Chesapeake Bay Virginia (CBV) NERR Water Quality Metadata
January - December 2003
Latest update: August 12, 2020

I. Data Set and Research Descriptors

1. Principal investigators and contact persons

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2. Entry verification

The data were uploaded to a PC from either YSI 6000 or 6600 dataloggers and reviewed using PC6000/6600 software from YSI. Graphs were produced and examined using the PC6000/6600 software then printed out and filed. Next, files were uploaded in comma-delimited format, which were opened in Excel 5.0 software and edited to remove extraneous information (headers, footers, spaces, and pre- and post-deployment data). Monthly templates were used to form complete sets of monthly data sets. Macros supplied by NERRS/CDMO were used to help with editing, formatting and identifying outliers in the database. The CDMO cdmomac3.xls macro allowed the user to automatically format column widths and to adjust value decimal places based on YSI sensor specifications. It also allowed the user to QA/QC each datalogger generated file for missing data points, fill

all cells that do not contain data with periods (.), and find all data points
that fell outside (i.e. outliers) the measurement range of the YSI 6000/6600
instrumentation. Outliers were determined according to the instruments'
manufacturers manual. Suspect data (as in data believed to result from a damaged
or biofouled probe) were evaluated according to Appendix B of the CDMO manual,
edited and documented. Missing data due to YSI maintenance (downtime) was
inserted into the spreadsheet and was denoted by periods (.). Edited and raw
data files were copied and archived in the CBNERRVA file server and uploaded to
the CDMO FTP site. Following final editing, the database was uploaded to the
CBNERRVA server and to CDMO. Periods were later removed for data dissemination
purposes and left blank. Joy Austin was the individual who was responsible
for the entry verification tasks.

3. Research objectives

Goodwin Islands (GI) component:
The Goodwin Islands represent marsh islands surrounded by intertidal flats,
submerged aquatic vegetation (SAV) beds, oyster reefs, and shallow open
estuarine waters. Because minimal human activities occur within upland
portions, the Goodwin Islands are suitable as a reference or control site for
non-point source water quality issues. Furthermore, due to extensive wetlands,
intertidal, and submerged habitats, the Goodwin Islands are used extensively for
SAV, material flux, fisheries science and trophic interaction research activities.

Claybank (CB) component:
The Claybank site represents a shallow (<2m) littoral area approximately 300-400
meters in width and located within the mesohaline portion of the York River
estuary. Prior to 1972, this area supported submersed aquatic vegetation (SAV)
but current conditions are not conducive to SAV survival. This site is used
extensively to study sediment dynamics and environmental stress on SAV.

Taskinas Creek (TC) component:
The Taskinas Creek watershed is representative of an inner coastal plain, rural
watershed within the southern Chesapeake Bay system. This watershed is

dominated by forested and agricultural land uses with an increasing urban land use component. The drainage basin is suited for investigating hydrologic and non-point source water quality issues associated with changing land use patterns.

Sweet Hall Marsh (SH) component:
Sweet Hall Marsh is the most downriver extensive tidal freshwater marsh located in the Pamunkey River, one of two major tributaries of the York River. Research activities are currently addressing the impacts of salinity intrusion due to relative sea level rise. In addition, Sweet Hall Marsh has been used extensively to study general ecology and material flux within tidal freshwater marshes.

4. Research methods

Goodwin Islands (GI) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality monitoring station at Goodwin Islands. This station is located on the southeastern side of the main island in a shallow embayment, approximately 400 meters from shore. A stable and permanent structure, consisting of a 4-inch PVC pipe housed within a galvanized steel tower, was built in October 1997. The lower portion of the PVC pipe was milled to allow for water circulation within the pipe and around the datalogger sensors. The datalogger is suspended so that the sensors are maintained 0.5 m from the bottom substrate. A YSI 6600 unvented datalogger was used to measure specific conductivity, pH, depth, percent dissolved oxygen saturation, temperature, and turbidity at 15-minute intervals throughout the 2003 deployment year (see Section 6 for deployment intervals). Salinity and dissolved oxygen concentration are calculated parameters. At approximately one to two-week intervals, the datalogger was returned to the lab for downloading, cleaning, membrane replacement and recalibration. Maintenance intervals vary from year to year and site-to-site depending on the amount of biofouling and expected battery life. In general, YSI dataloggers were deployed for two-week

intervals from early December to the end of May and one-week intervals from the beginning of June to late November. A second YSI datalogger was deployed following retrieval of the original YSI datalogger in order to maintain a continuous record.
Field verification samples for pH, dissolved oxygen, salinity, and temperature were taken during the deployment/retrieval procedure. PH was measured in the lab with a Orion pH meter model 370. Dissolved oxygen was determined by Winkler titration. Salinity was determined by using a Rosemount analytical induction salinometer. Temperature was field measured with a long-stem glass thermometer.
All YSI procedures are in accordance with the YSI operating manual methods, Sections 3 and 7. Standards for pH were purchased from Fisher. Standards for specific conductivity was purchased from YSI. Turbidity standards were purchased from Advanced Polymer Systems. Data are reviewed and edited according to the YSI Data Review and Editing Protocol in Appendix B of the CDMO manual version 4.

Clay Bank (CB) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality monitoring station at Clay Bank. The station is located within a shallow (<2m) littoral area approximately 300-400 meters wide. A stable structure which consists of a 6-inch PVC pipe attached to a piling, was built in January 2001. The lower portion of the PVC pipe was milled to allow for water circulation within the pipe and around the datalogger sensors. The datalogger is suspended so that sensors are located 0.25 m from the bottom substrate. A YSI 6600 unvented datalogger was used to measure specific conductivity, pH, depth, percent dissolved oxygen saturation, temperature, and turbidity at 15-minute intervals throughout the 2003 deployment year (see Section 6 for instrument deployment intervals). Salinity and dissolved oxygen are calculated parameters. At approximately one to two-week intervals, the datalogger was returned to the lab for downloading, cleaning, membrane replacement and recalibration. Maintenance intervals vary from year to year and site-to-site depending on the amount of

biofouling and expected battery life. In general, YSI dataloggers were deployed for two-week intervals from early November to the end of May and one-week intervals from the beginning of June to late October. A second YSI datalogger was deployed following retrieval of the original YSI datalogger in order to maintain a continuous record. Field verification samples for pH, dissolved oxygen, salinity, and temperature were taken during the deployment/retrieval procedure.
PH was measured in the lab with a Orion pH meter model 370. Dissolved oxygen was determined by Winkler titration. Salinity was determined by using a Rosemount analytical induction salinometer. Temperature was field measured with a long-stem glass thermometer. All YSI procedures are in accordance with the YSI operating manual methods, Sections 3 and 7. Standards for pH were purchased from Fisher. Standards for conductivity and standards for turbidity were purchased from YSI. Data are reviewed and edited according to the YSI Data Review and Editing Protocol in Appendix B of the CDMO manual version 4.

Taskinas Creek (TC) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality monitoring station at Taskinas Creek. The station is located near the mouth of Taskinas Creek where the tidal marsh creek converges with the York River estuary. A simple deployment, consisting of a suspended wire attached to an overhanging tree, was established in September 1995. The datalogger was suspended at a fixed depth approximately 0.5 m above the creek-bed. In September 1997, the deployment was modified so that the datalogger remained secure and stable at all times within a 4-inch PVC housing attached to a piling system. The lower portion of the PVC pipe was milled to allow for water circulation within the pipe and around the datalogger sensors. The datalogger was suspended so that the sensors are maintained 0.5 m above the bottom substrate. A YSI 6600 EDS unvented datalogger was used to measure specific conductivity, pH, depth, percent dissolved oxygen saturation, temperature, and turbidity at 15-minute intervals throughout the 2003 deployment year (see Section 6 for instrument deployment intervals). Salinity and dissolved oxygen are calculated parameters. At approximately one to two-week intervals, the datalogger was returned to the lab for downloading, cleaning, membrane replacement and recalibration. Maintenance intervals vary from year to year and

site-to-site depending on the amount of biofouling and expected battery life. In general, YSI dataloggers were deployed for two-week intervals from early November to the end of May and one-week intervals from the beginning of June to late October. A second YSI datalogger was deployed following retrieval of the original YSI datalogger in order to maintain a continuous record. Field verification samples for pH, dissolved oxygen, salinity, and temperature were taken during the deployment/retrieval procedure. PH was measured in the lab with a Orion pH meter model 370. Dissolved oxygen was determined by Winkler titration. Salinity was determined by using a Rosemount analytical induction salinometer. Temperature was field measured with a long-stem glass thermometer. All YSI procedures are in accordance with the YSI operating manual methods, Sections 3 and 7. Standards for pH were purchased from Fisher. Standards for conductivity were purchased from YSI. Turbidity standards were purchased from Advanced Polymer Systems. Data are reviewed and edited according to the YSI Data Review and Editing Protocol in Appendix B of the CDMO manual.

Sweet Hall Marsh (SH) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality station at Sweet Hall Marsh. This station is located adjacent to a low-use boathouse where a 6-inch PVC pipe is attached to an adjacent pier piling. The datalogger was suspended so that the sensors remained 0.7 m from the bottom substrate. A YSI 6000 unvented datalogger used to measure specific conductivity, pH, depth, percent dissolved oxygen saturation, temperature, and turbidity at 15-minute intervals throughout the 2003 deployment year (see Section 6 for instrument deployment intervals). Salinity and dissolved oxygen are calculated parameters. At approximately one to two-week intervals, the datalogger was returned to the lab for downloading, cleaning, membrane replacement and recalibration. Maintenance intervals vary from year to year and site-to-site depending on the amount of biofouling and expected battery life. In general, YSI dataloggers were deployed for two-week intervals from January to the end of December. A second

YSI datalogger was deployed following retrieval of the original YSI datalogger in order to maintain a continuous record. Field verification samples for pH, dissolved oxygen, salinity, and temperature were taken during the deployment/retrieval procedure. PH was measured in the lab with an Orion pH meter model 370. Dissolved oxygen was determined by Winkler titration. Salinity was determined by using a Rosemount analytical induction salinometer. Temperature was field measured with a long-stem glass thermometer. All YSI procedures are in accordance with the YSI operating manual methods, Sections 3 and 7. Standards for pH were purchased from Fisher. Standards for conductivity were purchased from YSI. Turbidity standards were purchased from Advanced Polymer Systems. Data are reviewed and edited according to the YSI Data Review and Editing Protocol in Appendix B of the CDMO manual version 4.

5. Site location and character

(a) Goodwin Islands (37 deg 13' 02.65"; 76 deg 23' 32.76")

The Goodwin Islands component of CBNERRVA is located on the southern side of the mouth of the York River. The station is located approximately 400 meters from shore, with and average water depth on the order of 1m. Goodwin Islands are a 315 ha (777 acre) archipelago of salt-marsh islands surrounded by inter-tidal flats and extensive beds of submerged aquatic vegetation (121 ha; 300 acres) dominated by eelgrass (Zostera marina) and Widgeon grass (Ruppia maritime). Water circulation patterns around the island are influenced by York River discharge and wind patterns of the Chesapeake Bay. Tides at the Goodwin Islands are semi-diurnal and display an average range of 0.7 m (range: 0.4 - 1.1 m). Water quality conditions described here are from data recorded between October 1997 and December 1998. During this period mean water temperature at the Goodwin Islands sampling station ranged from 7 °C in winter to 27 °C in summer. Minimum and maximum water temperatures recorded were 2.3 °C (January) and 31.6 °C (July). Mean monthly salinity ranged from 9.9 ppt (January) to 27.5 ppt (November). Mean salinity was greatest (23-25 ppt) during the summer and fall

and lowest (13-15 ppt) during the winter and spring. Mean dissolved oxygen readings were typically near saturation during this time period except between July-August. Dissolved oxygen readings ranged from 23.6% (October) to 195.7% saturation (May); hypoxia is rarely observed. The data logger probes are located 0.5 m above the sandy substrate bottom. Potential activities that could impact the site included, light recreational and commercial boating activity.

(b) Claybank (37 deg 20' 51.58"; 76 deg 36' 37.52")

The Claybank station is loaded within a shallow (<2m) littoral area approximately 300-400 meters wide along the mesohaline portion of the York River estuary. The site is approximately 26 km upriver from the mouth of the estuary. The shoreline consists of a narrow fringe of salt marsh with some areas armored with bulkhead or stone. Tidal range is on the order of 0.85 meters. This station is located along the north shoreline of the estuary in an area that historically (prior to 1972) supported submersed aquatic vegetation. The sampling station is influenced by a secondary turbidity maximum that moves back and forth in a region of about 20-40 km from the mouth of the York River estuary. Substrate within the region varies from fine sediments to sand. The site is exposed to strong winds from the northwest and re-suspension of sediment during storm events can be high. In 1998 observed surface water temperatures ranged from 6 °C to 28 °C and salinities from 5 ppt to 20 ppt.

(c) Taskinas Creek (37 deg 24' 53.86"; 76 deg 42' 51.82")

Taskinas Creek Reserve, component of CBNERRVA, encompasses 397 ha (980 acres) and is located within the boundaries of York River State Park near the town of Croaker, Virginia. The small sub-estuary of the York River is located on the southern side of the river, approximately 37 km up river from the mouth of the York River. The Taskinas Creek watershed is representative of an inner coastal plain, rural watershed within the southern Chesapeake Bay system. The watershed is dominated by forested and agricultural land uses with an increasing residential land use component. The non-tidal portion of Taskinas Creek contains

feeder streams that drain oak-hickory forests, maple-gum-ash swamps and freshwater marshes. Freshwater mixed wetlands are found in the upstream reaches of Taskinas Creek. The creek is roughly 2 meters deep and 20 meters wide towards the lower end of the creek where substrate is dominated by fine sediment. Mean tide range is 0.85 m. Mean water temperature from 1997 to 1998 was 5-7 °C during the winter and 26-28 °C in the summer. The minimum and maximum water temperature recorded between 1996-1998 was - 0.7 °C in January of 1996 and 35.1 °C in July 1998. For 1997-1998, mean salinity in Taskinas Creek was on the order of 14-16 ppt in the summer and 3-5 ppt in the winter. Minimum and maximum salinity recorded in 1996 - 1998 was 0.1 ppt in March 1996 and 20.3 ppt in November 1998. Mean dissolved oxygen values in 1996 and 1997 were lowest in the summer and greatest in the winter. Mean dissolved oxygen values below 50% saturation was only observed during parts of July 1996 and June 1997. Hypoxia was rarely observed and when present, lasted less than 2% of the time. Mean dissolved oxygen readings > 100% saturation (super saturation) frequently observed. Potential activities that could impact the site include residential development, selective hardwood logging, and light recreational boating activity. Wildlife populations have been shown to influence microbiological water quality within the watershed.

(d) Sweet Hall Marsh (37 deg 34' 16.94"; 76 deg 53' 02.78")

Sweet Hall Marsh is the most downriver extensive tidal freshwater marsh located in the Pamunkey River, one of two major tributaries of the York River. The marsh is located approximately 77 km upriver from the mouth of the York River estuary. The reserve is 353 ha (871 acres) in area and includes 331 ha (818 acres) of emergent fresh-water marsh, 14 ha (35 acres) of permanently flooded broad-leaved forested wetlands and approximately 4 ha (9 acres) of scrub-shrub. The marsh community is classified as freshwater mixed. Mean tidal range at Sweet Hall Marsh is on the order of 0.9 m. The Pamunkey River, which surrounds Sweet Hall Marsh, can reach depths up to 15 meters. Substrate within the littoral zone and channel is dominated by fine sediment. Based on 2002 data,

mean monthly water temperature ranged from 5-8 °C during the winter and 26-29 °C
in the summer. The minimum and maximum-recorded water temperature was 3.3 °C in
December and 32.6 °C in July. Mean monthly salinity was on the order of 1-4 ppt
in the winter and 6-11 ppt in the summer. Minimum and maximum salinity recorded
in 2002 was 0.0 ppt in January, February, November and December and 15.7 ppt in
October. Potential activities that could impact the site include minor municipal point source discharges above and below river of Sweet Hall Marsh, a
major industrial discharge site (pulp mill) in the town of West Point and significant groundwater withdrawal near the confluence of the Pamunkey and York
Rivers.

6. Data collection period
Sampling at Claybank (CB), Goodwin Islands (GI), Sweet Hall Marsh (SH), and
Taskinas Creek (TC) began January 2003. Sampling was continuous through December
2003. Occasional time skips occurred at all sites due to low batteries, water
leakage into the battery compartment, and for no apparent reason.

Sampling Site	Instrument Model	Begin Date	End Date
Claybank	6600 Unvented	Jan 03	Dec 03
Goodwin	6600 Unvented	Jan 03	Dec 03
Sweet Hall	6000 Unvented	Jan 03	Jun 03
	6600 EDS,Unvented	Jun 03	Dec 03
Taskinas	6600 EDS, Unvented	Jan 03	Dec 03

Claybank (CB)

Deployment Date/Time (MM/DD/YY)	(HH:MM:SS)	Retrieval Date/Time (MM/DD/YY)	(HH:MM:SS)
12/16/02	13:30:00	01/09/03	10:30:00
01/09/03	10:45:00	01/21/03	10:30:00
01/21/03	10:45:00	02/03/03	11:15:00
02/03/03	11:30:00	02/19/03	11:00:00
02/19/03	11:15:00	03/04/03	11:00:00
03/04/03	11:15:00	03/18/03	11:30:00
03/18/03	11:45:00	04/01/03	11:15:00
04/01/03	11:30:00	04/15/03	10:15:00
04/15/03	10:30:00	04/29/03	09:00:00
04/29/03	09:15:00	05/13/03	11:30:00

05/13/03	11:45:00	05/27/03	11:30:00
05/27/03	11:45:00	06/03/03	11:45:00
06/03/03	12:00:00	06/10/03	10:30:00
06/10/03	11:00:00	06/18/03	10:45:00
06/18/03	11:00:00	06/24/03	10:30:00
06/24/03	10:45:00	07/01/03	12:45:00
07/01/03	13:00:00	07/08/03	11:45:00
07/08/03	12:00:00	07/15/03	11:45:00
07/15/03	12:00:00	07/22/03	10:45:00
07/22/03	11:00:00	07/29/03	12:45:00
07/29/03	13:00:00	08/06/03	11:30:00
08/06/03	11:45:00	08/12/03	11:15:00
08/12/03	11:30:00	08/19/03	10:45:00
08/19/03	11:00:00	08/26/03	12:00:00
08/26/03	12:15:00	09/02/03	10:45:00
09/02/03	11:00:00	09/09/03	08:45:00
09/09/03	09:00:00	09/16/03	13:30:00
09/16/03	13:45:00	09/23/03	14:00:00
09/23/03	14:30:00	09/24/03	14:45:00
09/24/03	15:00:00	09/30/03	11:15:00
09/30/03	11:30:00	10/07/03	11:45:00
10/07/03	12:00:00	10/14/03	10:30:00
10/14/03	10:45:00	10/23/03	12:45:00
10/23/03	13:00:00	10/28/03	12:00:00
10/28/03	12:15:00	11/05/03	12:00:00
11/05/03	12:15:00	11/20/03	11:30:00
11/20/03	11:45:00	12/01/03	14:15:00
12/01/03	14:30:00	12/18/03	09:45:00
12/18/03	10:00:00	01/07/04	11:30:00

Goodwin Islands (GI)

Deployment Date/Time		Retrieval Date/Time	
(MM/DD/YY)	(HH:MM:SS)	(MM/DD/YY)	(HH:MM:SS)
12/16/02	12:00:00	01/09/03	10:15:00
01/09/03	10:30:00	01/21/03	09:30:00
01/21/03	09:45:00	02/03/03	10:15:00
02/03/03	10:30:00	02/19/03	10:00:00
02/19/03	10:15:00	03/04/03	10:00:00
03/04/03	10:15:00	03/18/03	10:15:00
03/18/03	10:30:00	04/01/03	10:00:00
04/01/03	10:15:00	04/15/03	08:45:00
04/15/03	09:00:00	04/29/03	13:30:00
04/29/03	13:45:00	05/13/03	09:15:00
05/13/03	09:45:00	05/27/03	10:15:00
05/27/03	10:30:00	06/03/03	09:45:00
06/03/03	10:00:00	06/10/03	09:00:00
06/10/03	09:15:00	06/18/03	08:45:00
06/18/03	09:00:00	06/24/03	08:45:00
06/24/03	09:00:00	07/01/03	10:00:00
07/01/03	10:15:00	07/10/03	13:00:00
07/10/03	13:15:00	07/15/03	09:00:00
07/15/03	09:15:00	07/22/03	08:45:00
07/22/03	09:00:00	07/29/03	09:15:00

07/29/03	09:30:00	08/06/03	09:00:00
08/06/03	09:15:00	08/12/03	08:45:00
08/12/03	09:00:00	08/19/03	09:45:00
08/19/03	10:00:00	08/26/03	09:00:00
08/26/03	09:15:00	09/02/03	08:30:00
09/02/03	08:45:00	09/09/03	11:45:00
09/09/03	12:00:00	09/18/03	11:00:00
09/30/03	09:15:00	10/07/03	09:30:00
10/07/03	09:45:00	10/14/03	08:30:00
10/14/03	08:45:00	10/22/03	08:30:00
10/22/03	08:45:00	10/28/03	09:45:00
10/28/03	10:00:00	11/05/03	11:00:00
11/05/03	11:15:00	11/20/03	09:30:00
11/20/03	09:45:00	12/01/03	13:00:00
12/01/03	13:15:00	12/18/03	11:15:00
12/18/03	11:30:00	01/07/04	09:45:00

Sweet Hall Marsh (SH)

Deployment Date/Time		Retrieval Date/Time	
(MM/DD/YY)	(HH:MM:SS)	(MM/DD/YY)	(HH:MM:SS)
12/18/02	17:30:00	01/06/03	14:30:00
01/06/03	14:45:00	01/21/03	14:00:00
01/21/03	14:15:00	02/05/03	13:30:00
02/05/03	13:45:00	02/20/03	10:45:00
02/20/03	11:00:00	03/07/03	12:00:00
03/07/03	12:15:00	03/17/03	15:45:00
03/17/03	16:00:00	04/03/03	14:45:00
04/03/03	15:00:00	04/17/03	10:30:00
04/17/03	10:45:00	05/01/03	09:45:00
05/01/03	10:00:00	05/15/03	10:30:00
05/15/03	10:45:00	05/29/03	10:00:00
05/29/03	10:15:00	06/11/03	15:45:00
06/11/03	16:00:00	06/25/03	13:30:00
06/25/03	13:45:00	07/09/03	13:15:00
07/09/03	13:30:00	07/23/03	10:30:00
07/23/03	10:45:00	08/05/03	12:30:00
08/05/03	12:45:00	08/20/03	12:15:00
08/20/03	12:30:00	09/04/03	10:00:00
09/04/03	10:15:00	09/16/03	15:30:00
09/16/03	15:45:00	09/25/03	09:45:00
09/25/03	10:00:00	10/08/03	13:00:00
10/08/03	13:15:00	10/23/03	13:15:00
10/23/03	13:30:00	11/04/03	14:00:00
11/04/03	14:15:00	11/19/03	13:00:00
11/19/03	13:15:00	12/02/03	12:00:00
12/02/03	12:15:00	12/17/03	13:30:00
12/17/03	13:45:00	01/07/04	16:30:00

Taskinas Creek (TC)

Deployment Date/Time		Retrieval Date/Time	
(MM/DD/YY)	(HH:MM:SS)	(MM/DD/YY)	(HH:MM:SS)
12/19/02	13:45:00	01/08/03	14:30:00
01/08/03	14:45:00	01/22/03	14:45:00
01/22/03	15:00:00	02/05/03	10:15:00

02/05/03	10:30:00	02/18/03	14:45:00
02/18/03	15:00:00	03/05/03	10:30:00
03/05/03	10:45:00	03/17/03	13:45:00
03/17/03	14:00:00	04/02/03	10:30:00
04/02/03	10:45:00	04/16/03	10:00:00
04/16/03	10:15:00	04/30/03	13:15:00
04/30/03	13:30:00	05/14/03	11:45:00
05/14/03	12:00:00	05/29/03	12:00:00
05/29/03	12:15:00	06/04/03	11:30:00
06/04/03	11:45:00	06/10/03	13:15:00
06/10/03	13:30:00	06/19/03	09:15:00
06/19/03	09:30:00	06/25/03	10:30:00
06/25/03	10:45:00	07/02/03	09:45:00
07/02/03	10:00:00	07/09/03	10:30:00
07/09/03	10:45:00	07/16/03	09:00:00
07/16/03	09:15:00	07/23/03	08:45:00
07/23/03	09:30:00	07/30/03	10:30:00
07/30/03	10:45:00	08/05/03	10:45:00
08/05/03	11:00:00	08/13/03	11:00:00
08/13/03	11:15:00	08/20/03	10:00:00
08/20/03	10:15:00	08/27/03	11:15:00
08/27/03	11:30:00	09/03/03	09:45:00
09/03/03	10:00:00	09/10/03	09:30:00
09/10/03	09:45:00	09/16/03	16:45:00
09/16/03	17:00:00	09/24/03	10:15:00
09/24/03	10:30:00	10/01/03	09:15:00
10/01/03	09:30:00	10/08/03	09:15:00
10/08/03	09:30:00	10/15/03	11:30:00
10/15/03	11:45:00	10/20/03	12:15:00
10/20/03	12:30:00	10/29/03	10:15:00
10/29/03	10:30:00	11/03/03	13:30:00
11/03/03	13:45:00	11/19/00	11:30:00
11/19/03	11:45:00	12/01/03	11:45:00
12/01/03	12:00:00	12/17/03	12:00:00
12/17/03	12:15:00	01/07/04	13:30:00

7. Distribution

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program, NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where the data collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from the NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will

acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed with this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way for the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see section 1. Principal investigators and contact persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under general information link on CDMO homepage) and online at the CDMO homepage http://cdmo.baruch.sc.edu. Data are available in the text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format.

8. Associated researchers and projects

Additional water quality monitoring programs within the York River system include:

a) USEPA Chesapeake Bay Mainstem and Tributary Monitoring Program. Since 1984, biweekly to monthly water quality sampling at a series of sites located along the mid-river channel has been conducted as part of the Chesapeake Bay Program (www.chesapeakebay.net). Station ID's: York River proper (WE4.2, LE4.3, LE4.2, LE4.1, RET4.3), the Pamunkey River (RET4.1, TF4.2) and Mattaponi River (RET4.2 and TF4.4).

b) VIMS Shoal Survey. Since 1984, biweekly to monthly water quality sampling at a series of sites located along the shoal areas of the lower York River estuary has been conducted by the Biological Sciences Department at the Virginia

Institute of Marine Science. Station ID's include: Guinea Marsh, Goodwin Island, VIMS, Yorktown, Mumfort Islands, Catlett Islands and Clay Bank.

c. Alliance for the Chesapeake Bay Volunteer Monitoring Program. Physical and chemical (limited nutrients) data are collected by a volunteer network along the York River system (www. Acb-online.org). Station ID's include: Thorofare Creek, Wormley Creek, Blackwell Landing, Pamunkey Trail, Timberneck Creek, Yorktown Naval Weapons Station, Gloucester Point, West Point and Croaker Landing. Note: Some stations may be inactive.

d. VIMS Juvenile Abundance Monitoring Survey. As part of their Juvenile Abundance Monitoring Surveys, water quality and hydrographic data has been collected since 1968 along a series of sites in the York River estuary (includes the Mattaponi and Pamunkey River systems) by the Fisheries Science Department (www.fisheries.vims.edu/research.html) at the Virginia Institute of Marine Science. Surveys include the VIMS Trawl Survey, the Striped Bass Seine Survey and the Juvenile Shad/River Herring Pushnet Survey.

e. Virginia Department of Health. The Virginia Department of Health, Division of Shellfish Sanitation's (www.vdh.state.va.us/shellfish) Seawater Sampling Program collects microbial and general water quality and hydrographic data along a series of sites in the York River estuary (includes lower portions of the Mattaponi and Pamunkey River systems).

f. USEPA Chesapeake Bay Shallow Water Monitoring Program. Since May 2003, CBNERRVA has maintained additional continuous water monitoring stations within the York River estuary system. Measurements for this program include: temperature, specific conductivity, dissolved oxygen, pH, turbidity, insitu fluorescence, and depth. Stations are located at Gloucester Point and Yorktown (on the York River proper), Muddy Point and Walkerton (Mattaponi River), and White House (Pamunkey River). This additional surface water quality mapping program, which monitors the above stated parameters, occurs on a monthly basis in the York River estuary.

II. Physical Structure Descriptors

9. Sensor specifications, range of measurements, units, resolution, and accuracy

YSI 6000/6600 datalogger

Variable	Range of Measurements	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo,Day,Yr)	1 mo, 1 day, 1 yr	NA
Time	0-24, 0-60, 0-60 (Hr,Min,Sec)	1 hr, 1 min, 1 s	NA
Temp	-5 to 45 (c)	0.01 C	+/- 0.15C
Sp COND	0-100(mS/cm)	0.01mS/cm	+/-0.5% Of reading + 0.001mS/Cm
Salinity	0-70 Parts per thousand (ppt)	0.01 ppt	+/- 1% of Reading or 0.1 ppt, (whichever is greater)
DO	0-200 (% air saturation)	0.1% @air sat	+/-2% @air Saturation
DO	200-500 (% air saturation	0.1% @ air sat	+/- 6% @ Saturation
DO	0-20 (mg/l)	0.01 mg/l	+/- 0.2mg/l
DO	20-50 (mg/l)	0.01 mg/l	+/- 0.6mg/l
Depth (shallow)	0-9.1 (m)	0.001m	+/- 0.018m
PH	2-14 units	0.01 units	+/- 0.2units
Turb	0-1000 NTU	0.1 NTU	+/- 5% of Reading or 2 NTU (whichever is greater)

10. Coded variable indicator and variable code definitions

2 letter sampling site codes: CB = Claybank, GI= Goodwin Islands, SH = Sweet Hall Marsh, TC = Taskinas Creek

File definitions: Site code/file definition/month/year (example: tcwq0103 = Taskinas Creek water quality data from January 2003).

Station codes in data: cbvcbwq = Claybank, cbvgiwq = Goodwind Islands, cbvshwq = Sweet Hall Marsh, cbvtcwq = Taskinas Creek

11. Data anomalies (suspect data)

Frequent data anomalies were recorded in depth levels for several months potentially due to low-pressure weather fronts. This data remained in the database. Standard calibration protocols for the non-vented sensor use the atmospheric pressure at the time of calibration. Therefore, changes in atmospheric pressure between calibrations appears as changes in water depth.

The error is equal to approximately 1.03cm for every 1 millibar change in atmospheric pressure. Specific dates and time ranges of potentially influenced data are listed with each respective month. Starting with January, data were extracted in accordance with Version 3.0 of the CDMO Manual. Significantly elevated single point turbidity values located between background values were considered to be a product of sensor interference. Significant elevated single point turbidity values were 200 NTUs for Goodwin Island, Sweet Hall Landing, and 300 NTUs for Claybank and Taskinas Creek. These data were deleted. Significantly elevated single point turbidity values located between background values were reported as suspect and data was retained. Mean, standard deviation values were based on 2002 site specific data; Goodwin Island: mean=6, STD=19; Claybank: mean=17, STD=19; Taskinas Creek: mean=67, STD=63; Sweet Hall Landing: mean =48, STD 48.

JANUARY

CLAYBANK:

a) For the following dates and times, all data were deleted due to datalogger being out of the water.

01/12/03 22:30:00 - 01/13/03 00:45:00
01/13/03 12:00:00 - 01/13/03 12:30:00
01/13/03 23:45:00 - 01/14/03 00:00:00
01/20/03 03:30:00 - 01/20/03 06:30:00
01/20/03 16:45:00 - 01/20/03 17:15:00
01/21/03 05:15:00 - 01/21/03 06:00:00
01/21/03 18:00:00 - 01/21/03 18:45:00
01/22/03 18:00:00 - 01/22/03 19:45:00
01/23/03 06:30:00 - 01/23/03 08:30:00
01/23/03 17:30:00 - 01/23/03 23:15:00
01/24/03 08:00:00 - 01/24/03 10:00:00
01/24/03 19:45:00 - 01/24/03 22:45:00
01/27/03 23:15:00 - 01/28/03 01:00:00

b) For the following dates and times, turbidity values greater than 1000 were
deleted.

01/11/03 15:00:00
01/11/03 15:15:00
01/11/03 16:15:00

c) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

01/08/03 20:45:00 991 NTU

d) For the following dates and times, turbidity readings are suspect. Data
retained.

01/11/03 17:30:00 267 NTU

e) For the month of January, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

01/12/03 21:15:00 - 01/12/03 23:45:00
01/13/03 11:00:00 - 01/13/03 11:15:00
01/13/03 22:45:00
01/20/03 02:15:00 - 01/20/03 06:00:00
01/22/03 17:15:00 - 01/22/03 18:45:00
01/23/03 16:45:00 - 01/23/03 22:00:00
01/24/03 07:30:00 - 01/24/03 08:45:00
01/24/03 18:45:00 - 01/24/03 22:00:00
01/27/03 22:15:00 - 01/28/03 00:00:00

b) For the month of January, turbidity values occasionally reported negative
and/or zero due to sensor precision. Data retained.

c) For the month of January, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

d) For the following dates and times, depth data was deleted due to station
maintenance. Data deleted.

01/16/03 12:00:00 - 01/16/03 12:15:00

Sweet Hall MARSH:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

01/12/03 14:30:00 - 01/12/03 15:00:00
01/13/03 00:30:00 - 01/13/03 03:45:00
01/13/03 13:30:00 - 01/13/03 16:45:00
01/14/03 01:30:00 - 01/14/03 03:30:00
01/15/03 02:45:00 - 01/15/03 04:15:00
01/20/03 06:45:00 - 01/20/03 09:15:00
01/20/03 19:15:00 - 01/20/03 20:15:00
01/21/03 20:30:00 - 01/21/03 22:15:00
01/22/03 21:00:00 - 01/22/03 23:15:00
01/23/03 08:45:00 - 01/23/03 12:30:00
01/23/03 19:15:00 - 01/24/03 03:30:00
01/24/03 08:45:00 - 01/24/03 13:45:00
01/24/03 21:45:00 - 01/25/03 03:00:00
01/27/03 13:15:00 - 01/27/03 15:00:00

b) For the month of January, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity readings are suspect. Data
retained.

01/10/03 05:15:00 118 NTU

d) For the following dates and times, all data are missing due to an internal
error within the sonde.

01/27/03 15:15:00 - 01/31/03 23:45:00

e) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

01/12/03 01:15:00 - 01/12/03 01:45:00
01/12/03 14:00:00 - 01/12/03 14:15:00
01/12/03 15:15:00 - 01/12/03 15:30:00
01/19/03 06:45:00 - 01/19/03 07:30:00
01/21/03 08:15:00 - 01/21/03 09:00:00
01/27/03 01:30:00 - 01/27/03 02:15:00

f) Significant negative depth values were observed at Sweet Hall Marsh during
the months of January; data reflects tidal patterns and were retained.

Taskinas Creek:

a) For the following dates and times, turbidity values greater than 1000 were
deleted.

01/11/03 01:30:00
01/11/03 03:30:00
01/12/03 04:30:40
01/12/03 15:30:00
01/14/03 02:30:00
01/16/03 18:45:00
01/18/03 01:00:00
01/21/03 00:00:00

FEBRUARY

CLAYBANK:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

02/04/03 05:15:00 - 02/04/03 06:15:00
02/04/03 16:45:00 - 02/04/03 18:45:00
02/05/03 17:45:00 - 02/05/03 19:00:00
02/06/03 06:00:00 - 02/06/03 08:30:00
02/06/03 18:00:00 - 02/06/03 20:15:00
02/10/03 21:30:00 - 02/10/03 23:30:00
02/12/03 11:30:00 - 02/12/03 13:30:00
02/13/03 00:30:00 - 02/13/03 01:30:00
02/13/03 11:45:00 - 02/13/03 16:00:00
02/14/03 00:00:00 - 02/14/03 03:00:00
02/14/03 12:45:00 - 02/14/03 15:45:00
02/15/03 00:30:00 - 02/15/03 03:15:00
02/15/03 14:00:00 - 02/15/03 14:30:00

b) For the month of February, depth values occasionally reported negative and/or zero due to sensor precision. Data retained.

c) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

02/24/03 21:30:00 - 02/24/03 22:45:00
02/25/03 23:45:00

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted due to datalogger

being out of the water.

02/04/03 15:45:00 - 02/04/03 17:45:00
02/05/03 17:30:00 - 02/05/03 18:00:00
02/06/03 05:00:00 - 02/06/03 07:30:00
02/06/03 16:45:00 - 02/06/03 19:15:00
02/10/03 20:15:00 - 02/10/03 22:45:00
02/12/03 10:00:00 - 02/12/03 12:00:00
02/12/03 23:15:00 - 02/13/03 00:30:00
02/13/03 10:45:00 - 02/13/03 15:00:00
02/13/03 22:30:00 - 02/14/03 02:15:00
02/14/03 12:00:00 - 02/14/03 14:45:00
02/14/03 23:15:00 - 02/15/03 02:45:00
02/24/03 20:30:00 – 02/24/03 22:15:00

b) For the month of February, depth values occasionally reported negative and/or zero due to sensor precision. Data retained.

c) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

02/05/03 17:15:00
02/13/03 10:30:00

d) For the following dates and times, all data were missing due to an internal
error within the sonde.

02/23/03 16:15:00

Sweet Hall MARSH:

a) For the following dates and times, all data was deleted due to datalogger
being out of the water.

02/05/03 20:45:00 - 02/05/03 22:30:00
02/06/03 08:15:00 - 02/06/03 11:15:00
02/06/03 20:30:00 - 02/06/03 23:15:00
02/10/03 12:00:00 - 02/10/03 13:45:00
02/10/03 23:00:00 - 02/11/03 03:00:00
02/12/03 12:45:00 - 02/12/03 17:15:00
02/13/03 02:30:00 - 02/13/03 04:30:00
02/13/03 13:30:00 - 02/13/03 19:15:00
02/14/03 02:00:00 - 02/14/03 06:00:00
02/14/03 15:30:00 - 02/14/03 18:30:00
02/15/03 03:15:00 - 02/15/03 06:00:00
02/24/03 23:15:00 - 02/25/03 02:30:00
02/26/03 02:30:00

b) For the month of February, depth values occasionally reported negative

and/or zero due to sensor precision. Data retained.

c) For the following dates and times, all data were missing due to an internal
error within the sonde.

02/01/03 00:00:00 - 02/05/03 13:45:00

d) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

02/05/03 20:30:00
02/05/03 22:45:00
02/09/03 11:45:00 - 02/09/03 12:45:00
02/09/03 23:00:00 - 02/10/03 01:00:00
02/12/03 01:45:00 - 02/12/03 02:45:00
02/15/03 16:45:00 - 02/15/03 17:30:00
02/26/03 01:45:00 - 02/26/03 02:15:00
02/26/03 02:45:00 - 02/26/03 03:15:00

e) For the following dates and times, elevated turbidity were suspect during
and immediately following station maintenance and datalogger exchange. Data
retained.

02/05/03 14:00:00 - 02/05/03 15:15:00
02/20/03 11:00:00 - 02/20/03 13:45:00

f) Significant negative depth values were observed at Sweet Hall Marsh during
the months of February; data reflects tidal patterns and were retained.

TASKINAS CREEK:

a) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

02/13/03 03:00:00 354 NTU
02/14/03 19:45:00 443 NTU
02/15/03 07:15:00 477 NTU

b) For the following dates and times, turbidity readings are suspect. Data
retained.

02/10/03 08:45:00 176 NTU

MARCH

CLAYBANK:

a) For the month of March, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, turbidity values greater than 1000 were
deleted.

03/29/03 15:15:00

c) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

03/18/03 15:00:00 423 NTU

d) For the following dates and times, turbidity readings are suspect. Data
retained.

03/12/03 20:00:00 166 NTU

e) For the following dates and times, depth values were deleted due to exchange
of datalogger.

03/04/03 11:15:00

GOODWIN ISLANDS:

a) For the month of March, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, all data are missing due to an internal
error within the sonde.

03/02/03 05:45:00
03/02/03 09:15:00
03/03/03 08:45:00
03/19/03 19:15:00 - 03/19/03 19:45:00

c) For the following dates and times, DO % sat and DO mg/L data were deleted due
to probe malfunction.

03/17/03 12:15:00

Sweet Hall MARSH:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

03/31/03 05:15:00 - 03/31/03 07:00:00
03/31/03 17:45:00 - 03/31/03 19:30:00

b) For the month of March, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity values greater than 1000 were
deleted.

03/03/03 23:45:00
03/23/03 23:15:00

d) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

03/31/03 17:30:00

e) Significant negative depth values were observed at Sweet Hall Marsh during
the months of March; data reflects tidal patterns and were retained.

TASKINAS CREEK:

a) For the following dates and times, turbidity readings are suspect. Data
retained.

03/16/03 22:30:00 133 NTU
03/17/03 10:00:00 110 NTU
03/17/03 11:30:00 95 NTU

b) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

03/09/03 16:00:00 732 NTU

APRIL

CLAYBANK:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

04/01/03 03:15:00 - 04/01/03 04:00:00
04/01/03 04:30:00
04/01/03 15:00:00
04/01/03 15:30:00 - 04/01/03 17:15:00
04/02/03 03:30:00 - 04/02/03 05:00:00
04/15/03 14:30:00 - 04/15/03 14:45:00
04/16/03 02:15:00 - 04/16/03 04:30:00
04/16/03 14:15:00 - 04/16/03 16:45:00
04/17/03 02:45:00 - 04/17/03 05:15:00

b) For the month of April, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

04/01/03 14:15:00 - 04/01/03 16:30:00
04/02/03 03:00:00 - 04/02/03 03:45:00
04/16/03 01:30:00 - 04/16/03 03:30:00
04/16/03 13:15:00 - 04/16/03 15:45:00
04/17/03 02:15:00 - 04/17/03 04:15:00

b) For the month of April, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times, all data are missing due to an internal
error within the sonde.

04/15/03 18:00:00
04/17/03 08:15:00
04/18/03 07:00:00

Sweet Hall MARSH:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

04/01/03 06:00:00 - 04/01/03 07:30:00
04/01/03 18:00:00 - 04/01/03 20:15:00
04/02/03 06:30:00 - 04/02/03 08:15:00
04/16/03 17:30:00 - 04/16/03 19:15:00
04/17/03 06:15:00 - 04/17/03 07:45:00

b) For the month of April, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

04/01/03 05:45:00
04/01/03 07:45:00
04/02/03 06:15:00
04/17/03 08:00:00

TASKINAS CREEK:

a) For the following dates and times, turbidity readings are suspect. Data
retained.

04/04/03 09:45:00 220 NTU
04/29/03 21:15:00 202 NTU

MAY

CLAYBANK:

a) For the month of May, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

05/03/03 14:30:00 598 NTU
05/07/03 13:45:00 790 NTU
05/08/03 07:30:00 793 NTU
05/20/03 05:30:00 306 NTU
05/21/03 14:00:00 381 NTU
05/23/03 10:15:00 393 NTU
05/25/03 20:45:00 323 NTU

c) For the following dates and times, turbidity values greater than 1000 were
deleted.

05/24/03 17:45:00
05/27/03 13:30:00

d) For the following dates and times, turbidity readings are suspect. Data
retained.

05/10/03 11:45:00 159 NTU
05/15/03 13:30:00 292 NTU

05/21/03 10:30:00 274 NTU
05/24/03 18:00:00 102 NTU
05/24/03 18:45:00 248 NTU
05/29/03 18:45:00 133 NTU

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted to due exchange of
datalogger.

05/13/03 09:30:00

b) For the following dates and times data are missing due to an internal error
within the sonde.

05/17/03 22:00:00

c) For the following dates and times, turbidity values greater than 1000 were
deleted.

05/19/03 16:15:00

d) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

05/16/03 09:15:00 229 NTU
05/27/03 05:15:00 336 NTU
05/31/03 18:15:00 512 NTU

e) For the following dates and times, turbidity readings are suspect. Data
retained.

05/27/03 07:45:00 091 NTU

Sweet Hall MARSH:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

05/13/03 15:00:00 - 05/13/03 16:30:00

b) For the month of May, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times, DO % sat and DO mg/l data deleted due to
datalogger exchange.

05/29/03 10:15:00

d) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

05/13/03 14:45:00
05/13/03 16:45:00

e) For the following dates and times, elevated turbidity readings were deleted
due to station maintenance at time of deployment.

05/15/03 10:45:00 103 NTU

f) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

05/29/03 12:30:00 266 NTU

TASKINAS CREEK:

a) For the following dates and times, turbidity readings are suspect. Data
retained.

05/01/03 14:15:00 783 NTU

b) For the following dates and times, elevated single point turbidity values due
to sensor interference. Data deleted.

05/07/03 17:15:00 505 NTU
05/08/03 09:15:00 655 NTU

JUNE

CLAYBANK:

a) For the following dates and times, all data were deleted due to exchange of
datalogger.

06/10/03 10:45:00

b) For the month of June, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity values greater than 1000 were
deleted.

06/02/03 04:30:00

d) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

06/22/03 21:15:00 143 NTU
06/22/03 01:45:00 782 NTU

e) For the following dates and times, depth data was deleted due to exchange of
datalogger.

06/18/03 11:00:00

GOODWIN ISLANDS:

a) For the month of June, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, DO % sat and DO mg/L data were deleted due
to membrane puncture.

06/06/03 07:15:00 - 06/10/03 09:00:00

c) For the following dates and times, pH values were deleted due to broken
probe.

06/07/03 21:15:00 - 06/10/03 09:00:00

d) For the following dates and times, turbidity values greater than 1000 were
deleted.

06/06/03 07:00:00
06/06/03 07:30:00
06/07/03 21:15:00
06/08/03 03:30:00
06/08/03 21:00:00
06/13/03 22:15:00
06/27/03 21:45:00

e) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

06/03/03 17:15:00 842 NTU

06/06/03 07:45:00 207 NTU
06/06/03 11:00:00 754 NTU
06/07/03 17:45:00 209 NTU
06/08/03 19:15:00 296 NTU
06/09/03 18:30:00 754 NTU
06/14/03 10:00:00 310 NTU
06/27/03 23:00:00 401 NTU

f) For the following dates and times, turbidity readings are suspect. Data
retained.

06/06/03 06:15:00 109 NTU
06/06/03 10:30:00 107 NTU
06/06/03 20:00:00 130 NTU
06/23/03 17:15:00 063 NTU
06/27/03 22:00:00 067 NTU

Sweet Hall MARSH:

a) For the month of June, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

d) For the following dates and times, elevated single point turbidity values
deleted due to sensor interface.
06/02/03 22:45:00 258 NTU
06/04/03 15:45:00 174 NTU

e) For the following dates and times, turbidity readings are suspect sue to
exchange of datalogger. Data retained.
06/11/03 16:00:00 50 NTU
06/25/03 13:45:00 46 NTU

TASKINAS CREEK:

a) Between the time interval 06/10/03 13:30:00 - 06/30/03 23:45:00, a different
datalogger cable was used at the Taskinas Creek site. This resulted in a depth
difference of 58 cm shallower than the previous and subsequent deployments.
Because other water quality data are associated with the specific sampling
depth, depth data were not adjusted.

b) For the month of June, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity values greater than 1000 were

deleted.

06/17/03 16:00:00
06/18/03 10:15:00
06/19/03 08:00:00
06/19/03 08:30:00

d) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

06/03/03 05:30:00 742 NTU
06/17/03 22:30:00 619 NTU

e) For the following dates and times, turbidity readings are suspect. Data
retained.

06/07/03 16:00:00 545 NTU
06/18/03 08:30:00 123 NTU
06/18/03 22:15:00 350 NTU

f) For the following dates and times, pH values high due to sensor malfunction.
Data deleted.

06/15/03 03:00:00 - 06/19/03 09:15:00

g) For the following dates and times, Specific conductance, salinity, and depth
are suspect due to probes being out of the water.

06/14/03 04:45:00

h) For the following dates and times, turbidity readings are suspect due to
exchange of datalogger. Data retained.

06/19/03 09:30:00 114 NTU

i) For the following dates and times, depth data were deleted due to exchange of
datalogger.

06/10/03 13:30:00
06/19/03 09:30:00

JULY

CLAYBANK:

a) For the month of July, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

07/07/03 05:00:00 622 NTU
07/28/03 09:45:00 681 NTU
07/29/03 09:45:00 541 NTU

c) For the following dates and times, depth data were deleted due to exchange of
datalogger.

07/15/03 12:00:00 - 07/15/03 12:15:00

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

07/01/03 09:45:00
07/22/03 09:00:00

b) For the following dates and times, all data were missing due to an internal
error within the sonde.

07/28/03 03:00:00

c) For the month of July, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

d) For the following dates and times, turbidity values greater than 1000 were
deleted.

07/08/03 21:30:00
07/18/03 23:15:00

e) For the following dates and times, turbidity readings are suspect. Data
retained.

07/15/03 00:30:00 115 NTU
07/26/03 02:15:00 69 NTU

f) For the following dates and times, depth values are suspect. Data retained.

07/18/03 23:00:00 - 07/18/03 23:15:00

g) A DO membrane puncture was observed during post calibration. No obvious
signature was observed in raw data. Data retained.

07/01/03 00:00:00 - 07/10/03 13:00:00

Sweet Hall Marsh:

a) For the month of July, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, turbidity readings were suspect due to
exchange of datalogger. Data retained.

07/09/03 13:30:00
07/23/03 10:45:00 - 07/23/03 11:00:00

c) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

07/21/03 10:30:00 287 NTU

TASKINAS CREEK:

a) Between the time interval 07/01/03 00:00:00 - 07/31/03 23:45:00, a different
datalogger cable was used at the Taskinas Creek site. This resulted in a depth
difference of 58 cm shallower than the previous and subsequent deployments.
Because other water quality data are associated with the specific sampling
depth, depth data were not adjusted.

b) For the following dates and times, all data was deleted due to datalogger
being out
of the water.

07/28/03 03:45:00 - 07/28/03 05:15:00

c) For the month of July, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

d) For the following dates and times, turbidity values greater than 1000 were
deleted.

07/17/03 07:00:00
07/21/03 19:00:00

e) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

07/25/03 21:30:00 957 NTU

f) For the following dates and times, turbidity readings are suspect. Data
retained.

07/02/03 06:30:00 113 NTU
07/12/03 08:15:00 159 NTU
07/25/03 06:30:00 275 NTU
07/26/03 14:00:00 161 NTU

g) For the following dates and times, all data were deleted due to exchange of
datalogger.

07/23/03 09:00:00 - 07/23/03 09:15:00

AUGUST

CLAYBANK:

a) For the month of August, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, turbidity values greater than 1000 were
deleted.

08/02/03 15:30:00
08/03/03 12:45:00
08/03/03 13:00:00
08/03/03 19:45:00
08/27/03 02:30:00
08/27/03 08:00:00
08/28/03 08:30:00
08/28/03 16:45:00
08/28/03 17:45:00
08/28/03 18:00:00
08/28/03 19:00:00
08/28/03 19:45:00
08/29/03 05:15:00

c) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

08/01/03 07:00:00 824 NTU
08/01/03 20:30:00 667 NTU

08/26/03 14:00:00 452 NTU
08/27/03 13:15:00 352 NTU
08/27/03 20:15:00 428 NTU
08/28/03 00:45:00 939 NTU
08/28/03 22:30:00 594 NTU
08/28/03 23:45:00 614 NTU

d) For the following dates and times, turbidity readings are suspect. Data
retained.

08/11/03 00:30:00 143 NTU
08/11/03 23:45:00 095 NTU
08/27/03 07:45:00 236 NTU
08/28/03 02:15:00 231 NTU
08/30/03 02:00:00 797 NTU
08/31/03 15:15:00 836 NTU
08/31/03 14:30:00 238 NTU
08/31/03 20:30:00 663 NTU

e) For the following dates and times, all data were missing due to internal
error within the sonde.

08/30/03 18:45:00

f) For the following dates and times, depth values were deleted due to exchange
of datalogger.

08/06/03 11:45:00
08/19/03 11:00:00

GOODWIN ISLANDS:

a) For the month of August, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, turbidity values greater than 1000 were
deleted.

08/01/03 23:45:00
08/17/03 16:00:00
08/28/03 05:30:00
08/30/03 06:00:00

c) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

08/11/03 12:30:00 648 NTU

d) For the following dates and times, turbidity readings are suspect. Data
retained.

08/15/03 18:15:00 52 NTU
08/18/03 00:30:00 89 NTU

Sweet Hall MARSH:

a) For the month of August, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, elevated turbidity values are suspect
during and immediately following station maintenance and datalogger exchange.
Data retained.

08/05/03 12:45:00 - 08/05/03 13:45:00
08/20/03 12:30:00 - 08/20/03 12:45:00

c) For the following dates and times, turbidity readings are suspect. Data
retained.

08/13/03 18:00:00 103 NTU

TASKINAS CREEK:

a) Between the time interval 08/01/03 00:00:00 - 08/20/03 10:00:00, a different
datalogger cable was used at the Taskinas Creek site. This resulted in a depth
difference of 58 cm shallower than the previous and subsequent deployments.
Because other water quality data are associated with the specific sampling
depth, depth data were not adjusted.

b) For the month of August, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity values greater than 1000 were
deleted due to wiper malfunction.

08/06/03 15:45:00
08/17/03 06:00:00
08/22/03 22:00:00
08/31/03 18:00:00

d) For the following dates and times, elevated single point turbidity values
deleted to sensor interference. Data deleted.

08/04/03 15:15:00 461 NTU
08/05/03 04:45:00 564 NTU
08/25/03 23:45:00 578 NTU
08/26/03 01:45:00 652 NTU
08/26/03 08:00:00 388 NTU

e) For the following dates and times, turbidity readings are suspect. Data
retained.

08/07/03 16:45:00 367 NTU
08/10/03 05:45:00 520 NTU
08/18/03 01:15:00 223 NTU
08/24/03 17:00:00 643 NTU
08/24/03 17:15:00 461 NTU

f) For the following dates and times, DO% sat and DO mg/L data are suspect.
Data retained.

08/18/03 09:45:00

g) For the following dates and times, turbidity brush wiper fell off during the
deployment, but no heavy fouling occurred. All data retained.

08/05/03 11:00:00 - 08/13/02 11:00:00

SEPTEMBER

CLAYBANK:

a) For the following dates and times, all data were deleted due to exchange of
datalogger.

09/23/03 14:15:00

b) For the following dates and times, all data are missing due to internal error
within the sonde.

09/01/03 14:15:00

c) For the following dates and times, turbidity values greater than 1000 were
deleted.

09/02/03 07:00:00

d) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

09/01/03 00:45:00 629 NTU
09/01/03 03:45:00 884 NTU
09/01/03 17:00:00 382 NTU
09/01/03 17:30:00 502 NTU
09/01/03 18:45:00 427 NTU
09/01/03 19:30:00 858 NTU

e) For the following dates and times, turbidity readings are suspect. Data
retained.

09/01/03 02:00:00 680 NTU
09/01/03 07:45:00 835 NTU
09/02/03 03:30:00 826 NTU
09/02/03 06:30:00 879 NTU

f) For the following dates and times, depth data were deleted due to exchange of
datalogger.

09/16/03 13:45:00 - 09/16/03 14:00:00
09/24/03 14:45:00

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted due to equipment
damage during Hurricane Isabel.

09/18/03 11:15:00 - 09/30/03 09:00:00

Sweet Hall MARSH:

a) For the following dates and times, elevated turbidity values are suspect
during and immediately following station maintenance and datalogger exchange.
Data retained.

09/16/03 15:45:00 - 09/16/03 16:15:00
09/25/03 10:00:00

b) For the month of September, depth values occasionally reported negative
and/or zero due to sensor precision. Data retained.

TASKINAS CREEK:

a) For the following dates and times, turbidity values greater than 1000 were
deleted. Sampling intervals were impacted due to Hurricane Isabel. Recorded
values were as follows;

09/18/03 14:30:00 1029 NTU
09/18/03 14:45:00 1142 NTU
09/18/03 15:00:00 1071 NTU
09/18/03 15:15:00 1272 NTU
09/18/03 15:30:00 1306 NTU
09/18/03 15:45:00 1264 NTU
09/18/03 16:00:00 1228 NTU
09/18/03 16:15:00 1736 NTU
09/18/03 16:30:00 1834 NTU
09/18/03 17:00:00 2104 NTU
09/18/03 17:15:00 1606 NTU
09/18/03 17:30:00 1440 NTU

b) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

09/04/03 14:00:00 557 NTU
09/04/03 18:30:00 967 NTU
09/06/03 19:00:00 393 NTU
09/07/03 06:00:00 436 NTU

c) For the following dates and times, turbidity readings are suspect. Data
retained.

09/01/03 11:00:00 254 NTU

OCTOBER

CLAYBANK:

a) For the month of October, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, depth data were deleted due to exchange of
datalogger.

10/07/03 12:00:00

GOODWIN ISLANDS:

a) For the month of October, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, turbidity readings are suspect. Data
retained.

10/24/03 09:45:00 46 NTU
10/29/03 11:15:00 88 NTU

c) For the following dates and times, turbidity data was subtracted by 10 NTU to
correct for calibration error.

10/28/03 10:00:00 - 10/31/03 23:45:00

Sweet Hall MARSH:

a) For the month of October, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

b) For the following dates and times, turbidity readings are suspect. Data
retained.

10/11/03 11:00:00 138 NTU

TASKINAS CREEK:

a) For the following dates and times, turbidity values are suspect due to
exchange of datalogger.

10/01/03 09:30:00

NOVEMBER

CLAYBANK:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

11/13/03 19:45:00 - 11/13/03 20:00:00
11/14/03 06:00:00 - 11/14/03 09:45:00
11/14/03 16:45:00 - 11/15/03 00:15:00
11/15/03 04:30:00 - 11/15/03 09:45:00
11/15/03 18:45:00 - 11/15/03 22:30:00
11/29/03 06:30:00 - 11/29/03 10:15:00
11/29/03 19:00:00 - 11/30/03 00:15:00
11/30/03 07:00:00 - 11/30/03 12:45:00
11/30/03 19:45:00 - 11/30/03 23:45:00

b) For the month of November, turbidity values occasionally reported zeros due
to sensor precision. Data retained.

c) For the month of November, depth values occasionally reported negative and/or
zero due to sensor precision. Data retained.

d) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

11/14/03 16:30:00
11/15/03 00:30:00

e) For the following dates and times, depth data were deleted due to exchange of
datalogger.

11/05/03 12:15:00

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

11/11/03 10:15:00
11/14/03 05:00:00 - 11/14/03 08:15:00
11/14/03 15:30:00 - 11/14/03 23:15:00
11/15/03 02:45:00 - 11/15/03 08:45:00
11/15/03 18:15:00 - 11/15/03 21:00:00
11/29/03 07:45:00
11/29/03 20:30:00 - 11/29/03 21:45:00
11/30/03 06:30:00 - 11/30/03 11:00:00
11/30/03 19:30:00 - 11/30/03 23:30:00

b) For the month of November, depth values occasionally reported negative and/or zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity data was subtracted by 10 NTU to
correct for calibration error.

11/01/03 00:00:00 - 11/05/03 11:00:00

Sweet Hall MARSH:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

11/13/03 19:30:00 - 11/14/03 00:15:00
11/14/03 09:00:00 - 11/14/03 12:00:00
11/14/03 19:45:00 - 11/15/03 02:15:00
11/15/03 08:15:00 - 11/15/03 12:00:00

11/15/03 22:15:00 - 11/16/03 00:45:00
11/29/03 10:15:00 - 11/29/03 12:45:00
11/29/03 22:45:00 - 11/20/03 02:00:00
11/30/03 10:30:00 - 11/30/03 14:30:00
11/30/03 23:30:00 - 11/30/03 23:45:00

b) For the month of November, depth values occasionally reported negative and/or zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity values greater than 1000 were
deleted.

11/06/03 10:00:00

d) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

11/13/03 19:15:00
11/14/03 00:30:00
11/14/03 08:45:00
11/15/03 22:00:00
11/16/03 01:00:00
11/29/03 10:00:00
11/29/03 22:30:00
11/30/03 02:15:00

TASKINAS CREEK:

a) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

11/13/03 17:45:00 - 11/13/03 23:45:00
11/14/03 07:30:00 - 11/14/03 10:45:00
11/14/03 22:15:00 - 11/15/03 01:15:00
11/15/03 06:45:00 - 11/15/03 10:00:00
11/15/03 21:45:00 - 11/15/03 23:00:00

b) For the following dates and times, depth values are suspect due to exchange
of datalogger. Data retained.

11/03/03 13:45:00
11/19/03 11:45:00

c) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

11/19/03 10:45:00 335 NTU
11/29/03 07:15:00 388 NTU

DECEMBER

Claybank:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

12/01/03 00:00:00 - 12/01/03 01:15:00
12/01/03 07:45:00 - 12/01/03 13:00:00
12/22/03 01:30:00 - 12/22/03 03:15:00
12/22/03 14:15:00 - 12/22/03 16:30:00
12/23/03 01:30:00 - 12/23/03 04:45:00
12/23/03 14:45:00 - 12/23/03 17:15:00
12/27/03 05:45:00 - 12/27/03 07:30:00

b) For the month of December, depth values occasionally reported negative and/or zero due to sensor precision. Data retained.

c) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

12/22/03 01:15:00
12/22/03 03:30:00

GOODWIN ISLANDS:

a) For the following dates and times, all data were deleted due to datalogger
being out of the water.

12/02/03 10:30:00
12/22/03 18:15:00 - 12/22/03 18:30:00

b) For the month of December, depth values occasionally reported negative and/or zero due to sensor precision. Data retained.

c) For the following dates and times, turbidity values greater than 1000 were
deleted.

12/09/03 01:00:00

Sweet Hall MARSH:

a) For the following dates and times, all data were deleted due to datalogger

being out of the water.

12/01/03 00:00:00 - 12/01/03 03:00:00
12/01/03 11:45:00 - 12/01/03 15:00:00
12/02/03 13:00:00 - 12/02/03 15:30:00
12/23/03 00:30:00 - 12/23/03 04:00:00
12/23/03 05:00:00 - 12/23/03 07:00:00
12/23/03 18:45:00 - 12/23/03 19:30:00
12/27/03 09:15:00 - 12/27/03 10:00:00

b) For the month of December, depth values occasionally reported negative and/or zero due to sensor precision. Data retained.

c) For the following dates and times depth, specific conductance, salinity, and
DO concentration are suspect due to potential depth and specific conductivity
sensors being out of water. Data retained.

12/01/03 11:30:00
12/27/03 09:00:00

d) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

12/14/03 09:45:00 230 NTU
12/14/03 15:45:00 247 NTU
12/24/03 11:45:00 453 NTU

e) For the following dates and times, turbidity readings are suspect. Data
retained.

12/12/03 10:00:00 165 NTU
12/23/03 18:15:00 169 NTU

f) For the following dates and times, depth data were deleted due to exchange of
datalogger.

12/02/03 12:15:00 - 12/02/03 12:45:00

TASKINAS CREEK:

a) For the following dates and times, all data are missing due to an internal
error within the sonde.

12/17/03 12:15:00 - 12/31/03 23:45:00

b) For the following dates and times, elevated single point turbidity values
deleted due to sensor interference. Data deleted.

12/11/03 23:00:00 360 NTU

c) For the following dates and times, turbidity readings are suspect. Data
retained.

12/01/03 11:15:00 118 NTU
12/12/03 12:45:00 171 NTU

12. Missing data

Missing data are denoted by a period in the data set. Periods were later removed
for data dissemination purposes and left blank. Data are missing due to equipment failure where no probes were deployed, maintenance/calibration of
equipment, elimination of obvious outliers or elimination of data due to calibration problems (both pre and post). For more details on deleted data, see
the Data Anomalies Section. To find out more details about missing data, contact the Research Coordinator at the site submitting the data.

13. A. Post-deployment Information
End of deployment Post-calibration Readings in Standard Solutions:
na = no data available for that particular standard

Claybank:

Date (post cal)	Cond (ms) (Std:10/50)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)
01/09/03	9.956	83.9	7.08	2.9	-0.118
01/21/03	10.280	100.2	7.09	0.1	0.195
02/03/03	10.003	95.0	7.07	-0.7	-0.058
02/19/03	9.778	96.5	7.01	0.3	0.071
03/04/03	10.170	97.9	7.02	0.8	-0.073
03/18/03	9.992	62.8	7.03	-0.4	-0.170
04/01/03	10.110	101.8	7.06	1.3	0.075
04/15/03	9.891	57.7	7.12	4.2	-0.048
04/29/03	10.230	62.7	6.99	3.9	-0.144
05/13/03	9.676	70.3	7.08	7.3	-0.043
05/27/03	10.100	98.2	7.10	-0.2	0.056
06/04/03	10.010	99.2	7.12	0.0	-0.070
06/11/03	9.979	101.7	7.00	-1.3	-0.025
06/19/03	9.970	101.5	7.00	0.0	-0.095
06/25/03	9.919	100.3	7.14	0.7	0.031
07/02/03	10.110	99.8	6.96	0.0	-0.006
07/09/03	10.400	88.7	6.97	-0.5	-0.051
07/16/03	49.360	93.5	7.07	1.7	-0.011
07/23/03	48.820	87.4	7.03	0.2	-0.080
07/30/03	49.620	99.9	7.05	0.6	0.084
08/07/03	50.320	95.8	7.05	0.1	-0.028
08/13/03	49.870	98.7	7.13	0.7	0.134

08/20/03	50.200	87.5	7.01	0.4	0.046
08/27/03	49.630	99.7	7.13	2.6	-0.059
09/03/03	49.170	91.1	7.11	1.5	0.021
09/10/03	49.520	90.7	7.05	0.9	0.030
09/16/03	48.970	90.0	7.06	-0.2	0.019
09/24/03	49.660	76.3	7.10	0.0	0.013
10/01/03	50.250	94.2	7.01	0.5	0.017
10/08/03	49.930	98.4	7.08	-0.3	-0.024
10/15/03	49.630	100.6	7.09	0.6	-0.128
10/24/03	10.040	100.0	7.26	0.3	0.100
10/29/03	10.070	96.7	7.08	-0.2	-0.022
11/06/03	10.060	99.5	7.04	0.0	0.014
11/21/03	10.080	99.7	7.13	-1.9	-0.025
12/02/03	10.120	101.2	7.05	0.0	0.155
12/19/03	10.050	75.3	7.10	-0.6	-0.046

Goodwin Island:

Date (post cal)	Cond (ms) (Std:10/50)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)
01/09/03	10.220	97.4	6.98	-1.2	-0.113
01/21/03	10.050	97.3	7.18	-1.5	0.196
02/03/03	10.460	99.8	7.09	0.2	-0.056
02/19/03	9.897	97.9	7.05	0.1	0.071
03/04/03	10.170	92.8	7.00	0.4	-0.075
03/18/03	10.080	89.1	7.06	0.3	-0.169
04/01/03	10.110	104.8	7.03	0.4	0.083
04/15/03	10.110	94.9	7.08	0.4	-0.042
04/29/03	10.330	89.6	7.10	1.7	-0.146
05/13/03	9.776	58.6	7.10	2.5	-0.027
05/27/03	9.734	45.6	7.13	0.3	0.053
06/04/03	10.080	99.5	6.91	0.2	-0.071
06/11/03	10.040	111.7	na	-0.1	-0.013
06/19/03	9.888	102.2	6.95	0.0	-0.096
06/25/03	9.933	95.9	7.06	-0.4	0.035
07/02/03	10.020	54.6	7.06	0.5	-0.023
07/11/03	9.875	43.9	7.01	-0.3	-0.100
07/16/03	10.320	91.4	7.21	1.3	0.033
07/23/03	48.770	51.6	6.95	1.6	-0.088
07/30/03	48.750	94.1	7.09	0.3	0.078
08/07/03	49.590	92.1	7.10	0.9	-0.011
08/13/03	49.180	94.1	7.04	0.4	0.135
08/20/03	49.310	86.0	7.00	2.0	0.054
08/27/03	49.220	85.0	7.08	-0.2	-0.058
09/03/03	49.590	83.9	7.15	0.3	-0.003
09/10/03	49.340	57.4	6.99	-0.7	0.030
10/06/03	49.400	39.3	7.01	0.7	-0.006
10/08/03	49.440	97.4	6.94	-0.8	-0.012
10/15/03	49.640	96.0	7.07	-1.2	-0.164
10/23/03	10.100	92.0	7.05	-0.2	-0.049
10/29/03	9.906	100.2	7.15	0.4	0.044
11/06/03	10.090	101.8	7.14	10.4	0.042
11/12/03	9.987	98.9	7.07	-0.1	-0.062
11/21/03	10.170	94.2	7.01	0.0	-0.083
12/02/03	10.040	109.2	7.03	-0.3	0.157

12/19/03	10.200	71.0	7.03	0.2	-0.058

Sweet Hall Marsh:

Date (post cal)	Cond (ms) (Std:10/50)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)
01/06/03	9.9600	97.6	7.01	0.2	-0.196
01/21/03	10.090	98.0	7.09	0.0	0.057
02/07/03	10.000	100.1	7.01	1.0	-0.028
02/20/03	9.810	108.2	7.10	-0.3	0.079
03/07/03	9.840	98.6	7.00	0.1	-0.062
03/18/03	9.900	95.3	7.05	0.0	-0.191
04/04/03	10.020	98.1	7.10	0.4	-0.017
04/17/03	10.030	81.4	7.06	0.3	0.045
05/01/03	10.080	111.4	7.07	0.6	-0.007
05/15/03	10.110	95.7	7.02	0.7	-0.039
05/29/03	10.000	101.8	7.10	-0.3	-0.142
06/12/03	10.310	108.2	7.06	0.3	0.082
06/26/03	10.050	102.7	7.03	0.4	-0.013
07/10/03	49.030	103.3	7.01	-0.3	-0.047
07/24/03	49.570	106.6	7.04	-0.2	0.010
08/06/03	49.340	93.1	7.05	-0.1	-0.009
08/21/03	49.070	105.4	7.04	-0.8	0.081
09/05/03	49.820	105.7	6.99	-0.1	-0.078
09/16/03	50.000	102.1	7.09	0.0	-0.077
09/26/03	49.930	100.1	7.06	0.0	-0.047
10/09/03	50.040	103.4	7.02	0.0	0.051
10/23/03	50.130	100.8	7.12	-0.2	-0.007
11/05/03	10.030	103.2	7.05	-0.4	0.129
11/20/03	9.850	102.2	6.98	0.0	-0.087
12/03/03	10.160	102.8	6.97	-0.2	0.269
12/18/03	9.897	87.4	7.02	-0.8	-0.154

Taskinas Creek:

Date	Cond (ms) (Std:10/50)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)
01/08/03	10.080	96.3	7.04	2.8	-0.026
01/22/03	9.996	101.5	7.04	-0.3	0.179
02/05/03	10.190	99.8	7.03	-0.2	-0.006
02/18/03	9.949	100.7	7.03	-2.8	0.066
03/05/03	9.915	97.6	7.02	1.1	-0.166
03/17/03	10.050	99.5	7.02	-0.4	-0.009
04/02/03	10.080	100.3	7.00	4.9	0.055
04/16/03	9.930	100.8	6.96	4.3	-0.054
04/30/03	10.060	87.3	6.99	3.4	0.008
05/14/03	9.851	101.0	7.04	0.4	-0.029
05/29/03	10.040	97.4	7.10	1.4	-0.131
06/04/03	10.020	102.8	7.01	1.5	-0.005
06/11/03	10.030	99.1	6.95	-0.4	0.026
06/19/03	9.974	83.1	6.58	0.4	-0.112
06/26/03	9.939	100.6	6.93	0.0	0.052
07/02/03	10.000	103.2	6.98	0.4	-0.102
07/10/03	10.180	100.7	7.09	0.0	-0.028

07/17/03	50.210	101.0	7.03	-0.1	0.039
07/24/03	50.240	98.8	7.12	0.4	0.007
07/31/03	49.980	104.5	6.94	0.9	0.088
08/06/03	49.860	99.4	7.12	-0.5	-0.063
08/14/03	49.810	99.8	6.97	0.1	0.146
08/21/03	49.950	100.1	7.10	-1.5	-0.053
08/28/03	50.450	96.5	6.99	0.1	-0.035
09/04/03	50.370	97.1	7.04	0.2	-0.009
09/11/03	50.280	100.7	7.04	0.6	0.027
09/17/03	49.810	100.7	7.02	0.3	0.006
09/25/03	49.970	100.6	6.92	-0.7	-0.032
10/01/03	49.080	107.6	7.05	0.8	-0.009
10/09/03	49.890	102.3	7.02	-0.4	-0.022
10/16/03	49.870	99.2	7.03	-0.6	-0.017
10/21/03	10.030	101.5	6.98	-0.4	0.036
10/30/03	10.050	74.6	7.04	-0.3	0.032
11/04/03	10.050	103.1	6.98	-0.3	0.161
11/20/03	10.000	96.7	7.03	0.2	-0.113
12/02/03	10.170	102.1	6.95	0.3	0.183
12/18/03	9.826	99.8	7.01	-0.3	-0.038

13.B Field Verification samples:
na = no data available

Claybank:

Date	Salinity ppt	pH	Water Temp C		Secchi m	DO mg/L
12/16/02	17.800		7.60	6.0	0.50	11.3/11.6
01/09/03	12.100		7.20	6.0	0.40	11.1/11.3
01/21/03	17.100		6.40	2.5	1.05	12.0/11.8
02/03/03	17.307		na	2.0	1.20	12.1/11.7
02/19/03	19.325		8.24	3.0	1.00	12.3/11.7
03/04/03	10.557		8.37	5.5	0.80	12.5/12.3
03/18/03	14.320		8.37	9.5	1.00	9.9
04/01/03	8.308		8.34	10.0	0.50	11.2/11.3
04/15/03	9.513		7.80	17.5	0.60	7.6/7.5
04/29/03	10.652		7.87	17.0	0.60	6.2/6.0
05/13/03	10.793		8.01	19.0	0.10	na
05/27/03	10.947		7.68	19.0	0.40	6.4/6.4
06/03/03	8.500		7.76	19.6	0.65	7.8/7.7
06/10/03	10.585		7.68	22.5	0.60	6.5/6.4
06/18/03	11.400		7.81	24.5	0.50	7.6/7.7
06/24/03	8.700		7.90	24.0	0.90	6.1/6.2
07/01/03	14.000		7.99	27.0	0.70	6.4/6.4
07/08/03	11.300		7.97	28.5	0.50	6.8/7.1
07/15/03	17.200		7.74	28.8	0.80	4.9/4.9
07/22/03	13.100		7.91	28.0	0.40	7.1/6.8
07/29/03	17.100		7.82	26.9	0.80	5.0/5.1
08/06/03	11.800		8.22	29.0	0.50	8.7/8.5
08/12/03	14.700		7.69	26.6	0.50	4.9/5.0
08/19/03	15.100		7.74	27.5	0.40	6.2/5.8

08/26/03	13.200	8.18	28.5	0.50	6.9/7.1
09/02/03	16.100	7.92	27.8	0.40	6.5
09/09/03	17.900	7.82	24.6	0.70	5.0
09/16/03	16.400	6.98	24.6	0.80	4.6/4.9
09/23/03	9.200	7.86	25.4	0.60	9.0
09/24/03	19.300	7.90	25.4	0.60	8.0/8.1
09/30/03	8.100	7.50	22.4	0.50	5.3/5.5
10/07/03	12.700	7.68	21.4	0.60	5.9/5.9
10/14/03	11.200	7.60	20.2	0.80	6.6/6.7
10/23/03	15.300	7.82	15.8	0.40	7.2/7.2
10/28/03	15.800	7.72	16.7	1.00	6.8/7.0
11/05/03	13.500	7.65	19.2	0.80	9.1
11/20/03	10.600	7.70	13.6	0.30	9.3/9.0
12/02/03	7.500	7.86	11.1	0.60	10.0/10.5
12/18/03	6.300	7.65	5.5	0.40	10.4

Goodwin Island:

Date	Salinity ppt	pH	Water Temp C		Secchi m	DO mg/L
12/16/02	22.400		7.80	7.0	0.70	10.6
01/09/03	20.100		7.10	6.5	0.80	10.5/10.7
01/21/03	20.500		na	2.0	1.10	10.6/10.9
02/03/03	20.010		na	2.5	1.30	11.6/12.0
02/19/03	19.450		8.27	3.0	1.10	11.8/11.4
03/04/03	16.596		8.39	5.0	1.20	10.9/11.4
03/18/03	15.625		8.47	9.0	1.40	12.0/11.5
04/01/03	14.339		8.64	9.5	0.90	na
04/15/03	13.882		8.67	12.5	1.00	12.4
04/29/03	14.812		8.74	21.0	2.00	11.1
05/13/03	17.238		8.33	17.5	0.70	na
05/27/03	16.313		8.52	19.0	0.80	8.0/7.8
06/03/03	14.700		8.05	19.1	0.80	9.3/9.0
06/10/03	15.706		8.31	22.5	0.85	8.0/8.2
06/18/03	16.500		7.87	21.5	0.80	5.5/5.5
06/24/03	14.600		8.29	23.0	0.70	7.5/7.4
07/01/03	14.300		8.18	26.5	0.90	5.9/5.5
07/10/03	17.200		8.88	30.0	0.80	14.1/14.0
07/15/03	19.800		8.01	26.0	1.00	6.2/6.6
07/22/03	19.000		8.04	27.0	0.60	5.8/5.8
07/29/03	18.800		8.09	26.4	0.60	5.2/5.3
08/06/03	19.600		8.04	26.0	0.60	5.4/5.8
08/12/03	18.700		8.27	26.4	1.00	7.4/6.5
08/19/03	18.300		8.09	26.8	0.50	6.0/5.7
08/26/03	17.900		8.48	27.1	0.80	6.2/6.1
09/02/03	18.400		8.45	26.7	0.60	5.8/5.8
09/09/03	17.800		8.36	24.5	0.50	7.3/7.5
09/23/03	16.800		8.26	24.2	0.65	8.3/8.2
09/30/03	15.100		7.84	19.5	1.00	7.8/7.5
10/07/03	15.100		8.12	19.8	0.80	8.8
10/14/03	16.300		8.10	19.7	1.20	8.8
10/22/03	17.800		8.00	17.4	1.00	7.9/7.3
10/28/03	18.000		8.00	16.0	0.70	5.2/5.2
11/05/03	17.800		8.20	19.5	0.80	10.3/10.4
11/11/03	17.500		8.21	14.6	1.10	9.2/9.4

11/20/03	17.700	8.06	13.4	1.00	9.2/9.1
12/01/03	17.300	8.19	10.9	0.40	10.0/9.6
12/19/03	14.300	8.13	6.7	0.50	11.0/10.9

Sweet Hall Marsh:

Date	Salinity ppt	pH	Water Temp C	Secchi m	DO mg/L
12/18/02	0.700	7.20	5.0	0.80	10.5/10.4
01/06/03	0.200	7.05	6.0	0.30	11.1/10.5
01/21/03	0.600	na	2.5	0.20	11.2/11.2
02/05/03	0.532	7.49	4.3	0.15	10.4
02/20/03	0.233	na	3.0	0.10	11.8
03/07/03	0.107	7.55	6.0	0.40	na
03/17/03	0.126	7.28	11.0	0.40	10.1/9.8
04/03/03	0.088	8.29	15.0	0.30	7.4/7.3
04/17/03	0.066	7.28	15.0	0.30	8.0/8.0
05/01/03	0.100	7.50	20.5	0.40	7.3/7.2
05/15/03	0.103	7.36	22.0	0.40	7.0
05/29/03	0.000	7.29	19.0	0.60	6.4
06/11/03	0.100	6.86	24.3	0.30	5.5
06/25/03	0.100	6.95	26.0	0.50	6.7/6.4
07/09/03	0.100	6.99	29.9	0.40	6.3/6.7
07/23/03	0.100	7.53	27.7	0.60	6.3
08/05/03	0.100	6.74	27.9	0.40	4.9/5.1
08/20/03	0.100	7.00	28.0	0.60	5.0/5.3
09/04/03	0.900	7.08	28.0	0.40	5.0/4.8
09/16/03	0.400	6.86	24.7	0.50	5.5/5.1
09/25/03	0.100	6.46	23.3	0.40	2.9
10/08/03	0.100	6.71	20.3	0.50	5.0/5.2
10/23/03	0.600	7.03	17.0	0.50	6.6/6.8
11/04/03	0.100	6.70	17.8	0.40	7.7/7.8
11/19/03	0.100	6.77	14.0	0.20	5.9/6.1
12/02/03	0.100	na	10.6	0.40	9.7/9.3
12/17/03	0.100	6.49	6.8	0.30	9.0/8.9

Taskinas Creek:

Date	Salinity ppt	pH	Water Temp C	Secchi m	DO mg/L
12/19/02	13.000	7.50	5.5	0.30	11.6/10.9
01/08/03	10.100	7.10	5.3	0.35	12.8/12.3
01/22/03	13.200	7.49	0.4	0.60	12.0
02/05/03	13.173	7.50	3.5	0.35	10.1/10.5
02/18/03	12.714	8.05	1.0	0.30	8.0
03/05/03	3.421	7.39	7.5	0.60	10.6/10.6
03/17/03	5.737	7.85	11.5	0.45	10.0/9.9
04/02/03	5.281	7.68	12.0	0.50	9.6
04/16/03	6.416	7.63	17.5	0.30	7.0/6.5
04/30/03	6.900	7.61	17.0	0.60	6.0/5.9
05/14/03	9.203	7.55	19.5	0.20	6.3
05/29/03	5.329	7.28	20.2	0.25	na
06/04/03	5.100	7.66	21.0	0.20	7.0/6.6
06/10/03	2.900	7.21	24.5	0.30	3.8/3.3

06/19/03	3.900	7.19	24.5	0.25	3.5/3.4
06/25/03	4.900	7.14	26.0	0.30	4.2/4.3
07/02/03	8.200	7.23	26.0	0.20	4.0/3.7
07/09/03	7.600	7.31	29.5	0.30	4.5/4.6
07/16/03	10.600	7.31	28.0	0.20	5.0
07/23/03	0.900	7.09	23.6	0.20	2.7/2.6
07/30/03	9.700	7.31	25.4	0.30	4.5/4.6
08/05/03	3.100	7.30	27.2	0.30	3.7
08/13/03	9.400	7.31	28.0	0.20	4.3/4.3
08/20/03	4.000	7.28	27.3	0.30	4.3/4.0
08/27/03	11.400	7.36	28.9	0.40	5.9/5.4
09/03/03	7.100	7.36	27.9	0.40	3.9
09/10/03	12.100	7.53	22.4	0.20	5.8/5.5
09/16/03	10.600	7.69	25.3	0.20	6.7/6.6
09/24/03	6.000	7.49	23.2	0.30	6.3/6.2
10/01/03	1.600	7.50	16.7	0.30	6.2
10/08/03	7.500	6.94	20.1	0.30	5.3/5.3
10/15/03	8.500	7.41	19.1	0.20	7.3
10/20/03	1.800	7.42	15.3	0.30	7.1/7.3
10/29/03	10.200	7.44	14.4	0.30	7.0/7.0
11/03/03	2.600	7.26	16.8	0.30	5.7/5.5
11/19/03	3.800	7.34	14.1	0.40	6.1/6.3
12/01/03	1.500	7.49	8.1	0.50	7.4/7.7
12/17/03	0.800	7.32	6.5	0.30	9.1/9.0

14. Other remarks

On 08/12/2020 this dataset was updated to include embedded QAQC flags for anomalous/suspect data. System-wide monitoring data beginning in 2007 were processed to allow for QAQC flags and codes to be embedded in the data files rather than detailed in the metadata alone (as in the anomalous/suspect, deleted, and missing data sections above). Prior to 2006, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes.
No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

A) Depth measurements were determined with non-vented pressure transducers and therefore depth data should be considered relative depth. Negative depth values can be due to extremely low water conditions, low-pressure systems, or probes

being out of the water. In the event where probes were clearly out of the water, as verified by specific conductance values, data were deleted. When specific conductance values did not indicate probe exposure, negative depth values were retained and data was marked as suspect. Significant negative depth values were observed at Sweet Hall Marsh during the months of January through March; data reflects tidal patterns and were retained.

B) Significant difference in depth between newly deployed and replaced dataloggers were occasionally noted. Variations in barometric pressure at time of datalogger calibration are responsible, in part, for these observations.

C) Between the time interval 06/10/03 13:30:00 through 08/20/03 10:00:00, a different datalogger cable was used at the Taskinas Creek site. This resulted in a depth difference of 58 cm shallower than the previous and subsequent deployments. Because other water quality data are associated with the specific sampling depth, depth data were not adjusted.

D) Significantly elevated single point turbidity values which occured between background values were considered to be a product of sensor interference. Single point turbidity values greater than 200 NTUs for Goodwin Island, Sweet Hall Marsh, and 300 NTUs for Claybank and Taskinas Creek were deleted. Values between 64-199 NTUs for Goodwin Island, 257-299 NTUs for Taskinas Creek, 93-299 NTUs for Claybank, 193-199 NTUs for Sweet Hall Marsh were reported as suspect and retained. These suspect values exceeded 3 standard deviation from mean values based on 2002 site specific data; Goodwin Island: mean = 6, STD = 19; Claybank: mean = 17, STD = 25; Taskinas Creek: mean = 67, STD = 63; Sweet Hall Landing: mean = 48, STD = 48.

E) Any time a reference is made to turbidity data being negative and/or zero, it was recorded as a negative in the raw data file and a zero in the edited data file due to the formatting of Excel. The technician edited none of these data points by hand nor did he/she delete any of them.

F) An extensive algal bloom was observed during the months of March and early
April within the York River system.

G) Water quality within the entire York River estuary, which includes the
Goodwin Islands, Clay Bank, Taskinas Creek and Sweet Hall Marsh stations, were
significantly impacted by the passage of Hurricane Isabel on September 18,
2003. Short-term impacts (24-48 hrs in duration) from Hurricane Isabel
included elevated water depths, turbidity and salinity. Longer terms impacts
(days-weeks), such as lower oxygen levels, were observed in the more tidal
freshwater regions of the estuary.

H) Please note: Time skips can occur due to low batteries, water leakage into the battery compartment, and for no apparent reason.