ACE Basin National Estuarine Research Reserve Water Quality Metadata Report
January-December 2000
Latest Update: June 30, 2021

I. Data Set & Research Descriptors
1. Principal investigator & contact persons:

SCDNR/Marine Resources Division
217 Fort Johnson Road
Charleston, SC 29422
(843) 762-5000

ACE Basin NERR field station
15717 Bennetts Point Road
Green Pond, SC 29441
(843) 844-8822

Contact Persons:
Dr. Elizabeth Wenner, Research Coordinator
E-mail: wennere@mrd.dnr.state.sc.us; (843) 762-5050
Saundra Upchurch, Reserve Biologist
E-mail: upchurchs@mrd.dnr.state.sc.us; (843) 762-5000 ext. 2032
Amy Whitaker, Reserve Technician
E-mail: whitakera@mrd.dnr.state.sc.us; (843) 762-5000 ext. 2078

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 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 output the anomalous data to a 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 are responsible for these tasks.

3. Research Objectives:

Based on discussions with local 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. 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. 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 and 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. Beginning in December of 1999, we alternate between chlorophyll a and turbidity data collection, and each parameter is

monitored two weeks each month. (Note: chlorophyll data are not yet a parameter that is collected for the NERR system, so please contact the Research Coordinator and/or Reserve Technician for this data.) In July 1997, the Reserve staff initiated nutrient monitoring study. 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, ortho-phosphate, and chlorophyll a 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.
The electronics package in two 6000 dataloggers were upgraded so that the existing optical ports 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 7, 2000.

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. To facilitate water flow across the sensors, approximately two-inch diameter holes were 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 was 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 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.
During the summer, the data loggers are deployed at the sites for one to two weeks, and the sampling period is extended 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 58.64 mS/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, and water temperature are taken during the first and last sampling interval. Water samples are collected at the same depth as the sensors. Water temperature and salinity are measured directly with a thermistor and refractometer, respectively, and dissolved oxygen level is determined by the Winkler procedure.
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 Entry Verification section).

5. Site Location and Character:

The two sampling sites are in separate tributaries of the South Edisto River. 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"38.72125N and 80'19"21.69864W). Surrounded by residential and commercial development and subject to nonpoint source pollution, this station is designated as the "treatment" site. Pollution sources to Big Bay Creek 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"40.59518N and 80' 21"41.25481W). The tidal creek and St. Pierre Creek are 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 oC, 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 oC 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 appear 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% air 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 between the two 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 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 sediments of Big Bay Creek; this station also had detectable levels of PCBs concentrations as well. Whereas, the concentrations in St. Pierre Creek sediments were below the level of detection for persistent pesticides and for PCBs. Overall, contaminant levels in sediments at the 34 sampling sites 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	
12/16/00, 11:00:00	01/14/00, 11:30:00
01/20/00, 17:00:00	02/10/00, 09:30:00
02/11/00, 15:00:00	03/06/00, 11:00:00
03/09/00, 10:00:00	04/04/00, 09:00:00
04/10/00, 10:00:00	05/01/00, 09:00:00
05/05/00, 10:30:00	05/25/00, 10:00:00
05/30/00, 10:00:00	06/07/00, 22:00:00
06/26/00, 11:00:00	07/10/00, 10:30:00

07/12/00, 10:00:00 08/02/00, 09:30:00
08/04/00, 11:00:00 08/16/00, 10:00:00
08/18/00, 10:00:00 08/29/00, 10:30:00
09/01/00, 11:00:00 09/27/00, 10:30:00*
09/27/00, 11:00:00 10/11/00, 10:00:00
10/16/00, 13:00:00 10/24/00, 14:30:00
11/09/00, 10:30:00 12/07/00, 08:30:00
12/15/00, 10:30:00 01/11/01, 10:30:00

* Prior to 09/27/00 at 11:00:00 at Big Bay, the datalogger was replaced with a
newly calibrated sonde.

St. Pierre Site
12/16/00, 10:30:00 01/14/00, 11:30:00
01/20/00, 16:00:00 02/10/00, 09:30:00
02/11/00, 17:00:00 03/06/00, 09:30:00
03/09/00, 09:30:00 04/04/00, 09:30:00
04/10/00, 11:00:00 05/01/00, 13:00:00
05/05/00, 11:00:00 05/08/00, 12:30:00
05/30/00, 11:00:00 06/21/00, 10:30:00
06/26/00, 10:30:00 07/10/00, 09:30:00
07/12/00, 10:30:00 08/02/00, 10:30:00
08/04/00, 11:30:00 08/16/00, 10:30:00
08/18/00, 10:30:00 08/29/00, 11:00:00
09/01/00, 11:30:00 09/27/00, 11:30:00
NO DATA WAS RECORDED FROM 09/27/00, 12:00:00 THRU 10/16/00, 09:30:00
10/16/00, 10:00:00 11/06/00, 15:30:00
11/09/00, 11:00:00 12/07/00, 09:30:00
12/15/00, 11:30:00 01/11/00, 11:00:00

7. Associated researchers and projects:

Two NERRS graduate fellows have concluded their examination of the nutrient dynamics in the marsh sediments near our water quality monitoring stations. Christopher T. Nietch studied carbon biogeochemistry and the effect of salinity and nutrient availability on marsh metabolism in tidal marshes. The focus of Pallaoor V. Sundareshwar's study was on phosphorus dynamics in impacted and non-impacted coastal wetlands and the effect anthropogenic perturbations on natural processes. Both fellows received their Ph.D. degrees in spring of 2000.

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.

In the spring of 2000, SCDNR Geologists completed the construction of sediment/erosion tables (SET) in the ACE Basin NERR, including our water quality stations, to determine the effects hydrologic changes on the marsh elevation.

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. Hepatopancreatic/liver tissues were dissected and used for three different cellular biomarker assays (lysosomal destabilization, glutathione concentrations, and lipid peroxidation).

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).

II. Physical Structure Descriptors

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

Variable Name	Range of Measurements (Units)	Resolution	Accuracy
Date	1-12, 1-31, 00-99(mo,day,yr)	1 mo, 1d, 1 y	N/A
Hour	0-24, 0-60, 0-60 (hr,min,sec)	1 hr, 1 min, 1 s	N/A
Temp	-5 to +45C	0.01C	+/- 0.15C
SpCond	0-100 mS/cm	0.01 mS/cm	+/- 0.5% of reading + 0.001 mS/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 sat.)	0.1% @air sat.	+/-2% @air sat.
DO	200-500% (air sat.)	0.1% @air sat	+/-6% @air sat.
DO	0-20(mg/l)	0.01 mg/l	+/-0.2 mg/l
DO	20-50(mg/l)	0.01 mg/l	+/-0.6 mg/l
Depth(shallow)	0-9.1 meters	0.001 m	+/-0.018 m
pH	2-14 units	0.01 units	+/-0.2 units
Turb	0-1000 NTU	0.1 NTU	+/-5% of reading or 2 NTU or whichever is greater

As of March 16, 1999, our data loggers now have the capability to record turbidity readings greater than 1000 NTU.

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

10. Data anomalies:
January 1-31, 2000 Sampling Period

Big Bay
a) During the following periods, the specific conductivity and salinity readings are suspect. The low readings are probably due to improper calibration procedures or a contaminated standard. The correction factors for the specific conductivity and salinity data were calculated as follow. First, a new conductivity standard (58.64 mS/cm) was prepared and then the conductivity sensor was fully immersed in the standard and then the specific conductivity and salinity of the standard were recorded. Next, the sensor was calibrated, and the new specific conductivity and salinity readings were recorded. The correction factor for the two parameters was calculated by dividing the reading taken after calibration by the reading taken prior to the calibration. The specific conductivity and salinity data were multiplied by the correction factors (1.67 and 1.77, respectively). In addition, the dissolved oxygen (mg/L) readings were reduced by 10%, in accordance with the oxygen solubility table.
01/01/00 00:00:00 THRU 01/14/00 11:30:00

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

01/04/00 23:30:00 THRU 01/05/00 01:30:00

St. Pierre

a) During the following periods, the specific conductivity and salinity readings are suspect. The low readings are probably due to improper calibration procedures or a contaminated standard. The correction factors for the specific conductivity and salinity data were calculated as follow. First, a new conductivity was prepared and then the conductivity sensor was fully immersed in the standard and then the specific conductivity and salinity of the standard were recorded. Next, the sensor was calibrated, and the new specific conductivity and salinity readings were recorded. The correction factor for the two parameters was calculated by dividing the reading taken after calibration by the reading taken prior to the calibration. The specific conductivity and salinity data were multiplied by the correction factors (1.67 and 1.77, respectively).

01/01/00 00:00:00 THRU 01/14/00 11:30:00

b) During the following periods of the December 16,1999-January 14, 2000 deployment, dissolved oxygen (DO) readings were deleted because the DO membrane was fouled during deployment.

01/01/00 00:00:00 THRU 01/14/00 11:30:00

c) During the following periods of the January 20-February 10 deployment, dissolved oxygen (DO) readings were deleted because the DO membrane was punctured during deployment.

01/20/00 16:00:00 THRU 01/31/00 23:30:00

d) During the following periods of the January 20-February 10 deployment, the specific conductivity and salinity readings were deleted.

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

e) At 21:00 on January 24, the turbidity spiked (1612 NTU). The high spike was probably caused by an animal or a clump of plant matter or sediment that passed by the sensor optics during the sampling interval.

February 1-29, 2000 Sampling Period

Big Bay

a) At 17:30 on February 7, the turbidity spiked (1271 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. Data was deleted.

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

02/11/00	17:30:00-18:30:00
02/14/00	08:30:00-10:00:00; 18:00:00-22:30:00
02/15/00	22:00:00-22:30:00
02/16/00	22:30:00-23:30:00
02/17/00	00:00:00
02/19/00	01:30:00-02:00:00
02/20/00	01:30:00-03:30:00; 15:00:00
02/21/00	03:00:00-03:30:00
02/22/00	03:30:00

St. Pierre

a) During the following periods of the January 20-February 10 deployment, the specific conductivity and salinity readings were deleted.

02/01/00 00:00:00THRU 02/10/00 09:30:00

b) During the following periods of the January 20-February 10 deployment, dissolved oxygen (DO) readings were deleted because the DO membrane was punctured during deployment.

02/01/00 00:00:00THRU 02/10/00 09:30:00

c) During the following periods of the February 11-March 6 deployment, dissolved oxygen (DO) readings ranged from 130 to 163 % air saturation, and rarely dropped below 130%. Super saturation conditions (>100%) continued after this period, but the DO levels were lower. The readings were not deleted because the high values corresponded with the highest water levels during that period, suggesting an environmental cause of the high readings. In addition, the membrane was not damaged and YSI readings were similar to in-situ Winkler readings. The YSI DO reading at deployment was 11.1 mg/l and the Winkler reading was 10.3 mg/l. The retrieval reading for YSI was 9.4 mg/l and the Winkler reading was

7.2 mg/l. A review of historical DO-water level correlation will help us evaluate these readings.
02/13/00 09:30:00 THRU 02/28/00 06:00:00

d) During the following periods, the turbidity spiked. The high spikes were
probably caused by an animal or a clump of plant matter or sediment that passed
by the sensor optics during the sampling interval.
02/05/00 07:30:00
02/06/00 18:30:00
02/07/00 08:30:00; 20:30:00
02/08/00 08:00:00; 09:00:00; 10:30:00-11:00:00; 21:30:00-22:30:00
02/09/00 09:30:00-10:00:00; 11:30:00; 22:30:00

e) During the following periods, the salinity readings 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.
02/14/00 08:30:00-09:30:00

March 1-31, 2000 Sampling Period

Big Bay
a) During the following periods, data were deleted because the sonde went
dry.
03/06/00 01:30:00-02:00:00

b) During the following periods, the depth readings are zero or negative.
The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.
03/05/00 00:30:00
03/09/00 15:30:00-17:00:00
03/10/00 04:30:00-05:00:00; 16:30:00-17:30:00
03/12/00 06:00:00-07:30:00; 18:00:00-19:30:00
03/16/00 23:30:00
03/17/00 00:00:00; 11:30:00-12:30:00
03/18/00 00:00:00

St. Pierre
a) No anomalies

April 1-30, 2000 Sampling Period

Big Bay

a) During the following periods of the April 10-May 1 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was damaged or
the sensor was fouled during the deployment.
04/17/00 03:00:00THRU 04/30/00 23:30:00

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

04/04/00 01:30:00-02:00:00
04/16/00 13:30:00
04/17/00 02:00:00-02:30:00; 14:00:00
04/18/00 03:00:00-03:30:00; 14:30:00-15:30:00

St. Pierre

a) No anomalies

May 1-31, 2000 Sampling Period

Big Bay

a) During the following periods of the April 10-May 1 deployment, the dissolved oxygen (DO)readings were deleted because the membrane was fouled
during the deployment.
05/01/00 00:00:00-09:00:00

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

05/05/00 16:00:00-16:30:00
05/06/00 16:30:00-17:30:00
05/07/00 17:00:00-18:00:00
05/08/00 18:30:00

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

05/07/00 06:00:00
05/08/00 06:30:00 18:00:00 19:00:00
05/09/00 07:00:00-07:30:0019:00:00-19:30:00
05/10/00 08:00:00
05/13/00 11:30:00
05/20/00 04:00:00-04:30:00

d) At 07:30 on May 7, the dissolved oxygen reading is less than 28% air
saturation. The low reading occurred during early flood tide.

St. Pierre

a) During the following periods of the May 30-June 21 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was punctured
during deployment.

05/30/00 11:00:00 THRU 05/31/00 23:30:00

June 1-30, 2000 Sampling Period

Big Bay

a) The following records include dissolved oxygen reading that are less than
28% air saturation. The low readings occurred during late ebb tides and early
flood tides.

06/04/00 06:00:00
06/05/00 00:30:00

b) During the following periods of the May 30-June 7 deployment, the dissolved oxygen (DO) readings were deleted because the sensor malfunctioned
during the deployment.

06/05/00 03:00:00 THRU 06/07/00 22:00:00

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

06/06/00 18:00:00-19:00:00
06/27/00 10:00:00-11:00:00
06/28/00 11:00:00
06/29/00 00:00:00-00:30:00; 11:30:00-12:00:00; 13:30:00
06/30/00 01:00:00-02:00:00; 12:30:00-14:00:00

d) During the following periods of the June 21-July 10 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was fouled
during the deployment.

06/26/00 13:30:00 THRU 06/30/00 23:30:00

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

06/28/00 11:30:00-12:00:00
06/29/00 12:30:00-13:00:00

St. Pierre

a) During the following periods of the May 30-June 21 and the June 26-July 10
deployment periods, the dissolved oxygen (DO) readings were deleted because the
membrane was punctured during the deployment.

06/01/00 00:00:00 THRU 06/21/00 10:30:00

06/26/00 10:30:00 THRU 06/30/00 23:30:00

b) At 10:00 on June 12, the turbidity spiked (1337 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.

July 1-31, 2000 Sampling Period

Big Bay

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

07/01/00 14:00:00-15:00:00
07/04/00 17:30:00
07/05/00 17:30:00-18:30:00
07/06/00 06:30:00-07:30:00; 19:00:00

b) During the following periods of the June 26-July 10 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was fouled during the deployment.

07/01/00 00:00:00 THRU 07/10/00 10:30:00

c) During the following periods, the turbidity spiked. The high spikes probably were caused by an animal, a clump of plant matter, or sediment that passed by the sensor optics during these sampling intervals.

07/06/00 01:00:00
07/09/00 16:30:00
07/16/00 23:30:00
07/22/00 03:00:00

d) During the following periods of the July 12-August 2 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during the deployment.

07/12/00 10:00:00 THRU 07/31/00 23:30:00

e) During the following periods, the specific conductivity and salinity readings were lower than usual, but salinity was within the normal polyhaline/euhaline range (18 and 40 ppt) for this site. The low readings were probably due to extremely low tides or heavy rainfall events.

07/25/00 06:30:00-10:30:00

St. Pierre

a) During the following periods of the June 26-July 10 and July 12-August 2 deployment periods, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during the deployment.

07/01/00	00:00:00	THRU	07/10/00	09:30:00
07/12/00	10:30:00	THRU	07/31/00	23:30:00

b) During the following periods, the salinity readings 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.

07/24/00	20:30:00-21:30:00
07/25/00	07:30:00

c) During the following periods, the turbidity readings were greater than 1000 NTU. These high values reflect very turbid conditions.

07/24/00	20:00:00-21:30:00

d) During the following periods, the turbidity spiked (>700 NTU). The high spikes probably were caused by an animal, a clump of plant matter, or sediment that passed by the sensor optics during these sampling intervals.

07/08/00	15:30:00
07/27/00	20:30:00

August 1-31, 2000 Sampling Period

Big Bay

a) During the following periods of the July 12-August 2 and August 4-August 16 deployments, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during the deployment.

08/01/00	00:00:00	THRU	08/02/00	09:30:00
08/04/00	11:00:00	THRU	08/16/00	10:00:00

b) The following periods, the salinity readings 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.

08/04/00	19:00:00-20:00:00

c) During the following periods, the turbidity readings were greater than

1000 NTU. The high value reflects the very turbid conditions that occur during
heavy rainfall and high wind events.
08/04/00 18:00:00-19:00:00
08/26/00 04:30:00-05:00:00

d) During the following periods, the dissolved oxygen (% air saturation)
readings were less than 28 % air sat.
08/20/00 07:00:00-07:30:00

e) During the following periods, the pH data were deleted.
08/25/00 13:30:00 THRU 08/29/00 10:30:00

f) During the following periods, the salinity readings were lower than usual,
but were within the 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.
08/04/00 18:00:00-20:00:00

St. Pierre
a) During the following periods of the July 12-August 2 and August 4-August 16
deployment periods, the dissolved oxygen (DO) readings were deleted because the
membrane was punctured during the deployment.
08/01/00 00:00:00 THRU 08/02/00 10:30:00
08/04/00 11:30:00 THRU 08/16/00 10:30:00

b) During the following periods, the dissolved oxygen (% air saturation) was
less than 28% air sat.
08/19/00 01:30:00-07:00:00
08/20/00 05:30:00-07:00:00
08/21/00 07:30:00-09:00:00
08/23/00 09:00:00-10:30:00
08/24/00 09:00:00-11:00:00
08/25/00 00:00:00 11:30:00-12:30:00
08/26/00 01:00:00 12:00:00-13:00:00
08/27/00 01:30:00
08/28/00 02:00:00-03:00:00
08/29/00 03:00:00

c) During the following periods, the turbidity readings were greater than
1000 NTU. The high value reflects the very turbid conditions that occur during
heavy rainfall and high wind events.
08/01/00 14:00:00-15:30:00

September 1-30, 2000 Sampling Period

Big Bay

a) During the following periods, the dissolved oxygen (% air saturation) was less than 28% air sat.

09/02/00 07:00:00
09/28/00 00:30:00-02:00:0003:30:00-04:00:00
09/29/00 03:00:00-04:30:00
09/30/00 04:00:00-05:00:00

b) During the following periods of the September 1-September 27 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during the deployment.

09/03/00 03:00:00 THRU 09/27/00 10:30:00

c) The following periods, the salinity readings 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.

09/05/00 02:00:00-10:00:00
09/18/00 03:00:00-08:00:00

d) During the following periods, the turbidity readings were negative, data was deleted.

09/05/00 05:00:00-07:00:0008:30:00-09:30:0018:30:00-19:00:00
09/09/00 21:00:00
09/18/00 05:00:00-06:30:00
09/19/00 23:00:00
09/20/00 02:30:00 20:30:00
09/24/00 05:00:00 08:30:00 16:00:00

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

09/25/00 00:30:00-01:00:0012:00:00 13:30:00
09/26/00 02:00:00-02:30:00

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

09/23/00 11:00:00
09/24/00 11:30:00-12:00:00
09/25/00 12:30:00-13:00:00
09/26/00 13:30:00-14:30:00

g) During the following periods, negative dissolved oxygen data were deleted.
09/28/00 02:30:00-03:00:00

St. Pierre

a) The following periods, the salinity readings 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 for salinity and sp. cond. were probably due to extremely low tides or heavy rainfall events.

09/18/00 06:00:00-06:30:00

b) During the following periods, the dissolved oxygen (% air saturation) was less than 28% air sat.

09/03/00 08:00:00
09/09/00 12:00:00-12:30:00
09/10/00 01:00:00-01:30:0013:00:00
09/11/00 01:00:00-02:00:0013:30:00-14:00:00
09/12/00 02:00:00-03:00:0014:30:00
09/13/00 02:30:00-03:30:0015:00:00
09/14/00 03:00:00-04:30:00
09/15/00 03:30:00-05:00:0016:30:00
09/16/00 04:00:00-06:00:00
09/17/00 05:30:00-06:30:00
09/19/00 06:00:00-07:00:0019:00:00
09/20/00 06:30:00-08:30:0020:00:00-21:30:00
09/21/00 07:30:00-09:30:00
09/22/00 09:00:00-10:30:00
09/23/00 10:30:00-11:30:0023:00:00-23:30:00
09/24/00 00:00:00-00:30:0010:30:00-12:30:00
09/25/00 00:00:00-01:00:0011:30:00-13:30:00
09/26/00 00:30:00-03:00:0014:00:00-14:30:00
09/27/00 03:00:00-04:00:00

October 1-31, 2000 Sampling Period

Big Bay

a) During the following periods, the dissolved oxygen (% air saturation) was less than 28% air sat.

10/01/00 05:00:00-06:00:00
10/02/00 05:00:00
10/03/00 05:30:00-07:30:00
10/04/00 06:30:00-08:30:00
10/05/00 07:00:00-09:00:00
10/06/00 07:00:00-08:00:0010:00:00 21:30:00
10/07/00 09:00:00 10:00:00 23:30:00
10/08/00 00:00:00
10/16/00 19:00:00-20:00:00
10/17/00 19:00:00-20:30:00

10/18/00 21:00:00-21:30:00

b) During the following periods, negative dissolved oxygen data were deleted.
10/02/00 05:30:00-06:00:00
10/06/00 09:00:00

c) During the following periods of the October 16-November 6 deployment, the
turbidity data were deleted.
10/16/00 19:30:00 THRU 10/24/00 14:00:00

St. Pierre
a) During the following periods, the dissolved oxygen (% air saturation) was
less than 28% air sat.
10/20/00 07:30:00
b) During the following periods, no data were recorded by the sonde. The reason
for missing data is not known at this time.
10/18/00 15:00:00
10/19/00 16:00:00

November 1-30, 2000 Sampling Period

Big Bay
a) During the following periods of the November 9-December 7 deployment, the
turbidity data were deleted because the sensor did not read within the required
range during the post-calibration check
11/09/00 10:30:00 THRU 11/30/00 23:30:00

b) During the following periods, the depth readings are zero or negative.
The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.
11/11/00 00:30:00-01:00:00
11/26/00 02:00:00

St. Pierre
No anomalies

December 1-31, 2000

Big Bay

a) During the following periods of the November 9-December 7 deployment, the
turbidity data were deleted because the sensor did not read within the required
range during the post-calibration check.
12/01/00 00:00:00 THRU 12/07/00 08:30:00

b) During the following periods of the December 15-January 11 deployment, the pH
data were deleted because the sensor did not read within the required range
during the post-calibration check on the pH 10.
12/15/00 10:30:00 THRU 12/31/00 23:30:00

c) During the following periods, the dissolved oxygen (% air saturation) was
less than 28% air sat.
12/01/00 05:30:00 06:30:00

d) During the following periods, the depth readings are zero or negative.
The depth data were not deleted because the salinity and dissolved oxygen
readings indicate the data logger was submerged during these periods.
12/17/00 06:00:00-08:30:0018:30:00-21:30:00
12/18/00 07:30:00-08:30:0020:00:00-21:00:00
12/19/00 08:30:00-09:30:0020:00:00-23:30:00
12/20/00 10:00:00-10:30:00
12/21/00 23:00:00-23:30:00
12/22/00 12:30:00
12/30/00 16:30:00-18:00:00
12/31/00 17:30:00-18:00:00

St. Pierre
No anomalies

11. Missing data

January 1-31, 2000 Sampling Period

Big Bay
a) During the following periods, data were deleted because the sonde went
dry.
01/04/00 23:30:00 THRU 01/05/00 01:30:00

b) During the following periods, no data are available due to downtime for
servicing and calibrating of data loggers.
01/14/00 12:00:00 THRU 01/20/00 16:30:00

St. Pierre

a) During the following periods of the December 20, 1999-January 14, 2000 deployment, dissolved oxygen (DO) data were deleted because the DO membrane was fouled during deployment. The presence of a mud ball in the guard during retrieval indicate that the flow of oxygen to the membrane was restricted.

01/01/00 00:00:00 THRU 01/14/00 11:30:00

b) During the following periods, no data are available due to downtime for servicing and calibrating of data loggers.

01/14/00 12:00:00 THRU 01/20/00 15:30:00

c) During the following periods of the January 20-February 10 deployment, dissolved oxygen (DO) data were deleted because the DO membrane was punctured during deployment. The DO membrane integrity during post deployment checks confirmed our assumption. The DO readings increased to 200 or more % air saturation when submersed in salt water and dropped below 100 % when removed from the water.

01/20/00 16:00:00 THRU 01/31/00 23:30:00

d) During the following periods of the January 20-February 10 deployments, the specific conductivity and salinity readings were deleted. The downward drift in the readings indicated that the probe was fouled. We couldn't adjust the readings because no in-situ readings were taken.

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

February 1-29, 2000 Sampling Period

Big Bay

a) During the following periods, no data are available due to downtime for servicing and calibrating of data loggers.

02/10/00 10:00:00THRU 02/11/00 14:30:00

b) From 02/11/00 15:00:00 - 02/29/00 23:30:00, the turbidity probe was not installed. The probe was replaced with a chlorophyll sensor (see Research Objectives section).

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

02/11/00 17:30:00-18:30:00

02/14/00 08:30:00-10:00:00; 18:00:00-22:30:00

02/15/00 22:00:00-22:30:00
02/16/00 22:30:00-23:30:00
02/17/00 00:00:00
02/19/00 01:30:00-02:00:00
02/20/00 01:30:00-03:30:00; 15:00:00
02/21/00 03:00:00-03:30:00
02/22/00 03:30:00

d) At 17:30 on February 7, the turbidity spiked (1271 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. Data was deleted.

e) During the following periods, the dissolved oxygen data (DO) readings were deleted because the membrane was punctured during the deployment. The DO membrane integrity during post deployment checks confirmed our assumption. The DO readings increased to 200+ %air saturation when submersed in salt water and dropped below 100 % when removed from the water.
02/01/00 12:00:00 THRU 02/10/00 09:30:00

St. Pierre

a) During the following periods of the January 20-February 10 deployment, the specific conductivity and salinity readings were deleted. The downward drift in the readings indicated that the probe was fouled. We couldn't adjust the readings because no in-situ readings were taken.
02/01/00 00:00:00THRU 02/10/00 09:30:00

b) During the following periods of the January 20-February 10 deployment, dissolved oxygen (DO) data were deleted because the DO membrane was punctured during deployment. The DO membrane integrity during post deployment checks confirmed our assumption. The DO readings increased to 200 or more % air saturation when submersed in salt water and dropped below 100% when removed from the water.
02/01/00 00:00:00THRU 02/10/00 09:30:00

c) During the following periods, no data are available due to downtime for servicing and calibrating of data loggers.
02/10/00 10:00:00THRU 02/11/00 16:30:00

d) From 02/11/00 17:00:00-02/29/00 23:30:00, the turbidity probe was not installed. The probe was replaced with a chlorophyll sensor (see Research Objectives section).

March 1-31, 2000 Sampling Period

Big Bay

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

03/06/00 01:30:00-02:00:00

b) During the following periods, no data are available due to downtime for servicing and calibrating of data loggers.

03/06/00 11:30:00 THRU 03/09/00 09:30:00

c) The chlorophyll probe was installed, therefore no turbidity was recorded for the entire month of March.

St. Pierre

a) During the following periods, no data are available due to downtime for servicing and calibrating of data loggers.

03/06/00 10:00:00 THRU 03/09/00 09:00:00

c) The chlorophyll probe was installed, therefore no turbidity was recorded for the entire month of March.

April 1-30, 2000 Sampling Period

Big Bay

a) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.

04/04/00 09:30:00 THRU 4/10/00 09:30:00

b) During the following periods of the April 10-May 1 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was fouled. Many of the DO readings were extremely low (<1.0 mg/L), indicating that the DO membrane was blocked by debris or sediment. A post-deployment calibration reading of 77.6% air saturation confirmed that the membrane was fouled.

04/17/00 03:00:00 THRU 4/30/00 23:30:00

c) The chlorophyll probe was installed therefore no turbidity was recorded

for the entire month of April.

St. Pierre

a) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.
04/04/00 10:00:00THRU 4/10/00 10:30:00

b) The chlorophyll probe was installed, therefore no turbidity was recorded for the entire month of April.

May 1-31, 2000 Sampling Period

Big Bay

a) During the following periods of the April 10-May 1 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was fouled.
Many of the DO readings were extremely low (<1.0 mg/L), indicating that the DO membrane was blocked by debris or sediment. A post-deployment calibration reading of 77.6% air saturation confirmed that the membrane was fouled during deployment.
05/01/00 00:00:00-09:00:00

b) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.
05/01/00 09:30:00 THRU 05/05/00 10:00:00

c) During the following periods, data were deleted because the sonde went dry.
05/05/00 16:00:00-16:30:00
05/06/00 16:30:00-17:30:00
05/07/00 17:00:00-18:00:00
05/08/00 18:30:00

d) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.
05/25/00 10:30:00 THRU 05/30/00 10:00:00

e) The chlorophyll probe was installed, therefore no turbidity was recorded for the entire month of May.

St. Pierre

a) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.
05/01/00 10:00:00 THRU 05/05/00 10:30:00

b) During the following periods, no data are available because the battery stopped working during the deployment. A crack in the bulkhead allowed water to seep into battery chamber thus shorting out batteries. The unit was sent to YSI for repairs.

05/08/00 13:00:00 THRU 05/25/00 09:30:00

c) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.

05/25/00 10:00:00 THRU 05/30/00 10:30:00

d) During the following periods of the May 30-June 21 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during deployment. The DO membrane integrity during post deployment checks confirmed our assumption. The DO readings spiked to 300+ % air saturation when submersed in salt water and dropped when removed from the water.

05/30/00 11:00:00 THRU 05/31/00 23:30:00

e) 05/01/00 00:00:00-05/30/00 10:30:00 the chlorophyll probe was installed, therefore no turbidity was recorded.

June 1-30, 2000 Sampling Period

Big Bay

a) During the following periods of the May 30-June 7 deployment, the dissolved oxygen (DO) readings were deleted because the membrane malfunctioned during the deployment, as indicated by the erratic DO readings. The DO sensor was reconditioned prior to the next deployment.

06/05/00 03:00:00 THRU 06/07/00 22:00:00

b) During the following periods, no data are available because the battery stopped working during the deployment. A crack in the bulkhead allowed water to seep into battery chamber thus shorting out batteries. The unit was sent to YSI for repair.

06/07/00 22:30:00 THRU 06/21/00 09:30:00

c) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.

06/21/00 10:00:00 THRU 06/26/00 10:30:00

d) During the following periods of the June 26-July 10 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was fouled during the deployment. A post-deployment calibration reading of 79.8% air saturation confirmed that the membrane was fouled.
06/26/00 13:30:00 THRU 06/30/00 23:30:00

e) From 06/01/00 00:00:00 - 06/26/00 10:30:00 chlorophyll probe was installed, therefore no turbidity was recorded.

f) During the following periods, data were deleted because the sonde went dry.
06/28/00 11:30:00-12:00:00
06/29/00 12:30:00-13:00:00

St. Pierre

a) During the following periods of the May 30-June 21 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during deployment. The DO membrane integrity during post deployment checks confirmed our assumption. The DO readings increased to 200 or more % air saturation when submersed in salt water and dropped below 100 % when removed from the water.
06/01/00 00:00:00 THRU 06/21/00 10:30:00
06/26/00 10:30:00 THRU 06/30/00 23:30:00

b) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.
06/21/00 11:00:00 THRU 06/26/00 10:00:00

July 1-31, 2000 Sampling Period

Big Bay

a) During the following periods of the June 26-July 10 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was fouled during the deployment. A post-deployment calibration reading of 79.8% air saturation confirmed that the membrane was fouled.
07/01/00 00:00:00 THRU 07/10/00 10:30:00

b) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.
07/10/00 11:00:00 THRU 07/12/00 09:30:00

c) During the following periods of the July 12-August 2 deployment, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during the deployment. The DO membrane integrity during post deployment check confirmed our assumption. The DO readings spiked to 300+ % air saturation when submersed in salt water and dropped when removed from the water.

07/12/00	10:00:00	THRU	07/31/00	23:30:00

St. Pierre

a) During the following periods of the June 26-July 10 and July 12-August 2 deployment periods, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during the deployment. The DO membrane integrity during post deployment checks confirmed our assumption. The DO readings spiked to 300+ % air saturation when submersed in salt water and dropped when removed from the water.

07/01/00	00:00:00	THRU	07/10/00	09:30:00
07/12/00	10:30:00	THRU	07/31/00	23:30:30

b) During the following periods, no data are available due to downtime for servicing and calibrating of dataloggers.

07/10/00	10:00:00	THRU	07/12/00	10:00:00

August 1-31, 2000 Sampling Period

Big Bay

a) During the following periods of the July 12-August 2 and August 4-August 16 deployments, the dissolved oxygen (DO) readings were deleted because the membrane was punctured during the deployment.

08/01/00	00:00:00	THRU	08/02/00	09:30:00
08/04/00	11:00:00	THRU	08/16/00	10:00:00
08/21/00	17:30:00	THRU	08/29/00	10:30:00

b) During the following periods, no data are available due to downtime for servicing and calibrating of datalogger.

08/02/00	10:00:00	THRU	08/04/00	10:30:00
08/16/00	10:30:00	THRU	08/18/00	09:30:00
08/29/00	11:00:00	THRU	08/31/00	23:30:00

c) During the following periods, the pH data were deleted because the pH probe
cracked during the deployment. The low readings (6.0-6.2) were due to the
broken probe.

08/25/00	13:30:00	THRU	08/29/00	10:30:00

St. Pierre

a) During the following periods of the July 12-August 2 and August 4-August
16 deployment periods, the dissolved oxygen (DO) readings were deleted because
the membrane was punctured during the deployment.

08/01/00	00:00:00	THRU	08/02/00	10:30:00
08/04/00	11:30:00	THRU	08/16/00	10:30:00

b) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.

08/02/00	11:00:00	THRU	08/04/00	11:00:00
08/16/00	11:00:00	THRU	08/18/00	10:00:00
08/29/00	11:30:00	THRU	08/31/00	23:30:00

September 1-30, 2000 Sampling Period

Big Bay

a) During the following periods of the September 1-September 27 deployment,
the dissolved oxygen (DO) readings were deleted because the membrane was
punctured during the deployment.

09/03/00	03:00:00	THRU	09/27/00	10:30:00

b) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.

09/01/00	00:00:00	THRU	09/01/00	10:30:00

c) During the following periods, the turbidity readings were deleted. The
negative (-2 to -933 NTU) readings were caused by debris on the lens, a wiper
malfunction, or animal interference.

09/05/00	05:00:00-07:00:00; 08:30:00-09:30:00; 18:30:00-19:00:00
09/09/00	21:00:00
09/18/00	05:00:00-06:30:00
09/19/00	23:00:00
09/20/00	02:30:00; 20:30:00
09/24/00	05:00:00; 08:30:00; 16:00:00

d) From 09/27/00 11:00:00 - 09/30/00 23:30:00, the chlorophyll probe was
installed, therefore turbidity data was not recorded.

e) During the following periods, the data were deleted because the sonde went
dry.
09/23/00 11:00:00
09/24/00 11:30:00-12:00:00
09/25/00 12:30:00-13:00:00
09/26/00 13:30:00-14:30:00

g) During the following periods, negative dissolved oxygen (DO) data were deleted. The negative readings probably were caused by an animal or a clump of
plant matter or sediment that blocked the flow of oxygen across the membrane
during the sampling interval.
09/28/00 02:30:00-03:00:00

St. Pierre

a) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.
09/01/00 00:00:00 THRU 09/01/00 11:00:00

d) During the following periods, no data are available due to operator error.
09/27/00 12:00:00 THRU 09/30/00 23:30:00

October 1-31, 2000 Sampling Period

Big Bay

a) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.
10/11/00 10:30:00 THRU 10/16/00 02:30:00

b) During the following periods, no data are available due to dead batteries.
10/24/00 14:30:00 THRU 10/31/00 23:30:00

c) From 10/01/00 00:00:00-10/11/00 10:00:00, the chlorophyll probe was installed, therefore no turbidity was recorded.

d) During the following periods, negative dissolved oxygen data were deleted.
The negative readings probably were caused by an animal or a clump of plant
matter or sediment that blocked the flow of oxygen across the membrane during
the sampling interval.
10/06/00 08:30:00-09:00:00

e) During the following periods of the October 16-November 6 deployment, the
turbidity data were deleted because the readings were negative (> 2 NTU). The
negative readings were due to a sensor malfunction: the sensor did not read
within the required range during the post-calibration check. The malfunction
was due to metal oxidization on some of the connectors. The connectors were
cleaned prior to next deployment.
10/16/00 19:30:00 THRU 10/24/00 14:00:00

St. Pierre

a) During the following periods, no data are available due to operator error.
10/01/00 00:00:00 THRU 10/16/00 09:30:00

November 1-30, 2000 Sampling Period

Big Bay
a) During the following periods, no data are available due to dead batteries.
11/01/00 00:00:00 THRU 11/06/00 13:00:00

b) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.
11/06/00 13:30:00 THRU 11/09/00 10:00:00

c) During the following periods of the November 9-December 7 deployment, the
turbidity data were deleted because the sensor did not read within the required
range during the post-calibration check
11/09/00 10:30:00 THRU 11/30/00 23:30:00

St. Pierre
a) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.
11/06/00 09:00:00 THRU 11/09/00 10:30:00

December 1-31, 2000 Sampling Period

Big Bay
a) During the following periods of the November 9-December 7 deployment, the

turbidity data were deleted because the sensor did not read within the required
range during the post-calibration check.
12/01/00 00:00:00 THRU 12/07/00 08:30:00

b) During the following periods of the December 15-January 11 deployment, the pH
data were deleted because the sensor did not read within the required range
during the post-calibration check on the pH 10.
12/15/00 10:30:00 THRU 12/31/00 23:30:00

c) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.
12/07/00 09:00:00 THRU 12/15/00 10:00:00

d) From 12/15/00 10:30:00 - 12/31/00 23:30:00 the chlorophyll probe was
installed, therefore no turbidity was recorded.

St. Pierre
a) During the following periods, no data are available due to downtime for
servicing and calibrating of datalogger.
12/07/00 10:00:00 THRU 12/15/00 11:00:00

b) From 12/15/00 11:30:00 - 12/31/00 23:30:00 the chlorophyll probe was installed, therefore no turbidity was recorded.

12. Other Remarks / Comments:
The NERR program has not yet adopted chlorophyll as a water quality parameter,
however, some sites have began deploying the chlorophyll sensor on the YSI 6000.
Please contact the Research Coordinator and/or the Reserve Technician for chlorophyll data.

Prior to 09/27/00 at 11:00:00 at Big Bay, the datalogger was replaced with a
newly calibrated sonde.

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.