

Padilla Bay (PDB) NERR Water Quality Metadata
January - December 2000
Latest update: 19 July 2001

I. Data Set and Research Descriptors

1. Principal investigator and contact persons

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2. Entry verification

The data are downloaded from the YSI 6000s or 6600s to an IBM compatible PC. Graphs of all data are printed using Ecowatch software and are examined for suspect, anomalous, or outlying data. Files are converted to Macintosh Excel files and edited for transfer to the NERRS CDMO. Files are merged to contain one full month of data. Missing data (from maintenance and downloading down time) are inserted into the spreadsheet and are denoted by a period (.). Suspect data are deleted and replaced by periods (.). After formatting the data, some files are more closely checked for anomalies in DeltaGraph Pro(r). Edited and raw files are archived on a Macintosh hard drive at Padilla Bay NERR. No CDMO Excel 5.0 macros were used. Robin Cottrell completed this process of entry verification for the 2000 data. Robin Cottrell and Douglas Bulthuis completed final verification and this metadata documentation.

3. Research Objectives

The Bay View Channel site has been set out to detect and monitor short-term variability and long-term changes in Padilla Bay. The Joe Leary Slough site has been set at the mouth of the slough to measure the effects of tidal "closure" of the tide gates on water in the slough and to detect long-term

changes in water quality in the slough associated with implementation of a non point source pollution watershed action plan. Measurements are taken every 30 minutes at both sites unless otherwise noted in data anomalies.

4. Research methods

A YSI 6000 or 6600 were deployed in Joe Leary Slough in a vertical position, 0.25 m above the bottom of the slough (from 1 January to 11 October and at a depth of 1.7 m from December 20-13), in a 4 in. diameter PVC pipe which has holes and slits drilled in it to allow water circulation around the probes. The PVC pipe is attached to a steel pipe that was driven into the sediment.

During September to December 2000, the lower part of Joe Leary Slough was dredged, including the area where the datasonde was deployed. In order to prevent damage to the datasonde, the deployment apparatus was removed and no data collected from October 12 to December 19. After the dredging was completed the area was examined. The dredging had changed the configuration of the channel so that there was very little flow of water over the spot that the datasonde had been deployed for the last 5 years. Therefore the deployment site was moved about 6 m away so that the deployment would, once again, be near the center of the flow toward the tide gate tubes. Because the bottom was dredged out, the area of deployment is now much deeper than it had been. In order to keep the data comparable with the previous 5 years of data collection, the YSI was deployed at the same height relative to Mean sea Level. However, because the bottom was dredged out under this area, the new depth of the datasonde is 1.7 m above the bottom from December 20 - 31, 2000.

Some dissolved oxygen data from Joe Leary Slough were anomalous and could be explained if there were poor exchange between the water inside the deployment tube and water outside the deployment tube. Therefore during four days in October 1998 and 10 days in December 1998, YSI datasondes were deployed inside and outside the deployment tube simultaneously at the same depth. All data were

very similar inside and outside the deployment tube (or fluctuated in parallel indicating differences in calibration) during October and December with the exception of the dissolved oxygen data during October. During four tidal cycles in October 1998, the dissolved oxygen concentration inside the deployment tube did not increase with increasing salinity as much as dissolved oxygen in the water outside the deployment tube. (In Joe Leary Slough, salinity values typically fluctuate from 0 to 10, 20 or even 30 PSU with each tidal cycle, with higher oxygen concentrations usually observed in the high salinity water.) The October dissolved oxygen data could indicate that organic material with a high oxygen demand may have accumulated inside the deployment tube and/or epiphytic and bacterial growth along the openings in the deployment tube may be exerting a high oxygen demand on the water in the tube. If exchange between the water inside and outside the pipe were slow enough, the material and organisms inside the tube could exert a measurable decrease in dissolved oxygen. When the same experiment was repeated in December 1998, there was no difference in dissolved oxygen inside and outside the deployment tube. Therefore, dissolved oxygen data from Joe Leary Slough need to be interpreted with caution because there may be times when the data indicate dissolved oxygen concentrations inside the deployment tube that are different than concentrations in Joe Leary Slough outside the deployment tube. In order to reduce the possibility of such differences occurring, the deployment pipe was replaced so that during 2000, the cutout portion of the deployment pipe around the sonde guard was increased and only two one-inch wide strips of deployment pipe remained around the sensor guard. This relatively unrestricted flow should reduce the possibility of such differences in dissolved oxygen inside and outside the pipe during 2000.

A YSI 6000 or 6600 were deployed in Padilla Bay in a tributary of Bayview Channel. They were deployed using the same design as that in Joe Leary Slough, except that the PVC pipe was attached to two steel pipes. The depth of the YSI was -1.1 m (depth below MLLW) and about 0.75 m above the bottom along the

sloping edge of a small channel draining the surrounding intertidal flats.

In all cases, measurements of temperature, specific conductivity, salinity, percent saturation of dissolved oxygen, depth and pH are recorded every half hour. At the end of each sampling period, the YSI 6000 or 6600 is brought back into the laboratory for downloading, cleaning, and recalibration.

All calibrations are conducted according to the protocols in the YSI 6000 Operation and Service Manual. For the conductivity calibration, a conductivity standard of 50 mS/cm was used. The pH calibration is a 2 point calibration using standard pH buffer solutions with a pH of 7 and 10. The KCl solution and Teflon membrane on the dissolved oxygen probe are changed prior to each YSI 6000 or 6600 deployment and the new oxygen membrane is allowed to soak overnight in water saturated air before calibration.

5. Site location and character

General: Padilla Bay (48° 30' N; 122° 30' W) is a shallow embayment in northern Puget Sound. The tide flats are dominated by the eelgrass *Zostera marina*, which covers approximately 3,000 ha. *Zostera japonica*, a recent invader to the region, now covers about 350 ha of the bay. Tides are mixed semi-diurnal with a mean range of 1.55 m. Salinity varies from about 15 to 30 PSU.

Padilla Bay is an "orphaned" estuary in that the Skagit River no longer empties directly into it. Most of the land in the 9300 ha Padilla Bay watershed is agricultural, and is drained by four sloughs which empty into the bay. The salinity in Padilla Bay reflects both the sloughs that flow into the bay and the greater Puget Sound-Georgia Basin estuary in which Padilla Bay is located. Major freshwater flows into this area of the Puget Sound-Georgia Basin estuary come from the Fraser and Nooksack Rivers to the north and from the Skagit River to the south.

Joe Leary Slough Site (48° 31' 05.3" N; 122° 28' 22.8" W) Joe Leary

Slough drains land that is predominantly annual crop agriculture and pasture land with some low-density housing. The slough is characterized by high fecal and nutrient inputs, high turbidity, and low dissolved oxygen concentrations. During the summer, there is low flow and the depth ranges from 0.5-1.5 m. During winter flooding, the slough can reach a depth of 4 m. There is a dam at the mouth of the slough with twelve 4 ft. diameter outfall pipes that have one-way hinged tide gates. Upstream water flows out of Joe Leary Slough when water height in Padilla Bay is lower than water height in Joe Leary Slough (i.e. ebbing tide and low water). Some saline water from Padilla Bay seeps through the tide gates during high water. The bottom of the slough is composed of very soft sediment, which is periodically dredged. A YSI 6000 (or 6600) is deployed on the freshwater side of the tide gates. The depth of the datasonde was about 0.25 m above the bottom for the last five years and from January 1 through October 11, 2000. The depth was changed to 1.7 m above the bottom from December 20 -31, 2000 (see Research Methods above). The latitude/longitude were measured with a Trimble GeoExplorer II and differentially corrected with post processing providing a manufacturer's stated accuracy of ± 5 m.

Bayview Channel Site (48° 29' 46.6" N; 122° 30' 01.8" W) Bayview Channel, a major Padilla Bay tributary/distributary, floods and drains intertidal flats including eelgrass beds, mats of macroalgae, and flats without macro-vegetation. The YSI 6000 (or 6600) is located in a tributary channel to Bayview Channel. The tributary drains predominately eelgrass (*Zostera marina* and *Z. Japonica*) covered intertidal flats. Bottom sediments beneath the YSI 6000 are fine silt and clay overlying sand. The YSI 6000 is deployed in a black PVC pipe that is attached to two steel pipes set in the sediment. When deployed, the datasonde is located about 0.75 m above the bottom. Pollutants entering the bay include general non-point source, agricultural non-point source, and fecal coliform bacteria from agriculture, failing septic tanks and wildlife. The

latitude/longitude were measured with a Trimble GeoExplorer II and differentially corrected with post processing providing a manufacturer's stated accuracy of $\pm$ 5m.

6. Data collection period

Data collection was continuous from January 1 to December 31 at the Bay View Channel site and from January 1 to October 11 and from December 11 to 31 at the Joe Leary Site except for times of downloading, cleaning and recalibration as noted in the missing data section. No data collection was attempted in Joe Leary Slough from October 12 to December 19 because of dredging of the slough in the area where the sonde is deployed (see Research Methods, above).

Deployment and retrieval times at the Joe Leary Slough site and the Bay View Channel site are listed below. The times indicate the first and last measurements made with each deployment.

Joe Leary Slough (JL)

Deployment Date/Time		Retrieval Date/Time	
(MM/DD/YY)	(HH:MM:SS)	(MM/DD/YY)	(HH:MM:SS)
01/06/00	16:30:00	02/01/00	15:00:00
02/01/00	16:00:00	02/29/00	16:00:00
02/29/00	17:00:00	03/14/00	13:30:00
03/14/00	14:00:00	03/29/00	13:00:00
03/29/00	14:00:00	04/19/00	13:30:00
04/19/00	14:00:00	05/04/00	09:30:00
05/04/00	10:30:00	05/23/00	14:30:00
05/23/00	15:00:00	06/06/00	12:00:00
06/06/00	13:00:00	06/20/00	14:00:00
06/20/00	15:00:00	07/05/00	12:30:00
07/05/00	14:00:00	07/19/00	11:00:00
07/19/00	11:30:00	07/25/00	14:00:00
07/25/00	14:30:00	08/08/00	11:30:00
08/08/00	12:00:00	08/22/00	14:30:00
08/22/00	15:00:00	09/11/00	10:00:00
09/11/00	11:00:00	09/27/00	14:30:00
09/27/00	15:00:00	10/11/00	14:00:00
12/20/00	15:30:00	01/16/01	13:00:00

Bay View Channel (BY)

Deployment Date/Time		Retrieval Date/Time	
(MM/DD/YY)	(HH:MM:SS)	(MM/DD/YY)	(HH:MM:SS)

12/23/99	16:00:00	02/03/00	13:30:00
02/03/00	14:30:00	03/07/00	14:00:00
03/07/00	15:00:00	04/11/00	09:00:00
04/11/00	10:00:00	05/16/00	14:00:00
05/16/00	14:30:00	06/23/00	08:00:00
06/23/00	09:00:00	08/18/00	06:00:00
08/18/00	06:30:00	09/07/00	14:30:00
09/07/00	15:00:00	10/11/00	15:00:00
10/11/00	15:30:00	11/16/00	14:00:00
11/16/00	14:30:00	12/14/00	09:30:00
12/14/00	10:00:00	01/23/01	14:00:00

7. Distribution

According to the Ocean and Coastal Resource Management Data Dissemination Policy

for the NERRS System-wide Monitoring Program, NOAA/ERD retains the right to

analyze, synthesize and publish summaries of the NERRS System-wide Monitoring

Program data. The PI retains the right to be fully credited for having collected

and processed the data. Following academic courtesy standards, the PI and NERR

site where the data were collected will be contacted and fully acknowledged in

any subsequent publications in which any part of the data are used.

Manuscripts

resulting from the NOAA/OCRM supported research that are produced for publication

in open literature, including refereed scientific journals, will

acknowledge

that the research was conducted under an award from the Estuarine

Reserves

Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set

enclosed

within this package/transmission is only as good as the quality assurance and

quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent

use/misuse in

any further analyses or comparisons. The Federal government does not assume

liability to the Recipient or third persons, nor will the Federal government

reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see section 1. Principal investigators and contact persons), from the Data Manager at the Centralized

Data Management Office (please see personnel directory under general information link on CDMO homepage) and online at the CDMO homepage <http://inlet.geol.sc.edu/cdmohome.html>. Data are available in text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format.

8. Associated researchers and projects
None

II. Physical Structure Descriptors

9. Variable sequence, range of measurements, units, resolution, 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.

*During 1997 records were kept of the atmospheric pressure during calibration of

depth and the apparent depth after each two to four week deployment. The data indicated that depth readings could read as much as 0.28 m above or below true depth. Therefore, although the sensor may accurately read ± 0.001 m, changes in atmospheric pressure when deployed indicate depth may be ± 0.3 m.

10. Coded variable code definitions

JL - Joe Leary Slough Site; BY - Bayview Channel Site.

11. Data anomalies

January

JL:

No data for all parameters until 6 Jan at 1630 because the batteries failed

during deployment.

Dissolved oxygen data from 0400 on 23 Jan through the end of the month were low;

cause is unknown but may be related to debris found in the sonde guard.

There

was also evidence of beaver activity at this site. Data were retained.

BY:

There was no pH probe installed during January.

The DO membrane was damaged after 2330 on 17 Jan, as indicated by an abrupt drop

in the readings eventually falling to negative values, so all DO data after that

date have been deleted. During the following periods turbidity readings were

high and erratic so the data were deleted.

Date	Time
01/02/2000	23:30:00
01/03/2000	0:00:00 - 1:00:00
01/03/2000	2:30:00 - 4:00:00
01/03/2000	5:30:00, 7:30:00
01/06/2000	6:30:00
01/11/2000	2:00:00, 11:30:00, 21:30:00
01/13/2000	13:00:00
01/16/2000	10:00:00, 15:00:00
01/20/2000	20:30:00
01/29/2000	8:00:00 - 8:30:00

February

JL:

Dissolved oxygen data from 1 Feb at 0000 through 1500 were low; cause is unknown but may be related to debris found in the sensor guard. There was evidence of beaver activity at this site. Data were retained.

There are no data for all parameters on 29 Feb at 1630 due to a 40 second delay in the new 6600 software when logging samples. The last sample was cut off when downloading because 16:30 was specified instead of 16:30:40. During the following periods turbidity values were high and erratic so the data were deleted:

02/12/2000 16:00:00
02/17/2000 22:00:00 - 23:30:00
02/18/2000 0:00:00 - 0:30:00, 21:00:00 - 23:30:00
02/19/2000 0:00:00 - 1:00:00, 3:00:00
02/20/2000 2:00:00 - 3:00:00, 5:00:00
02/21/2000 16:00:00
02/27/2000 15:30:00 - 16:00:00, 19:00:00 - 22:30:00
02/28/2000 16:30:00, 17:30:00, 18:30:00 - 23:30:00
02/29/2000 0:00:00 - 1:00:00, 2:30:00 - 6:00:00
02/29/2000 10:00:00 - 11:00:00, 13:00:00

BY:

There are no pH data from 0000 on 1 Feb through 1330 on 3 Feb because there was

no pH probe.

Dissolved oxygen data from 1 Feb, 0000 to 3 Feb, 1330 and 21 Feb, 1800 to 29

Feb, 2330 has been deleted due to damaged DO membranes.

Erratic high turbidity values on 9 Feb at 0900 and 1230 and 29 Feb at 1030

were removed.

March

JL:

During the following periods turbidity values were high and erratic so the data

were deleted.

03/12/2000 20:30:00
03/13/2000 21:30:00, 22:00:00, 23:00:00
03/14/2000 1:00:00
03/15/2000 19:00:00, 20:00:00
03/16/2000 12:30:00
03/21/2000 17:30:00
03/22/2000 12:30:00
03/27/2000 18:00:00

BY:

Dissolved oxygen data from 1 March, 0000 to 7 March, 1400 have been deleted due

to a damaged DO membrane.

During the following periods turbidity values were high and erratic so the data

were deleted:

03/7/2000 8:30:00
03/16/2000 10:30:00, 12:30:00, 14:30:00
03/27/2000 23:00:00

April

JL:

Dissolved oxygen data from 12 April, 2100 through 2200 have been deleted due to negative values.

Dissolved oxygen data from 13 April, 2300 to 19 April, 1330 have been deleted

due to anomalously low readings (including negative numbers) at the end of

logger deployment.

Turbidity data on 7 April at 1000 and from 12 April, 0630 to 19 April, 1330 has

been deleted due to high and erratic readings, the latter probably due to debris

inside the sensor guard.

BY:

There are no data for all parameters on 11 April at 0930 due to a 40 second

delay in the 6600 software when logging samples. The last sample was cut off

when downloading because 09:30 was specified instead of 09:30:40.

During the following periods turbidity values were high and erratic so the data

were deleted.

04/10/2000 13:00:00
04/15/2000 6:00:00
04/18/2000 16:30:00
04/19/2000 15:30:00
04/26/2000 7:30:00, 9:30:00
04/27/2000 3:30:00, 7:30:00, 13:00:00
04/29/2000 23:30:00
04/30/2000 20:00:00

May

JL:

There are no data for all parameters on 4 May at 1000 due to a 40 second delay

in the 6600 software when logging samples. The last sample was cut off when

downloading because 10:00 was specified instead of 10:00:40.

On 16 May at 2200 there was dip in values for temp, pH, salinity and D.O. and a

small peak in turbidity, cause unknown. Data were retained.

During the following periods turbidity values were high and erratic so the data

were deleted, this was probably due to debris caught in the sensor guard:

05/26/00 19:00:00, 20:30:00
05/27/00 13:00:00
05/28/00 0:30:00, 13:00:00, 13:30:00, 15:30:00, 20:30:00, 21:30:00
05/29/00 2:00:00, 4:00:00, 7:30:00, 9:00:00, 10:30:00 to 11:30:00,
13:30:00, 19:30:00, 20:30:00
05/30/00 1:30:00, 2:00:00, 4:30:00, 5:00:00, 7:00:00
05/31/00 13:30:00, 14:30:00, 15:30:00, 18:00:00 to 19:30:00,
21:00:00 to 23:30:00

DO oxygen dips down to 22.1% and 2.3 mg/L on 05/17/00 13:30:00. Cause unknown.

Data were retained.

BY: Salinity values took an unusual dip beginning at 1230 on 25 May and continuing low until 530 on 26 May, cause unknown. Data retained.

During the following periods turbidity values were high and erratic so the data

were deleted, cause unknown:

05/01/00 20:00:00, 21:30:00
05/02/00 0:30:00, 2:00:00, 4:30:00, 7:00:00, 10:30:00, 18:30:00
05/04/00 5:30:00
05/06/00 14:00:00, 16:00:00, 17:00:00 to 18:00:00, 19:30:00
05/08/00 7:00:00
05/10/00 22:00:00, 23:00:00
05/11/00 10:00:00
05/12/00 0:30:00, 2:30:00 to 4:00:00, 17:30:00
05/14/00 17:00:00
05/15/00 6:00:00
05/16/00 11:00:00
05/24/00 14:30:00, 15:00:00

June

JL:

There is no data for all parameters on 6 June at 1230 and 20 June at 1430 due to

a 40 second delay in the 6600 software when logging samples. The last sample was cut off when downloaded because 12:30 (or 14:30) was the time specified instead of 12:30:40 (or 14:30:40).

Dissolved oxygen values were deleted from 20 June at 1500 through the end of the

month because the D.O. membrane was damaged soon after deployment.

During the following periods turbidity values were high and erratic so the data

were deleted:

06/01/00 8:00:00, 8:30:00, 17:30:00
06/02/00 4:00:00
06/05/00 19:00:00
06/06/00 1:00:00, 3:00:00

06/13/00 1:00:00
06/24/00 4:30:00

BY:

Dissolved oxygen values were deleted from 29 June at 1630 to 2330 on 30 June because of an abrupt drop to negative values. Damage to the D.O. membrane is suspected but was not apparent at retrieval or during the calibration check. Turbidity values that were high and erratic were deleted for 4 June at 1200, 7 June at 1500, and 19 June at 1030.

July

JL:

Dissolved oxygen values were deleted from 1 July at 0000 through 5 July at 1230 because the D.O. membrane was damaged. There are no data for all parameters on 5 July at 1300 due to a 40 second delay in the 6600 software when logging samples. The last sample was cut off when downloaded because 13:00 was the time specified instead of 13:00:40. There were no data for all parameters at 1330 on 5 July because of exchange of datasondes. During the following periods turbidity values were high and erratic so the data were deleted, this was probably due to debris in the sensor guard:

07/04/00 23:00:00
07/15/00 19:30:00
07/16/00 7:00:00, 7:30:00
07/17/00 1:30:00, 13:30:00, 15:00:00, 20:30:00, 22:00:00
07/18/00 9:30:00
07/19/00 0:00:00, 3:30:00, 5:30:00, 6:00:00, 7:00:00, 8:30:00, 9:00:00

BY:

All dissolved oxygen data were deleted because of suspected damage to the D.O. membrane. Damage was not evident visually or at calibration check but readings were abnormally low for this site during July and early in this deployment negative values were recorded (see June notes). Turbidity values that were high and erratic were deleted for July dates and times as follows: 7 July at 630; 13 July at 330; 23 July at 800 and 1030; 29 July at 2130; 30 July at 0530.

August

JL:

One high (over 1000 NTU) turbidity value at 1230 on 22 August was deleted.
Dissolved oxygen should be interpreted with caution from 1500 on 22 August through the end of the month, because later in this deployment (in September) there was obvious damage to the D.O. membrane.

BY:

Dissolved oxygen data were deleted from 1 August at 0000 to 18 August at 0600 because of suspected damage to the D.O. membrane. (See July notes). Turbidity values that were high and erratic were deleted for August dates and times as follows: 4 August at 1230; 5 August at 1900; 6 August at 1700 and 2000; 19 August at 0100 and 1730; 29 August at 0430 and 2100.

September

JL:

Dissolved oxygen values were deleted from 2 September at 0430 through 11 September at 1000 due to a damaged D.O. membrane. There are no data for all parameters on 11 September at 1030 due to a 40 second delay in the 6600 software when logging samples. The last sample was cut off when downloaded because 10:30 was the time specified instead of 10:30:40. Turbidity values that were high and erratic were deleted for 14 September at 0600 and 16 September at 1600.

One salinity value on 12 September at 0700 was deleted because it was erratic and high, cause unknown.

Dredging in Joe Leary slough was first noticed on Monday, 25 September but may

have been started earlier on the weekend. Dredging began at the Bay View -

Edison Road bridge and progressed westward toward the tide gates where the

datasonde was deployed. Turbidity peaks began to increase during the low tides

of 23 September. All data from this point on should be interpreted with caution

due to the dredging that went on for many weeks.

During the following periods depth values were negative (largest was - 0.09m) so

they were deleted. There was no evidence that the probes had been exposed to the

air:

09/20/00	6:00:00, 6:30:00
09/21/00	5:30:00 - 8:30:00
09/22/00	7:00:00 - 9:00:00
09/23/00	8:00:00 - 10:00:00

09/24/00 9:00:00 - 11:00:00
09/26/00 12:00:00

BY:

Salinity values took an unusual dip beginning at 1800 on 26 September and remained low until 0500 on 27 September, cause unknown. Data were retained.

Dissolved oxygen data were deleted from 7 September at 1500 through the end of

the month because of damage to the D.O. membrane.

During the following periods turbidity values were high and erratic so the data

were deleted, cause unknown.

09/01/2000 20:30:00
09/02/2000 14:30:00, 17:00:00, 17:30:00
09/06/2000 7:00:00, 14:00:00, 14:30:00, 23:30:00
09/07/2000 11:00:00
09/09/2000 19:30:00

October

JL:

Joe Leary slough was being dredged during this abbreviated deployment and all

parameters reflect this altered environment. The sonde was pulled from this

site on 11 October at 1400 to keep it from being damaged.

No data for all parameters from that time until the site was reinstalled in December.

BY:

Dissolved oxygen data from 1 October, 0000 to 11 October at 1500 has been deleted due to damage to the DO membrane.

Turbidity values that were high and erratic were deleted for October dates and

times as follows: 7 October at 2000; 27 October at 0230.

November

JL:

No data for all parameters. There was no datalogger deployed because the channel was being dredged.

BY:

No data anomalies.

December

JL:

The Joe Leary slough deployment site was relocated after the slough was dredged.

At the new site the sonde is positioned about 1.7 meters above the bottom of the slough to keep it at approximately the same level, in relationship to the tide gates, as it was before dredging. During this deployment the sonde was about 0.15 m above the planned depth of 1.7 m because the security chain was too short. The data from Joe Leary Slough beginning in December 2000 reflects this change in the depth configuration at the deployment site. In particular, high salinity water seeped through the tide gates each tidal cycle (see Section 5 above) and filled the bottom of the slough up to the height of the datasonde from January thorough October 2000. Starting in December, this water flowed into the deeper portions of the slough that had been dredged. Thus, from December 2000, the salinity at the datasonde is lower than the rest of the year because the high salinity water remained in the newly formed deeper parts of the slough and did not mix into the water layers where the sonde was located. Deployment began 12/20 1530 due to dredging.

BY:

The data for dissolved oxygen and salinity from 1600 on 24 December through the end of the month were deleted. The D.O. membrane was damaged (probably by the crustacean found living in the sensor guard) and something had packed debris into the salinity probe orifice, perhaps living there, causing erratically low readings. Salinity data from 14 December at 1000 up to deleted data should be interpreted with caution even though it looks reasonable. Turbidity values that were high and erratic, probably due to debris or animals in the sensor guard, were deleted for December dates and times as follows: 2 December at 1900; 13 December at 0500; 22 December at 0030.

12. Missing data

Missing data are denoted by a period in the data set. Data are missing due to equipment failure where no probes deployed, maintenance/calibration of equipment, elimination of obvious outliers, or elimination of data due to

calibration (both pre and post) problems. For more details on deleted data, see the Anomalous Data Section (11). To find out more details about missing data, contact the Research Coordinator at the site submitting the data.

13. Post deployment information

End of Deployment Post-calibration Readings in Standard Solutions:

Site Date Spec.Cond. Std:50 (mS) D.O. (Air Sat.) Std:100%
 Turbidity Std:100 NTU
 pH Std: 7

BY 03 Feb 2000	49.0	Damaged	100.8
N/A			
BY 07 March 2000	50.17	Damaged	100.7
6.99			
BY 11 April 2000	49.97	Damaged(after deployment)	97.7
7.59			
BY 16 May 2000	49.7	99.3	96.3
7.04			
BY 23 June 2000	50.37	100.1	97.8
7.12			
BY 18 August 2000	48.05	94 (damaged?)	101.4
7.14			
BY 07 September 2000	49.7	99.3	96.5
7.03			
BY 11 October 2000	48.95	Damaged	97.5
6.94			
BY 16 November 2000	50.22	101.8	115.3
7.0			
BY 23 January 2000	139-43 (unstable)	Damaged	97.2
7.12			
JL 01 February 2000	50.54	102.4	102.2
7.01			
JL 29 February 2000	49.07	99.7	96.3
7.08			
JL 14 March 2000	48.97	104.2	99.7
7.08			
JL 29 March 2000	51.14	101.5	99.7
7.11			
JL 19 April 2000	50.63	93.9	99.0
6.98			
JL 04 May 2000	50.01	99.6	99.3
7.03			
JL 23 May 2000	49.15	92.2	103.4
7.01			
JL 06 June 2000	50.22	101.3	102.7
7.27			
JL 20 June 2000	49.17	97.6	100.7
7.03			
JL 05 July 2000	50.21	Damaged	101.0
7.11			

JL 19 July 2000 6.95	49.45	99.5	97.1
JL 25 July 2000 7.02	50.47	98.0	101.5
JL 08 August 2000 7.21	49.91	30.2	99.8
JL 22 August 2000 7.0	49.62	96.4	98.5
JL 11 September 2000 6.83	48.43	Damaged	101.9
JL 27 September 2000 7.14	51.0	95.8	100.6
JL 11 October 2000 7.05	49.02	99.2	94.6
JL 16 January 2001 6.9	50.17	101.5	100.5

14. Other Remarks/notes

None.