

Tijuana River Estuary (TJR) NERR Site Water Quality Metadata Form
January to December 1998
Last Revised April 23, 2002

I. Data Set and Research Descriptors

1. Principal Investigators and contact persons

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2. Entry Verification:

The data are uploaded directly from the YSI model 6000upg dataloggers to the YSI PC6000 software into a file appended with the suffix .dat. The data are also downloaded directly from the datalogger into a spreadsheet importable file appended with the suffix .csv. The data are then reviewed for major problems (i.e. logger out of water, probe malfunction, battery failure etc.) using the YSI PC6000 plotting software. The resulting plot is printed out and saved in a folder named "datalogger deployment log". The .csv file is imported into Excel 5.0 for Macintosh and is edited and formatted.

The tails of each sampling period are deleted and any suspect data is identified with the aid of Excel CDMO 5.0 macros and are evaluated and dealt with according to CDMO Operations Manual (ver.3.0) guidelines. The parameter columns are checked for proper order and formatted to the correct decimal places using the "column reformat" macro supplied by the CDMO. Missing data fields are inserted into the Excel spreadsheet and are denoted by periods (.). Reasons for

any missing or anomalous data are entered directly into the data file and the edited file is saved as a two-week excel file. When an entire month of two-week edited data files have been collected, the files are combined into a 1 month excel file. Any dates and times when data was not collected are inserted and the reason for the missing data (from the deployment log) are entered directly into the excel file along with the editing information from the two-week files. All editing and missing data documentation are also recorded in an excel file named "missing data log". The information in the "missing data log" is transferred to the metadata form. The edited and raw files are archived on a Sun Sparc 20 workstation and backed up to tape weekly. Data and metadata files are uploaded via ftp to the CDMO. The person responsible for the data management is Michelle Cordrey.

3. Research Objectives:

The Tijuana Estuarine Research Reserve is impacted heavily by both periodic raw sewage outflows and urban development. Only about a quarter of the reserve's 2,531 acres are tidally influenced with few channels deep enough for deployment of dataloggers. Initially two stations were set up; the "treatment" station was set up close to the mouth on the Southern end of the Oneonta Slough. It was thought that this location would be best suited for monitoring changes caused by sewage outflow events. The "control" station was set up on the northern end of Oneonta Slough. Deployment at the treatment station, however, was continually halted by both shifting sediment and massive wracks of Kelp (*macrocystis pyrifera*) which would often bury the deployment set-up on incoming tides. After a number of different deployment equipment designs were implemented, with no success, logging at this site was terminated. Recently, however, a new channel was dredged in the northeast section of the estuary to increase tidal flushing. This restoration site named the "Tidal Linkage" will be the new location of the "treatment" site. Comparisons will be made with the natural site as the hydrology of the constructed treatment site changes over time.

4. Research Methods (Dataloggers)

A 4 inch diameter PVC pipe was strapped to a 6 ft length of steel fencing post and driven into the sediment until refusal prior to datalogger deployment in the center of the channel. The bottom of the pipe is raised 1' off of the channel bottom and is capped. Multiple 1.5" holes have been drilled in the bottom cap and sides to permit unrestricted flow to the sensors. The datalogger units are then placed into and rest on the bottom of the tubes during deployment. The sampling period is two weeks with measurements being taken every 30 minutes. Measurements for specific conductivity, salinity, dissolved oxygen (percent saturation), dissolved oxygen (mg/l), pH, temperature, turbidity and water level are recorded. At the end of each two-week period, the YSI data logger unit is replaced by another YSI datalogger unit and brought back to the laboratory for downloading, cleaning and recalibration. These procedures are carried out according to the methods described in the YSI Operations Manual (see sections 3 and 7). Calibration standards for Specific Conductivity, pH and turbidity are purchased pre-made from VWR scientific. The QA/QC procedures for the collected data are followed as given in the CDMO Operations Manual version 3.0.

In May 1997 sampling at the "Tidal Linkage" station began. All deployment, calibration and QA/QC procedures were followed exactly as they are at the Oneonta Slough station. Additionally, on May 23, 1997 plastic mesh sleeves were placed on the datasondes at both stations to inhibit crabs from interfering with the sensors.

5. Site location and character

General site Characteristics (TJE)

- a) Tidal exchange (extremes): approx. -2 +7 MLLW,
- b) Salinity: 4 ppt (extreme rain events) to 38 ppt
- c) Latitude and longitude: 32 deg. 34 min. N, 117 deg. 07 min. W
- d) Potential impacts: storm drain runoff from military airfield and adjacent residential areas, occasional sewage spills (10-15 MGD) into the Tijuana River from Mexico. The area surrounding the estuary is heavily developed by residential housing as is the watershed which drains into the estuary.

Approximately 2/3 of the watershed is in Mexico. The North Eastern section of the reserve is bordered by a military helicopter training base. Vegetation in the area is dominated by common pickleweed (*Spartina virginica*) and Pacific cordgrass (*Spartina foliosa*).

Specific Site characteristics: Oneonta Slough

- a) Orientation of site: Datalogger is located on the upper portion of Oneonta Slough. The channel runs North to South and is located on the northwestern edge of the reserve.
- b) The elevation of the channel bottom directly below the datalogger is approx. 0.55m below Mean Sea Level.
- c) Channel width is approx. 20 meters. Datalogger site is located 1km from mouth
- d) Bottom type: sand and sediment
- e) Area adjacent to west side of channel is developed. There is a 50 meter buffer of natural vegetation between development and the channel. Area adjacent to east side of channel is relatively natural.
- f) Direct impacts are estimated to be runoff from streets into channel during rain events.
- g) Site location: 32° 34' 4.8"N, 117° 07' 52.3"W

Specific Site Characteristics: The Tidal Linkage

- a) Orientation of site: Datalogger is located in the middle of the newly constructed channel. The channel runs Northwest to Southwest and is located adjacent to the visitor's center in the northeastern section of the reserve.
- b) The elevation of the channel bottom is approximately 0.9m below Mean Sea Level.
- c) Channel width: Approximately 5 meters.
- d) Bottom type: mostly sand in the area of the datalogger with a change to mostly mud at either end of the channel.
- e) Site location: 32° 34' 24.9"N, 117° 07' 32.2"W

6. Data Collection period

Oneonta Slough data collection began July 1, 1995. Multiple instrument problems (defective sensors, software bugs, exploding batteries) and subsequent repairs and upgrades delayed data processing and compromised some of the data acquired between July 1995 and January 1, 1996. Sampling at the Tidal Linkage

began in May 1997. Sampling is ongoing.

7. Associated researchers and projects

A computer animated salinity model is being developed by Phil Williams Assoc. in collaboration with the Pacific Estuarine Research Laboratory (PERL) at San Diego State University (SDSU). The datalogger data will be used to adjust and validate the model. The salinity data and dilution model will be used to determine the distribution and dilution of human pathogens resulting from sewage spills into Tijuana Estuary. The pathogen study is being conducted by Dr. Rick Gersberg, SDSU Grad. School of Public Health and PERL. The newly constructed channel is the site of research being conducted by PERL which focuses on methods for increasing the success of saltmarsh revegetation projects.

II. Physical Structure Descriptors

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

YSI 6000upg datalogger:

Variable	Range of Measurements (units)	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 sec	NA
Temp	-5 TO 45 (C)	0.01 C	+/-
0.15C			
SpCond	0-100 (mS/cm)	0.01 mS/cm	+/-
(.5% of reading)+ 0.001 mS/cm			
Sal	0-70 parts per thousand (ppt)	0.01 ppt	+/-
1.0% of reading or 0.01 ppt (whichever is greater)			
DO	0-200 (% air Saturation)	0.1% @air sat	+/-
2.0%@air sat.			
DO	200-500 (% air saturation)	0.1% @air sat	+/-
6%@air sat.			
DO	0-20 (mg/l)	0.01 mg/l	+/-
0.2 mg/l			
DO	20-50 (mg/l)	0.01 mg/l	+/-
0.6 mg/l			
Depth	0-152 (m)	0.001m	+/-
0.3 m			

PH	2-14 units	0.01 units	+/-
0.2 units			
Turbidity	0-1000 (NTU)	0.1 NTU	+/-5%
of			
reading or 2 NTU (whichever is greater)			

data columns are separated by tabs

9. Coded variable indicator and variable code definitions
 Site definitions: OS = Oneonta Slough TL = Tidal Linkage

10. Data anomalies (suspect data):

January 1998

Oneonta Sough

a) 01/28(16:30)-01/31(23:30), Sp Cond and Salinity - readings unusually high.

Post calibration checked out ok. Data were not removed

Tidal Linkage

a)The following negative turbidity values were recorded:

Date	Time	Turb
01/01/98	19:30:00	-0066
01/01/98	20:00:00	-0075
01/01/98	20:30:00	-0067
01/01/98	21:00:00	-0072
01/01/98	21:30:00	-0082
01/01/98	22:00:00	-0100
01/01/98	22:30:00	-0049
01/01/98	23:00:00	-0034
01/01/98	23:30:00	-0027
01/02/98	00:00:00	-0004
01/02/98	22:30:00	-0054
01/02/98	23:00:00	-0032
01/02/98	23:30:00	-0022
01/03/98	00:00:00	-0023
01/03/98	01:30:00	-0003
01/04/98	01:30:00	-0343
01/04/98	02:00:00	-0366
01/04/98	02:30:00	-0248
01/04/98	03:00:00	-0199
01/04/98	03:30:00	-0162
01/04/98	04:00:00	-0137
01/04/98	04:30:00	-0118
01/04/98	05:00:00	-0107
01/04/98	05:30:00	-0096
01/04/98	06:00:00	-0083
01/04/98	06:30:00	-0443
01/04/98	07:00:00	-0446
01/04/98	07:30:00	-0434
01/04/98	23:30:00	-0307
01/05/98	01:30:00	-0012
01/05/98	02:00:00	-0064

01/05/98	02:30:00	-0191
01/05/98	03:00:00	-0182
01/05/98	03:30:00	-0131
01/05/98	04:00:00	-0138
01/05/98	04:30:00	-0104
01/05/98	05:00:00	-0101
01/05/98	05:30:00	-0107
01/05/98	06:00:00	-0106
01/05/98	06:30:00	-0106
01/05/98	07:00:00	-0101
01/05/98	07:30:00	-0097
01/05/98	08:00:00	-0097
01/05/98	08:30:00	-0101
01/05/98	09:00:00	-0118
01/05/98	09:30:00	-0101
01/05/98	10:00:00	-0100
01/05/98	10:30:00	-0096
01/05/98	11:00:00	-0120
01/05/98	11:30:00	-0116
01/05/98	12:00:00	-0158
01/05/98	12:30:00	-0164
01/05/98	13:00:00	-0135
01/05/98	13:30:00	-0166
01/05/98	14:00:00	-0156
01/05/98	14:30:00	-0142
01/05/98	15:00:00	-0070
01/05/98	15:30:00	-0005
01/05/98	16:00:00	-0005
01/05/98	16:30:00	-0256
01/05/98	17:00:00	-0267
01/05/98	17:30:00	-0251
01/05/98	18:00:00	-0257
01/05/98	18:30:00	-0263
01/05/98	19:00:00	-0251
01/05/98	19:30:00	-0258
01/05/98	20:00:00	-0272
01/05/98	20:30:00	-0239
01/05/98	21:00:00	-0233
01/05/98	21:30:00	-0236
01/05/98	22:00:00	-0222
01/05/98	22:30:00	-0239
01/05/98	23:00:00	-0272
01/05/98	23:30:00	-0278
01/06/98	00:00:00	-0289
01/06/98	00:30:00	-0317
01/06/98	01:00:00	-0233
01/06/98	01:30:00	-0194
01/06/98	02:00:00	-0176
01/06/98	02:30:00	-0162
01/06/98	03:00:00	-0269
01/06/98	03:30:00	-0005
01/06/98	04:00:00	-0005
01/06/98	04:30:00	-0005
01/06/98	05:00:00	-0005

01/06/98	05:30:00	-0392
01/06/98	06:00:00	-0326
01/06/98	06:30:00	-0312
01/06/98	07:00:00	-0288
01/06/98	07:30:00	-0258
01/06/98	08:00:00	-0192
01/06/98	08:30:00	-0069
01/06/98	11:00:00	-0005
01/06/98	11:30:00	-0005
01/06/98	12:00:00	-0005
01/06/98	12:30:00	-0005
01/06/98	13:00:00	-0127
01/06/98	15:30:00	-0005
01/07/98	22:00:00	-0180
01/07/98	22:30:00	-0117
01/07/98	23:00:00	-0120
01/07/98	23:30:00	-0064
01/08/98	00:00:00	-0067
01/08/98	02:30:00	-0005
01/08/98	03:00:00	-0005
01/08/98	03:30:00	-0005
01/08/98	05:00:00	-0005
01/08/98	05:30:00	-0005
01/08/98	06:00:00	-0005
01/08/98	06:30:00	-0005
01/08/98	07:00:00	-0005
01/08/98	07:30:00	-0005
01/08/98	08:00:00	-0005
01/08/98	08:30:00	-0005
01/08/98	09:00:00	-0005
01/08/98	09:30:00	-0005
01/08/98	10:00:00	-0005
01/08/98	10:30:00	-0005
01/08/98	11:00:00	-0005
01/08/98	11:30:00	-0609
01/08/98	12:00:00	-0604
01/08/98	18:00:00	-0005
01/08/98	18:30:00	-0005
01/08/98	19:00:00	-0005
01/08/98	19:30:00	-0005
01/08/98	20:00:00	-0005
01/08/98	20:30:00	-0005
01/08/98	21:00:00	-0005
01/08/98	21:30:00	-0005
01/08/98	22:00:00	-0005
01/08/98	22:30:00	-0005
01/08/98	23:00:00	-0005
01/08/98	23:30:00	-0005
01/09/98	00:00:00	-0005
01/09/98	00:30:00	-0005
01/09/98	01:00:00	-0005
01/09/98	01:30:00	-0171
01/09/98	02:00:00	-0155
01/09/98	02:30:00	-0175

01/09/98	03:00:00	-0166
01/09/98	03:30:00	-0148
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01/09/98	11:30:00	-0005
01/09/98	12:00:00	-0005
01/09/98	12:30:00	-0005
01/09/98	13:00:00	-0199
01/09/98	13:30:00	-0222
01/09/98	14:00:00	-0330
01/09/98	14:30:00	-0345
01/09/98	15:00:00	-0345
01/09/98	15:30:00	-0373
01/09/98	16:00:00	-0375
01/09/98	16:30:00	-0138
01/09/98	17:00:00	-0157
01/09/98	17:30:00	-0125
01/09/98	18:00:00	-0103
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01/09/98	19:30:00	-0245
01/09/98	20:00:00	-0187
01/09/98	20:30:00	-0152
01/09/98	21:00:00	-0126
01/09/98	21:30:00	-0005
01/09/98	22:00:00	-0005
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01/09/98	23:30:00	-0005
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01/10/98	01:30:00	-0005
01/10/98	02:00:00	-0005
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01/10/98	03:30:00	-0005
01/10/98	04:00:00	-0005
01/10/98	04:30:00	-0005
01/10/98	05:00:00	-0005
01/10/98	05:30:00	-0005

01/10/98	06:00:00	-0593
01/10/98	06:30:00	-0005
01/10/98	07:00:00	-0005
01/10/98	07:30:00	-0005
01/10/98	08:00:00	-0005
01/10/98	08:30:00	-0267
01/10/98	09:00:00	-0192
01/10/98	09:30:00	-0188
01/10/98	10:00:00	-0149
01/10/98	10:30:00	-0258
01/10/98	11:00:00	-0125
01/10/98	11:30:00	-0101
01/10/98	12:00:00	-0102
01/10/98	12:30:00	-0162
01/10/98	13:00:00	-0073
01/10/98	13:30:00	-0115
01/10/98	14:00:00	-0068
01/10/98	14:30:00	-0061
01/10/98	15:00:00	-0052
01/10/98	15:30:00	-0034
01/10/98	16:00:00	-0011
01/10/98	16:30:00	-0021
01/10/98	17:00:00	-0031
01/10/98	17:30:00	-0034
01/10/98	18:00:00	-0039
01/10/98	18:30:00	-0032
01/10/98	19:00:00	-0185
01/10/98	19:30:00	-0079
01/10/98	20:00:00	-0045
01/10/98	20:30:00	-0036
01/10/98	21:00:00	-0044
01/10/98	21:30:00	-0040
01/10/98	22:00:00	-0057
01/10/98	22:30:00	-0041
01/10/98	23:00:00	-0057
01/10/98	23:30:00	-0080
01/11/98	00:00:00	-0020
01/11/98	00:30:00	-0047
01/11/98	01:00:00	-0061
01/11/98	01:30:00	-0085
01/11/98	02:00:00	-0003
01/11/98	04:00:00	-0003
01/11/98	04:30:00	-0019
01/11/98	05:00:00	-0026
01/11/98	06:00:00	-0003
01/11/98	06:30:00	-0238
01/11/98	07:00:00	-0148
01/11/98	07:30:00	-0144
01/11/98	08:00:00	-0074
01/11/98	08:30:00	-0041
01/11/98	09:00:00	-0062
01/11/98	09:30:00	-0040
01/11/98	10:00:00	-0011
01/11/98	10:30:00	-0014

01/11/98	12:00:00	-0021
01/11/98	12:30:00	-0011
01/11/98	13:00:00	-0105
01/11/98	13:30:00	-0115
01/11/98	14:00:00	-0120
01/11/98	14:30:00	-0132
01/11/98	15:00:00	-0098
01/11/98	15:30:00	-0189
01/11/98	16:00:00	-0219
01/11/98	16:30:00	-0005
01/11/98	17:00:00	-0005
01/11/98	17:30:00	-0005
01/11/98	18:00:00	-0005
01/11/98	18:30:00	-0005
01/11/98	19:00:00	-0005
01/11/98	19:30:00	-0005
01/11/98	20:00:00	-0005
01/11/98	20:30:00	-0495
01/11/98	21:00:00	-0496
01/11/98	21:30:00	-0493
01/11/98	22:00:00	-0457
01/11/98	22:30:00	-0434
01/11/98	23:00:00	-0425
01/11/98	23:30:00	-0427
01/12/98	00:00:00	-0429
01/12/98	00:30:00	-0428
01/12/98	01:00:00	-0425
01/12/98	01:30:00	-0429
01/12/98	02:00:00	-0400
01/12/98	02:30:00	-0397
01/12/98	03:00:00	-0395
01/12/98	03:30:00	-0379
01/12/98	04:00:00	-0389
01/12/98	04:30:00	-0386
01/12/98	05:00:00	-0354
01/12/98	05:30:00	-0327
01/12/98	06:00:00	-0299
01/12/98	06:30:00	-0258
01/12/98	07:00:00	-0245
01/12/98	07:30:00	-0235
01/12/98	08:00:00	-0252
01/12/98	08:30:00	-0222
01/12/98	09:00:00	-0193
01/12/98	09:30:00	-0183
01/12/98	10:00:00	-0167
01/12/98	10:30:00	-0177
01/12/98	12:30:00	-0017
01/12/98	13:00:00	-0007
01/12/98	13:30:00	-0019
01/12/98	14:00:00	-0021
01/12/98	14:30:00	-0019

February 1998
Oneonta Slough

a) 02/01(00:00)-02/11(15:00), Sp cond. and salinity maximum values unusually high. No reason found, post calibration ok. Data were not removed

b) The following negative turbidity values were recorded:

Date	Time	Turb
02/14/98	15:30:00	-0001
02/14/98	19:30:00	-0001
02/14/98	20:00:00	-0001
02/14/98	21:30:00	-0001
02/14/98	22:00:00	-0001
02/14/98	22:30:00	-0001
02/14/98	23:00:00	-0001
02/14/98	23:30:00	-0001
02/15/98	00:00:00	-0001
02/15/98	00:30:00	-0001
02/15/98	01:00:00	-0001
02/15/98	01:30:00	-0001
02/15/98	02:00:00	-0001
02/15/98	02:30:00	-0001
02/15/98	03:00:00	-0001
02/15/98	09:30:00	-0001
02/15/98	10:00:00	-0001
02/15/98	10:30:00	-0001
02/15/98	11:00:00	-0001
02/15/98	11:30:00	-0001
02/15/98	12:00:00	-0001
02/15/98	12:30:00	-0001
02/15/98	22:30:00	-0001
02/15/98	23:00:00	-0001
02/15/98	23:30:00	-0001
02/16/98	00:00:00	-0001
02/16/98	00:30:00	-0001
02/16/98	01:00:00	-0001
02/16/98	01:30:00	-0001
02/17/98	07:00:00	-0001
02/17/98	07:30:00	-0001
02/17/98	08:00:00	-0001
02/17/98	10:30:00	-0001
02/17/98	23:30:00	-0001
02/18/98	00:00:00	-0001
02/18/98	00:30:00	-0001
02/18/98	01:00:00	-0001
02/18/98	02:00:00	-0001
02/24/98	03:30:00	-0001
02/24/98	04:00:00	-0001
02/24/98	04:30:00	-0001
02/24/98	05:00:00	-0001
02/24/98	05:30:00	-0001
02/24/98	06:00:00	-0001
02/24/98	06:30:00	-0001
02/24/98	07:00:00	-0001
02/24/98	07:30:00	-0001
02/24/98	08:00:00	-0001

02/24/98	08:30:00	-0001
02/24/98	09:00:00	-0001
02/24/98	09:30:00	-0001
02/24/98	10:00:00	-0001
02/24/98	10:30:00	-0001
02/24/98	11:00:00	-0001
02/24/98	11:30:00	-0001
02/24/98	12:00:00	-0001
02/24/98	12:30:00	-0001
02/24/98	13:00:00	-0001
02/24/98	13:30:00	-0001
02/24/98	14:00:00	-0001
02/24/98	14:30:00	-0001
02/24/98	15:00:00	-0001

Tidal Linkage

March 1998

Oneonta Slough

a) The following unexplained, large turbidity values were recorded:

Date	Time	Turb
03/12/98	17:00:00	0517
03/12/98	17:30:00	0854
03/13/98	16:00:00	0383
03/16/98	16:00:00	0615
03/19/98	13:30:00	0533
03/23/98	15:00:00	0316
03/24/98	14:30:00	0267
03/25/98	16:00:00	0299
03/25/98	17:00:00	0225
03/25/98	17:30:00	0207
03/25/98	18:00:00	0558
03/26/98	06:00:00	0213
03/30/98	20:00:00	0280
03/30/98	20:30:00	0855
03/30/98	21:00:00	0291
03/31/98	15:30:00	0384
03/31/98	21:00:00	0247

Tidal Linkage

a) 03/31(09:30)-03/31(23:30), pH missing - probe failure during deployment. Data were removed

April 1998

Oneonta Slough

a) 04/10(22:00)-04/14(10:00), pH missing - probe failure suspected. Data were removed

b) The following abnormally high turbidity values were recorded. May be consistent with storm events.

Date	Time	Turb
04/01/98	23:00:00	0569
04/02/98	03:00:00	0533
04/05/98	12:30:00	0833
04/07/98	17:30:00	0441

04/12/98	20:30:00	0637
04/18/98	11:30:00	0635
04/20/98	13:00:00	0323
04/23/98	15:00:00	0737
04/24/98	05:30:00	0387
04/24/98	17:00:00	0353

Tidal Linkage

a) 04/01(00:00)-04/14(09:30), pH missing - probe failure during deployment.

Data were removed

b) 04/13(01:30)-04/14(09:30), DO% and DOmg missing - readings below range of sensor (<0). Data were removed

May 1998

Oneonta Slough

Tidal Linkage

05/20(12:00)-05/31(23:30), turbidity missing - calibration error - most readings

below zero. Data were removed

05/24 (22:00) -05/25 (01:00), negative DO values were removed from data file

June 1998

Oneonta Slough

a) 06/02(13:00), DO% and DOmg - reading was above 500% saturation. Reason unknown. Data were removed

b) 06/11(21:30)-06/16(11:30), DO % & DOmg - readings below 0. Data were removed

c) The following abnormally high turbidity value was recorded:

Date	Time	Turb
06/20/98	18:00:00	0658

Tidal Linkage

a) 06/03(14:25)-06/16(11:25), time offset by -4min 35sec. times were adjusted to

nearest :00 or :30 minute interval.

b) 06/18(09:30)-06/30(23:30), Average depth values abnormally low.

c) Negative depth values were recorded as follows:

Date	Time	Depth
06/19/98	14:00:00	-0.01
06/20/98	03:00:00	-0.01
06/20/98	03:30:00	-0.01
06/20/98	04:00:00	-0.01
06/20/98	04:30:00	-0.01

d) Negative turbidity values were recorded as follows:

06/01/98	00:00:00	-0002
06/01/98	00:30:00	-0003
06/01/98	01:00:00	-0004
06/01/98	01:30:00	-0006
06/01/98	02:00:00	-0005
06/01/98	02:30:00	-0005
06/01/98	03:00:00	-0006

06/01/98	03:30:00	-0009
06/01/98	04:00:00	-0008
06/01/98	04:30:00	-0004
06/01/98	17:00:00	-0006
06/01/98	17:30:00	-0006
06/01/98	18:00:00	-0006
06/01/98	18:30:00	-0007
06/01/98	19:00:00	-0005
06/01/98	19:30:00	-0006
06/01/98	20:00:00	-0007
06/01/98	20:30:00	-0007
06/01/98	21:00:00	-0002
06/01/98	21:30:00	-0005
06/01/98	22:00:00	-0004
06/01/98	22:30:00	-0007
06/01/98	23:00:00	-0006
06/01/98	23:30:00	-0005
06/02/98	00:00:00	-0006
06/02/98	00:30:00	-0007
06/02/98	01:30:00	-0001
06/02/98	02:00:00	-0005
06/02/98	02:30:00	-0008
06/02/98	03:00:00	-0008
06/02/98	03:30:00	-0006

July 1998

Oneonta Slough

a) 07/26(21:30)-07/28(10:00), DO% & DOmg - readings fell below 0. Data were removed.

b) 07/09(22:30)-07/15(12:30), Turbidity values showed abnormally large drift -

wiper problem suspected. Data were removed.

c) The following negative turbidity values were recorded:

Date	Time	Turb
07/02/98	17:30:00	-0004
07/03/98	18:00:00	-0001
07/03/98	18:30:00	-0002
07/04/98	18:30:00	-0001
07/04/98	19:00:00	-0001
07/05/98	19:30:00	-0002
07/07/98	21:00:00	-0001
07/08/98	21:30:00	-0001
07/18/98	18:30:00	-0001

Tidal Linkage

a) 07/02(19:00), DO% and DOmg/l values were below range of sensor. Data was removed.

b) 07/16(11:30)-07/28(10:30), pH missing - readings showed anomalous drift and

low variability caused by suspected probe failure. Data were removed

c) 07/22(22:30)-07/28(10:30), DO% and DOMg anomalous. Readings showed below normal variation. Reason unknown. Data were not removed.

d) 07/25(08:30)-07/28(10:30), turbidity values anomalously high and noisy. No probe or wiper malfunction apparent. Data were not removed.

e) The following slightly negative turbidity values were recorded:

Date	Time	Turb
07/16/98	18:00:00	-0002
07/16/98	18:30:00	-0003
07/16/98	19:00:00	-0001
07/16/98	19:30:00	-0001
07/16/98	20:00:00	-0003
07/16/98	22:00:00	-0001
07/16/98	23:30:00	-0002
07/17/98	01:00:00	-0002
07/17/98	18:30:00	-0001
07/17/98	19:00:00	-0003
07/17/98	19:30:00	-0002
07/17/98	20:00:00	-0002
07/17/98	20:30:00	-0003
07/17/98	21:30:00	-0001
07/17/98	22:00:00	-0001
07/18/98	02:00:00	-0001
07/18/98	02:30:00	-0002
07/18/98	03:30:00	-0001
07/18/98	18:30:00	-0003
07/18/98	19:00:00	-0003
07/18/98	19:30:00	-0004
07/18/98	20:00:00	-0004
07/18/98	20:30:00	-0001
07/18/98	22:30:00	-0004
07/19/98	19:30:00	-0002
07/19/98	20:30:00	-0001
07/19/98	21:00:00	-0002
07/20/98	21:00:00	-0001

August 1998

Oneonta Slough

a) 08/01(00:00)-08/17(10:30), Salinity and Sp. Cond. readings appear to have

higher than average drift through course of deployment. Post calibration ok. Data were not removed

b) 08/01(00:00)-08/17(10:30), DOMg & DO% missing - readings fell below sensor range (< 0). Data were removed.

c) 08/01(00:00)-08/17(10:30), pH values show abnormally low variability. No

reason found. Post calibration and check normal.

Data were not removed

Tidal Linkage

a) 08/17(04:30)-08/17(11:00), DO% and D0mg missing - readings fell below range of sensor (0). Data were removed

b) 08/26(23:30)-08/31(23:30), DO% and D0mg missing - readings fell below range of sensor (0). Data were removed

c) The following negative depth values were recorded:

Date	Time	Depth
08/22/98	17:30:00	-0.01
08/22/98	18:00:00	-0.01
08/23/98	05:30:00	-0.01
08/23/98	06:00:00	-0.02
08/23/98	06:30:00	-0.02
08/23/98	07:00:00	-0.02
08/23/98	07:30:00	-0.02
08/23/98	17:30:00	-0.01
08/23/98	18:00:00	-0.02
08/24/98	06:30:00	-0.01
08/24/98	07:00:00	-0.01
08/24/98	07:30:00	-0.01
08/28/98	23:30:00	-0.01
08/30/98	00:30:00	-0.01
08/30/98	01:00:00	-0.01
08/30/98	01:30:00	-0.01
08/30/98	02:00:00	-0.01
08/31/98	00:00:00	-0.01
08/31/98	00:30:00	-0.01
08/31/98	01:00:00	-0.02
08/31/98	01:30:00	-0.03
08/31/98	02:00:00	-0.03
08/31/98	02:30:00	-0.03
08/31/98	03:00:00	-0.03
08/31/98	03:30:00	-0.01

September 1998

Oneonta Slough

a) 09/10(21:30)-09/15(11:30), pH - variability abnormally low. may be caused by decreased tidal exchange -post calibration ok

Tidal Linkage

a) 09/01(00:00)-09/02(13:30), DO% and D0mg missing - Reading fell below range of

probe (<0). Data were removed

b) 09/03(13:30)-09/15(11:00), average low depth values abnormally high - calibration error suspected.

c) The following negative depth values were recorded:

Date	Time	Depth
09/01/98	00:30:00	-0.01
09/01/98	01:00:00	-0.02
09/01/98	01:30:00	-0.03
09/01/98	02:00:00	-0.03

09/01/98	02:30:00	-0.04
09/01/98	03:00:00	-0.05
09/01/98	03:30:00	-0.05
09/01/98	04:00:00	-0.04
09/02/98	02:00:00	-0.01
09/02/98	02:30:00	-0.03
09/02/98	03:00:00	-0.04
09/02/98	03:30:00	-0.04
09/02/98	04:00:00	-0.05
09/02/98	04:30:00	-0.05
09/02/98	05:00:00	-0.02

October 1998

Oneonta Slough

Tidal Linkage

a) 10/05(14:00)-10/15(13:00), DO% and DOfg missing - many values below range of

sensor. Data were removed

b) 10/02 (1430) to 10/15 (1230), DO% and DOfg/L deleted due to values averaging

130 to 150% possibly due to calibration problem

November 1998

Oneonta Slough

a) 11/13(15:31)-12/01(13:31), time values offset by +1.00 min. Time values were

adjusted to nearest :30 or :00 interval.

b) The following anomalously high turbidity value was recorded.

Date	Time	Turb
------	------	------

11/02/98	04:00:00	0359
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Tidal Linkage

a) 11/14(15:00)-11/30(23:30), time values offset by -11min 13sec. Time values

were adjusted to nearest :30 or :00 interval.

b) The following negative depth values were recorded:

Date	Time	Depth
------	------	-------

11/17/98	03:00:00	-0.01
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11/17/98	03:30:00	-0.01
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11/17/98	04:00:00	-0.01
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December 1998

Oneonta Slough

Tidal Linkage

a) 12/01(00:00)-12/01(14:00), time values offset by -11min 13sec. Time values

were adjusted to nearest :30 or :00 interval.

b) 12/27(23:30)-12/31(23:30), all parameters missing - sediment covered sensors.

Data were removed

Date	Time	Depth
------	------	-------

12/08/98	23:30:00	-0.01
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12/09/98	00:00:00	-0.01
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12/09/98	00:30:00	-0.01
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12/13/98	00:00:00	-0.01
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12/13/98	00:30:00	-0.02
12/13/98	01:00:00	-0.03
12/13/98	01:30:00	-0.03
12/13/98	02:00:00	-0.02
12/13/98	02:30:00	-0.03
12/13/98	03:00:00	-0.02
12/13/98	16:00:00	-0.01
12/13/98	16:30:00	-0.02
12/13/98	17:00:00	-0.01
12/14/98	00:00:00	-0.01
12/14/98	00:30:00	-0.01
12/14/98	01:00:00	-0.02
12/14/98	01:30:00	-0.02
12/14/98	02:00:00	-0.02
12/14/98	02:30:00	-0.02
12/14/98	03:00:00	-0.02
12/14/98	13:00:00	-0.01
12/14/98	13:30:00	-0.01
12/14/98	14:00:00	-0.02
12/14/98	14:30:00	-0.02
12/14/98	15:00:00	-0.02
12/14/98	15:30:00	-0.02
12/14/98	16:00:00	-0.02
12/14/98	16:30:00	-0.02
12/14/98	17:00:00	-0.02
12/15/98	00:30:00	-0.01
12/15/98	01:00:00	-0.02
12/15/98	01:30:00	-0.03
12/15/98	02:00:00	-0.04
12/15/98	02:30:00	-0.04
12/15/98	03:00:00	-0.01
12/15/98	14:00:00	-0.02
12/15/98	14:30:00	-0.02
12/15/98	15:00:00	-0.03
12/15/98	15:30:00	-0.03
12/15/98	16:00:00	-0.04
12/15/98	16:30:00	-0.04
12/15/98	17:00:00	-0.05
12/15/98	17:30:00	-0.06
12/15/98	18:00:00	-0.05
12/16/98	01:00:00	-0.02
12/16/98	01:30:00	-0.03
12/16/98	02:00:00	-0.03
12/16/98	02:30:00	-0.04
12/16/98	03:00:00	-0.04
12/16/98	03:30:00	-0.03
12/16/98	15:00:00	-0.01
12/16/98	15:30:00	-0.01
12/16/98	16:00:00	-0.01
12/16/98	16:30:00	-0.01
12/16/98	17:00:00	-0.02
12/16/98	17:30:00	-0.02
12/16/98	18:00:00	-0.02
12/16/98	18:30:00	-0.02

12/17/98	01:30:00	-0.01
12/17/98	02:00:00	-0.02
12/17/98	02:30:00	-0.03
12/17/98	03:00:00	-0.03
12/17/98	03:30:00	-0.03
12/17/98	14:30:00	-0.01
12/17/98	15:00:00	-0.03
12/17/98	15:30:00	-0.04
12/17/98	16:00:00	-0.05
12/17/98	16:30:00	-0.05
12/17/98	17:00:00	-0.05
12/17/98	17:30:00	-0.06
12/17/98	18:00:00	-0.06
12/17/98	18:30:00	-0.06
12/17/98	19:00:00	-0.07
12/18/98	16:00:00	-0.01
12/18/98	16:30:00	-0.02
12/18/98	17:00:00	-0.03
12/18/98	17:30:00	-0.04
12/18/98	18:00:00	-0.04
12/18/98	18:30:00	-0.04
12/18/98	19:00:00	-0.03
12/18/98	19:30:00	-0.03
12/19/98	02:30:00	-0.02
12/19/98	03:00:00	-0.04
12/19/98	03:30:00	-0.05
12/19/98	04:00:00	-0.04
12/19/98	16:30:00	-0.02
12/19/98	17:00:00	-0.03
12/19/98	17:30:00	-0.03
12/19/98	18:00:00	-0.03
12/19/98	18:30:00	-0.04
12/19/98	19:00:00	-0.04
12/19/98	19:30:00	-0.04
12/19/98	20:00:00	-0.04
12/19/98	20:30:00	-0.02
12/20/98	03:00:00	-0.01
12/20/98	03:30:00	-0.02
12/20/98	04:00:00	-0.02
12/20/98	04:30:00	-0.01
12/22/98	17:30:00	-0.01

11. Missing Data:

January 1998

Oneonta Slough

01/01(00:00)-01/12(15:00), pH and turbidity missing - no probes installed

01/12(15:30)-01/14(15:30), all parameters missing- maintenance and calibration

01/14(16:00)-01/27(14:30), pH and Turbidity missing- no probes installed

01/27(15:00)-01/28(16:00), all parameters missing- maintenance and calibration

01/28(16:30)-01/31(23:30), turbidity missing - no probe installed

Tidal Linkage

01/12(15:00)-01/14(16:00), all parameters missing - maintenance and calibration

01/14(16:30)-01/27(14:00), turbidity missing - sensor not installed

01/27(14:30)-01/28(16:00), all parameters missing - maintenance and calibration

February 1998

Oneonta Slough

02/01(00:00)-02/11(15:00), turbidity - no probe installed

02/11(15:30)-02/13(14:30), all - maintenance and calibration

02/24(15:30)-02/26(16:30), all - maintenance and calibration

Tidal Linkage

02/11(15:30)-02/12(15:30), all parameters missing - maintenance and calibration

02/12(16:00)-02/24(14:30), turbidity missing - no sensor installed.

02/24(15:00)-02/26(15:30), all parameters missing - maintenance and calibration

02/26(16:00)-02/28(23:30), turbidity - no sensor installed.

March 1998

Oneonta Slough

03/11(14:30)-03/12(15:00), all - maintenance and calibration

03/26(16:00)-03/30(15:30), all - maintenance and calibration

Tidal Linkage

03/01(00:00)-03/11(13:30), turbidity missing - no sensor installed

03/11(14:00)-03/12(15:00), all parameters missing - maintenance and calibration

03/12(15:30)-03/26(15:00), turbidity missing - no sensor installed

03/26(15:30)-03/30(15:00), all parameters missing - maintenance and calibration

03/30(15:30)-03/31(23:30), turbidity missing - no sensor installed

03/31(09:30)-03/31(23:30), pH missing - probe failure during deployment.

Data

were removed

April 1998

Oneonta Slough

04/10(22:00)-04/14(10:00), pH - probe failure suspected, data were removed

04/14(10:30)-04/16(15:00), all - maintenance and calibration

04/16(15:30)-04/28(14:00), pH - no probe installed

04/28(14:30)-04/30(15:00), all - maintenance and calibration

04/30(15:30)-04/30(23:30), Turbidity - no probe installed

Tidal Linkage

04/01(00:00)-04/14(09:30), pH missing - probe failure during deployment.

Data

were removed

04/01(00:00)-04/14(09:30), turbidity missing - no probes installed

04/13(01:30)-04/14(09:30), DO% and DOmg missing - readings below range of sensor

(<0). Data were removed

04/14(10:00)-04/16(15:30), all parameters missing - maintenance and calibration
04/16(16:00)-04/24(13:00), pH and Turbidity missing - no probes installed
04/24(13:30)-04/30(14:30), all parameters missing - maintenance and calibration
(tidal cycle prevented redeployment in a timely fashion)
04/30 (15:00-23:30), no pH -

May 1998

Oneonta Slough

05/01(00:00)-05/18(22:00), Turbidity missing
05/18(22:30)-05/19(10:00), all parameters missing - battery voltage drop caused logging to end before end of deployment
05/19(10:30)-05/20(12:00), all parameters missing - maintenance and calibration
05/20(12:30)-05/31(23:30), Turbidity missing

Tidal Linkage

05/01(00:00)-05/19(10:00), pH missing - no probe installed
05/15(02:30)-05/19(10:00), Turbidity missing - wiper stopped rotating
05/19(10:30)-05/20(11:30), all parameters missing - maintenance and calibration
05/20(12:00)-05/31(23:30), pH missing - no probe installed
05/20(12:00)-05/31(23:30), turbidity missing - calibration error - most readings below zero. Data were removed
05/24 (22:00) -05/25 (01:00), negative DO values were removed from data file

June 1998

Oneonta Slough

06/01(00:00)-06/02(13:00), Turbidity missing - no probe installed
06/02(13:30)-06/03(15:00), all parameters missing - maintenance and calibration
06/02(13:00), DO% and DOmg missing - reading was above 500% saturation. Data were removed
06/11(21:30)-06/16(11:30), DO % & DOmg missing - readings below 0. Data were removed
06/16(12:00)-06/18(09:30), All parameters missing - maintenance and calibration

Tidal Linkage

06/01(00:00)-06/02(12:30), pH missing - no probe
06/02(13:00)-06/03(14:00), all parameters missing - maintenance and calibration
06/03(14:30)-06/16(11:30), turbidity missing - no sensor
06/16(12:00)-06/18(09:00), all parameters missing - maintenance and calibration
06/18(09:30)-06/30(23:30), turbidity missing - no sensor

July 1998

Oneonta Slough

07/01(10:30)-07/02(12:00), all parameters missing - maintenance and calibration

07/09(22:30)-07/15(12:30), Turbidity values showed abnormally large drift

-

wiper problem suspected. Data were removed.

07/15(13:00)-07/16(11:00), all parameters missing - maintenance and calibration

07/26(21:30)-07/28(10:00), DO% & DOmg missing - readings fell below 0 , all DO

data removed after

07/28(10:30)-07/31(12:30), all parameters missing - maintenance and calibration

Tidal Linkage

07/01(00:00)-07/01(10:00), turbidity missing - no probe installed

07/01(10:30)-07/02(12:00), all parameters missing - maintenance and calibration

07/02(19:00), DO% and DOmg/l values were below range of sensor. Data was removed

07/02(12:30)-07/12(12:00), turbidity missing - no probe installed

07/12(12:30)-07/16(11:00), all parameters missing - maintenance and calibration

07/16(11:30)-07/28(10:30), pH missing - readings showed anomalous drift and low

variability caused by suspected probe

failure. Data were removed

07/28(11:00)-07/31(23:30), all parameters missing - maintenance and calibration

August 1998

Oneonta Slough

08/01(00:00)-08/17(10:30), DOmg & DO% missing - readings fell below sensor range

(< 0). Data were removed.

08/17(11:00)-08/18(13:00), all parameters missing - maintenance and calibration

Tidal Linkage

08/01(00:00)-08/04(12:00), all parameters missing - maintenance and calibration

08/04(12:30)-08/17(11:00), pH and turbidity missing -

08/17(04:30)-08/17(11:00), DO% and DOmg missing - readings fell below range of

sensor (<0). Data were removed

08/17(11:30)-08/18(13:00), all parameters missing - maintenance and calibration

08/18(13:30)-08/31(23:30), pH and turbidity missing - no probes installed

08/26(23:30)-08/31(23:30), DO% and DOmg missing - readings fell below range of

sensor (<0). Data were removed

September 1998

Oneonta Slough

09/02(12:00)-09/03(12:30), all parameters missing - maintenance and calibration

09/15(12:00)-09/17(15:30), all parameters missing - maintenance and calibration

Tidal Linkage

09/01(00:00)-09/02(13:30), DO% and DOmg missing - Reading fell below range of

probe (<0). Data were removed

09/01(00:00)-09/02(13:30), pH and turbidity missing - no probes installed

09/02(14:00)-09/03(13:00), all parameters missing - maintenance and calibration

09/03(13:30)-09/15(11:00), pH and turbidity missing - no probes installed

09/15(11:30)-09/17(15:00), all parameters missing - maintenance and calibration

09/17(15:30)-09/30(23:30), pH and turbidity missing -

October 1998

Oneonta Slough

10/01(13:30)-10/02(14:00), all parameters missing - maintenance and calibration

10/02 (1430) to 10/15 (1230), DO% and DOmg/L deleted due to values averaging

130 to 150% possibly due to calibration problem

10/15(13:00)-10/16(14:30), all parameters missing - maintenance and calibration

Tidal Linkage

10/01(00:00)-10/01(13:30), pH and turbidity missing - no probes installed

10/01(14:00)-10/05(13:30), all parameters missing - maintenance and calibration

10/05(14:00)-10/15(13:00), DO% and DOmg missing - many values below range of

sensor. Reason unknown. Data were removed

10/05(14:00)-10/15(13:00), pH and turbidity missing - no probes installed

10/15(13:30)-10/16(14:30), all parameters missing - maintenance and calibration

10/16(15:00)-10/31(23:30), salinity missing - parameter not selected for report

output. No .dat file to use for export.

November 1998

Oneonta Slough

11/02(15:00)-11/03(15:30), all parameters missing - maintenance and calibration

11/12(13:30)-11/13(04:00), all parameters missing -maintenance and calibration

11/13(04:30)-11/30(23:30), pH - no probe installed

Tidal Linkage

11/01(00:00)-11/02(14:30), salinity missing - parameter not selected for report

output. No .dat file to use for export.

11/02(15:00)-11/03(14:30), all parameters missing - maintenance and calibration

11/03(15:00)-11/12(13:00), Turbidity missing - no probe installed

11/12(13:30)-11/13(14:30), all parameters missing - maintenance and calibration

11/14(15:00)-11/30(23:30), turbidity missing - no probe installed

December 1998

Oneonta Slough

12/01(00:00)-12/01(13:30), pH missing no probe installed

12/01(14:00)-12/02(16:00), all parameters missing - maintenance and calibration

Tidal Linkage

12/01(00:00)-12/01(14:00), turbidity missing - no probe installed

12/01(14:30)-12/02(16:00), all parameters missing - maintenance and calibration

12/02(16:30)-12/21(14:30), turbidity missing - no probe installed

12/21(15:00)-12/22(15:00), all parameters missing - maintenance and calibration

12/27(23:30)-12/31(23:30), all parameters missing - sediment covered sensors.

Data were removed

12. Other Remarks

The deep depth probe was installed on these dataloggers during all deployments.