ACE Basin NERR Water Quality Metadata
January-December 2001
Latest update: June 30, 2021

I. Data Set & Research Descriptors
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2. Entry verification:

The data are directly downloaded from the YSI Model 6000 sonde to comma-delimited files (*.csv) and PC6000 files (*.dat). The comma-delimited files are imported into Excel 97 where they are formatted and processed by macros that are supplied by the Centralized Data Management Office (CDMO). Various macros are designed to: 1) check data files for missing data points, 2) fill all cells that do not contain data with periods (.), 3) convert the data columns to the CDMO-approved formats for time, date and numeric variables, 4) find all data that are out of acceptable range for the data logger's sensors and out the anomalous data to an output file (*.dat), and 5) save the files as Excel worksheets (*.xls).

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, 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 tide, or 3) fouling of sensors by aquatic organisms, debris, or sediment. Sensor malfunctions are detected if the voltage reading of the sensor is outside the range established for the sensor or the sensor will not calibrate. Fouling of sensors is detected by comparing in-situ sensor readings with measurements (see Research Methods section). 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. Saundra Upchurch and Amy Whitaker Dukes are responsible for these tasks.

3. Research Objectives:

Based on discussions with local Coastal Zone Management (CZM) personnel and our knowledge of land use within the Reserve, the South Edisto River drainage basin appears well suited for studying contrasting hydrographic conditions and land use patterns.

One NERR water quality monitoring station has been established near Edisto Beach within a tributary of Big Bay Creek (BB). Surrounded by residential and commercial development and subject to nonpoint source pollution, this station is designated as the "treatment" site. The second NERR water quality monitoring station has been situated near Bailey Island, within a tributary of St. Pierre Creek (SP). Urban development in the immediate area of this station has been sparse to date so this station will serve as our "control" site.

The ACE Basin water quality monitoring program began on March 3, 1995 at two tributaries off Big Bay and St. Pierre creeks (see Site Location and Character section for description of sites). The deployment sites were constructed prior to the first deployment (see Research Methods section). Initially, the YSI electronic data loggers were programmed to measure the water temperature, specific conductance, dissolved oxygen, water level, and pH at 15-minute intervals (sampling interval was changed to 30 minutes prior to

the August 11 deployment period). Starting April 11, 1996 deployment period, turbidity monitoring was added to the program.

In July 1997, the Reserve staff initiated nutrient studies. The objective of the study is to ascertain the annual and tidal fluctuations in nutrient levels near our two data logger sites. Nutrient levels are measured during a complete tidal cycle each month, and the samples are analyzed for ammonia, nitrite-nitrate, and ortho-phosphate concentrations.

In December of 1999, we initiated a Chlorophyll Testing Pilot Study. The objective of the study is to test the performance and accuracy of the fluorescence probes by comparison of automated data sets with field and/or lab measurements of total chlorophyll, as determined by standard laboratory methods. In December 1999, we upgraded the electronics package in two 6000 dataloggers so that the existing optical port could be used for turbidity and chlorophyll measurements. We started measuring chlorophyll data at both sites on February 11, 2000. Water samples are collected at the beginning and end of each deployment and analyzed for chlorophyll, using the fluorometric method. The study was completed in June of 2000; however, the Reserve continued to utilize the chlorophyll probes alternating each deployment with the turbidity probe until August of 2001.

4. Research Methods

One data logger is deployed at each permanent monitoring station in the South Edisto River watershed. The monitoring station at Big Bay Creek was constructed in 1995, and it consists of a PVC pipe mounted vertically on 12-foot galvanized pole. This monitoring station was replaced in Oct of 2001 because of its old age, high potential for fouling to the data, and growth of oysters on the mount. The new mount consists of two 5-foot PVC pipes mounted vertically on two overlapping 12-foot galvanized poles. The new mount design allows for easy access to the YSI data sondes. To facilitate water flow across the sensors, approximately one-inch diameter holes are drilled into the PVC pipes. The pipes

are also positioned to ensure that the sensors are approximately 0.1 meters from the creek bottom.

In 1997, the St. Pierre Creek station was modified: the PVC pipe is mounted horizontally in a pyramid-shaped cage (2.5 ft long x 1.5 ft high) tethered to the original 12-foot galvanized pole. Later that year, we began to put the data loggers in 1/8-inch mesh net bags before placing them in the PVC pipe to reduce damage by crabs and fish.

In April 2000 the St. Pierre station was moved and again modified. The station was moved to the other side of the creek, and the pyramid-shaped cage was deployed vertically at the base of the pole. In September of 2001, the St. Pierre deployment mount was replaced with three 5-foot PVC pipes mounted vertically on two overlapping 12-foot galvanized poles. To facilitate water flow across the sensors, approximately one-inch diameter holes were drilled into the PVC pipes. During the summer, the data loggers are left at the sites for one to two weeks, and the sampling period is extended up to one month during the cooler months.

At the end of the sampling period, the data loggers are brought back to the laboratory for cleaning, calibration, and servicing, by methods outlined in the YSI Operating and Service Manual. Downtime for doing these procedures normally ranges from 24 to 48 hours. After cleaning the data loggers, the dissolved oxygen (DO) membrane is replaced and is allowed to stretch for 24 hours before calibration begins. The pH, conductivity, depth, and turbidity sensors are calibrated, using the following standards: pH 7 and 10, conductivity standard of 58.64mS/cm depth in the air, and turbidity standards of 0 and 200 NTU, respectively. The water level sensor is zeroed in air, and the chlorophyll is zeroed in distilled water. The DO sensor is calibrated in air-saturated water. In addition to the procedures outlined in the manual, we conduct a DO membrane integrity test prior to deployment to determine if the membrane was damaged during calibration.

Several quality assurance checks are used to determine if the sensor

readings drifted significantly during deployment. In-situ measurements of dissolved oxygen, expressed in mg/L, salinity, pH, and water temperature are taken during deployment and retrieval of the data sondes. Water samples are collected at the same depth as the sensors. Water temperature, salinity, and pH are measured directly with a thermistor, refractometer and pH meter, respectively, and dissolved oxygen level is determined by the Winkler titration.
Post-deployment measurements of all the parameters are taken before cleaning the data loggers. Sensors are immersed in the appropriate standard solutions (i.e., pH) and readings are recorded. A DO membrane integrity test also is conducted to determine if the membrane was damaged during deployment. The results of these checks are used to evaluate the validity of the data (see Post Deployment Information section).

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 135,000 acres of diverse estuarine wetlands providing preserved habitats for fish and wildlife.

The two sampling sites are in separate tributaries of the South Edisto River. Both had an average year round tidal range of 2.0 m (6.5 feet), with a maximum of 2.45 m (8.1 feet) and a minimum of 1.51 m (5.0 feet). The descriptions of the sites are as follows:
Station A (BB) - this site is in a tidal marsh creek off Big Bay Creek (GPS coordinates: 32° 29 38.72125 N and 80° 19 21.69864 W). Surrounded by residential and commercial development and subject to nonpoint source pollution, this station is designated as the "treatment" site. Pollution sources include houses bordering the creek, many of them with little setbacks from the bordering Spartina marsh; forty docks in the area constructed of creosote, concrete and Wolmanized pilings; boat dockage and heavy boat traffic through the creek; a paved road and three boat ramps off the creek; a marina with 75 slips, CCA treated bulkheads and fueling areas located about 0.5 miles downstream; two

commercial seafood docks with 8-10 commercial shrimp boats; and three restaurants. The creek is closed to shellfish harvesting because of the human development in the vicinity. Vegetation in the area includes salt marsh dominated by Spartina alterniflora with isolated areas of Salicornia. Upland fringe areas consist of cabbage palmetto, live oak and cedars. Reefs of American oyster (Crassostrea virginica) fringe the creek banks. At the time of reconnaissance, depth of the creek midway through ebb tide was 5 feet and salinity was 23 parts per thousand (ppt).

Station B (SP) - this site is in a tidal creek off St. Pierre Creek (GPS coordinates: 32° 31 40.59518 N and 80° 21 41.2548 W). It 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. Development in the immediate area is sparse. This creek is subject to relatively light boat traffic. At the time of reconnaissance, depth at low tide was 2.5 feet and salinity was 21 ppt.

The following discussions of trends in water quality at the monitoring stations are based on data collected from March 1995 through December 1997. During this period, water temperature at both monitoring sites exhibited a seasonal pattern with lowest values occurring in December-January. The lowest monthly water temperature observed was 8.9°C, which occurred in February 1996 at St. Pierre Creek; whereas maximum temperatures occurred in July and August with the highest monthly water temperature 38.9°C occurring in July 1995 at Big Bay Creek. Diurnal variation in temperature was evident with warmest temperatures occurring from 1300 hr to 1800 hr at both sites. Salinity also exhibited seasonal variability during the same period, with lowest values occurring in March at Big Bay and St. Pierre creeks. Another period of low average monthly salinity occurred at Big Bay Creek in December 1997. Average annual salinity for both sites was in the polyhaline regime, with a mean of 29.4 ‰ at Big Bay Creek and 26.3‰ at St. Pierre Creek; however, for all years, salinity ranged from 0.3-41.7 ‰ at Big Bay and from 0-41.7‰ at St. Pierre Creek. Local precipitation and evaporation conditions are most likely the major

contributors to monthly variability in salinity. Analysis of the data indicates that tidal stage strongly influences salinity. As expected, highest values of salinity occurred on the flood tide.

It appears that tidal stage also influences pH. Spectral analysis revealed a periodicity for pH and water depth with a sinusoidal period at ~ 12 hrs., representing tidal periodicity. Time series plots of pH indicated variability of ~1 standard unit (su) on a daily basis. The pH at both sites was very similar, ranging from 5.3-8.4; however, the preponderance of measurements were >7 at both sites. The pH observed at the two monitoring sites appears to be attributable to natural conditions. Marked variations in pH can also occur diurnally due to changes in primary production and respiration.

Dissolved oxygen concentrations appeared to track depth for part of the cycle, with lowest values occurring on low tides. Afternoon and evening values were not as low as early morning values, suggesting a diurnal component. Dissolved oxygen values at the two monitoring sites were generally high throughout the year with averages of 83.6% saturation and 6.6 mg/l for Big Bay Creek and 78.5% saturation and 6.3 mg/l for St. Pierre Creek, with highest values in winter and lowest in summer. Hypoxic events (<28% air saturation) were observed in every season, but summer was clearly the season with the greatest percent of time when DO was 28%. Whereas, supersaturation (>100% air saturation) occurred primarily in the winter, with values exceeding 120% at both creeks. There are a few differences among the sites such as, hypoxic conditions occur more frequently at St. Pierre Creek.

Unlike the other parameters monitored at Big Bay and St. Pierre creeks, there appears to be no distinct seasonal trend in turbidity; however, monthly variability appeared greater at the St. Pierre site. This may be due to fluctuations in the amount of detritus being washed from the extensive salt marsh and upland sites that surround St. Pierre Creek.

It appears that metal leachates from the pilings, even the new ones, in reasonably tidal flushed areas, along Big Bay Creek have negligible ecological effects, according to the 1994 study by Weis and Weis. Their findings indicated

that concentrations of the metals (Cr, Cu, and As) in sediments adjacent to pilings along Big Bay Creek were generally not significantly elevated, and there were no consistent differences in the benthic communities between the Big Bay and St. Pierre monitoring sites.

However, the highest values of PAHs encountered (299.0 ng/g) during a study by Drs. Geoff Scott and Tom Mathews from 1993-1995 were in the South Edisto watershed at Big Bay Creek; this station also had detectable levels of PCBs, concentrations as well. The concentrations in St. Pierre Creek were below the level of detection for persistent pesticides and for PCBs. At most 34 sites, contaminant levels were below the level of detection for persistent pesticides and for PCBs, suggesting that the ACE is a relatively pristine system.

6. Data collection period:

BEGAN	ENDED
Big Bay Site	
12/15/2000 - 10:30:00	01/11/2001 - 10:30:00
01/11/2001 - 11:00:00	01/29/2001 - 10:30:00
01/29/2001 - 11:00:00	02/08/2001 - 09:30:00
02/08/2001 - 10:00:00	02/23/2001 - 09:00:00
No data was recorded on 02/23/2001 at 09:30:00	
02/23/2001 - 10:00:00	03/08/2001 - 08:30:00
03/08/2001 - 09:00:00	03/26/2001 - 09:00:00
03/26/2001 - 09:30:00	04/12/2001 - 10:00:00
04/12/2001 - 10:30:00	05/01/2001 - 12:00:00
05/01/2001 - 12:30:00	05/10/2001 - 09:30:00
05/10/2001 - 10:00:00	05/24/2001 - 10:00:00
05/24/2001 - 10:30:00	06/07/2001 - 08:00:00
06/07/2001 - 08:30:00	06/25/2001 - 12:00:00
06/25/2001 - 12:30:00	07/12/2001 - 10:00:00
07/12/2001 - 10:30:00	07/26/2001 - 13:30:00
07/26/2001 - 14:00:00	08/07/2001 - 10:30:00
08/07/2001 - 11:00:00	08/27/2001 - 13:30:00
08/27/2001 - 14:00:00	09/06/2001 - 09:00:00
No data was recorded on 09/06/2001 at 09:30:00	
09/06/2001 - 10:00:00	09/13/2001 - 19:30:00
No data was recorded between 09/13/2001 at 20:00:00 thru 09/20/2001 at 11:30:00	
09/20/2001 - 12:00:00	10/01/2001 - 12:00:00
No data was recorded between 10/01/2001 at 12:30:00 thru 10/03/2001 at 09:00:00	
10/03/2001 - 09:30:00	10/19/2001 - 12:00:00
10/19/2001 - 12:30:00	11/07/2001 - 10:00:00
11/07/2001 - 10:30:00	12/03/2001 - 10:00:00

No data was recorded on 12/03/2001 at 10:30:00
12/03/2001 - 11:00:00 01/07/2002 - 15:00:00

St. Pierre Site
12/15/2000 - 11:30:00 01/11/2001 - 11:00:00
01/11/2001 - 11:30:00 01/29/2001 - 11:30:00
01/29/2001 - 12:00:00 02/08/2001 - 10:30:00
02/08/2001 - 11:00:00 02/23/2001 - 09:30:00
No data was recorded on 02/23/2001 at 10:00:00
02/23/2001 - 10:30:00 03/08/2001 - 09:00:00
03/08/2001 - 09:30:00 03/26/2001 - 09:30:00
No data was recorded on 03/26/2001 at 10:00:00
03/26/2001 - 10:30:00 04/12/2001 - 11:00:00
04/12/2001 - 11:30:00 05/01/2001 - 13:00:00
05/01/2001 - 13:30:00 05/10/2001 - 10:30:00
05/10/2001 - 11:00:00 05/24/2001 - 10:30:00
05/24/2001 - 11:00:00 06/07/2001 - 09:00:00
06/07/2001 - 09:30:00 06/25/2001 - 13:00:00
06/25/2001 - 13:30:00 07/12/2001 - 09:00:00
07/12/2001 - 09:30:00 07/26/2001 - 12:30:00
07/26/2001 - 13:00:00 08/07/2001 - 09:30:00
08/07/2001 - 10:00:00 08/27/2001 - 07:30:00
No data was recorded between 08/27/2001 at 08:00:00 thru 09/04/2001 at 13:00:00
09/04/2001 - 13:30:00 09/20/2001 - 10:30:00
09/20/2001 - 11:00:00 10/01/2001 - 13:30:00
No data was recorded between 10/01/2001 at 14:00:00 thru 10/03/2001 at 07:30:00
10/03/2001 - 08:00:00 10/19/2001 - 11:00:00
10/19/2001 - 11:30:00 11/07/2001 - 09:00:00
11/07/2001 - 09:30:00 12/03/2001 - 11:30:00
12/03/2001 - 12:00:00 01/07/2002 - 14:30:00
No data was recorded between 12/10/2001 at 22:00:00 thru 01/07/2002 at 14:30:00

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 or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Section 1 Principal investigators and contact persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on 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:

Dr. Clark Alexander of Skidaway Institute continued the investigations of the sedimentation process in the ACE Basin. Concurrent studies were conducted in the several locations in the Ashepoo and South Edisto Rivers during May 1999. Continuous flow velocity readings were measured over a 13-hour period at an anchored station while discrete measurements of various water parameters (i.e., salinity, turbidity) were taken at various locations in the same water body. Deep sediment cores were also collected at the anchor stations.

Dr. Amy Ringwood of SCDNR/Marine Resources Research Institute received CICEET funding to conduct this study in ACE Basin and North Inlet/Winyah Bay Reserves. Funds for this project were awarded in October 1998. Eight sites were selected in the ACE Basin, including the two water quality monitoring stations. Oysters (Crassostrea virginica), grass shrimp (Paleomonetes pugio), and mummichogs (Fundulus heteroclitus) were collected from these sites during the February-April time frame in 1999 and 2000.

Hepatopancreatic/liver tissues were dissected and used for three different cellular biomarker assays (lysosomal destabilization, glutathione oncentrations, and lipid peroxidation). Dr. Ringwood is currently completing analysis of the samples collected and writing the final report for submission.

Drs. James T. Morris, Madilyn Fletcher, John Jensen, Alan Lewitus, Peter A. Noble, and Dwayne Porter of University of South Carolina received CISNet funding to conduct this three-year study in the North Inlet/Winyah Bay Reserve; and, prior to the first sampling season (summer 1999), the investigators added the ACE Basin NERR to the study. The researchers will compare nutrient loading, nutrient dynamics, and productivity in the North Inlet to that of the S. Edisto River (ACE Basin NERR).

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 electro-fishing in tidal freshwater and low salinity brackish water. Although red drum are the target species, all catches are separated, measured and weighted to provide a distribution and population size for each species.

The ACE Basin NERR received initial 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. Weekly precipitation samples are collected and analyzed for atmospheric pollutants. The recipitation collector is located on Bear Island, a Wildlife Management Area inside the NERR.

II. Physical Structure Descriptors

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

YSI 6000/6600 datalogger

Variable	Range of Measurements	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo,Day,Yr)	1 mo, 1 day, 1 yr	NA
Time	0-24, 0-60, 0-60 (Hr,Min,Sec)	1 hr, 1 min, 1 s	NA
Temp	-5 to 45 (c)	0.01 C	+/- 0.15C

Sp COND	0-100(mS/cm)	0.01mS/cm	+/-0.5% Of reading + 0.001mS/Cm
Salinity	0-70 Parts per thousand (ppt)	0.01 ppt	+/- 1% of Reading or 0.1 ppt, (whichever is greater)
DO	0-200 (% air saturation)	0.1% @air sat	+/-2% @air Saturation
DO	200-500 (% air saturation	0.1% @ air sat	+/- 6% @ Saturation
DO	0-20 (mg/l)	0.01 mg/l	+/- 0.2mg/l
DO	20-50 (mg/l)	0.01 mg/l	+/- 0.6mg/l
Depth (shallow)	0-9.1 (m)	0.001m	+/- 0.018m
PH	2-14 units	0.01 units	+/- 0.2units
Turb	0-1000 NTU	0.1 NTU	+/- 5% of Reading or 2 NTU (whichever is greater)

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

Probe Identification:	Standards for Calibration:
Turbidity 6026 Probe	Advanced Polymer Systems Inc. 200 NTU
pH 116031 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
Chlorophyll 99L Probe	Rhodamine B 0.05 grams in 500 milliliters of DI water

10. Coded variable indicator and variable code definitions:
SP = St. Pierre
BB = Big Bay

11. Data anomalies:

January 1-31, 2001 Sampling Period
Big Bay
a) During the following periods of the December 15, 2000 - January 11, 2001 deployment, the pH readings were deleted. The pH probe failed during deployment.

The sensor did not read within the required range during the post-deployment
calibration check on pH 10.
01/01/01 00:00:00 THRU 01/11/01 10:30:00
b) During the following periods, dissolved oxygen (DO) readings are suspect
because readings are above 120% air saturation.
01/01/01 15:00:00-16:30:00
01/02/01 15:30:00-17:30:00
01/03/01 16:00:00-18:30:00
01/04/01 17:00:00-19:00:00
01/05/01 18:00:00-20:00:00
01/15/01 16:00:00
01/16/01 16:00:00
01/23/01 14:00:00-14:30:00
01/23/01 15:30:00
01/24/01 14:00:00-16:00:00
01/25/01 14:00:00-14:30:00; 15:30:00; 16:30:00
01/26/01 14:30:00-17:00:00
01/27/01 12:30:00-17:00:00
01/28/01 13:00:00-17:00:00
c) During the following periods, the depth readings are negative. The depth
data were not deleted because the salinity and dissolved oxygen readings
indicate the data logger was submerged during these periods.
01/04/01 21:30:00
01/05/01 21:00:00-23:30:00
01/06/01 10:00:00-11:30:00; 22:00:00-23:30:00
01/07/01 00:00:00; 11:30:00-12:00:00; 22:30:00-23:30:00
01/08/01 00:00:00-01:00:00; 12:30:00-14:00:00; 23:30:00
01/09/01 00:00:00-02:30:00; 13:30:00-15:00:00
01/10/01 01:30:00-03:00:00
01/11/01 04:00:00
01/30/01 17:00:00-18:00:00
01/31/01 06:00:00-06:30:00; 17:30:00-19:00:00
d) During the following periods of the January 29 - February 8 deployment, the
dissolved oxygen (DO) reading were deleted because the membrane was punctured
during the deployment. The probe failed the post-calibration DO membrane integrity test.
01/29/01 11:00:00 THRU 01/31/01 23:30:00
e) No turbidity data for the following times due to the chlorophyll probe being
deployed.
01/01/01 00:00:00 - 01/11/01 10:30:00
01/29/01 11:00:00 - 01/31/01 23:30:00

St. Pierre
a) During the following periods, dissolved oxygen (DO) readings are suspect
because readings are above 120% air saturation.
01/01/01 14:30:00-20:00:00
01/02/01 16:30:00-18:00:00; 19:00:00; 20:00:00-20:30:00

01/03/01 17:00:00-20:30:00; 21:30:00-22:00:00
01/04/01 11:00:00-11:30:00; 16:00:00-21:30:00; 22:00:00-23:30:00
01/05/01 12:30:00-13:00:00; 14:30:00; 18:00:00-21:30:00
01/06/01 00:00:00-01:00:00; 13:00:00-13:30:00; 14:30:00; 19:00:00-20:30:00
01/07/01 01:00:00; 14:30:00-15:30:00
01/08/01 01:30:00-02:00:00; 15:30:00
01/10/01 14:00:00-15:30:00
01/13/01 15:00:00-16:00:00
01/14/01 15:00:00-15:30:00
01/15/01 15:30:00-16:00:00
01/16/01 15:30:00-17:00:00
01/18/01 13:30:00-15:00:00; 16:30:00-20:30:00
01/19/01 01:30:00-03:30:00; 13:00:00-20:00:00
01/20/01 02:00:00-05:00:00; 06:00:00; 14:30:00-15:00:00; 16:00:00-17:00:00
01/21/01 14:30:00-18:00:00; 20:30:00; 22:00:00
01/22/01 02:30:00; 04:00:00-07:00:00; 15:30:00; 16:30:00-19:00:00
01/23/01 05:30:00-06:30:00; 15:00:00-20:00:00; 21:00:00
01/24/01 05:00:00-06:00:00; 10:00:00-14:30:00; 15:30:00; 16:30:00-20:00:00; 21:00:00-21:30:00
01/25/01 06:00:00-08:30:00; 09:30:00-15:00:00; 16:00:00-21:00:00; 22:00:00
01/26/01 07:00:00-09:30:00; 10:30:00-15:30:00; 16:30:00-22:30:00
01/27/01 07:30:00-09:30:00; 10:30:00-22:00:00; 23:30:00
01/28/01 07:30:00-10:30:00; 11:30:00-23:30:00
01/29/01 00:00:00-00:30:00; 08:00:00-11:00:00; 13:30:00-16:00:00; 18:00:00
01/30/01 15:00:00; 16:00:00
01/31/01 15:00:00-16:30:00

b) During the following periods, the depth readings are suspect. The depth data was not deleted.

01/11/01 11:30:00 THRU 01/29/01 11:30:00

c) From 01/11/01 12:00:00 - 01/12/01 03:30:00, the pH measurements were high. Conditions appear to be normal with no fluctuations in temperature. The pH values 30-minutes before and after the high reading are normal.

d) During the following periods, the turbidity data were deleted because NTU values were less the zero. The negative values may have been caused by debris on the lens, a wiper malfunction, or an animal interference.

01/15/01 06:30:00; 07:30:00; 19:00:00-20:00:00
01/16/01 07:00:00; 08:30:00; 10:00:00; 13:30:00; 17:00:00-23:30:00
01/17/01 02:30:00-03:00:00; 08:30:00-10:30:00; 12:30:00; 18:30:00-23:30:00
01/18/01 00:00:00-00:30:00; 04:00:00; 10:00:00-11:00:00; 12:00:00; 15:30:00; 18:30:00-23:30:00
01/19/01 00:00:00-01:00:00; 11:00:00-11:30:00; 15:30:00-16:00:00; 17:00:00; 22:00:00; 23:00:00 - 23:30:00
01/20/01 00:00:00; 17:30:00

01/21/01 15:00:00; 17:00:00-17:30:00; 18:30:00; 20:30:00; 22:30:00-23:00:00
01/22/01 00:00:00-02:00:00; 03:00:00; 04:00:00; 13:00:00-13:30:00; 16:00:00; 18:30:00-19:00:00;
01/23/01 15:00:00-16:00:00; 17:00:00; 23:00:00-23:30:00
01/24/01 00:00:00-04:30:00; 13:00:00-13:30:00; 14:30:00-15:00:00;
01/25/01 00:00:00-01:30:00; 02:30:00-04:00:00; 05:30:00; 09:00:00; 16:00:00; 20:00:00-20:30:00
01/26/01 00:00:00-06:00:00; 12:30:00-13:30:00; 14:30:00; 17:30:00-18:00:00
01/27/01 01:00:00-06:30:00; 13:00:00; 14:00:00; 15:00:00 - 16:00:00; 17:00:00-18:30:00; 20:30:00-21:30:00; 23:30:00
01/28/01 00:00:00-02:00:00; 03:00:00-07:30:00; 09:00:00; 10:30:00; 14:30:00-17:30:00; 19:00:00-19:30:00; 21:00:00-22:30:00
01/29/01 01:30:00-06:30:00; 08:00:00-08:30:00; 09:30:00-10:00:00; 11:00:00

e) At 07:30:00 on January 26, the turbidity spiked (333.2 NTU). The high spike was probably caused by an animal, a clump of plant matter, or sediment that passed by the sensor optics during the sampling interval.

f) During the following periods of the January 29-Febuary 8 deployment, the pH reading were deleted. The pH probe failed during deployment. The sensor did not read within the required range during the post-deployment calibration check on pH 10.

01/29/01 12:00:00 THRU 01/31/01 23:30:00

g) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

01/29/01 16:00:00; 18:00:00
01/30/01 05:00:00-06:00:00; 16:00:00-16:30:00; 19:00:00
01/31/01 05:00:00; 07:30:00; 16:30:00; 20:00:00

h) During the following periods, data were deleted because the sonde went dry.

01/29/01 16:30:00-17:30:00
01/30/01 17:00:00-18:30:00
01/31/01 05:30:00-07:00:00; 17:00:00-19:30:00

i) No turbidity data for the following times due to the chlorophyll probe being deployed.

01/01/01 00:00:00 - 01/11/01 11:00:00
01/29/01 12:00:00 - 01/31/01 23:30:00

February 1-29, 2001 Sampling Period
Big Bay

a) During the following periods of the January 29 - February 8 deployment,

the dissolved oxygen (DO) reading were deleted because the membrane was punctured during the deployment. The probe failed the post-calibration DO
membrane integrity test.
02/01/01 00:00:00 THRU 02/08/01 09:30:00
b) During the following periods, the depth readings are negative. The depth
data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.
02/06/01 00:00:00-01:00:00
c) During the following periods, dissolved oxygen (DO) readings are suspect because readings are above 120% air saturation.
02/14/01 16:00:00-17:30:00
02/15/01 16:00:00-18:30:00
02/16/01 17:00:00-18:30:00
02/21/01 14:30:00
02/23/01 14:30:00
02/24/01 14:30:00-15:00:00; 16:00:00-16:30:00
02/26/01 15:00:00
02/27/01 14:00:00-14:30:00; 15:30:00-16:00:00
d) At 15:00:00 on February 19, the pH measurement was high (9.1). Conditions
appear to be normal with no fluctuations in temperature. The pH values 30-
minutes before and after the high reading are normal.
e) At 17:30:00 on February 18, the turbidity spiked (1857 NTU). The high
spike was probably caused by an animal, a clump of plant matter, or sediment
that passed by the sensor optics during the sampling interval.
f) No turbidity data for the following times due to the chlorophyll probe being
deployed.
02/01/01 00:00:00 - 02/08/01 09:30:00
02/23/01 10:00:00 - 02/28/01 23:30:00
g) During the following periods, the pH readings were deleted. The sensor did
not read within the required range during the post-deployment calibration check
on pH 7 and pH 10.
02/08/01 10:00:00 THRU 02/23/01 09:00:00

St. Pierre
a) During the following periods, data were deleted because the sonde went dry.
02/01/01 06:30:00-08:00:00; 18:00:00-20:00:00
02/02/01 07:30:00-08:30:00; 19:30:00-21:30:00
02/03/01 08:30:00-09:00:00; 21:00:00-22:00:00
02/04/01 10:30:00; 22:30:00-23:00:00
02/05/01 11:00:00-12:30:00; 22:30:00-23:30:00
02/06/01 00:00:00-01:30:00; 11:30:00-13:30:00; 23:30:00
02/07/01 00:00:00-02:00:00; 12:30:00-14:30:00
02/08/01 00:00:00-03:00:00; 13:00:00-15:30:00
02/09/01 01:00:00-04:00:00; 14:00:00-16:30:00

02/10/01 02:00:00-05:00:00; 14:30:00-17:30:00
02/11/01 03:00:00-05:30:00; 16:30:00-17:30:00
02/12/01 17:00:00-18:30:00
02/13/01 05:30:00-07:00:00; 17:30:00-19:00:00
02/17/01 10:00:00-10:30:00
02/21/01 00:00:00-01:00:00
02/22/01 00:30:00-01:30:00
02/25/01 15:30:00-16:00:00
02/26/01 03:30:00-04:00:00; 15:30:00-16:30:00

b) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

02/01/01 06:00:00; 08:30:00; 20:30:00
02/02/01 07:00:00; 09:00:00; 19:00:00
02/03/01 09:30:00; 22:30:00
02/04/01 10:00:00; 22:00:00; 23:30:00
02/05/01 10:30:00; 22:00:00
02/06/01 14:00:00; 23:00:00
02/07/01 15:00:00
02/08/01 03:30:00

c) During the following periods of the January 29-Febuary 8 deployment, the pH reading were deleted. The pH probe malfunctioned during deployment.

02/01/01 00:00:00 THRU 02/08/01 10:30:00

d) No turbidity data for the following times due to the chlorophyll probe being deployed.

02/01/01 00:00:00 - 02/08/01 10:30:00
02/23/01 10:30:00 - 02/28/01 23:30:00

March 1-31, 2001 Sampling Period
Big Bay

a) During the following periods, dissolved oxygen (DO) readings are suspect because readings are above 120% air saturation.

03/01/01 15:00:00-17:00:00
03/24/01 13:30:00-16:00:00
03/26/01 14:00:00-15:30:00

b) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

03/05/01 09:30:00-10:30:00; 21:30:00-23:30:00
03/06/01 11:00:00-12:00:00
03/30/01 17:00:00-18:00:00
03/31/01 18:30:00

c) During the following periods, the depth readings are suspect. The depth data was not deleted.

03/08/01 09:00:00 THRU 03/26/01 09:00:00

d) During the following periods, the pH readings are suspect. The sensor read within the required range during the post-deployment calibration check on

pH 7 and pH 10; however the values were on the high end of the range and the pH
readings were sporadic during the deployment.
03/08/01 09:00:00 THRU 03/26/02 09:00:00
e) No turbidity data for the following times due to the chlorophyll probe being
deployed.
03/01/01 00:00:00 - 03/08/01 08:30:00
03/26/01 09:30:00 - 03/31/01 23:30:00

St. Pierre
a) During the following periods, the depth readings are negative. The depth
data were not deleted because the salinity and dissolved oxygen readings
indicate the data logger was submerged during these periods.
03/02/01 18:30:00-19:30:00
03/03/01 20:00:00-20:30:00
03/04/01 20:30:00-22:00:00
03/05/01 08:30:00
03/06/01 12:30:00; 22:00:00
03/15/01 17:30:00
03/21/01 12:00:00-12:30:00
03/30/01 17:00:00; 18:00:00
03/31/01 18:30:00-19:00:00
b) During the following periods, data were deleted because the sonde went dry.
03/05/01 09:00:00-11:00:00; 21:00:00-23:30:00
03/06/01 00:00:00; 10:00:00-12:00:00; 22:30:00-23:30:00
03/07/01 00:00:00-00:30:00
03/08/01 00:30:00; 12:30:00-13:30:00
03/09/01 00:30:00-02:30:00; 12:30:00-15:00:00
03/10/01 01:00:00-03:30:00; 14:30:00-15:30:00
03/11/01 02:30:00-04:00:00; 14:30:00-16:30:00
03/12/01 03:00:00-05:00:00; 15:00:00-17:30:00
03/13/01 04:00:00-06:00:00; 15:30:00-18:00:00
03/14/01 04:00:00-07:00:00; 16:30:00-19:00:00
03/15/01 18:00:00-19:00:00
03/17/01 07:30:00-08:30:00; 20:00:00-20:30:00
03/21/01 23:00:00-23:30:00
03/22/01 00:00:00-01:00:00; 12:00:00-13:30:00
03/23/01 00:00:00-01:30:00
03/24/01 00:30:00-02:00:00; 13:00:00-14:30:00
03/25/01 01:00:00-03:00:00; 13:30:00-15:00:00
03/26/01 02:30:00-03:00:00; 14:30:00-15:00:00
03/30/01 17:30:00
c) During the following periods, the salinity readings are suspect because
values were less than 18 ppt. These readings are not within normal
polyhaline/euhaline salinity range (18 and 40 ppt) for this site. The low
readings were probably due to extremely low tides or heavy rainfall events. Data
were retained.
03/16/01 23:00:00

03/22/01 03:00:00-03:30:00
03/23/01 03:00:00-03:30:00
03/24/01 04:00:00 16:00:00-16:30:00
03/25/01 04:00:00-05:00:00; 16:30:00-17:00:00
03/26/01 17:00:00-18:00:00
03/27/01 06:00:00; 17:30:00-18:30:00
03/29/01 20:00:00
03/30/01 19:30:00-20:30:00
03/31/01 20:30:00-21:30:00
d) No turbidity data for the following times due to the chlorophyll probe being
deployed.
03/01/01 00:00:00 - 03/08/01 09:00:00
03/26/01 10:30:00 - 03/31/01 23:30:00

April 1-30, 2001 Sampling Period
Big Bay
a) During the following periods, the depth readings are negative. The depth
data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.
04/01/01 07:30:00; 18:30:00-20:30:00
b) During the following periods, the dissolved oxygen (DO) readings are suspect
because readings are less than 28% air saturation.
04/12/01 07:00:00-07:30:00
04/15/01 09:00:00
c) During the following periods, data were deleted because the sonde went dry.
04/12/01 16:30:00-17:30:00
04/13/01 05:30:00-06:30:00; 17:00:00-18:30:00
04/14/01 06:30:00-07:00:00
04/19/01 10:30:00-11:30:00; 23:30:00
04/20/01 11:00:00-12:30:00; 23:30:00
04/21/01 00:00:00-00:30:00; 11:00:00-13:30:00; 23:30:00
04/22/01 00:00:00-02:00:00; 11:30:00-14:30:00
04/23/01 00:00:00-03:00:00; 12:00:00-15:00:00
04/24/01 01:00:00-03:30:00; 13:00:00-16:00:00
04/25/01 01:30:00-04:30:00; 13:30:00-16:00:00
04/26/01 03:30:00-04:30:00; 14:30:00-16:30:00
04/27/01 04:00:00-05:00:00; 15:30:00-17:30:00
04/28/01 05:00:00-05:30:00; 16:30:00-18:30:00
04/29/01 05:30:00-06:30:00
04/30/01 19:00:00-20:00:00
d) No turbidity data for the following times due to the chlorophyll probe being
deployed.
04/01/01 00:00:00 - 04/12/01 10:00:00

St. Pierre
a) During the following periods, the depth readings are negative. The depth
data were not deleted because the salinity and dissolved oxygen readings

indicate the data logger was submerged during these periods.
04/01/01 07:30:00; 18:00:00
b) During the following periods, the salinity readings are suspect because
values were less than 18 ppt. These readings are not within normal polyhaline/euhaline salinity range (18 and 40 ppt) for this site. The low
readings were probably due to extremely low tides or heavy rainfall events.
04/01/01 10:30:00; 21:30:00-23:00:00
04/02/01 11:30:00
04/04/01 00:30:00; 13:30:00
c) During the following periods, data were deleted because the sonde went dry.
04/01/01 18:30:00-20:30:00
04/03/01 21:30:00-22:30:00
04/04/01 10:30:00-11:00:00
04/06/01 00:30:00; 12:30:00-13:30:00
04/07/01 00:03:00-02:00:00; 13:00:00-14:30:00
04/08/01 01:30:00-03:00:00; 13:30:00-15:00:00
04/09/01 02:30:00-03:30:00; 14:30:00-15:30:00
04/10/01 04:00:00
04/21/01 12:30:00-13:00:00
04/22/01 00:30:00-01:00:00; 12:30:00-14:00:00
04/23/01 01:00:00-02:00:00; 13:00:00-14:30:00
04/24/01 02:00:00-03:00:00; 13:30:00-15:00:00
04/25/01 02:30:00-03:30:00; 14:30:00-15:30:00
d) At 12:00:00 on April 22, the turbidity spiked (1516 NTU). The high spike was
probably caused by an animal, a clump of plant matter, or sediment that passed
by the sensor optics during the sampling interval.
e) No turbidity data for the following times due to the chlorophyll probe being
deployed.
04/01/01 00:00:00 - 04/12/01 11:00:00

May 1-31, 2001 Sampling Period
Big Bay
a) During the following periods, data were deleted because the sonde went dry.
05/01/01 08:00:00-08:30:00; 20:00:00-21:30:00
05/02/01 08:30:00-10:30:00; 21:00:00-23:00:00
05/03/01 09:30:00-12:00:00; 22:00:00-23:30:00
05/04/01 00:00:00-00:30:00; 10:00:00-13:00:00; 23:00:00-23:30:00
05/05/01 00:00:00-01:30:00; 11:00:00-13:30:00
05/06/01 00:30:00-02:30:00; 12:00:00-14:30:00
05/08/01 14:00:00-15:30:00
05/09/01 04:00:00; 14:30:00-16:00:00
05/10/01 04:00:00-05:00:00; 15:30:00
05/20/01 11:30:00-12:00:00
05/21/01 12:00:00-13:00:00
05/22/01 12:30:00-14:00:00
05/23/01 02:30:00; 13:30:00-14:30:00

05/24/01 14:00:00-15:30:00
05/25/01 04:00:00-04:30:00; 14:30:00-16:30:00
05/26/01 05:00:00; 15:30:00-17:30:00
05/27/01 05:00:00-06:00:00; 17:00:00-18:00:00
05/28/01 06:00:00-06:30:00; 18:00:00-19:30:00
05/29/01 06:30:00-08:00:00; 19:00:00-20:30:00
05/30/01 08:00:00-08:30:00; 20:30:00-21:00:00
05/31/01 08:30:00

b) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings
indicate the data logger was submerged during these periods.

05/05/01 14:00:00
05/10/01 15:00:00; 16:00:00-16:30:00
05/11/01 04:30:00-05:00:00
05/12/01 05:30:00
05/19/01 10:30:00-11:30:00
05/20/01 11:00:00; 12:30:00
05/21/01 13:30:00
05/22/01 01:00:00-02:00:00; 12:00:00; 14:30:00
05/23/01 01:30:00-02:00:00; 03:00:00; 13:00:00; 15:00:00
05/24/01 02:30:00-03:30:00

c) During the following periods, the dissolved oxygen (DO) readings are
suspect because readings are less than 28% air saturation.

05/18/01 23:30:00
05/19/01 00:00:00-00:30:00
05/20/01 00:30:00-01:30:00
05/21/01 01:30:00-02:00:00
05/22/01 03:00:00
05/24/01 03:30:00; 04:30:00
05/30/01 22:00:00

d) No turbidity data for the following times due to the chlorophyll probe being
deployed.

05/01/01 12:30:00 - 05/10/01 09:30:00
05/24/01 10:30:00 - 05/31/01 23:30:00

St. Pierre

a) During the following periods, the depth readings are suspect. The depth data were not deleted.

05/01/01 13:30:00 THRU 05/31/01 23:30:00

b) During the following periods, the dissolved oxygen (DO) readings are
suspect because readings are less than 28% air saturation.

05/02/01 10:00:00-12:00:00; 22:30:00-23:30:00
05/03/01 00:00:00; 11:00:00-12:30:00; 23:30:00
05/04/01 00:00:00-01:00:00; 11:30:00-13:30:00
05/05/01 00:00:00-02:00:00; 13:00:00; 14:00:00
05/06/01 01:30:00-03:00:00; 13:30:00-14:30:00; 20:30:00
05/07/01 02:30:00; 03:30:00-04:00:00; 09:00:00; 14:00:00-15:00:00
05/08/01 03:30:00-05:00:00; 15:30:00; 22:00:00
05/09/01 03:00:00-03:30:00; 04:30:00-05:30:00; 16:00:00-16:30:00
05/10/01 05:30:00-06:30:00

05/13/01 06:30:00
05/16/01 09:00:00
05/17/01 10:00:00
05/18/01 10:30:00-11:00:00; 12:00:00-12:30:00; 23:30:00
05/19/01 00:00:00-00:30:00; 11:30:00-13:00:00
05/20/01 00:00:00-01:30:00; 12:30:00-13:00:00
05/21/01 00:00:00-02:30:00; 13:00:00
05/22/01 01:00:00-03:30:00
05/23/01 03:00:00-03:30:00
05/24/01 02:30:00-05:00:00
05/26/01 06:00:00
05/27/01 06:00:00; 07:00:00
05/30/01 09:30:00-10:00:00
05/31/01 09:30:00; 10:30:00-11:00:00

c) At 04:00:00 on May 9, the dissolved oxygen spiked negative and the reading was deleted. An animal, a clump of plant matter, or sediment that blocked the sensor membrane during the sampling interval, probably caused the negative spike.

d) During the following periods, the turbidity data were deleted because NTU values were less than zero. The negative values may have been caused by debris on the lens, a wiper malfunction, or an animal interference.

05/16/01 20:00:00; 22:00:00
05/18/01 23:30:00
05/20/01 03:00:00; 06:00:00; 22:30:00
05/21/01 13:30:00; 18:30:00; 23:30:00
05/22/01 02:30:00; 03:30:00; 08:00:00; 11:30:00
05/23/01 09:30:00; 10:30:00

e) During the following periods, data were deleted because the sonde went dry.

05/24/01 13:30:00-16:00:00

f) No turbidity data for the following times due to the chlorophyll probe being deployed.

05/01/01 13:30:00 - 05/10/01 10:30:00
05/24/01 11:00:00 - 05/31/01 23:30:00

g) During the following periods, specific conductivity and salinity readings are suspect. Although the probe passed post-deployment calibrations and the cell constant was within range, salinity values for this deployment were low. The specific conductivity standard used in calibrating the probe may have been inaccurate.

05/10/01 11:00:00 THRU 05/24/01 10:30:00

June 1-30, 2001 Sampling Period
Big Bay

a) During the following periods, the dissolved oxygen (DO) readings are
suspect because readings are less than 28% air saturation.
06/03/01 01:30:00
06/05/01 03:00:00-03:30:00
06/06/01 04:00:00
06/07/01 05:00:00
06/16/01 23:30:00
06/18/01 01:00:00
06/19/01 01:30:00-02:00:00
06/20/01 02:30:00-03:00:00
06/22/01 04:30:00
06/24/01 06:00:00
06/25/01 07:00:00
b) During the following periods, the depth readings are negative. The depth
data were not deleted because the salinity and dissolved oxygen readings
indicate the data logger was submerged during these periods.
06/07/01 14:00:00-15:00:00
06/08/01 03:30:00
06/09/01 04:00:00-04:30:00
06/21/01 14:00:00-14:30:00
06/22/01 13:30:00-15:30:00
06/23/01 14:30:00-16:30:00
06/24/01 15:30:00-17:00:00
06/29/01 21:00:00
06/30/01 23:30:00
c) During the following periods, data were deleted because the sonde went
dry.
06/25/01 16:30:00-18:00:00
06/26/01 06:00:00-06:30:00; 17:30:00-19:00:00
06/27/01 06:00:00-08:00:00; 19:00:00-20:00:00
06/28/01 07:00:00-08:30:00; 20:00:00-21:00:00
06/29/01 08:00:00-09:30:00; 21:30:00-22:00:00
06/30/01 09:00:00-10:30:00; 22:00:00-23:00:00
d) No turbidity data for the following times due to the chlorophyll probe being
deployed.
06/01/01 00:00:00 - 06/07/01 08:00:00
06/25/01 12:30:00 - 06/30/01 23:30:00

St. Pierre
a) During the following periods, the depth readings are suspect. The depth data was not deleted.
06/01/01 00:00:00 THRU 06/30/01 23:30:00
b) During the following periods, the dissolved oxygen (DO) readings are
suspect because readings are less than 28% air saturation.
06/01/01 11:30:00
06/03/01 00:30:00; 01:30:00
06/05/01 02:00:00-02:30:00
06/06/01 02:30:00-04:00:00
06/07/01 02:00:00; 03:00:00-05:00:00

06/09/01 04:30:00
06/10/01 05:00:00-05:30:00; 15:30:00-18:00:00
06/11/01 05:00:00-05:30:00
06/20/01 01:00:00-04:00:00; 14:00:00; 15:00:00-15:30:00
06/21/01 01:30:00-03:30:00; 13:30:00-14:30:00
06/22/01 02:30:00-05:00:00; 14:00:00-15:00:00
06/23/01 03:00:00-05:00:00; 14:30:00-16:30:00
06/24/01 04:30:00-06:00:00; 15:30:00-17:00:00
06/25/01 05:00:00-07:30:00
06/26/01 06:30:00-07:00:00; 08:00:00
06/27/01 06:30:00-09:30:00
06/28/01 06:30:00-08:30:00
06/29/01 08:00:00-09:30:00
06/30/01 09:30:00-10:00:00; 11:30:00

c) During the following periods, the turbidity spiked (>1000 NTU). The high spike was probably caused by an animal, a clump of plant matter, or sediment that passed by the sensor optics during the sampling interval.
06/07/01 17:00:00
06/10/01 14:30:00-16:30:00; 18:30:00-19:00:00; 20:00:00
06/19/01 20:30:00
06/22/01 19:00:00

d) No turbidity data for the following times due to the chlorophyll probe being deployed.
06/01/01 00:00:00 - 06/07/01 09:00:00
06/25/01 13:30:00 - 06/30/01 23:30:00

July 1-31, 2001 Sampling Period
Big Bay

a) During the following periods, data were deleted because the sonde went dry.
07/01/01 09:30:00-11:30:00; 23:00:00-23:30:00
07/02/01 00:00:00; 10:30:00-12:30:00; 23:30:00
07/03/01 00:00:00-01:00:00; 11:30:00-13:00:00
07/04/01 01:00:00-02:00:00; 12:00:00-14:00:00
07/05/01 01:30:00-03:00:00; 12:30:00-15:00:00
07/06/01 02:00:00-03:30:00; 13:30:00-15:30:00
07/07/01 02:30:00-04:00:00
07/08/01 15:30:00
07/09/01 04:00:00-05:00:00
07/26/01 18:30:00-19:30:00
07/27/01 06:30:00-08:30:00; 19:30:00-20:30:00
07/28/01 07:30:00-09:00:00
07/30/01 09:00:00-11:00:00

b) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.
07/01/01 12:00:00; 22:30:00
07/02/01 00:30:00; 10:00:00; 13:00:00
07/05/01 01:00:00

07/06/01 01:30:00; 04:00:00; 13:00:00; 16:00:00
07/07/01 04:30:00; 14:30:00-15:30:00
07/08/01 03:30:00-04:30:00; 15:00:00; 16:00:00-16:30:00
07/09/01 03:30:00; 05:30:00; 16:00:00-17:00:00
07/10/01 04:30:00-06:00:00
07/11/01 05:00:00-06:30:00
07/12/01 06:00:00-07:30:00

c) During the following periods, the dissolved oxygen (DO) readings are suspect because readings are less than 28% air saturation.

07/05/01 03:30:00
07/08/01 04:00:00; 05:00:00-06:00:00
07/09/01 03:30:00; 05:30:00
07/10/01 04:30:00-06:30:00
07/11/01 04:30:00-07:00:00
07/12/01 04:30:00-07:30:00
07/13/01 08:00:00
07/15/01 11:00:00; 13:00:00
07/16/01 13:00:00
07/18/01 01:00:00-01:30:00; 02:30:00; 13:00:00; 14:00:00-15:00:00
07/19/01 02:00:00-03:00:00; 13:30:00; 15:00:00
07/20/01 02:30:00-04:30:00; 15:00:00
07/22/01 05:30:00
07/25/01 07:00:00-09:00:00
07/26/01 07:30:00-09:00:00
07/30/01 08:30:00

d) During the following periods, the depth readings are suspect. The depth data was not deleted.

07/12/01 10:30:00 THRU 07/26/01 13:30:00

e) During the following periods, data for turbidity spiked (>1000 NTU). The high spikes were probably caused by an animal, a clump of plant matter, or sediment that passed by the sensor optics during the sampling interval.

07/13/01 16:00:00
07/16/01 15:00:00-17:30:00
07/17/01 01:30:00; 16:00:00-18:30:00; 19:30:00-20:00:00
07/18/01 16:30:00-21:30:00
07/19/01 02:30:00; 04:00:00-09:30:00; 19:00:00
07/20/01 01:00:00-22:30:00
07/21/01 18:00:00; 19:00:00-20:00:00
07/22/01 20:00:00-20:30:00
07/23/01 12:30:00-13:00:00
07/24/01 03:00:00
07/25/01 01:30:00-02:00:00; 22:00:00-23:00:00

f) No turbidity data for the following times due to the chlorophyll probe being deployed.

07/01/01 00:00:00 - 07/12/01 10:00:00
07/26/01 14:00:00 - 07/31/01 23:30:00

St. Pierre

a) During the following periods, the depth readings are suspect. The depth data
was not deleted.
07/01/01 00:00:00 THRU 07/12/01 09:00:00
07/26/01 13:00:00 THRU 07/31/01 23:30:00
b) During the following periods, the dissolved oxygen (DO) readings are suspect
because readings are less than 28% air saturation.
07/01/01 10:00:00-13:00:00
07/02/01 00:00:00-02:00:00; 12:00:00
07/03/01 00:00:00-02:30:00; 12:00:00; 14:00:00
07/04/01 00:30:00-04:00:00; 11:00:00-13:00:00
07/13/01 06:30:00-07:00:00
07/30/01 10:30:00
c) During the following periods of the June 25 - July 12 deployment, the dissolved oxygen (DO) readings were deleted because extensive fouling of the
probe occurred .
07/04/01 13:30:00 THRU 07/12/01 09:00:00
d) During the following periods, data were deleted because the sonde went
dry.
07/16/01 08:00:00-09:00:00
07/17/01 09:00:00-10:00:00
07/18/01 09:30:00-11:30:00; 23:00:00-23:30:00
07/19/01 00:00:00; 10:00:00-12:30:00
07/20/01 00:30:00-01:00:00; 11:00:00-13:00:00
07/23/01 15:30:00-16:00:00
07/24/01 04:30:00; 15:30:00-17:00:00
07/25/01 04:30:00-05:30:00; 16:30:00-18:00:00
07/26/01 05:00:00-06:00:00
e) No turbidity data for the following times due to the chlorophyll probe being
deployed.
07/01/01 00:00:00 - 07/12/01 09:00:00
07/26/01 13:00:00 - 07/31/01 23:30:00

August 1-31, 2001 Sampling Period
Big Bay
a) During the following periods, the salinity readings are suspect because
values were less than 18 ppt. These readings are not within normal polyhaline/euhaline salinity range (18 and 40 ppt) for this site. The low
readings were probably due to extremely low tides or heavy rainfall events.
08/14/01 22:30:00
08/20/01 16:00:00-17:00:00
b) During the following periods, the dissolved oxygen (DO) readings are suspect
because readings are less than 28% air saturation.
08/01/01 15:00:00
08/03/01 00:00:00-03:30:00; 10:30:00-11:30:00; 23:30:00
08/04/01 00:00:00-01:30:00; 02:30:00-04:00:00

08/05/01 01:00:00-04:30:00
08/06/01 01:30:00-05:00:00
08/07/01 01:30:00-03:00:00; 04:30:00-05:30:00
08/08/01 05:30:00-06:00:00
08/09/01 06:00:00-06:30:00
08/10/01 05:00:00-07:30:00
08/11/01 05:00:00-08:30:00
08/12/01 06:00:00-07:00:00; 08:00:00-09:00:00
08/13/01 08:30:00-09:00:00; 22:30:00-23:00:00
08/14/01 08:30:00-10:00:00
08/23/01 07:00:00-07:30:00
08/24/01 07:30:00-08:00:00
08/25/01 05:00:00-08:30:00
08/27/01 08:30:00-10:00:00

c) At 15:30:00 on August 1, the dissolved oxygen spiked negative and the reading was deleted. An animal, a clump of plant matter, or sediment that blocked the sensor membrane during the sampling interval, probably caused the negative spike.

d) During the following periods, data were deleted because the sonde went dry.

08/03/01 13:00:00-13:30:00
08/04/01 02:00:00-02:30:00; 13:30:00-14:00:00
08/05/01 02:30:00-03:00:00; 14:30:00
08/06/01 03:30:00; 15:00:00
08/07/01 03:30:00-04:00:00

e) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

08/04/01 01:30:00; 14:30:00
08/05/01 02:00:00

f) During the following periods, the turbidity data were deleted because NTU values were less the zero. The negative values may have been caused by debris on the lens, a wiper malfunction, or an animal interference

08/07/01 11:30:00-12:00:00; 14:30:00-17:00:00; 18:30:00; 21:00:00; 22:30:00-23:30:00
08/08/01 04:00:00-06:30:00; 10:00:00-11:30:00; 12:30:00; 15:30:00-16:00:00; 17:30:00-18:30:00; 20:00:00; 21:00:00-23:30:00
08/09/01 00:00:00; 03:00:00; 04:00:00-07:00:00; 08:30:00-09:30:00; 10:30:00-13:00:00; 14:00:00; 18:00:00-18:30:00; 21:30:00-23:30:00
08/10/01 00:00:00-02:00:00; 03:00:00; 05:00:00-07:30:00; 12:00:00-13:00:00; 14:00:00; 19:30:00; 23:00:00-23:30:00
08/11/01 00:00:00-00:30:00; 02:30:00; 06:30:00; 07:30:00-09:00:00; 12:00:00; 13:30:00

g) No turbidity data for the following times due to the chlorophyll probe being deployed.

08/01/01 00:00:00 - 08/07/01 10:30:00

St. Pierre
a) During the following periods, the depth readings are suspect. The depth data
was not deleted.
08/01/01 00:00:00 THRU 08/07/01 09:30:00
b) During the following periods, the dissolved oxygen (DO) readings are suspect
because readings are less than 28% air saturation.
08/06/01 04:00:00
08/07/01 04:00:00-05:00:00; 06:00:00
08/14/01 08:30:00-09:00:00
c) During the following periods, dissolved oxygen (DO) readings are suspect because readings are above 120% air saturation.
08/21/01 21:00:00-23:00:00
08/22/01 10:30:00-12:30:00; 23:00:00
08/23/01 12:30:00; 23:30:00
08/24/01 00:00:00-01:00:00; 11:30:00-13:30:00
08/25/01 13:00:00-15:30:00
08/26/01 13:30:00-16:00:00
d) No turbidity data for the following times due to the chlorophyll probe being
deployed.
08/01/01 00:00:00 - 08/07/01 09:30:00

September 1-30, 2001 Sampling Period
Big Bay
a) During the following periods, the dissolved oxygen (DO) readings are suspect
because readings are less than 28% air saturation.
09/05/01 04:00:00
09/09/01 07:00:00
09/10/01 07:30:00-08:30:00
09/11/01 06:30:00-07:00:00; 08:30:00-09:30:00
09/12/01 10:00:00
b) During the following period, no data are available because the batteries
stopped working during deployment. A crack in the battery compartment seal
allowed water to leak into battery chamber, thus shorting out the batteries.
Unit was sent to YSI for repairs.
09/13/01 20:00:00 THRU 09/20/01 11:30:00

St. Pierre
a) During the following periods, the dissolved oxygen (DO) readings are suspect
because readings are less than 28% air saturation.
09/22/01 06:00:00
09/23/01 07:00:00
09/24/01 07:30:00-08:00:00
09/26/01 09:00:00-10:00:00
09/27/01 10:30:00-11:30:00; 23:30:00
09/28/01 00:00:00; 01:00:00; 11:30:00
09/29/01 00:30:00; 01:30:00

b) At 18:00:00 on September 25, the turbidity spiked (1756 NTU). The high spike
was probably caused by an animal, a clump of plant matter, or sediment that
passed by the sensor optics during the sampling interval.

October 1-31, 2001 Sampling Period
Big Bay
a) During the following periods, specific conductivity and salinity are suspect.
The probe calibrated properly and passed post-calibration checks. The conductivity cell constant was out or range (5.97615) and the high salinity
readings during the deployment reflect the high cell constant. The high cell
constant may be due to insufficient cleaning of the probe.
10/03/01 09:30:00 THRU 10/19/01 12:00:00
b) During the following periods, specific conductivity and salinity values have
been corrected. The probe calibrated properly, however did not pass post-calibration checks. The conductivity cell constant was out or range (5.94155).
Since the probe failed the post-calibration check, a mathematical equation was
derived to correct for the high salinity readings.
10/19/01 12:30:00 THRU 10/31/01 23:30:00

St. Pierre
a) During the following periods, specific conductivity and salinity are suspect.
The probe calibrated properly and passed post-calibration checks. The conductivity cell constant was out or range (5.88091) and the high salinity
readings during the deployment reflect the high cell constant. The high cell
constant may be due to insufficient cleaning of the probe.
10/03/01 08:00:00 THRU 10/19/01 11:00:00
b) During the following periods, specific conductivity and salinity values have
been corrected. The probe calibrated properly, however did not pass post-calibration checks. The conductivity cell constant was out or range (5.97366).
Since the probe failed the post-calibration check, a mathematical equation was
derived to correct for the high salinity readings.
10/19/01 11:30:00 THRU 10/31/01 23:30:00

November 1-30, 2001 Sampling Period
Big Bay
a) During the following periods, specific conductivity and salinity values have
been corrected. The probe calibrated properly, however did not pass post-calibration checks. The conductivity cell constant was out or range (5.94155).

Since the probe failed the post-calibration check, a mathematical equation was
derived to correct for the high salinity readings.
11/01/01 00:00:00 THRU 11/07/01 10:00:00
b) During the following periods of the November 7 -December 3 deployment, the pH
readings were deleted. The sensor did not read within the required range during
the post-deployment calibration check on pH 7 and pH 10.
11/07/01 10:30:00 THRU 11/30/01 23:30:00

St. Pierre
a) During the following periods, specific conductivity and salinity values have
been corrected. The probe calibrated properly, however did not pass post-calibration checks. The conductivity cell constant was out or range (5.97366).
Since the probe failed the post-calibration check, a mathematical equation was
derived to correct for the high salinity readings.
11/01/01 00:00:00 THRU 11/07/01 09:00:00
b) During the following periods, the dissolved oxygen (DO) readings are suspect
because readings are less than 28% air saturation.
11/03/01 03:00:00
11/04/01 03:30:00-04:00:00
11/05/01 04:30:00-06:00:00

December 1-31, 2001 Sampling Period
Big Bay
a) During the following periods of the November 7 -December 3 deployment, the pH
readings were deleted. The sensor did not read within the required range during
the post-deployment calibration check on pH 7 and pH 10.
12/01/01 00:00:00 THRU 12/03/01 10:00:00
b) During the following periods, the depth readings are negative. The depth
data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.
12/18/01 04:00:00-05:30:00; 17:00:00
12/26/01 22:30:00-23:30:00
12/27/01 00:00:00; 23:30:00
12/28/01 00:00:00-00:30:00
12/29/01 00:00:00-01:00:00
12/30/01 01:00:00-02:30:00

St. Pierre
a) During the following periods, no data are available due to dead batteries.
12/10/01 22:00:00 THRU 12/31/00 23:30:00

12. 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
the Anomalous Data Section (11.). To find out more details about missing data,
contact the Research Coordinator at the site submitting the data.

13. Post Deployment Information

A. Control sonde End of Deployment Readings:

Site ID	Date	Salinity (Std: 18-40 ppt)	DO(mg/l) (Std: Variable)	pH (Std: 7.00&10.00)
Big Bay				
	01/11/01	38	10.7	7.60
	01/29/01	36	10.1	6.70
	02/08/01	37	10.0	7.22
	02/23/01	34	9.9	6.70
	03/08/01	--	9.1	6.84
	03/26/01	35	9.0	6.98
	04/12/01	29	8.1	7.56
	05/01/01	34	7.7	7.59
	05/10/01	33	7.8	7.60
	05/24/01	37	6.4	7.70
	06/07/01	33	6.0	7.99
	06/25/01	32	7.0	8.24
	07/12/01	29	6.7	8.04
	07/26/01	32	7.6	8.32
	08/07/01	31	6.6	8.27
	08/27/01	32	6.6	8.37
	09/06/01	35	5.8	8.43
	09/20/01	34	7.4	8.16
	10/01/01	35	6.8	7.85
	10/19/01	35	8.6	8.06
	11/07/01	35	7.8	7.90
	12/03/01	36	9.1	8.14
	01/07/02	36	10.8	7.74
St. Pierre				
	01/11/01	37	11.0	8.01
	01/29/01	35	11.0	7.17
	02/08/01	34	9.9	7.54
	02/23/01	35	9.2	7.60
	03/08/01	--	9.2	7.61
	03/26/01	33	8.9	7.28
	04/12/01	30	7.8	7.72
	05/01/01	33	8.2	7.69
	05/10/01	31	7.2	7.60
	05/24/01	34	6.2	7.95
	06/07/01	31	6.4	7.98
	06/25/01	32	6.5	8.16

07/12/01	28	6.2	8.20
07/26/01	35	7.6	8.28
08/07/02	31	7.2	8.26
08/27/01	31	7.0	8.12
Deployment Cancelled			
09/20/01	33	7.6	8.20
10/01/01	35	6.5	7.76
10/19/01	35	8.2	8.10
11/07/01	35	8.3	7.93
12/03/01	37	7.3	8.17
01/07/01	35	10.2	7.70

B. End of Deployment Post-Calibration Readings in Standard Solutions:

Site ID

Date	Cond.(mS) (Std: 58.64)	DO (Air Sat.) (Std: 100%)		pH (Std: 7.00&10.00)	
Big Bay					
01/11/01	58.62	104.00		7.26	8.02
01/29/01	57.18	102.50		7.15	10.15
02/08/01	59.02	104.50		7.10	10.14
02/23/01	57.71	101.40		5.75	9.13
03/08/01	57.38	100.10		7.10	10.05
03/26/01	54.15	101.20		7.57	10.95
04/12/01	57.95	104.60		7.10	10.29
05/01/01	55.64	101.20		7.55	9.56
05/10/01	57.55	99.40	7.02	9.99	
05/24/01	57.42	98.00	7.04	9.86	
06/07/01	57.38	99.70	7.11	10.18	
06/25/01	57.94	88.50	7.05	10.01	
07/12/01	55.60	106.30		7.04	9.98
07/26/01	58.03	93.20	7.03	10.03	
08/07/01	56.86	23.20	7.14	10.03	
08/27/01	57.48	99.60	7.04	10.04	
09/06/01	59.63	100.50		7.08	10.09
09/20/01	57.16	98.80	7.05	10.05	
10/01/01	57.13	100.90		7.04	10.00
10/19/01	57.85	100.00		7.00	10.03
11/07/01	65.47	96.20	7.00	9.89	
12/03/01	56.50	102.5	3.27	5.51	
01/07/02	57.55	98.70	6.88	9.93	

14. Other Remarks

On 06/30/2021 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 less than 28% air saturation (hypoxia) is frequently observed in the ACE
Basin NERR during the warmer months, especially June-August, however hypoxia was
also observed in November in St. Pierre Creek. Hypoxia events are common in the
salt march environment and occurred consistently during late ebb, low slack, and
early flood tides. Natural factors can contribute to these low DO measurements
including insufficient water circulation, elevated water temperature, and the
lack of stratification in shallow estuarine habitats.
b) DO greater than 120% air saturation (supersaturation) is frequently observed
in the ACE Basin NERR during the colder months, especially January to March,
however was also observed in August in St. Pierre Creek. Supersaturation events
are not uncommon in shallow estuarine waters and usually occur during late
daylight hours as water temperature rises, thus elevating primary productivity.
The supersaturation event in August corresponded with the highest water levels,
suggesting an environmental cause.
c) DO measurements between 100% and 120% air saturation are not listed in the
metadata. These DO readings consistently occur in the ACE Basin NERR and are
not considered to be suspect.

Depth (meters) Blanket Statement: Depth readings are suspect throughout several
deployments in both Big Bay and St. Pierre Creeks for 2001. Reasons vary from
the data sonde not positioned at the bottom of the deployment mount, human
tampering of the data sonde during the deployment, or for reasons unknown at

this time. The differences in depth readings between the suspect deployment and the prior/post deployments range from 0.5 to 2.0 meters. However, all post calibration measurements were with in expected range, so the data were not deleted.

Turbidity (NTU) Blanket Statement: In January of 2002, Mike Lizotte, a representative for YSI, bought to the attention of CDMO and NERR staff, that turbidity standards used in calibration not purchased directly from YSI may be producing inaccurate data. The Advanced Polymer Systems Incorporated (APS) turbidity standard used by the ACE Basin NERR for calibration during 2001 deployments could create as much as a 20 percent total variance in the turbidity reading. According to Mike Lizotte, the standard angle between the fibers, the backscatter, may account for a variance in the turbidity reading.
In February of 2002, we will compare the APS turbidity standard used by the Reserve against the approved turbidity standards for YSI. A newly calibrated YSI turbidity probe will be placed in each standard, the values recorded, and the variances between standards will be calculated.