

Old Woman Creek (OWC) NERR Site Water Quality Metadata
March through December 2003
Latest Update: July 1, 2021

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2. Entry verification:

The data were directly downloaded from the YSI PC6600 data loggers into the YSI Ecowatch for Windows program in the PC. The data were graphed and visually checked for any obvious outliers. Notes are made of any unusual data or faulty probes. The data is then exported as a .csv file into an Excel spreadsheet. The data files were edited to remove headers, footers, and spaces. The CDMO cdmomac3.xls macro was used to QA/QC the data. The macro automatically formatted the column widths to the correct number of decimal places based on YSI sensor specifications. It QA/QC's the data file for missing data points and filled all cells without data with periods. Periods were later removed for data dissemination purposes and left blank. It also compiled a list of all data that fell outside the stated range of the different data logger probes. An explanation for the missing and the deleted data is included in this meta data sheet. The files were then transferred along with the associated metadata by disk to the CDMO. The files are archived at OWC. Dr. David Klarer is responsible for both data logger deployment and data management.

3. Research Objectives:

Measurements are taken every 15 minutes over approximately two-week periods at four sites within the Old Woman Creek- three in the estuary proper- one in the upper reaches at State Route 2 (SU), one near the mouth just south of State Route 6 (WM), and the third site is upstream from the WM site (OL). The final site (BR) is just upstream of the first riffle zone above

the estuary in Old Woman Creek proper. The purpose of this monitoring program is to document the role of this Great Lakes estuary in the Lake Erie ecosystem, particularly the estuary's role in mitigating storm flow that passes through it. The role of the OL site is to document the degree of intrusion by lake water during northerly winds and subsequent seiche events.

4. Research methods:

The YSI monitoring program began on 24 March, 2003 at all four sites. The sampling at all sites ended for the year on 15 December, 2003. Prior to deployment of the data loggers, a 4-inch diameter PVC pipe was bolted to a metal 8-foot long metal post that had been driven into the sediment. Each pipe had 4 rows of holes or 4 vertical slits $\frac{3}{4}$ " wide drilled into it spanning the area of the probe guard on the data logger so that the probes would have direct contact with the surrounding waters. Dissolved oxygen, pH, temperature, turbidity, and specific conductance readings are taken when the instrument is pulled at each site. The data loggers are replaced in the field after a one, two, or three-week deployment, depending on temperature and degree of fouling of the data loggers. The data was retrieved from each data logger and each data logger was recalibrated (according to the directions in the YSI Operations Manual) before being returned to the field. Conductivity, pH (2 point calibration), and turbidity (2 point calibration) are calibrated using commercial standards. Formazin (Hach, 4000 NTU) was diluted to prepare the standards for turbidity. These standards were prepared prior to each deployment. The data loggers at sites WM and SU have water level sensors while the loggers at sites BR and OL have non-vented depth sensors.

5. Site Location and Character:

Old Woman Creek National Estuarine Research Reserve is located on the southern shore of Lake Erie, slightly east of the city of Huron, Ohio (Latitude 41° 23'N; Longitude 82° 33'W). Land use in the Old Woman Creek (OWC) watershed is primarily row crop agriculture. Other than the non-point source pollutants coming into the estuary from these agricultural practices and from

the town of Berlin Heights, there are no other major pollution sources in the estuary. Salinity in Old Woman Creek is normally 1 ppt. or less, although it will rise, on occasion, to nearly 2 ppt. The tidal range in Lake Erie (and therefore in the estuary) is on the order of 4 cm or less. Water levels in the estuary and in the creek are extremely variable, with changes occurring daily, seasonally and annually.

The data logger at the State Route 6 (WM) site (Latitude 41° 22' 57" N, Longitude 82° 30'54" W) is very close to the mouth of Old Woman Creek. In this portion of the Reserve, the creek is very shallow but extends over a large surface area. This site frequently experiences influx of Lake Erie waters. The bottom sediments at this site are silty clay. At the beginning of the deployment for 2003, there was no rooted aquatic vegetation directly adjacent to the site, although there was both emergent and submerged vegetation within 3 meters of the site. By mid September, *Phragmites australis* had grown up around the data logger trap. The data logger is about .15 meters above the bottom sediments. On June 4 at about 08:00 the old guard on the sonde was changed to the new guard, so this effectively raised the logger 5 cm within the trap and sediment was removed from under the trap. On October 6 at (08:00:00) the new data logger deployed has the old short guard so the logger was lowered 5 cm within the trap..

The data logger at the State Route 2 (SU) site (Latitude 41° 22' 2" N, Longitude 82° 30'26" W) is very near the southern boundary of the Reserve. This site is in the upper reaches of the estuary. The data logger is sited near a concrete piling of the eastbound Ohio State Route 2 bridge. At this site, the creek is relatively deep and narrow. Although water direction and flow is influenced at this site by changes in Lake Erie water levels, this site doesn't have direct contact with Lake Erie waters. The bottom sediments at this site are silty clay. There is no rooted aquatic vegetation near or upstream from this site. The data logger is about .165 meters above the bottom at this site. On August 25 just before (08:15:00) the trap was lowered 4 cm to compensate for very low water levels.

The data logger at site Lower Esturay (OL) (Latitude 41° 22' 55" N, Longitude 82° 30'51" W) is in the lower reaches of the estuary. This site is not in direct sight of the mouth, so northerly winds and resulting seiche activities should be less noticeable at this site. The bottom sediments are silty clay. This site is located at the northern tip of a *Nelumbo lutea* bed, so plants are immediately adjacent to the data logger. The base of data logger is about 25 cm above the sediment. On 6 April the sonde was retrieved because the trap had been severely damaged by storm runoff. The trap was reset and a logger redeployed on April 14 at 09:20:00.

The data logger at site BR (Latitude 41° 20'54" N, Longitude 82° 30'30"W) is located in the lower portion of the creek proper. Just upstream from the data logger, Berlin Road crosses Old Woman Creek. The site is just upstream of the first riffle area above the estuary. Unlike the other three sites, Lake Erie water levels have no impact on this site. The bottom of the creek at this site is a combination of rocks interspersed with some clay-silt that has been washed in from upstream. There are no aquatic macrophytes at or near this site. The sonde is 15 cm above the bottom.

6. Data collection periods:

Sampling at WM began on March 24, 2003 at 10:00:00. Sampling for 2003 ceased at WM site on December 15, 2003 at 11:30:00. Sampling at SU began on March 24, 2003 at 08:45:00. Sampling ceased at SU site on December 15, 2003 at 10:00:00. Sampling at OL began on March 24, 2003 at 10:00:00, and ceased on December 15, 2003 at 15:15:00. Sampling at BR began on March 24, 2003 at 09:30:00 and ceased on December 15, 2003 at 10:30:00. Specific deployment dates are listed below.

Site	Deployed	Pulled
WM	03/24/2003 (10:00:00)	04/14/2003 (09:30:00)
	04/14/2003 (10:15:00)	05/05/2003 (08:30:00)
	05/05/2003 (08:30:00)	05/19/2003 (08:30:00)
	05/19/2003 (08:30:00)	06/02/2003 (08:15:00)
	06/02/2003 (08:30:00)	06/16/2003 (09:00:00)
	06/16/2003 (09:15:00)	06/30/2003 (08:30:00)
	06/30/2003 (08:45:00)	07/14/2003 (08:30:00)
	07/14/2003 (08:45:00)	07/28/2003 (08:15:00)
	07/28/2003 (08:30:00)	08/11/2003 (08:45:00)

08/11/2003	(09:00:00)	08/25/2003	(08:45:00)
08/25/2003	(09:00:00)	09/08/2003	(09:30:00)
09/08/2003	(10:00:00)	09/22/2003	(07:30:00)
09/22/2003	(07:45:00)	10/06/2003	(07:45:00)
10/06/2003	(08:00:00)	10/20/2003	(08:30:00)
10/20/2003	(08:45:00)	11/10/2003	(10:00:00)
11/10/2003	(10:15:00)	12/01/2003	(09:30:00)
12/01/2003	(09:45:00)	12/15/2003	(11:30:00)

SU

03/24/2003	(08:45:00)	04/14/2003	(07:15:00)
04/14/2003	(08:00:00)	05/05/2003	(07:00:00)
05/05/2003	(07:00:00)	05/19/2003	(07:00:00)
05/19/2003	(07:15:00)	06/02/2003	(07:15:00)
06/02/2003	(07:30:00)	06/16/2003	(07:15:00)
06/16/2003	(07:45:00)	06/30/2003	(07:30:00)
06/30/2003	(07:45:00)	07/14/2003	(07:15:00)
07/14/2003	(07:30:00)	07/28/2003	(07:15:00)
07/28/2003	(07:30:00)	08/11/2003	(07:45:00)
08/11/2003	(08:00:00)	08/25/2003	(07:30:00)
08/25/2003	(07:45:00)	09/08/2003	(08:30:00)
09/08/2003	(08:45:00)	09/22/2003	(08:30:00)
09/22/2003	(09:00:00)	10/06/2003	(08:45:00)
10/06/2003	(09:00:00)	10/20/2003	(07:45:00)
10/20/2003	(08:00:00)	11/10/2003	(09:00:00)
11/10/2003	(09:15:00)	12/01/2003	(08:30:00)
12/01/2003	(08:45:00)	12/15/2003	(10:00:00)

OL

03/24/2003	(10:00:00)	04/06/2003	(15:45:00)
04/14/2003	(09:30:00)	05/05/2003	(07:45:00)
05/05/2003	(08:15:00)	05/19/2003	(08:45:00)
05/19/2003	(09:00:00)	06/02/2003	(08:15:00)
06/02/2003	(08:30:00)	06/16/2003	(09:00:00)
06/16/2003	(09:00:00)	06/30/2003	(08:15:00)
06/30/2003	(08:30:00)	07/14/2003	(08:30:00)
07/14/2003	(08:45:00)	07/28/2003	(08:15:00)
07/28/2003	(08:30:00)	08/11/2003	(08:45:00)
08/11/2003	(09:00:00)	08/25/2003	(08:45:00)
08/25/2003	(08:55:00)	09/08/2003	(09:35:00)
09/08/2003	(09:45:00)	09/22/2003	(07:30:00)
09/22/2003	(07:35:00)	10/06/2003	(07:55:00)
10/06/2003	(08:00:00)	10/20/2003	(08:30:00)
10/20/2003	(09:00:00)	11/10/2003	(10:15:00)
11/10/2003	(10:15:00)	12/01/2003	(09:30:00)
12/01/2003	(09:45:00)	12/15/2003	(15:15:00)

BR

03/24/2003	(09:30:00)	04/14/2003	(08:00:00)
04/14/2003	(08:15:00)	05/05/2003	(07:00:00)
05/05/2003	(07:30:00)	05/19/2003	(07:30:00)
05/19/2003	(07:45:00)	06/02/2003	(07:30:00)
06/02/2003	(07:45:00)	06/16/2003	(07:45:00)
06/16/2003	(08:00:00)	06/30/2003	(07:45:00)
06/30/2003	(08:00:00)	07/14/2003	(07:30:00)
07/14/2003	(07:45:00)	07/28/2003	(07:30:00)

07/28/2003	(07:45:00)	08/11/2003	(08:00:00)
08/11/2003	(08:15:00)	08/25/2003	(07:45:00)
08/25/2003	(08:15:00)	09/08/2003	(09:00:00)
09/08/2003	(09:15:00)	09/22/2003	(08:45:00)
09/22/2003	(09:00:00)	10/06/2003	(09:15:00)
10/06/2003	(09:30:00)	10/20/2003	(08:00:00)
10/20/2003	(08:15:00)	11/10/2003	(09:15:00)
11/10/2003	(09:30:00)	12/01/2003	(09:00:00)
12/01/2003	(09:15:00)	12/15/2003	(10:30:00)

7. Distribution

NOAA/ERD retains the right to analyze, synthesize, and publish summaries of the NERRS System-wide Monitoring Program data. The OWC Research Coordinator (RC) retains the right to be fully credited for having collected and processed the data. Following academic courtesy standard, the RC and the 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.

The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined in the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government and the State of Ohio do not assume liability to the Recipient or third persons, nor will the Federal government or the State of Ohio 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) or online at the CDMO homepage <http://cdmo.baruch.sc.edu/>. Data are available in text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format from the CDMO.

8. Associated projects: Replicate samples for chemical analysis of the water are collected at each site every time the data loggers are changed. Samples for phytoplankton determination are collected at the same time at sites near

the data logger deployment sites. Additionally, a 26 hour sampling regime (samples are collected at 2 hour intervals over the 26 hours) is conducted at the WM site once during each month.

II. Physical Structure and Descriptors:

9. Variable sequence, column format, 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.

10. Coded variable indicator and variable code definitions:

SU- State Route 2

WM- State Route 6

OL- Lower Estuary
BR- Berlin Road site

File definitions: YSI deployment site/file definition/month/year (e.g.
SUWQ0803
(water quality data from State Route 2, August, 2003))

11. Data anomalies

March 2003

WM: Water level data was deleted because sensor was at or above the water surface on the following dates:

03/24/2003 (12:15:00-12:30:00); (13:00:00-16:45:00); (17:15:00-19:00:00)
03/25/2003 (00:00:00-00:15:00); (00:45:00-01:45:00); (02:15:00); (03:00:00); (04:00:00- 04:30:00); (05:00:00-05:15:00); (05:45:00-06:00:00);
(07:15:00-07:45:00); (08:15:00- 09:45:00)
03/27/2003 (12:45:00); (13:15:00): (14:15:00)
03/28/2003 (04:45:00); (06:00:00-14:45:00); (20:45:00-21:45:00)
03/29/2003 (07:30:00-07:45:00); (08:15:00); (11:00:00); (16:00:00-17:15:00); (18:30:00- 19:15:00)
03/30/2003 (20:00:00-20:15:00); (22:30:00-22:45:00); (23:15:00)
through
03/31/2003 (00:15:00)
03/31/2003 (07:15:00- 08:45:00); (09:15:00-10:15:00); (10:45:00-18:30:00)

Datalogger was out of the water for the following dates and times, all data were deleted.

03/29/2003 (07:15:00)

SU: Water level data was deleted because sensor was at or above the water surface on the following dates:

03/24/2003 (08:45:00) through 03/26/2003 (00:30:00)
03/27/2003 (04:15:00) through 03/29/2003 (08:30:00)
03/30/2003 (09:45:00) through 03/31/2003 (23:45:00)

OL: Turbidity levels were above 1000 NTU due to either storms or biological activity:

03/29/2003 (19:30:00)
03/30/2003 (05:30:00); (06:00:00); (18:00:00); (18:30:00)
03/31/2003 (07:15:00); (21:30:00); (22:45:00)

BR: Water level data was deleted because sensor was at or above the water surface on the following dates:

03/28/2003 (15:30:00) through 03/29/2003 (00:15:00)

03/29/2003 (00:45:00)

Turbidity levels were above 1000 NTU due to either storms or biological activity:

03/26/2003 (01:30:00-03:00:00)

03/29/2003 (11:00:00)

April 2003

WM: All data missing 4/14/2003 (09:45:00-10:00:00) due to changing data loggers.

Water level data was deleted because sensor was at or above the water surface on the following dates:

04/01/2003 (03:15:00-13:30:00); (14:00:00); (15:00:00-18:00:00)

04/02/2003 (04:30:00-05:00:00); (05:30:00); (06:15:00); (13:00:00); (13:30:00); (15:00:00)

04/05/2003 (15:15:00); (16:00:00-17:00:00); (17:45:00-18:15:00); (19:45:00); (20:15:00); (21:30:00)

Turbidity levels were above 1000 NTU due to either storms or biological activity:

04/03/2003 (20:45:00)

04/04/2003 (02:30:00)

04/05/2003 (17:15:00); (19:00:00)

SU: All data missing 04/14/2003 (07:30:00-07:45:00) changing data loggers.

Water level data was deleted because sensor was at or above the water surface on the following dates:

04/01/2003 (00:00:00) through 04/02/2003 (23:00:00)

04/02/2003 (23:30:00)

04/03/2003 (01:30:00-14:15:00)

04/04/2003 (04:15:00-09:15:00); (09:45:00-10:00:00)

04/09/2003 (18:00:00) through 04/14/2003 (07:15:00)

04/14/2003 (08:00:00-11:00:00); (19:30:00) through 04/15/2003 (09:00:00)

04/15/2003 (09:30:00-09:45:00); (21:00:00) through 04/16/2003 (09:15:00)

04/16/2003 (09:45:00); (13:45:00-16:15:00)

04/18/2003 (13:00:00) through 04/25/2003 (09:15:00)

04/25/2003 (10:00:00-10:45:00); (18:45:00-19:15:00); (20:15:00); (20:45:00-21:30:00); (22:00:00-22:15:00); (22:45:00) through

04/26/2003

(07:45:00)

04/26/2003 (11:00:00) through 04/29/2003 (14:30:00)

04/29/2003 (15:15:00-15:45:00); (16:15:00); (16:45:00) through

04/30/2003 (14:00:00)

Turbidity levels were above 1000 NTU due to either storms or biological

activity:

04/05/2003 (00:00:00); (01:00:00-01:15:00); (02:30:00); (05:00:00);
(14:00:00)
04/23/2003 (22:15:00)

OL: All data missing 04/06/2003 (16:00:00) through 04/14/2003 (09:15:00)
because trap was badly damaged by debris during runoff event

Water level data was deleted because sensor was at or above the water
surface on the following dates:

04/15/2003 (15:30:00-17:30:00)
04/21/2003 (14:45:00-16:00:00)

Turbidity levels were above 1000 NTU due to either storms or
biological activity:

04/05/2003 (08:45:00); (16:15:00)

BR: Water level data was deleted because sensor was at or above the
water

surface on the following dates:

04/01/2003 (11:45:00-16:45:00); (18:00:00-18:15:00)
04/03/2003 (15:15:00-16:00:00); (16:30:00-21:15:00); (21:45:00-
23:15:00); (23:45:00) through 04/04/2003 (16:00:00)
04/11/2003 (16:15:00); (17:00:00) through 04/12/2003 (06:30:00)
04/14/2003 (21:45) through 04/19/2003 (04:15:00)
04/19/2003 (12:00:00) through 04/23/2003 (08:45:00)
04/23/2003 (15:45:00- 19:30:00)
04/24/2003 (05:15:00) through 04/30/2004 (23:45:00)

Dissolved Oxygen data questionable due to possible biological
activity:

04/04/2003 (21:15:00) through 04/05/2003 (16:45:00)

Dissolved oxygen data deleted due to punctured membrane:

04/22/2003 (22:00:00) through 04/30/2003 (23:45:00)

Turbidity levels were above 1000 NTU due to either storms or
biological activity:

04/04/2003 (21:30:00); (22:00:00) through 04/05/2003 (15:00:00)
04/05/2003 (16:30:00)
04/06/2003 (06:45:00); (09:15:00-09:30:00); (11:15:00-11:30:00);
(12:30:00-12:45:00); (13:30:00); (15:00:00); (15:45:00)
04/08/2003 (08:15:00-13:00:00); (16:00:00-21:00:00); (21:30:00-
23:30:00)
04/09/2003 (00:00:00); (00:30:00-01:00:00); (01:45:00-02:00:00);
(02:45:00-03:00:00); (03:30:00); (04:00:00)

May 2003

WM: Turbidity levels were above 1000 NTU due to either storms or biological activity:
05/05/2003 (06:30:00)
05/06/2003 (14:30:00-15:00:00); (15:30:00-22:30:00); (23:00:00) through
05/07/2003 (01:45:00)
All turbidity data from 05/12/2003 (00:00:00) through 05/31/2003 (23:45:00) deleted due to sediment buildup around sensor.

SU: Water level data was deleted because sensor was at or above the water surface on the following dates:
05/01/2003 (05:30:00) through 05/03/2003 (00:15:00)
05/03/2003 (00:45:00)
05/09/2003 (00:15:00-05:45:00)
05/12/2003 (03:30:00-17:00:00)
05/13/2003 (06:45:00-17:30:00)
05/14/2003 (01:30:00-19:00:00)
05/17/2003 (07:45:00)
05/24/2003 (07:45:00-15:30:00); (20:00:00-22:00:00)
05/26/2003 (14:15:00-19:30:00)
05/29/2003 (08:00:00-09:00:00)

OL: No data was collected 05/05/2003 (08:00:00) due to changing data logger.
Partial difference in water depth recordings between 05/05/2003 (07:45:00) and 05/05/2003 (08:15:00) was due to changing from long guard in previous deployment to short guard in new deployment
Partial difference in water depth recordings between 05/19/2003 (08:45:00) and 05/19/2003 (09:00:00) was due to changing from short guard in previous deployment to long guard in new deployment
Turbidity levels were above 1000 NTU due to either storms or biological activity:
05/02/2003 (00:45:00)
05/07/2003 (16:00:00)
05/29/2003 (21:00:00)
05/31/2003 (03:30:00); (04:00:00); (05:00:00); (05:45:00); (09:45:00)
Turbidity questionable due to possible debris blocking sensor:
05/15/2003 (04:00:00) through 05/19/2003 (08:45:00)
Water level data was deleted because sensor was at or above the water surface on the following dates:
05/12/2003 00:15:00 - 03:15:00

BR: No data was collected 05/05/2003 (07:15:00) due to changing data logger
Water level data was deleted because sensor was at or above the water surface on the following dates:
05/1/2003 (00:00:00) through 5/3/2003 (20:15:00)
05/3/2003 (20:45:00-21:00:00); (21:30:00)

05/4/2003 (02:30:00-02:45:00); (08:30:00) through 05/05/2003
(07:00:00)

05/05/2003 (07:30:00) through 05/06/2003 (05:45:00)

05/19/2003 (14:30:00) through 05/20/2003 (07:30:00)

05/23/2003 (16:45:00) through 05/31/2003 (08:15:00)

Dissolved Oxygen data deleted due to punctured membrane 05/01/2003
(00:00:00) through 05/05/2003 (07:00:00)

Turbidity levels were above 1000 NTU due to either storms or
biological activity:

05/08/2003 (07:45:00); (09:15:00); (09:45:00); (10:15:00)

05/20/2003 (18:30:00)

05/31/2003 (11:45:00)

June 2003

WM: All data missing 06/16/2003 (09:00:00) due to changing data logger
All turbidity data from 06/01/2003 (00:00:00) through 06/04/2003
(08:00:00)

deleted due to sediment buildup around sensor

Marked difference in conductivity between deployment ending 06/16/2003
(08:45:00) and deployment beginning 06/16/2003 (09:15:00) probably due to
calibration anomalies

SU: All data missing 06/16/2003 (07:30:00) due to changing data logger.

Turbidity levels were above 1000 NTU due to storms:

06/14/2003 (04:30:00); (05:00:00-06:30:00)

The difference between deployments in dissolved oxygen data during the
following times possibly due to a siltation event during the time of
switching

out the datalogger. Data retained.

06/30/2003 (07:30:00) 55.3%

06/30/2003 (07:45:00) 113.9%

OL: All data missing 06/02/2003 (15:00:00-17:00:00) sonde failure

06/06/2003 (09:30:00-10:30:00) sonde failure

06/06/2003 (11:00:00-11:15:00) sonde failure

06/06/2003 (18:45:00) sonde failure

06/08/2003 (14:30:00)-06/10/2003 (09:30:00) sonde failure

06/10/2003 (14:30:00)-06/12/2003 (19:15:00) sonde failure

06/12/2003 (22:00:00)- 06/16/2003 (08:45:00) sonde failure

Partial difference in depth between 06/02/2003 (08:15:00-08:30:00) is due
to change from long guard on previous sonde to short guard on new sonde
at
deployment

Turbidity levels were above 1000 NTU due to either storms or biological
activity: 06/01/2003 (12:00:00)

BR: Turbidity levels were above 1000 NTU due to either storms or biological activity:

06/08/2003 (22:45:00)
06/09/2003 (00:45:00)
06/13/2003 (14:00:00)
06/14/2003 (02:15:00-02:45:00); (03:15:00-04:30:00); (09:00:00)
DO levels dropped due to membrane puncture. Post calibration

readings were

low (60.6%). DO data deleted:
06/29/2003 (21:45:00) through 06/30/2003 (07:45:00)

July 2003

WM: Turbidity levels were above 1000 NTU due to either storms or biological activity:

07/06/2003 (14:30:00)
07/07/2003 (16:00:00)
07/22/2003 (15:45:00)
07/23/2003 (02:00:00); (06:45:00); (19:00:00-19:15:00); (19:45:00);
(23:00:00-23:15:00)
07/24/2003 (00:00:00); (01:30:00-02:00:00); (02:45:00-03:00:00);
(03:45:00-04:00:00); (05:00:00-05:15:00); (07:45:00-08:00:00);
(08:30:00);
(09:00:00); (09:30:00) ; (10:00:00-10:15:00); (12:00:00);
(13:15:00);
(15:30:00); (16:00:00); (17:45:00- 18:00:00); (19:15:00);
(20:15:00);
(22:45:00-23:00:00)
07/25/2003 (02:15:00); (03:00:00-03:15:00); (03:45:00-04:00:00);
(10:30:00); (14:45:00); (17:00:00); (18:00:00-18:15:00);
07/26/2003 (06:30:00); (07:45:00); (11:00:00)
07/27/2003 (02:30:00); (04:15:00); (21:00:00); (21:30:00);
07/28/2003 (02:15:00); (08:00:00)

SU: Water level data was deleted because sensor was at or above the water surface on the following dates:

07/15/2003 (10:45:00-12:00:00)
07/20/2003 (11:30:00-16:15:00)
07/21/2003 (03:45:00-05:15:00)
07/27/2003 (05:00:00-10:00:00)

Turbidity levels were above 1000 NTU due to either storms or biological activity:
07/20/2003 (10:00:00)

OL: All data missing 07/01/2003 (12:30:00), 07/02/2003 (12:15:00) through (12:45:00), and 07/09/2003 (11:00:00) through 7/10/2003 (06:00:00) sonde

failure cause unknown

Turbidity levels were above 1000 NTU due to either storms or biological activity:

07/10/2003 (12:45:00)

Partial difference in depth between 07/14/2003 (08:30:00-08:45:00) is due to change from long guard on previous sonde to short guard on new sonde at deployment

Partial difference in depth between 07/28/2003 (08:15:00-08:30:00) is due to change from short guard on previous sonde to long guard on new sonde at deployment

BR: Water level data was deleted because sensor was at or above the water surface on the following dates:

07/01/2003 (13:15:00) through 07/04/2003 (15:15:00)

07/05/2003 (01:45:00) through 07/07/2003 (15:45:00)

07/28/2003 (07:45:00) through 07/31/2003 (23:45:00)

Turbidity levels were above 1000 NTU due to either storms or biological activity:

07/04/2003 (18:30:00); (19:00:00)

07/07/2003 (18:00:00-18:30:00); (19:45:00)

07/08/2003 (05:15:00)

07/10/2003 (16:15:00-19:15:00); (22:45:00)

07/11/2003 (10:00:00)

August 2003

WM: Turbidity levels were above 1000 NTU due to either storms or biological activity:

08/05/2003 (09:30:00-09:45:00); (10:45:00)

08/06/2003 (07:15:00); (18:00:00)

08/09/2003 (15:30:00)

08/12/2003 (15:30:00)

08/23/2003 (13:15:00); (14:00:00); (15:30:00); (16:15:00);

(17:00:00-

17:15:00)

08/24/2003 (07:15:00-07:30:00); (08:00:00); (09:00:00); (09:30:00)

;

(10:00:00); (10:30:00); (11:30:00-11:45:00); (12:30:00-12:45:00);

(13:30:00-

14:00:00); (14:30:00-14:45:00); (15:45:00); (18:15:00); (19:15:00-19:30:00);

(20:15:00-20:30:00); (21:30:00); (22:00:00); (23:00:00);

(23:30:00)

08/25/2003 (00:15:00); (02:15:00); (02:45:00); (03:15:00);
(03:45:00);
(04:45:00); (05:30:00); (06:30:00); (07:30:00); (08:30:00-08:45:00)
08/28/2003 (20:15:00)
08/30/2003 (22:15:00)

SU: PH data deleted from 08/11/2003 (08:00:00) through 08/25/2003
(07:30:00)
due to broken sensor

Partial difference in depth between 08/25/2003 (07:30:00-07:45:00) is
due to change from short guard on previous sonde to long guard on new
sonde at
deployment

Dissolved oxygen data deleted from 08/08/2003 (18:15:00) through
08/11/2003 (07:45:00) due to punctured DO membrane that showed up in post
calibration.

OL: All data is missing from 08/25/2003 (09:00:00) until 08/31/2003
(23:45:00)
due to sonde failure

BR: All data is missing 08/25/2003 (08:00:00) due to changing data
logger

Water level data was deleted because sensor was at or above the water
surface on the following dates:

08/01/2003 (00:00:00) through 08/02/2003 (03:15:00)
08/02/2003 (20:00:00) through 08/03/2003 (13:30:00)
08/05/2003 (01:15:00) through 08/11/2003 (08:00:00)
08/16/2003 (12:45:00 - 19:15:00); (20:00:00 - 20:45:00)
08/21/2003 (16:00:00) through 8/22/2003 (05:15:00)
08/22/2003 (17:30:00) through 08/25/03 (07:45:00)
08/25/2003 (08:15:00) through 08/30/2003 (03:00:00)

Conductivity data was deleted because sensor was partially or
completely above water surface on the following dates:

08/22/2003 (17:30:00) through 08/24/2003 (09:15:00)
08/24/2003 (12:15:00) through 08/25/2003 (07:45:00)

Turbidity levels were above 1000 NTU due to either storms or
biological activity:

08/03/2003 (21:30:00)
08/04/2003 (08:30:00)

pH probe may not have been totally immersed from 8/25 0000-0445.

September 2003

WM: All data missing 09/08/2003 (09:45:00) due to changing data logger

Water level data was deleted because sensor was at or above the water surface on the following dates:

09/28/2003 (17:00:00-18:45:00); (19:30:00-20:15:00); (20:45:00)
09/29/2003 (12:00:00-14:00:00); (17:15:00-18:00:00); (19:15:00);
(21:30:00-21:45:00); (23:00:00); (23:45:00) through 09/30/2003
(19:00:00)

Turbidity levels were deleted from 09/14/2003 (05:30:00) through 09/22/2003 (07:30:00) due to unknown problem with turbidity sensor

Turbidity levels were above 1000 NTU due to either storms or biological activity:

09/22/2003 (20:00:00)
09/28/2003 (08:45:00)
09/29/2003 (05:30:00); (06:00:00-06:30:00); (07:45:00)

SU: All data missing 09/22/2003 (08:45:00) changing data logger

OL: All data missing from 09/01/2003 (00:00:00) through 09/08/2003 (09:30:00)
due to sonde failure

All data missing from 09/22/2003 (07:45:00) through 09/30/2003 (23:45:00) due to sonde failure

BR: Water level data was deleted because sensor was at or above the water surface on the following dates:

09/02/2003 (21:15:00) through 09/05/2003 (04:45:00)
09/06/2003 (17:45:00); (18:15:00-18:45:00)
09/07/2003 (01:30:00-02:15:00); (02:45:00-03:30:00); (04:00:00-05:00:00); (11:45:00) through 09/08/2003 (05:45:00)
09/12/2003 (12:15:00) through 09/13/2003 (05:30:00)
09/13/2003 (12:00:00) through 09/16/2003 (05:45:00)
09/18/2003 (14:45:00) through 09/19/2003 (05:30:00)
09/21/2003 (19:45:00) through 09/22/2003 (08:45:00)
09/22/2003 (11:15:00-13:30:00)
09/26/2003 (19:00:00) through 09/27/2003 (00:15:00)

Turbidity levels were above 1000 NTU due to either storms or biological activity:

09/19/2003 (09:15:00); (09:45:00); (10:45:00); (12:45:00); (15:30:00)
09/27/2003 (06:30:00); (07:15:00); (08:15:00-09:00:00); (11:45:00); (12:15:00); (12:45:00-16:45:00)

Dissolved Oxygen data questionable due to possible biological activity:

09/27/2003 (08:30:00) through 09/27/2003 (17:00:00)

October 2003

WM: Water level data was deleted because sensor was at or above the water surface on the following dates:

10/01/2003 (01:15:00-01:30:00); (02:15:00-10:45:00); (14:45:00-22:30:00)

10/02/2003 (08:45:00-14:45:00); (22:30:00) through 10/04/2003 (07:45:00)

10/04/2003 (16:00:00-20:15:00)

10/15/2003 (05:00:00-11:30:00)

10/16/2003 (03:30:00-03:45:00); (04:15:00-06:00:00)

10/18/2003 (18:15:00-19:45:00); (22:15:00-23:45)

10/19/2003 (01:15:00)

10/27/2003 (14:45:00-19:45:00); (23:30:00)

10/28/2003 (04:15:00-08:45:00); (09:15:00-12:30:00)

10/29/2003 (03:30:00-05:00:00); (05:30:00-15:45:00); (16:15:00-23:45:00)

10/30/2003 (00:45:00-03:15:00); (03:45:00-07:45:00); (08:30:00-09:15:00); (17:15:00-18:00:00); (21:15:00); (23:00:00-23:30)

10/31/2003 (02:15:00-09:30:00); (12:30:00); (13:00:00-14:00:00); (17:15:00-17:30:00); (21:30:00); (22:00:00-23:30:00)

Difference in water levels on 10/06/2003 (08:00:00) caused by going from long guard in previous deployment to short guard in new deployment

Turbidity levels were above 1000 NTU due to either storms or biological activity:

10/01/2003 (12:00:00); (17:45:00)

10/02/2003 (10:00:00-10:15:00); (16:15:00-16:30:00); (17:00:00); (17:45:00); (18:15:00-18:30:00); (20:30:00-22:45:00); (23:15:00-23:30:00)

10/03/2003 (00:00:00-02:30:00); (03:00:00-03:15:00); (04:30:00-05:00:00); (05:30:00-05:45:00); (07:45:00); (09:15:00-09:30:00);

(10:45:00-

11:15:00); (12:30:00); (13:15:00-13:30:00); (15:00:00-19:00:00);

(19:30:00-

20:15:00); (20:45:00) through 10/04/2003 (08:45:00)

10/04/2003 (09:15:00-09:45:00); (10:45:00); (12:15:00-13:45:00);

(17:15:00-19:00:00); (19:45:00-21:45:00); (22:30:00-22:45:00);

(23:30:00)

10/05/2003 ((00:00:00-01:15:00); (01:45:00); (03:15:00)-06:00:00);

(06:45:00); (07:15:00-07:30:00); (08:45:00-09:00); (11:30:00);

(14:15:00-

15:00:00); (15:45:00); (17:15:00-19:15:00); (19:45:00)

10/06/2003 (06:30:00); (07:15:00); (07:30:00); (08:15:00);

(09:15:00);

(10:15:00); (11:00:00); (12:45:00); (14:00:00-14:15:00);

(15:15:00);

(20:45:00-21:00:00); (22:45:00-23:00:00); (23:45:00)

10/07/2003 (00:45:00); (01:15:00-01:30:00); (02:15:00); (03:15:00);

(04:00:00); (06:15:00); (06:45:00); (07:15:00-07:30:00);
(09:15:00);
(13:45:00-14:00:00); (14:30:00); (17:00:00-17:15:00); (17:45:00);
(18:15:00)
10/08/2003 (17:45:00)
10/09/2003 (03:30:00)
10/11/2003 (21:45:00); (22:30:00); (23:00:00)
10/12/2003 (07:45:00); (09:15:00-09:30:00); (13:00:00)
10/13/2003 (03:30:00); (12:45:00); (17:45:00-18:00:00)
10/14/2003 (02:45:00); (04:00:00); (04:30:00); (05:45:00);
(06:15:00);
(06:45:00); (07:15:00-07:30:00)

Turbidity levels were zero:

10/06/2003 (17:15:00); (18:30:00); (19:00:00-19:15:00); (19:45:00);
(20:15:00); (21:30:00); (22:15:00)

A drop in dissolved oxygen levels for the following dates and times were possibly due to biological activity. Data retained, but suspect.

10/06/2003 (08:00:00)

SU: Water level data was deleted because sensor was at or above the water

surface on the following dates:

10/16/2003 (17:45:00) through 10/17/2003 (03:00:00)
10/17/2003 (07:15:00) through 10/18/2003 (13:45:00)
10/22/2003 (16:30:00); (18:00:00-18:30:00); (19:00:00-19:45:00);
(20:15:00-20:30:00); (21:30:00)
10/28/2003 (19:15:00-19:30:00); (20:30:00-22:00:00)
10/29/2003 (01:15:00-12:00:00)
10/30/2003 (11:15:00); (11:45:00-12:15:00); (12:45:00); (14:00:00);
(14:30:00-14:45:00)
10/31/2003 (03:00:00); (03:45:00); (04:30:00-07:45:00)

All data deleted due to datalogger sensors being out of the water for the following dates and times:

10/03/2003 (09:30:00) through 10/04/2003 (09:30:00)

OL: All data missing 10/01/2003 (00:00:00) through 10/06/2003 (07:45:00) due to sonde failure

All data missing 10/20/2003 (08:45:00) changing data logger

Water level data was deleted because sensor was at or above the water surface on the following dates:

10/15/2003 (04:45:00-10:00:00)
10/21/2003 (04:00:00)
10/27/2003 (13:00:00-13:15:00); (14:00:00-21:15:00); (22:30:00)
through
10/28/2003 (01:15:00)
10/28/2003 (03:15:00) through 10/29/2003 (23:15:00)

10/30/2003 (02:00:00); (17:30:00-17:45:00)
10/31/2003 (04:00:00-06:00:00); (09:45:00-11:15:00)

BR: Water level data was deleted because sensor was at or above the water

surface on the following dates:

10/03/2003 (21:00:00 through 10/04/2003 (03:30:00)
10/11/2003 (13:00:00) through 10/13/2003 (07:15:00)
10/13/2003 (09:45:00) through 10/15/2003 (04:30:00)
10/18/2003 (14:15:00) through 10/19/2003 (06:00:00)
10/20/2003 (09:30:00) through 10/24/2003 (07:15:00)
10/24/2003 (14:00:00-19:15:00); (20:00:00); (21:00:00-21:15:00)
10/24/2003 (22:00:00) through 10/25/2003 (10:30:00); (13:30:00)
10/28/2003 (13:00:00) through 10/29/2003 (06:00:00)

Turbidity levels were above 1000 NTU due to either storms or biological activity:

10/04/2003 (22:00:00)
10/15/2003 (06:45:00); (07:15:00); (08:00:00); (12:15:00);
(13:00:00);
(15:00:00)
10/26/2003 (05:15:00); (06:00:00); (06:30:00-06:45:00); (08:15:00);
(09:00:00); (10:15:00); (10:45:00); (11:30:00-11:45:00);
(12:15:00);
(13:00:00-13:15:00); (14:45:00-15:00:00), (15:30:00-17:30:00);
(18:00:00);
(19:15:00-20:00:00); (20:45:00- 21:00:00); (22:00:00-22:15:00);
(22:45:00);
(23:45:00)
10/27/2003 (00:00:00-00:30:00); (01:00:00-02:00:00); (02:30:00);
(03:45:00-04:30:00); (07:30:00-08:00:00); (08:45:00-09:00:00);
(09:45:00-
10:00:00); (10:30:00-10:45:00); (11:15:00), (11:45:00-12:30:00);
(14:45:00);
(15:45:00); (16:30:00); (21:15:00)
10/28/2003 (03:30:00); (06:45:00-07:00:00); (08:30:00); (09:15:00-
09:30:00); (10:00:00- 10:45:00); (11:30:00-11:45:00); (18:00:00);
(22:15:00);
(23:15:00)
10/29/2003 (00:15:00); (01:30:00); (02:45:00); (03:15:00);
(04:00:00);
(08:00:00); (09:00:00); (10:30:00); (13:30:00); (15:15:00);
(15:45:00-
16:15:00); (17:30:00); (22:30:00)
10/30/2003 (06:45:00)
10/31/2003 (01:30:00); (07:15:00); (23:00:00)

November 2003

WM: All data deleted because conductivity sensor was out of water:

11/13/2003 (04:30:00-17:45:00)
11/14/2003 (13:15:00-23:00:00)

11/24/2003 (17:45:00) through 11/25/2003 (08:45:00)
11/29/2003 (18:45:00) through 11/30/2003 (21:00:00)
11/30/2003 (22:00:00-23:45:00)

Water level data was deleted because sensor was at or above the water surface on the following dates:

11/01/2003 (00:00:00-03:15:00); (04:00:00); (04:30:00-06:45:00);
(10:30:00); (18:15:00- 18:30:00), (19:00:00-19:15:00); (19:45:00-
20:00:00);
(21:45:00-22:15:00); (22:45:00- 23:00:00)
11/02/2003 (08:30:00); (09:15:00); (09:45:00-10:00:00); (10:30:00-
11:15:00); (22:00:00); (23:00:00-23:15:00); (23:45:00)
11/07/2003 (08:30:00-23:15:00)
11/13/2003 (19:15:00)
11/14/2003 (01:30:00-02:45:00); (06:00:00-06:30:00)
11/15/2003 (19:15:00)
11/16/2003 (16:30:00-16:45:00)
11/17/2003 (21:00:00)
11/19/2003 (01:30:00); (04:15:00)
11/24/2003 (10:30:00); (16:30:00)
11/25/2003 (09:00:00-09:45:00)
11/27/2003 (06:30:00)
11/29/2003 (07:30:00); (08:00:00); (08:45:00-09:30:00); (14:30:00);
(16:45:00-18:30:00)

Turbidity levels were above 1000 NTU due to either storms or biological activity:

11/05/2003 (00:15:00); (01:00:00); (02:30:00); (03:45:00-04:00:00);
(04:30:00- 04:45:00); (05:15:00); (06:15:00); (07:00:00);
(11:15:00-11:45:00);
(12:15:00); (12:45:00); (16:00:00); (16:30:00-17:15:00); (17:45:00-
18:15:00);
(18:45:00); (19:30:00-20:45:00); (21:15:00-22:00:00); (22:45:00)
11/06/2003 (00:45:00); (02:00:00-02:45:00); (03:30:00); (04:45:00);
(05:15:00- 05:45:00); (06:15:00-06:30:00); (07:00:00); (07:30:00);
(12:15:00-
12:30:00); (14:00:00); (15:15:00-15:30:00); (21:45:00)
11/07/2003 (00:30:00); (01:00:00-01:15:00); (03:15:00); (04:15:00-
04:45:00); (05:15:00- 05:30:00); (13:00:00); (13:30:00); (15:15:00)
11/08/2003 (00:00:00); (02:30:00-03:00:00); (04:45:00-05:00:00);
(05:30:00); (09:15:00); (13:00:00); (14:00:00); (16:45:00);
(18:15:00);
(19:15:00); (20:00:00); (20:30:00- 21:00:00); (22:30:00);
(23:00:00)
11/09/2003 (07:00:00); (13:30:00-13:45:00); (16:45:00); (17:15:00);
(17:45:00); (19:15:00-19:30:00); (20:00:00); (20:30:00);
(21:00:00);
(23:45:00)
11/10/2003 (00:15:00-00:30:00); (01:15:00); (01:45:00); (03:00:00);
(04:30:00); (05:30:00); (06:00:00-06:15:00); (07:45:00-08:00:00);
(08:30:00);
(09:15:00- 09:30:00); (10:00:00-10:45:00)
11/11/2003 (01:45:00-02:45:00); (04:00:00); (04:30:00); (05:30:00);

(11:00:00); (17:15:00-17:45:00); (19:15:00-19:45:00); (21:15:00);
(22:30:00);
(23:30:00)
11/12/2003 (00:15:00-01:00:00); (01:30:00-02:00:00); (02:30:00);
(04:00:00); (06:00:00); (08:45:00-09:00:00); (09:45:00); (11:45:00-
12:00:00);
(13:00:00- 13:30:00); (14:45:00)
11/14/2003 (10:00:00); (23:15:00)
11/15/2003 (00:00:00); (01:00:00); (01:30:00-01:45:00); (02:30:00);
(03:15:00); (04:00:00); (04:30:00); (05:00:00-05:15:00);
(05:45:00); (06:30:00-
06:45:00); (07:30:00-07:45:00); (08:15:00-08:45:00); (09:15:00-
09:45:00);
(10:30:00-10:45:00); (11:15:00); (11:45:00)
11/23/2003 (23:15:00-23:30:00)
11/24/2003 (05:15:00-05:45:00); (14:30:00-14:45:00); (17:30:00)
11/25/2003 (09:15:00-10:00:00); (17:00:00); (22:30:00)
11/26/2003 (00:45:00-01:00:00); (02:15:00-02:30:00); (04:15:00);
(05:00:00); (06:45:00); (16:45:00); (21:45:00-22:00:00)
11/27/2003 (01:15:00); (02:00:00-02:15:00); (02:45:00); (03:45:00-
04:00:00); (05:15:00- 05:30:00); (12:45:00); (16:45:00); (17:30:00)
11/29/2003 (01:30:00)

SU: Water level data was deleted because sensor was at or above the water

surface on the following dates:

11/02/2003 (11:15:00-20:15:00)
11/04/2003 (10:30:00-22:45:00)
11/05/2003 (10:15:00-10:45:00); (12:00:00-12:15:00); (14:15:00-
14:30:00); (15:00:00); (15:30:00) through 11/10/2003 (04:45:00)
11/10/2003 (09:15:00-12:15:00)
11/12/2003 (09:30:00) through 11/19/2003 (14:15:00)
11/20/2003 (14:30:00) through 11/22/2003 (07:15:00)
11/22/2003 (12:45:00) through 11/27/2003 (14:30:00)

Data suspect for the following dates and times due to sensors being partially out of the water:

11/07/2003 (12:30:00) through 11/08/2003 (04:00:00)

OL: All data deleted because conductivity sensor was out of water:

11/24/2003 (19:30:00) through 11/25/2003 (07:45:00)
11/29/2003 (19:30:00) through 11/30/2003 (18:30:00)
11/30/2003 (22:15:00-23:45:00)

Water level data was deleted because sensor was at or above the water surface on the following dates:

11/12/2003 (14:15:00) through 11/13/2003 (11:00:00)
11/13/2003 (11:30:00)
11/18/2003 (19:45:00) through 11/19/2003 (09:00:00)
11/20/2003 (21:00:00) through 11/21/2003 (08:00:00)
11/23/2003 (15:45:00) through 11/24/2003 (08:15:00)
11/24/2003 (08:45:00-17:15:00)

11/25/2003 (17:45:00) through 11/26/2003 (08:15:00)
11/29/2003 (08:00:00-09:00:00); (12:00:00-15:30:00); (16:30:00-19:15:00)
11/30/2003 (18:45:00-22:00:00)

Water level data deleted because sensor became clogged:
11/24/2003 (18:00:00-19:15:00)

Conductivity data questionable from 11/27/2003 (19:00:00) through
11/30/2003 (23:45:00) due to silt build-up in sensor

Water level data questionable during 11/25/2003 (08:00:00) through
(09:45:00), reasons for increase depth unknown. Data retained.

BR: Water level data was deleted because sensor was at or above the
water
surface on the following dates:

11/04/2003 (10:15:00) through 11/15/2003 (11:15:00)
11/11/2003 (01:45:00-07:15:00); (14:15:00-14:30:00); (16:30:00-17:00:00); (22:45:00)
11/12/2003 (00:15:00-01:45:00); (02:15:00-03:00:00); (12:45:00-18:30:00); (19:00:00)
11/18/2003 (10:15:00) through 11/19/2003 (07:15:00)
11/23/2003 (16:45:00) through 11/24/2003 (10:45:00); (11:15:00)

Turbidity levels were above 1000 NTU due to either storms or biological
activity

11/01/2003 (11:00:00); (17:30:00)
11/02/2003 (04:15:00); (05:00:00); (05:45:00); (06:15:00);
(08:45:00)
11/03/2003 (04:00:00)
11/06/2003 (06:30:00)
11/08/2003 (19:15:00)
11/09/2003 (02:30:00)
11/10/2003 (10:15:00); (11:15:00)
11/19/2003 (11:00:00-11:30:00); (13:30:00); (19:00:00)
11/20/2003 (23:00:00); (23:30:00)
11/27/2003 (15:00:00); (15:30:00-20:00:00); (20:30:00)
11/29/2003 (17:30:00-22:15:00)

December 2003

WM: All data deleted because conductivity sensor was out of water:
12/01/2003 (00:00:00-02:30:00); (03:15:00-05:45:00); (13:30:00-18:30:00); (19:00:00- 21:30:00)

Water level data was deleted because sensor was at or above the water
surface on the following dates:

12/01/2003 (07:15:00-07:30:00); (11:00:00-13:15:00); (18:45:00);
(21:45:00)
through 12/02/2003 (01:30:00)
12/02/2003 (03:15:00); (04:00:00); (04:30:00); (05:45:00);
(06:45:00-

08:00:00); (10:30:00- 11:45:00); (20:45:00-22:30:00)
12/03/2003 (03:45:00); (04:15:00); (09:30:00-17:15:00); (19:30:00-
19:45:00); (22:15:00); (22:45:00) through 12/04/2003 (04:15:00)
12/06/2003 (05:30:00)-06:15:00); (17:30:00)
12/07/2003 (09:00:00-16:15:00); (20:00:00-22:45:00)
12/08/2003 (08:15:00-09:00:00); (09:45:00-17:30:00); (19:00:00);
(20:00:00- 20:15:00); (22:30:00-22:45:00)
12/09/2003 (01:30:00); (02:00:00-02:30:00); (03:00:00-05:00:00);
(05:30:00); (06:00:00-07:45:00); (08:15:00); (09:30:00);
(13:45:00);
(14:15:00-14:30:00); (15:00:00-16:15:00); (17:00:00-18:30:00);
(19:00:00);
(19:30:00); (20:45:00)
12/10/2003 (02:00:00)
12/11/2003 (08:00:00); (08:45:00-23:30:00)
12/12/2003 (10:30:00-17:00:00)
12/13/2003 (16:00:00); (16:45:00-18:45:00)
12/14/2003 (23:15:00)
12/15/2003 (01:30:00-03:15:00); (04:15:00-04:30:00); (05:00:00-
11:30:00)

Turbidity levels were above 1000 NTU due to either storms or
biological activity:

12/02/2003 (17:00:00-17:15:00); (18:30:00)
12/05/2003 (19:00:00); (19:45:00)
12/07/2003 (03:30:00)
12/08/2003 (20:45:00)
12/09/2003 (00:30:00)
12/10/2003 (05:45:00); (07:00:00-07:15:00); (07:45:00); (08:15:00-
08:30:00); (09:00:00); (09:30:00); (13:00:00); (16:30:00-16:45:00);
(17:15:00)
12/11/2003 (10:00:00-11:00:00)

A shift in dissolved oxygen, water depth and pH data during the following
dates and times are possibly due to siltation. Data were retained.

12/11/2003 (00:45:00) - 12/15/2003 (11:30:00)

SU: Water level data was deleted because sensor was at or above the
water

surface on the following dates:

12/13/2003 (08:00:00-08:30:00)

Turbidity levels were above 1000 NTU due to either storms or biological
activity:

12/08/2003 (23:30:00)

pH data deleted for the following times due to drop in data for unknown
reason, possibly an electronic glitch in datalogger.

12/01/2003 (08:45:00)

OL: All data deleted because conductivity sensor was out of water:

12/01/2003 (00:00:00-02:15:00); (03:30:00-05:30:00); (14:30:00-

15:00:00); (15:30:00- 18:30:00); (19:45:00); (20:15:00-21:00:00)

Water level data was deleted because sensor was at or above the water surface on the following dates:

12/01/2003 (02:30:00-03:15:00)

12/10/2003 (05:00:00); (09:30:00); (10:00:00); (10:45:00-23:00:00)

12/11/2003 (01:45:00-17:15:00); (18:15:00-20:00:00); (22:30:00)

Conductivity data questionable on 12/01/2003 (02:30:00-03:15:00); and (05:45:00- 09:30:00) due to silt build-up in sensor

BR: Turbidity levels were above 1000 NTU due to either storms or biological activity:

12/10/2003 (20:15:00-21:45:00); (22:15:00); (23:45:00)

12/11/2003 (00:30:00); (01:15:00-02:45:00); (04:30:00); (05:15:00); (05:45:00); (06:15:00); (09:30:00)

12. Missing data:

Missing data are denoted by a period in the data set. Periods were later removed for data dissemination purposes and left blank. Data are missing due to equipment failure when 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 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:

Dissolved oxygen standard is 100%, unless noted. Depth is always 0.0 meters.

The specific conductivity standard is 1 mS/cm. The pH standard is 7.00.

Site Date	Sp. Cond.	DO(%)	pH	Turb	Depth
WM					
04/14/2003	.990	101.7	7.06	3.3	-.001
05/05/2003	.882	96.8	7.11	0.4	-.003
05/19/2003	.992	85	7.10	0.9	.006
06/02/2003	.996	101.8	7.06	0.1	-.002
06/16/2003	1.036	108.8	7.04	1.2	-.048
06/30/2003	.943	110.5	7.10	0.5	.001
07/14/2003	1.000	113.9	7.07	2.5	-.017
07/28/2003	.980	101.8	7.13	1.4	.003
08/11/2003	.998	95.7	7.04	3.4	.000
08/25/2003	1.018	95.8	7.12	2.0	.002
09/08/2003	1.000	91.3	7.08	0.1	-.017

09/22/2003	1.005	94.2	7.03	3.4	.001
10/06/2003	1.031	103	7.11	1.0	-.026
10/20/2003	.925	116.8	7.06	-1.4	.000
11/10/2003	1.010	108.2	7.10	2.6	-.010
12/01/2003	.990	102.3	7.06	1.9	.001
12/15/2003	1.012	105.2	6.91	0	-.008

Site	Date	Sp. Cond.	DO (%)	pH	Turb
	Depth				

SU

04/14/2003	.981	108.4	7.08	3.3	-.032
05/05/2003	.960	102.1	7.07	2.1	.003
05/19/2003	.999	107.9	7.05	1.2	-.030
06/02/2003	.936	95.2	7.14	4.0	-.003
06/16/2003	.980	95.4	7.17	0.8	.003
06/30/2003	.968	102.3	7.12	1.9	.005
07/14/2003	1.041	102.6	7.13	0.8	.003
07/28/2003	.986	100.7	7.11	1.7	.000
08/11/2003	1.006	2.1*	7.10	1.1	.004

*(punctured membrane)

08/25/2003	1.016	104.5	----	2.0	.001
09/08/2003	.988	88.1	7.10	2.2	.003
09/22/2003	.982	102.4	7.08	1.0	-.001
10/06/2003	.999	101.9	7.12	3.2	.004
10/20/2003	.978	119.6	7.14	0.4	.001
11/10/2003	.997	104.8	7.06	1.3	.000
12/01/2003	.975	103.0	6.97	0.1	-.005
12/15/2003	.998	103.3	7.07	2.1	.001

Site	Date	Sp. Cond.	DO (%)	pH	Turb
	Depth				

OL

04/14/2003	.894	97.8	7.09	0.8	.183
05/05/2003	.940	67	7.07	3.0	-.165
05/19/2003	.999	104	7.08	0.6	.113
06/02/2003	.861	98.9	7.07	1.5	-.032
06/16/2003	.994	101.4	7.07	1.5	.156
06/30/2003	.980	100.9	7.07	3.8	.176
07/14/2003	1.007	101.6	7.10	1.8	.017
07/28/2003	.975	94.6	7.12	1.7	.075
08/11/2003	.987	89.7	7.11	2.0	-.066
08/25/2003	1.011	94.9	7.08	2.0	.007
09/08/2003	1.027	91.3	7.15	0.5	-.018
09/22/2003	.974	95.9	7.10	2.4	-.150
10/06/2003	1.020	109.7	7.15	1.1	.111
10/20/2003	.979	104.4	7.05	1.2	-.074
11/10/2003	1.016	96.7	6.99	3.3	.026
12/01/2003	.336*	102.5	7.07	0.1	.037

*(silt buildup)

12/15/2003	1.008	103.7	6.97	3.9	-.017
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Site	Date	Sp. Cond.	DO (%)	pH	Turb	Depth
BR						
04/14/2003	.945	91.2	7.12	3.5	.030	
05/05/2003	.992	17.6*	7.08	4.0	-.214	
		* (punctured membrane)				
05/19/2003	1.006	99.5	7.05	0.2	.130	
06/02/2003	.967	98.1	7.10	2.9	-.045	
06/16/2003	1.015	101.2	7.02	1.8	.162	
06/30/2003	1.012	60.6	7.14	1.7	.148	
07/14/2003	.978	98.2	7.14	2.2	.023	
07/28/2003	.993	95.3	7.06	1.5	.093	
08/11/2003	1.006	100	7.10	1.9	-.063	
08/25/2003	1.019	93.6	7.08	1.9	.015	
09/08/2003	1.000	98.0	7.08	3.8	-.007	
09/22/2003	.973	97.5	7.09	0.9	-.139	
10/06/2003	.970	110.4	7.12	1.5	.121	
10/20/2003	.954	103	7.10	1.0	-.111	
11/10/2003	.929	100	7.07	1.6	.031	
12/01/2003	.977	91.2	7.09	0.9	.041	
12/15/2003	.989	93.8	7.00	3.1	-.008	

14. Other Remarks

On 07/01/2021 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.