

Chesapeake Bay Virginia (CBV) NERR Water Quality Metadata
January - December 1999
Latest update: November 1, 2002

I. Data Set and Research Descriptors

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2. Entry verification

The data were uploaded to the PC from the YSI 6000 data loggers and reviewed using PC6000 software from YSI. Graphs were produced and examined using the PC6000 software then printed out and filed in order to aid in reviewing data to correlate any anomalous and outlying data. 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. 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 (down time) was inserted into the spreadsheet and was denoted by periods (.). Data that was not within calibration range of the instrument were evaluated and removed from the record and denoted by periods (.). Edited and raw data files were copied and archived in the CBNERRVA file server and uploaded to the CDMO FTP site. All Taskinas Creek and Goodwin Islands files from 1999 have been

verified using the latest update of the CDMO Microsoft Excel 5.0 macro programs which identified outliers (values that fall outside of the calibration - see section II.8 of this document) and other erroneous data. Outliers were determined according to the instruments' manufacturers manual. Eric Wooden collected 1999 Goodwin Island data from 01/00 to 06/00 and Janet Nestlerode collected the 1999 data from 6/00 to 12/00. Scott Neubauer collected the 1999 Taskinas Creek data. Eric Wooden processed the 1999 data from both sites through the latest update of the CDMO macro and conducted final editing of the data. Following final editing, Eric Wooden uploaded the database to the CBNERRVA server and to CDMO.

3. Research Objectives

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 nonpoint source water quality issues associated with changing land use patterns; these issues are of prime importance to the U.S. EPA Chesapeake Bay Program. Continuously monitored physical water quality parameters (dissolved oxygen, pH, specific conductance, turbidity, and temperature) provide long-term measurements which can be supplemented with shorter-term monitoring and process oriented studies. Measurements were taken every 15 minutes at the Taskinas Creek site and the YSI dataloggers were maintained, downloaded, cleaned, and calibrated at two-week intervals from early October to the end of May. The two-week intervals of YSI dataloggers deployments are increased to one-week intervals from beginning of June to late September. This may vary from year to year and site to site depending on the amount of fouling on the instruments.

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

nonpoint source water quality issues. Furthermore, due to extensive wetlands, intertidal, and submerged habitats, the Goodwin Islands are used extensively for SAV, material flux, and trophic interaction research activities. Measurements were taken every 15 minutes at the Goodwin Islands site and the YSI dataloggers were maintained, downloaded, cleaned, and calibrated at two-week intervals from early October to the end of May. The two-week intervals of YSI dataloggers deployments are increased to one-week intervals from beginning of June to late September. This may vary from year to year and site to site depending on the amount of fouling on the instruments.

4. Research methods

Taskinas Creek (TC) Component:

The Chesapeake Bay NERRS of Virginia maintains a long-term water quality-monitoring program, which consists of two stations. The Taskinas Creek station

is located in the transitional zone of the York River tributary in the York

River State Park. A simple deployment was arranged with the State Park in

September 1995, where the secured unit hung at a fixed depth (0.5 m above the

creek bed) from an overhanging tree approximately six meters upstream from

the parks canoe landing. In September 1997, the deployment was modified so that

the datalogger remained secure at all times within a 4-inch PVC housing 0.5 m

above the bottom. Three wood pilings were driven into the sediment in an equilateral triangle arrangement and the PVC pipe bolted to one piling.

Specific conductivity, pH, depth, dissolved oxygen, temperature, and turbidity

are recorded at 15-minute intervals. Salinity and DO saturation are determined

from temperature and specific conductivity readings. At approximately two-week

intervals or one-week intervals depending on the time of year, the data logger

is returned to the lab for downloading, cleaning, membrane replacement and

recalibration. Maintenance intervals are determined according to the amount of

biofouling that occurs and to accommodate battery life. A second YSI 6000

datalogger is deployed following retrieval of the original YSI datasonde in order to maintain a continuous record. Field verification of pH, dissolved

oxygen, salinity, and temperature are taken during the deployment/retrieval procedure. PH is tested in the lab with a Fisher Accumet pH Meter Model 600. Dissolved Oxygen was determined by a Winkler titration. Salinity was determined by using a Rosemount Analytical Induction Salinometer. Temperature was measured with a Hanna Instrument HI 9063 microcomputer K-thermocouple thermometer. All YSI procedures are in accordance with the YSI operating manual methods, sections 3 and 7. Standards for pH, and 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.

Goodwin Islands (GI) Component:

The Chesapeake Bay NERRS of Virginia maintains a second long-term water quality-monitoring program at Goodwin Islands, located at the mouth of the York River. 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 was built in October 1997 where 4-inch PVC pipe is housed inside of a commercially available galvanized steel communications tower with the datalogger 0.5 m from the bottom. Specific conductivity, pH, depth, dissolved oxygen, temperature, and turbidity are recorded at 15-minute intervals. Salinity and DO saturation are determined from temperature and specific conductivity readings. At approximately two-week intervals or one-week intervals depending on the time of year, the datalogger is returned to the lab for downloading, cleaning, membrane replacement and recalibration. Maintenance intervals are determined according to the amount of biofouling that occurs and to accommodate battery life. A second YSI 6000 datalogger is deployed following retrieval of the original YSI datasonde in order to maintain a continuous record. Field verification of pH, dissolved oxygen, salinity, and temperature are taken during the deployment/retrieval procedure. PH is tested in the lab with a Fisher Accumet pH Meter Model 600. Dissolved Oxygen was determined by a Winkler titration. Salinity was determined by using a Rosemount Analytical Induction Salinometer. Temperature was measured with a Hanna Instrument HI 9063

microcomputer K-thermocouple thermometer. All YSI procedures are in accordance with the YSI operating manual methods, sections 3 and 7. Standards for pH, and 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.

5. Site location and character

(1) Goodwin Islands (37 deg 13' 02.65093"; 76 deg 23' 32.75799")

The Goodwin Islands component of the CBNERR-VA is on the mouth of the York River at the northeastern tip of York County. Circulation patterns at the Goodwin Islands are influenced by York River discharge and the wind patterns of the Chesapeake Bay. The Goodwin Islands represent relatively pristine marsh islands surrounded by intertidal flats, submerged aquatic vegetation (SAV) beds, oyster reefs, and shallow open estuarine waters. Dominant marsh species include Saltmarsh Cordgrass (*Spartina alterniflora*), Salt Grass (*Distichlis spicata*), and Saltmeadow Hay (*Spartina patens*). Estuarine scrub/shrub vegetation dominates the forested ridges. The sampling station is located in a shallow embayment on the southeastern side of the main island. The station is located approximately 400 meters from shore, average water depth on the order of 1m, amongst submerged aquatic vegetation beds dominated by eelgrass (*Zostera marina*) and Widgeon grass (*Ruppia maritima*). Salinity at this site ranges from 9.9-27.5 ppt and a multi-year average salinity is 19.3 ppt. Tides are semi-diurnal and range from 0.4-1.1 m. The data logger probes are located 0.5 m above the sandy substrate bottom. Potential activities that could impact the site include light recreational and commercial boating activity.

(2) Taskinas Creek (37 deg 24' 54.04617"; 76 deg 42' 51.75733")

The Taskinas Creek watershed is representative of an inner coastal plain rural watershed within the southern Chesapeake Bay system. Taskinas Creek is a third

order stream approximately 3 km in length and flows in a northeasterly direction eventually emptying into the York River. This watershed is dominated by forested and agricultural land uses with an increasing urban land use component. The non-tidal portion of Taskinas Creek contains feeder streams, which drain oak-hickory forests, maple-gum-oak-ash swamps and freshwater marshes. Dominant low tidal creek marsh species include Saltmarsh cordgrass (*Spartina alterniflora*), Salt Grass (*Distichlis spicata*), and Saltmeadow Hay (*Spartina patens*) at the creek mouth, three-square (*Scirpus americanus* and *S. olneyi*) and Big Cordgrass (*Spartina cynosuroides*) in the middle marsh reaches, and freshwater mixed (no single species covers more than 50%) wetlands in the upstream reaches. The data logger station is located near the mouth of Taskinas Creek in the lower tidal creekbank region. Water depth and width are approximately 2 and 20m, respectively. Salinity at this site ranges from 0.2-20.3 ppt and a multi-year average salinity is 9.6 ppt. Tides are semi-diurnal and range from 0.4-1.2 m. The data logger probes are located 0.5 m above the mixed substrate (42% fine sand, 30% clay, and 28% silt) bottom. 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.

6. Data collection period:

Sampling at Taskinas Creek (TC) and Goodwin Islands (GI) began January 1999.

Sampling was continuous at both sites through December 1999.

7. Associated researchers and projects:

A volunteer water quality monitoring program sponsored by the Alliance for the

Chesapeake Bay has been ongoing at Taskinas Creek for several years, beginning

January 10, 1990. This project samples some overlapping parameters including

dissolved oxygen and salinity on a two-week basis.

II. Physical Structure Descriptors

8. Sensor specifications, range of measurements, units, resolution, and accuracy:

YSI 6000 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.

9. Coded variable indicator and variable code definitions

Site definitions: TC = Taskinas Creek, GI= Goodwin Islands

File definitions: YSI deployment site/month/year (ex.: TC0995 = Taskinas Creek data from September 1995).

10. 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. According to the CDMO Operations Manual Version 3.0, depth measurements taken with the non-vented level probe can be influenced by up to

0.39 m (1.3 ft) during some low-pressure hurricane events. Specific dates and

time ranges of potentially influenced data are listed with each respective

month. Starting with July, data were extracted in accordance with Version 3.0 of the CDMO Manual.

January 1999:

TC:

01/07/99	00:45:00	Turbidity spike >1000 NTU removed
01/07/99	14:00:00	decrease in pH due to difference
in		
calibration of exchanged YSI (calibration .7 lower than field		
verification)		
01/18/99	14:30:00	Datalogger out of the water due
to low		
tides		
01/22/99	12:30:00	Increase in pH due to difference
in		
calibration of exchanged YSI (calibration was correct)		

January 1999:

GI:

01/01/99	00:30:00-01/01/99	02:30:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/03/99	04:00:00-01/03/99	04:15:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/03/99	23:00:00		DO data suspect
01/05/99	01:00:00-01:15:00		DO data suspect
01/06/99	17:45:00-01/06/99	19:00:00	Datalogger out of the water due
			to low
			tides
01/06/99	18:15:00-01/06/99	19:30:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/07/99	05:30:00-01/07/99	07:30:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/08/99	10:15:00-01/08/99	11:45:00	DO data suspect
01/12/99	09:15:00-01/12/99	13:00:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/12/99	21:30:00-01/13/99	01:15:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/13/99	10:30:00-01/13/99	13:45:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/13/99	23:00:00-01/14/99	00:45:00	Zero/negative depths due to low
			tides
or low-pressure system			
01/16/99	14:00:00-01/16/99	14:30:00	Zero/negative depths due to low
			tides

or low-pressure system			
01/17/99	01:00:00-01/17/99	03:15:00	Zero/negative depths due to low tides
or low-pressure system			
01/17/99	13:15:00-01/17/99	16:30:00	Zero/negative depths due to low tides
or low-pressure system			
01/17/99	14:30:00-01/17/99	15:30:00	Datalogger out of the water due to low tides
01/18/99	01:15:00-01/18/99	04:30:00	Zero/negative depths due to low tides
or low-pressure system			
01/18/99	13:45:00-01/18/99	17:45:00	Zero/negative depths due to low tides
or low-pressure system			
01/19/99	03:15:00-01/19/99	04:00:00	Zero/negative depths due to low tides
or low-pressure system			
01/19/99	16:00:00-01/19/99	16:15:00	Zero/negative depths due to low tides
or low-pressure system			
01/20/99	05:15:00		Zero turbidity due to low turbidity
01/20/99	07:45:00		Zero turbidity due to low turbidity
01/21/99	12:30:00		Zero turbidity due to low turbidity
01/21/99	16:15:00		Zero turbidity due to low turbidity
01/21/99	20:45:00		Zero turbidity due to low turbidity
01/21/99	21:30:00		Zero turbidity due to low turbidity
01/21/99	22:45:00-01/21/99	23:00:00	Zero turbidity due to low turbidity
01/21/99	23:15:00		Zero turbidity due to low turbidity
01/22/99	00:15:00-01/22/99	00:30:00	Zero turbidity due to low turbidity
01/22/99	01:00:00		Zero turbidity due to low turbidity
01/22/99	01:30:00		Zero turbidity due to low turbidity
01/22/99	02:00:00		Zero turbidity due to low turbidity
01/22/99	02:15:00-01/22/99	02:30:00	Zero turbidity due to low turbidity
01/22/99	03:00:00		Zero turbidity due to low turbidity

01/22/99 turbidity	03:15:00-01/22/99 03:30:00	Zero turbidity due to low
01/22/99 turbidity	04:15:00-01/22/99 05:15:00	Zero turbidity due to low
01/22/99 turbidity	05:45:00-01/22/99 06:15:00	Zero turbidity due to low
01/22/99 turbidity	06:45:00	Zero turbidity due to low
01/22/99 turbidity	07:30:00-01/22/99 09:15:00	Zero turbidity due to low
01/22/99 turbidity	09:45:00	Zero turbidity due to low
01/22/99 turbidity	10:00:00-01/22/99 10:45:00	Zero turbidity due to low
01/22/99 turbidity	11:15:00	Zero turbidity due to low
01/22/99 turbidity	12:00:00-01/22/99 12:45:00	Zero turbidity due to low
01/22/99 turbidity	20:30:00	Zero turbidity due to low
01/22/99 turbidity	21:00:00	Zero turbidity due to low
01/22/99 turbidity	21:15:00	Zero turbidity due to low
01/23/99 turbidity	00:15:00-01/23/99 00:30:00	Zero turbidity due to low
01/23/99 turbidity	01:15:00	Zero turbidity due to low
01/23/99 turbidity	01:45:00-01/23/99 02:15:00	Zero turbidity due to low
01/23/99 turbidity	10:00:00	Zero turbidity due to low
01/24/99 turbidity	12:30:00-01/24/99 13:00:00	Zero turbidity due to low
01/24/99 turbidity	14:45:00-01/24/99 15:00:00	Zero turbidity due to low
01/24/99 turbidity	16:45:00	Zero turbidity due to low
01/24/99 turbidity	22:45:00	Zero turbidity due to low
01/24/99 turbidity	23:15:00	Zero turbidity due to low
01/25/99 turbidity	08:00:00	Zero turbidity due to low

01/25/99 turbidity	09:15:00	Zero turbidity due to low
01/25/99 turbidity	09:45:00	Zero turbidity due to low
01/25/99 turbidity	16:00:00	Zero turbidity due to low
01/25/99 turbidity	16:30:00	Zero turbidity due to low
01/25/99 turbidity	17:15:00	Zero turbidity due to low
01/25/99 turbidity	17:45:00-01/25/99 18:00:00	Zero turbidity due to low
01/25/99 turbidity	19:15:00	Zero turbidity due to low
01/26/99	13:45:00-01/26/99 15:45:00	DO data suspect
01/27/99 tides or low-pressure system	23:15:00	Zero/negative depths due to low
01/27/99 turbidity	21:15:00	Zero turbidity due to low
01/28/99 turbidity	00:15:00-01/28/99 00:30:00	Zero turbidity due to low
01/28/99 turbidity	05:45:00	Zero turbidity due to low
01/28/99 turbidity	07:30:00	Zero turbidity due to low
01/28/99 turbidity	11:45:00	Zero turbidity due to low
01/28/99 turbidity	12:00:00-01/28/99 12:15:00	Zero turbidity due to low
01/28/99 turbidity	13:15:00	Zero turbidity due to low
01/28/99 turbidity	17:30:00	Zero turbidity due to low
01/28/99 turbidity	18:45:00-01/28/99 19:00:00	Zero turbidity due to low
01/28/99 turbidity	19:30:00	Zero turbidity due to low
01/28/99 turbidity	20:00:00	Zero turbidity due to low
01/28/99 turbidity	20:45:00-01/28/99 21:15:00	Zero turbidity due to low
01/28/99 turbidity	21:45:00-01/28/99 22:00:00	Zero turbidity due to low
01/28/99 turbidity	22:30:00	Zero turbidity due to low

01/28/99	22:45:00-01/29/99 01:00:00	Zero turbidity due to low turbidity
01/29/99	01:15:00	Zero turbidity due to low turbidity
01/29/99	01:30:00-01/29/99 02:15:00	Zero turbidity due to low turbidity
01/29/99	03:00:00	Zero turbidity due to low turbidity
01/29/99	14:00:00	Turbidity spike >1000 NTU removed

February 1999:

TC:

02/01/99	04:00:00-02/04/99 09:45:00	Datalogger malfunction resulting in no data collection
02/04/99	10:00:00	Decrease in pH due to difference in calibration of exchanged YSI (calibration .4 higher than verification sample)
02/19/99	10:15:00	Increase in pH due to difference in calibration of exchanged YSI (calibration .2 higher than field verification sample)

February 1999:

GI:

02/03/99	16:15:00-02/16/99 15:15:00	Salinity data approximately 1.3-1.8 ppt higher than field verification samples. No corrections were made.
02/16/99	15:30:00-02/28/99 23:45:00	Salinity values were corrected based on field verification samples and no specific conductance were calculated.
02/28/99	13:00:00-02/28/99 15:00:00	Zero/negative depths due to low tides or low-pressure system

March 1999:

TC:

03/03/99	19:00:00	Turbidity spike >1000 NTU removed
03/05/99	10:15:00	Decrease in pH due to differences in calibration of the datalogger

March 1999:

GI:

03/01/99 00:00:00- 03/11/99 17:15:00 Salinity values were corrected based on field verification samples and no specific conductance were calculated.

03/02/99 16:00:00 Datalogger out of the water due to low tides

03/04/99 02:30:00-03/04/99 06:45:00 Datalogger out of the water due to low tides

03/05/99 15:45:00-03/05/99 18:15:00 Datalogger out of the water due to low tides

03/11/99 17:30:00-03/25/99 09:45:00 DO data deleted due to possible punctured membrane

03/18/99 02:30:00-03/18/99 04:15:00 Datalogger out of the water due to low tides

03/01/99 13:45:00-03/01/99 15:00:00 Zero/negative depths due to low tides or low-pressure system

03/02/99 16:00:00 Zero/negative depths due to low tides or low-pressure system

03/03/99 15:30:00-03/03/99 16:00:00 Zero/negative depths due to low tides or low-pressure system

03/04/99 01:00:00-03/04/99 07:15:00 Zero/negative depths due to low tides or low-pressure system

03/18/99 02:30:00-03/18/99 04:30:00 Zero/negative depths due to low tides or low-pressure system

03/18/99 14:15:00-03/18/99 16:30:00 Zero/negative depths due to low tides or low-pressure system

April 1999:

TC:

04/20/99 23:30:00 Turbidity spike >1000 NTU removed

04/22/99 07:30:00 Datalogger out of the water during deployment

04/30/99 08:00:00 Turbidity spike >1000 NTU removed

April 1999:

GI:

04/01/99	14:30:00-04/01/99 16:30:00	Zero/negative depths due to low tides
or low-pressure system		
04/02/99	05:15:00	Zero turbidity due to low turbidity
04/02/99	03:15:00-04/02/99 04:15:00	Zero/negative depths due to low tides
or low-pressure system		
04/08/99	12:30:00-04/22/99 09:45:00	Major malfunction in datalogger resulted in no data collection

May 1999

TC:

05/11/99	03:45:00	Turbidity spike >1000 NTU removed
05/28/99	12:30:00-05/31/99 23:45:00	Punctured DO membrane; data removed

May 1999:

GI:

05/21/99	03:00:00-05/21/99 07:00:00	Zero/negative turbidity due to low turbidity
05/21/99	07:45:00-05/22/99 09:15:00	Zero/negative turbidity due to low turbidity
05/22/99	10:15:00-05/22/99 10:30:00	Zero/negative turbidity due to low turbidity
05/23/99	20:30:00	Zero/negative turbidity due to low turbidity
05/23/99	21:30:00-05/24/99 23:00:00	Zero/negative turbidity due to low turbidity
05/24/99	23:30:00-05/25/99 00:30:00	Zero/negative turbidity due to low turbidity
05/25/99	09:15:00-05/25/99 10:00:00	Zero/negative turbidity due to low turbidity
05/25/99	10:30:00-05/25/99 10:45:00	Zero/negative turbidity due to low turbidity
05/25/99	12:15:00	Zero/negative turbidity due to low turbidity
05/25/99	12:45:00-05/25/99 13:15:00	Zero/negative turbidity due to low turbidity
05/25/99	21:15:00-05/26/99 03:00:00	Zero/negative turbidity due to low turbidity

turbidity			
05/26/99	21:00:00		Zero/negative turbidity due to
low			
turbidity			
05/26/99	23:00:00-05/27/99	02:15:00	Zero/negative turbidity due to
low			
turbidity			
05-27-99	09:00:00-05/31/99	23:45:00	Depth data deleted due to
possible			
clogging of port with large deposits of			clingfish eggs on the YSI.

June 1999:

TC:

June 1999:

GI:			
06/03/99	09:15:00		Datalogger out of the water
during			
deployment			
06/03/99	09:30:00-06/15/99	11:30:00	Salinity values were corrected
based			
on field verification sample and no			specific conductance was
calculated.			
06/10/99	13:45:00		Datalogger out of the water
during			
deployment			
06/15/99	12:15:00-06/17/99	05:00:00	DO data suspect
06/15/99	05:30:00-06/15/99	05:45:00	Zero/negative turbidity due to
low			
turbidity			
06/17/99	05:15:00-06/28/99	16:30:00	Datalogger flooded resulting in
no			
data collection			
06/28/99	17:00:00		Turbidity spike >1000 NTU removed

July 1999:

TC:

July 1999:

GI:			
07/03/99	05:15:00-07/03/99	06:45:00	Datalogger out of the water due
to low			
tides			
07/07/99	08:00:00-07/07/99	08:15:00	Zero/negative turbidity due to
low			
turbidity			
07/08/99	09:45:00-07/08/99	10:00:00	Zero/negative turbidity due to
low			
turbidity			

07/08/99	10:45:00	Zero/negative turbidity due to low turbidity
07/08/99	11:15:00	Zero/negative turbidity due to low turbidity
07/27/99	10:45:00-07/31/99 23:45:00	Salinity values were corrected based on field verification samples and no specific conductance was calculated.

August 1999:

TC:		
08/09/99	11:45:00	Turbidity spike >1000 NTU removed
08/12/99	07:00:00	Datalogger out of the water during deployment
08/14/99	09:00:00-08/19/99 13:45:00	Punctured DO membrane
08/23/99	16:45:00-08/30/99 13:00:00	Datalogger flooded resulting in no data collected

August 1999:

GI:

08/01/99	00:00:00-08/26/99 10:30:00	Salinity values were corrected based on field verification samples and no specific conductance was calculated.
08/10/99	11:15:00	Datalogger out of the water during deployment
08/24/99	04:30:00	Turbidity spike >1000 NTU removed
08/30/99	07:45:00	Depth potential influenced by storm
08/31/99	09:00:00-08/31/99 23:45:00	Punctured DO membrane

September 1999:

TC:		
09/05/99	02:15:00-09/05/99 09:15:00	Turbidity spike >1000 NTU removed
09/05/99	12:30:00-09/05/99 13:00:00	Turbidity spike >1000 NTU removed
09/05/99	14:30:00-09/05/99 15:00:00	Turbidity spike >1000 NTU removed
09/23/99	17:15:00-09/25/99 08:30:00	DO data suspect
09/15/99	15:15:00	Data influenced by major hurricane

September 1999:

GI:		
09/01/99	00:00:00-09/03/99 10:30:00	Punctured DO membrane; data removed
09/11/99	11:00:00-09/11/99 14:45:00	DO data suspect

09/11/99	15:00:00-09/14/99	10:15:00	Punctured DO membrane; data removed
09/24/99	09:30:00-09/24/99	11:00:00	Datalogger skipped in time and did not collect data
09/28/99	14:00:00		DO increase due to deployment of new datalogger

October 1999:

TC:

October 1999:

GI:

10/09/99	06:45:00-10/09/99	07:00:00	Datalogger out of the water due to low tides
10/10/99	05:15:00		Datalogger out of the water due to low tides
10/28/99	10:30:00-10/31/99	23:45:00	Major malfunction of datalogger resulting in no data collection
10/9/99	14:15:00-10/09/99	16:15:00	Zero/negative turbidity due to low turbidity
10/10/99	3:45:00		Zero/negative turbidity due to low turbidity
10/10/99	5:00:00		Zero/negative turbidity due to low turbidity
10/11/99	01:00:00-10/11/99	02:30:00	Zero/negative turbidity due to low turbidity
10/11/99	03:00:00-10/11/99	05:00:00	Zero/negative turbidity due to low turbidity
10/11/99	03:15:00-10/11/99	04:15:00	Zero/negative depths due to low tides or low-pressure system
10/11/99	16:30:00		DO spike suspect
10/10/99	04:15:00-10/10/99	04:30:00	Zero/negative turbidity due to low turbidity
10/10/99	15:00:00-10/10/99	16:30:00	Zero/negative depths due to low tides or low-pressure system
10/10/99	15:45:00-10/10/99	16:30:00	Zero/negative turbidity due to low turbidity

10/11/99	14:15:00	Zero/negative turbidity due to
low		
turbidity		
10/11/99	15:00:00-10/11/99 15:15:00	Zero/negative turbidity due to
low		
turbidity		
10/11/99	15:45:00-10/11/99 16:00:00	Zero/negative turbidity due to
low		
turbidity		
10/14/99	04:00:00-10/14/99 05:30:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/21/99	09:30:00	DO spike suspect
10/22/99	12:30:00-10/22/99 13:15:00	Zero/negative turbidity due to
low		
turbidity		
10/24/99	13:45:00	Zero/negative turbidity due to
low		
turbidity		
10/24/99	14:00:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/24/99	14:45:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/24/99	01:30:00-10/24/99 02:30:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/24/99	15:45:00-10/24/99 16:00:00	Zero/negative turbidity due to
low		
turbidity		
10/25/99	02:15:00-10/25/99 02:45:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/25/99	14:30:00-10/25/99 16:30:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/26/99	17:00:00	Zero/negative turbidity due to
low		
turbidity		
10/26/99	02:00:00-10/26/99 05:00:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/26/99	14:45:00-10/26/99 17:45:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/27/99	2:45:00	Zero/negative turbidity due to
low		
turbidity		
10/27/99	02:15:00-10/27/99 05:45:00	Zero/negative depths due to low
tides		
or low-pressure system		
10/27/99	03:15:00-10/27/99 03:30:00	Zero/negative turbidity due to
low		

turbidity
10/27/99 04:00:00-10/27/99 05:30:00 Zero/negative turbidity due to
low
turbidity

November 1999:

TC:
11/28/99 23:15:00 Turbidity spike >1000 NTU removed

November 1999:

GI:

11/01/99 00:00:00-11/10/99 14:45:00 Datalogger malfunction resulting
in no
data collected
11/10/99 15:00:00-11/30/99 23:45:00 Salinity values were corrected
based
on field verification samples and no specific conductance was calculated.
11/10/99 16:15:00-11/10/99 16:45:00 Zero turbidity due to low
turbidity
11/11/99 02:45:00 Zero turbidity due to low
turbidity
11/11/99 03:15:00-11/11/99 03:30:00 Zero turbidity due to low
turbidity
11/11/99 04:30:00-11/11/99 04:45:00 Zero turbidity due to low
turbidity
11/11/99 05:30:00 Zero turbidity due to low
turbidity
11/21/99 10:45:00 Zero turbidity due to low
turbidity
11/21/99 13:15:00 Zero turbidity due to low
turbidity
11/21/99 14:45:00-11/21/99 15:00:00 Zero turbidity due to low
turbidity
11/21/99 23:15:00 Zero turbidity due to low
turbidity
11/22/99 00:00:00 Zero turbidity due to low
turbidity
11/22/99 00:45:00-11/22/99 01:00:00 Zero turbidity due to low
turbidity
11/26/99 17:30:00-11/26/99 18:00:00 Zero/negative depths due to low
tides
or low-pressure system

December 1999:

TC:
12/01/99 12:30:00 Turbidity spike >1000 NTU removed
12/05/99 13:30:00 Turbidity spike >1000 NTU removed

12/19/99 17:15:00 Turbidity spike >1000 NTU removed

December 1999:

GI:

12/01/99 00:00:00-12/21/99 09:45:00 Salinity values were corrected based

on field verification samples and no specific conductance was calculated.

12/09/99 02:30:00-12/09/99 02:45:00 Zero turbidity due to low turbidity

12/09/99 03:15:00-12/09/99 04:45:00 Zero turbidity due to low turbidity

12/10/99 03:30:00-12/10/99 05:00:00 Zero/negative depths due to low tides

or low-pressure system

12/10/99 15:45:00-12/10/99 17:15:00 Zero/negative depths due to low tides

or low-pressure system

12/11/99 16:00:00-12/11/99 19:15:00 Zero/negative depths due to low tides

or low-pressure system

12/12/99 03:30:00-12/12/99 07:15:00 Zero/negative depths due to low tides

or low-pressure system

12/12/99 15:45:00-12/12/99 20:30:00 Zero/negative depths due to low tides

or low-pressure system

12/12/99 16:45:00-12/12/99 19:00:00 Datalogger out of the water due to low tides

12/17/99 20:30:00-12/18/99 12:15:00 Zero/negative depths due to low tides

or low-pressure system

12/17/99 21:15:00-12/17/99 23:45:00 Datalogger out of the water due to low tides

12/18/99 21:45:00-12/19/99 00:15:00 Zero/negative depths due to low tides

or low-pressure system

12/20/99 23:00:00 Missing data due to time skip during deployment

12/21/99 10:00:00 Increase in DO due to exchange of datalogger

12/21/99 10:00:00 Increase in pH due to difference in calibration of datalogger

12/21/99 10:00:00 Increase in depth due to difference in calibration of datalogger

12/21/99 10:15:00 12/21/99 10:30:00 Depth data may be suspect resulting

from recent deployment of datalogger
 12/21/99 10:15:00 12/21/99 10:45:00 Turbidity data may be suspect due to deployment of datalogger
 12/23/99 15:15:00 12/23/99 16:30:00 Datalogger out of the water due to low tides
 12/23/99 15:30:00-12/23/99 16:45:00 Zero/negative depths due to low tides or low-pressure system
 12/26/99 04:15:00-12/26/99 08:00:00 Zero/negative depths due to low tides or low-pressure system
 12/26/99 04:45:00-12/26/99 07:00:00 Datalogger out of the water due to low tides
 12/26/99 16:15:00-12/26/99 19:15:00 Zero/negative depths due to low tides or low-pressure system
 12/27/99 17:30:00-12/27/99 20:30:00 Zero/negative depths due to low tides or low-pressure system
 12/28/99 19:15:00-12/28/99 21:15:00 Zero/negative depths due to low tides or low-pressure system
 12/30/99 07:30:00-12/30/99 10:30:00 Zero/negative depths due to low tides or low-pressure system
 12/30/99 20:00:00-12/30/99 23:45:00 Zero/negative depths due to low tides or low-pressure system
 12/31/99 09:15:00-12/31/99 11:45:00 Zero/negative depths due to low tides or low-pressure system

12. Missing data

Missing data is either the result of

- 1) the YSI not deployed
- 2) YSI out of the water (negative depth with salinity of zero)
- 3) a probe not attached
- 4) a probe malfunction

January 1999:

TC:

01/07/99	00:45:00	Turbidity spike >1000 NTU removed
01/18/99	14:30:00	Datalogger out of the water due to low tides

January 1999:

GI:
01/06/99 17:45:00-01/06/99 19:00:00 Datalogger out of the water due
to low
tides
01/17/99 14:30:00-01/17/99 15:30:00 Datalogger out of the water due
to low
tides
01/29/99 14:00:00 Turbidity spike >1000 NTU removed

February 1999:

TC:
02/01/99 04:00:00-02/04/99 09:45:00 Datalogger malfunction resulting
in no
data collection

February 1999:

GI:
02/16/99 15:30:00-02/28/99 23:45:00 Salinity values were corrected
based
on field verification samples and no specific conductance were
calculated.

March 1999:

TC:
03/03/99 19:00:00 Turbidity spike >1000 NTU removed

March 1999:

GI:
03/01/99 00:00:00-03/11/99 17:15:00 Salinity values were corrected
based
on field verification samples and no specific conductance were
calculated.
03/02/99 16:00:00 Datalogger out of the water due
to low
tides
03/04/99 02:30:00-03/04/99 06:45:00 Datalogger out of the water due
to low
tides
03/05/99 15:45:00-03/05/99 18:15:00 Datalogger out of the water due
to low
tides
03/11/99 17:30:00-03/25/99 09:45:00 DO data deleted due to possible
punctured membrane
03/18/99 02:30:00-03/18/99 04:15:00 Datalogger out of the water due
to low
tides

April 1999:

TC:
04/20/99 23:30:00 Turbidity spike >1000 NTU removed
04/22/99 07:30:00 Datalogger out of the water
during
deployment
04/30/99 08:00:00 Turbidity spike >1000 NTU removed

April 1999:

GI:

04/08/99 12:30:00-04/22/99 09:45:00 Major malfunction in datalogger
resulted in no data collection

May 1999

TC:
05/11/99 03:45:00 Turbidity spike >1000 NTU Removed
05/28/99 12:30:00-05/31/99 23:45:00 Punctured DO membrane; data
removed

May 1999:

GI:

05-27-99 09:00:00-05/31/99 23:45:00 Depth data deleted due to
possible
clogging of port with large deposits of clingfish eggs on the YSI.

June 1999:

TC:

June 1999:

GI:
06/03/99 09:15:00 Datalogger out of the water
during
deployment
06/03/99 09:30:00-06/15/99 11:30:00 Salinity values were corrected
based
on field verification sample and no specific conductance was calculated.
06/10/99 13:45:00 Datalogger out of the water
during
deployment
06/17/99 05:15:00-06/28/99 16:30:00 Datalogger flooded resulting in
no
data collection
06/28/99 17:00:00 Turbidity spike >1000 NTU removed

July 1999:

TC:

July 1999:

GI:

07/03/99 05:15:00-07/03/99 06:45:00 Datalogger out of the water
07/27/99 10:45:00-07/31/99 23:45:00 Salinity values were corrected
based
on field verification samples and no specific conductance was calculated.

August 1999:

TC:

08/09/99 11:45:00 Turbidity spike >1000 NTU removed
08/12/99 07:00:00 Datalogger out of the water
during
deployment
08/14/99 09:00:00-08/19/99 13:45:00 Punctured DO membrane
08/23/99 16:45:00-08/30/99 13:00:00 Datalogger flooded resulting in
no
data collected

August 1999:

GI:

08/01/99 00:00:00-08/26/99 10:30:00 Salinity values were corrected
based
on field verification samples and no specific conductance was calculated.
08/10/99 11:15:00 Datalogger out of the water
during
deployment
08/24/99 04:30:00 Turbidity spike >1000 NTU removed
08/31/99 09:00:00-08/31/99 23:45:00 Punctured DO membrane

September 1999:

TC:

09/05/99 02:15:00-09/05/99 09:15:00 Turbidity spike >1000 NTU removed
09/05/99 12:30:00-09/05/99 13:00:00 Turbidity spike >1000 NTU removed
09/05/99 14:30:00-09/05/99 15:00:00 Turbidity spike >1000 NTU removed

September 1999:

GI:

09/01/99 00:00:00-09/03/99 10:30:00 Punctured DO membrane; data
removed
09/11/99 15:00:00-09/14/99 10:15:00 Punctured DO membrane; data
removed
09/24/99 09:30:00-09/24/99 11:00:00 Datalogger skipped in time and
did not
collect data

October 1999:

TC:

October 1999:

GI:

10/09/99	06:45:00-10/09/99 07:00:00	Datalogger out of the water due to low tides
10/10/99	05:15:00	Datalogger out of the water due to low tides
10/28/99	10:30:00-10/31/99 23:45:00	Major malfunction of datalogger resulting in no data collection

November 1999:

TC:

11/28/99	23:15:00	Turbidity spike >1000 NTU removed
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November 1999:

GI:

11/01/99	00:00:00-11/10/99 14:45:00	Datalogger malfunction resulting in no data collected
11/10/99	15:00:00-11/30/99 23:45:00	Salinity values were corrected based on field verification samples and no specific conductance was calculated.

December 1999:

TC:

12/01/99	12:30:00	Turbidity spike >1000 NTU removed
12/05/99	13:30:00	Turbidity spike >1000 NTU removed
12/19/99	17:15:00	Turbidity spike >1000 NTU removed

December 1999:

GI:

12/01/99	00:00:00-12/21/99 09:45:00	Salinity values were corrected based on field verification samples and no specific conductance was calculated.
12/12/99	16:45:00-12/12/99 19:00:00	Datalogger out of the water due to low tides
12/17/99	21:15:00-12/17/99 23:45:00	Datalogger out of the water due to low tides

tides
12/20/99 23:00:00 Missing data due to time skip
during
deployment
12/23/99 15:15:00 12/23/99 16:30:00 Datalogger out of the water due
to low
tides
12/26/99 04:45:00-12/26/99 07:00:00 Datalogger out of the water due
to low
tides

12. Remarks

Any regions of data with negative depth values due to low tides or low-pressure systems should be viewed with caution. In some instances the probes are clearly out of water and have been noted. Depth data should be considered relative depth.

Due to conductance calibration error, salinity values were adjusted based on field verification samples taken at each datasonde deployment and retrieval. Datasonde specific conductance data were deleted and replaced with periods. Corrected salinity values are presented in edited and raw data files. Percent dissolved oxygen saturation values were computed based on equations provided by APHA Standard Methods 1989. No changes were made to raw dissolved oxygen concentration data.