

Sapelo Island (SAP) NERR Water Quality Metadata
(January - December, 1998)
Latest Update: November 12, 2001

I. Data set and Research Descriptors:

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2. Entry Verification:

The data are downloaded to an IBM compatible computer from the Hydrolab Datasonde I, Hydrolab Datasonde III, Hydrolab Recorder, or YSI 6000UPG as a raw file. The YSI 6000 data are reviewed using the YSI computer program PC6000 that accompanies the YSI 6000 data logger. After the file is uploaded from the datalogger, PC6000 is used to plot the data and perform basic statistical analysis (i.e., min., max., mean, std. dev.) This information is printed out and attached to the Field Log for the articular deployment. The information obtained from this printout is used during file review to detect any gross outliers such as data taken when the datalogger was removed from the water or those caused by instrument failure. Georgianne Coker, Research Technician, was responsible for the data collection, management, and monitoring of the three sites. The data are imported into a Microsoft Excel file that contains the current month's cumulative recordings. When a complete month of data has been recorded the file is ready for review. The data review includes several steps. The first step is to format the data so that the parameter columns are in the correct order and the data has the correct number of decimal place holders by using the Column Reformat CDMO Excel 5.0 Macro. Secondly, the Date Hour Count CDMO Excel 5.0 macro is used to determine if there are any dates and times that data was not recorded due to maintenance, battery failure, or other causes. Missing dates

and times are inserted into the file and a period is inserted into the cells where data would normally be. The reason for the missing data is recorded on the Water Quality Editing Log. Next, the data are filtered using the Find Variable Outlier CDMO Excel 5.0 macro to find readings outside the instrument measurement range and the "normal" range for the site in question. Data outside the instrument range is/are removed from the file and a period is inserted to the cell(s). An explanation for the missing dates and times are recorded onto the Water Quality Editing Log. Data that was outside the "normal" range of water quality for a particular site is investigated for validity based on weather data, field observations, QC checks, PC6000 printouts, and instrument diagnostics. If the data is/are rejected from the file a period is inserted to the cell(s) and an explanation for the missing dates and times are recorded onto the Water quality Editing Log. The information recorded on the Water Quality Editing Log is transferred to the Metadata form. The Metadata form is the submitted with the data file to the CDMO. Stacey Webb, reserve fellow, was responsible for the data review.

3. Research Objectives:

The purpose of research was only to perform long term water quality monitoring and not a specific experiment. Sapelo Island is only accessible by passenger ferry. Due to its isolation, the salt marsh and tidal waters of the SINERR show little evidence of human impact. The Marsh Landing site receives a large amount of boat traffic, as it is the primary access point for the approximately 200-300 residents, commuters and daily visitors plus barge off loading. The Flume Dock site is a relatively isolated location compared to the Marsh Landing site.

4. Research Methods:

The monitoring program began in August of 1986 at the Flume Dock and Marsh Landing sites. The units are hung vertically from a float or floating dock so they hang two meters below the surface. Thus, depth was considered fixed and not measured. Hydrolab units were used exclusively until May 1995. Beyond that point, YSI units were used as well as the Hydrolabs. The probes are cleaned three times weekly during the warmer months. No pre- or post-calibrations were performed. The Dissolved Oxygen probes are cleaned once weekly with a cotton swab soaked in methanol, while the other probes are cleaned with cotton swabs or pipe cleaners and de-ionized water. After two weeks the units are returned to the lab

for downloading, cleaning and recalibration, according to the manufacturers manual. Before each YSI PC6000 datalogger is deployed, calibration and maintenance is performed following the manufacturer's instructions. Calibration standards are only required for pH, conductivity, and turbidity, all other parameters are done as described in the manual. Buffer solutions for 2 point calibration (pH 7 and 10) are purchased from a scientific supply house. The conductivity standard is made using a 0.2 M solution of KCl (24.82mS/cm=14.92 g/L). The turbidity calibration uses distilled water made by the University of Georgia-Athens Marine Institute. The dissolved oxygen membranes are replaced before deployment and are allowed to sit at least 24 hours prior to deployment.

The datalogger is placed inside a length of PVC pipe attached to the dock. Every 30 minutes during the sampling period measurements are taken for temperature, specific conductance, salinity, pH, dissolved oxygen concentration, depth and turbidity. During the stage of deployment the datalogger is checked for fouling and cleaned. This can be one to three times a week depending on the time of year. At the end of the sample period the datalogger is retrieved and immediately replaced by another calibrated datalogger. The datalogger is then taken to the lab where the data is uploaded, and the probe is cleaned.

5. Site Location and character:

The Sapelo Island National Estuarine Research Reserve is located in a tidal estuary on the western side of Sapelo Island on the coast of Georgia. The Duplin River, actually a tidal lagoon, that receives little fresh water and opens into Doboy Sound, ca. 5 km inland from the Atlantic Ocean. The marsh is inundated twice daily by unequal tides with a mean range of 2.1m. Salinity ranges from 10 to 25 ppt. The surrounding area vegetation is dominated by salt marsh with *Spartina alterniflora* being the predominate flora. There are two monitoring stations located within the reserve. The previous Barn Creek site was discontinued as of January 1, 1998.

1) Marsh Landing: located on the lower Duplin River on Sapelo Island (Latitude: 31° 25' 4"N, Longitude 81° 17' 46"W). Water passing the Marsh landing site during flood tide originates from the Doboy Sound. The Doboy receives input from the Atlantic Ocean, and the Altamaha River via the Intra-Coastal waterway. The water is pushed up the river or up smaller tidal creeks and some is pushed onto the marsh surface by

the flood tide and recedes into the main channel during ebb tide. The dock itself is used as the main dock to the island where the ferry makes several daily runs. There are also several small boats that are docked there.

2) Flume Dock: located on the upper Duplin River on Sapelo Island (Latitude: 31° 28' 58N, Longitude 81° 17' 3"W). It is influenced by tidal currents which flood the marsh on high tides and recede into the channel of the river and its side creeks. It receives far less boat traffic than the Marsh Landing site.

6. Data collection period:

Data has been collected at the Marsh Landing and Flume Dock sites since 1986 for the University of Georgia Marine Institute. Both sites started May 1995 for the NERRS SWMP.

7. Associated researchers and projects:

Sapelo Island has a long history of maintaining research. In 1953, the University of Georgia Marine Institute (UGAMI) was formed and the island became a working laboratory for many. Given UGAMI's long history on Sapelo, a bibliographic list of over 800 articles of current and previous research can be found on the UGAMI website. (<http://www.uga.edu/UGAMI>).

8. Variable sequence, range of measurements, units, resolution, and accuracy:

Hydrolab Datasonde I

Variable Name	Range of measurement	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo., Day, Yr.)	1 month, 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 50 (C)	0.01 C	+/-0.15 C
Ph	2 to 14 (units)	0.01 unit	+/-0.2
units			
SpCond	0 to 100 (mS/cm)	0.01 mS/cm	+/-of
range 0.5%			
Salinity	0 to 70 (ppt)	0.1 ppt	+/-
0.2 ppt			

Hydrolab Datasonde III

Variable Name	Range of measurement	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo., Day, Yr.)	1 month, 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 50 (C)	0.01 C	+/-0.15 C

SpCond	0 to 100 (mS/cm)	0.01 mS/cm	+/-of
range 0.5%			
Salinity	0 to 70 (ppt)	0.1 ppt	+/-
0.2 ppt			
DO	0-200 (%air Saturation)	0.1% @air sat	+/-
2% @ air sat.			
DO	0-20 (mg/L)	0.01 mg/L	+/-0.2 mg/L
Ph	2 to 14 (units)	0.01 unit	+/-0.2
units			

Hydrolab Recorder

Variable Name	Range of measurement	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo., Day, Yr.)	1 month, 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 50 (C)	0.01 C	+/-0.15 C
Ph	2 to 14 (units)	0.01 unit	+/-0.2
units			
SpCond	0 to 100 (mS/cm)	0.01 mS/cm	+/-of
range 0.5%			
Salinity	0 to 70 (ppt)	0.1 ppt	+/-
0.2 ppt			
DO	0 to 20 (mg/L)	0.01 mg/L	+/-0.2 mg/L

YSI 6000 datalogger

Variable Name	Range of measurement (units)	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
SpCond	0-100 (mS/cm)	0.01 mS/cm	+/-0.5% of
reading +			
0.001 mS/cm			
Salinity	0-70 (ppt)	0.01 ppt	+/- 1.0%
of reading			
or 0.1ppt (which ever is greater)			
DO	0-200 (% air saturation)	0.1% @ air sat.	+/-
2% @air sat			
DO	200-500 (% air sat.)	0.1% @ air sat.	+/-6% @
air			
sat.			
DO	0-20 (mg/L)	0.01 mg/L	+/-0. 2mg/L
DO	20-50 (mg/L)	0.01 mg/L	+/-0.6 mg/L
pH	2-14 units	0.01 units	+/-0.2 units
Turb	0-1000 (NTU)	0.1 NTU	+/-5% of
reading			
or 2 NTU (which ever is greater)			

9. Coded variable indicator and variable code definitions:

ML= Marsh Landing, FD = Flume Dock

File definitions: Deployment site/month/year (ex: ML0198 from January 1998).

10. Data anomalies:

January 1998:

FD:1/4 10:00	DO	jumps from 9.1 to 14.1mg/l
FD: 1/5 14:30 -1/31 23:30	turbidity	suspect data removed
FD: 1/29 14:00	all	out of water
ML: 1/5 11:00 - 1/21 13:00	turbidity	suspect data removed
ML: 1/21 13:30 - 1/31 23:30	turbidity	suspect data removed

February 1998:

FD: 2/1 00:00 - 2/6 13:00	turbidity	suspect data removed
FD: 2/6 13:30 - 15:00	DO, DO%	suspect data removed, probe slow to stabilize
FD: 2/7 21:30 - 2/12 15:00	turbidity	removed miscellaneous suspect data
ML: 2/1 00:00 - 2/4 15:30	turbidity	suspect data removed
ML: 2/4 16:00	all	out of water
ML: 2/4 16:30 - 2/17 14:00	DO, DO%	suspect data removed : DO out of tolerance
ML: 2/17 14:30 - 2/28 23:30	turbidity	suspect data removed

March 1998:

FD: 3/31 23:30 - 3/31 23:30	pH	suspect data: numbers out of range
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FD: the following is a list of all turbidity outliers for this month:

03/04/98	14:30:00	-0001	
03/14/98	15:00:00	-0001	
03/14/98	15:30:00	-0002	
03/14/98	16:00:00	-0002	
03/14/98	16:30:00	-0001	
03/14/98	17:00:00	-0001	
03/14/98	17:30:00	-0001	
03/14/98	18:00:00	-0001	
03/14/98	18:30:00	-0001	
03/14/98	19:00:00	-0001	
03/14/98	19:30:00	-0001	
03/14/98	20:30:00	-0001	
03/16/98	07:00:00	-0001	
03/16/98	07:30:00	-0001	
03/16/98	08:00:00	-0001	
03/16/98	08:30:00	-0001	
03/16/98	09:00:00	-0001	
03/16/98	09:30:00	-0001	
03/16/98	10:00:00	-0002	
03/16/98	10:30:00	-0002	
03/16/98	11:00:00	-0001	
03/16/98	11:30:00	-0001	
03/16/98	2:00:00	-0001	-0001
03/16/98	15:30:00	-0001	
03/16/98	16:00:00	-0001	
03/16/98	16:30:00	-0001	
03/16/98	17:00:00	-0001	
03/16/98	17:30:00	-0001	

03/16/98	18:00:00	-0001	
03/16/98	18:30:00	-0001	
03/16/98	19:00:00	-0001	
03/16/98	19:30:00	-0001	
03/16/98	20:00:00	-0001	
03/16/98	22:00:00	-0002	
03/16/98	23:00:00	-0001	
03/17/98	03:30:00	-0001	
03/17/98	23:00:00	-0001	
ML: 3/1 00:00 - 3/2 13:00	turbidity	suspect data removed	

April 1998:

FD: 4/1 00:00 - 4/7 11:30	pH	suspect data, numbers out of range
FD: 4/17 7:30 - 4/30 11:30 maintenance	DO, DO%	data suspect after
FD: 4/7 12:00 - 4/30 11:30	turbidity	suspect data removed
ML: 4/1 14:00 - 4/16 15:30 offset	turbidity	suspect data removed: probe
ML: 4/16 16:00 - 4/29 13:00	turbidity	suspect data removed
ML: 4/1 14:00 - 15:00 stabilized	DO, DO%	new deployment not yet
ML: 4/15 15:30 - 4/16 03:00 fouling	DO, DO%	possible DO membrane

May 1998:

FD: 5/7 05:00	DO	drops from 4.7 to 0.5 mg/l
FD: 5/11 18:00 - 5/12 11:30 with wiper	turbidity	suspect data removed, problem
FD: 5/12 12:00 - 5/31 23:30 turbidity probe	turbidity	sonde(s) not equipped with
FD: 5/12 12:00	all	out of water
FD: 5/26 12:00	all	out of water
ML: 5/1 00:00 - 5/15 13:00 turbidity probe	turbidity	sonde(s) not equipped with
ML: 5/15 13:30 - 5/31 23:30	turbidity	suspect data removed
ML: 5/26 13:30	all	out of water

June 1998:

FD: 6/1 00:00 - 6/10 12:00 turbidity probe	turbidity	sonde(s) not equipped with
FD: 6/7 07:00	SC	drops from 29.6 to 20.9 ms/cm
FD: 6/8 13:30	all	out of water
FD: 6/10 14:00	DO	increase from 5.2 to 7.0 mg/l
FD: 6/10 12:30 - 6/22 13:30 range	pH	suspect data: numbers out of range
FD: 6/13 16:00 - 6/20 17:00 removed	turbidity	miscellaneous suspect data
FD: 6/20 17:30 - 6/22 13:30 range	turbidity	suspect data: numbers out of range
FD: 6/22 12:30 - 13:30	all	out of water
ML: 6/9 14:00 - 6/24 16:00 random high numbers	DO, DO%	suspect data removed:

ML: 6/1 00:00- 6/30 23:30	turbidity	suspect data removed: probe offset
ML: 6/22 14:00	all	out of water
July 1998:		
FD: 7/1 00:00 - 7/21 11:30	turbidity	suspect data removed
FD: 7/10 8:00	all	out of water
FD: 7/17 12:00	all	out of water
FD: 7/21 12:00	DO, DO%	negative numbers removed
FD: 7/21 12:00 - 7/31 7:30	pH	probe broken
FD: 7/28 9:00	all	out of water
FD: 7/31 8:00 - 7/31 23:30	DO, DO%	erratic high and low numbers removed
FD: 7/31 8:00 - 7/31 23:30	turbidity	erratic high and low numbers removed
ML: 7/1 00:00 - 7/31 23:30	turbidity	suspect data removed
ML: 7/5 00:30 - 14:00	DO	decrease
ML: 7/23 14:30 - 7/31 23:30	pH	probe broken
August 1998:		
FD: 8/1 00:00 - 8/11 11:30	DO, DO%	erratic high and low numbers removed
FD: 8/1 00:00 - 8/30 23:30	turbidity	erratic high and low numbers removed
ML: 8/1 00:00 - 8/8 10:30	turbidity	suspect data removed
ML: 8/1 00:00 - 8/8 10:30	pH	probe broken
ML: 8/4 04:30 - 05:30	DO	increase from 4.7 to 7.1 mg/l
ML: 8/8 11:00	all	out of water
ML: 8/17 13:30 - 8/27 12:00	DO, DO%, pH	new probe not calibrated correctly
ML: 8/27 12:30	all	out of water
September 1998:		
FD: 9/2 8:00	all	out of water
FD: 9/3 4:30 - 9/7 13:00	DO, DO%	erratic high and low numbers removed
FD: 9/7 13:30 - 9/22 12:00	pH	probe did not calibrate
FD: 9/21 14:00 - 9/22 10:30	turbidity	miscellaneous suspect data removed
FD: 9/22 12:30 - 9/25 04:00	DO, DO%	erratic high and low numbers removed
FD: 9/29 12:00	all	out of water
ML: 9/3 12:30	salinity	dips to 32.00 mS/cm
ML: 9/25 13:30 - 9/30 23:30	turbidity	suspect data removed
October 1998:		
FD: 10/2 13:00	all	out of water
FD: 10/2 13:30 - 10/4 1:00	DO, DO%	possible DO membrane fouling
FD: 10/4 1:30 - 10/7 8:30	DO, DO%	possible DO membrane fouling
FD: 10/7 9:00	all	out of water
FD: 10/7 9:30 - 10/15 13:00	DO, DO%	possible DO membrane fouling

FD: 10/15-13:30 - 10/31 23:30	turbidity	suspect data removed
FD: 10/15-13:30 - 10/31 23:30	pH	probe broken, did not calibrate
FD: 10/15 13:30 - 15:00	DO, DO%	new deployment not yet stabilized
FD: 10/20 12:30	all	out of water
ML: 10/1 00:00 - 10/9 13:00	turbidity	suspect data removed
ML: 10/30 14:00 - 10/31 23:30	DO, DO%	sonde did not calibrate

November 1998:

FD: 11/1 00:00 - 11/3 14:00	pH	probe broken, did not calibrate
FD: 11/1 00:00 - 11/3 13:00	turbidity	suspect data removed
FD: 11/1 19:00	DO, DO%	single negative reading
FD: 11/17 14:30 - 11/30 23:30	DO, DO%	probe would not calibrate
ML: 11/1 00:00 - 11/4 14:00	DO, DO%	sonde did not calibrate
ML: 11/1 00:00- 11/18 13:00	turbidity	suspect data removed

December 1998:

FD: 12/1 00:00 - 12/7 14:00	DO, DO%	sonde did not calibrate
FD: 12/22 13:30- 12/31 23:30	turbidity	suspect data removed
ML: 12/3 13:30- 12/16 13:00	turbidity	suspect data removed
ML: 12/11 9:00	all	out of water
ML: 12/17 16:00 - 1/8/99 14:00	DO, DO%	sonde did not calibrate

11. Missing data:

January 1998:

FD: 1/5 14:30 -1/31 23:30	turbidity	suspect data removed
FD: 1/29 14:00	all	out of water
ML: 1/5 11:00 - 1/21 13:00	turbidity	suspect data removed
ML: 1/21 13:30 - 1/31 23:30	turbidity	suspect data removed
ML: 1/28 22:00	all	sonde skipped reading

February 1998:

FD: 2/1 00:00 - 2/6 13:00	turbidity	suspect data removed
FD: 2/6 13:30 - 15:00	DO, DO%	suspect data removed, probe slow to stabilize
FD: 2/7 21:30 - 2/11 1:30	turbidity	miscellaneous suspect data removed
FD: 2/12 7:00	all	battery leakage, skipped readings
FD: 2/12 13:30 - 14:00	all	battery leakage, skipped readings
FD: 2/12 15:00 - 2/18 13:30	all	water in battery compartment, no data recorded
FD: 2/18 14:00 - 2/28 23:30	turbidity	sonde(s) not equipped with turbidity probe
ML: 2/1 00:00 - 2/4 15:30	turbidity	suspect data removed
ML: 2/4 16:00	all	out of water
ML: 2/4 16:30 - 2/17 14:00	DO, DO%	suspect data removed : DO out of tolerance
ML: 2/4 16:30 - 2/17 14:00	turbidity	sonde(s) not equipped with turbidity probe

ML: 2/17 14:30- 2/28 23:30	turbidity	suspect data removed
March 1998:		
FD: 3/1 00:00 - 3/4 14:00	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 3/19 13:30 - 3/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 3/31 23:00 - 3/31 23:30	pH	suspect data: numbers out of
range		
ML: 3/1 00:00 - 3/2 13:00	turbidity	suspect data removed
ML: 3/2 13:30 - 3/18 5:00	all	deployment not logged, clock
incorrect		
ML: 3/2 13:30 - 3/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
April 1998:		
FD: 4/1 00:00 - 4/7 11:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 4/1 00:00 - 4/7 11:30	pH	suspect data, numbers out of
range		
FD: 4/17 7:30 - 4/30 11:30	DO, DO%	data suspect after
maintenance		
FD: 4/7 12:00 -4/30 11:30	turbidity	suspect data removed
ML: 4/1 14:00 - 4/29 13:00	turbidity	suspect data removed: probe
offset		
ML: 4/1 14:00 - 15:00	DO, DO%	new deployment not yet
stabilized		
ML: 4/16 3:30 - 15:30	DO, DO%	possible DO membrane
fouling		
ML: 4/15 15:30 - 4/16 03:00	DO, DO%	possible DO membrane
fouling		
ML: 4/29 13:30 - 4/30 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
May 1998:		
FD: 5/6 21:30	all	sonde skipped reading
FD: 5/11 18:00 -5/12 11:30	turbidity	suspect data removed, problem
with wiper		
FD: 5/12 12:00 - 5/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 5/12 12:00	all	out of water
FD: 5/26 12:00	all	out of water
ML: 5/1 00:00-5/15 13:00	turbidity	sonde(s) not equipped with
turbidity probe		
ML: 5/15 13:30-- 5/31 23:30	turbidity	suspect data removed
ML: 5/26 13:30	all	out of water
June 1998:		
FD: 6/1 00:00 - 6/10 12:00	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 6/8 13:30	all	out of water
FD: 6/10 12:30 - 6/22 13:30	pH	suspect data: numbers out of
range		

FD: 6/13 16:00- 6/20 17:00	turbidity	miscellaneous suspect data removed
FD: 6/20 17:30 - 6/22 13:30	turbidity	suspect data removed: numbers out of range
FD: 6/22 12:30 - 13:30	all	out of water
FD: 6/22 -- 7/21 11:30	turbidity	sonde(s) not equipped with turbidity probe
ML: 6/9 14:00 - 6/24 16:00	DO, DO%	suspect data removed: random high numbers
ML: 6/1 00:00- 6/30 23:30	turbidity	suspect data removed: probe offset
ML: 6/22 14:00	all	out of water

July 1998:

FD: 7/1 00:00 - 7/21 11:30	turbidity	suspect data removed
FD: 7/10 8:00	all	out of water
FD: 7/17 12:00	all	out of water
FD: 7/21 12:00	DO, DO%	negative numbers removed
FD: 7/21 12:00 - 7/31 7:30	pH	probe broken
FD: 7/28 9:00	all	out of water
FD: 7/31 8:00 - 7/31 23:30	DO, DO%	erratic high and low numbers removed
FD: 7/31 8:00 - 7/31 23:30	turbidity	erratic high and low numbers removed
ML: 7/1 00:00 7/31 23:30	turbidity	suspect data removed
ML: 7/23 14:30 - 8/8 11:00	pH	probe broken

August 1998:

FD: 8/1 00:00 - 8/11 11:30	DO, DO%	erratic high and low numbers removed
FD: 8/1 00:00 - 8/30 23:30	turbidity	erratic high and low numbers removed
ML: 8/1 00:00 - 8/8 10:30	pH	probe broken
ML: 8/1 00:00 - 8/8 10:30	turbidity	suspect data removed
ML: 8/8 11:00	all	out of water
ML: 8/8 11:30 - 8/17 13:00	turbidity	sonde(s) not equipped with turbidity probe
ML: 8/17 13:30 - 8/27 12:00	DO, DO%, pH	new probe not calibrated correctly
ML: 8/27 12:30	all	out of water
ML: 8/27 13:00 - 8/30 23:30	turbidity	sonde(s) not equipped with turbidity probe

September 1998:

FD: 9/1 00:00 - 9/7 13:00	turbidity	erratic high and low numbers removed
FD: 9/2 8:00	all	out of water
FD: 9/3 4:30 - 9/7 13:00	DO, DO%	erratic high and low numbers removed
FD: 9/7 13:30 - 9/22 12:00	pH	probe did not calibrate
FD: 9/21 14:00 - 9/22 10:30	turbidity	miscellaneous suspect data removed
FD: 9/22 12:30 - 9/30 23:30	turbidity	probe removed for repairs

FD: 9/22 12:30 - 9/25 04:00	DO, DO%	erratic high and low numbers removed
FD: 9/25 04:30 - 9/30 23:30	DO, DO%	erratic high and low numbers removed
FD: 9/29 12:00	all	out of water
ML: 9/1 00:00 - 9/25 13:00	turbidity	sonde(s) not equipped with turbidity probe
ML: 9/9 14:30 - 9/11 13:00	all	sonde lost connection
ML: 9/25 13:30 - 9/30 23:30	turbidity	suspect data removed

October 1998:

FD: 10/1 00:00 - 10/2 12:30	DO, DO%	erratic high and low numbers removed
FD: 10/1 00:00 - 10/7 07:30	turbidity	probe removed for repairs
FD: 10/2 13:00	all	out of water
FD: 10/2 13:30 - 10/4 1:00	DO, DO%	possible DO membrane fouling
FD: 10/4 1:30 - 10/7 8:30	DO, DO%	possible DO membrane fouling
FD: 10/7 9:30 - 10/15 13:00	DO, DO%	possible DO membrane fouling
FD: 10/7 9:30- 10/15 13:00	turbidity	sonde(s) not equipped with turbidity probe
FD: 10/15 13:30-10/31 23:30	turbidity	suspect data removed
FD: 10/7 9:00	all	out of water
FD: 10/15 13:30 - 15:00	DO, DO%	new deployment not yet stabilized
FD: 10/15 13:30 - 10/31 23:30	pH	probe broken, did not calibrate
FD: 10/20 12:30	all	out of water
ML: 10/1 00:00 - 10/9 13:00	turbidity	suspect data removed
ML: 10/9 13:30 -10/31 23:30	turbidity	sonde(s) not equipped with turbidity probe
ML: 10/30 12:30 - 13:30	all	deployment ended before new sonde installed
ML: 10/30 14:00 - 10/31 23:30	DO, DO%	erratic high and low numbers removed

November 1998:

FD: 11/1 00:00 - 11/3 14:00	pH	probe broken, did not calibrate
FD: 11/1 00:00 - 11/3 13:00	turbidity	suspect data removed
FD: 11/1 19:00	DO, DO%	single negative reading
FD: 11/3 13:30- 11/30 23:30	turbidity	sonde(s) not equipped with turbidity probe
FD: 11/17 14:30 - 11/30 23:30	DO, DO%	probe would not calibrate
ML: 11/1 00:00 - 11/4 14:00	DO, DO%	sonde did not calibrate
ML: 11/1 00:00 - 11/4 14:00	turbidity	sonde did not calibrate
ML: 11/4 14:30- 11/18 13:00	turbidity	suspect data removed
ML: 11/18 13:30 - 11/30 23:30	turbidity	sonde(s) not equipped with turbidity probe

December 1998:

FD: 12/1 00:00 - 12/7 14:00	DO, DO%	sonde did not calibrate
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FD: 12/1 00:00 - 12/22 13:00 turbidity sonde(s) not equipped with
turbidity probe
FD: 12/22 13:30- 12/31 23:30 turbidity suspect data removed
ML: 12/1 00:00 - 12/3 13:00 turbidity sonde(s) not equipped with
turbidity probe
ML: 12/3 13:30 - 12/16 13:00 turbidity suspect data removed
ML: 12/11 9:00 all out of water
ML: 12/16 13:30- 12/31 23:30 turbidity sonde(s) not equipped with
turbidity probe
ML: 12/17 16:00 - 12/31 23:30 DO, DO% sonde did not
calibrate

12. Other Remarks

Depth was absent from each monthly file due to the fixed depth off
the
dock. The following was a list of deployments for the year:

Brand	location	month	date		
ysi	ml	1	5	98	
ysi	fd	1	5	98	
hydrolab	fd	1	20	98	
ysi	ml	1	21	98	
hydrolab	ml	2	4	98	
ysi	fd	2	6	98	
ysi	ml	2	17	98	
ysi	fd	2	18	98	
hydrolab	ml	3	2	98	
ysi	fd	3	3	98	
hydrolab	ml	3	17	98	
hydrolab	fd	3	19	98	
ysi	ml	4	1	98	
ysi	fd	4	7	98	
ysi	ml	4	16	98	
hydrolab	ml	4	29	98	
ysi	fd	4	29	98	
hydrolab	fd	5	12	98	
ysi	ml	5	15	98	
hydrolab	fd	5	26	98	
ysi	ml	5	28	98	
ysi	ml	6	9	98	
ysi	fd	6	10	98	
hydrolab	fd	6	22	98	
ysi	ml	6	24	98	
hydrolab	fd	7	7	98	
ysi	ml	7	8	98	
ysi	fd	7	21	98	
ysi	ml	7	23	98	
ysi	fd	7	31	98	
hydrolab	ml	8	8	98	
ysi	fd	8	11	98	
ysi	ml	8	17	98	
ysi	fd	8	21	98	
hydrolab	ml	8	27	98	
ysi	fd	9	7	98	

hydrolab		ml	9	11	98
ysi	fd	9	22	98	
ysi	ml	9	25	98	
hydrolab		fd	10	6	98
hydrolab		ml	10	9	98
ysi	fd	10	15	98	
hydrolab		ml	10	30	98
hydrolab		fd	11	3	98
ysi	ml	11	4	98	
hydrolab		fd	11	17	98
hydrolab		ml	11	18	98
ysi	ml	12	3	98	
hydrolab		fd	12	7	98
hydrolab		ml	12	16	98
ysi	fd	12	22	98	