6/30/08 16:13	Mid Depth
LS3	Plume Centroid	BH081128	39.23	13.6	6/30/08 17:17	Near Bottom
LS3	Plume Centroid	BH081129	22.01	7.51	6/30/08 17:17	Mid Depth
LS4	Lateral Extent	BH081135	23.01	2.54	6/30/08 17:24	Near Bottom
LS4	Lateral Extent	BH081136	13.01	2.17	6/30/08 17:24	Mid Depth
LS5	Lateral Extent	BH081140	24.62	2.66	6/30/08 17:32	Near Bottom
LS5	Lateral Extent	BH081141	13.61	3.26	6/30/08 17:33	Mid Depth
LS6	Plume Down Current	BH08114B	40.43	20.1	6/30/08 17:42	Near Bottom
LS6	Plume Down Current	BH08114C	32.22	19.5	6/30/08 17:43	Mid Depth
<b>Mystic River CAD Cell Disposal Plume Monitoring 01-Jul-2008</b>						
REF1	Disposal Referece	BH081194	35.02	11.2	7/1/08 8:49	Mid Depth
REF1	Disposal Referece	BH081195	45.43	7.94	7/1/08 8:49	Near Bottom
REF2	Disposal Referece	BH08119D	49.24	5.46	7/1/08 9:07	Near Bottom
REF2	Disposal Referece	BH08119E	36.83	4.74	7/1/08 9:07	Mid Depth
DD1	Disposal 500ft	BH0811C3	43.83	4.91	7/1/08 11:29	Near Bottom
DD1	Disposal 500ft	BH0811C4	24.01	5.98	7/1/08 11:30	Mid Depth
DD2	Disposal 500ft	BH0811CC	48.43	4.41	7/1/08 11:35	Near Bottom
DD2	Disposal 500ft	BH0811CD	20.41	3.07	7/1/08 11:36	Mid Depth
DD3	Disposal 500ft	BH0811D5	28.02	2.74	7/1/08 11:41	Near Bottom
DD3	Disposal 500ft	BH0811D6	14.21	3.06	7/1/08 11:41	Mid Depth
<b>Main Ship Channel CAD Cell Dredge Monitoring 02-Jul-2008</b>						
MF1	Plume Centroid	BH081203	43.63	7.76	7/2/08 8:48	Near Bottom
MF1	Plume Centroid	BH081204	17.21	6.65	7/2/08 8:49	Mid Depth



Station	Station Type	SampleID	Depth (m)	Turbidity	SampleDateTime	Sample depth
MF2	Lateral Extent	BH08120D	38.23	3.14	7/2/08 8:57	Near Bottom
MF2	Lateral Extent	BH08120E	19.61	2.54	7/2/08 8:57	Mid Depth
MF3	Lateral Extent	BH08121A	26.02	3.15	7/2/08 9:05	Near Bottom
MF3	Lateral Extent	BH08121B	12.61	2.28	7/2/08 9:06	Mid Depth
MF4	Plume Down Current	BH081229	44.23	19.7	7/2/08 9:18	Near Bottom
MF4	Plume Down Current	BH08122A	19.21	11.6	7/2/08 9:19	Mid Depth
MF5	Reference	BH081233	43.43	3.71	7/2/08 9:26	Near Bottom
MF5	Reference	BH081234	33.23	4.79	7/2/08 9:27	Mid Depth
MF6	Reference	BH08123D	43.03	2.24	7/2/08 9:37	Near Bottom
MF6	Reference	BH08123E	21.02	0.98	7/2/08 9:37	Mid Depth
DX	Calibration	BH081251	60.25	93	7/2/08 11:30	Near Bottom
DX	Calibration	BH081252	39.03	82.6	7/2/08 11:31	Mid Depth
Ship2	Ship Passage	BH081267	43.83	4.23	7/2/08 12:43	Near Bottom
Ship2	Ship Passage	BH081268	29.62	4.94	7/2/08 12:44	Mid Depth
ME1	Plume Centroid	BH08127C	40.03	15	7/2/08 15:21	Near Bottom
ME1	Plume Centroid	BH08127D	23.22	7.51	7/2/08 15:21	Mid Depth
ME2	Lateral Extent	BH081289	33.23	3.47	7/2/08 15:30	Near Bottom
ME2	Lateral Extent	BH08128A	18.61	2.71	7/2/08 15:30	Mid Depth
ME3	Lateral Extent	BH081293	27.02	2.91	7/2/08 15:37	Near Bottom
ME3	Lateral Extent	BH081294	15.81	1.77	7/2/08 15:38	Mid Depth
ME4	Plume Down Current	BH08129D	36.63	8.2	7/2/08 15:46	Near Bottom
ME4	Plume Down Current	BH08129E	14.21	7.63	7/2/08 15:47	Mid Depth
ME5	Reference	BH0812A9	24.82	3.01	7/2/08 15:55	Near Bottom
ME5	Reference	BH0812AA	15.81	2.31	7/2/08 15:55	Mid Depth
ME6	Reference	BH0812B3	33.83	3.28	7/2/08 16:04	Near Bottom
ME6	Reference	BH0812B4	20.01	2.61	7/2/08 16:05	Mid Depth
LS1	Plume Centroid	BH0812C7	30.42	7.26	7/2/08 17:26	Near Bottom
LS1	Plume Centroid	BH0812C8	14.21	4.19	7/2/08 17:27	Mid Depth
LS2	Lateral Extent	BH0812D1	29.62	2.42	7/2/08 17:32	Near Bottom
LS2	Lateral Extent	BH0812D2	16.61	2.13	7/2/08 17:32	Mid Depth
LS3	Plume Down Current	BH0812D8	33.23	6.98	7/2/08 17:40	Near Bottom
LS3	Plume Down Current	BH0812D9	20.82	6.07	7/2/08 17:40	Mid Depth
LS4	Lateral Extent	BH0812E2	31.62	3.01	7/2/08 17:46	Near Bottom
LS4	Lateral Extent	BH0812E3	14.61	2.63	7/2/08 17:47	Mid Depth
LS5	Reference	BH0812EC	35.83	2.86	7/2/08 17:55	Near Bottom
LS5	Reference	BH0812ED	21.02	1.78	7/2/08 17:56	Mid Depth
LS6	Reference	BH0812FA	29.22	2.78	7/2/08 18:06	Near Bottom
LS6	Reference	BH0812FB	15.41	2.4	7/2/08 18:07	Mid Depth
<b>Main Ship Channel CAD Cell Dredge Monitoring 03-Jul-2008</b>						
MF1	Plume Centroid	BH08132F	39.43	9.97	7/3/08 9:28	Near Bottom
MF1	Plume Centroid	BH081330	18.81	9.73	7/3/08 9:29	Mid Depth
MF2	Plume Down Current	BH081345	43.23	10.84	7/3/08 9:52	Near Bottom
MF2	Plume Down Current	BH081346	17.01	6.36	7/3/08 9:53	Mid Depth
MF3	Lateral Extent	BH08134F	30.62	2.82	7/3/08 10:01	Near Bottom
MF3	Lateral Extent	BH081350	16.21	2.34	7/3/08 10:02	Mid Depth
MF4	Lateral Extent	BH08135C	29.02	2.85	7/3/08 10:10	Near Bottom
MF4	Lateral Extent	BH08135D	14.41	2.17	7/3/08 10:11	Mid Depth
MF5	Reference	BH081366	30.02	2.24	7/3/08 10:20	Near Bottom
MF5	Reference	BH081367	15.41	1.65	7/3/08 10:20	Mid Depth
MF6	Reference	BH081373	26.22	3.21	7/3/08 10:37	Near Bottom
MF6	Reference	BH081374	15.81	4.34	7/3/08 10:38	Mid Depth

Station	Station Type	SampleID	Depth (m)	Turbidity	SampleDateTime	Sample depth
HS1	Plume Centroid	BH081385	41.43	10.19	7/3/08 12:26	Near Bottom
HS1	Plume Centroid	BH081386	27.82	7.16	7/3/08 12:26	Mid Depth
HS2	Plume Down Current	BH08138F	42.03	9.07	7/3/08 12:34	Near Bottom
HS2	Plume Down Current	BH081390	26.02	5.83	7/3/08 12:35	Mid Depth
HS3	Lateral Extent	BH081396	37.63	4.01	7/3/08 12:42	Near Bottom
HS3	Lateral Extent	BH081397	22.02	2.47	7/3/08 12:42	Mid Depth
HS4	Lateral Extent	BH0813A0	27.82	2.73	7/3/08 12:49	Near Bottom
HS4	Lateral Extent	BH0813A1	14.81	3.08	7/3/08 12:50	Mid Depth
HS5	Reference	BH0813AC	29.42	3.53	7/3/08 12:59	Near Bottom
HS5	Reference	BH0813AD	15.81	2.32	7/3/08 13:00	Mid Depth
HS6	Reference	BH0813B6	28.42	2.1	7/3/08 13:11	Near Bottom
HS6	Reference	BH0813B7	14.21	2.35	7/3/08 13:12	Mid Depth



## **Appendix 5**

### **Laboratory TSS Results**

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SAMP_ID	ANALYSIS_METH	LAB_QC_CODE	DILUTION	ANALYTE	VALUE	LAB_QUAL	DETECT_LIMIT	UNIT	ANALYSIS_DATE
BH081057TS1	160.2	SA	1	TSS - Membrane	15.1		1.00	MG/L	07/03/2008
BH081057TS1DUP	160.2	DUP	1	TSS - Membrane	15.5		1.00	MG/L	07/03/2008
BH081058TS1	160.2	SA	1	TSS - Membrane	34.0		1.00	MG/L	07/03/2008
BH081058TS2	160.2	SA	1	TSS - Membrane	22.9		1.00	MG/L	07/03/2008
BH081059TS1	160.2	SA	1	TSS - Membrane	21.0		1.00	MG/L	07/03/2008
BH081061TS1	160.2	SA	1	TSS - Membrane	6.70		1.00	MG/L	07/03/2008
BH081062TS1	160.2	SA	1	TSS - Membrane	5.10		1.00	MG/L	07/03/2008
BH081063TS1	160.2	SA	1	TSS - Membrane	8.10		1.00	MG/L	07/03/2008
BH081068TS1	160.2	SA	1	TSS - Membrane	6.40		1.00	MG/L	07/03/2008
BH081069TS1	160.2	SA	1	TSS - Membrane	5.20		1.00	MG/L	07/03/2008
BH08106ATS1	160.2	SA	1	TSS - Membrane	6.70		1.00	MG/L	07/03/2008
BH081073TS1	160.2	SA	1	TSS - Membrane	19.8		1.00	MG/L	07/03/2008
BH081074TS1	160.2	SA	1	TSS - Membrane	12.8		1.00	MG/L	07/03/2008
BH081075TS1	160.2	SA	1	TSS - Membrane	13.2		1.00	MG/L	07/03/2008
BH08107ETS1	160.2	SA	1	TSS - Membrane	5.80		1.00	MG/L	07/03/2008
BH08107FTS1	160.2	SA	1	TSS - Membrane	2.40		1.00	MG/L	07/03/2008
BH08107FTS1DUP	160.2	DUP	1	TSS - Membrane	2.20		1.00	MG/L	07/03/2008
BH081080TS1	160.2	SA	1	TSS - Membrane	6.00		1.00	MG/L	07/03/2008
BH08108BTS1	160.2	SA	1	TSS - Membrane	5.70		1.00	MG/L	07/03/2008
BH08108CTS1	160.2	SA	1	TSS - Membrane	3.50		1.00	MG/L	07/03/2008
BH08108DTS1	160.2	SA	1	TSS - Membrane	6.80		1.00	MG/L	07/03/2008
BH0810ADTS1	160.2	SA	1	TSS - Membrane	25.4		1.00	MG/L	07/03/2008
BH0810AETS1	160.2	SA	1	TSS - Membrane	22.0		1.00	MG/L	07/03/2008
BH0810AFTS1	160.2	SA	1	TSS - Membrane	19.1		1.00	MG/L	07/03/2008
BH0810B4TS1	160.2	SA	1	TSS - Membrane	8.30		1.00	MG/L	07/03/2008
BH0810B5TS1	160.2	SA	1	TSS - Membrane	7.40		1.00	MG/L	07/03/2008
BH0810B6TS1	160.2	SA	1	TSS - Membrane	5.60		1.00	MG/L	07/03/2008
BH0810BETS1	160.2	SA	1	TSS - Membrane	5.10		1.00	MG/L	07/03/2008
BH0810BFTS1	160.2	SA	1	TSS - Membrane	6.10		1.00	MG/L	07/03/2008
BH0810C0TS1	160.2	SA	1	TSS - Membrane	4.50		1.00	MG/L	07/03/2008
	160.2	MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/03/2008
	160.2	MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/03/2008
	160.2	LCS	1	TSS - Membrane	83.0			PCT_REC	07/03/2008
	160.2	LCS	1	TSS - Membrane	80.0			PCT_REC	07/03/2008
BH0810CBTS1	160.2	SA	1	TSS - Membrane	24.7		1.00	MG/L	07/07/2008
BH0810CBTS1DUP	160.2	DUP	1	TSS - Membrane	24.3		1.00	MG/L	07/07/2008
BH0810CBTS2	160.2	SA	1	TSS - Membrane	22.1		1.00	MG/L	07/07/2008
BH0810CCTS2	160.2	SA	1	TSS - Membrane	11.0		1.00	MG/L	07/07/2008
BH0810CDTS1	160.2	SA	1	TSS - Membrane	14.2		1.00	MG/L	07/07/2008
BH0810DFTS1	160.2	SA	1	TSS - Membrane	7.30		1.00	MG/L	07/07/2008

BH0810E0TS1	160.2	SA	1	TSS - Membrane	7.20	1.00	MG/L	07/07/2008
BH0810E1TS1	160.2	SA	1	TSS - Membrane	7.00	1.00	MG/L	07/07/2008
BH0810EATS1	160.2	SA	1	TSS - Membrane	13.5	1.00	MG/L	07/07/2008
BH0810EBTS1	160.2	SA	1	TSS - Membrane	15.0	1.00	MG/L	07/07/2008
BH0810ECTS1	160.2	SA	1	TSS - Membrane	6.70	1.00	MG/L	07/07/2008
BH0810F9TS1	160.2	SA	1	TSS - Membrane	7.00	1.00	MG/L	07/07/2008
BH0810F9TS2	160.2	SA	1	TSS - Membrane	2.10	1.00	MG/L	07/07/2008
BH0810FATS1	160.2	SA	1	TSS - Membrane	5.70	1.00	MG/L	07/07/2008
BH0810FBTS1	160.2	SA	1	TSS - Membrane	6.60	1.00	MG/L	07/07/2008
BH081106TS1	160.2	SA	1	TSS - Membrane	8.30	1.00	MG/L	07/07/2008
BH081106TS1DUP	160.2	DUP	1	TSS - Membrane	9.40	1.00	MG/L	07/07/2008
BH081107TS1	160.2	SA	1	TSS - Membrane	6.60	1.00	MG/L	07/07/2008
BH081108TS1	160.2	SA	1	TSS - Membrane	5.70	1.00	MG/L	07/07/2008
BH081118TS1	160.2	SA	1	TSS - Membrane	5.30	1.00	MG/L	07/07/2008
BH081119TS1	160.2	SA	1	TSS - Membrane	6.40	1.00	MG/L	07/07/2008
BH08111ATS1	160.2	SA	1	TSS - Membrane	9.70	1.00	MG/L	07/07/2008
BH081128TS1	160.2	SA	1	TSS - Membrane	28.0	1.00	MG/L	07/07/2008
BH081129TS1	160.2	SA	1	TSS - Membrane	16.8	1.00	MG/L	07/07/2008
BH08112ATS1	160.2	SA	1	TSS - Membrane	11.4	1.00	MG/L	07/07/2008
BH081135TS1	160.2	SA	1	TSS - Membrane	11.0	1.00	MG/L	07/07/2008
BH081136TS1	160.2	SA	1	TSS - Membrane	5.00	1.00	MG/L	07/07/2008
BH081137TS1	160.2	SA	1	TSS - Membrane	9.00	1.00	MG/L	07/07/2008
BH081140TS1	160.2	SA	1	TSS - Membrane	5.80	1.00	MG/L	07/07/2008
BH081141TS1	160.2	SA	1	TSS - Membrane	10.0	1.00	MG/L	07/07/2008
	160.2	MB	1	TSS - Membrane	1.00	1.00	MG/L	07/07/2008
	160.2	MB	1	TSS - Membrane	1.00	1.00	MG/L	07/07/2008
	160.2	LCS	1	TSS - Membrane	85.0		PCT_REC	07/07/2008
	160.2	LCS	1	TSS - Membrane	93.0		PCT_REC	07/07/2008
BH081142TS1	160.2	SA	1	TSS - Membrane	9.20	1.00	MG/L	07/07/2008
BH081142TS1DUP	160.2	DUP	1	TSS - Membrane	8.60	1.00	MG/L	07/07/2008
BH08114BTS1	160.2	SA	1	TSS - Membrane	41.3	1.00	MG/L	07/07/2008
BH08114CTS1	160.2	SA	1	TSS - Membrane	42.2	1.00	MG/L	07/07/2008
BH08114DTS1	160.2	SA	1	TSS - Membrane	12.2	1.00	MG/L	07/07/2008
BH081194TS1	160.2	SA	1	TSS - Membrane	21.6	1.00	MG/L	07/07/2008
BH081195TS1	160.2	SA	1	TSS - Membrane	14.8	1.00	MG/L	07/07/2008
BH08119DTS1	160.2	SA	1	TSS - Membrane	37.6	1.00	MG/L	07/07/2008
BH08119ETS1	160.2	SA	1	TSS - Membrane	8.70	1.00	MG/L	07/07/2008
BH0811C3TS1	160.2	SA	1	TSS - Membrane	7.80	1.00	MG/L	07/07/2008
BH0811C4TS1	160.2	SA	1	TSS - Membrane	11.0	1.00	MG/L	07/07/2008
BH0811CCTS1	160.2	SA	1	TSS - Membrane	7.30	1.00	MG/L	07/07/2008
BH0811CDTS1	160.2	SA	1	TSS - Membrane	4.60	1.00	MG/L	07/07/2008

BH0811D5TS1	160.2	SA	1	TSS - Membrane	7.50		1.00	MG/L	07/07/2008
BH0811D6TS1	160.2	SA	1	TSS - Membrane	7.80		1.00	MG/L	07/07/2008
	160.2	MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/07/2008
	160.2	LCS	1	TSS - Membrane	94.0			PCT_REC	07/07/2008
BH081203TS1	160.2	SA	1	TSS - Membrane	16.0		1.00	MG/L	07/08/2008
BH081203TS1DUP	160.2	DUP	1	TSS - Membrane	17.1		1.00	MG/L	07/08/2008
BH081204TS1	160.2	SA	1	TSS - Membrane	15.3		1.00	MG/L	07/08/2008
BH081204TS2	160.2	SA	1	TSS - Membrane	14.9		1.00	MG/L	07/08/2008
BH081205TS1	160.2	SA	1	TSS - Membrane	16.0		1.00	MG/L	07/08/2008
BH08120DTS1	160.2	SA	1	TSS - Membrane	7.40		1.00	MG/L	07/08/2008
BH08120ETS1	160.2	SA	1	TSS - Membrane	4.80		1.00	MG/L	07/08/2008
BH08120FTS1	160.2	SA	1	TSS - Membrane	6.00		1.00	MG/L	07/08/2008
BH08121ATS1	160.2	SA	1	TSS - Membrane	5.00		1.00	MG/L	07/08/2008
BH08121BTS1	160.2	SA	1	TSS - Membrane	5.30		1.00	MG/L	07/08/2008
BH08121CTS1	160.2	SA	1	TSS - Membrane	4.80		1.00	MG/L	07/08/2008
BH081229TS1	160.2	SA	1	TSS - Membrane	46.3		1.00	MG/L	07/08/2008
BH08122ATS1	160.2	SA	1	TSS - Membrane	5.10		1.00	MG/L	07/08/2008
BH08122ATS1DUP	160.2	DUP	1	TSS - Membrane	4.60		1.00	MG/L	07/08/2008
BH08122BTS1	160.2	SA	1	TSS - Membrane	12.3		1.00	MG/L	07/08/2008
BH081233TS1	160.2	SA	1	TSS - Membrane	9.00		1.00	MG/L	07/08/2008
BH081234TS1	160.2	SA	1	TSS - Membrane	16.9		1.00	MG/L	07/08/2008
BH081235TS1	160.2	SA	1	TSS - Membrane	14.0		1.00	MG/L	07/08/2008
BH08123DTS1	160.2	SA	1	TSS - Membrane	5.80		1.00	MG/L	07/08/2008
BH08123ETS1	160.2	SA	1	TSS - Membrane	5.20		1.00	MG/L	07/08/2008
BH08123FTS1	160.2	SA	1	TSS - Membrane	5.80		1.00	MG/L	07/08/2008
BH081251TS1	160.2	SA	1	TSS - Membrane	893		1.00	MG/L	07/08/2008
BH081252TS1	160.2	SA	1	TSS - Membrane	223		1.00	MG/L	07/08/2008
BH081267TS1	160.2	SA	1	TSS - Membrane	9.50		1.00	MG/L	07/08/2008
BH081268TS1	160.2	SA	1	TSS - Membrane	12.8		1.00	MG/L	07/08/2008
BH081268TS1DUP	160.2	DUP	1	TSS - Membrane	14.0		1.00	MG/L	07/08/2008
BH08127CTS1	160.2	SA	1	TSS - Membrane	28.4		1.00	MG/L	07/08/2008
BH08127DTS1	160.2	SA	1	TSS - Membrane	17.4		1.00	MG/L	07/08/2008
BH08127ETS1	160.2	SA	1	TSS - Membrane	18.4		1.00	MG/L	07/08/2008
BH081289TS1	160.2	SA	1	TSS - Membrane	6.40		1.00	MG/L	07/08/2008
BH081289TS2	160.2	SA	1	TSS - Membrane	5.80		1.00	MG/L	07/08/2008
BH08128ATS1	160.2	SA	1	TSS - Membrane	5.70		1.00	MG/L	07/08/2008
BH08128BTS1	160.2	SA	1	TSS - Membrane	3.60		1.00	MG/L	07/08/2008
BH081293TS1	160.2	SA	1	TSS - Membrane	7.70		1.00	MG/L	07/08/2008
BH081294TS1	160.2	SA	1	TSS - Membrane	7.80		1.00	MG/L	07/08/2008
BH081295TS1	160.2	SA	1	TSS - Membrane	6.90		1.00	MG/L	07/08/2008
	160.2	MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/08/2008



160.2		MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/08/2008
160.2		MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/08/2008
160.2		LCS	1	TSS - Membrane	84.0			PCT_REC	07/08/2008
160.2		LCS	1	TSS - Membrane	86.0			PCT_REC	07/08/2008
160.2		LCS	1	TSS - Membrane	83.0			PCT_REC	07/08/2008
BH08129DTS1		SA	1	TSS - Membrane	11.5		1.00	MG/L	07/09/2008
BH08129DTS1DUP		DUP	1	TSS - Membrane	10.7		1.00	MG/L	07/09/2008
BH08129FTS1		SA	1	TSS - Membrane	7.70		1.00	MG/L	07/09/2008
BH0812A9TS1		SA	1	TSS - Membrane	5.80		1.00	MG/L	07/09/2008
BH0812AATS1		SA	1	TSS - Membrane	15.4		1.00	MG/L	07/09/2008
BH0812ABTS1		SA	1	TSS - Membrane	4.70		1.00	MG/L	07/09/2008
BH0812B3TS1		SA	1	TSS - Membrane	4.30		1.00	MG/L	07/09/2008
BH0812B4TS1		SA	1	TSS - Membrane	4.00		1.00	MG/L	07/09/2008
BH0812B5TS1		SA	1	TSS - Membrane	4.30		1.00	MG/L	07/09/2008
BH0812C7TS1		SA	1	TSS - Membrane	12.0		1.00	MG/L	07/09/2008
BH0812C8TS1		SA	1	TSS - Membrane	6.00		1.00	MG/L	07/09/2008
BH0812C9TS1		SA	1	TSS - Membrane	8.50		1.00	MG/L	07/09/2008
BH0812D1TS1		SA	1	TSS - Membrane	5.00		1.00	MG/L	07/09/2008
BH0812D2TS1		SA	1	TSS - Membrane	8.60		1.00	MG/L	07/09/2008
BH0812D2TS1DUP		DUP	1	TSS - Membrane	9.40		1.00	MG/L	07/09/2008
BH0812D3TS1		SA	1	TSS - Membrane	2.70		1.00	MG/L	07/09/2008
BH0812D8TS1		SA	1	TSS - Membrane	10.0		1.00	MG/L	07/09/2008
BH0812D9TS1		SA	1	TSS - Membrane	12.0		1.00	MG/L	07/09/2008
BH0812DATS1		SA	1	TSS - Membrane	9.20		1.00	MG/L	07/09/2008
BH0812E2TS1		SA	1	TSS - Membrane	8.70		1.00	MG/L	07/09/2008
BH0812E3TS1		SA	1	TSS - Membrane	10.4		1.00	MG/L	07/09/2008
BH0812E3TS2		SA	1	TSS - Membrane	5.00		1.00	MG/L	07/09/2008
BH0812E4TS1		SA	1	TSS - Membrane	8.20		1.00	MG/L	07/09/2008
BH0812ECTS1		SA	1	TSS - Membrane	6.40		1.00	MG/L	07/09/2008
BH0812EDTS1		SA	1	TSS - Membrane	5.50		1.00	MG/L	07/09/2008
BH0812EETS1		SA	1	TSS - Membrane	7.70		1.00	MG/L	07/09/2008
BH0812FATS1		SA	1	TSS - Membrane	4.00		1.00	MG/L	07/09/2008
BH0812FBTS1		SA	1	TSS - Membrane	5.80		1.00	MG/L	07/09/2008
BH0812FCTS1		SA	1	TSS - Membrane	4.80		1.00	MG/L	07/09/2008
BH08129ETS2		SA	1	TSS - Membrane	12.2		1.00	MG/L	07/09/2008
		MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/09/2008
		MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/09/2008
		LCS	1	TSS - Membrane	83.0			PCT_REC	07/09/2008
		LCS	1	TSS - Membrane	87.0			PCT_REC	07/09/2008
BH08132FTS1		SA	1	TSS - Membrane	23.7		1.00	MG/L	07/10/2008
BH08132FTS1DUP		DUP	1	TSS - Membrane	25.0		1.00	MG/L	07/10/2008

BH081330TS1	160.2	SA	1	TSS - Membrane	16.2	1.00	MG/L	07/10/2008
BH081331TS1	160.2	SA	1	TSS - Membrane	8.00	1.00	MG/L	07/10/2008
BH081345TS1	160.2	SA	1	TSS - Membrane	25.4	1.00	MG/L	07/10/2008
BH081346TS1	160.2	SA	1	TSS - Membrane	11.7	1.00	MG/L	07/10/2008
BH081346TS2	160.2	SA	1	TSS - Membrane	12.2	1.00	MG/L	07/10/2008
BH081347TS1	160.2	SA	1	TSS - Membrane	5.80	1.00	MG/L	07/10/2008
BH081347TS1	160.2	SA	1	TSS - Membrane	13.2	1.00	MG/L	07/10/2008
BH081350TS1	160.2	SA	1	TSS - Membrane	4.80	1.00	MG/L	07/10/2008
BH081351TS1	160.2	SA	1	TSS - Membrane	4.00	1.00	MG/L	07/10/2008
BH081355CTS1	160.2	SA	1	TSS - Membrane	4.40	1.00	MG/L	07/10/2008
BH081355DTS1	160.2	SA	1	TSS - Membrane	5.00	1.00	MG/L	07/10/2008
BH081355ETS1	160.2	SA	1	TSS - Membrane	7.50	1.00	MG/L	07/10/2008
BH081366TS1	160.2	SA	1	TSS - Membrane	3.70	1.00	MG/L	07/10/2008
BH081367TS1	160.2	SA	1	TSS - Membrane	6.30	1.00	MG/L	07/10/2008
	160.2	MB	1	TSS - Membrane	1.00	1.00	MG/L	07/10/2008
	160.2	LCS	1	TSS - Membrane	92.0		PCT_REC	07/10/2008
BH081368TS1	160.2	SA	1	TSS - Membrane	4.20	1.00	MG/L	07/10/2008
BH081368TS1DUP	160.2	DUP	1	TSS - Membrane	4.50	1.00	MG/L	07/10/2008
BH081373TS1	160.2	SA	1	TSS - Membrane	5.40	1.00	MG/L	07/10/2008
BH081374TS1	160.2	SA	1	TSS - Membrane	8.30	1.00	MG/L	07/10/2008
BH081375TS1	160.2	SA	1	TSS - Membrane	9.20	1.00	MG/L	07/10/2008
BH081385TS1	160.2	SA	1	TSS - Membrane	17.3	1.00	MG/L	07/10/2008
BH081386TS1	160.2	SA	1	TSS - Membrane	14.1	1.00	MG/L	07/10/2008
BH081387TS1	160.2	SA	1	TSS - Membrane	7.00	1.00	MG/L	07/10/2008
BH081387TS1	160.2	SA	1	TSS - Membrane	5.80	1.00	MG/L	07/10/2008
BH081388FTS1	160.2	SA	1	TSS - Membrane	10.7	1.00	MG/L	07/10/2008
BH081390TS1	160.2	SA	1	TSS - Membrane	4.50	1.00	MG/L	07/10/2008
BH081391TS1	160.2	SA	1	TSS - Membrane	9.00	1.00	MG/L	07/10/2008
BH081396TS1	160.2	SA	1	TSS - Membrane	7.60	1.00	MG/L	07/10/2008
BH081397TS1	160.2	SA	1	TSS - Membrane	6.70	1.00	MG/L	07/10/2008
BH081397TS1DUP	160.2	DUP	1	TSS - Membrane	6.70	1.00	MG/L	07/10/2008
BH081398TS1	160.2	SA	1	TSS - Membrane	5.20	1.00	MG/L	07/10/2008
BH0813A0TS1	160.2	SA	1	TSS - Membrane	7.50	1.00	MG/L	07/10/2008
BH0813A1TS1	160.2	SA	1	TSS - Membrane	15.4	1.00	MG/L	07/10/2008
BH0813A2TS1	160.2	SA	1	TSS - Membrane	5.80	1.00	MG/L	07/10/2008
BH0813ACTS1	160.2	SA	1	TSS - Membrane	19.2	1.00	MG/L	07/10/2008
BH0813ADTS1	160.2	SA	1	TSS - Membrane	5.60	1.00	MG/L	07/10/2008
BH0813AETS1	160.2	SA	1	TSS - Membrane	5.20	1.00	MG/L	07/10/2008
BH0813B6TS1	160.2	SA	1	TSS - Membrane	5.30	1.00	MG/L	07/10/2008
BH0813B7TS1	160.2	SA	1	TSS - Membrane	4.00	1.00	MG/L	07/10/2008
BH0813B8TS1	160.2	SA	1	TSS - Membrane	4.80	1.00	MG/L	07/10/2008
BH0813B8TS2	160.2	SA	1	TSS - Membrane	3.40	1.00	MG/L	07/10/2008

160.2	MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/10/2008
160.2	MB	1	TSS - Membrane	1.00	U	1.00	MG/L	07/10/2008
160.2	LCS	1	TSS - Membrane	89.0	U		PCT_REC	07/10/2008
160.2	LCS	1	TSS - Membrane	88.0	U		PCT_REC	07/10/2008