

Jobos Bay (JOB) NERR WATER QUALITY METADATA
JANUARY 1998 TO DECEMBER 1998
Latest Update: July 16, 2002

I. Data Set & Research Descriptors

1. Principal investigator(s) and contact persons

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2. Entry verification:

After retrieving and carefully cleaning the dataloggers, they are examined

to detect any structural damage to the body or to the probes. The DO membrane is

checked for ruptures and then replaced if needed. The turbidity probe is

examined to assure that no obstruction affects the wiper and that the sensor is clean. Manipulation and observation are registered in the field log for each deployment respectively.

The YSI is connected to a Pentium II 400 MHz IBM compatible computer and the data are reviewed using the YSI computer program PC6000 that accompanies the YSI 6000 datalogger. The file is uploaded in two formats, one in YSI PC6000 format and the other in Comma and "" Delimited format then the file is renamed to have a ".txt" extension. The YSI Ecowatch for Windows program is used to plot the data and delete the pre- and post deployment data that are not in range of the other readings. The program is used to perform basic statistical analysis (i.e., min., max., mean, std. dev.). This information is printed out with a list of data and filed for each station.

The information obtained from this printout is used during file review to detect any gross outliers such as data taken when the datalogger was removed from the water or those caused by instrument failure. The data are imported into a Microsoft Excel file that contains the current month's cumulative recordings. When a complete month of data has been recorded the file is ready for review.

The data review includes several steps. The first step is to format the data so that the parameter columns are in the correct order. Secondly, a modified Excel 97 version of the CDMO Excel 5.0 macro is used to check and determine if there are any dates and times that were not recorded due to maintenance, battery failure, or other cause. Missing dates and times are inserted into the file and a period is inserted into the cells where data would normally be. The reason for the missing data is recorded onto the Missing data Log. The data are then formatted so that the parameter columns are in the correct size and the data have the correct number of decimal place holders as specified by the NERR CDMO. Next, the data are filtered using the CDMO Excel 97 macro to find readings outside the instrument measurement range and the "normal" range for the site in question.

Data outside the instrument range is/are removed from the file and a

period is inserted to the cell(s). An explanation for the missing dates and time are recorded onto the Missing data Log. Data that were outside the "normal" range of water quality for a particular site is investigated for validity based on field observation, QC check, PC6000 printouts, and instrument diagnostics. If the datum is/are rejected from the file a period is inserted to the cell(s) and an explanation for the missing date and time is recorded onto the Missing data Log. The information recorded on the Missing data Log is transferred to the metadata form. The metadata form is then submitted with the data to the CDMO. Data is stores in zip disks. Dr. Pedro Robles, Research Coordinator is responsible for the data management.

3. Research Objectives:

The four dataloggers are deployed at Mar Negro area, major component of Jobos Bay Estuarine Research Reserve, and are suspended from a pole at one foot from the bottom of the selected site. Measurements are taken at thirty (30) minute intervals for approximately two-week periods. The sites are identified as representative of areas within the reserve and comparable to the sites that may be receiving impact from human activities in the surroundings areas.

Station number six (6), is located in the proximity of Punta Colchones, close to the thermal discharge pipeline, which can be affected by high temperatures and sediment resuspension.

Station number nine (9), the impacted site, collects water quality data in a site associated with runoff from littoral and basin mangroves areas. This sampling station is closer to the Electric Power Thermoelectric Plant, which makes it subject to runoff and potential spills contamination from this industrial facility. Information compiled from historical environmental documents indicate that station nine (9) was used as a disposal site for the residues of the previously operating sugar mill operation, which might have been a high organic input to the sediments.

Station number ten (10), located in the mangrove lagoon area is the reference or unimpacted site.

Station number eleven (11) is another possible impacted site.

Housing development that is not provided with sewage treatment facilities are the potential source of contaminants for this Station. Septic tanks and possible

direct disposal constitute the potential contamination sources. Runoffs from agricultural land and other contaminant transport through a drainage channel are possible hazards at station nine (9) and eleven (11).

4. Research methods:

The Estuarine Water Quality Monitoring began on December 20, 1995 at Station nine (9), February 1, 1996 at Station ten (10), March 15, 1996 at Station eleven (11), and at Station six (6) on December 06, 1996. At this time we are only performing long term water quality monitoring.

Before each YSI 6000 datalogger is deployed, calibration and maintenance is performed following the manufacturer's instruction (YSI Manual addendum 7/94, sections 3,4 and 7). Calibration standards are only required for pH, salinity, and turbidity, all other parameters are done as described in the manual. Buffer solutions for two-point calibration (pH 7 and pH 10) are purchased from a scientific supply house. Salinity is calibrated via a specific conductance standard 1000 $\mu\text{S}/\text{cm}$ and are purchased from a scientific supply house. This solution is also prepared in the laboratory of Department of Natural and Environmental Resources (DNER) utilizing KCl following specification of EPA methods.

The two-point turbidity calibration (as of January 01, 1997) was performed using a 0 NTU standard using lab grade DI water made at the DNER laboratory and 40 NTU standard purchased from a scientific supply house. We are now using (since Jan 01, 1997) a 200 NTU standard purchased from a scientific company. The dissolved oxygen membranes are replaced before deployment and are allowed to sit at least 24 hours prior to deployment.

The weather conditions and tide stage during deployment are recorded in the field observation log. Measurements of DO, pH, salinity, specific conductance, temperature, turbidity (secchi) are taken with other calibrated field instruments to check the accuracy of the instrumentation.

Each YSI datalogger is tied with steel cable to a wrought iron galvanized pole, which is plunged into the sediments of each sampling area. Dataloggers are deployed at a depth of 0.3 m. Every 30 minutes during the sampling period measurements are taken for date, time, temperature, specific conductance,

salinity, dissolved oxygen saturation, dissolved oxygen concentration, depth, pH, and turbidity. Every two weeks the dataloggers are retrieved, uploaded, cleaned, inspected, and calibrated as noted previously. The datalogger is then ready to be deployed.

5. Site location and character:

The Jobos Bay National Estuarine Research Reserve (JOBNERR) is located on the southern coastal plain of the island of Puerto Rico, a reserve within the West Indies geographical area. JOBNERR is composed of two major areas: (1) Mar Negro, located on the western margin of the Bay, and (2) Cayos Caribe, a chain of 15 tear-shaped islets located to the southeast. The Mar Negro area comprises the bulk of the Reserve, and consists of mangrove forests and a complex system of lagoons and channels interspersed with salt and mud flats. Coral reefs and seagrass beds, with small beach deposits and upland areas fringe Cayos Caribe mangrove islands.

Station 6 is located in the bay close to the peninsular drape area in Mar Negro known as Punta Colchones. The datalogger is deployed at about five meters from the emergence of the fallout pipe cooling water from the Thermoelectric Power Plant. This station is subject to high temperatures and sediment resuspension. The tidal range varies from 12 in. to 14 in. in the vicinity of the monitoring station. No fresh water input in the vicinity of the station is probable. The salinity at the vicinity of the monitoring station varies from 34.0 ppt to 35.7 ppt. The station pole is located at 17° 56' 6.5"N and 66° 13' 43.6"W.

Station 9 is an impacted site and is located at the northeastern part of the Mar Negro unit. The sampling station is associated with the mangrove lagoon area and received the Thermoelectric Power Plant runoff through mudflats and areas adjacent. The tidal range varies from 12 in. to 14 in. in the vicinity of the monitoring station. No fresh water input in the vicinity of the station is probable. The salinity at the vicinity of the monitoring station varies from 0.0

ppt to 41.1 ppt. The station pole is located at 17° 56' 36.8" N and 66° 14' 18.5" W.

Station 10 is located in a mangrove lagoon not impacted from upland or marine activities. It provided a reference for comparison of the data obtained in other stations, especially to the stations in Mar Negro lagoon environment. The tidal range varies from 12 in. to 14 in. in the vicinity of the monitoring station. No fresh water input in the vicinity of the station is probable. The salinity at the vicinity of the monitoring station varies from 0.0 ppt to 41.7 ppt. The pole is located at 17° 56' 20.3" N and 66° 45' 26.7" W.

Station 11 datalogger is tied to a small pier stand in the westernmost lagoon in the Mar Negro unit. Although a chain from a small pier suspends this datalogger, and it has been deployed at the same depth of the other dataloggers. Non point sources of contaminants from residences and boating activities in the vicinity are probable. The lagoon is characterized by dark bottom, tidal range from 12 in. to 14 in., allegedly related to long term deposition of organic wastes from the sugar mill operation when the mill was operating. No fresh water input in the vicinity of the station is probable. The salinity at the vicinity of the monitoring station varies from 0.0 ppt to 36.7 ppt. The datalogger is suspended by a chain and localized at 17° 56' 41.8" N and 66° 15' 46.0" W.

All monitoring is considered long term.

6. Data collection period:

Station nine (9) sampling with the YSI began on December 20, 1995.
Station ten (10) sampling with the YSI began on February 1, 1996.
Station eleven (11) sampling with the YSI began on March 15, 1996.
Station six (6) sampling with the YSI began on December 06, 1996.
Station eighteen (18) sampling with the YSI began on October 08, 1998.

7. Associated researchers and projects:

A water quality and plankton monitoring scheme was initiated in 1995, to monitor 12 stations in the Jobos Bay system. This effort, conducted by the Department of Natural and Environmental Resources Laboratory began in March

1995, using a Hydrolab Data sonde 3 with a Surveyor 3 readout system, monitoring the water column on a bimonthly time basis for abiotic parameter similar to the YSI. Monthly samples for nutrients, plankton and chlorophyll were conducted from March to October (Water Quality Monitoring-Spatial and temporal variations of main abiotic and plankton components in JOBNERR, 1996). Samplings were resumed in January 1996 and will be conducted until March 1997).

8. 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.

9. Coded variable indicator and variable code definitions:

Site definitions: S9 = Station 9
Site definitions: S10 = Station 10
Site definitions: S11 = Station 11

Site definitions: S6 = Station 6
 Site definitions: S18 = Station 18
 File definitions: site/month/year (ex: XXaug95 = Station data from
 August
 of 1995).

10. Data anomalies:
 January 1998

Station 06

Low DO Outliers removed

01/23/98	16:00:00	through	01/23/98	16:30:00
01/23/98	18:00:00			

Station 10

Low DO Outliers removed

1/1/98	0:00:00	through	1/11/98	3:30:00
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Anomalous Low Turbidity due to small calibration error

1/23/98	16:00:00	through	1/31/98	23:30:00
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High Salin Outliers removed

1/23/98	16:00:00	through	1/31/98	23:30:00
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High SpCond Outliers removed

1/23/98	16:00:00	through	1/31/98	23:30:00
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Station 11

High DO due to redeployment on 01/23/98 16:00:00

Anomalous Low Turbidity

01/27/98	15:00:00			
01/28/98	12:30:00			
01/28/98	10:30:00	through	01/28/98	13:00:00
01/28/98	14:00:00			
01/28/98	16:00:00			
01/28/98	17:00:00			
01/28/98	21:30:00			
01/29/98	10:30:00			
01/29/98	11:30:00	through	01/29/98	14:30:00
01/29/98	15:30:00			
01/29/98	16:30:00	through	01/29/98	17:00:00
01/29/98	20:00:00			
01/29/98	22:00:00	through	01/29/98	23:30:00
01/30/98	01:30:00			
01/30/98	03:00:00	through	01/30/98	03:30:00
01/30/98	04:30:00			
01/30/98	09:00:00			
01/30/98	10:00:00	through	01/30/98	10:30:00
01/30/98	14:00:00	through	01/30/98	14:30:00
01/30/98	15:30:00	through	01/30/98	16:30:00
01/30/98	18:00:00			
01/30/98	20:30:00	through	01/30/98	22:00:00
01/30/98	21:00:00	through	01/30/98	21:30:00

01/31/98	00:00:00	through	01/31/98	00:30:00
01/31/98	05:00:00			
01/31/98	06:00:00	through	01/31/98	06:30:00
01/31/98	07:30:00	through	01/31/98	12:00:00
01/31/98	15:30:00	through	01/31/98	16:30:00
01/31/98	15:00:00	through	01/31/98	17:00:00
01/31/98	18:30:00	through	01/31/98	19:30:00
01/31/98	20:30:00			
01/31/98	21:30:00			
01/31/98	22:30:00	through	01/31/98	23:30:00

February 1998

Station 06

Internal Error

02/13/98	20:30:00	through	02/13/98	21:00:00
02/14/98	01:30:00	through	02/14/98	02:30:00
02/14/98	06:30:00			
02/14/98	08:00:00			
02/14/98	10:00:00			

Station 10

High Salin Outliers

2/1/98	0:00:00	through	2/11/98	8:00:00
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High SpCond Outliers

2/1/98	0:00:00	through	2/11/98	8:00:00
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Anomalous Low Turbidity due to small calibration error

2/1/98	0:00:00	2/11/98	8:00:00
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DO data removed; possible membrane puncture

2/10/98	01:00:00	through	2/11/98	08:00:00
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Station 11

Anomalous Low Turbidity

02/01/98	00:30:00	through	02/01/98	01:30:00
02/01/98	02:30:00	through	02/01/98	03:00:00
02/01/98	04:00:00			
02/01/98	05:00:00	through	02/01/98	06:30:00
02/01/98	12:00:00	through	02/01/98	13:30:00
02/01/98	15:00:00			
02/01/98	18:00:00	through	02/01/98	18:30:00
02/01/98	21:30:00			
02/01/98	23:00:00			
02/02/98	01:00:00			
02/04/98	16:30:00			
02/04/98	17:30:00			
02/04/98	19:30:00			
02/05/98	04:00:00			
02/05/98	05:00:00			
02/05/98	08:00:00			
02/05/98	10:00:00			

02/05/98	12:00:00	through	02/05/98	12:30:00
02/06/98	00:30:00			
02/06/98	02:00:00	through	02/06/98	02:30:00
02/06/98	05:00:00	through	02/06/98	07:30:00
02/06/98	09:30:00	through	02/06/98	10:00:00
02/06/98	11:00:00			
02/06/98	15:00:00			
02/06/98	16:30:00			
02/06/98	18:30:00			
02/06/98	22:00:00	through	02/06/98	23:30:00
02/07/98	01:00:00	through	02/07/98	03:00:00
02/07/98	08:00:00	through	02/07/98	09:30:00
02/07/98	11:00:00	through	02/07/98	14:30:00
02/07/98	05:30:00	through	02/07/98	06:00:00
02/07/98	17:00:00	through	02/07/98	19:00:00
02/08/98	00:30:00			
02/08/98	08:30:00			
02/08/98	09:00:00	through	02/08/98	12:00:00
02/08/98	13:00:00			
02/08/98	14:00:00	through	02/28/98	14:30:00
02/08/98	15:30:00	through	02/28/98	16:00:00
02/08/98	18:00:00			
02/08/98	21:30:00			
02/09/98	00:00:00			
02/09/98	12:00:00	through	02/09/98	12:30:00
02/09/98	13:30:00	through	02/09/98	14:00:00
02/09/98	15:00:00	through	02/09/98	16:00:00
02/10/98	13:00:00	through	02/10/98	13:30:00

April 1998

Station 09

First four DO values were deleted because membrane had not settled yet
04/07/98 14:00:00 through 15:30

DO removed due to possible membrane puncture

04/16/98 22:00:00 through 04/23/98 05:00:00

Anomalous Low Turbidity

04/11/98	05:30:00			
04/11/98	19:00:00			
04/11/98	21:30:00			
04/12/98	04:30:00			
04/12/98	07:00:00			
04/12/98	12:00:00			
04/13/98	04:00:00			
04/13/98	07:30:00	through	04/13/98	08:00:00
04/14/98	00:30:00			
04/14/98	01:30:00			
04/14/98	02:30:00			
04/14/98	03:30:00			
04/14/98	04:30:00	through	04/14/98	05:00:00
04/14/98	06:30:00			
04/15/98	04:30:00			

04/15/98	06:30:00
04/15/98	11:30:00
04/15/98	12:30:00
04/21/98	23:30:00
04/22/98	02:00:00
04/22/98	08:30:00
04/23/98	01:30:00
04/23/98	02:30:00

Anomalous High Turbidity

04/14/98	08:00:00
04/15/98	12:00:00
04/15/98	16:30:00
04/23/98	03:30:00

May 1998

Station 06

No Data due to other reasons

05/12/98	20:00:00			
05/12/98	21:30:00			
05/12/98	23:30:00			
05/13/98	00:30:00	through	05/13/98	01:30:00
05/13/98	03:00:00			
05/13/98	04:30:00	through	05/13/98	05:00:00
05/13/98	09:30:00	through	05/13/98	10:00:00
05/13/98	11:00:00			
05/13/98	12:00:00			
05/13/98	13:00:00			
05/13/98	18:30:00	through	05/13/98	20:30:00
05/13/98	22:00:00	through	05/13/98	22:30:00

Anomalous Low Turbidity

05/08/98	16:00:00	through	05/08/98	23:30:00
05/09/98	00:00:00	through	05/09/98	11:00:00
05/09/98	12:00:00	through	05/09/98	23:30:00
05/10/98	00:00:00	through	05/10/98	23:30:00
05/11/98	00:00:00	through	05/11/98	23:30:00
05/12/98	00:00:00	through	05/12/98	12:00:00
05/12/98	13:00:00	through	05/12/98	19:30:00
05/12/98	20:30:00	through	05/12/98	21:00:00
05/12/98	22:00:00	through	05/12/98	23:00:00
05/13/98	00:00:00			
05/13/98	02:00:00	through	05/13/98	02:30:00
05/13/98	03:30:00	through	05/13/98	04:00:00
05/13/98	05:30:00	through	05/13/98	09:00:00
05/13/98	10:30:00			
05/13/98	11:30:00			
05/13/98	12:30:00			
05/13/98	13:30:00	through	05/13/98	18:00:00
05/13/98	21:00:00	through	05/13/98	21:30:00
05/13/98	23:30:00			

Station 09

High DO Outliers removed

05/08/98 16:00:00 through 05/08/98 16:30:00

Salinity, SpCond and DOmg/L were deleted due to extremely high spcond and salinity

5/8/98 16:00 through 5/10/98 04:30

Station 11

High Spcond and Salinity data was removed due to possible calibration error

05/08/98 16:00:00 - 05/15/98 22:30:00

Anomalous Low Turbidity due to small calibration error

05/08/98 16:00:00 through 05/15/98 22:30:00

June

Station 09

High DO due to redeployment on 06/11/98 16:00:00

First seven DO values were deleted because membrane had not settled yet
06/11/98 16:00 through 19:00

DO data removed due to possible membrane puncture

06/28/98 19:30:00 through 06/30/98 23:30:00

Station 10

Data removed due to instrument being out of water

06/05/98 08:30:00 - 06/07/98 15:30:00

06/09/98 16:00:00 - 06/11/98 09:30:00

Anomalous Low Turbidity due to small calibration error

6/11/98 10:00:00 through 6/12/98 7:30:00

Station 11

Low DO Outliers removed

06/23/98 06:00:00 through 06/23/98 08:00:00

Internal Error

06/23/98 15:30:00

06/30/98 16:00:00 through 06/30/98 23:30:00

All data removed due to instrument being out of water

06/23/98 09:30:00 - 15:00:00

Anomalous Low Turbidity

06/11/98 16:00:00 through 06/11/98 17:00:00

06/11/98 18:00:00 through 06/11/98 18:30:00

06/11/98 19:30:00

06/12/98 00:00:00

06/12/98 01:30:00

06/12/98 03:00:00

06/12/98	04:00:00			
06/12/98	05:00:00	through	06/12/98	05:30:00
06/12/98	07:30:00	through	06/12/98	13:30:00
06/12/98	14:30:00			
06/12/98	15:30:00	through	06/12/98	19:00:00
06/12/98	21:30:00			
06/12/98	23:00:00			
06/13/98	00:30:00			
06/13/98	01:30:00	through	06/13/98	03:00:00
06/13/98	04:30:00	through	06/13/98	06:00:00
06/13/98	07:00:00	through	06/13/98	20:30:00
06/13/98	21:30:00	through	06/13/98	22:00:00
06/14/98	00:30:00	through	06/14/98	01:00:00
06/14/98	02:00:00			
06/14/98	03:30:00	through	06/14/98	09:00:00
06/14/98	10:00:00	through	06/14/98	11:30:00
06/14/98	12:30:00	through	06/14/98	19:30:00
06/14/98	20:30:00	through	06/14/98	23:00:00
06/15/98	00:00:00	through	06/15/98	03:00:00
06/15/98	04:00:00	through	06/15/98	10:00:00
06/15/98	11:00:00	through	06/15/98	14:00:00
06/15/98	15:00:00	through	06/15/98	16:30:00
06/15/98	17:30:00			
06/15/98	18:30:00	through	06/15/98	19:00:00
06/15/98	21:00:00	through	06/15/98	21:30:00
06/15/98	22:30:00			
06/15/98	23:30:00			
06/16/98	00:00:00	through	06/16/98	05:30:00
06/16/98	06:30:00	through	06/16/98	11:30:00
06/16/98	12:30:00	through	06/16/98	13:30:00
06/16/98	15:00:00	through	06/16/98	16:00:00
06/16/98	17:00:00			
06/16/98	18:30:00	through	06/16/98	19:00:00
06/16/98	21:00:00			
06/16/98	22:30:00	through	06/16/98	23:30:00
06/17/98	00:30:00	through	06/17/98	03:00:00
06/17/98	04:00:00	through	06/17/98	05:30:00
06/17/98	07:30:00			
06/17/98	09:30:00	through	06/17/98	12:00:00
06/17/98	14:00:00	through	06/17/98	15:30:00
06/17/98	18:00:00			
06/17/98	19:30:00	through	06/17/98	21:00:00
06/17/98	23:30:00			
06/18/98	00:00:00	through	06/18/98	01:00:00
06/18/98	02:00:00			
06/18/98	03:00:00			
6/18/98	04:30:00			
06/18/98	06:30:00	through	06/18/98	07:00:00
06/18/98	08:00:00	through	06/18/98	08:30:00
06/18/98	11:30:00	through	06/18/98	11:30:00
06/18/98	12:30:00			
06/18/98	13:30:00	through	06/18/98	14:30:00
06/18/98	15:30:00			
06/18/98	16:30:00			

06/18/98	18:30:00	through	06/18/98	19:30:00
06/18/98	21:30:00			
06/18/98	23:30:00			
06/19/98	00:00:00	through	06/19/98	00:30:00
06/19/98	01:30:00	through	06/19/98	05:00:00
06/19/98	06:30:00	through	06/19/98	14:30:00
06/19/98	15:30:00	through	06/19/98	17:00:00
06/19/98	18:00:00			
06/19/98	19:00:00	through	06/19/98	19:30:00
06/19/98	20:30:00	through	06/19/98	22:00:00
06/19/98	23:30:00			
06/20/98	00:00:00			
06/20/98	01:00:00	through	06/20/98	07:30:00
06/20/98	08:30:00			
06/20/98	09:30:00	through	06/20/98	10:00:00
06/20/98	12:00:00			
06/20/98	14:30:00			
06/20/98	15:30:00	through	06/20/98	16:00:00
06/20/98	22:30:00	through	06/20/98	23:30:00
06/21/98	00:00:00	through	06/21/98	05:00:00
06/21/98	06:00:00	through	06/21/98	07:30:00
06/21/98	09:00:00			
06/21/98	10:00:00			

July 1998

Station 06

Low DO Outliers removed

07/01/98	01:30:00	through	07/01/98	02:00:00
07/01/98	03:00:00			
07/01/98	06:30:00	through	07/01/98	08:30:00
07/01/98	09:30:00			
07/01/98	20:00:00	through	07/01/98	23:30:00
07/02/98	00:00:00	through	07/02/98	10:00:00
07/02/98	14:30:00			
07/02/98	19:30:00	through	07/02/98	23:30:00
07/03/98	00:00:00	through	07/03/98	10:30:00
07/03/98	11:30:00			
07/03/98	14:00:00			
07/03/98	19:30:00	through	07/03/98	21:30:00
07/03/98	22:30:00	through	07/03/98	23:30:00
07/04/98	00:00:00	through	07/04/98	00:30:00
07/04/98	01:30:00			
07/04/98	02:30:00	through	07/04/98	03:30:00
07/04/98	04:30:00	through	07/04/98	09:00:00
07/05/98	04:00:00			
07/05/98	05:30:00	through	07/05/98	06:00:00
07/06/98	02:30:00			
07/06/98	06:30:00	through	07/06/98	07:00:00
07/06/98	22:30:00			
07/07/98	00:30:00			
07/07/98	02:30:00			
07/07/98	04:00:00			
07/07/98	23:00:00	through	07/07/98	23:30:00

07/08/98 00:00:00
07/08/98 01:00:00
07/08/98 05:30:00 through 07/08/98 07:00:00

Station 10

Data removed due to instrument being out of water
07/21/98 15:00:00 - 07/23/98 09:00:00

Anomalous Low Turbidity

07/23/98 09:30:00 through 07/31/98 23:30:00

Station 11

Internal Error

07/01/98 00:00:00 through 07/06/98 04:30:00

Low DO Outliers removed

07/28/98 03:30:00 through 07/28/98 13:00:00
07/28/98 20:00:00 through 07/29/98 06:30:00

Anomalous Low Turbidity

07/26/98 00:00:00
07/26/98 02:30:00 through 07/26/98 03:00:00
07/27/98 01:00:00 through 07/27/98 01:30:00
07/27/98 03:30:00

August 1998

Station 09

First twelve DO values were deleted because membrane had not settled yet
08/21/98 16:00 through 21:30

Station 10

Anomalous High Turbidity

08/30/98 23:30:00

Anomalous Low Turbidity due to small calibration error

08/21/98 16:00:00 through 08/31/98 23:30:00

Spcond, salinity, and DO data were deleted from 8/21/98 16:00 through
8/31/98 23:30
due to possible calibration error.

Station 11

Low DO Outliers removed

08/12/98 07:30:00 through 08/12/98 08:00:00
08/12/98 20:00:00
08/13/98 06:30:00
08/13/98 17:30:00
08/13/98 21:00:00 through 08/14/98 10:30:00
08/14/98 11:30:00 through 08/14/98 12:00:00
08/14/98 13:00:00 through 08/14/98 13:30:00
08/14/98 14:30:00 through 08/14/98 15:00:00
08/14/98 16:00:00 through 08/14/98 21:00:00

08/14/98	22:00:00	through	08/16/98	00:00:00
08/16/98	01:30:00	through	08/16/98	02:00:00
08/16/98	03:00:00	through	08/16/98	05:30:00
08/16/98	06:30:00	through	08/16/98	08:00:00
08/16/98	09:30:00			
08/16/98	21:30:00			
08/16/98	22:30:00	through	08/17/98	04:00:00

Anomalous Low Turbidity

08/02/98 18:00:00

All data removed due to instrument being out of water

08/17/98 09:30:00 - 08/18/98 09:00:00

October 1998

Station 06

Internal Error

10/11/98	00:30:00	through	10/11/98	01:30:00
10/11/98	03:30:00	through	10/11/98	04:00:00
10/11/98	06:00:00			
10/11/98	11:00:00	through	10/11/98	11:30:00
10/11/98	12:30:00			
10/11/98	14:00:00	through	10/11/98	14:30:00
10/11/98	15:30:00			
10/11/98	16:30:00			
10/11/98	18:30:00			
10/12/98	11:30:00			
10/31/98	09:30:00			
10/31/98	16:00:00			
10/31/98	22:30:00	through	23:00:00	

Anomalous Low Turbidity

10/30/98	16:00:00	through	10/30/98	23:30:00
10/31/98	00:00:00	through	10/31/98	00:30:00
10/31/98	01:30:00	through	10/31/98	02:00:00
10/31/98	04:00:00	through	10/31/98	09:00:00
10/31/98	10:00:00	through	10/31/98	15:30:00
10/31/98	16:30:00	through	10/31/98	22:00:00
10/31/98	23:30:00			

Station 09

DO data deleted due to possible membrane puncture

10/14/98 05:00:00 through 10/26/98 10:00

All Data removed - Instrument out of water

10/26/98 10:30:00 - 10/27/98 12:00:00

Anomalous Low Turbidity

10/26/98	13:30:00	through	10/26/98	14:00:00
10/30/98	16:00:00	through	10/30/98	17:30:00

Anomalous High Turbidity

10/16/98 13:30:00

10/26/98 14:30:00

Anomalous Low Depth

10/26/98	10:30:00	through	10/26/98	23:30:00
10/27/98	00:00:00	through	10/27/98	12:00:00

Station 10

DO data removed due to possible membrane puncture
10/12/98 19:00:00 - 10/22/98 13:30:00

Station 11

All data removed due to instrument being out of water
10/08/98 12:00:00
10/26/98 11:00:00 - 10/27/98 09:30:00

All DO data removed - very erratic
10/01/98 00:00:00 - 10/31/98 23:30:00

Anomalous Low Depth

10/26/98	13:00:00	through	10/26/98	14:00:00
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Station 18

All data suspect due to possible rain event or biofouling or probe malfunction.
Data not removed.
10/08/98 12:00:00 through 10/26/98 09:30:00

Low DO Outliers removed

10/19/98	10:30:00
10/23/98	7:30:00
10/25/98	1:00:00
10/26/98	8:00:00
10/26/98	9:00:00

All data removed due to instrument being out of water
10/26/98 10:00:00 - 10/27/98 11:30:00

Anomalous Low Turbidity

10/30/98	16:00:00	through	10/30/98	20:00:00
10/30/98	21:00:00	through	10/31/98	3:30:00
10/31/98	4:30:00	through	10/31/98	5:30:00
10/31/98	6:30:00	through	10/31/98	8:00:00
10/31/98	9:30:00	through	10/31/98	11:30:00
10/31/98	12:30:00	through	10/31/98	23:30:00

November 1998

Station 06

Internal Error
11/01/98 06:30:00

Anomalous Low Turbidity

11/01/98	00:00:00	through	11/01/98	06:00:00
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Station 09

Anomalous Low Turbidity

11/01/98 10:00:00

11/01/98 19:30:00

11/02/98 06:00:00 through 11/02/98 06:30:00

11/02/98 07:30:00 through 11/02/98 10:00:00

11/02/98 22:00:00 through 11/02/98 22:30:00

11/03/98 06:30:00 through 11/03/98 11:00:00

11/04/98 08:00:00 through 11/04/98 11:00:00

11/30/98 01:30:00

Depth deleted from 11/24/98 1200-1330; depth was unusually high and deleted

due to possible probe problem

Station 11

All data removed due to instrument being out of water

11/24/98 12:00:00 - 13:30:00

Station 18

Anomalous Low Turbidity due to small calibration error

11/1/98 0:00:00 through 11/13/98 3:30:00

December 1998

Station 06

All Data removed - Instrument out of water

12/01/98 08:30:00 - 12/02/98 13:00:00

Station 09

Depth data removed - possible bad calibration; low depth compared with the rest

of the month's data

12/01/98 00:00:00 - 12/07/98 09:30:00

Specific Conductivity data removed; was very high compared to rest of the month;

possible bad calibration

12/01/98 00:00:00 - 12/07/98 09:30:00

Dissolved Oxygen mg/L data removed due to abrupt increase; possible membrane

puncture

12/27/98 22:00:00 - 12/28/98 10:00:00

Station 10

High Salin Outliers removed

12/03/98 16:00:00 through 12/03/98 16:30:00

All data suspect; possible culprits could be a rain event, obstructed instrument, bad calibration. Data not removed.

12/03/98 16:00:00 through 12/08/98 10:30:00

Spcond, salinity, and DO data were deleted from 12/3/98 16:00 through 12/15/98 13:00.
Salinity and DO was very erratic.

Depth and pH are suspicious from new deployment on 12/8 1100 through end of month
due to drastic difference between depth of new deployment and depth of old. Also pH
drastically increases with new deployment. Anomalous values are probably due to probe
obstruction and should be considered suspect.

Anomalous High Turbidity

12/04/98	04:00:00			
12/05/98	02:00:00			
12/05/98	15:30:00			
12/05/98	17:00:00			
12/06/98	06:00:00			
12/06/98	11:30:00			
12/06/98	13:30:00			
12/06/98	16:30:00			
12/06/98	17:30:00	through	12/06/98	18:00:00
12/06/98	20:00:00			
12/06/98	21:00:00	through	12/06/98	21:30:00
12/06/98	23:00:00			
12/07/98	02:30:00	through	12/07/98	03:00:00
12/07/98	04:00:00			
12/07/98	05:30:00	through	12/07/98	07:30:00
12/07/98	09:00:00			
12/07/98	11:30:00			
12/07/98	13:00:00			
12/07/98	14:00:00			
12/07/98	15:00:00	through	12/07/98	15:30:00
12/07/98	17:00:00			
12/07/98	18:00:00			
12/07/98	19:00:00	through	12/07/98	20:00:00
12/07/98	21:00:00	through	12/07/98	21:30:00
12/07/98	23:00:00			
12/08/98	00:00:00			
12/08/98	02:30:00	through	12/08/98	03:00:00
12/08/98	04:00:00	through	12/08/98	05:30:00
12/08/98	07:00:00	through	12/08/98	07:30:00
12/08/98	09:30:00	through	12/08/98	10:30:00
12/12/98	17:00:00			

Station 11

All data removed due to instrument being out of water
12/01/98 10:00:00 - 12/02/98 13:00:00

Dissolved Oxygen mg/L data removed due to possible membrane puncture
12/06/98 02:30:00 - 12/07/98 09:30:00

Anomalous Low Turbidity

12/15/98 09:30:00

12/15/98 12:00:00
12/15/98 14:00:00
12/26/98 11:30:00

11. Missing data:
January 1998

Station 06

No Data due to service
01/01/98 00:00:00 through 01/23/98 15:30:00
01/24/98 06:30:00
01/24/98 08:00:00
01/24/98 11:30:00
01/24/98 14:00:00 through 01/31/98 23:30:00

No Depth Data (the sensor was disabled)
01/23/98 16:00:00 through 01/24/98 13:30:00

No Turbidity Data (the sensor was disabled)
01/23/98 16:00:00 through 01/24/98 13:30:00

Low DO Outliers removed
01/23/98 16:00:00 through 01/23/98 16:30:00
01/23/98 18:00:00

Station 09

No Data to Report due to service
01/01/98 00:00:00 through 01/31/98 23:30:00

Station 10

No Salinity Data (the sensor was disabled)
01/01/98 00:00:00 through 01/11/98 03:30:00

Low DO Outliers removed
1/1/98 0:00:00 through 1/11/98 3:30:00

No Data due to service
1/11/98 4:00:00 through 1/23/98 15:30:00

High Salin Outliers removed
1/23/98 16:00:00 through 1/31/98 23:30:00

High SpCond Outliers removed
1/23/98 16:00:00 through 1/31/98 23:30:00

Station 11

No Data due to service
01/01/98 00:00:00 through 01/23/98 15:30:00

Station 18

No Data to Report (there was no station)
01/01/98 00:00:00 through 01/31/98 23:30:00

February 1998

Station 06

No Depth Data (the sensor was disabled)

02/13/98 16:00:00 through 02/14/98 10:00:00

No Turbidity Data (the sensor was disabled)

02/13/98 16:00:00 through 02/14/98 10:00:00

No Data due to service

02/01/98 00:00:00 through 02/13/98 15:30:00

02/13/98 18:00:00 through 02/13/98 18:30:00

02/13/98 22:00:00

02/13/98 23:30:00

02/14/98 01:00:00

02/14/98 04:00:00

02/14/98 06:00:00

02/14/98 07:00:00

02/14/98 09:30:00

02/14/98 10:30:00 through 02/28/98 23:30:00

Internal Error

02/13/98 20:30:00 through 02/13/98 21:00:00

02/14/98 01:30:00 through 02/14/98 02:30:00

02/14/98 06:30:00

02/14/98 08:00:00

02/14/98 10:00:00

Station 09

No Data to Report due to service

02/01/98 00:00:00 through 02/28/98 23:30:00

Station 10

High Salin Outliers removed

2/1/98 0:00:00 through 2/11/98 8:00:00

High SpCond Outliers removed

2/1/98 0:00:00 through 2/11/98 8:00:00

DO data removed; possible membrane puncture

2/10/98 01:00:00 through 2/11/98 08:00:00

No Data due to service

2/11/98 8:30:00 through 2/28/98 23:30:00

Station 11

No Data due to service

02/11/98 08:30:00 through 02/28/98 23:30:00

Station 18

No Data to Report (there was no station)

02/01/98 00:00:00 through 02/28/98 23:30:00

March 1998

Station 06

No Data to Report due to service

03/01/98 00:00:00 through 03/31/98 23:30:00

Station 09

No Data to Report due to service

03/01/98 00:00:00 through 03/31/98 23:30:00

Station 10

No Data to Report due to service

03/01/98 00:00:00 through 03/31/98 23:30:00

Station 11

No Data to Report due to service

03/01/98 00:00:00 through 03/31/98 23:30:00

Station 18

No Data to Report (there was no station)

03/01/98 00:00:00 through 03/31/98 23:30:00

April 1998

Station 06

No Data to Report due to service

04/01/98 00:00:00 through 04/30/98 23:30:00

Station 09

No Data due to service

04/01/98 00:00:00 through 04/07/98 13:30:00

04/23/98 04:30:00

04/23/98 05:30:00 through 04/30/98 23:30:00

First four DO values were deleted because membrane had not settled yet

04/07/98 14:00:00 through 15:30

DO removed due to possible membrane puncture

04/16/98 22:00:00 through 04/23/98 05:00:00

Station 10

No Data to Report due to service

04/01/98 00:00:00 through 04/30/98 23:30:00

Station 11

No Data to Report due to service

04/01/98 00:00:00 through 04/30/98 23:30:00

Station 18

No Data to Report (there was no station)

04/01/98 00:00:00 through 04/30/98 23:30:00

May 1998

Station 06

No Data due to service

05/01/98 00:00:00 through 05/08/98 15:30:00

No Data due to other reasons

05/12/98 20:00:00

05/12/98 21:30:00

05/12/98 23:30:00

05/13/98 00:30:00 through 05/13/98 01:30:00

05/13/98 03:00:00

05/13/98 04:30:00 through 05/13/98 05:00:00

05/13/98 09:30:00 through 05/13/98 10:00:00

05/13/98 11:00:00

05/13/98 12:00:00

05/13/98 13:00:00

05/13/98 18:30:00 through 05/13/98 20:30:00

05/13/98 22:00:00 through 05/13/98 22:30:00

No Data due to service

05/14/98 00:00:00 through 05/31/98 23:30:00

Station 09

No Data due to service

05/01/98 00:00:00 through 05/08/98 15:30:00

05/10/98 05:00:00 through 05/31/98 23:30:00

High DO Outliers removed

05/08/98 16:00:00 through 05/08/98 16:30:00

Salinity, SpCond and D0mg/L were deleted due to extremely high spcond and salinity

5/8/98 16:00 through 5/10/98 04:30

Station 10

No Data to Report due to service

05/01/98 00:00:00 through 05/31/98 23:30:00

Station 11

No Data due to service

05/01/98 00:00:00 through 05/08/98 15:30:00

05/15/98 23:00:00 through 05/31/98 23:30:00

High Spcond and Salinity data was removed due to possible calibration error

05/08/98 16:00:00 - 05/15/98 22:30:00

Station 18

No Data to Report (there was no station)

05/01/98 00:00:00 through 05/31/98 23:30:00

June 1998

Station 06

No Data due to service
06/01/98 00:00:00 through 06/11/98 15:30:00

No Depth Data (the sensor was disabled)
06/30/98 16:00:00 through 06/30/98 23:30:00

No Turbidity Data (the sensor was disabled)
06/30/98 16:00:00 through 06/30/98 23:30:00

Station 09

No Data due to service
06/01/98 00:00:00 through 06/11/98 15:30:00
06/16/98 04:30:00 through 06/28/98 15:30:00
06/30/98 06:00:00 through 06/30/98 23:30:00

First seven DO values were deleted because membrane had not settled yet
06/11/98 16:00 through 19:00

DO data removed due to possible membrane puncture
06/28/98 19:30:00 through 06/30/98 23:30:00

Station 10

No Data due to service
6/1/98 0:00:00 through 6/5/98 8:00:00
6/7/98 16:00:00 through 6/8/98 23:30:00
6/9/98 0:00:00 through 6/9/98 15:30:00
6/12/98 8:00:00 through 6/30/98 23:30:00

Data removed due to instrument being out of water
06/05/98 08:30:00 - 06/07/98 15:30:00
06/09/98 16:00:00 - 06/11/98 09:30:00

Station 11

No Data due to service
06/01/98 00:00:00 through 06/11/98 15:30:00
06/23/98 16:00:00 through 06/30/98 15:30:00

Low DO Outliers removed
06/23/98 06:00:00 through 06/23/98 08:00:00

All data removed due to instrument being out of water
06/23/98 09:30:00 - 15:00:00

Internal Error

06/23/98 15:30:00
06/30/98 16:00:00 through 06/30/98 23:30:00

Station 18

No Data to Report (there was no station)
06/01/98 00:00:00 through 06/30/98 23:30:00

July 1998

Station 06

No Depth Data (the sensor was disabled)

07/01/98 00:00:00 through 07/08/98 15:30:00

No Turbidity Data (the sensor was disabled)

07/01/98 00:00:00 through 07/08/98 15:30:00

No Data due to service

07/01/98 14:00:00

07/04/98 04:00:00

07/05/98 10:30:00

07/05/98 15:30:00

07/06/98 13:30:00

07/07/98 18:30:00 through 07/07/98 19:30:00

07/07/98 21:30:00

07/08/98 13:00:00 through 07/08/98 13:30:00

07/08/98 14:30:00 through 07/08/98 15:00:00

07/08/98 16:00:00 through 07/31/98 23:30:00

Low DO Outliers removed

07/01/98 01:30:00 through 07/01/98 02:00:00

07/01/98 03:00:00

07/01/98 06:30:00 through 07/01/98 08:30:00

07/01/98 09:30:00

07/01/98 20:00:00 through 07/01/98 23:30:00

07/02/98 00:00:00 through 07/02/98 10:00:00

07/02/98 14:30:00

07/02/98 19:30:00 through 07/02/98 23:30:00

07/03/98 00:00:00 through 07/03/98 10:30:00

07/03/98 11:30:00

07/03/98 14:00:00

07/03/98 19:30:00 through 07/03/98 21:30:00

07/03/98 22:30:00 through 07/03/98 23:30:00

07/04/98 00:00:00 through 07/04/98 00:30:00

07/04/98 01:30:00

07/04/98 02:30:00 through 07/04/98 03:30:00

07/04/98 04:30:00 through 07/04/98 09:00:00

07/05/98 04:00:00

07/05/98 05:30:00 through 07/05/98 06:00:00

07/06/98 02:30:00

07/06/98 06:30:00 through 07/06/98 07:00:00

07/06/98 22:30:00

07/07/98 00:30:00

07/07/98 02:30:00

07/07/98 04:00:00

07/07/98 23:00:00 through 07/07/98 23:30:00

07/08/98 00:00:00

07/08/98 01:00:00

07/08/98 05:30:00 through 07/08/98 07:00:00

Station 09

No Data to Report due to service

07/01/98 00:00:00 through 07/31/98 23:30:00

Station 10

No Data due to service

07/01/98 00:00:00 through 07/21/98 14:30:00

07/30/98 16:30:00 through 07/31/98 23:30:00

Data removed due to instrument being out of water

07/21/98 15:00:00 - 07/23/98 09:00:00

Station 11

No Data due to service

07/06/98 05:00:00 through 07/24/98 16:00:00

Internal Error

07/01/98 00:00:00 through 07/06/98 04:30:00

Low DO Outliers removed

07/28/98 03:30:00 through 07/28/98 13:00:00

07/28/98 20:00:00 through 07/29/98 06:30:00

Station 18

No Data to Report (there was no station)

07/01/98 00:00:00 through 07/31/98 23:30:00

August 1998

Station 06

No Data to Report due to service

08/01/98 00:00:00 through 08/31/98 23:30:00

Station 09

No Data due to service

08/01/98 00:00:00 through 08/21/98 15:30:00

08/31/98 08:30:00 through 08/31/98 23:30:00

First twelve DO values were deleted because membrane had not settled yet

08/21/98 16:00 through 21:30

Station 10

No Data due to service

08/01/98 00:00:00 through 08/21/98 15:30:00

08/31/98 08:30:00 through 08/31/98 23:30:00

Spcond, salinity, and DO data were deleted from 8/21/98 16:00 through 8/31/98 23:30

due to possible calibration error.

Station 11

All data removed due to instrument being out of water

08/17/98 09:30:00 - 08/18/98 09:00:00

No Depth Data (the sensor was disabled)
8/21/98 16:00:00 through 8/22/98 1:00:00

No Turbidity Data (the sensor was disabled)
8/21/98 16:00:00 through 8/22/98 1:00:00

No Data due to service
08/17/98 14:30:00
08/18/98 09:30:00 through 08/21/98 15:30:00
08/22/98 01:30:00 through 08/31/98 23:30:00

Low DO Outliers removed
08/12/98 07:30:00 through 08/12/98 08:00:00
08/12/98 20:00:00
08/13/98 06:30:00
08/13/98 17:30:00
08/13/98 21:00:00 through 08/14/98 10:30:00
08/14/98 11:30:00 through 08/14/98 12:00:00
08/14/98 13:00:00 through 08/14/98 13:30:00
08/14/98 14:30:00 through 08/14/98 15:00:00
08/14/98 16:00:00 through 08/14/98 21:00:00
08/14/98 22:00:00 through 08/16/98 00:00:00
08/16/98 01:30:00 through 08/16/98 02:00:00
08/16/98 03:00:00 through 08/16/98 05:30:00
08/16/98 06:30:00 through 08/16/98 08:00:00
08/16/98 09:30:00
08/16/98 21:30:00
08/16/98 22:30:00 through 08/17/98 04:00:00

Station 18
No Data to Report (there was no station)
08/01/98 00:00:00 through 08/31/98 23:30:00

September 1998

Station 06
No Data to Report due to service
09/01/98 00:00:00 through 09/30/98 23:30:00

Station 09
No Data to Report due to service
09/01/98 00:00:00 through 09/30/98 23:30:00

Station 10
No Data to Report due to service
09/01/98 00:00:00 through 09/30/98 23:30:00

Station 11
No Data to Report due to service
09/01/98 00:00:00 through 09/30/98 23:30:00

Station 18

No Data to Report (there was no station)
09/01/98 00:00:00 through 09/30/98 23:30:00

October 1998

Station 06

No Data due to service and data uploading
10/01/98 00:00:00 through 10/08/98 11:30:00

No Depth Data (the sensor was disabled)
10/08/98 12:00:00 through 10/12/98 14:00:00

No Turbidity Data (the sensor was disabled)
10/08/98 12:00:00 through 10/12/98 14:00:00

No Data due to service and data uploading
10/12/98 14:30:00 through 10/30/98 15:30:00

No Data due to other reasons
10/09/98 19:30:00
10/10/98 23:30:00
10/11/98 02:30:00 through 10/11/98 03:00:00

Internal Error

10/11/98 00:30:00 through 10/11/98 01:30:00
10/11/98 03:30:00 through 10/11/98 04:00:00
10/11/98 06:00:00
10/11/98 11:00:00 through 10/11/98 11:30:00
10/11/98 12:30:00
10/11/98 14:00:00 through 10/11/98 14:30:00
10/11/98 15:30:00
10/11/98 16:30:00
10/11/98 18:30:00
10/12/98 11:30:00
10/31/98 09:30:00
10/31/98 16:00:00
10/31/98 22:30:00 through 23:00:00

Station 09

No Data due to service and data uploading
10/01/98 00:00:00 through 10/08/98 11:30:00
10/27/98 12:30:00 through 10/30/98 15:30:00

DO data deleted due to possible membrane puncture
10/14/98 05:00:00 through 10/26/98 10:00

All Data removed - Instrument out of water
10/26/98 10:30:00 - 10/27/98 12:00:00

Station 10

No Data due to service and data uploading
10/01/98 00:00:00 through 10/08/98 11:30:00
10/22/98 14:00:00 through 10/31/98 23:30:00

DO data removed due to possible membrane puncture
10/12/98 19:00:00 - 10/22/98 13:30:00

Station 11

No Data due to service and data uploading
10/01/98 00:00:00 through 10/08/98 11:30:00
10/27/98 10:00:00 through 10/31/98 23:30:00

All data removed due to instrument being out of water
10/08/98 12:00:00
10/26/98 11:00:00 - 10/27/98 09:30:00

All DO data removed - very erratic
10/01/98 00:00:00 - 10/31/98 23:30:00

Station 18

No Data due to service and data uploading
10/1/98 0:00:00 through 10/8/98 11:30:00
10/27/98 12:00:00 through 10/30/98 15:30:00

All data removed due to instrument being out of water
10/26/98 10:00:00 - 10/27/98 11:30:00

Low DO Outliers removed

10/19/98 10:30:00
10/23/98 7:30:00
10/25/98 1:00:00
10/26/98 8:00:00
10/26/98 9:00:00

November 1998

Station 06

No Data due to service
11/01/98 07:00:00 through 11/24/98 11:30:00

Internal Error

11/01/98 06:30:00

No Salinity Data (the sensor was disabled)
11/24/98 12:00:00 through 11/30/98 23:30:00

No DO % Data (the sensor was disabled)
11/24/98 12:00:00 through 11/30/98 23:30:00

Depth deleted from 11/24/98 1200-1330; depth was unusually high and deleted
due to possible probe problem

Station 09

No Salinity Data (the sensor was disabled)
11/24/98 12:00:00 through 11/30/98 23:30:00

No DO % Data (the sensor was disabled)
11/24/98 12:00:00 through 11/30/98 23:30:00

No Data (due to service)
11/04/98 15:00:00 through 11/24/98 11:30:00

Station 10
No Data to Report (due to service)
11/01/98 00:00:00 through 11/30/98 23:30:00

Station 11
No Data (due to service)
11/01/98 00:00:00 through 11/24/98 11:30:00

No DO % or salinity Data (the sensor was disabled)
11/24/98 14:00:00 through 11/30/98 23:30:00

All data removed due to instrument being out of water
11/24/98 12:00:00 - 13:30:00

Station 18
No Data (the sonde was not deployed due to insufficient sondes available)

11/13/98 4:00:00 through 11/30/98 23:30:00

December 1998

Station 06
No Salinity Data (the sensor was disabled)
12/01/98 00:00:00 through 12/07/98 09:30:00

No DO % Data (the sensor was disabled)
12/01/98 00:00:00 through 12/07/98 09:30:00

All Data removed - Instrument out of water
12/01/98 08:30:00 - 12/02/98 13:00:00

No Data due to service
12/07/98 10:00:00 through 12/31/98 23:30:00

Station 09
No Salinity Data (the sensor was disabled)
12/01/98 00:00:00 through 12/28/98 10:00:00

No DO % Data (the sensor was disabled)
12/01/98 00:00:00 through 12/28/98 10:00:00

Depth data removed - possible bad calibration; low depth compared with the rest of the month's data
12/01/98 00:00:00 - 12/07/98 09:30:00

Specific Conductivity data removed; was very high compared to rest of the month;

possible bad calibration

12/01/98 00:00:00 - 12/07/98 09:30:00

Dissolved Oxygen mg/L data removed due to abrupt increase; possible membrane

puncture

12/27/98 22:00:00 - 12/28/98 10:00:00

No Data due to service and data uploading

12/07/98 10:00:00 through 12/10/98 15:30:00

12/28/98 10:30:00 through 12/31/98 23:30:00

Station 10

No Data due to service

12/01/98 00:00:00 through 12/03/98 15:30:00

12/15/98 13:30:00 through 12/31/98 23:30:00

High Salin Outliers removed

12/03/98 16:00:00 through 12/03/98 16:30:00

Spcond, salinity, and DO data were deleted from 12/3/98 16:00 through 12/15/98 13:00.

Salinity and DO was very erratic.

Station 11

No DO % and salinity Data (the sensor was disabled)

12/1/98 0:00:00 through 12/7/98 9:30:00

All data removed due to instrument being out of water

12/01/98 10:00:00 - 12/02/98 13:00:00

Dissolved Oxygen mg/L data removed due to possible membrane puncture

12/06/98 02:30:00 - 12/07/98 09:30:00

No Data due to service

12/01/98 09:00:00 through 12/01/98 09:30:00

12/07/98 10:00:00 through 12/10/98 15:30:00

12/28/98 10:30:00 through 2/31/98 23:30:00

Station 18

No Data to Report No Data (the sonde was not deployed due to insufficient sondes

available)

12/01/98 00:00:00 through 12/31/98 23:30:00

12. Other remarks

Note: All time drifts were corrected.

January 1998

Station 06
Time Drift
01/24/98 6:16:51
01/24/98 7:08:37 through 01/24/98 7:38:37
01/24/98 8:39:17 through 01/24/98 13:39:17

February 1998

Station 06
02/13/98 19:00:16 through 02/14/98 5:30:16
02/14/98 6:24:13
02/14/98 7:33:22 through 02/14/98 10:03:22

March 1998

Station 09
Time Drift
03/02/98 16:02:35 through 03/31/98 12:02:35
03/31/98 13:02:59 through 03/31/98 23:32:59

April 1998

Station 09
Time Drift
4/23/98 5:00:51

May 1998

Station 06
Time Drift
05/12/98 20:00:00 through 05/13/98
05/13/98
05/12/98 21:17:12 through 05/13/98 0:17:12
05/13/98 0:30:00 through 05/13/98 1:30:00
05/13/98 2:18:34 through 05/13/98 4:18:34
05/13/98 5:48:51 through 05/13/98 9:18:51
05/13/98 10:36:46
05/13/98 11:52:30 through 05/13/98 18:22:30
05/13/98 21:04:39 through 05/14/98 4:34:39
05/14/98 5:34:56

Station 10
Time Drift
06/05/98 8:30:00 through 06/07/98 15:30:00

Station 11
Time Drift
05/08/98 16:26:38 through 05/15/98 22:56:38