

Sapelo Island (SAP) NERR Water Quality Metadata
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2. Entry Verification:

Deployment data (.DATfiles) are uploaded from the YSI 6600 datalogger to an IBM personal computer. Data plots are produced and examined and erroneous data are detected using the PC6000 or EcoWatch software from YSI. Notes are made of any unusual data during that deployment. Files are exported from EcoWatch in a comma-delimited format (.CSV) and opened in Microsoft Excel for pre-processing with the EQWin format macro that was developed by the CDMO. Data files are revised using the EQWinformat.xls macro that 1) ensure parameters are in the correct order; 2) convert depth in feet to depth in meters; 3) format the data to the correct number of decimal points; 4) inserts a station identifying code; 5) insert a corrected time column; 6) allows the user to remove any pre and post deployment data from the file. Where deployment overlap occurs between files, the data produced by the newly calibrated sonde is accepted as being the most accurate.

The pre-processed data are then copied into EQWin where: 1) the station and parameters are verified against the database; 2) the file configurations are checked; 3) the date and time formats are checked; 4) the data are checked for duplication; 5) the data are checked for outliers (data outside the acceptable range of the sensors) and 6) graphs are generated. The reports and graphs are printed and the data reviewed. Data at the beginning and end of each data record when the instrument was out of the water are deleted. These data are identified by field notes that document the times of deployment and retrieval and the sudden change in specific conductivity and depth records. Data in the remainder of the record are not deleted unless supporting reasons can be documented. EQWin is also used to generate statistics, view graphs, create customized reports and queries of the data, cross query the water, weather, and nutrient data and finally export the data to the CDMO.

The anomalous data are evaluated to determine whether to flag or delete the suspect data. Data are flagged if the values are: 1) outside the range expected for the site (see Site Location and Character section 5), 2) outside the range of measurements and accuracy established for the sensors (see section 9), or 3) outside the range established for good water quality conditions (e.g., turbidity >150 NTU, negative turbidity, variable DO, or sudden data spikes). Data outside the acceptable range for a particular site are investigated for validity based on weather data, field observations, OC checks, data printouts, and instrument diagnostics. Data are deleted if the anomalies are attributed to: 1) sensor malfunction –if the voltage reading is outside the range established for the sensor or the sensor will not calibrate, 2) exposure of the sensors during low tide – identified by unusual depth, temperature, and specific conductivity data, or 3) fouling of the sensors by aquatic organisms, debris, or sediment –detected by in situ sensor with measurements (see Section 4). Turbidity readings >900 NTU are deleted. In addition sensor readings that differ significantly (>10%) from standard solutions (e.g., conductivity) suggest that the sensor was fouled during deployment. After corrections are made to the pre-processed data in Excel, it is imported into the EQWin database and an updated file is submitted to the CDMO via FTP for archival. Patrick Hagan holds primary responsibility for the data management.

3. Research objectives:

Hydrological studies by Ragotskie and Bryson, 1955 and Imberger et al., 1986, have demonstrated that that three tidal excursions exist along the length of the Duplin River. These distinct water masses have characteristically different hydrology and chemical properties. The two System Wide Monitoring Program (SWMP) continuous water quality monitoring sites maintained by the Sapelo Island NERR located in the Duplin River (Lower Duplin site and Hunt Dock), are located within these different lower and upper water masses, respectively. Water passing the Lower Duplin site during flood tide originates in Doboy Sound, which receives input from the Altamaha River (via the Intra-Coastal Waterway) and the Atlantic Ocean. Tidal action in the lower Duplin pushes water upstream into smaller tidal creeks and eventually onto the marsh surface during the flood tide. Much of the water flowing into this lower area of the Duplin River is retained in the River's primary channel as it flows through steep marsh banks between Little Sapelo and Sapelo Islands. This water mass then recedes back into the main channel and out to Doboy Sound during ebbing flow, completing the tidal cycle on a diurnal basis. Flood tide in the upper Duplin passes the Hunt Camp site and is then pushed into small creek channels and onto the marsh. Thus, the two Duplin River stations monitor conditions in two hydrological separate water masses, one of which is primarily influenced by exchanges with Doboy Sound, mixed estuarine waters, (Lower Duplin) and the other (Hunt Camp) which is influenced by its twice-daily contact with the extensive marsh surface of the rivers upper reaches.

Sapelo Island has no infrastructure enabling direct, vehicular access with the mainland therefore it is only accessible by a state maintained passenger ferry and limited use of privately owned small craft. These access limitations have enabled the islands natural communities to remain functionally intact with reduced anthropogenic impacts by

comparison to nearby, mainland environs. The Lower Duplin site is located adjacent to the passenger ferry dockage for the approximately 125 island residents, commuters and daily visitors and represents the SAP NERR's water quality monitoring site of highest human impacts. The Hunt Dock site was selected in July 1999 for water quality monitoring and is deployed on a small dock used intermittently by recreational campers, fishermen and hunters for access to the headwaters of the Duplin. This site therefore displays lower anthropogenic impacts as compared to the down-river, Lower Duplin site.

Two previously maintained stations in the Duplin River (Flume Dock and Marsh Landing) have been discontinued and moved to Cabretta Creek and Dean Creek; respectively. The addition of these two sites allow for collection of comparative water quality data across both a larger spatial domain and a wider salinity regime than the previous duplicative, near surface stations located at the discontinued sites. These sites are also different from the Duplin River sites as they are representative of poorly studied, small creek and salt marsh systems. The site changes in the Sapelo Island NERR water quality monitoring program allow for comparisons between larger, intensively studied, tidal river regimes (Duplin River) and smaller, lesser known, tidal creek systems of greater marine influence (Cabretta Creek and Dean Creek). These new sites differ from the Duplin River sites in both marine water delivery and dynamics associated with rainfall events. The marsh (watershed) to creek volume ratio's within the new sites also differ with the Dean Creek site feeding into Doboy Sound with an extensive associated marsh hence, freshwater runoff. The Dean Creek site therefore displays highly dynamic shifts in salinity in response to rainfall events. By contrast, the Cabretta Creek site with its mouth feeding directly in to Cabretta inlet, located on Sapelo Island's Atlantic Ocean frontage displays a much lower marsh to creek volume ratio therefore, reduced salinity dynamics associated with rainfall events by comparison to either the Dean Creek site or the Duplin River sites.

The long-term trends and short-term variability within the water quality and hydrodynamics of these differing water quality monitoring sites promote research questions and provide information related to differing temporal salinity dynamics and biological responses

4. Research Methods:

The SAP NERR Water Quality Monitoring began in October of 1999, at the Marsh Landing Dock on the lower Duplin River. At that time we were only performing long term water quality monitoring and not a specific experiment. Prior to April 15, 1999 the University of Georgia-Athens Marine Institute (UGAMI) completed sampling. When SAP NERR took over the NERR monitoring from the University of GA, a second site was set up at the Marsh Landing site to be the NERR monitoring station. In order to lesson the confusion between the 2 sites, the SAP NERR site is referred to as the Lower Duplin site (LD) and is monitored at a fixed depth from the bottom (0.5m). In June 2002, the reserve returned to including the University's monitoring sites. These sites are at a

fixed depth just below the surface. The sites include the Marsh Landing site, (ML) and the Flume Dock (FD). They are both hung by stainless steel chains from floating docks at a fixed depth, approximately 1.5 m. The Hunt Dock (HD) site is just south of the Flume Dock site and also measures at 0.5m above the surface bottom. Because the ML and FD sites are surface deployments the amount of fouling is much worse when compared to the LD and HD sites. In an effort to improve the data, the YSI EDS sondes are used exclusively at these sites and the 6000 series and 6600 series sondes are used at the LD and HD sites. The EDS sondes reduce some of the fouling, but there is still considerable deterioration of probe sensitivity during deployment.

Before each YSI PC6000 data logger 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 ($24.82\text{mS/cm} = 14.92\text{ g/L}$) or from serial dilution of a certified conductivity standard. The turbidity calibration uses distilled water made by the University of Georgia-Athens Marine Institute and a purchased 100 NTU certified standard. The dissolved oxygen membranes are replaced before deployment and are allowed to sit at least 24 hours prior to deployment. Calibration is then verified by running a standard as a sample after each calibration.

When deployed, the weather conditions and tidal stage are recorded in the field observation log. The data logger is placed inside a length of 4" PVC pipe attached to the dock. The Lower Duplin data logger is attached to the north side of a non-floating dock by a steel cable and run down a PVC pipe to rest 0.5m above the surface bottom. The Hunt Dock data logger is attached to the south side of a fixed dock by steel cable and run down a PVC pipe to take measurements 0.5m above the surface bottom. The new Cabretta Creek datalogger is also suspended inside a PVC pipe affixed to the north side of a fixed bridge and sits 1.5m off the bottom, suspended by a monofilament line. Dean creek, like Cabretta consists of a PVC pipe containing a datalogger suspended .25m off the bottom by a monofilament line. Because of the large tidal range, water is continually flushed through the PVC pipes, thus eliminating the problem of creating a stagnate column of water with in the pipe with data logger. Every 30 minutes during the sampling period measurements are taken for temperature, specific conductance, salinity, pH, dissolved oxygen concentration, percent saturation, depth and turbidity.

At the end of the sample period the data logger is retrieved and immediately replaced by another calibrated data logger. The data logger is then taken to the lab and runs QA/QC standards for pH, and conductivity, and dissolved oxygen, the data are uploaded, and the sonde is cleaned. data are removed if the post calibration standards fail or if technical problems are noted. All data removed is noted in the metadata.

5. Site Location and character:

Both the Marsh Landing (ML) and Lower Duplin (LD) monitoring sites (31 deg 25' 4" N, 81 deg 17' 46" W) are located on the Marsh Landing Dock in the Duplin River on Sapelo Island and consists of a muddy bottom habitat. Water passing the dock during flood tide originates from the Doboy Sound. The Doboy Sound 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 Marsh Landing dock is used as the main dock to the island where the ferry makes several daily runs, with several small boats that are docked there. The surrounding area vegetation is dominated by salt marsh with *Spartina* being the predominate flora. Tidal range maximum for both sampling sites is 14 feet and the salinity range is 5-35 ppt. The depth at these sampling stations ranges from 1.5 meters to 6.0 meters depending on tide.

The Hunt Dock monitoring site (31 deg 28' 43" N, 81 deg 16' 23" W) is located on the Duplin River, off of Moses Hammock, which is separated by Sapelo Island by a small tidal channel. The primary runoff at the site is from tidal creeks flowing through *Spartina* marsh and through the mud. Bottom habitat at this site includes soft mud and some oyster bed building along the shoreline with a tidal range maximum of 14 feet and a salinity range of 5-35 ppt. There is little human traffic this far up the Duplin and it is north of the people living on Sapelo. During the fall, the Hunt dock and Moses Hammock are the camping and docking site for deer hunters traveling to the island. These are controlled hunts and dates are available from the SAP NERR office if needed. The maximum depth at the Hunt Dock site is 4.27 meters.

The Flume Dock (FD) site (31 deg 28' 58"N, 81 deg 16' 3"W) is located just upstream of Hunt Dock. This station is mounted on the hunt camp access dock. Bottom habitat at this site includes soft mud and some oyster bed building along the shoreline. These sites were used since 1986 by the UGA Marine Institute. In June of 2002, the data collection was consolidated by the SAP NERR and the University. Because of the fixed placement of the sondes at the water surface the fouling of the probes is a continuous problem. The data will reflect this problem. Maximum tidal range is 14 feet and salinity ranges 5-35 ppt. The maximum depth at the Flume Dock site is 4.27 meters.

Dean Creek (DC), (31 deg 23' 22.5"N, 81 deg 16' 44.2"W) is located on a small wooden bridge spanning Dean Creek, in close proximity to the adjacent Nannygoat Beach causeway. Dean Creek is a small tidal basin fed from the waters of Doboy Sound, which is located on Sapelo Island's south end. Freshwater inputs at this site are limited by rainfall and runoff. With exception to short duration local or long duration regional precipitation events, the creeks' salinity normally ranges between 20 and 30 ppt. Maximum/minimum salinities are unknown at this time. The benthic community consists of a sandy-mud substrate with occasional, small, intertidal oyster reef community and mean tidal amplitude of approximately 8 feet. The depth at the Dean Creek sampling station ranges from .15 meters to 1.6 meters depending on tide. The maximum depth at

the Dean Creek site is 2.0 meters. The small creek feeds approximately 150 acres of *Spartina alterniflora* dominated salt marsh, which is interspersed with small 0.5-1 acre hammocks and salt pans. Fringe community components range from Loblolly pine forests with a sub-canopy of Yaupon holly to Wax myrtle and Sable Palm.

The Cabretta Creek (CA) site coordinates are (31 deg 26' 37.3"N, 81 deg 14' 23.7"W). The station is located on a small (one-lane), wooden, roadway bridge spanning Cabretta creek located on the island's extreme eastern side, bordering the Atlantic Ocean. The creek is fed directly from waters of the Atlantic Ocean and freshwater inputs are limited by rainfall and runoff. Cabretta experiences a maximum tidal range of approximately 14 feet. The depth at the Cabretta Creek sampling station ranges from 1.5 meters to 4.0 meters depending on tide. The maximum depth at the Cabretta Creek site is 4.5 meters.

Salinity ranges with exception to major, long-term precipitation events, varies from 15-36 ppt., seasonally. The benthos is composed primarily of sand substrate with small, intertidal oyster reef conglomerate communities. Adjacent to the site is extensive, intertidal, bank stabilization (armoring) in the form of woven rip-rap fencing and granite rocks. This manipulation is slowly becoming stabilized via oyster reef community colonization. The adjacent marshes are dominated by *Spartina alterniflora* with occasional *Juncus roemerianus* in the nearby fringe community habitat. The creek has very little adjacent uplands due to: 1) the low elevational gradient and 2) the areas geologically recent accretion genesis (Holocene) resulting in sandy soils; of which neither conditions allow for extensive floral colonization or stabilization.

There are no current studies on pollutants in this area. Sapelo Island is typically considered a pristine environment, with minimal pollutant input.

6. Data collection period:

	deploy date	time	retrieve date	time
Cabretta:				
	8/30/2004	11:30	9/17/2004	13:30
	9/17/2004	14:00	10/8/2004	11:30
	10/8/2004	12:00	10/22/2004	13:30
	10/22/2004	14:00	11/9/2004	10:30
	11/9/2004	11:00	11/29/2004	11:00
	11/29/2004	11:30	12/20/2004	10:30
	12/20/2004	13:30	1/6/2006	11:30
Dean Creek				
	4/18/2004	16:30	5/14/2004	10:30
	5/14/2004	11:00	6/01/2004	13:00
	6/1/2004	13:30	7/5/2004	09:00
	7/5/2004	09:30	7/25/2004	10:30
	7/25/2004	11:00	8/16/2004	10:30
	08/16/2004	11:30	09/04/2004	09:00

9/4/2004	09:30	9/24/2004	11:00
9/24/2004	11:30	10/8/2004	10:30
10/8/2004	11:00	10/25/2004	15:00
10/25/2004	16:00	11/9/2004	11:30
11/9/2004	12:00	11/29/2004	10:30
11/29/2004	11:30	12/20/2004	11:00
12/20/2004	12:30	01/06/2005	11:00
Hunt Dock			
12/24/2003	17:30	01/09/2004	11:30
1/9/2004	12:00	2/6/2004	13:30
2/11/2004	20:00	3/6/2004	11:30
3/6/2004	12:00	4/5/2004	10:00
4/5/2004	10:30	4/27/2004	10:30
4/27/2004	11:00	5/14/2004	10:00
5/14/2004	10:30	5/30/2004	10:00
5/30/2004	10:30	7/1/2004	11:00
7/1/2004	11:30	7/25/2004	11:00
7/25/2004	11:30	8/16/2004	11:30
8/16/2004	12:00	9/3/2004	15:00
9/3/2004	15:30	9/18/2004	09:00
9/17/2004	09:30	10/8/2004	14:30
10/8/2004	15:30	10/25/2004	14:30
10/25/2004	17:00	11/9/2004	10:30
11/9/2004	11:30	11/29/2004	11:30
11/29/2004	12:00	12/20/2004	11:30
2/20/2004	13:30	1/6/2004	12:30
Marsh landing			
12/25/2003	11:00	01/09/2004	11:00
1/9/2004	12:00	1/30/2004	15:00
1/30/2004	16:00	2/20/2004	15:00
2/20/2004	15:30	3/6/2004	11:00
3/6/2004	11:30	4/4/2004	14:00
4/4/2004	14:30	4/18/2004	15:30
4/18/2004	16:00	5/03/2004	13:00
05/03/2004	13:30	05/14/2004	08:30
Lower Duplin			
12/25/2003	10:30	01/21/2004	15:30
1/21/2004	16:00	2/20/2004	15:30
2/22/2004	15:00	3/10/2004	17:00
3/10/2004	17:30	4/4/2004	14:00
4/5/2004	10:30	4/26/2004	15:00
4/26/2004	16:00	5/14/2004	08:30
5/14/2004	09:00	6/12/2004	09:00
6/12/2004	10:00	6/19/2004	10:00
6/19/2004	10:30	7/16/2004	13:00
7/16/2004	14:00	8/7/2004	08:30

8/7/2004	09:00	9/2/2004	12:00
9/02/2004	12:30	9/17/2004	10:30
9/17/2004	14:00	10/8/2004	10:00
10/8/2004	10:30	10/25/2004	15:00
10/25/2004	16:30	11/9/2004	13:00
11/9/2004	13:30	11/29/2004	13:00
11/29/2004	13:30	12/20/2004	12:00
12/20/2004	13:00	01/06/2004	12:30
Flume dock			
1/10/2004	10:30	1/30/2004	15:30
1/30/2004	16:00	2/20/2004	15:30
2/21/2004	12:00	3/10/2004	17:30
3/10/2004	18:00	4/9/2004	16:30
4/11/2004	13:00	4/26/2004	15:30
4/26/2004	16:00	5/12/2004	13:00
5/12/2004	13:30	5/27/2004	09:30
5/27/2004	10:00	6/12/2004	12:00
6/12/2004	12:30	6/25/2004	14:00
6/25/2004	14:30	7/9/2004	15:00
7/9/2004	15:30	7/17/2004	10:30
7/17/2004	11:00	8/3/2004	09:30
8/3/2004	10:30	8/28/2004	09:30

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 is 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 and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient 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 2.2-1 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 the CDMO home page) and online at the CDMO home page <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:

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. The research continues today with SAP NERR and UGAMI creating a unique partnership with much of the current research being done facilitated by SAP NERR and UGAMI together. 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> and on the Sapelo Island NERR site: <http://www.sapelonerr.org>.

9. Sensor specifications:

YSI 6600/YSI 6600EDS datalogger

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Thermistor
Model #: 6560
Range: -5 to 45 °C
Accuracy: +/-0.15 °C
Resolution: 0.01 °C

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: 4-electrode cell with autoranging
Model #: 6560
Range: 0 to 100 mS/cm
Accuracy: +/-0.5% of reading + 0.001 mS/cm
Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependent)

Parameter: Salinity
Units: parts per thousand (ppt)
Sensor Type: Calculated from conductivity and temperature
Range: 0 to 70 ppt
Accuracy: +/- 1.0% of reading or 0.1 ppt, whichever is greater
Resolution: 0.01 ppt

Parameter: Dissolved Oxygen % saturation
Units: percent air saturation (%)
Sensor Type: Rapid Pulse – Clark type, polarographic

Model #: 6562

Range: 0 to 500 % air saturation

Accuracy: 0-200 % air saturation, +/- 2 % of the reading or 2 % air saturation, whichever is greater; 200-500 % air saturation, +/- 6 % of the reading

Resolution: 0.1 % air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature and salinity)

Units: milligrams per Liter (mg/L)

Sensor Type: Rapid Pulse – Clark type, polarographic

Model #: 6562

Range: 0 to 50 mg/L

Accuracy: 0 to 20 mg/L, +/- 2 % of the reading or 0.2 mg/L, whichever is greater; 20 to 50 mg/L, +/- 6 % of the reading

Resolution: 0.01 mg/L

Parameter: Non-Vented Level – Shallow (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 30 ft (9.1 m)

Accuracy: +/- 0.06 ft (0.018 m)

Resolution: 0.001 ft (0.001 m)

Parameter: pH

Units: units

Sensor Type: Glass combination electrode

Model #: 6561

Range: 0 to 14 units

Accuracy: +/- 0.2 units

Resolution: 0.01 units

Parameter: Turbidity

Units: nephelometric turbidity units (NTU)

Sensor Type: Optical, 90 ° scatter, with mechanical cleaning

Model #: 6136

Range: 0 to 1000 NTU

Accuracy: +/- 5 % reading or 2 NTU (whichever is greater)

Resolution: 0.1 NTU

Dissolved Oxygen Qualifier: The reliability of the dissolved oxygen (DO) data after 96 hours post-deployment for non-EDS (Extended Deployment System) data sondes may be problematic due to fouling which forms on the DO probe membrane during some deployments (Wenner et al. 200*). Many reserves have upgraded to YSI 6600 EDS data sondes, which increase DO accuracy and longevity by reducing the environmental effects of fouling. The user is therefore advised to consult the metadata and to exercise caution

when utilizing the DO data beyond the initial 96-hour time period. However, this potential drift is not always problematic for some uses of the data, ie. periodicity analysis. It should be noted that the amount of fouling is site specific and that not all data are affected. The Research Coordinator at the specific NERR site should be contacted concerning the reliability of the DO data because of the site and seasonal variation in the fouling of the DO sensor. All data sondes used at DNERR sites in 2002 were non-EDS models.

Depth Qualifier: The NERRS System-Wide Monitoring Program utilizes YSI data sondes that can be equipped with either depth or water level sensors. Both sensors measure water depth, but by convention, level sensors refer to atmospherically vented measurements and depth refers to non-vented measurements. Standard calibration protocols for the non-vented sensor use the atmosphere pressure at the time of calibration. Therefore, changes in atmospheric pressure between calibrations appear as changes in water depth. The error is equal to approximately 1.03 cm for every 1 millibar change in atmospheric pressure. This error is eliminated for level sensors because they are vented to the atmosphere throughout the deployment time interval. If proper atmospheric pressure data is available, non-vented sensor depth measurements can be corrected for deployments between calibrations. Readings for both vented and non-vented sensors are automatically compensated for water density changes due to variations in temperature and salinity. The Research Coordinator at the specific NERR site should be contacted in order to obtain information regarding atmospheric pressure data availability. All data sondes used at the DNERR sites in 2002 were non-vented models.

10. Coded variable definitions:

Sampling Station:	Sampling Site Code:	Station Code
Cabretta Creek	CA	sapcawq
Dean Creek	DC	sapdcwq
Flume Dock	FD	sapfdwq
Hunt Dock	HD	saphdwq
Lower Duplin	LD	sapl原因dwq
Marsh Landing	ML	sapmlwq

11. Anomalous/Suspect:

Hunt Dock

January

1/6 0230 Turbidity spike, cause unknown

1/8 1600 Turbidity spike, cause unknown

February

2/13 0830 Turbidity spike, cause unknown

The following times reported negative and/or zero turbidity values.

March

3/6 1200, 1300-1530, 1630 - 3/7 0000

3/7 0100 -3/8 0030

3/8 0130-1300, 1400 - 3/10 0700

3/10 0800 - 3/12 0500

3/12 0530-1130

3/12 1300-3/13 1200

3/13 1300-3/16 2130

3/17 0030 -3/20 0930

3/20 1030-1530, 1730-2130, 2230-2330

3/21 0000-0100, 0200-1130, 1230-2030, 2130-2330

3/22 0000-0030, 0200-1230, 1400-1530, 1630, 1730-1800, 1900-2230, 2330

3/23 0000-1300, 1400-3/24 0400

3/24 0500-1330, 1530, 1730-3/25 0430

3/25 0530-0800, 0900-1000, 1100-1300, 1400, 1500, 1600-1630,

3/25 1800-3/26 0800

3/26 0900-1000, 1100-1300, 1400, 1600-1700, 1830-3/27 0700

3/27 0800-1130, 1230-1430, 1530, 1630 - 3/28 1000

3/28 1100-1200, 1300, 1400 -3/29 1130

3/29 1400, 1500, 1600-3/30 0630

3/30 0730-0830, 0900 -1230, 1330-1430,, 1630- 3/31 0800

3/31 1000-1030, 1200, 1330-1430, 1600-2330

The following turbidity spikes were reported:

3/7 0030, 3/12 0530, 3/13 0800 sonde exposed at low tide

3/20 0630 cause unknown

3/22 1830 cause unknown

3/24 1430-1500, 3/26 1530, 3/27 1200, 1500 cause unknown

3/30 0900, 3/31 0930, 1100 cause unknown

April

The following times reported negative and/or zero turbidity values

4/1 0000-0900, 1030, 1300-1530, 1700, 1830-2100 2200-2330

4/2 0000, 0100- 0630, 0730, 0800, 0900-0930, 1030, 1130-1430, 1530, 1630-1700, 1800-1830

4/2/2030-4/3 0430

4/3 0600-0630, 0730-1100, 1230-1300, 1400-1430, 1530-1630, 1800-1900, 2000, 2100-2200

4/3 2300-4/4 0730

4/4 0830-1730, 1830-1930, 2100, 2230, 2330

4/5 0000-0400, 0600-0700, 0900

The following times reported spikes in turbidity data:

4/1 1000, 1200, 4/2 0030, 1100, 1900, 2000, 2100

4/3 0500, 0530, 0700, 1130, 1330, 1500, 2230

4/4 2030, 4/5 0500

4/30 0730

4/22 at approximately 1000 there is a increase in the values for

DO that are maintained even when a new sonde is deployed.

May

5/6 1700 - 5/14 1000 DO suspect due to fouling

The following times had negative and/or zero turbidity values reported, causes unknown

5/3 1230-1400

5/4 0130-0230

5/5 0300, 1500

5/6 0330, 0400, 1500-1630

5/7 0500, 1630

5/8 0530, 0600

5/3 0630 Turbidity spikes in value

June

6/15 1630 – 6/21 0230 DO suspect due to fouling

The following times turbidity data reported had negative values, sonde exposed at low tide:

6/1 0100-1200-1330

6/2 1330 1400

6/3 1400-1500

6/4 1530-1630

6/7 1730 Turbidity spike cause unknown, happened shortly before data was removed for fouling, thus this could be the cause.

September

9/7 0430 Turbidity spike cause unknown

The following times turbidity data recorded negative values

Cause unknown:

9/3 1630-9/4 0100

9/4 0230-0430, 0600, 0700, 0730, 0830, 0930, 1030, 1300, 1700, 1800-1900, 2000-2100, 2200,2300

9/5 0000-0200, 0430-0700, 0830, 0900, 1330, 1430,18700, 2100, 2330

9/6 0200-0330, 1000, 1030, 200000-9/7 0600

9/7 11230, 1230-1600, 1830-1900, 2100,2200-2330

9/8 0000-0400, 0500-0700, 0830-0900, 1100, 1200 1230, 1330-1700, 1830, 1930-2330

9/9 0000-1300, 1400, 1530-1830, 1930-2030, 2130-2330

9/10 0000-0830, 0930-1030, 1230-1500, 1600, 1630 1730, 1800, 2000-2330

9/11 0000-1600, 1830-1930, 2200-2330

9/12 0000-0500, 0630-0800, 1000, 1030, 1130, 400-1500, 1900-2000, 2330

9/13 0000-0500, 0730-0830, 1130, 1200-1600, 20000 2030

9/14 0030-0430, 0800-0930, 1300 1400-1500

9/17 1930 2230 2330

9/18 0200-0330, 0500-0800

October

10/8 1930, 10/15 1600 Turbidity spikes cause unknown

10/20 1400-1430 turbidity negative values, cause unknown

November

11/06 0530 turbidity spike, unknown cause

11/08 0600 turbidity spike, unknown cause

11/08 2230 turbidity spike, unknown cause

11/09 0330 turbidity spike, unknown cause

11/21 1130, 1830, 1900 turbidity spike, cause unknown

Negative and/or zero turbidity values:

11/09/2004 13:30

11/09/2004 19:00

11/09/2004 23:30

11/10/2004 02:00

11/10/2004 03:00

11/10/2004 14:30

11/11/2004 02:30

11/11/2004 12:00

11/12/2004 00:30

11/12/2004 02:30

11/12/2004 05:00

11/12/2004 17:00

11/13/2004 00:30

11/13/2004 03:30

11/16/2004 06:00

11/16/2004 07:30

11/16/2004 18:00

11/17/2004 03:30

11/17/2004 18:30

11/18/2004 01:30

11/18/2004 04:30

11/18/2004 14:30

11/18/2004 18:00

11/19/2004 02:00

11/19/2004 05:00

11/19/2004 10:00

11/19/2004 14:30

11/19/2004 18:00

11/20/2004 05:30

11/20/2004 19:00

11/21/2004 07:30

11/21/2004 18:30

11/21/2004 21:00

11/22/2004 00:00

11/22/2004 04:30

11/22/2004 09:00

11/22/2004 20:00

11/23/2004 05:30

11/23/2004	10:00
11/23/2004	13:30
11/23/2004	21:00
11/24/2004	14:00
11/25/2004	07:00
11/25/2004	14:00
11/25/2004	16:00
11/25/2004	18:30
11/26/2004	08:30
11/26/2004	15:30
11/26/2004	20:00
11/26/2004	23:30
11/27/2004	06:00
11/27/2004	13:00
11/27/2004	21:30
11/28/2004	00:30
11/28/2004	13:00
11/28/2004	16:00
11/28/2004	17:00
11/29/2004	09:30

11/21 1130 and 1900 saw large turbidity spikes of unknown cause, data retained

December

Negative turbidity for the month should be attributed to a calibration error, all negative values may be considered to be near zero.

Cabretta Creek

This is a new site, no data collected until 08/30/04 1130

September

9/10 16:00-9/17 07:30 ...high turbidity values probably due to heavy rains associated with hurricane activity /possible fouling. Data kept as they returned to normal at end of deployment and post-cal value of 105/100true.

October

10/07 15:00 ...turbidity spike, cause unknown. data otherwise stable, all data kept.

September through December negative turb values

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09/18/2004	05:00	-0002
09/18/2004	05:30	-0002
09/18/2004	17:00	-0001
09/18/2004	17:30	-0001
09/18/2004	18:00	-0003
09/18/2004	22:30	-0002
09/18/2004	23:00	-0005
09/18/2004	23:30	-0006
09/19/2004	00:00	-0005

09/19/2004	00:30	-0002
09/19/2004	04:30	-0001
09/19/2004	05:00	-0001
09/19/2004	05:30	-0003
09/19/2004	06:00	-0001
09/19/2004	18:30	-0003
09/21/2004	21:30	-0003
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09/22/2004	09:30	-0005
09/22/2004	21:30	-0002
09/22/2004	22:00	-0005
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09/23/2004	08:30	-0003
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09/23/2004	10:00	-0005
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11/07/2004	10:00	-0004
11/07/2004	11:30	-0002
11/07/2004	13:30	-0004
11/07/2004	15:30	-0004
11/07/2004	16:00	-0006
11/07/2004	18:00	-0003
11/07/2004	18:30	-0002
11/07/2004	20:30	-0004

11/07/2004	22:30	-0003
11/07/2004	23:00	-0004
11/08/2004	03:00	-0006
11/08/2004	04:30	-0006
11/08/2004	05:00	-0006
11/08/2004	07:00	-0005
11/08/2004	07:30	-0005
11/08/2004	09:30	-0004
11/08/2004	10:00	-0004
11/08/2004	12:00	-0002
11/08/2004	12:30	-0002
11/08/2004	14:30	-0002
11/08/2004	15:00	-0001
11/08/2004	16:30	-0004
11/08/2004	17:00	-0005
11/08/2004	18:30	-0001
11/08/2004	19:00	-0002
11/08/2004	20:30	-0003
11/08/2004	21:00	-0003
11/08/2004	23:00	-0003
11/08/2004	23:30	-0003
11/09/2004	02:00	-0001
11/19/2004	08:30	-0001
11/20/2004	09:30	- 10:00
11/20/2004	15:30	-0001
11/21/2004	04:00	-0001
11/21/2004	16:00	-17:00
11/21/2004	23:30	-0001
11/22/2004	16:30	-18:00
11/23/2004	06:00	-0001
11/23/2004	17:30	-19:00
11/24/2004	07:00	-0001
12/20/2004	15:30	-0003
12/20/2004	16:00	-0002
12/20/2004	16:30	-0002
12/20/2004	17:00	-0001
12/20/2004	17:30	-0003
12/20/2004	18:00	-0004
12/20/2004	18:30	-0005
12/20/2004	19:00	-0005
12/20/2004	19:30	-0006
12/20/2004	20:00	-0006
12/20/2004	20:30	-0006
12/20/2004	21:00	-0006
12/20/2004	21:30	-0006
12/20/2004	22:00	-0006

12/20/2004	22:30	-0006
12/20/2004	23:00	-0007
12/20/2004	23:30	-0005
12/21/2004	00:00	-0004
12/21/2004	03:30	-0001
12/21/2004	04:00	-0003
12/21/2004	04:30	-0003
12/21/2004	05:00	-0003
12/21/2004	05:30	-0001
12/21/2004	06:00	-0001
12/21/2004	06:30	-0001
12/21/2004	07:00	-0001
12/21/2004	07:30	-0002
12/21/2004	08:00	-0003
12/21/2004	08:30	-0004
12/21/2004	09:00	-0005
12/21/2004	09:30	-0006
12/21/2004	10:00	-0006
12/21/2004	10:30	-0006
12/21/2004	11:00	-0006
12/21/2004	11:30	-0006
12/21/2004	12:00	-0006
12/21/2004	12:30	-0005
12/21/2004	13:00	-0004
12/21/2004	13:30	-0004
12/21/2004	14:00	-0003
12/21/2004	14:30	-0002
12/21/2004	15:00	-0001
12/21/2004	15:30	-0002
12/21/2004	16:00	-0005
12/21/2004	16:30	-0006
12/21/2004	17:00	-0006
12/21/2004	17:30	-0006
12/21/2004	18:00	-0006
12/21/2004	18:30	-0005
12/21/2004	19:00	-0006
12/21/2004	19:30	-0007
12/21/2004	20:00	-0007
12/21/2004	20:30	-0007
12/21/2004	21:00	-0007
12/21/2004	21:30	-0007
12/21/2004	22:00	-0007
12/21/2004	22:30	-0007
12/21/2004	23:00	-0007
12/21/2004	23:30	-0007
12/22/2004	00:00	-0007

12/22/2004	00:30	-0006
12/22/2004	01:00	-0002
12/22/2004	01:30	-0002
12/22/2004	02:00	-0002
12/22/2004	04:00	-0001
12/22/2004	04:30	-0001
12/22/2004	05:00	-0001
12/22/2004	05:30	-0004
12/22/2004	06:00	-0003
12/22/2004	06:30	-0001
12/22/2004	07:00	-0001
12/22/2004	08:00	-0001
12/22/2004	08:30	-0002
12/22/2004	09:00	-0004
12/22/2004	09:30	-0005
12/22/2004	10:00	-0006
12/22/2004	10:30	-0006
12/22/2004	11:00	-0007
12/22/2004	11:30	-0007
12/22/2004	12:00	-0007
12/22/2004	12:30	-0007
12/22/2004	13:00	-0006
12/22/2004	13:30	-0006
12/22/2004	14:00	-0006
12/22/2004	14:30	-0005
12/22/2004	15:00	-0004
12/22/2004	15:30	-0003
12/22/2004	16:00	-0004
12/22/2004	16:30	-0003
12/22/2004	17:00	-0004
12/22/2004	17:30	-0005
12/22/2004	18:00	-0005
12/22/2004	18:30	-0005
12/22/2004	19:00	-0005
12/22/2004	19:30	-0006
12/22/2004	20:00	-0007
12/22/2004	20:30	-0007
12/22/2004	21:00	-0007
12/22/2004	21:30	-0007
12/22/2004	22:00	-0007
12/22/2004	22:30	-0007
12/22/2004	23:00	-0007
12/22/2004	23:30	-0007
12/23/2004	00:00	-0007
12/23/2004	00:30	-0007
12/23/2004	01:00	-0005

12/23/2004	01:30	-0001
12/23/2004	02:00	-0003
12/23/2004	02:30	-0003
12/23/2004	09:00	-0001
12/23/2004	09:30	-0002
12/23/2004	10:00	-0004
12/23/2004	10:30	-0004
12/23/2004	11:00	-0005
12/23/2004	11:30	-0006
12/23/2004	12:00	-0006
12/23/2004	12:30	-0006
12/23/2004	13:00	-0006
12/23/2004	13:30	-0005
12/23/2004	14:00	-0003
12/23/2004	14:30	-0002
12/23/2004	15:00	-0001
12/23/2004	21:00	-0002
12/23/2004	21:30	-0005
12/23/2004	22:00	-0005
12/23/2004	22:30	-0005
12/23/2004	23:00	-0004
12/23/2004	23:30	-0005
12/24/2004	00:00	-0004
12/24/2004	00:30	-0005
12/24/2004	01:00	-0005
12/24/2004	01:30	-0004
12/24/2004	02:00	-0004
12/24/2004	11:30	-0002
12/24/2004	12:00	-0003
12/24/2004	12:30	-0004
12/24/2004	13:00	-0004
12/24/2004	13:30	-0005
12/24/2004	14:00	-0004
12/24/2004	14:30	-0003
12/24/2004	19:00	-0002
12/24/2004	21:30	-0001
12/24/2004	22:00	-0003
12/24/2004	22:30	-0004
12/24/2004	23:00	-0005
12/24/2004	23:30	-0005
12/25/2004	00:00	-0005
12/25/2004	00:30	-0005
12/25/2004	01:00	-0005
12/25/2004	01:30	-0005
12/25/2004	02:00	-0003
12/25/2004	02:30	-0001

12/25/2004	12:30	-0001
12/25/2004	13:00	-0003
12/25/2004	13:30	-0003
12/25/2004	14:00	-0005
12/25/2004	14:30	-0004
12/25/2004	15:00	-0004
12/25/2004	15:30	-0002
12/25/2004	16:00	-0003
12/25/2004	16:30	-0001
12/25/2004	17:00	-0001
12/27/2004	02:00	-0001
12/27/2004	02:30	-0001
12/27/2004	03:00	-0002
12/28/2004	03:30	-0001
12/28/2004	16:00	-0001
12/29/2004	02:30	-0001
12/29/2004	03:00	-0003
12/29/2004	03:30	-0002
12/29/2004	04:00	-0004
12/29/2004	04:30	-0003
12/29/2004	15:00	-0001
12/29/2004	15:30	-0002
12/29/2004	16:00	-0004
12/29/2004	16:30	-0005
12/29/2004	17:00	-0005
12/29/2004	17:30	-0002
12/30/2004	00:30	-0001
12/30/2004	01:00	-0002
12/30/2004	01:30	-0003
12/30/2004	02:00	-0003
12/30/2004	02:30	-0002
12/30/2004	03:00	-0004
12/30/2004	03:30	-0004
12/30/2004	04:00	-0004
12/30/2004	04:30	-0005
12/30/2004	05:00	-0005
12/30/2004	05:30	-0002
12/30/2004	14:00	-0001
12/30/2004	14:30	-0004
12/30/2004	15:00	-0004
12/30/2004	15:30	-0005
12/30/2004	16:00	-0005
12/30/2004	16:30	-0005
12/30/2004	17:00	-0006
12/30/2004	17:30	-0006
12/30/2004	18:00	-0004

12/30/2004	18:30	-0001
12/30/2004	22:00	-0001
12/30/2004	22:30	-0001
12/30/2004	23:00	-0002
12/30/2004	23:30	-0003
12/31/2004	00:00	-0003
12/31/2004	00:30	-0004
12/31/2004	01:00	-0004
12/31/2004	01:30	-0005
12/31/2004	02:00	-0005
12/31/2004	02:30	-0005
12/31/2004	03:00	-0005
12/31/2004	03:30	-0005
12/31/2004	04:00	-0006
12/31/2004	04:30	-0006
12/31/2004	05:00	-0006
12/31/2004	05:30	-0006
12/31/2004	06:00	-0005
12/31/2004	06:30	-0003
12/31/2004	10:30	-0002
12/31/2004	11:00	-0002
12/31/2004	11:30	-0002
12/31/2004	12:00	-0001
12/31/2004	12:30	-0001
12/31/2004	13:00	-0002
12/31/2004	13:30	-0004
12/31/2004	14:00	-0004
12/31/2004	14:30	-0005
12/31/2004	15:00	-0005
12/31/2004	15:30	-0006
12/31/2004	16:00	-0006
12/31/2004	16:30	-0006
12/31/2004	17:30	-0006
12/31/2004	18:00	-0007
12/31/2004	18:30	-0005
12/31/2004	19:00	-0004
12/31/2004	21:30	-0002
12/31/2004	22:00	-0002
12/31/2004	22:30	-0004
12/31/2004	23:00	-0004
12/31/2004	23:30	-0004

Lower Duplin:

January:

The following times turbidity values reported were negative and/or zero.

1/1 0000-0030, 0130-1430, 1530-1930, 2030-2330

1/2 0000,0100-0230, 0330-0600, 0800,0930-1230, 1600,1730,1830-2100
 1/2 2200-1/3 0100
 1/3 0200,0230,0400,0500-0600, 0830, 0930, 1100-1200, 1300, 1400,
 1500, 1530, 1630, 1700, 1800
 1/4 0030-0300, 0530-0700, 1100-1200, 1300-1400, 1500, 1830-2330
 1/5 0000, 0030, 0130-0330, 0630-0730, 1400, 1430, 1830-1/6 0200
 1/6 0300, 0400-0430,0700-0730, 0830, 1100, 1130, 1330, 1730, 1830,
 2000, 2030, 2200, 2300, 2330
 1/7 0000-0400, 0500, 1500, 1600, 1730-1830, 2030-2130, 2300-2330
 1/8 0000-0400, 0500, 0930, 1330-1430, 1600, 1700, 1800, 2100, 2200
 1/9 0030-0100, 0300-0330, 1030, 1600, 1630,1730, 2130, 2200, 2230
 1/10 0200-0230, 0330-0400, 0630, 1630,
 1/11 0230, 0430
 1/12 0530-0600, 1630, 1930, 2030
 1/13 0000, 0600, 0630,0700, 1700, 2000, 2030, 2130, 2200, 2330
 1/14 0000-0200, 0300, 0430, 0500, 1830, 2130-2230,
 1/15 0130-0230, 0400-0730, 1830, 1900, 2030, 2130, 2200, 2300,
 2330
 1/16 0230-0400, 0700-0730, 1530, 2130-2330
 1/17 0000, 0400-0500, 0930, 1100, 1230, 1600-1700, 2300
 1/18 0530-0600, 1700, 1800, 1830, 1930, 2000, 2330
 1/19 0000-0030, 0130, 1830, 1900, 2330
 1/20 0030-0130, 2000
 1/21 0130, 0230, 2030-2130
 1/22 0100-0430, 0930, 1430-1600, 1700, 2130, 2200
 1/23 0130-0530, 0930-1030, 1500-1800, 1900, 2200-2300
 1/24 0200-0600, 0700, 1000-1130, 1530-1830, 2230-2330
 1/25 0200-0630, 0800, 1130-1200, 1600,1700, 1800, 1930, 2300-2330
 1/26 0000-0130, 0300-0530, 0630-0800, 0900, 1130-1300, 1530, 1630-
 2100, 2300
 1/27 0000-0130, 0230, 0400-1000, 1130-1400, 1500-1800, 1900-1/28
 0700
 1/28 0800-1500, 1600-1/29 1000
 1/29 1100-2130, 2230, 2330
 1/30 0000-1200, 1300-1/31/0900
 1/31 1000-1330, 1430-2030, 2130-2330

On new deployment 1/21 1600 pH value drops and DO increases. Most likely due to putting out a clean sonde.

1/12 0200, 0230 Turbidity spike, cause unknown

1/20 1800 Turbidity spike, cause unknown

February

The following times reported negative and/or zero turbidity values.

2/1 0000-0200, 0430-0700, 0830-0900, 1000-1300, 1400-2/2 0330

2/2 0630-0730, 1000-1100, 1200-2/3 0100

2/3 0200, 0300-0400, 0600-0730, 0900-1300, 1400-2/4 0400

2/4 0700, 0730, 1030-1530, 1630-1700, 1800-2/5 0200

2/5 0300, 0430, 0800-0900, 12130-1630, 1730-1800, 2030-2100, 2230-2/6 0400

2/6 0500, 0900, 0930, 1330, 1430-1630, 1800-1830, 2100-2130

2/7 0100-0200, 0300-0330, 0430, 0530-0630, 0900-0930, 1230, 1300, 1730-2000, 2130-2230

2/8 0030-0500, 0630, 0700, 1100, 1530, 1700, 1900, 1930, 2300

2/9 0300, 0430-0530, 1100, 1530-1700, 1900, 1930, 2300, 2330

2/10 0000, 0200-0330, 0430-0630, 0730, 1130, 1500-1700, 1800, 1900, 2000, 2030, 2330

2/11 0000, 030, 0400, 0430, 0600-0700, 0800, 1300, 1530, 1600, 1630, 1830-2000, 2100

2/12 0100-0200, 0530, 0600, 0700-1000, 1300-1330, 1630-1700, 1800-1900, 2100-2230, 2330

2/13 0200-0300, 0530-0600, 0700, 0730, 0830, 0930-1030, 1230, 1300, 1400, 1500, 1700-2/14 0030

2/14 0300-0400, 0630-0730, 0900, 0930, 1030, 1130, 1200, 1500, 1530, 1800-1900-, 2100-2/15 0000

2/15 0400, 0430, 0800-0930, 1030, 1100, 1200-1800, 1930, 2/16 0000

2/16 0100, 0600, 1000, 1130, 1200, 1430, 1730, 1830-2130, 2300

2/17 0030-0300, 0700, 1130, 1200, 1300, 1430, 1530, 1900, 1930, 2230-2330

2/18 0000-0100, 0200, 0730, 0800, 1130-1300, 1600, 2000, 2300, 2330

2/19 0000, 0230, 0300, 0400, 1530, 1600, 2030, 2100

2/20 0030, 0230, 0030, 0400, 0930, 1530

2/18 1430 Turbidity spike, cause unknown

March

3/16 0430 Turbidity spike, cause unknown

3/10 1730 - 3/31 2330 Depth is staying a steady measurement rather than cycling with the tides. Data is suspect, possible probe failure.

April

4/1 0000- 4/4 1400 Depth is staying a steady measurement rather than cycling with the tides. Data is suspect, possible technical failure.

The following times reported negative turbidity

4/5 1330-1530 2030-2200

4/6 0100-0430, 0900-1000, 1330-1600, 2130-2230

4/7 0300-0530, 1000-1100, 1430-1700, 2130, 2300, 2330

4/8 0300-0530, 1030-1130, 1530-1730, 1830, 1930, 2200-4/9 0030

4/9 03300-0730, 1130-1230, 1330, 1600-1900, 2030, 2330-4/10 0130

4/10 0430-0830, 1230-1330, 1500, 1600-2130

4/11 0000-0300, 0430-0930, 12030-1130, 1330-1430, 1530-2230

4/12 0200, 0230, 0430-1030, 1130, 1200, 1330-4/13 0000

4/13 0300-1100, 1530-1630, 1830-2330

4/14 0030, 0130-0730, 0830-1200, 1430, 1600 -4/15 0030

4/15 0200, 0530-0630, 0930-1230, 1430, 1730-1830, 2000-4/16 0330

4/16 0530-0700, 0830-1400, 1830-1930, 2030-4/17 0230

4/17 0400, 0630-0800, 1030-1600, 1900-2030, 2130, 2230-4/18 0330
4/18 0430, 0500, 0730-0830, 1000-1530 1630, 1930-2100, 2200,2300,
2330
4/19 0000-030, 0830, 0900, 1030, 1120, 1200, 1330-1530, 2000-2100,
2230
4/20 0100, 0200-0500, 0600, 0630, 0800, 0900-1630, 2100, 2200,
2330
4/21 0000-0200, 0300-0500, 0900-1030, 1200-1230, 1400-1700, 1800,
1830, 2130-2300
4/22 0000-0100, 0230-0430, 0530-0600, 0730, 0900-1630, 1730-1930,
2130-2330
4/23 0030-0330, 0500-0630, 0800-1900, 2000, 2230-4/24 0030
4/24 0430, 0500, 0600, 0700, 0730, 1100, 1130, 1300-1530, 1630-
1900, 2100, 2330
4/25 0000-0600, 0730, 1000, 1130, 1300-1700, 1800-2000, 2100,
21330, 2330
4/26 0000-0100, 0200-0530, 0700, 0800, 0900-1500

The following times reported turbidity spikes, cause unknown

4/12 1830
4/16 1500
4/19 0830
4/20 0100
4/21 1300
4/22 0130
4/23 1930
4/24 0800, 0900, 0930, 1200
4/26 0600, 1530

May

Negative turbidity for the month should be attributed to a calibration error, all negative values may be considered to be near zero.

June

6/12 1000 – 7/16 1300 Calibration error likely for decline in specific conductivity data, possibly due to a contaminated standard. Salinity, DO mg/L, depth, and specific conductivity data should all be considered suspect.

6/29 DO data begins to decrease, data retained-post calibration verification well within acceptable limits.

The following times reported negative values, cause unknown:

6/19 1230, 1400, 1430,
6/20 0300, 0400, 1500, 1530,2300
6/21 0330-0500,1730
6/22 0500, 0530, 0630, 1630, 1700
6/23 0330-0530, 0630, 0700, 1300-1430, 1700
6/24 0430,- 0700, 0800, 1730-1830
6/25 0600-0730
6/30 1900 DO values negative, cause unknown

July

7/1 -7/16 1300, DO data unusually low with values dipping down into negative values, cause unknown.

The following times turbidity values reported were negative. Cause unknown.

7/17 1400-1430

7/19 1530

7/20 0430, 1600

7/21 1700, 0500, 0530,

7/22 0530, 0600, 1800, 1900

The following times reported spikes in turbidity values:

7/25 1530, 1730

7/26 0030, 1130, 1330

7/28 1630, 1830 2230

7/29 0000, 0500, 1930, 2330

7/30 0100, 1800

7/31 0030, 0100, 0530, 0600, 0730, 1630, 1730, 2000, 2130

August

The following times turbidity reported negative values, cause unknown

8/1 0200-0230, 0430, 0530, 1500, 1700, 2000, 2230

8/2 0730, 0830, 0930, 1630, 1830

8/7 2000-2200, 2330

8/8 0630-0800, 0900, 1000, 1930-8/9 0100

8/9 0600, 0630, 0730-0830, 0930-1030, 2000-8/10 0000

8/10 0130, 0200, 0330, 0430-0800, 0900-1030, 1130, 1300, 1330, 2030-8/11 0100

8/11 0230-0730, 0900-1030, 1200, 1230, 2130, 2230

8/12 0000-0200, 0330-0500, 0630, 0830-0930, 1030

8/13 1100, 1200, 1300, 1330

8/14 0100, 0130 1030, 1100, 1200-1300

8/15 1230, 1300, 1400

8/16 0230, 0300 1300-1500

8/17 0330, 1400-1500

8/18 0430, 1500

8/19 0500, 1700

8/20 0530

8/22 2000

8/23 0830

Turbidity spikes cause unknown:

8/1 0200, 0230, 0430, 0530, 1500, 1700, 2000, 2230

8/2 0730, 0830, 0930, 1630, 1830, 2030

8/26 0400, 2130, 2200

Sonde may have gotten hung up in tubing, therefore affecting depth data. The following depth data is suspect:

8/7 0900 – 9/2 1200

September

the following times reported negative turb. Values, cause unknown

9/1 0000-2330

9/2 0000-1200

9/8 2230

9/9 1000-1100

9/17 2330

9/18 0300-0500, 1600-1800, 1900

9/19 0000, 0030, 0400-0600, 1300, 1700-1900

9/21 0300, 0330, 0700-0900, 20340, 2200, 2230

9/22 0730, 0800-0930, 1600,2030-2300

9/23 0400-0500, 0800-1100, 2030-9/24 0030

9/24 0600, 0900-1100, 1200, 2300, 2330

9/25 0000-0130, 1200, 1330

9/26 0200, 1300, 1330, 1430

9/29 0300, 0330

October

The following times reported negative and/or zero turbidity values cause unknown

10/1 0300, 0400, 1600, 1630

10/2 0330, 0400, 0500

10/4 0400, 1130, 1430, 1530, 1600, 1730, 1800, 2200, 2230

10/8 2200-2300

10/9 0930, 1030 2200-2330

10/10 1030-1200, 2300 2330

10/11 0000-0030, 1130-1300

10/18 0430

10/19 0530 1900

10/20 0530-0730, 1930-2000, 2100

10/21 0700-0830

10/25 0030 turbidity spike cause unknown

November

negative and/or zero turbidity values

11/10/2004 00:00 -00:30

11/20/2004 22:30 -0001

11/21/2004 23:00 -23:30

11/23/2004 00:00 -0002

December

Oxygen values declined steadily after 12/08 12:00, post cal ok; data retained.

Turbidity spikes on 12/06 0400 and 12/08 0500, cause unknown, data retained.

Negative turbidity for the entire month should be attributed to a calibration error, all negative values may be considered to be near zero.

Dean Creek:

January-March

no sonde deployed at this site during these months. Dean creek is a new site begun in April 2004.

April

4/23 1630 Turbidity spike, cause unknown

4/30 1900-2330 Salinity values decreases, looking at depth values
this is most likely due to water levels dropping.

May

5/7 0900 – 5/14 1030 DO suspect due to fouling and out of range post calibration
reading.

June

6/3 0900 DO values negative.

July

7/5 0600 negative DO values reported

7/6 0530, 1730 turbidity spikes, cause unknown

The following times turbidity values reported were negative, most
likely due to values near 0:

7/25 1530, 1600

7/26 0330, 1630

7/29 0630

7/31 2300

August

The following times turbidity values reported were negative, most
likely due to values near 0:

8/1 2330

8/6 0130

8/8 0300

8/9 0230, 1530, 1700

8/10 0130,300,0430,0500,1630

8/11 0400,0500,0800

September

9/4 0930 9/24 1100 no pH probe deployed

The following times had turbidity spikes, cause unknown

9/5 0600, 9/7 1230, 9/20 0500, 9/21 1000, 1030, 1100

October

The following times had turbidity spikes, cause unknown

10/6 1900, 10/23 1530, 10/24 1000

November

negative turbidity

11/09/2004 20:00

11/09/2004 20:30

11/18/2004 07:30

11/18/2004 08:30 -10:30

11/19/2004 10:00 -12:00

11/19/2004 16:00

11/20/2004 01:30

11/20/2004 11:00

11/20/2004 12:30

11/20/2004 13:30

11/20/2004	14:00	
11/21/2004	00:00	
11/21/2004	12:30	
11/21/2004	13:30	-15:30
11/22/2004	14:30	-17:00
11/22/2004	18:00	-20:00
11/23/2004	08:00	
11/23/2004	15:30	-20:30
11/24/2004	16:30	-17:00
11/24/2004	18:00	-18:30
11/24/2004	20:00	-21:30
11/29/2004	11:00	

December

drops in salinity and conductivity accompanied a spike in turbidity on 12/08, @ 22:00 due to a rain event (4.6mm). No changes made.

negative turbidity

12/01/2004	00:00	
12/01/2004	09:30-12:30	
12/01/2004	22:30-23:30	
12/02/2004	00:00-01:00	
12/02/2004	13:00-13:30	
12/02/2004	22:30-12/03/2004	02:00
12/04/2004	00:00-03:00	
12/04/2004	12:00-15:00	
12/05/2004	01:00-04:00	
12/05/2004	12:30-16:00	
12/06/2004	01:00-05:00	
12/06/2004	14:00-16:30	
12/07/2004	02:30-06:00	
12/07/2004	15:30-17:30	
12/08/2004	05:30-06:00	
12/08/2004	16:30-19:30	
12/11/2004	16:30-17:30	
12/13/2004	04:30-06:00	
12/13/2004	16:30-18:30	
12/14/2004	04:30-06:30	
12/14/2004	17:30-20:30	
12/15/2004	02:30-07:30	
12/15/2004	18:00-22:00	
12/16/2004	04:00-09:00	
12/16/2004	18:00-23:00	
12/17/2004	05:30-11:00	
12/17/2004	19:30- 12/18/2004	00:00
12/18/2004	06:30-12:30	
12/18/2004	19:30-23:30	
12/19/2004	00:00-14:00	

12/19/2004	17:00-23:30
12/20/2004	00:00-01:30
12/20/2004	06:00-07:30
12/20/2004	09:30-10:00
12/20/2004	12:30-13:30
12/20/2004	16:00-23:30
12/21/2004	00:00-23:30
12/22/2004	00:00-23:30
12/23/2004	00:00-23:30
12/24/2004	00:00-04:30
12/24/2004	07:00-23:30
12/25/2004	00:00-23:30
12/26/2004	00:00-02:00
12/26/2004	12:30-23:30
12/27/2004	00:00-07:30
12/27/2004	10:00-23:30
12/28/2004	00:00-23:30
12/29/2004	00:00-09:00
12/29/2004	11:00-23:30
12/30/2004	00:00-23:30
12/31/2004	00:00-23:30

Flume Dock:

January:

The following dates and times reported negative and/or zero turbidity values, most likely from values being near 0.

1/10 1430-2130, 2300-2330
 1/11 0000-0930, 1300, 1400-2330
 1/12 0000-1800, 1900-2330
 1/13 0000 - 1/15 0300
 1/15 0400-0700, 0800-0900, 1000-2330
 1/16 0000-1/18 0330
 1/18 0630, 0930-1/19 0430
 1/19 0730, 1000-1730, 1930 - 1/20 0030
 1/20 0130-0500, 1130-1800, 2230-2330
 1/21 0000-0130, 0230-0530, 1300-1530, 1630-1830, 2330
 1/22 0000-0130, 0230,0330-0600, 1300-1400,1500,1700-1830
 1/23 0030-0800, 1230-1600, 1700-2000
 1/24 0100-0900, 1300-1630,1800-2000
 1/25 0030-0330, 0430-0830, 1500-1830,1930

March:

The following dates and times reported negative and/or zero turbidity values, most likely from values being near 0.

3/10 1830-2200
 3/11 0130-0200, 0300- 3/13 0500
 3/13 0600- 3/15 0130

3/15 0200 - 3/16 1030

3/16 1130-2230, 2330 - 3/18 0530

3/18 0630,0730-1800, 1900-3/19 0630

3/19 0830-0930, 1100-1830, 2030-3/20 0700

3/20 1000-1130, 1300-1330, 1430, 1500, 1600-1900, 2130-2300

3/21 0030-0800, 1000-1230, 1700-1930,2130-2300

3/22 0000-0730, 1030-1130, 1230-2100, 2200-3/30 0300

3/30 0400-1900, 2000-3/31 0130

3/31 0300, 0400-0800,0900,1000-1200, 1300, 1500-1530,
1630,1700,1800

3/10 1830 dissolved oxygen data increases a half hour after deployment. Cycles back down to more normal readings in April. Data is suspect but was retained in the data set as there was no indication of membrane failure.

3/16 SpCond and Sal data stops the usual cycling and slowly decreases in value as month progresses. Suspect fouling decreased the sensitivity of the probe. Data retained.

April

4/24 0700-0730, 1130-1200 Turbidity spike, cause unknown

4/26 1600- 4/30 2330 Turbidity values reading negative, cause unknown

May

5/1 0000-5/02 2000 Turbidity values reading negative, cause unknown

5/2 2100 - 5/3 0800 Turbidity values reading negative, cause unknown

5/3 0900-1130, 1230-1330, 1430-2200, 2300-2330 Turbidity values reading negative, cause unknown

5/4 0000-1000, Turbidity values reading negative, cause unknown

5/4 1100-5/6 0730 Turbidity values reading negative, cause unknown

5/6 830 – 5/12 1300 negative and/or zero turbidity values, most likely from values being near 0.

June

Depth increase on 6/1 and 6/2 possibly due to strong currents or debris causing the sonde to swing and slightly affect depth readings.

The following dates and times reported negative and/or zero turbidity values, most likely from values being near 0.

6/12 1730

6/13 0130-0300, 0400-0600, 1500, 1830,1900

6/15 0700-0730, 2000

6/16 0430 -0800

6/17 0500-0600, 0700, 0800-0900, 2100

6/18 0830-0930

6/19 0900-1000, 2230

6/20 0900

6/25 1430-1500,1600-1700,2230-2330

6/26 0000-0400, 0530,0700, 0800,0900,1000,1100-1700

6/27 0000-0430,0700-0830,1100-1730,2100-2200,2330

6/28 0030-0700, 0800-0900,1000, 1200, 1300-1430, 1630-1830, 2200

6/29 0100-1030,1130-1400,1500,1530, 1730-1900

6/30 0200-0730, 1000-1300, 1430-1600, 1930, 2030

July

The following dates and times reported negative and/or zero turbidity values, most likely from values being near 0.

7/1 0700-0830, 1300, 2030-2130,

7/2 0400-0500, 0830-0930, 1230-1330, 1630-1700, 2100-2200

7/3 0500-0700, 0930-1030, 1400-1500, 1800-1900, 2200-2330

7/5 0000-0030, 0400, 0530, 0630-0800, 0930-1130, 1230, 1800, 2130

7/6 0000 1230-1300

August

Depth increase on 8/15 possibly due to strong currents or debris causing the sonde to swing and slightly affect depth readings.

Marsh Landing

January

1/27 0400 Turbidity spike, cause unknown

The following times reported negative and/or zero turbidity values

1/1 0000-1/2 0600

1/2 0800-1/3 0630

1/3 0900-1/4 0400

1/4 0530-0700, 1000-1/5 010

1/5 0200-0430, 0700-0800, 1100-1400, 1500-1730, 1830-2100, 2200
2300-2330

1/6 0000-0430, 0730-0830, 1200-1530, 1700, 1730, 1830, 2000-2100,
2300 -1/7 0330

1/7 0430-0530, 0830, 0930, 1300, 1400-1800, 2030-2200, 2330

1/8 0000-0500, 0900-1000, 1330-1630, 1800, 1830, 2100-223

1/9 0100-0430, 0530, 0900, 1000, 1030

1/30 1600-2200, 2300

1/31 0230-0300, 0530, 0730-1030, 1630-1730, 1900-2330

February

The following times reported negative and/or zero turbidity values

2/1 0000-0030, 2200

2/2 1930, 2330

March

3/6 – 4/4 deployment drop in specific conductivity and salinity due to fouling

12. Deleted Data:

Hunt dock

The nature of this site causes the sonde to be periodically exposed during periods of low tide. All parameters for the following dates and times has been removed as a result of these occurrences.

January

1/1 1030
1/1 2100-2300
1/2 1000-1100
1/2 2200-2330
1/3 1100-1130
1/3 2230-1/4 0030
1/4 1200
1/4 2300-1/5 0130
1/5 1200-1400
1/5 2330-1/6 0230
1/6 1230-1430
1/7 0030-0300
1/7 1430
1/8 0130-0330
1/8 1430-1600
1/9 0200-0400
1/9 1500-1600
1/10 0400
1/11 1700-1730
1/12 0430-0530
1/12 1630-1830
1/13 00430-0700
1/13 1700-1900
1/14 0630-0730
1/14 1800-1930
1/15 0730-0830
1/15 1900-2100
1/16 2100 2130
1/17 1030
1/17 2200-2300
1/18 1030-1200
1/18 2200-2330
1/19 0000-0100
1/19 1100-1330
1/19 2300-1/20 0130
1/12 1230-1400
1/21 0000-0230
1/21 1300-1500
1/22 0030-0330
1/22 1400-1630
1/23 0100-0430
1/23 1430-1700
1/24 0230-0500
1/24 1500-1800
1/25 0300-0530
1/25 1700-1800

1/26 0530
1/28 0530 – 0730, 1800-1930
1/29 1930-2000
1/30 2100
February
2/3 1230
2/3 2300-2/4 0130
2/4 1230-1400
2/5 0030-0200
2/5 1330-1430
2/6 0130-0230
2/12 0630-0730
2/12 1800 - 2000
2/13 0730-0800
2/13 1900 – 2030
2/14 0930
2/14 2100-2130
2/15 1000-1030
2/15 2100-2/16 0000
2/16 1100-1130
2/16 2330 – 2/17 0000
2/17 1200-1300
2/17 2300-2/18 0200
2/18 1200-1400
2/19 0000-0300
2/19 1230-1530
2/20 0030-0400
2/20 1330-1630
2/21 0100-0430
2/21 1400-1730
2/22 0200-0530
2/22 1430-1730
2/23 0300-0530
2/23 1530-1800
2/24 1630-1800
March
3/1 2230-2300
3/2 1030-1200
3/2 2200-3/3 0100
3/3 1030-1330
3/3 2300-3/4 0130
3/4 1130-1400
3/4 2330-3/5 0230
3/5 1200-3/5 1500
3/6 0000-0330
3/6 1230 - 1600

3/7 0030-0400
3/7 1300-1630
3/8 0130-0530
3/8 1330-1700
3/9 0230-0500
3/9 1500-1700
3/10 0400-0500
3/10 1630-1730
3/11 0500-0600
3/11 1630-1830
3/12 0530-0730
3/12 1730-1930
3/13 0700-0800
3/15 0930-1030
3/15 2130-2230
3/16 1000-1130
3/16 2200-3/17 0000
3/17 1100-1300
3/17 2300-3/18 0100
3/18 1200-1330
3/19 0000-0230
3/19 1230-1430
3/20 0030-0230
3/20 1330-1500
3/21 0130-0330
3/21 1330-1600
3/22 0200-0330
3/22 1530-1600
3/23 0400
3/23 1530-1630
3/24 0430-0500
3/24 1600-1700
3/25 0500-0530
3/25 1630-1730
3/26 1730-1800
April
4/1 2300-4/2 0030
4/2 1130-1330
4/2 2330-4/3 0130
4/3 1200-1330
4/4 0000-0230
4/4 1230-1500
4/5 0100-0300
4/5 1330 - 1500
4/6 0130-0400
4/6 1400-1600

4/7 0230-0500
4/7 1430-1700
4/8 0300-0530
4/8 1530-1730
4/9 0430-0630
4/9 1630-1800
4/10 0600-0630
4/10 1800-1830
4/11 1900
4/12 2100-2130
4/13 0900-1130
4/13 2100-2330
4/14 0000-0030
4/14 0830-1230
4/14 2130-4/15 0030
4/15 1030-1230
4/15 2300-4/16 0030
4/16 1100-1330
4/16 2330-4/17 0130
4/17 1200-1400
4/18 0000-0230
4/18 1230-1500
4/19 0100-0330
4/19 1300-1530
4/20 0130-0400
4/20 1300-1600
4/21 0200-0430
4/21 1400-1630
4/22 0300-0500
4/22 1500-1630
4/23 0330-0530
4/23 1530-1700
4/24 0430-0530
4/24 1630-1800
May
5/3 0030-0200
5/3 1230-1400
5/4 0130-0300
5/4 1400
5/5 0230-0330
5/5 1430-1530
5/6 0330-0430
5/6 1500-1630
5/7 0430-0500
5/7 1600-1630
5/8 0530-0600

5/30 1000

5/31 1130-1230

June

6/1 0030-0100

6/1 1200-1330

6/2 0100-0200

6/2 1300-1430

6/3 0200-0300

6/3 1330-1500

6/4 0230-0430

6/4 1500-1630

6/5 0330-0530

6/5 1530-1700

6/6 0500-0600

6/7 0630

6/28 1030-1130

6/29 1100-1200

6/30 0000-0100, 1130 - 1300

July

7/1 0100-0200

7/1 1230-1330

7/2 0130-0230

7/2 1300-1430

7/3 0230-0330

7/3 1430-1500

7/4 0330-0400

7/5 0430

7/6 0530

August

8/29 1330-1500

8/30 0200-0300

8/30 1400-1500

8/31 0230-0400

8/31 1500-1530

September

9/1 0330-0430

9/18 0400-0430

9/28 1400-1430

9/29 0200-0300

October

10/15 1530-1600

10/17 0330-0430

November

11/13 0230-0300

11/25 1330-1400

December

12/1 1630-1700
12/8 2300-2330
12/10 0000-0030
12/10 1230-1400
12/11 0000-0230
12/11 1300-1500
12/12 0030-0330
12/12 1400-1600
12/13 0130-0400
12/13 1500-1700
12/14 0230-0500
12/14 1630-1730
12/15 0400-0500
12/19 2100-2200
12/24 0030-0130

Further data was removed under the following circumstances.

June

6/07 2330 -6/30 2330 turbidity data removed, probe fouled

6/21 0300 -6/30 2330 DO data removed, post calibration verification failed.

July

7/1 0000-1100 Turbidity data removed, probe fouled, DO data removed, post calibration verification failure,

Lower Duplin

January

1/1 0000 – 1/21 1530 DO % and mg/L removed, membrane failed

April

4/12 0600 - 4/26 1500 DO % and mg/L removed, membrane failed

4/15 0830-4/26 1500 pH data removed, probe broken during deployment

4/26 1600-5/14 0830 DO data removed, membrane/probe failure

4/27 1930 - 5/14 0830 pH data removed, probe failure

May

5/24 2200 – 6/12 0900 DO data removed, post cal failed

June

6/25 1800-6/30 2330 Turbidity data removed, probe fouled

6/29 2200 – 7/16 1300 DO data removed, membrane failure

6/19 1030-6/30 2330 pH removed, probe broken

July

7/1 0000-7/16 1300 turbidity data removed, probe fouled, pH data removed, probe broken.

August

8/2 1030 - 8/7 0830 DO data removed, membrane missing.

8/3 0230 - 8/7 0830 pH data removed, pH probe broken.

8/2 1030 – 8/7 0830 depth deleted due to fouling

September

09/01 16:00 all data deleted. Sonde was pulled temporarily to repair tube.

October

10/4 2230-10/8 1000 turbidity data removed

December

12/20/04 1300 – 12/31 2330 DO removed post cal failed

Dean Creek:

May

5/19 2000 -5/25 0530 DO removed, membrane ruptured.

June

6/26 1700-6/30 2330 Turbidity data removed, wiper not parking at 180 degrees.

July

7/1 0000-7/5 0900 Turbidity data removed, wiper not parking at 180 degrees.

7/7 1700-7/25 1030 Turbidity data removed, wiper missing

Cabretta creek

September

9/27 00:30 – 10/8 11:30 DO values removed due to fouling.

October

10/08 10:30 all data deleted. Sonde was pulled temporarily to replace a damaged tube, then replaced in water before actual retrieval.

10/22 14:00-11/09 10:30 DO probe was lost in the 3rd quarter of the deployment, cause unknown. The early readings were erratic so I discarded all data for this deployment as a loose or damaged probe could have been giving false readings.

Flume dock

March

3/29 2030 - 3/31 2330 Sal and SpCond data removed, post calibration verification failure

3/7 0500-1000 depth reading increased. This sonde is hanging from a floating dock at a fixed point, cannot explain the increase therefore data was removed.

April

4/1/0000-4/9 1630 sal and SpCond data removed due to post calibration verification failure.

4/18 2300-4/26 1530 DO data removed due to fouling of probe

May

5/6 0800-5/12 1300 turbidity data removed. probe fouling

5/23 0900 - 5/27 0930 Salinity and Spcond data removed due to fouling

5/21 0400-5/27 0930 Do data removed, probe fouled

5/21 1430 - 5/27 0930 Turbidity data removed, probe fouled

5/31 1930 Turbidity data removed, spike in value

June

6/3 1930 - 6/12 1200 Turbidity data removed, probe fouled

6/1 2200-6/12 1200 DO data removed, probe fouled

6/5 1530- 6/12 1200 SpCond/sal. data removed, probe fouled

6/11 0900-6/12 1200 pH data removed, suspect probe fouling.

6/21 0100 - 6/25 1400 DO data removed, probed fouled
6/21 2030 - 6/25 1400 Turbidity data removed, probe fouled

July

7/7 0100 7/9 1530 Turbidity data removed due to probe fouling
7/23 2100-7/31 2330 Turbidity data removed due to probe fouling
7/25 0400 – 08/03 0930 DO data removed, membrane failure
7/27 1400 7/31 2330 Salinity, Spcond data removed data due to fouling

August

8/1 0000- 8/3 0930 all turbidity. salinity and Spcond data removed due to fouling of probe.

8/11 0000-8/28 0930 DO data removed, probe fouled.

8/11 2130-8/28 0930 Turbidity data remove, probe fouled

Marsh Landing

3/22 1330-3/31 2330 DO% and mg/L removed due to fouling of probe

3/26 1930-3/31 2330 Turbidity data removed, probe heavily fouled

4/1 0000-4/4 1400 Turbidity data removed, DO% and mg/L probe

4/16 2200 – 4/18 1530 do data removed, membrane failure
heavily fouled

4/27 1130-4/30 2330 Turbidity data removed probe heavily fouled

5/1 0000 -5/3 1300 Turbidity data removed probe fouled

5/9 1400-5/14 0830 Turbidity data removed probe fouled

5/11 500 - 5/14 830 DO data removed probe fouled

Site discontinued as of 05/14/04

13. Missing data:

Hunt dock

January

1/9 1200-1/31/2330 no turbidity probe deployed, data missing

February

2/1 0000-2/6 1330 no turbidity probe deployed

April

4/5 1030-4/27 1030 no turbidity probe deployed

May

5/14 1030-5/30 1000 all data missing sonde failure.

5/30 1030-5/31 2330 no pH probe deployed, data missing

June

6/1 0000-6/30 no pH data, no probe deployed

July

7/1/0000-1100 no pH probe deployed.

7/25 1130-7/31 2330 all data missing, sonde failure.

7/1 1130 -7/25 1100 no turbidity probe deployed

August

8/1 0000-8/16 1130 all data missing, sonde failure

8/16 1200-8/31 2330 no turbidity probe deployed

9/1 0000 - 9/3 1500 no turbidity probe deployed, data missing.

9/14 1530 9/17 1300 all data missing sonde did not record data.

9/18 0930- 10/8 1430 no turbidity probe deployed

Lower Duplin

February

2/22 1500-2/29 2330 No turbidity probe deployed

March

3/1/0000-3/10 1700 No turbidity probe deployed

June

6/12 1000 -6/19 1000 no turbidity probe deployed, turb. data missing.

September

9/17 1400- 10/8 1030 no pH probe deployed

Dean Creek:

January-March

no sonde deployed at this site during these months. Dean creek is a new site begun in April 2004.

May

5/14 1100-5/25 0530 pH removed, no pH probe deployed

5/25 0600 - 5/31 2330 no data sonde, battery failure

June

6/1 0000-1300 no data sonde, battery failure

6/1 1330-6/30 2330 no pH probe deployed

July

7/1 0000-7/5 0900 no pH probe deployed

September

9/4 930 – 9/24 1100 no pH probe deployed, probe broken

October

10/25 1600 – 11/9 1130 no pH probe deployed

10/25 1600 – 11/9 1130 turbidity did not record

Cabretta Creek

This is a new site, no data collected until August 30 11:30

Flume Dock

8/3 1030 – 8/28 930 no pH probe deployed, therefore no pH data.

Sonde deployment discontinued at this site as of 08/28/04

Marsh Landing

May

Site discontinued as of 5/14/04

14. Post deployment information:

Cabretta:

Date	DO% Air Saturation	ph(7.41)	Depth m	Turbidity (100/123)	SpCond (25.82)
09/17/04	82.6	7.33	-.071	(100) 105.1	24.75
10/08/04	37.29	7.41	0.116	(100) 91.8	24.08
10/22/04	106.2	7.56	-.6	(100) 88.7	24.54
11/09/04	n/a	8.61	0.12	(100) 99.7	23.05
11/29/04	84.0	7.56	0	(0) -1.2	26.74
12/20/04	96.0	7.21	.003	(100) 105	22.5
01/06/05	103	7.39	-.342	(123) 142	23.71

Dean Creek:

Date	DO% Air Saturation	ph(7.41)	Depth m	Turbidity (100/123)	SpCond (25.82)
05/12/04	137	7.7	-.063	(100) 93	23.57
06/01/04	n/a	n/a	-.119	(100) 101	25.05
07/05/04	117	n/a	.004	(100) 110	21.8
07/25/04	88	7.57	0	(123) 122	24.4
08/16/04	90	7.04	.113	(123) 120	24.55
09/04/04	96	7.5	-.061	(123) 95	24.8
09/24/04	95	n/a	.016	(100) 92	25.2
10/08/04	98	7.37	.060	(123) 123	23.9
10/25/04	100	7.5	-0.056	(123) 110	23.99
11/09/04	86	n/a	.098	(100) 109	23.35
11/29/04	113	7.47	.055	(0) 5.4	24.01
12/20/04	111	8.4	.011	(123) 122	22.51
01/06/05	101.9	7.65	-.113	(123) 132.2	24.03

Hunt Dock:

Date	DO% Air Saturation	ph(7.41)	Depth m	Turbidity (100/123)	SpCond (25.82)
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02/11/04	107	7.1	-0.03	n/a	25.08
03/06/04	120	7.41	-.072	(100) 92	25
04/05/04	107	7.4	.052	(100) 100.6	24.05
04/27/04	100	7.05	.002	n/a	25.4
05/12/04	183	7.47	.052	(100) 95	26.3
05/30/04	n/a	-----			
07/01/04	10	n/a	.043	(100) 122	25.24
07/25/04	109	7.26	.074	n/a	24.39
08/16/04	n/a	7.49	.064	n/a	23.5
09/03/04	112	7.2	-.041	n/a	24.97
09/18/04	101	7.12	-.063	(123) 144	24.82
10/08/04	93	7.48	.080	n/a	25.8
10/25/04	110	7.6	-.072	(123) 100	23.2
11/09/04	102	7.6	.064	(123) 104	22.48
11/29/04	107.2	7.46	0	(0) 4.6	24.17
12/20/04	118	6.96	.009	(123) 125	22.7
01/06/05	96.1	7.66	-.111	(123) 144	24.48

Marsh Landing

Date	DO% Air Saturation	ph(7.41)	Depth m	Turbidity (100/123)	SpCond (25.82)
1/30/04	102	6.32	-.105	(100) 117	26.99
02/20/04	80	7.44	-.001	(100) 98	23.63
03/06/04	117	7.43	.042	(100) 100	26.4
04/04/04	42	7.45	-.126	n/a	18.85
04/18/04	55	7.0	.243	(100) 99	25.9
05/03/04	114	7.66	-.149	(100) 97.4	19.74
05/14/04	79	7.6	.102	n/a	24

Lower Duplin

Date	DO% Air Saturation	ph(7.41)	Depth m	Turbidity (100/123)	SpCond (25.82)
02/22/04	n/a	7.35	-.031	n/a	24.28
03/10/04	95	7.3	-.043	n/a	25.8
04/04/04	113	7.6	.558	(100) 98.9	26.2
04/26/04	n/a	n/a	-.082	(100) 84	25.58
05/14/04	n/a	n/a	.071	(100) 96	26.4
06/12/04	12	7.9	-.079	(0) 54	n/a
06/19/04	121	7.31	-.024	n/a	26.57
07/16/04	98	n/a	-.05	n/a	22.63
08/07/04	143	n/a	.024	(123) 144	25.04
09/02/04	70	7.2	.092	(123) 122	25.3
09/17/04	94	6.7	-.11	(123) 160	25.7
10/08/04	95	n/a	.111	(123) 120	22.95
10/25/04	75	7.41	-.055	(123) 144	20.7
11/09/04	101	n/a	.033	(123) 108	10.4
11/29/04	120	7.93	.05	(0) 13.2	23.45
12/20/04	114	7.6	.013	(123) 117	24.08

01/06/05	50	7.98	-.101	(123) 122.3	24.5
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Flume Dock

Date	DO% Air Saturation	ph(7.41)	Depth m	Turbidity (100/123)	SpCond (25.82)
01/30/04	105	7.42	-.248	(100) 111	26.9
02/20/04	99	7.30	-.007	(100) 99.7	24.88
03/10/04	115	7	n/a	(100) 120	26.3
04/11/04	120	7.05	.108	(100) 101	15
04 26 04	46	7.28	-.179	(100) 98	24.2
05/12/04	104	7.42	.050	(100) 100.6	19.76
05/27/04	55	7.4	n/a	(n/a	15
05/27/04	85	7.26	.176	(100) 100	15.9
06/12/04	40	7.4	.007	(123) 600	18
07/09/04	118	7.43	-.011	(123) 205	20.04
07/17/04	107	7.10	-.074	(100) 97.6	25.8
08/03/04	n/a	6.7	n/a	n/a	7
08/03/04	n/a	-----			

15. Other remarks:

a) Data editing followed CDMO protocol. Out of range data has been rejected. Large spikes and other unusual readings though reported in the anomalous data section were usually retained, as a direct cause usually cannot be pinpointed.

b) Storm events:

Hurricane Charley, on August 13th, made landfall with maximum winds near 150 M.P.H. (category 4) on the southwest coast of Florida, north of Captiva Island. The hurricane then crossed central Florida, passing near Orlando and was still of hurricane intensity around midnight when its center cleared the northeast coast of Florida near Daytona Beach and landed as a category 1 near Cape Romain, SC on the 14th with minimal impacts to Georgia other than rain and wind.

Hurricane Frances made landfall near Stuart, Florida on the 5th with 105 M.P.H. (category 2) maximum winds then weakened as it moved across the Florida Peninsula, and became a tropical storm just before entering the northeastern Gulf of Mexico on September 6. Frances then made landfall in the Florida Big Bend region that afternoon as a tropical storm, which weakened over the southeastern United States and became extratropical over West Virginia on the 9th. Francis brought lots of wind and rain for Georgia.

Ivan made landfall as a major hurricane with sustained winds of near 120 M.P.H. (category 3) on the September 16th just west of Gulf Shores, Alabama. It then weakened as it moved inland and merged with a front. A remnant broke off and moved into the Atlantic, drifted south, and crossed southern Florida after which it became a tropical

storm, which moved into Louisiana. Georgia experienced several days of rain associated with this system.

Hurricane Jeanne crossed the Florida coast near Stuart with 120 M.P.H. winds (category 3). Jeanne weakened, as it moved across central Florida, became a tropical storm during the afternoon of the 26th near Tampa, and then weakened to a depression a day later over central Georgia. The depression brought heavy rain when it moved over Georgia and the Carolinas