ACE Basin (ACE) National Estuarine Research Reserve Water Quality Metadata
January-December 2006 Report
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I. Data Set & Research Descriptors

1. Principal investigator & contact persons

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2. Entry verification

The data are downloaded from the YSI® Model 6600EDS sondes to a Personal Computer (IBM compatible) as PC6000 files (*.dat) and as comma-delimited files (*.csv). The PC6000 files are examined in EcoWatch® to detect equipment malfunctions that require immediate attention or to detect damaged DO membrane. The comma-delimited format (.CSV) files are opened in Microsoft Excel for pre-processing with the EQWin format macro that was developed by the CDMO to reformat the header columns, insert station codes, and insert a corrected time column. Data at the beginning and end of each data record, when the instrument was out of the water, are deleted by the staff before running the macros. The formatted and processed files are saved as an Excel file (*.xls). Before submitting the data to the CDMO, the datasets are imported into EQWin® where: 1) the station and parameter names are verified; 2) the date and time formats are verified; 3) data are checked for duplication, and 4) yearly statistics (i.e. mean, standard deviation) for each parameter are generated. The statistical reports are printed and reviewed to ensure that all anomalous data have been detected and evaluated. EQWin® is also used to cross query the water, weather and nutrient data and finally export the data to the CDMO. **Note:** periods are removed from cells before dataset is submitted 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 at the site, 2) outside the range of measurements established for the sensors, 3) outside the range of accuracy established for the sensors, or 4) outside the range established for good water quality conditions (i.e. dissolved oxygen <28%). Data are deleted if the anomalies are attributed to: 1) a sensor malfunction, 2) exposure of sensors during low tides, or 3) fouling of sensors by aquatic organisms, debris, or sediment. Data in the remainder of the record are not deleted unless supporting reasons can be

documented. In addition, condition of the data logger at the time of deployment and retrieval (i.e. of presence of organisms on sensors or body of logger, buildup of sediment in sensor guard) are noted on field logs, as well as the ambient conditions (tide stage, air temperature, wind speed/direction).

Sensor malfunctions are detected when the voltage reading of the sensor is outside the range established for the sensor or when sensor will not calibrate. Fouling of sensors is detected by comparing in-situ readings to YSI measurements (see **Research Methods** section) or examining data graphically. In addition, sensor readings that differ significantly (>10%) from standard solution (i.e. conductivity) suggest that the sensor was fouled during deployment. After corrections are made to the Excel worksheet (*.xls), the files are exported as tab-delimited files (*.txt) to the CDMO. Julie Dingle and Amy Whitaker Dukes are responsible for these tasks.

3. Research Objectives

Long-term water quality monitoring in the ACE Basin provides a unique opportunity to increase understanding of how various environmental factors influence estuarine processes. The Reserve research staff has elected to compare water quality conditions in shallow creeks along a salinity gradient and different levels of development. Based on discussions with local Coastal Zone Management (CZM) personnel and ACE Basin NERR staff knowledge of land use within the Reserve, the South Edisto River drainage basin was selected because it is well suited for studying contrasting hydrographic conditions and land use patterns. Two tributaries, St. Pierre Creek and Fishing Creek are in areas where boat traffic is light and development is sparse, and they are designated as "control" sites. In contrast, the two “treatment” sites are in Big Bay Creek and Mosquito Creek where boat traffic is moderate to heavy and residential and commercial development is medium to dense. The four sites also are located along the salinity gradient in the South Edisto River watershed: Big Bay Creek and St. Pierre Creek are in the polyhaline zone (18-30 ppt), Mosquito Creek is in the mesohaline zone (5-18 ppt), and Fishing Creek is in the oligohaline zone. See *Section 5 - Site Location and Character* for detailed descriptions of the sites.

The water quality monitoring program began on March 3, 1995 at Big Bay Creek and St. Pierre Creek; in October 2002, a monitoring station was established in Fishing Creek and in Mosquito Creek. Initially, YSI electronic data loggers were deployed to monitor the water temperature, specific conductance, dissolved oxygen, water level, and pH conditions, approximately 0.5 meters above the creek bottom, at 15-minute intervals; on August 11, 1995, the sampling interval was changed to 30 minutes, and turbidity monitoring was added to the program on April 11, 1996.

4. Research Methods

One data logger is deployed at each permanent monitoring station (Big Bay, St. Pierre, Fishing Creek, and Mosquito Creek). The data logger is attached to a deployment mount at each station to ensure that the sensor is positioned approximately 0.5 m from the creek bottom during a deployment. At each monitoring station, the deployment mount consists of a PVC pipe that is attached vertically to a galvanized pole, which is driven approximately 1 m into the sediment. To facilitate water flow across the sensors, approximately two-inch diameter holes are drilled into the PVC pipes. On April 14, 2006 at 10:30:00 the St. Pierre deployment mount was replaced with a new PVC pipe.

To minimize fouling (i.e. settlement of barnacles and sponges) of data loggers, new sensors and sensor guards are coated with a copper-based anti-fouling paint and periodically re-applied. A plastic mesh is wrapped around the sensor guard to keep out large animals (i.e. crabs, fish); the mesh is coated with anti-fouling paint. In addition, fouling organisms are removed from and with in the PVE deployment mounts during monthly inspections.

The YSI data loggers are deployed for one to two weeks during the summer months, and the sampling period is extended up to one month during the cooler months. A data logger is retrieved and replaced with a newly calibrated data logger prior to a 30-minute reading to prevent interruption of data collection. After deploying the calibrated data logger, a water sample is collected from same depth as the sensor to measure several water quality parameters (water temperature, salinity, pH, dissolved oxygen [mg/l]). Water temperature, salinity, and pH are measured directly with a thermometer, refractometer and hand-held pH meter, respectively, dissolved oxygen, expressed at mg/l, is determined with a field Winkler titration kit. Water depth and meteorological conditions (i.e. precipitation and wind speed and direction) also are recorded. The in-situ measurements are used to determine if the sensor readings drifted significantly during deployment and to evaluate anomalous readings (<28% air saturation).

When the data loggers are retrieved, they are taken to the laboratory for cleaning, post-deployment calibration checks and servicing, in accordance with guidelines set by YSI Operating and Service Manual. Upon returning to the laboratory, the data are downloaded, and the dataset is reviewed to determine if any equipment malfunctions occurred during deployment that need immediate attention. Post-deployment calibration checks of all the parameters except turbidity are done before cleaning the data loggers. Turbidity checks are performed after cleaning the data loggers to prevent contamination of the standard. Sensors are immersed in the appropriate standard solutions (i.e. pH) and readings are recorded. A DO membrane integrity test also isconducted to determine if the membrane was damaged during deployment.

A series of diagnostic values, including dissolved oxygen charge, dissolved oxygen gain, and pH millivolt value at pH 7 and 10, are recorded during calibration and post-deployment calibration checks of data loggers. These diagnostic values are strong indicators of the individual sensor performance, and they are used to determine the accuracy of the data.

Before the data loggers are deployed dissolved oxygen (DO) membranes are changed and allowed to stretch for 24 hours, and the voltage of the batteries are checked. Next, the pH, conductivity, and turbidity sensors are calibrated, using the following standards: pH 7 and 10, 58.64 mS/cm potassium chloride solution, and 0 and 123 NTU solutions. The water level sensor is zeroed in air, and the barometric pressure in the laboratory is recorded. Before leaving the laboratory the following day, the DO sensor is calibrated in air-saturated water at 760 mm barometric pressure. In addition to the procedures outlined in the CDMO manual, we conduct a DO membrane integrity test prior to deployment to determine if the membrane was installed properly or was damaged during calibration.

5. Site Locations and Character

ACE Basin National Estuarine Research Reserve is one of the largest undeveloped estuaries on the East Coast. The study area encompasses the Ashepoo, Combahee and South Edisto River basins, which empty into St. Helena Sound. The NERR consists of approximately 150,000 acres of diverse estuarine wetlands providing preserved habitats for fish and wildlife.

Three monitoring stations are tributaries of the South Edisto River and one is in a tributary of both the S. Edisto and Ashepoo rivers, contributing to freshwater input to each site. The average tidal range at all stations is approximately 2.0 m (6.5 feet), with a maximum of 2.36 m (7.8 feet) and a minimum of 1.39 m (4.6 feet). The bottom habitat at each of the four sites consists of mud intermixed with dead shell hash. The descriptions of the sites are as follow:

Big Bay - GPS coordinates: 32.4941N and -80.3241W

This monitoring station is in Big Bay Creek proper, approximately 2 km (1.24 mi) from the mouth of the creek, and is located about 5 m (16.41 ft) from the southern bank of the creek. In 2006, the mean depth at the station was 1.93 m (6.33 ft), and the mean salinity was 30.81 parts per thousand (ppt).

The Big Bay monitoring station is designated as a "treatment" site because it is subject to nonpoint source pollution and has a high density of development. The southern bank of the creek is bordered by residential and commercial development, with little setback from the bordering *Spartina* marsh. For instance, there are over forty private docks, two commercial seafood docks and a marina with 75 slips, three paved boat ramps, and two fueling areas along the southern bank. Docks and bulkheads are constructed of concrete, or creosote, CCA-treated or Wolmanized material. Boat traffic is heavy, especially during the warmer months, and the creek is closed to shellfish harvesting because of the surrounding human activities. The major sources of nonpoint source pollution are surface runoff from lawns, golf courses, and paved ramps that contain fertilizers, pesticides, herbicides and PAHs. All of the high ground along the southern bank is developed (i.e. residential homes, condominiums and restaurants); and maritime plant communities have been replaced by golf courses, lawns and ornamental gardens. Small patches of a few maritime species (i.e. live oak, cabbage, and Southern red cedar) are found along the roads. In contrast, the northern bank is bordered by a wide expanse of *Spartina alterniflora* marsh, and no high ground is present. American oyster (*Crassostrea virginica*) forms a reef along the creek banks, especially the northern side, and on intertidal mud flats within the creek.

St. Pierre - GPS coordinates: 32.5233N and -80.3568W

This monitoring station is in a small tributary of St. Pierre Creek, approximately 0.25 km (0.16 mi) from the mouth of the creek, and it is about 5 m (16.41 ft) from the northern bank of the creek. The tributary flows through the southern portion of Bailey Island, and creek forms the eastern border of the island. The monitoring station is surrounded by a wide expanse of *Spartina alterniflora* marsh. Extensive mud flats and oyster reefs fringe the banks. Maritime forest communities comprised of species such as wax myrtles, live oaks, and palmettos dominate the upland areas. In 2006, the mean depth at the station was 1.99 m (6.53 ft), and the mean salinity was 29.73 parts per thousand (ppt).

The St. Pierre station is designated as a “control” site because development in the immediate area was sparse when the station was established on March 3, 1995, and the tributary is subject to relatively light boat traffic. In 1996, the 695-acre island was sold, and the owners partnered with The Nature Conservancy to design a conservation-based development. Four hundred and three acres in the center of Bailey Island were set aside as a nature preserve that is managed by The Nature Conservancy, and number of residential lots on the remaining 292 acres is limited to 67. Access to the island is limited to one bridge and all roads on the island are single lane and made of

crushed seashells. In addition, a conservation manual was developed for the property owners that provide specific lot designs and construction guidelines as well as landscaping guidelines to protect the maritime and estuarine habitats.

Fishing Creek – GPS coordinates: 32.6358 N and -80.3655W

This monitoring station is in a tributary of Fishing Creek, approximately 1.79 km (1.11 mi) from the mouth of the creek, and is located approximately 5 m (16.41 ft) from the northern bank of the creek. The tributary flows through the eastern half of Jehossee Island, a protected USFWS, and Fishing Creek forms the northeast border of the island. The station is surrounded by extensive *Spartina cynosuroides* marsh and vast mud flats. The upland area is characterized by slash pine, live oak, and cabbage palmetto. In 2006, the mean depth at the station was 1.67 m (5.48 ft), and the mean salinity was 10.05 parts per thousand (ppt).

Fishing Creek monitoring station is designated as a "control" site because there is no development in the immediate area, and boat traffic is relatively light in the creek. The Wildlife Management Area contains impoundments (formerly rice fields) that are managed as wildlife habitat for endangered fauna and migratory waterfowl. No pesticides or herbicides are applied to the managed wetlands. Water level in the managed wetland is regulated by rice trunks that control the flow of water between the impoundment and the South Edisto River.

Mosquito Creek – GPS coordinates: 32.5558 N and -80.4380W

This monitoring station is in Mosquito Creek proper (a tributary of both the South Edisto and Ashepoo rivers), approximately 2.51 km (1.56 mi) from the Ashepoo River and 12 km (7.46 mi) from the South Edisto River, and it is about 5 m (16.41 ft) from the southern bank of the creek. In 2006, the mean depth at the station was 2.68 m (8.79 ft), and the mean salinity was 21.07 parts per thousand (ppt).

Mosquito Creek station is designated as a "treatment" site because of the land use practices in the surrounding area. Agriculture fields and impounded wetlands are found upstream of the monitoring station. Ten docks constructed of creosote, concrete and Wolmanized pilings; a public boat landing; a commercial seafood business with three commercial shrimp boats and a fueling area are located about 0.8 km (0.5 mi) downstream of the monitoring station. The major source of nonpoint source pollution to the monitoring station is surface runoff from the impoundments and agricultural lands that contain high levels of nutrients and, at times, herbicides and pesticides. Impoundment trunks open and drain into the creek increasing the nutrient load and possibly introducing herbicides and pesticides. Vegetation in the area includes salt marsh dominated by *Spartina alterniflora* and *Juncus roemerianus*. Upland fringe areas consist of cabbage palmetto, live oaks and pine trees.

6. Data collection period

BEGAN	ENDED
Big Bay Site	
12/21/05 – 12:30	01/19/06 – 09:30
01/19/06 – 10:00	03/09/06 – 11:00
03/09/06 – 11:30	04/26/06 – 09:30
04/26/06 – 10:00	05/24/06 – 09:30

05/24/06 – 10:00	06/07/06 – 11:00
06/07/06 – 11:30	06/22/06 – 09:30
06/22/06 – 10:00	07/10/06 – 10:00
07/10/06 – 10:30	07/20/06 – 08:30
07/20/06 – 09:00	08/07/06 – 10:00
08/07/06 – 10:30	08/21/06 – 09:30
08/21/06 – 10:00	09/07/06 – 08:30
09/07/06 – 09:00	09/19/06 – 09:30
09/19/06 – 10:00	10/04/06 – 11:00
10/04/06 – 11:30	10/18/06 – 08:30
10/18/06 – 09:00	11/20/06 – 10:00
11/20/06 – 10:30	12/18/06 – 11:00
12/18/06 – 11:30	01/17/07 – 10:30

St. Pierre Site

12/21/05 – 11:00	01/19/06 – 10:30
01/19/06 – 11:00	03/09/06 – 12:00
03/09/06 – 12:30	04/26/06 – 10:00
04/26/06 – 10:30	05/24/06 – 10:00
05/24/06 – 10:30	06/07/06 – 10:30
06/07/06 – 11:00	06/22/06 – 10:00
06/22/06 – 10:30	07/10/06 – 10:30
07/10/06 – 11:00	07/20/06 – 09:00
07/20/06 – 09:30	08/07/06 – 10:30
08/07/06 – 11:00	08/21/06 – 10:00
08/21/06 – 10:30	09/07/06 – 09:00
09/07/06 – 09:30	09/19/06 – 10:00
09/19/06 – 10:30	10/04/06 – 10:30
10/04/06 – 11:00	10/18/06 – 09:00
10/18/06 – 09:30	11/20/06 – 11:00
11/20/06 – 11:30	12/18/06 – 11:30
12/18/06 – 12:00	01/17/07– 11:00

Fishing Creek

12/22/05 – 10:30	01/19/06 – 12:00
01/19/06 – 12:30	03/16/06 – 10:30
03/16/06 – 11:00	04/26/06 – 11:00
04/26/06 – 11:30	05/24/06 – 11:00
05/24/06 – 11:30	06/07/06 – 10:00
06/07/06 – 10:30	06/22/06 – 11:30
06/22/06 – 12:00	07/10/06 – 11:00

07/10/06 – 11:30	07/20/06 – 10:30
07/20/06 – 11:00	08/07/06 – 11:00
08/07/06 – 11:30	08/21/06 – 11:00
08/21/06 – 11:30	09/07/06 – 11:00
09/07/06 – 11:30	09/19/06 – 11:00
09/19/06 – 11:30	10/04/06 – 09:30
10/04/06 – 10:00	10/18/06 – 10:00
10/18/06 – 10:30	11/20/06 – 12:30
11/20/06 – 13:00	12/18/06 – 12:30
12/18/06 – 13:00	01/17/07 – 12:45

Mosquito Creek

12/21/05 – 16:00	01/19/06 – 12:30
01/19/06 – 13:00	03/09/06 – 13:00
03/09/06 – 13:30	04/26/06 – 11:30
04/26/06 – 12:00	05/24/06 – 11:30
05/24/06 – 12:00	06/07/06 – 12:30
06/07/06 – 13:00	06/22/06 – 10:30
06/22/06 – 11:00	07/10/06 – 12:30
07/10/06 – 13:00	07/20/06 – 10:00
07/20/06 – 10:30	08/07/06 – 12:30
08/07/06 – 13:00	08/21/06 – 10:00
08/21/06 – 10:30	09/07/06 – 10:00
09/07/06 – 10:30	09/19/06 – 10:00
09/19/06 – 10:30	10/04/06 – 12:30
10/04/06 – 13:00	10/18/06 – 11:00
10/18/06 – 11:30	11/20/06 – 12:00
11/20/06 – 12:30	12/18/06 – 11:30
12/18/06 – 12:00	01/17/07 – 11:30

7. Distribution

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program, is as follows.

NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from the NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is only as good as the quality assurance

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 (see *Section 1 - Principal Investigators and Contact Persons* for addresses), from the Data Manager at the Centralized Data Management Office (please see personnel directory under general information link on CDMO homepage) and online at the CDMO homepage http://cdmo.baruch.sc.edu. Data are available in text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format.

8. Associated researchers and projects

As part of SWMP, in addition to this Water Quality monitoring dataset, ACE NERR also monitors Meteorological and Nutrient data. These data are available from the Research Coordinator or online at http://cdmo.baruch.sc.edu/.

Dr. Charles Wenner of SCDNR/Marine Resources Research Institute received funding through the National Marine Fisheries Service in January of 2001 to continue an ongoing survey of red drum (*Sciaenops ocellatus*) in the South Edisto and Combahee River basins, by electrofishing in tidal freshwater and low salinity brackish water. Although red drum is the target species, all species identified to species, measured and weighed.

The ACE Basin NERR received funding from the U.S. Environmental Protection Agency to establish a National Atmospheric Deposition Program site in the Reserve. Sampling efforts began on January 1, 2002 and will continue for five years. Weekly precipitation samples are collected and analyzed for atmospheric pollutants. The precipitation collector is located on Bear Island, a Wildlife Management Area inside the NERR.

In February 2006, the ACE Basin NERR installed a RASSL – Remote Access Satellite Sensor Link – transmitter unit to the deployment structure at the Mosquito Creek water quality sampling station, and in August 2006 installed an additional transmitter unit at the Big Bay station. North Star Science and Technology, funded by a CITCEET grant, designed a compact and field rugged satellite communicator. The transmitter unit, compatible with YSI 6 series data sondes, communicates directly to the sonde and asks the sonde to take an additional reading once an hour. This additional reading is not stored by the data sonde and does not interfere with the scheduled SWMP data collection. The additional hourly reading is then transmitted via a satellite link. The provisional data are posted to a secure website provided and maintained by North Star Science and Technology. Access to this website can be obtained by contacting the Reserve research staff.

On September 19, 2006 the Algal Ecology Lab began screening water samples from the ACE BASIN. Algal assemblages are being identified at these sites to monitor these areas and identify any harmful algal blooms. If a bloom is present, the fixed sample will be counted to determine

algal density. These water samples are also being processed for HPLC (High Performance Liquid Chromatography), which will identify the pigments that are present in the water at that time, and can be later analyzed for estimates of algal community biomass.

Information about other studies conducted in the ACE Basin may be obtained from the Research Coordinator.

II. Physical Structure Descriptors

9. Sensors specifications

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 auto-ranging
Model #: 6560
Range: 0-100 mS/cm
Accuracy: +/-0.5% of reading +0.001mS/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 50mg/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 (9.1m)
Accuracy: +/- 0.06 ft (0.018m)
Resolution: 0.001ft (0.001 m)

Parameter: pH
Units: units
Sensor Type: Glass combination electrode; flat glass electrode
Model #: 6561; 6561FG
Range: 0-14 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

The NERR 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. Readings for both vented and non-vented sensors are automatically compensated for water density change due to variations in temperature and salinity; but for all non-vented depth measurements, 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, and is eliminated for level sensors because they are vented to the atmosphere throughout the deployment time interval.

Beginning in 2006, NERR SWMP standard calibration protocol calls for all non-vented depth sensors to read 0 meters at a (local) barometric pressure of 1013.25 mb (760 mm/hg). To achieve this, each site calibrates their depth sensor with a depth offset number, which is calculated using the actual atmospheric pressure at the time of calibration and the equation provided in the SWMP calibration sheet or Digital Calibration Log. This offset procedure standardizes each depth calibration for the entire NERR System. If accurate atmospheric pressure data are available, non-vented sensor depth measurements at any NERR site can be corrected. The Research Coordinator at the specific NERR site should be contacted in order to obtain information regarding atmospheric pressure data availability.

Probe Identification:	**Standards for Calibration:**
Turbidity 6136 Probe	Advanced Polymer System Inc. 123 NTU
pH 116031 Probe	Micro Essential Laboratory Inc. Hydrion Buffer 7.00 and 10.00
pH 6561FG Probe	Micro Essential Laboratory Inc. Hydrion Buffer 7.00 and 10.00
Specific Conductivity 6030 Probe	J.T. Baker, Potassium Chloride Crystal 58.64 mS/cm

10. Coded variable definitions

Sampling Station:	Sampling site code:	Station Code:
St. Pierre	SP	acespwq
Big Bay	BB	acebbwq
Fishing Creek	FC	acefcwq
Mosquito Creek	MC	acemcwq

11. Anomalous/Suspect Data

On 01/26/2019 this dataset was updated to include embedded QAQC flags for anomalous/suspect data. System-wide monitoring data beginning in 2007 were processed to allow for QAQC flags and codes to be embedded in the data files rather than detailed in the metadata alone (as in the anomalous/suspect, deleted, and missing data sections above). Prior to 2006, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes. No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

January 1-31, 2006 Sampling Period

Big Bay

a) At 01:30:00 on January 18, the turbidity spiked (1473 NTU).

St. Pierre

a) During the following periods, the turbidity spiked; both readings were 1174 NTU.
   01/16/06 23:00:00
   01/19/06 10:30:00

b) During the following periods, the salinity and specific conductivity readings were not within normal polyhaline/euhaline salinity range (18 and 40 ppt). The low readings correspond with significant rainfall events and low tides.
   01/02/06 16:30:00-17:30:00
   01/23/06 20:30:00-21:00:00
   01/24/06 07:30:00-08:30:00

Fishing Creek

a) During the following periods, the depth readings were negative or zero. The depth data were not deleted because the salinity and dissolved oxygen readings indicate that the data logger was submerged during these periods.
   01/01/06 03:00:00
   01/14/06 14:30:00-15:30:00
   01/31/06 04:00:00-04:30:00

Mosquito Creek

No anomalous data.

February 1-28, 2006 Sampling Period

Big Bay

No anomalous data.

St. Pierre

a) During the following periods, the salinity and specific conductivity reading were not within normal polyhaline/euhaline salinity range (18 and 40 ppt). The low readings were possibly due to a low tide and rainfall events.
   02/02/06 19:00:00
   02/03/06 05:00:00-06:00:00
   02/25/06 23:00:00-23:30:00
   02/26/06 00:00:00-01:00:00

Fishing Creek

a) During the following period, the depth reading was negative. The depth datum was not deleted because the salinity and dissolved oxygen readings indicate that the data logger was submerged during this period.
   02/28/06 15:30:00

a) During the following periods, the turbidity readings spiked.

02/24/06 04:00:00 (1881 NTU)
02/28/06 19:30:00 (1866 NTU)

Mosquito Creek
No anomalous data

March 1-31, 2006 Sampling Period

Big Bay

a) During the following periods, the dissolved oxygen (DO) readings are suspect. ACE NERR staff believes there was either a calibration error or a damaged membrane. The data were not deleted because the probe passed post-calibration test, although the DO% post-calibration value was low (88.6%).
03/09/06 at 11:30:00 to 03/31/06 at 23:30:00

St. Pierre
No anomalous data

Fishing Creek

a) At 05:00:00 on March 10, the turbidity spiked (1407 NTU).

b) During the following periods, the depth readings were negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate that the data logger was submerged during these periods.
03/01/06 16:00:00
03/02/06 17:00:00

Mosquito Creek
No anomalous data.

April 1-30, 2006 Sampling Period

Big Bay

a) During the following periods, the dissolved oxygen (DO) readings are suspect. ACE NERR staff believes there was either a calibration error or a damaged membrane. The data were not deleted because the probe passed post-calibration test, although the DO% post-calibration value was low (88.6%).
04/01/06 at 00:00:00 to 04/26/06 at 09:30:00

b) Suspect turbidity spike at 4/3/2006 04:00 (902 NTU).

c) Specific conductivity (and affected parameters Salinity, DO mg/L and Depth) are suspect for the following period. Heavy rains beginning 4/8/2006 contributed to fouling and there is a marked difference in readings with the start of the new deployment on 4/26 at 10:00.
4/8/2006 00:00 – 4/26/2006 09:30

St. Pierre

a) During the following periods, the dissolved oxygen (DO) readings are suspect because readings are above 120% air saturation.
   04/14/06 14:00:00-14:30:00; 15:30:00
   04/15/06 14:00:00-16:00:00
   04/16/06 14:00:00-16:30:00
   04/17/06 14:30:00-17:00:00

Fishing Creek

a) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
   04/15/06 15:30:00
   04/24/06 11:30:00

b) At 00:30:00 on April 03, the turbidity spiked (1212 NTU).

Mosquito Creek

a) During the following periods, the turbidity spiked; readings ranged from 1067 NTU to 1168 NTU.
   04/07/06 22:00:00
   04/08/06 00:00:00
   04/20/06 08:30:00

May 1-31, 2006 Sampling Period

Big Bay

a) During the following periods, the turbidity spiked; readings ranged from 1003 NTU to 1363 NTU.
   05/09/06 02:30:00
   05/11/06 15:30:00
   05/22/06 11:30:00

St. Pierre

No anomalous data.

Fishing Creek

a) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
   05/27/06 13:30:00
   05/31/06 06:00:00; 10:30:00

Mosquito Creek

a) During the following periods, the turbidity spiked; readings ranged from 1176 NTU to 1188 NTU.
   05/09/06 23:00:00

05/13/06 12:00:00
05/14/06 18:00:00
05/19/06 05:00:00
05/20/06 17:30:00

June 1-30, 2006 Sampling Period

Big Bay

a) Suspect turbidity spike occurred at 6/28/2006 15:00 (991 NTU).

St. Pierre

a) During the following period, the dissolved oxygen (DO) reading was below 28% air saturation; the low DO reading occurred during a low tide.
06/28/06 04:30:00

Fishing Creek

a) At 12:30:00 on June 17, the turbidity spiked (1354 NTU).

b) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low readings occurred at or around low tide events.
06/01/06 06:30:00; 09:00:00
06/02/06 07:00:00
06/03/06 11:00:00
06/04/06 11:00:00
06/09/06 07:30:00; 08:30:00; 09:30:00-10:00:00
06/11/06 09:00:00; 11:30:00
06/12/06 03:30:00
06/13/06 03:30:00-04:00:00; 07:00:00
06/15/06 05:00:00-06:00:00; 08:00:00; 20:00:00
06/17/06 08:00:00
06/18/06 10:30:00; 23:00:00
06/19/06 11:30:00
06/20/06 00:30:00-01:00:00; 08:00:00-10:00:00; 23:00:00-23:30:00
06/21/06 01:30:00-02:00:00; 08:30:00-11:00:00
06/22/06 00:00:00; 02:00:00-03:00:00; 10:00:00-11:30:00
06/28/06 04:00:00-04:30:00

Mosquito Creek

a) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
06/28/06 05:00:00
06/29/06 05:30:00

July 1-31, 2006 Sampling Period

Big Bay

a) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
   07/11/06 12:00:00-14:00:00
   07/12/06 02:00:00-02:30:00; 13:30:00-14:30:00
   07/13/06 03:30:00; 15:30:00
   07/14/06 04:30:00
   07/17/06 06:00:00-07:00:00
   07/18/06 07:00:00-07:30:00
   07/19/06 07:30:00-08:30:00

b) Suspect turbidity spikes occurred during the following period, data should be used with caution.
   7/7/2006 00:00 – 7/10/2006 10:00

St. Pierre

a) During the following periods, the turbidity spiked; readings ranged from 1018 NTU to 1460 NTU.
   07/05/06 07:00:00; 21:30:00; 23:00:00
   07/06/06 08:30:00; 09:30:00-10:00:00; 11:00:00; 12:30:00; 21:00:00; 22:30:00-23:00:00
   07/07/06 08:30:00; 10:00:00; 11:00:00; 12:30:00
   07/08/06 08:00:00; 09:30:00-10:00:00; 11:00:00; 12:30:00; 14:00:00; 23:00:00-23:30:00
   07/09/06 01:00:00; 02:00:00; 03:30:00; 05:00:00; 08:00:00; 09:30:00-10:00:00; 11:00:00
   07/10/06 09:30:00; 10:30:00
   07/28/06 14:00:00; 15:00:00; 16:30:00; 17:30:00; 18:30:00; 21:30:00; 22:30:00
   07/29/06 01:00:00; 04:00:00; 05:30:00; 06:30:00

b) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
   07/01/06 07:30:00
   07/02/06 08:30:00
   07/28/06 05:00:00

c) During the following periods, specific conductivity and salinity readings are suspect; readings were above normal. Please see the St. Pierre specific conductivity and salinity statement in the "Other Remarks" section for details.
   07/10/06 at 11:00:00 to 07/20/06 at 09:00:00

Fishing Creek

a) During the following periods, the turbidity readings spiked.
   07/03/06 at 12:00:00 (2102 NTU)
   07/19/06 at 03:30:00 (1131 NTU)

b) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred around low tide events.

07/05/06	08:30:00
07/06/06	08:00:00; 09:30:00; 10:30:00
07/07/06	10:30:00
07/15/06	06:30:00
07/16/06	07:00:00
07/19/06	09:30:00; 22:30:00
07/20/06	23:30:00
07/21/06	11:00:00-12:00:00
07/22/06	00:30:00
07/23/06	01:30:00
07/24/06	02:00:00; 03:00:00; 12:00:00
07/25/06	01:00:00-02:00:00; 03:00:00; 09:00:00; 11:00:00-11:30:00; 14:30:00
07/26/06	03:30:00
07/27/06	04:00:00
07/28/06	04:30:00
07/29/06	05:00:00; 15:00:00-16:00:00; 17:00:00
07/30/06	06:00:00
07/31/06	04:00:00

Mosquito Creek

a) During the following periods, the turbidity spiked; readings ranged from 1013 NTU to 2015 NTU.

07/14/06	18:30:00
07/15/06	07:30:00-08:00:00; 10:30:00; 14:30:00; 15:30:00; 17:00:00; 18:30:00; 21:30:00-22:00:00; 23:30:00
07/16/06	00:30:00; 05:30:00; 06:30:00; 07:30:00-09:00:00; 11:30:00; 15:30:00; 19:00:00; 23:30:00
07/17/06	16:30:00
07/18/06	02:00:00; 06:00:00; 07:30:00; 17:00:00-17:30:00; 19:30:00; 23:00:00
07/19/06	03:00:00; 07:30:00; 09:30:00-10:00:00; 12:30:00; 15:30:00-16:00:00
07/20/06	06:30:00
07/22/06	19:30:00

August 1-31, 2006 Sampling Period

Big Bay

a) At 20:00:00 on August 12, the turbidity spiked (1132 NTU).

b) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.

08/22/06	12:00:00-13:00:00
08/24/06	02:30:00; 13:00:00-14:30:00

08/25/06 02:30:00; 14:00:00-15:00:00
08/26/06 02:00:00-03:30:00
08/27/06 02:30:00-03:30:00; 15:30:00-16:00:00
08/28/06 03:30:00-04:00:00
08/29/06 04:30:00-05:00:00
08/30/06 04:30:00-06:00:00

St. Pierre

a) During the following periods, the turbidity readings are suspect. Turbidity readings consistently spiked during the deployment. The turbidity probe passed post calibration checks.
08/01/06 at 15:30:00 to 08/07/06 at 10:00:00
At 00:30:00 on August 23, the turbidity spiked (1368 NTU).

b) During the following periods, the dissolved oxygen (DO) readings are suspect. The readings were below 28% air saturation. The low readings that occurred between 8/15 and 8/21 could be a result of fouling presence on the DO probe. The turbidity wiper fell off during the deployment and allowed for moderate growth on all probes.
08/15/06 05:30:00-08:00:00
08/16/06 05:00:00-09:00:00; 20:00:00
08/17/06 05:30:00-10:30:00; 20:00:00-23:30:00
08/18/06 07:00:00-11:30:00; 20:00:00-23:30:00
08/19/06 00:00:00-00:30:00; 07:30:00-13:00:00; 20:30:00-23:00:00
08/20/06 00:00:00; 05:30:00; 08:00:00-12:00:00; 21:00:00-23:00:00
08/21/06 00:00:00; 01:00:00-02:30:00; 06:00:00-06:30:00; 09:00:00-10:00:00
08/27/06 04:00:00-05:00:00
08/28/06 04:30:00-05:00:00
08/29/06 05:00:00-05:30:00

Fishing Creek

a) At 06:30:00 on August 8, the turbidity spiked (1136)

b) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
08/01/06 06:30:00
08/05/06 09:00:00; 10:30:00; 23:30:00
08/06/06 11:30:00-12:00:00
08/08/06 02:00:00
08/09/06 03:00:00
08/10/06 03:30:00
08/21/06 04:30:00; 10:30:00-11:00:00
08/22/06 11:30:00-12:30:00
08/24/06 03:00:00; 07:00:00
08/27/06 04:30:00; 06:30:00

08/28/06 05:00:00; 07:00:00-08:30:00; 19:30:00
08/29/06 05:30:00; 07:00:00-08:00:00
08/30/06 06:00:00; 07:00:00-08:00:00
08/31/06 06:00:00-06:30:00

Mosquito Creek

a) During the following periods, the turbidity spiked; readings ranged from 1042 NTU to 1052 NTU.
08/12/06 10:30:00
08/15/06 00:30:00
08/16/06 09:30:00
08/19/06 21:00:00; 22:30:00
08/20/06 01:00:00; 02:00:00; 03:30:00; 06:00:00; 07:30:00; 10:00:00; 11:30:00; 13:30:00; 14:30:00-15:00:00; 16:30:00; 19:00:00; 20:30:00; 23:00:00
08/21/06 00:30:00; 03:00:00; 05:00:00; 07:30:00; 10:00:00

b) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
08/09/06 03:00:00
08/11/06 04:30:00
08/12/06 05:30:00
08/13/06 06:30:00
08/14/06 07:00:00
08/26/06 04:30:00

September 1-30, 2006 Sampling Period

Big Bay

a) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
09/01/06 06:00:00-08:00:00; 19:00:00-20:00:00
09/02/06 07:00:00-08:30:00
09/03/06 08:00:00; 22:00:00
09/04/06 09:30:00-10:30:00
09/05/06 10:00:00-12:00:00
09/06/06 00:00:00-00:30:00; 11:30:00; 12:30:00

St. Pierre

a) During the following periods specific conductivity and salinity readings are suspect; readings were above normal. Please see the St. Pierre specific conductivity and salinity statement in the "Other Remarks" section for details.
09/07/06 at 09:30:00 to 09/19/06 at 10:00:00

Fishing Creek

a) At 05:30:00 on September 14, the turbidity spiked (1503).

b) During the following periods, the dissolved oxygen (DO) readings were below 28% air saturation; the low DO readings occurred during low tides.
09/01/06 02:30:00; 04:30:00; 07:00:00-09:00:00; 21:30:00
09/02/06 08:30:00-09:30:00
09/03/06 09:30:00-10:30:00; 23:30:00
09/04/06 11:00:00-12:30:00
09/05/06 12:30:00
09/14/06 09:30:00; 22:30:00
09/16/06 09:30:00; 11:00:00-11:30:00
09/17/06 12:00:00
09/24/06 02:30:00-03:00:00
09/25/06 02:30:00-03:30:00
09/26/06 03:00:00-03:30:00

Mosquito Creek

a) During the following periods, the turbidity spiked; readings ranged from 1015 NTU to 1983 NTU.
09/03/06 15:00:00; 17:00:00
09/05/06 08:00:00
09/10/06 10:00:00
09/17/06 14:30:00

b) During the following period, the dissolved oxygen (DO) reading was below 28% air saturation; the low DO reading occurred during a low tide.
09/06/06 02:00:00

October 1-31, 2006 Sampling Period

Big Bay

No anomalous data.

St. Pierre

a) During the following periods specific conductivity and salinity readings are suspect; readings were above normal. Please see the St. Pierre specific conductivity and salinity statement in the "Other Remarks" section for details.
10/04/06 at 11:00:00 to 10/18/06 at 09:00:00

Fishing Creek

No anomalous data.

Mosquito Creek

a) During the following periods, the turbidity readings spiked.
10/03/06 at 18:30:00 (1589)
10/04/06 at 08:00:00 (1610)

November 1-30, 2006 Sampling Period

Big Bay

a) During the following periods, the turbidity spiked; readings ranged from 1032 NTU to 1133 NTU.

11/11/06	00:30:00-01:00:00
11/12/06	07:00:00; 09:30:00-10:00:00; 12:30:00-13:00:00; 15:30:00-16:00:00; 17:30:00; 18:30:00; 21:30:00
11/13/06	19:00:00; 20:00:00; 22:00:00
11/14/06	08:00:00; 09:00:00; 11:30:00; 12:30:00; 15:30:00; 20:00:00
11/16/06	12:00:00; 18:30:00; 19:30:00-20:00:00
11/19/06	05:00:00; 08:30:00; 11:00:00

St. Pierre

No anomalous data.

Fishing Creek

No anomalous data.

Mosquito Creek

No anomalous data.

December 1-31, 2006 Sampling Period

Big Bay

No anomalous data.

St. Pierre

No anomalous data.

Fishing Creek

No anomalous data.

Mosquito Creek

a) At 06:30:00 on December 04, the turbidity spiked (1064).

b) During the following period, the dissolved oxygen (DO) reading was below 28% air saturation; the low DO reading occurred during a low tide.

12/25/06	06:00:00

12. Deleted Data

January 1-31, 2006 Sampling Period

Big Bay

No deleted data.

St. Pierre
No deleted data.

Fishing Creek
No deleted data.

Mosquito Creek
a) During the following periods the pH readings were deleted. The pH sensor failed during two separate deployments in January.
01/01/06 at 00:00:00 to 01/19/06 at 12:30:00
01/24/06 at 05:30:00 to 01/31/06 at 23:30:00

February 1-29, 2006 Sampling Period

Big Bay
No deleted data.

St. Pierre
a) Turbidity data were deleted for the following period, possible wiper parking problem.
2/2/2006 19:00 – 2/28/2006 23:30

Fishing Creek
No deleted data.

Mosquito Creek
a) During the following periods, the pH readings were deleted. The pH sensor failed during the deployment.
02/01/06 at 00:00:00 to 02/28/06 at 23:30:00

March 1-31, 2006 Sampling Period

Big Bay
No deleted data.

St. Pierre
a) Turbidity data were deleted for the following period, possible wiper parking problem.
3/1/2006 00:00 – 3/9/2006 12:00

Fishing Creek
a) During the following periods the pH readings were deleted. The pH sensor calibrated within range, but failed between calibration and deployment.
03/16/06 at 11:00:00 to 03/31/06 at 23:30:00

Mosquito Creek
a) During the following periods of the deployment, the pH readings were deleted. The pH

sensor failed during the deployment.
03/01/06 at 00:00:00 to 03/09/06 at 13:00:00

April 1-30, 2006 Sampling Period

Big Bay

a) During the following periods of the deployment, the pH readings were deleted. The pH sensor failed during the deployment.
04/28/06 at 20:00:00 to 04/30/06 at 23:30:00

b) Turbidity data were deleted for the following period. Heavy tunicate and algae fouling led to erroneous values.
4/4/2006 02:30 – 4/26/2006 09:30

St. Pierre

No deleted data.

Fishing Creek

a) During the following periods the pH readings were deleted. The pH sensor calibrated within range, but failed between calibration and deployment.
04/01/06 at 00:00:00 to 04/26/06 at 11:00:00

Mosquito Creek

a) During the following periods, the dissolved oxygen (DO) data were deleted. The membrane was punctured during the deployment.
04/02/06 at 16:30:00 to 04/26/06 at 11:30:00

b) pH data were deleted for the following period due to fouling. Post-cal readings were bad (7.63 and 8.78, slope of 61.9) and readings were elevated.
4/13/2006 08:30 – 04/26/2006 11:30

May 1-31, 2006 Sampling Period

Big Bay

a) During the following periods, the pH readings were deleted. The pH sensor failed during the deployment.
05/01/06 at 00:00:00 to 05/24/06 at 09:30:00

St. Pierre

No deleted data.

Fishing Creek

No deleted data.

Mosquito Creek

No deleted data.

June 1-30, 2006 Sampling Period

Big Bay

No deleted data.

St. Pierre

a) During the following periods, the turbidity readings were negative; the data were deleted.
   06/15/06 17:00:00-18:00:00

Fishing Creek

No deleted data.

Mosquito Creek

No deleted data.

July 1-31, 2006 Sampling Period

Big Bay

a) Turbidity data were deleted for the following period. Possible wiper parking issue or something blocking the optic.
   7/31/2006 11:00 – 7/31/2006 23:30

St. Pierre

No deleted data.

Fishing Creek

No deleted data.

Mosquito Creek

No deleted data.

August 1-31, 2006 Sampling Period

Big Bay

a) Turbidity data were deleted for the following period. Possible wiper parking issue or something blocking the optic.
   8/1/2006 00:00 – 8/7/2006 10:00

St. Pierre

a) During the following periods, the dissolved oxygen (DO) data were deleted. The DO readings were negative. ACE NERR staff believes the negative DO readings are a result of the turbidity wiper falling off, which allowed for moderate growth on the DO membrane.
   08/19/06 23:30:00
   08/20/06 23:30:00
   08/21/06 00:30:00

Fishing Creek
No deleted data.

Mosquito Creek
No deleted data.

September 1-30, 2006 Sampling Period

Big Bay
No deleted data.

St. Pierre
No deleted data.

Fishing Creek
No deleted data.

Mosquito Creek
No deleted data.

October 1-31, 2006 Sampling Period

Big Bay
No deleted data.

St. Pierre
No deleted data.

Fishing Creek
No deleted data.

Mosquito Creek
No deleted data.

November 1-30, 2006 Sampling Period

Big Bay
No deleted data.

St. Pierre
No deleted data.

Fishing Creek
No deleted data.

Mosquito Creek

No deleted data.

December 1-31, 2006 Sampling Period

Big Bay

No deleted data.

St. Pierre

a) At 11:00:00 on December 15, the dissolved oxygen (DO) data were deleted. The probe malfunctioned and caused DO to spike to 196.7%. ACE NERR staff discussed the event with YSI staff and determined that only that data point be deleted since the probe recovered and passed post calibration test.

Fishing Creek

No deleted data.

Mosquito Creek

No deleted data.

13. Missing Data

Missing data are denoted by a period in the data set. Data are missing due to equipment failure, probes not installed, maintenance/calibration of equipment, elimination of obvious outliers, or elimination of data due to calibration (both pre and post) problems. For more details on deleted data, see *Section 12 – Deleted Data*. To find out more details about missing data, contact the Research Coordinator at the site submitting the data.

14. Post Deployment Information

A. Control sonde End of Deployment Readings:

(* Broken pH bulb and/or punctured D.O. membrane)

Site ID	Date	DO (mg/l) (Std: Variable)	Salinity (Std: 18-40 ppt)	pH (Std: 7.00)
Big Bay				
	01/19/06	8.67	26.55	8.18
	03/09/06	8.27	25.13	8.01
	04/26/06	4.78	24.11	7.77
	05/24/06	4.34	31.34	*
	06/07/06	5.48	31.42	7.51
	06/22/06	3.31	32.16	7.48
	07/10/06	4.07	32.61	7.51
	07/20/06	2.18	33.33	7.33
	08/07/06	2.95	33.99	7.27
	08/21/06	4.11	33.54	7.36
	09/07/06	4.89	33.84	7.81
	09/19/06	3.69	33.09	7.21
	10/04/06	3.50	33.76	7.49

10/18/06	4.97	32.66	7.72
11/20/06	7.13	33.62	8.14
12/18/06	6.55	29.28	8.49
01/17/07	7.44	27.61	8.19

St. Pierre

Date	DO (mg/l) (Std: Variable)	Salinity (Std: 18-40 ppt)	pH (Std: 7.00)
01/19/06	8.78	23.59	8.01
03/09/06	8.16	23.55	8.20
04/26/06	5.30	28.63	7.48
05/24/06	4.06	30.59	7.35
06/07/06	3.82	31.33	7.31
06/22/06	3.14	30.27	7.17
07/10/06	3.72	31.62	7.47
07/20/06	2.23	36.68	7.12
08/07/06	3.04	33.95	7.18
08/21/06	0.97	31.36	7.09
09/07/06	5.09	33.92	7.73
09/19/06	2.94	34.95	7.07
10/04/06	3.75	31.41	7.30
10/18/06	3.49	30.23	7.51
11/20/06	7.70	30.74	8.07
12/18/06	6.21	27.91	7.86
01/17/07	7.27	25.56	7.96

Fishing Creek

Date	DO (mg/l) (Std: Variable)	Salinity (Std: 18-40 ppt)	pH (Std: 7.00)
01/19/06	9.19	5.41	8.08
03/16/06	6.69	8.63	7.44
04/26/06	3.99	5.98	*
05/24/06	3.96	9.65	6.78
06/07/06	4.01	9.23	6.80
06/22/06	2.05	7.94	6.75
07/10/06	3.19	9.78	6.62
07/20/06	2.31	9.53	6.71
08/07/06	2.62	11.31	6.32
08/21/06	1.98	10.74	6.79
09/07/06	3.50	18.57	6.71
09/19/06	2.98	8.77	6.76
10/04/06	3.88	13.48	6.71
10/18/06	3.51	11.60	6.90
11/20/06	7.98	8.57	7.76

12/18/06	7.33	6.16	7.14
01/17/07	7.93	3.44	7.69

Mosquito Creek

Date	DO (mg/l) (Std: Variable)	Salinity (Std: 18-40 ppt)	pH (Std: 7.00)
01/19/06	9.24	12.59	*
03/09/06	8.33	10.16	*
04/26/06	1.79	17.44	7.88
05/24/06	4.26	22.43	7.13
06/07/06	5.88	23.79	7.34
06/22/06	3.33	24.38	7.07
07/10/06	3.69	26.29	7.21
07/20/06	3.37	26.29	7.06
08/07/06	2.88	26.92	7.11
08/21/06	4.02	24.43	7.17
09/07/06	3.78	26.59	7.31
09/19/06	3.94	24.68	7.17
10/04/06	2.96	23.37	7.10
10/18/06	4.50	25.81	7.36
11/20/06	7.09	23.75	7.66
12/18/06	8.07	20.87	7.77
01/17/07	7.62	12.62	7.51

B: End of Deployment Post-Calibration Readings in Standard Solutions:
(* probe failure)

Site ID	Date	DO%Air	pH(7.00)	Depth(m)	Turbid 0 NTU	SpCond 58.64mS/cm
BB						
	01/19/06	100.7	7.00	0.040	0.0	58.54
	03/10/06	100.2	6.96	-0.056	-0.2	57.83
	04/27/06	88.6	7.11	-0.133	-0.4	53.06
	05/25/06	102.6	*	0.032	0.1	59.21
	06/08/06	99.3	6.93	-0.067	-0.3	57.57
	06/23/06	100.0	7.17	0.066	-0.5	57.71
	07/12/06	103.9	7.01	0.032	-0.5	58.14
	07/21/06	98.7	7.03	-0.035	0.0	57.71
	08/08/06	103.4	6.93	0.010	-0.1	58.60
	08/23/06	99.7	6.90	-0.003	0.2	57.89
	09/08/06	102.6	6.91	-0.008	0.2	58.02
	09/20/06	98.4	6.77	-0.041	0.1	59.15
	10/05/06	101.9	6.96	0.028	-0.2	59.66

10/19/06	98.0	7.00	-0.136	-0.1	57.64
11/21/06	97.9	6.85	-0.001	0.0	59.93
12/18/06	100.3	7.26	0.107	-0.6	59.34
01/17/07	96.0	7.05	0.190	0.0	61.00

Site ID	**Date**	**DO%Air**	**pH(7.00)**	**Depth(m)**	**Turbid 0 NTU**	**SpCond 58.64mS/cm**
SP						
	01/19/06	99.5	7.01	0.055	-0.2	58.95
	03/10/06	96.8	7.01	-0.059	-0.1	58.60
	04/27/06	110.9	7.07	-0.138	-0.1	57.56
	05/25/06	100.1	7.00	0.057	0.5	58.79
	06/08/06	99.4	6.95	-0.120	0.1	58.06
	06/23/06	102.0	6.96	0.069	0.1	54.49
	07/12/06	103.3	7.09	0.030	-0.2	58.86
	07/21/06	102.3	6.98	-0.024	-0.1	63.36
	08/08/06	102.0	7.00	-0.009	-0.1	59.12
	08/23/06	91.2	6.87	0.003	0.0	55.84
	09/08/06	101.9	6.97	0.025	0.0	57.55
	09/20/06	100.2	6.86	-0.044	-0.1	63.23
	10/05/06	104.7	6.88	0.056	0.0	57.76
	10/19/06	99.2	7.12	-0.133	0.0	61.34
	11/21/06	99.1	6.96	-0.034	-0.1	58.04
	12/18/06	98.0	6.85	0.123	0.0	58.22
	01/17/07	102.7	6.93	0.126	-1.0	60.20

Site ID	**Date**	**DO%Air**	**pH(7.00)**	**Depth(m)**	**Turbid 0 NTU**	**SpCond 58.64mS/cm**
FC						
	01/19/06	100.5	7.08	0.049	0.3	58.84
	03/17/06	99.5	7.18	-0.065	0.0	58.11
	04/27/06	100.0	*	-0.119	-0.4	56.80
	05/25/06	100.5	7.01	0.057	0.0	59.24
	06/08/06	100.2	6.92	-0.065	14.9	57.71
	06/23/06	100.1	6.98	0.080	-0.1	56.78
	07/12/06	99.9	6.99	0.025	0.0	58.22
	07/21/06	102.2	6.95	-0.024	0.2	58.92
	08/08/06	101.4	6.77	0.010	0.0	58.44
	08/23/06	99.8	7.06	0.004	0.2	57.70
	09/08/06	102.6	7.04	-0.020	0.0	57.79
	09/20/06	98.2	6.97	-0.044	-1.1	58.63

10/05/06	99.8	6.70	0.043	-0.1	57.19
10/19/06	99.0	6.97	-0.112	-0.1	58.04
11/21/06	95.2	6.88	0.003	0.1	59.02
12/18/06	94.0	7.05	0.139	0.2	58.93
01/17/07	102.0	7.10	0.199	0.0	59.90

Site ID	Date	DO%Air	pH(7.00)	Depth(m)	Turbid 0 NTU	SpCond 58.64mS/cm
MC						
	01/19/06	100.6	*	0.050	0.1	58.75
	03/10/06	99.0	*	-0.064	0.1	58.04
	04/27/06	*	7.63	-0.110	-0.3	56.77
	05/25/06	102.6	7.02	0.058	0.5	58.76
	06/08/06	99.6	6.91	-0.073	0.1	57.77
	06/23/06	99.6	7.00	0.071	-0.2	57.29
	07/12/06	101.6	7.04	0.032	0.1	58.99
	07/21/06	98.6	6.96	-0.026	0.5	58.54
	08/08/06	99.4	6.91	0.006	0.2	58.45
	08/23/06	100.0	7.03	-0.001	0.2	58.20
	09/08/06	101.8	6.99	-0.014	0.0	58.13
	09/20/06	99.7	7.05	-0.027	0.2	58.47
	10/05/06	100.6	6.94	0.044	0.1	57.30
	10/19/06	99.7	7.06	-0.131	0.1	58.56
	11/21/06	97.5	6.89	0.008	-0.1	59.24
	12/18/06	100.4	7.02	0.125	0.0	58.89
	01/17/07	102.4	6.89	0.185	0.1	59.72

15. Other Remarks

On 09/19/2019 this dataset was updated to include embedded QAQC flags for anomalous/suspect data. System-wide monitoring data beginning in 2007 were processed to allow for QAQC flags and codes to be embedded in the data files rather than detailed in the metadata alone (as in the anomalous/suspect, deleted, and missing data sections above). Prior to 2006, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes. No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

Dissolved Oxygen (DO) Blanket Statements:

a) DO readings below 28% air saturation (hypoxia) are frequently observed in the ACE Basin NERR during the warmer months, especially from May to September; hypoxia events also was recorded at St. Pierre Creek, Fishing Creek, and Mosquito Creek during March and April.

Hypoxia events are common in the salt marsh environment and typically occur during late ebb, low slack, and early flood tides. Natural factors contribute to these low DO measurements including insufficient water circulation, elevated water temperature, and the lack of stratification in shallow estuarine habitats.
b) Dissolved oxygen (DO) measurements between 100% and 120% air saturation are not listed in the metadata. High DO readings commonly occur in the ACE Basin NERR during the colder months, especially January to March and November to December, and they and are not considered as suspect. The corresponding DO, expressed as mg/l, is a calculated value that based on percent air saturation; therefore, they also are not listed in the metadata.
c) DO readings above 120% air saturation (supersaturation) are observed during the colder months, especially in February, but are not common. The high readings usually occur during afternoon daylight hours as water temperature rises, thus elevating primary productivity. The supersaturation event in February also corresponded with the highest water levels.

Depth (meters) Blanket Statement: Negative depth readings were recorded at some sites. The data are not deleted if salinity and dissolved oxygen readings indicated that the data logger was submerged during these periods. Changes in barometric pressure while the data sonde is deployed may result in negative depth values, especially at low tides or during storm events.

Turbidity (NTU) Blanket Statement: Turbidity readings greater than 1000 NTU are recorded at all YSI sites. Turbidity spikes occur when an animal, a clump of plant matter or sediment passes across the sensor optics, or during rain events and low tides. Environmental factors, such as rainfall events, also may contribute to the turbidity spiking.

pH Blanket Statement: The average pH reading between two consecutive deployments may differ by 0.5 standard units, but the difference is not significant. The two probes calibrated and post-calibrated within range indicating that the difference is probably due to variability between the pH probes.

St. Pierre Specific Conductivity and Salinity Statement: During three different deployments (stpie188, 192 and 194), the specific conductivity and salinity readings recorded were higher then normal. The readings from deployments 188 and 192 were taken with a conductivity probe that was slowly degrading, but constantly passed all calibration and post-calibration tests. The probe was replaced with a new one for the 194 deployment. ACE NERR staff believes that because an “uncal” was not performed prior to calibrating the new probe, the specific conductivity and salinity readings continued to record higher then normal values. Staff compared the YSI readings to field in-situ reading taken during sonde deployment/retrievals, and the salinity values recorded by the YSI sonde were elevated by approximately 2-3 ppt. Please see anomalous data section for specific dates and times of these events.

St. Pierre Mount Statement: On April 14, 2006 at 10:30:00 the St. Pierre deployment mount was replaced.

St. Pierre Telemetry Statement: A Sutron Sat-Link2 transmitter was installed at this station

on 06/28/06 and transmits data to the NOAA GOES satellite, NESDIS ID # 3b02f20a. This site started transmitting on 10/23/06, there was a gap between installation and transmission due to hardware malfunctions. The transmissions are scheduled hourly and contain four (4) datasets reflecting fifteen minute data sampling intervals. The telemetry data are "Provisional" data and not the "Authentic" dataset used for long term monitoring and study. This data can be viewed by going to http://cdmo.baruch.sc.edu.

Extended Deployments Statement: Two separate deployments at the beginning of the year for each water quality station were prolonged, 01/19/06-03/09/06 and 03/09/06-04/26/06. YSI offered a promotion which thoroughly inspected the sondes and its associated sensors. YSI stated the sondes would be serviced and returned to the Reserve in approximately three weeks. However, upon receiving the ACE sondes, YSI stated they did not anticipate the high response to the promotion and the service time was extended to approximately six weeks. ACE Basin staff designated two sondes for each of water quality station, and these two sondes are in a rotating deployed schedule. One sonde from each sampling station was sent to YSI, while the other sonde was deployed, consequently the deployments were prolonged. Some of the data outliers at each of the water quality sites from February to April can be explained by these prolonged deployments.

Precipitation Blanket Statement: The Reserve is over 72,846 ha, and it encompasses most of the estuarine portion of the 320,000-ha ACE Basin watershed, extending 27.14 km northward from the mouth of St. Helena Sound to its inland boundary at the defunct *SCCL* railroad. Due to the immense size of the Reserve it is not uncommon to observe heavy rainfall in one area of the Reserve but not in another area. However, we do assume that rain occurred at all the water quality monitoring stations if rain was recorded at all the weather stations in the Reserve.

Currently, the monitoring stations are within 9.0 km of a recording rain gauge. Mosquito Creek station is 1.7 km southeast of the SWMP rain gauge at Bennett's Point lab. Fishing Creek is 8.5 km NE of the NADP rain gauge on Bear Island Wildlife Management Area. Big Bay Creek is 3.2 km southeast and St. Pierre Creek station is 6.8 km NW of the NOAA weather station at Edisto Beach State Park. Please contact the reserve for more information on various weather stations and their associated data.