

North Inlet-Winyah Bay (NIW) NERR Water Quality Metadata
January - December 2003
Latest Update: August 13, 2020

I. Data Set & Research Descriptors

1. Principal investigator(s) & contact persons

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2. Entry verification

The .dat and .csv versions of the raw data files were uploaded to a PC from YSI

6000 or 6600 dataloggers. Raw data were uploaded and plotted using EcoWatch

software. CDMO macros were also used in EXCEL 5.0 to identify anomalous or

problem data in the files. The CDMO cdmomac3.xls macro allows the user to

automatically format column widths to the correct number of decimal places based

on YSI sensor specifications. It also allows the user to QA/QC each data logger

generated file for missing data points, fill all cells that do not contain data

with periods, and find all data points that fall outside the range of what the

data logger is designed to measure (i.e. outliers). The CDMO import.xls macro

will allow PC users with 30-minute data to automatically create a monthly Excel

file from a two-week deployment and insert periods for missing data, which were

later removed for data dissemination purposes and left blank. In addition, in

November 1999 a graphing capability was added to this macro allowing users to

produce single parameter and missing data point graphs on a monthly basis.

Comma delimited files are opened in Microsoft EXCEL 5.0 and edited by removing

unnecessary headers, footers or spaces and any data which corresponds to the

instrument being out of the water for maintenance. Next, data plots were

produced and examined for any anomalies using the CDMO graphing Macro for each variable. Suspect data were evaluated as to being either good or bad based on criteria outlined in the CDMO manual version 4.0. If the data were determined to be bad, they were deleted from the final edited .txt file and then documented in the metadata. If it could not be determined whether or not suspect data were bad (as was often the case with turbidity) the data were left in the final edited .txt file and noted in the metadata as anomalous. The dissolved oxygen (DO) and Turbidity (Turb) probes were the most problematic. In instances where data values increased or decreased in an exponential fashion and or intermittently went outside the accepted range for that instrument and never returned to normal, the data were considered suspect, noted in the metadata, and removed from the final edited data file. Missing data due to equipment failure or maintenance were replaced with periods(.), which were also later removed for data dissemination purposes and left blank. The date/hour and column reformat macros were then run on the data files before being saved in their final edited form (.txt). Edited (.txt) and raw (.csv) files were then FTP'd to both the Sun Sparc II and the CDMO server and archived. Tracy Buck edited and archived the 2003 data for Thousand Acre, Debidue Creek, Oyster Landing, and Clambank Creek.

3. Research Objectives

The principal objective of this study is to record long-term water quality data for North Inlet/Winyah Bay in order to observe any physical changes or trends in water quality over time. Four sites were chosen; two to represent our pristine site and the other two to represent impacted sites. The Oyster Landing site is located near the center of the Reserve and is considered pristine. The Clambank site is located on a waterway that receives run-off from the undeveloped area of the reserve and is considered a pristine site. Debidue Creek and Thousand Acre are both located in waterways that receive run-off from heavily developed areas. Measurements were taken every 30 minutes over roughly two week collecting

periods at the Oyster Landing, Debidue Creek, Clambank and Thousand Acre sites.

4. Research methods (YSI 6000 dataloggers)

YSI dataloggers are currently mounted in a 4" diameter PVC pipe which is strapped to a treated 2" X 6" board; and then attached via stainless steel bands

to a piling at the Thousand Acre, Debidue Creek, Clambank, and Oyster Landing sites.

The PVC pipe that houses the data loggers has two large windows cut out

near the bottom for the probes to have direct contact with the water column. A

stop bolt placed through the PVC pipe below the cut out windows keeps the datalogger exactly one foot (30 cm) above the creek bottom. Every 30 minutes

measurements of specific conductivity, salinity, percent saturation, dissolved

oxygen, water temperature, pH, turbidity, and water level are recorded.

The

two-week sampling interval has been selected due to biofouling of the individual

probes and expected battery life. At the end of each sampling interval, the

dataloggers were brought back to the laboratory to be downloaded, cleaned and

recalibrated following procedures in YSI Service Manual and the Standard Operating Procedures V3.0 provided by NERR SWMP. Before the instruments were

cleaned and recalibrated a post calibration reading was taken from each instrument in fresh standard to see if any of the instruments exhibited drift

(see II-13). The pH probe was calibrated using a two point method with 7,10

standards. The turbidity probe calibration also used a two-point method using 0

& 123 NTU standards. Specific Conductivity was calibrated using a one-point

method and a 10 ms/cm standard that was purchased through YSI, Inc. The turbidity wiper and DO membrane were changed after each deployment.

After

approximately 24 hours of down time for cleaning and overnight relaxing of the

DO membrane, the YSI dataloggers were re-deployed. Sondes are switched out the

same day at each site to avoid excessive periods of data loss.

5. Site location and character

The North Inlet-Winyah Bay National Estuarine Research Reserve is located on the

Southeastern Atlantic coast of the United States in two tidal estuaries, North

Inlet and Winyah Bay, near Georgetown, South Carolina. The North Inlet estuary,

located approximately 10 km east of Georgetown, is a bar-built Class C type estuary (Pritchard, 1955). The North Inlet estuary is composed of numerous winding tidal creeks, and is considered a pristine tidal estuary due to minimal anthropogenic impacts. The watershed drains a 24.8 km² area of mostly pine forest and a moderately developed residential watershed to the north. The Winyah Bay estuary, classified as a Class B type estuary by Pritchard (1955), which originates in the Blue Ridge Mountains of North Carolina, is one of the largest river-estuary ecosystems on the Eastern Seaboard. It is located 14.4 km south of North Inlet. Winyah Bay drains the sub-basins of 6 major rivers, which are heavily impacted by agriculture, mining, and industry. The rivers drain approximately 46,736 km² of uplands and marshes. Descriptions of the three sampling stations are as follows:

A) Thousand Acre (TA) - (lat. 33:17:57; long. 79:15:36) The Thousand Acre monitoring site is located in Thousand Acre marsh tidal creek and is on the NW corner of the west bridge of Thousand Acre marsh (this site was relocated 07-19-99 to the current location due to heavy siltation and degrading data quality). The present site is about 15m from the mouth of the creek. At the sampling site, creek depth is approximately 2 m MHW and creek width is approximately 10 m. The creek empties into the northeastern side of the mid portion of Winyah Bay and directly drains pine forested upland and wetlands. Salinity ranges from 0 to 15 ppt. and tidal range is approximately 1m. The bottom is mostly composed of fine sediments and detritus. Georgetown, 5 km upstream from the Thousand Acre site and on the southern side of Winyah Bay, is the homeport for a number of heavy industries including a steel plant, paper mill, chemical plant, and a coal fired power plant. A public sewage treatment plant, which discharges into the bay, is also located in Georgetown.

B) Oyster Landing (OL) - (lat. 33:20:58; long. 79:11:34). The Oyster Landing

monitoring site is considered a fairly pristine and undisturbed area located at the end of the Oyster Landing pier which is also where the NI-WB Bay NERR weather station site is located. The pier stretches into the upper reaches of Crabhaul Creek in the mid western portion of North Inlet. The sampling site is located approximately 2.8 km from the headwaters of Crabhaul Creek. The creek directly drains pine-forested uplands and wetlands. Salinity can range from 0-32 ppt. and average tidal range is approximately 1.44m. The creek has an average depth of ~2 m MHW and average width of ~150m MHW. The bottom mostly is comprised of oyster shell hash with some fine sediment and detritus.

C) Debidue Creek (DC) - (lat 33:21:37, long 79:10:05). The Debidue Creek monitoring site is considered an impacted site that is located approximately 1 km south of the Debidue Colony. The Colony is a large development built on man-made canals that directly drain into the northern portion of Debidue Creek. The DC site is also located in an ocean-dominated *Spartina* marsh that was formerly surrounded by pine-dominated uplands. Salinity can range from 0 to full strength seawater and an average tidal range of approximately 2 meters. The approximate depth and width at MHW at the site is 2.2 and 70 m respectively. The bottom is mostly comprised of oyster shell hash with some fine sediment and detritus.

D) Clambank Creek (CB) - (lat 33:20:02, long 79:11:34). The Clambank Creek monitoring site is located roughly in the center of the reserve property. This site is surrounded by a *Spartina* marsh and drains associated uplands. Salinity ranged from 0.4 to full strength seawater (from August through December 2001) and an average tidal range of approximately 1.4 meters. At the sampling site, the depth and width at MHW are 2.4m and 40m respectively. The average depth of the creek is 2.0m at MHW. The bottom is mostly comprised of oyster shell hash and some fine sediment. This site is considered a pristine site and is influenced by its close proximity to North Inlet.

6. Data collection period

Thousand Acre data collection began January 1, 1995. Debidue Creek sampling

began March 5, 1998. Oyster Landing data collection began in 1995; however, it was not considered a SWMP site until 1996 when the collection site was switched from Caledonia to Oyster Landing. Clambank sampling began in February 1981 through June 1995; however, it was not considered a SWMP site until sampling resumed in August of 2001 (08/17). All sampling is ongoing.

Deployment dates and times (in Eastern Standard Time) for 2002 follow:

BEGAN		ENDED	
Site: Debidue Creek			
12/20/02,	10:00:00,	01/07/03,	11:30:00
01/08/03,	12:30:00,	01/22/03,	10:30:00
01/22/03,	11:00:00,	02/11/03,	15:30:00
02/11/03,	16:00:00,	03/10/03,	13:00:00
03/10/03,	13:30:00,	03/27/03,	14:00:00
03/27/03,	14:30:00,	04/16/03,	08:30:00
04/16/03,	09:00:00,	04/23/03,	13:30:00
04/23/03,	14:00:00,	05/07/03,	11:00:00
05/07/03,	11:30:00,	05/20/03,	10:30:00
05/20/03,	11:00:00,	06/03/03,	10:00:00
06/03/03,	10:30:00,	06/20/03,	12:30:00
06/20/03,	13:00:00,	07/07/03,	13:30:00
07/07/03,	14:00:00,	07/30/03,	09:00:00
07/30/03,	09:30:00,	08/15/03,	10:30:00
08/15/03,	11:30:00,	09/29/03,	10:30:00
09/29/03,	11:00:00,	10/20/03,	09:00:00
10/20/03,	10:00:00,	11/03/03,	14:30:00
11/03/03,	15:00:00,	11/17/03,	14:00:00
11/17/03,	14:30:00,	12/01/03,	14:30:00
12/01/03,	15:00:00,	12/15/03,	13:00:00
12/15/03,	13:30:00,	01/07/04,	10:00:00

Site: Oyster Landing			
12/20/02,	10:30:00,	01/07/03,	12:00:00
01/08/03,	11:30:00,	01/23/03,	09:30:00
01/23/03,	14:00:00,	02/11/03,	15:00:00
02/11/03,	15:30:00,	03/10/03,	13:30:00
03/10/03,	14:00:00,	03/26/03,	11:30:00
03/26/03,	12:00:00,	04/08/03,	09:30:00
04/08/03,	10:00:00,	04/23/03,	09:30:00
04/23/03,	10:00:00,	05/07/03,	13:30:00
05/07/03,	14:00:00,	05/21/03,	12:30:00
05/21/03,	13:00:00,	06/04/03,	09:30:00
06/04/03,	10:00:00,	06/20/03,	09:30:00
06/20/03,	10:00:00,	06/26/03,	14:30:00
06/26/03,	15:00:00,	07/08/03,	09:00:00
07/08/03,	09:30:00,	07/21/03,	13:00:00
07/21/03,	13:30:00,	08/15/03,	11:00:00
08/15/03,	11:30:00,	09/26/03,	08:30:00
09/26/03,	09:00:00,	10/15/03,	08:30:00

10/15/03,	09:00:00,	11/04/03,	11:00:00
11/04/03,	11:30:00,	11/06/03,	12:00:00
11/06/03,	12:30:00,	11/17/03,	14:30:00
11/17/03,	15:00:00,	12/01/03,	14:30:00
12/01/03,	15:00:00,	12/15/03,	13:30:00
12/15/03,	14:00:00,	01/07/04,	13:00:00

Site: Thousand Acre

12/10/02,	10:30:00,	01/09/03,	10:00:00
01/09/03,	13:00:00,	01/22/03,	13:30:00
01/22/03,	14:00:00,	02/13/03,	13:00:00
02/13/03,	13:30:00,	03/04/03,	10:00:00
03/04/03,	10:30:00,	03/27/03,	14:30:00
03/27/03,	15:00:00,	04/07/03,	10:30:00
04/07/03,	11:00:00,	04/22/03,	13:00:00
04/22/03,	13:30:00,	05/08/03,	12:30:00
04/22/03,	13:30:00,	05/08/03,	12:30:00
05/08/03,	13:00:00,	05/21/03,	13:30:00
05/21/03,	14:00:00,	06/02/03,	13:00:00
06/02/03,	13:30:00,	06/19/03,	10:00:00
06/19/03,	10:30:00,	07/02/03,	13:00:00
07/02/03,	13:30:00,	07/31/03,	09:00:00
07/31/03,	09:30:00,	08/19/03,	11:30:00
08/19/03,	12:00:00,	09/29/03,	14:00:00
09/29/03,	14:30:00,	10/01/03,	10:00:00
10/01/03,	11:00:00,	10/15/03,	09:30:00
10/15/03,	10:30:00,	10/31/03,	11:00:00
10/31/03,	11:30:00,	11/18/03,	14:00:00
11/18/03,	14:30:00,	12/02/03,	12:00:00
12/02/03,	12:30:00,	12/16/03,	13:00:00
12/16/03,	13:30:00,	01/06/04,	11:30:00

Site: Clambank Creek

12/10/02,	10:00:00,	01/09/03,	10:00:00
01/09/03,	12:30:00,	01/24/03,	14:00:00
01/24/03,	14:30:00,	02/13/03,	12:30:00
02/13/03,	13:00:00,	03/04/03,	09:30:00
03/04/03,	10:00:00,	03/26/03,	10:30:00
03/26/03,	11:00:00,	04/07/03,	11:30:00
04/07/03,	12:00:00,	04/22/03,	12:00:00
04/22/03,	13:00:00,	05/08/03,	09:30:00
05/08/03,	10:00:00,	05/20/03,	09:00:00
05/20/03,	09:30:00,	06/02/03,	12:30:00
06/02/03,	13:00:00,	06/19/03,	14:00:00
06/19/03,	14:30:00,	07/01/03,	08:30:00
07/01/03,	09:00:00,	07/29/03,	13:30:00
07/29/03,	14:00:00,	08/19/03,	10:30:00
08/19/03,	11:00:00,	09/26/03,	09:00:00
09/26/03,	09:30:00,	10/16/03,	14:00:00
10/16/03,	14:30:00,	10/31/03,	10:30:00
10/31/03,	11:00:00,	11/18/03,	13:30:00
11/18/03,	14:00:00,	12/02/03,	11:00:00
12/02/03,	11:30:00,	12/16/03,	12:30:00
12/16/03,	13:00:00,	01/06/04,	11:00:00

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 were 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 within this package/transmission is only

as good as the quality assurance/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 of third persons, nor will

the Federal government reimburse or indemnify the Recipient for its liability

due to any losses resulting in any way from 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 the general information link on CDMO homepage) and online at the CDMO homepage

<http://cdmo.baruch.sc.edu>. Data are available in text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format.

8. Associated researchers and projects

A water chemistry program is associated with the NIW core-monitoring program.

Variables sampled include: chlorophyll, dissolved organic carbon, nitrate-

nitrite, orthophosphate, and ammonia. (See documentation on the NIW WWW home

page for further details). Thousand Acre is our permanent monitoring station for the NERR monitoring program, but Oyster Landing and Debidue Creek were also sampled beginning in 1998. These stations are also included in our NIW core-monitoring program.

A long-term fish survey is also done at the Oyster Landing site bi-weekly. Species present, total weight, individual weights and standard lengths of fish that utilize the marsh at high tide are recorded. In the winter months (November through February), this sampling is done only once monthly.

The NERR weather station is also located at the Oyster Landing site. Air temperature and humidity, barometric pressure, solar radiation (total and PAR), wind speed and direction, and precipitation are measured.

II. Physical Structure Descriptors

9. Variable sequence, column format, 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)

Data columns are separated by tabs. Each file contains a two line column header at the top of the page which identifies measurements and units for each column.

10. Coded variable indicator and variable code definitions

Site definitions: OL = Oyster Landing; TA = Thousand Acre, DC = Debidue Creek,
CB =Clambank Creek

11. Data anomalies (suspect data)

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.

JANUARY 2003

DEBIDUE CREEK

a). For the following dates and times, data are missing due to sonde being out of the water for maintenance:

01/07/03 12:00 through 01/08/03 12:00

b). For the following dates and times, turbidity data are missing due to the turbidity sensor being out for repair:

01/01/03 00:00 through 01/07/03 11:30

OYSTER LANDING

a). For the following dates and times, data are missing due to sonde being out of the water for maintenance:

01/07/03 12:30 through 01/08/03 11:00

01/23/03 10:00 through 01/23/03 13:30

b). For the following dates and times, data are missing because the sonde was pulled to check for water in the battery department because the sonde was displaying anomalous data on the real-time display. The sonde was retrieved at

15:36 for maintenance and redeployed at 16:18, missing the 16:00 reading:
01/31/03 16:00

c). For the following dates and times, turbidity data are missing due to the turbidity sensor being out for repair:

01/01/03 00:00 through 01/07/03 12:00

d). For the following date and time the datalogger recorded negative depth data. However, specific conductivity and salinity sensor readings suggest that the datalogger was not out of the water, so suspect that the negative value indicates shallow depth and is simply due to a slight calibration error. Data were retained.

01/20/2003 16:00:00 through 16:30:00

01/21/2003 04:00:00 through 04:30:00

01/21/2003 17:00:00

THOUSAND ACRE

a). For the following dates and times, data are missing due to sonde being out of the water for maintenance:

01/09/03 10:30 through 01/09/03 12:30

b). For the following dates and times, turbidity data are missing due to the turbidity sensor being out for repair:

01/09/03 13:00 through 01/22/03 13:30

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

Suspect intermittent fouling episodes obscuring optics. Data were retained.

01/30/2003 05:00:00

01/30/2003 07:30:00 through 01/30/2003 08:00:00

d). For the following dates and times, dissolved oxygen data (% and mg/l) dropped dramatically. This drop was concurrent with a spike in turbidity, so suspect a fouling event during this period. Data were retained but should be considered suspect.

01/29/03 17:30 through 01/30/03 08:30

01/30/03 13:00 through 01/31/03 23:30

CLAMBANK CREEK

a). For the following dates and times, data are missing due to sonde being out of the water for maintenance:

01/09/03 10:30 through 01/09/03 12:00

b). For the following dates and times, turbidity data are missing due to the turbidity sensor being out for repair:

01/01/03 00:00:00 through 01/24/03 14:30

c). For the following dates and times the datalogger recorded negative and/or zero depth data. However, specific conductivity and salinity sensor readings suggest that the datalogger was not out of the water, so suspect that negative and/or zero values indicate shallow depth and are simply due to a slight calibration error. Data were retained.

01/02/2003 01:00:00 through 01/02/2003 01:30:00

01/20/2003 03:00:00 through 01/20/2003 03:30:00

01/20/2003 15:30:00 through 01/20/2003 16:00:00

01/21/2003 03:30:00 through 01/21/2003 04:30:00

01/21/2003 16:30:00

FEBRUARY 2003

DEBIDUE CREEK

No anomalous data for this month. See Section 14 for further documentation.

OYSTER LANDING

a). For the following date and time the datalogger recorded negative depth data. However, specific conductivity and salinity sensor readings suggest that the datalogger was not out of the water, so suspect that the negative value indicates shallow depth and is simply due to a slight calibration error. Data were retained.

02/04/2003 17:00:00

b). For the following dates and times, turbidity data were greater than 1000.
Suspect an object passing in front of optics during the time of sampling.
Data
were retained.

02/26/2003 15:30:00
02/28/2003 12:00:00

THOUSAND ACRE

a). For the following dates and times, turbidity data were greater than 1000.
Suspect a large fouling event that obscured the turbidity probe's optics.
All
data were retained but should be considered suspect during this period.

02/03/2003 22:00:00
02/04/2003 08:00:00
02/04/2003 09:30:00 through 02/04/2003 10:00:00
02/04/2003 11:00:00 through 02/04/2003 13:30:00
02/04/2003 14:30:00
02/04/2003 15:30:00 through 02/04/2003 19:30:00
02/04/2003 20:30:00 through 02/05/2003 03:30:00
02/05/2003 04:30:00 through 02/05/2003 09:00:00
02/05/2003 10:00:00 through 02/05/2003 13:00:00
02/05/2003 14:00:00
02/06/2003 09:00:00
02/06/2003 10:00:00
02/06/2003 11:00:00
02/06/2003 13:00:00
02/07/2003 11:00:00 through 02/07/2003 13:00:00
02/07/2003 14:00:00 through 02/07/2003 21:00:00
02/09/2003 01:00:00
02/09/2003 02:30:00
02/09/2003 03:30:00
02/11/2003 02:00:00 through 02/11/2003 04:00:00
02/11/2003 05:00:00
02/11/2003 06:30:00
02/11/2003 07:30:00
02/11/2003 09:30:00
02/11/2003 10:00:00
02/11/2003 11:00:00
02/11/2003 12:00:00 through 02/11/2003 13:30:00
02/11/2003 14:30:00 through 02/11/2003 18:00:00
02/12/2003 19:00:00
02/13/2003 04:00:00
02/13/2003 05:30:00

b). It is suspected that this same fouling event that affected turbidity also
prevented adequate flow of water over the sonde's remaining probes
resulting in
a reduction in dissolved oxygen concentrations, reduced ph, and reduced

salinity. However, post deployment calibration checks for all probes were perfect (see section 13), which indicates probes were working properly. All data were retained but should be considered suspect during this period.

02/01/2003 00:00:00 through 02/13/2003 13:00:00

CLAMBANK CREEK

a). For the following date and time the datalogger recorded negative and/or zero depth data. However, specific conductivity and salinity sensor readings suggest that the datalogger was not out of the water, so suspect that the negative and/or zero values indicates shallow depth and is simply due to a slight calibration error. Data were retained.

02/04/2003 16:30:00 through 17:00:00

MARCH 2003

DEBIDUE CREEK

No anomalous data for this month. See Section 14 for further documentation.

OYSTER LANDING

a). For the following dates and times, turbidity data were greater than 1000. These spikes began after rain events in late February/early March, and occurred up to but not after the sonde was switched out on 3/10/03. Suspect that a fouling event due to rainfall may have interfered with the wiper in such a way that it intermittently parked over optics, or debris stuck on the wiper obscured the optics. Spikes greater than 1000 NTU were deleted during this period.

03/03/2003 00:30:00
03/03/2003 01:00:00
03/03/2003 04:00:00
03/03/2003 07:00:00
03/03/2003 15:00:00
03/03/2003 19:00:00
03/03/2003 20:30:00
03/04/2003 08:00:00
03/04/2003 17:00:00

03/05/2003 02:00:00
03/05/2003 10:30:00
03/05/2003 11:30:00
03/05/2003 13:30:00
03/05/2003 15:00:00
03/05/2003 18:00:00
03/05/2003 19:30:00
03/05/2003 22:30:00
03/06/2003 02:00:00
03/06/2003 04:00:00
03/06/2003 05:30:00
03/06/2003 07:00:00
03/06/2003 09:00:00
03/06/2003 10:30:00
03/06/2003 11:30:00
03/06/2003 14:00:00
03/06/2003 22:00:00
03/07/2003 03:30:00
03/07/2003 05:00:00
03/07/2003 06:30:00
03/07/2003 09:00:00
03/07/2003 10:30:00 through 03/07/2003 11:00:00
03/07/2003 14:30:00
03/07/2003 17:00:00
03/07/2003 18:30:00
03/07/2003 20:00:00
03/08/2003 11:00:00
03/08/2003 15:30:00
03/08/2003 18:30:00
03/08/2003 21:00:00
03/08/2003 22:30:00
03/09/2003 00:00:00
03/09/2003 02:30:00
03/09/2003 05:00:00
03/09/2003 06:30:00
03/09/2003 08:00:00
03/09/2003 10:00:00
03/09/2003 12:00:00
03/09/2003 13:30:00
03/09/2003 16:30:00
03/09/2003 18:00:00
03/09/2003 19:30:00
03/09/2003 21:00:00
03/09/2003 22:30:00
03/10/2003 01:30:00
03/10/2003 04:00:00
03/10/2003 06:00:00
03/10/2003 07:30:00
03/10/2003 10:00:00
03/10/2003 11:30:00
03/10/2003 13:00:00

THOUSAND ACRE

a). For the following dates and times, turbidity data were greater than 1000.
Suspect a fouling event obscuring optics due to a rain event on 03/19/03.
Data
were retained but should be considered suspect.

03/20/2003 16:30:00 through 03/20/2003 18:30:00
03/21/2003 03:30:00
03/21/2003 04:30:00 through 03/21/2003 07:30:00

b). For the following dates and time, dissolved oxygen data (% & mg/l) dropped dramatically, most likely due to a fouling event (see comment a. above).
Data
should be considered suspect during these times.

03/20/03 20:00:00
03/21/03 09:00:00

CLAMBANK CREEK

No anomalous data for this month. See Section 14 for further documentation.

APRIL 2003

DEBIDUE CREEK

No anomalous data for this month. See Section 14 for further documentation.

OYSTER LANDING

No anomalous data for this month. See Section 14 for further documentation.

THOUSAND ACRE

a). For the following dates and times, data are missing due to sonde being out of the water for maintenance:

04/07/03 11:00:00

b). For the following date and time, turbidity data were greater than 1000.
Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

04/07/03 07:30:00

CLAMBANK CREEK

a). For the following dates and times, data are missing due to sonde being out of the water for maintenance:

04/22/03 12:30:00

MAY 2003

DEBIDUE CREEK

No anomalous data for this month. See Section 14 for further documentation.

OYSTER LANDING

No anomalous data for this month. See Section 14 for further documentation.

THOUSAND ACRE

a). For the following dates and times, all data are missing for Thousand Acre Creek. The battery terminal came loose during transport to the site for deployment on 5/21/2003, preventing data from being recorded during this deployment. This malfunction was not discovered until the scheduled retrieval on 6/2/2003.

05/21/2003 14:00:00 through 05/31/2003 23:30:00

b). For the following date and time, turbidity data were greater than 1000. This turbidity spike followed a 2-day rain event (5/15-16/2003 0.57" rain), so it is most likely due to particulate-laden runoff. Data were retained.

05/16/2003 15:00:00

CLAMBANK CREEK

a). For the following dates and times, it appears that the sonde did not settle to the bottom of the PVC tube during the first 4 hours of deployment. Data were retained but the user should be made aware that these readings are not from the typical deployment depth for this site.

05/20/2003 09:00:00 through 12:00:00

JUNE 2003

DEBIDUE CREEK

No anomalous data for this month. See Section 14 for further documentation.

OYSTER LANDING

a). For the following dates and times, all data are missing from Oyster Landing due to a YSI malfunction during deployment.

06/20/03 10:00 through 06/26/03 14:30

b). For the following dates and times, dissolved oxygen data were deleted from Oyster Landing due to a tear in the membrane.

06/16/03 00:30 through 06/20/03 09:30

THOUSAND ACRE

a). For the following dates and times, all data are missing from Thousand Acre Creek due to a sonde malfunction.

06/01/03 00:00 through 06/02/03 13:00

CLAMBANK CREEK

No anomalous data for this month. See Section 14 for further documentation.

JULY 2003

DEBIDUE CREEK

a). For the following dates and times, dissolved oxygen data were deleted from Debidue Creek due to a tear in the membrane.

07/10/03 13:00 through 07/30/03 09:00

b). For the following date and time, turbidity data were greater than 1000. Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

07/06/03 01:30

OYSTER LANDING

a). For the following dates and times, salinity and conductivity data are

missing due to a probe malfunction during deployment.

07/19/03 14:30 through 07/21/03 13:00

b). For the following dates and time, dissolved oxygen (mg/l) and depth data were deleted due to failure of the conductivity probe during deployment. These data are calculated based in-part on conductivity measurements, so these data are considered unreliable during failure of the conductivity probe.

07/19/03 14:30 through 07/21/03 13:00

c). For the following dates and times, turbidity data were greater than 1000. Suspect the wiper was jamming over the optics during sampling due to excessive fouling on the probe. Data were deleted.

07/19/2003 05:30:00
07/19/2003 08:30:00
07/19/2003 15:00:00
07/19/2003 16:00:00
07/19/2003 17:30:00 through 07/19/2003 18:00:00
07/19/2003 19:30:00
07/19/2003 21:30:00
07/19/2003 23:30:00
07/20/2003 03:00:00 through 07/20/2003 03:30:00
07/20/2003 05:00:00
07/20/2003 06:30:00
07/20/2003 08:00:00
07/20/2003 09:30:00
07/20/2003 11:30:00
07/20/2003 13:30:00 through 07/20/2003 14:30:00
07/20/2003 16:30:00 through 07/20/2003 17:00:00
07/20/2003 19:30:00 through 07/20/2003 20:00:00
07/20/2003 22:00:00 through 07/20/2003 22:30:00
07/21/2003 00:30:00 through 07/21/2003 01:00:00
07/21/2003 02:00:00
07/21/2003 03:30:00 through 07/21/2003 04:00:00
07/21/2003 06:00:00
07/21/2003 08:00:00
07/21/2003 10:30:00

THOUSAND ACRE

a). For the following dates and times, turbidity data were greater than 1000. Suspect heavily fouled water passing over optics due to runoff from a tropical depression. Data were retained, but should be considered suspect.

07/27/2003 16:00:00 through 07/27/2003 17:30:00

07/27/2003 18:30:00 through 07/27/2003 19:00:00
07/27/2003 20:00:00
07/27/2003 21:00:00 through 07/27/2003 21:30:00

CLAMBANK CREEK

a). Dissolved oxygen data should be considered suspect due to excessive fouling for deployment 07/29/2003 14:00 through 08/19/2003 10:30. Data were retained.

b). pH data for deployment 07/29/2003 14:00 through 08/19/2003 10:30 should be considered suspect due to drift caused by fouling of the membranes.

AUGUST 2003

DEBIDUE CREEK

a). For the following date and time, data are missing due to the exchanging of sondes during a sampling interval.

08/15/03 11:00

b). For the following dates and times, all pH data are missing due to a malfunctioning pH probe.

08/15/03 11:30 through 08/31/03 23:30

c). For the following date and time, turbidity data were greater than 1000.

Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

08/08/03 21:00

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

Suspect the wiper was jamming over the optics during sampling. Data were deleted.

08/21/2003 23:00:00
08/22/2003 00:00:00
08/22/2003 02:30:00
08/22/2003 03:30:00
08/22/2003 12:30:00
08/22/2003 14:00:00 through 08/22/2003 14:30:00
08/22/2003 20:00:00 through 08/22/2003 20:30:00
08/22/2003 23:00:00
08/23/2003 01:30:00
08/23/2003 03:30:00
08/23/2003 08:30:00
08/23/2003 10:30:00
08/23/2003 12:00:00

08/23/2003 23:30:00
08/24/2003 05:30:00
08/24/2003 06:30:00
08/24/2003 11:00:00
08/24/2003 13:30:00 through 08/24/2003 14:00:00
08/24/2003 17:30:00
08/24/2003 18:30:00
08/24/2003 20:30:00
08/25/2003 07:30:00
08/25/2003 08:30:00
08/25/2003 09:30:00
08/25/2003 11:30:00
08/25/2003 12:30:00
08/25/2003 16:30:00
08/25/2003 18:00:00
08/26/2003 14:00:00
08/26/2003 15:30:00
08/26/2003 21:30:00
08/27/2003 06:30:00
08/27/2003 07:30:00
08/27/2003 08:00:00
08/27/2003 09:30:00
08/28/2003 04:00:00
08/28/2003 08:00:00
08/28/2003 16:00:00
08/29/2003 10:30:00
08/29/2003 12:00:00

OYSTER LANDING

No anomalous data for this month. See Section 14 for further documentation.

THOUSAND ACRE

a). For the following dates and times, turbidity data were greater than 1000.
Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

08/17/2003 01:30:00
08/17/2003 10:00:00 through 08/17/2003 10:30:00
08/17/2003 12:30:00

CLAMBANK CREEK

a). For the following dates and times, turbidity data were deleted due to heavy fouling of probes.

08/03/2003 17:30:00 through 08/19/2003 10:30:00

b). Dissolved oxygen data should be considered suspect due to excessive fouling

for deployment 07/29/2003 14:00 through 08/19/2003 10:30. Data were retained.

c). pH data for deployment 07/29/2003 14:00 through 08/19/2003 10:30 should be considered suspect due to drift caused by fouling of the membranes.

SEPTEMBER 2003

DEBIDUE CREEK

a). For the following date and time, turbidity data were greater than 1000.

Suspect an object passed in front of optics at time of sample. This was most likely due to runoff from a rain event. Data were retained but should be considered suspect.

09/03/2003 18:30:00

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

Suspect the wiper was jamming over the optics during sampling due to excessive fouling on the probe. Data were deleted.

09/13/2003 21:30:00 through 09/13/2003 22:30:00
09/14/2003 00:00:00 through 09/14/2003 01:30:00
09/14/2003 03:00:00
09/14/2003 04:00:00
09/14/2003 05:00:00
09/14/2003 07:00:00
09/14/2003 09:00:00
09/14/2003 10:00:00 through 09/14/2003 10:30:00
09/14/2003 11:30:00
09/14/2003 13:00:00 through 09/14/2003 13:30:00
09/15/2003 00:00:00
09/15/2003 10:00:00 through 09/15/2003 12:30:00
09/15/2003 18:00:00
09/15/2003 21:30:00
09/16/2003 17:30:00
09/16/2003 19:30:00
09/17/2003 08:30:00
09/17/2003 10:00:00
09/17/2003 11:00:00 through 09/17/2003 11:30:00
09/17/2003 13:00:00
09/17/2003 14:00:00
09/17/2003 15:00:00
09/18/2003 07:00:00 through 09/18/2003 07:30:00
09/18/2003 08:30:00
09/18/2003 12:00:00
09/18/2003 13:00:00
09/18/2003 14:30:00
09/18/2003 16:30:00

09/18/2003 18:00:00 through 09/18/2003 18:30:00
09/18/2003 21:00:00
09/18/2003 23:30:00
09/19/2003 00:30:00
09/19/2003 04:30:00
09/19/2003 05:30:00
09/19/2003 06:30:00
09/19/2003 07:30:00
09/19/2003 08:30:00
09/19/2003 09:30:00
09/19/2003 10:30:00
09/19/2003 11:30:00
09/19/2003 13:30:00 through 09/19/2003 15:00:00
09/19/2003 16:00:00
09/20/2003 08:30:00 through 09/20/2003 09:00:00
09/20/2003 10:30:00
09/20/2003 11:00:00
09/21/2003 09:30:00
09/21/2003 18:00:00
09/22/2003 02:30:00
09/22/2003 09:30:00
09/22/2003 11:30:00
09/22/2003 13:30:00
09/22/2003 15:00:00
09/22/2003 18:00:00
09/22/2003 22:00:00
09/22/2003 23:30:00 through 09/23/2003 00:00:00
09/23/2003 04:00:00
09/23/2003 09:30:00
09/23/2003 15:30:00
09/23/2003 17:30:00
09/23/2003 18:30:00
09/23/2003 21:30:00
09/23/2003 23:00:00
09/24/2003 00:30:00
09/24/2003 01:30:00
09/24/2003 02:00:00
09/24/2003 03:00:00
09/24/2003 04:30:00
09/24/2003 13:00:00
09/24/2003 14:30:00
09/24/2003 16:30:00
09/24/2003 18:00:00
09/24/2003 19:30:00
09/24/2003 21:00:00
09/24/2003 22:30:00
09/25/2003 01:30:00
09/25/2003 08:30:00
09/25/2003 12:30:00
09/25/2003 13:30:00
09/25/2003 14:30:00
09/25/2003 19:30:00
09/27/2003 07:30:00
09/28/2003 04:00:00

09/28/2003 05:30:00
09/28/2003 08:30:00
09/29/2003 02:00:00
09/29/2003 03:30:00
09/29/2003 04:30:00

c). For the following dates and times, pH data are missing due to the probe breaking prior to deployment.

09/01/2003 00:00:00 through 09/29/2003 10:30:00

OYSTER LANDING

a). For the following date and time, turbidity data were greater than 1000.

Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

09/17/03 06:30

THOUSAND ACRE

a). For the following date and time, turbidity data were greater than 1000.

Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

09/27/03 15:00

CLAMBANK CREEK

a). For the following date and time, turbidity data were greater than 1000.

Suspect an object passed in front of optics at time of sample. This was during a high period of turbidity due to a storm event. Data were retained but should be considered suspect.

09/20/2003 08:00:00

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

Suspect the wiper was jamming over the optics during sampling due to excessive fouling on the probe. Data were deleted.

09/25/2003 00:30:00
09/25/2003 05:30:00
09/25/2003 06:30:00
09/25/2003 17:00:00
09/25/2003 20:00:00
09/26/2003 03:00:00

09/26/2003 04:00:00

c). For the following dates and times, dissolved oxygen data are suspect due to increasing fouling on the membrane during the deployment. Data were retained.

09/11/2003 03:00 through 09/23/2003 12:30

d). For the following dates and times, dissolved oxygen data were deleted from Oyster Landing due to a suspected tear in the membrane toward the end of the deployment.

09/23/2003 13:00 through 09/26/2003 09:00

OCTOBER 2003

DEBIDUE CREEK

a). For the following date and time, all data are missing due to the sonde being out of the water for maintenance.

10/20/2003 09:30

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

Suspect the wiper was intermittently parking over the optics during sampling.

All data >1000 NTU were deleted.

10/23/2003 08:00:00
10/25/2003 13:00:00
10/26/2003 14:30:00
10/27/2003 06:30:00
10/27/2003 08:30:00
10/27/2003 11:00:00
10/27/2003 12:00:00
10/28/2003 13:30:00
10/31/2003 02:30:00
10/31/2003 10:30:00
10/31/2003 21:30:00

OYSTER LANDING

a). For the following date and time the sonde was deployed at a shallower depth than normal while maintenance was performed at the sonde site. Data were retained but the user should be made aware that these readings are not from the typical deployment depth for this site.

10/15/2003 08:30

b). For the following dates and times, pH data are missing due to a probe malfunction during deployment.

10/15/2003 09:00 through 10/31/2003 23:30

THOUSAND ACRE

a). For the following dates and times, data are missing due to sonde maintenance.

10/01/2003 10:30

10/15/2003 10:00

b). For the following dates and time, turbidity data were greater than 1000.

Suspect the wiper was intermittently parking over the optics during sampling.

All data >1000 NTU were deleted.

10/01/2003 12:00:00

10/01/2003 14:30:00

10/01/2003 16:30:00

10/01/2003 17:00:00 through 10/01/2003 17:30:00

10/01/2003 19:00:00

10/01/2003 20:30:00

10/01/2003 22:00:00 through 10/01/2003 23:30:00

10/02/2003 01:00:00 through 10/02/2003 03:00:00

10/02/2003 04:30:00 through 10/02/2003 05:00:00

10/02/2003 12:00:00 through 10/02/2003 14:00:00

10/02/2003 15:30:00 through 10/02/2003 17:00:00

10/02/2003 18:30:00 through 10/02/2003 19:30:00

10/02/2003 21:00:00

10/02/2003 22:30:00

10/03/2003 01:30:00 through 10/03/2003 02:30:00

10/03/2003 04:00:00

10/03/2003 05:30:00 through 10/03/2003 06:30:00

10/03/2003 12:00:00 through 10/03/2003 12:30:00

10/03/2003 14:00:00 through 10/03/2003 17:30:00

10/03/2003 19:00:00

10/03/2003 20:30:00

10/03/2003 21:00:00

10/04/2003 02:30:00 through 10/04/2003 03:00:00

10/04/2003 04:30:00 through 10/04/2003 05:30:00

10/04/2003 07:00:00

10/04/2003 14:00:00

10/04/2003 15:00:00 through 10/04/2003 20:30:00

10/04/2003 21:30:00 through 10/04/2003 22:00:00

10/04/2003 23:30:00

10/05/2003 01:00:00 through 10/05/2003 03:00:00

10/05/2003 05:00:00 through 10/05/2003 06:00:00

10/05/2003 07:00:00

10/05/2003 08:30:00
10/05/2003 11:00:00
10/05/2003 12:30:00
10/05/2003 14:30:00 through 10/05/2003 15:00:00
10/05/2003 16:00:00 through 10/05/2003 21:00:00
10/05/2003 23:00:00 through 10/05/2003 23:30:00
10/06/2003 01:30:00
10/06/2003 03:00:00 through 10/06/2003 05:00:00
10/06/2003 06:00:00 through 10/06/2003 07:30:00
10/06/2003 09:30:00 through 10/06/2003 10:00:00
10/06/2003 12:00:00 through 10/06/2003 13:00:00
10/06/2003 14:30:00 through 10/06/2003 15:00:00
10/06/2003 18:00:00 through 10/06/2003 20:30:00
10/06/2003 21:30:00 through 10/06/2003 23:00:00
10/07/2003 01:00:00 through 10/07/2003 01:30:00
10/07/2003 03:00:00 through 10/07/2003 09:30:00
10/07/2003 14:00:00 through 10/07/2003 16:30:00
10/07/2003 17:30:00 through 10/08/2003 02:00:00
10/08/2003 03:30:00 through 10/08/2003 06:30:00
10/08/2003 07:30:00 through 10/08/2003 17:00:00
10/08/2003 18:00:00 through 10/08/2003 23:00:00
10/09/2003 00:30:00
10/09/2003 01:30:00 through 10/09/2003 02:30:00
10/09/2003 04:00:00
10/09/2003 05:30:00 through 10/09/2003 06:00:00
10/09/2003 07:30:00 through 10/09/2003 23:00:00
10/10/2003 01:30:00
10/10/2003 03:00:00
10/10/2003 04:30:00 through 10/10/2003 06:30:00
10/10/2003 09:30:00 through 10/10/2003 11:30:00
10/10/2003 14:00:00
10/10/2003 15:00:00
10/10/2003 18:30:00 through 10/10/2003 23:00:00
10/11/2003 01:30:00
10/11/2003 03:30:00
10/11/2003 05:00:00 through 10/11/2003 07:00:00
10/11/2003 09:30:00 through 10/11/2003 11:00:00
10/11/2003 14:00:00 through 10/11/2003 15:00:00
10/11/2003 16:00:00
10/11/2003 18:30:00

c). For the following date and time, turbidity data were greater than 1000.

Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

10/22/2003 03:00:00

CLAMBANK CREEK

No anomalous data for this month. See Section 14 for further documentation.

NOVEMBER 2003

DEBIDUE CREEK

a). For the following dates and times, turbidity data were greater than 1000.
This is due to a wiper malfunction and subsequent intermittent parking over optics. All values greater than 1000 were deleted. It should be noted that some high values below 1000 are most likely due to partial parking of the brush over the optics and should be considered suspect.

11/01/2003 01:00:00
11/01/2003 02:00:00
11/01/2003 06:30:00
11/01/2003 08:30:00
11/02/2003 06:30:00
11/02/2003 11:30:00
11/02/2003 12:30:00
11/02/2003 14:00:00
11/02/2003 15:00:00
11/03/2003 02:00:00
11/03/2003 04:30:00

OYSTER LANDING

a). For the following dates and times, dissolved oxygen data were deleted from Oyster Landing due to a tear in the membrane during the deployment.

11/04/03 11:30 through 11/06/03 12:00

b). For the following date and time the datalogger recorded negative depth data. However, specific conductivity and salinity sensor readings suggest that the datalogger was not out of the water. Suspect that the negative value indicates shallow depth due to extreme high winds holding the tide out (11/28/03 max wind 40 mph, 11/29/03 23 mph) and is simply due to a slight calibration error. Data were retained.

11/29/03 07:00

c). For the following dates and times, turbidity data were greater than 1000.
This is due to a wiper motor malfunction and subsequent parking over optics.
All values greater than 1000 were deleted.

11/14/2003 22:00:00

11/15/2003 02:30:00
11/16/2003 13:30:00
11/17/2003 01:00:00
11/17/2003 02:00:00
11/17/2003 04:00:00
11/17/2003 05:00:00
11/17/2003 07:30:00
11/17/2003 09:00:00
11/17/2003 11:00:00
11/17/2003 13:00:00
11/17/2003 14:00:00

d). For the following dates and times, pH data are missing due to a probe malfunction during deployment.

11/01/2003 00:00 through 11/04/2003 11:00

THOUSAND ACRE

a). For the following dates and times, turbidity data were greater than 1000.
Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

11/19/2003 00:30:00
11/19/2003 16:00:00
11/24/2003 16:00:00

CLAMBANK CREEK

No anomalous data for this month. See Section 14 for further documentation.

DECEMBER 2003

DEBIDUE CREEK

pH data for the following deployment should be considered suspect due to internal malfunction affecting pH data. Sonde was sent to YSI for repair in March 2004.
12/15/03 13:30 - 01/07/04 10:00

OYSTER LANDING

No anomalous data for this month. See Section 14 for further documentation.

THOUSAND ACRE

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

Suspect an object passed in front of optics at time of sample. Data were retained but should be considered suspect.

12/01/03 00:30:00
12/18/03 13:30:00

CLAMBANK CREEK

No anomalous data for this month. See Section 14 for further documentation.

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. Post Deployment Information

End of Deployment Post-calibration Readings in Standard Solutions:
NA = no data available for that particular standard

Site Date Cond(mS) (Std:10 or 0mS) Salinity(ppt) (Std:0ppt) DO(air sat) (Std: 100%) pH(Std:7) Depth(Std:0) Turb(Std:0)

DC

01/07/03	0.026	0.01	83.5	7.13	0.034	NA
01/22/03	0.013	0.01	103.6	6.99	-0.093	-0.7
02/11/03	0.032	0.01	99.7	7.06	0.043	0.1
03/10/03	0.036	0.02	104.2	6.95	0.071	0.4
03/27/03	0.029	0.01	95.6	7.08	0.031	0.5
04/16/03	0.016	0.01	87.7	7.07	0.073	0.6
04/23/03	0.034	0.01	97.8	7.10	-0.070	0.3
05/07/03	0.016	0.01	97.3	6.98	0.016	0.0
05/20/03	0.066	0.03	97.5	7.07	0.049	0.3
06/03/03	0.018	0.01	98.1	7.10	-0.069	0.1
06/20/03	0.057	0.03	98.7	7.09	-0.066	0.8
07/07/03	0.020	0.01	72.5	7.04	0.078	-0.3
07/30/03	0.018	0.01	NA	7.22	0.049	0.2
08/15/03	0.020	0.01	87.2	6.86	-0.017	-0.1
09/29/03	*10.135	.65	45.0	NA	0.054	0.1
10/20/03	0.028	0.01	80.4	7.02	0.020	0.2
11/03/03	0.046	0.02	101.0	7.13	-0.047	3.7
11/17/03	0.245	0.12	99.4	7.07	0.007	0.3
12/01/03	0.198	0.09	101.5	7.12	-0.051	0.5
12/15/03	0.022	0.01	98.2	7.01	-0.034	0.1

**01/07/03 1.409 0.71 100.7 6.41 0.105 0.9
 *in 10 mS/cm standard
 **Tap water rather than deionized water was used for post-cal, so
 turbidity and
 salinity/conductivity were higher than normal.

OL

01/07/03	0.061	0.03	91.7	7.20	0.033	NA
01/23/03	0.040	0.02	97.6	7.10	-0.060	-0.1
02/11/03	0.018	0.01	97.2	7.12	0.041	-0.1
03/10/03	0.017	0.01	104.3	7.05	0.059	0.2
03/26/03	0.032	0.01	99.9	7.15	0.008	0.0
04/08/03	0.030	0.01	60.0	7.11	0.184	-1.7
04/23/03	0.014	0.01	98.4	7.05	-0.055	0.2
05/07/03	0.006	0.00	99.8	7.13	-0.005	-0.2
05/21/03	0.022	0.01	94.8	7.03	0.012	0.5
06/04/03	0.021	0.01	92.2	7.05	-0.085	0.3
06/20/03	0.015	0.01	114.1	6.95	-0.040	0.3
06/26/03	not available due to sonde malfunction					
07/08/03	0.017	0.01	99.8	7.00	0.034	0.1
07/21/03	NA	NA	97.0	7.12	-0.075	-0.8
08/15/03	0.026	0.01	67.6	7.06	0.016	-0.1
09/26/03	*10.125	7.2	38.9	7.10	0.053	-0.5
10/15/03	0.070	0.03	94.6	7.02	-0.057	0.3
11/04/03	0.135	0.06	102.6	6.61	0.149	0.6
11/06/03	0.242	0.11	NA	7.07	-0.033	1.1
11/17/03	0.307	0.15	97.8	7.08	-0.004	0.5
12/01/03	0.101	0.05	97.3	7.11	-0.048	-0.1
12/15/03	0.056	0.03	101.0	7.14	-0.015	0.6
**01/17/03	1.396	0.70	96.3	7.09	0.072	2.1

*in 10 mS/cm standard
 **Tap water rather than deionized water was used for post-cal, so
 turbidity and
 salinity/conductivity were higher than normal.

TA

01/09/03	0.020	0.01	99.3	6.82	-0.261	0.1
01/22/03	0.016	0.01	110.8	7.10	-0.038	NA
02/13/03	0.100	0.04	100.0	6.98	0.053	3.2
03/04/03	0.011	0.00	98.0	7.02	-0.024	1.1
03/27/03	0.010	0.00	89.4	7.29	0.037	-2.2
04/07/03	0.002	0.00	97.9	7.01	0.040	0.0
04/22/03	0.018	0.01	99.8	7.05	-0.114	0.3
05/08/03	0.008	0.00	120.4	7.00	-0.026	0.4
05/21/03	0.011	0.00	101.3	7.00	0.031	-0.2
06/02/03	not available due to sonde malfunction					
06/19/03	0.012	0.00	98.7	7.00	-0.063	-0.3
07/02/03	0.005	0.00	98.0	7.11	-0.043	-0.1
07/31/03	0.009	0.00	99.3	NA	-0.012	-0.3
08/19/03	0.046	0.02	100.3	6.82	-0.009	0.3
09/29/03	*10.205	7.6	110.0	7.05	-0.010	0.0
10/15/03	0.073	0.03	95.6	7.08	-0.021	0.6
10/31/03	0.028	0.01	100.3	6.97	0.218	17.8**
11/18/03	0.032	0.01	97.6	7.05	-0.063	0.1

12/02/03	0.026	0.01	100.2	7.10	0.050	0.6
12/16/03	0.011	0.00	97.5	7.12	-0.091	0.4
01/06/04	0.028	0.01	99.4	7.09	-0.026	-0.1

*in 10 mS/cm standard

**bryozoans growing off end of wiper in optics path when parked

CB

01/09/03	0.010	0.00	97.4	7.05	-0.266	NA
01/24/03	0.017	0.01	98.5	7.04	0.078	NA
02/13/03	0.028	0.01	91.2	6.99	0.065	-0.6
03/04/03	0.078	0.04	97.4	6.97	-0.002	1.9
03/26/03	0.032	0.01	51.5	6.71	-0.040	-0.2
04/07/03	0.009	0.00	97.7	7.14	-0.040	0.3
04/22/03	0.016	0.01	96.4	7.02	-0.122	0.3
05/08/03	0.012	0.00	99.9	6.99	-0.020	0.3
05/20/03	0.097	0.04	96.8	7.04	0.068	0.5
06/02/03	0.028	0.01	101.0	6.97	-0.062	-0.2
06/19/03	0.135	0.06	101.0	7.02	-0.056	0.2
07/01/03	0.037	0.02	99.1	7.03	0.108	0.0
07/29/03	0.008	0.00	83.1	7.27	-0.051	0.4
08/19/03	0.060	0.03	62.4	NA	0.046	0.1
09/26/03	*10.195	7.74	106.1	7.01	-0.025	0.0
10/16/03	0.022	0.01	52.6	7.09	0.029	-1.1
10/31/03	0.014	0.00	98.7	6.98	0.021	-0.2
11/18/03	0.246	0.12	99.8	6.98	-0.070	1.7
12/02/03	0.053	0.02	99.8	7.04	0.065	0.0
12/16/03	0.062	0.03	97.8	6.88	-0.094	0.8
01/06/04	0.054	0.02	99.0	7.03	-0.015	0.8

*in 10 mS/cm standard

14. Other Remarks:

On 08/13/2020 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.

THOUSAND ACRE

01/22/03 14:00 There was a jump in pH after deployment of a different sonde at Thousand Acre. Suspect that this is due to a slight calibration difference between the two sondes and not any natural fluctuation in pH levels.

02/23/03 A prolonged wind event affected tidal depth on 2/23/03, preventing the tide from rising to a normal level. This event also affected water temperature. This event was evident at all sites.

03/03 For the month of March, precipitation effects are obvious in salinity and conductivity data at Thousand Acre Marsh.

04/03 A prolonged wind/storm event affected tidal depth on 04/06-07/03 (23:30-00:00) keeping the tide at a higher than normal level (high and low tide). This event was evident at all sites.

04/03 For the month of April, precipitation effects are obvious in salinity and conductivity data at Thousand Acre Marsh, suppressing salinity to fresh-water concentrations (<3ppt) for the entire month.

04/07/03 11:30:00 There was a jump in pH after deployment of a different sonde at Thousand Acre. Suspect that this is due to a slight calibration difference between the two sondes and not any natural fluctuation in pH levels.

05/03 For the month of May, precipitation effects are obvious in salinity, conductivity, pH and turbidity data at Thousand Acre Creek. Heavy & frequent rains coupled with increased riverine discharge into Winyah Bay lowered salinity levels to fresh-water concentrations for the beginning of the month with slightly elevated salinity levels during mid-month spring tides. Rain events on 5/6/03 (0.82") and 5/16/03 (0.43") caused noticeable spikes in turbidity on those dates.

07/03 A wind event affected tidal depth on 07/23/03 at Thousand Acre Marsh, preventing the tide from rising to a normal level. This event was evident at Oyster Landing, Clambank Creek and Debidue Creek as well.

08/03 A storm event on 08/18/03 effected temperature, pH and depth data at
Thousand Acre Marsh for that day. This storm produced heavy rains (2.1")
and
heavy winds (20 mph hourly av.).

09/03 During the month of September, the effects of several tropical
systems
(Hurricane Isabel, Hurricane Fabian, Tropical Depression Henri) are
evident in
all water quality parameters measured at Thousand Acre Marsh.

10/03 For the month of October, precipitation effects are obvious in
salinity,
conductivity, dissolved oxygen and pH data at Thousand Acre Marsh.

11/03 Due to a probe malfunction, turbidity data between 11/18/03 14:30
and
12/02/03 12:00 were collected using a 6026 turbidity probe rather than a
6136
turbidity probe.

11/03 For the month of November, precipitation effects were obvious in
salinity,
conductivity, pH and DO data, while wind effects were obvious in depth
data at
Thousand Acre Marsh.

12/03 Due to a turbidity probe malfunction, turbidity data between
12/01/03
00:00 and 12/02/03 12:00 were recorded measured with a 6026 turbidity
probe
rather than a 6136 turbidity probe.

12/03 For the month of December, precipitation effects were obvious in
salinity
and conductivity data, while wind effects were obvious in depth data at
Thousand
Acre Marsh.

CLAMBANK CREEK

01/03 For the month of January, precipitation effects are obvious in
salinity
and conductivity data at Clambank Creek.

02/23/03 A prolonged wind event affected tidal depth on 2/23/03,
preventing the
tide from rising to a normal level. This event was evident at all sites.

03/03 For the month of March, precipitation effects are obvious in
salinity,
conductivity, pH, and turbidity data at Clambank Creek. Most noticeable
are the

effects of the 03/20/03 storm which dropped >5 inches of rain in ~2 hours (5.75" measured at Oyster Landing weather station).

04/03 A prolonged wind/storm event affected tidal depth on 04/06-07/03 (23:30-00:00) keeping the tide at a higher than normal level (high and low tide). This event was evident at all sites.

04/03 For the month of April, precipitation effects are obvious in salinity and conductivity data at Clambank Creek.

05/03 For the month of May, precipitation effects are obvious in salinity, conductivity, and pH data at Clambank Creek.

05/03 A wind event affected tidal depth on 5/31/03 through 6/1/03, preventing the tide from rising to a normal level. Depth readings affected were between 5/31/03 17:00 and 6/1/03 2:00. This event was evident at Oyster Landing and Debidue Creek as well.

07/03 A wind event affected tidal depth on 07/23/03 at Clambank Creek, preventing the tide from rising to a normal level. This event was evident at Oyster Landing, Thousand Acre Marsh and Debidue Creek as well.

07/03 For the month of July, precipitation effects are obvious in salinity and conductivity data at Clambank Creek.

08/03 A storm event on 08/18/03 effected temperature, pH, salinity, conductivity and depth data at Clambank Creek for that day. This storm produced heavy rains (2.1") and heavy winds (20 mph hourly av.).

09/03 A jump in dissolved oxygen concentration on 9/26/03 is due to the instrumentation being switched out at that site. There was a noticeable drift in dissolved oxygen concentrations during September due to an extended deployment of the instrument and excessive fouling during that period.

09/03 During the month of September, the effects of several tropical systems (Hurricane Isabel, Hurricane Fabian, Tropical Depression Henri) are evident in all water quality parameters measured at Clambank Landing.

10/03 For the month of October, precipitation effects are obvious in salinity and conductivity data at Clambank Creek.

10/03 A jump in dissolved oxygen concentration on 10/16/03 is due to the instrumentation being switched out at that site.

11/03 A shift in pH was evident with the change-out of sondes at Clambank Creek.

11/03 For the month of November, precipitation effects were obvious in salinity, conductivity, pH and DO data, while wind effects were obvious in depth data at Clambank Creek.

12/03 A shift in pH was evident with the change-out of sondes at Clambank Creek.

12/03 For the month of December, precipitation effects were obvious in salinity and conductivity data, while wind effects were obvious in depth data at Clambank Creek.

DEBIDUE CREEK

02/03 During the second deployment in February, average pH was recorded as approximately 0.2 lower than the first deployment in the month. This is due to a failing pH probe on the second deployment. The pH probe was changed after retrieval, but data were not affected enough to merit deletion.

02/23/03 A prolonged wind event affected tidal depth on 2/23/03, preventing the tide from rising to a normal level. This event was evident at all sites.

03/03 During the second deployment in February, average pH was recorded as approximately 0.3 higher than the first deployment in the month. This is due to a failing pH probe on the first deployment (see 02/03 note above). The pH probe was changed after retrieval. Data were not affected enough to merit deletion.

03/03 For the month of March, precipitation effects are obvious in salinity, conductivity, and pH data at Debidue Creek. Most noticeable are the effects of the 03/20/03 storm which dropped >5 inches of rain in ~2 hours (5.75" measured

at Oyster Landing weather station).

04/03 A prolonged wind/storm event affected tidal depth on 04/06-07/03 (23:30-00:00) keeping the tide at a higher than normal level (high and low tide). This event was evident at all sites.

04/03 For the month of April, precipitation effects are obvious in salinity and conductivity data at Debidue Creek.

05/03 For the month of May, precipitation effects are obvious in salinity and conductivity data at Oyster Landing.

06/03 A wind event affected tidal depth on 6/1/03 at Debidue Creek, preventing the tide from rising to a normal level. This event was evident at Clambank Creek and Oyster Landing as well.

06/03 For the month of June, precipitation effects are obvious in salinity and conductivity data at Debidue Creek.

07/03 For the month of July, precipitation effects are obvious in salinity and conductivity data at Debidue Creek. A major storm event on 7/19/03 dropped 6.11" of rain (recorded at Oyster Landing MET station).

07/03 A wind event affected tidal depth on 07/23/03 at Debidue Creek, preventing the tide from rising to a normal level. This event was evident at Clambank Creek, Thousand Acre Marsh and Oyster Landing as well.

08/03 A storm event on 08/18/03 effected salinity, conductivity and depth data at Debidue Creek for that day. This storm produced heavy rains (2.1") and heavy winds (20 mph hourly av.).

09/03 A jump in dissolved oxygen concentration on 9/29/03 is due to the instrumentation being switched out at that site. There was a noticeable drift in dissolved oxygen concentrations during September due to an extended deployment of the instrument and excessive fouling during that period.

09/03 During the month of September, the effects of several tropical systems (Hurricane Isabel, Hurricane Fabian, Tropical Depression Henri) are evident in

salinity and depth data measured at Debidue Creek.

10/03 For the month of October, precipitation effects are obvious in salinity and conductivity data at Debidue Creek.

11/03 For the month of November, precipitation effects are obvious in salinity, conductivity and pH data, while wind effects are obvious in depth data at Debidue Creek.

12/03 For the month of December, precipitation effects are obvious in salinity, conductivity, and pH data, while wind effects are obvious in depth data at Debidue Creek.

OYSTER LANDING

02/23/03 A prolonged wind event affected tidal depth on 2/23/03, preventing the tide from rising to a normal level. This event was evident at all sites.

03/03 For the month of March, precipitation effects are obvious in salinity, conductivity, and pH data at Oyster Landing. Most noticeable are the effects of the 03/20/03 storm which dropped >5 inches of rain in ~2 hours (5.75" measured at Oyster Landing weather station).

04/03 A prolonged wind/storm event affected tidal depth on 04/06-07/03 (23:30-00:00) keeping the tide at a higher than normal level (high and low tide). This event was evident at all sites.

04/03 For the month of April, precipitation effects are obvious in salinity and conductivity data at Oyster Landing. These storm events also lowered dissolved oxygen levels at Oyster Landing (possibly due to silt-laden runoff), evident in readings for 04/06-07/03 and 04/25-26/03. 3.04 inches of rain fell on 04/25/03 alone.

05/03 For the month of May, precipitation effects are obvious in salinity, conductivity, and pH data at Debidue Creek.

06/03 A wind event affected tidal depth on 6/1/03, preventing the tide from

rising to a normal level. This event was evident at Clambank Creek and Debidue Creek as well.

06/03 For the month of June, precipitation effects are obvious in salinity and conductivity data at Oyster Landing.

07/03 For the month of July, precipitation effects are obvious in salinity, conductivity, and pH data at Oyster Landing. A major storm event on 7/19/03 dropped 6.11" of rain (recorded at Oyster Landing MET station).

07/03 A wind event affected tidal depth on 07/23/03 at Oyster Landing, preventing the tide from rising to a normal level. This event was evident at Clambank Creek, Thousand Acre Marsh and Debidue Creek as well.

08/03 A storm event on 08/18/03 effected temperature, pH, salinity, conductivity and depth data at Oyster Landing for that day. This storm produced heavy rains (2.1") and heavy winds (20 mph hourly av.).

09/03 During the month of September, the effects of several tropical systems (Hurricane Isabel, Hurricane Fabian, Tropical Depression Henri) are evident in all water quality parameters measured at Oyster Landing.

09/03 A jump in dissolved oxygen concentration and pH on 9/26/03 is due to the instrumentation being switched out at that site. There was a noticeable drift in dissolved oxygen concentrations and pH during September due to an extended deployment of the instrument and excessive fouling during that period.

10/03 For the month of October, precipitation effects are obvious in salinity, conductivity, and turbidity data at Oyster Landing.

11/03 For the month of November, precipitation effects are obvious in salinity and conductivity data, while wind effects are obvious in depth data at Oyster Landing.

12/03 For the month of December, precipitation effects are obvious in salinity and conductivity data, while wind effects are obvious in depth data at Oyster Landing.