

Tijuana River (TJR) NERR Water Quality Metadata  
January to December 2003  
Last Revised: August 13, 2020

## I. Data Set and Research Descriptors

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### 2. Entry Verification

The data are uploaded directly from the YSI model 6000 or 6600 data loggers to the YSI Ecowatch for windows 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 Ecowatch for windows plotting software. The resulting plot is printed out and saved in a folder named "datalogger deployment log". The .csv file is imported into Excel 2000 for Windows, where it is edited and formatted.

The tails of each sampling period are deleted and any suspect data are identified with the aid of CDMO Excel macros. Suspect data are evaluated and dealt with according to CDMO Operations Manual (ver.4.0) guidelines. The

parameter columns are checked for proper order and correct heading labels and formatted to the correct decimal places using the "column reformat" macro supplied by the CDMO. 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 edited and combined into a 1 month excel file using the excel import.xls macro. 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 datalogger deployment. Two stations were originally set up: a treatment station was set up close to the mouth on the Southern end of the Oneonta Slough, while a control station was set up on the northern end of Oneonta Slough. The treatment station location was chosen because it would be the site most affected by sewage outflow. 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.

We currently have four YSI datalogger stations installed at the reserve. The siting of the stations is designed to investigate spatial gradients of water quality parameters across the reserve as well as document the water quality changes over time to areas in the reserve which have been restored to increase

tidal flushing. The original control station in the northern end of Oneonta Slough is still in place. The second station, Tidal Linkage, is located in the North arm of the reserve in a constructed channel designed to increase tidal exchange in that portion of the reserve. Data logging at the Tidal Linkage station began in May 1997 but has not been continuous due to episodic sedimentation events. A third datalogger station is located at the inlet to the Model Marsh, a recently constructed 20-acre restoration site in the southern arm of the estuary. The Model Marsh was opened to tidal flushing in February 2000 and data logging at the station began in October 2000. The most recent station to be added was the River Channel. The station is located on a tidally influenced section of the Tijuana River, the largest source of freshwater to the reserve. Data logging at the River Channel station began in August 2002.

#### 4. Research Methods (Dataloggers)

Dataloggers at the Model Marsh, Oneonta Slough, and River Channel stations are deployed using a 4-inch diameter PVC pipe that is strapped vertically to two "rail" style fence posts driven into the sediment. Multiple 1.5 inch holes have been drilled around the bottom of the tube to permit unrestricted water flow to the sensors. During deployment the datalogger units are then placed into and rest on a bolt fixed across the bottom of the tubes. Dataloggers are deployed at the Tidal Linkage station are deployed horizontally, in a 4-inch diameter pvc pipe that is fastened to 4 copper pipes that have been driven into the sediment until refusal.

The sampling period is two weeks for non-EDS loggers and between three and four weeks when using EDS loggers, with measurements taken every 30 minutes. Measurements for specific conductivity, salinity, dissolved oxygen (percent saturation), dissolved oxygen (mg/l), temperature, turbidity and water level are recorded. At the end of each two week period, the YSI data logger units are brought back to the laboratory for downloading, cleaning and recalibration

and are usually redeployed in the field within 24 to 48 hours. 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 and turbidity are purchased from YSI and pH standards 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 4.0.

## 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*).
- e) The dominant freshwater source to the estuary is the Tijuana River, which drains a 4,483 sq. km watershed. Streamflows in the river vary considerably from season to season and year to year with no flow during many months with a mean annual discharge of .82 cubic meters per second (cms). Additional freshwater sources are stormdrains located mostly in the northern arm of the estuary. The entire estuary is shallow and has a relatively small tidal prism (0.36 Mm<sup>3</sup>) so even low freshwater flows result in reduced salinity throughout the reserve. Estimated residence times for freshwater entering the estuary vary from 7 hours to a few days depending on the tidal and mouth conditions. Rainfall within the watershed accounts for most of the freshwater entering the reserve with 90 percent of the mean annual rainfall falling between November

and April. Discharges of freshwater with untreated sewage occur year round although these have decreased with the construction of binational water treatment plant.

Specific Site characteristics: Oneonta Slough (OS)

- a) Orientation of site: The Datalogger station 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. Latitude is 32 deg 34 min 04.8 sec N, longitude is 117 deg 07 min 52.3 sec W.
- 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.

Specific Site Characteristics: Model Marsh (MM)

- a) Orientation of site: The datalogger station is located in the middle of a natural channel which runs north to south. The channel is approximately 20 meters north of a newly constructed 20 acre mudflat restoration area in the southern section of the reserve. Latitude is 32 deg 32 min 52.5 sec N, longitude is 117 deg 07 min 22.9 sec W for data collected January and February 2003. As of March 13, 2003 site was relocated to lat: 32deg 32min 52.1sec long: 117deg 7min 22.5sec due to heavy sedimentation.
- b) The elevation of the channel bottom: -.39 NGVD (last reading: 2001)
- c) Channel width: 5 meters
- d) Bottom type: Mostly mud with some sand

Specific Site Characteristics: Tidal Linkage (TL)

- a) Orientation of site: Datalogger station is located in the middle of the constructed channel known as the Tidal Linkage. The channel runs Northwest to Southwest and is located adjacent to the visitor's center in the northeastern section of the reserve. Latitude is 32 deg 34 min 27.9 sec N, longitude is 117 deg 07 min 37.8 sec W.
- b) The elevation of the channel bottom: no survey data available.
- c) Channel width: Approximately 5 meters at both the old and new sites

d) Bottom type: very fine mud.

Specific Site Characteristics: River Channel (RC)

- a) Orientation of site: Datalogger station is located in the main channel of the Tijuana River, the main drainage of the watershed. The channel runs East to West. Latitude is 32 deg 33 min 28.4 sec N, longitude is 117 deg 06 min 21.8 sec W,
- b) The elevation of the channel bottom: no survey data available.
- c) Channel width: Approximately 10 meters
- d) Bottom type: mostly sand, some mud.

6. Data Collection period

Unless otherwise noted, YSI model 6600 EDS dataloggers were used to collect data for the following dates and times.

Oneonta Slough

| Began      |       | Ended      |       |
|------------|-------|------------|-------|
| Date       | Time  | Date       | Time  |
| 12/06/2002 | 17:00 | 01/07/2003 | 16:00 |
| 01/10/2003 | 11:00 | 02/18/2003 | 15:30 |
| 02/18/2003 | 16:00 | 03/19/2003 | 15:00 |
| 03/20/2003 | 16:30 | 04/22/2003 | 11:30 |
| 04/24/2003 | 15:30 | 05/14/2003 | 13:30 |
| 05/16/2003 | 16:30 | 06/11/2003 | 13:00 |
| 06/20/2003 | 10:30 | 07/09/2003 | 12:30 |
| 07/10/2003 | 13:30 | 08/05/2003 | 12:00 |
| 08/06/2003 | 13:00 | 09/09/2003 | 14:30 |
| 09/10/2003 | 16:00 | 09/23/2003 | 13:30 |
| 09/24/2003 | 16:30 | 10/21/2003 | 13:00 |
| 10/24/2003 | 14:00 | 11/20/2003 | 14:30 |
| 11/21/2003 | 17:30 | 12/18/2003 | 12:00 |
| 12/19/2003 | 15:30 | 01/14/2004 | 12:00 |

Model Marsh

| Began      |       | Ended      |       |
|------------|-------|------------|-------|
| Date       | Time  | Date       | Time  |
| 12/06/2002 | 16:00 | 01/07/2003 | 14:00 |
| 01/10/2003 | 10:30 | 02/17/2003 | 15:00 |
| 03/13/2003 | 11:30 | 03/19/2003 | 13:30 |
| 03/20/2003 | 12:30 | 04/21/2003 | 12:30 |
| 04/23/2003 | 15:00 | 05/14/2003 | 12:30 |
| 05/16/2003 | 14:00 | 06/11/2003 | 12:30 |
| 07/17/2003 | 6:00  | 08/13/2003 | 05:00 |
| 08/14/2003 | 15:30 | 09/09/2003 | 13:00 |
| 09/11/2003 | 15:30 | 09/23/2003 | 12:30 |
| 09/24/2003 | 14:00 | 10/21/2003 | 11:30 |
| 10/22/2003 | 15:00 | 11/20/2003 | 16:00 |
| 11/21/2003 | 15:30 | 12/18/2003 | 13:00 |

12/19/2003 16:30 01/14/2004 13:00

#### Tidal Linkage

| Began      |       | Ended      |       |
|------------|-------|------------|-------|
| Date       | Time  | Date       | Time  |
| 03/11/2003 | 12:00 | 03/19/2003 | 15:00 |
| 03/21/2003 | 16:30 | 04/22/2003 | 12:30 |
| 04/24/2003 | 17:00 | 05/14/2003 | 13:30 |
| 05/19/2003 | 11:30 | 06/11/2003 | 14:00 |
| 06/13/2003 | 15:30 | 07/09/2003 | 12:30 |
| 07/10/2003 | 13:00 | 08/05/2003 | 12:00 |
| 08/06/2003 | 13:30 | 09/09/2003 | 14:30 |
| 09/10/2003 | 16:30 | 09/26/2003 | 05:30 |
| 10/01/2003 | 11:30 | 10/21/2003 | 13:30 |
| 10/25/2003 | 15:00 | 11/20/2003 | 14:00 |
| 11/21/2003 | 17:30 | 12/18/2003 | 12:00 |
| 12/19/2003 | 14:30 | 01/14/2004 | 12:00 |

#### River Channel

| Began      |       | Ended      |       |
|------------|-------|------------|-------|
| Date       | Time  | Date       | Time  |
| 12/09/2002 | 10:00 | 01/07/2003 | 13:00 |
| 01/10/2003 | 12:00 | 02/18/2003 | 16:00 |
| 02/18/2003 | 17:00 | 04/10/2003 | 14:00 |
| 04/11/2003 | 15:00 | 04/22/2003 | 11:30 |
| 04/23/2003 | 16:00 | 05/14/2003 | 13:00 |
| 05/16/2003 | 15:30 | 06/11/2003 | 13:00 |
| 06/13/2003 | 12:30 | 07/09/2003 | 12:00 |
| 07/10/2003 | 14:00 | 08/05/2003 | 13:00 |
| 08/06/2003 | 14:30 | 09/09/2003 | 13:30 |
| 09/11/2003 | 16:00 | 09/23/2003 | 13:00 |
| 09/24/2003 | 15:00 | 10/21/2003 | 12:30 |
| 10/22/2003 | 16:00 | 11/20/2003 | 15:00 |
| 11/21/2003 | 16:30 | 12/18/2003 | 12:30 |
| 12/19/2003 | 16:00 | 01/14/2004 | 12:30 |

## 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://cdmo.baruch.sc.edu>. Data are available in text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format.

## 8. Associated researchers and projects

NERR SWMP tier 1 nutrient sampling is being conducted at all water quality datalogger stations. NERR SWMP meteorological sampling is being conducted at 1 station which is located near the Tidal Linkage water quality station. Within the watershed, above the River Channel site, nutrient sampling and flow studies are being conducted by Dr. Richard Gersberg of the San Diego State University Department of Public Health. The Model Marsh is the ongoing site of research being conducted by PERL which focuses on methods for increasing the success of saltmarsh revegetation projects.

## II. Physical Structure Descriptors



9. Variable Sequence, range of measurements, units, resolution, and accuracy

YSI 6600 EDS 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

Site definitions:

OS = Oneonta Slough MM = Model Marsh TL = Tidal Linkage RC = River Channel

Station codes:

tjroswq = Tijuana River Oneonta Slough Water Quality  
tjrmwq = Tijuana River Model Marsh Water Quality  
tjrtlwq = Tijuana River Tidal Linkage Water Quality  
tjrrcwq = Tijuana River River Channel Water Quality

## 11. Data anomalies (suspect data)

January 2003

OS

a) Highly positive turbidity values (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 01/03/2003 | 01:00:00 | 115       |
| 01/03/2003 | 02:00:00 | 130       |
| 01/06/2003 | 06:30:00 | 357       |
| 01/12/2003 | 02:30:00 | 115       |
| 01/14/2003 | 17:00:00 | 1849      |
| 01/22/2003 | 01:00:00 | 1839      |
| 01/23/2003 | 15:00:00 | 723       |
| 01/25/2003 | 16:30:00 | 1855      |
| 01/25/2003 | 17:30:00 | 1340      |

MM

a) Periods of higher than average turbidity values were recorded during the following dates. A probable cause for these values was not found so data were not removed.

01/01/2003 - 01/07/2003  
01/13/2003 - 01/16/2003  
01/25/2003 - 01/30/2003

c) 01/01/2003 00:00:00 - 01/07/2003 14:30:00, Time values offset by +00:00:20 (20 seconds), data were corrected to closest 00:00 or 00:30 min interval.

RC

a) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.

01/23/2003 23:30:00  
01/27/2003 15:00:00 - 18:30:00  
01/27/2003 23:00:00 - 01/28/2003 02:00:00  
01/31/2003 04:30:00

b) 01/01/2003 00:00:00 to 01/07/2003 13:00:00, pH values are missing due to probe malfunction. Data were removed by technician.

c) 01/01/2003 - 01/07/2003 and 01/10/2003 - 01/14/2003, higher than average

turbidity values were recorded. No probable cause found.

e) 01/01/2003 00:00:00 - 01/07/2003 15:00:00, Time values offset by - 1min,  
data were corrected - closest 00:00 or 00:30 min interval.

TL

a) Heavy sedimentation, redesign of the deployment holder and holder installation at the station prevented deployment from 01/01/2003 through 01/31/2003.

February 2003

OS

a) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.  
02/24/2003 13:00:00 - 14:00:00

b) 02/25/2003 8:30:00 - 02/28/2003 23:30:00, Turbidity values higher than average. Post deployment calibration check showed wiper was not rotating properly which may have caused higher than average readings in addition to effects of rain event.

MM

a) Data deleted for the following dates and times due to heavy sedimentation, which caused site to be relocated for the March deployment.  
02/12/2003 12:30:00 - 02/17/2003 15:00:00

b) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.  
02/10/2003 12:00:00 - 15:30:00  
02/11/2003 13:30:00 - 15:30:00

c) 02/11/2003 - 02/12/2003, higher than average turbidity values were recorded, likely correlated with rain events that occurred 02/11/2003 - 02/14/2003 or sedimentation problems that later caused the site to be relocated.  
Data are suspect but were not removed.

RC

a) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.  
02/01/2003 03:00:00 - 05:00:00  
02/01/2003 17:30:00 - 20:30:00  
02/02/2003 03:30:00 - 05:30:00  
02/02/2003 19:00:00 - 21:00:00

02/04/2003 05:00:00 - 07:30:00  
02/04/2003 17:00:00 - 22:00:00  
02/05/2003 04:30:00 - 08:30:00  
02/05/2003 16:30:00 - 22:30:00  
02/06/2003 06:00:00 - 07:00:00  
02/06/2003 17:00:00 - 23:00:00  
02/07/2003 06:30:00 - 11:30:00  
02/07/2003 15:30:00 - 23:00:00  
02/08/2003 08:00:00 - 19:00:00  
02/10/2003 11:00:00 - 23:30:00  
02/11/2003 12:00:00 - 16:00:00

b) 02/07/2003 - 02/28/2003, higher than average turbidity values were recorded. No probable cause found.

TL

a) Heavy sedimentation, redesign of the deployment holder and holder installation at the station prevented deployment from 02/01/2003 through 02/28/2003.

March 2003

OS

a) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.

03/03/2003 18:00:00 - 18:30:00  
03/04/2003 17:30:00 - 18:30:00  
03/10/2003 11:30:00 - 13:00:00  
03/11/2003 11:00:00 - 14:30:00  
03/12/2003 12:30:00 - 16:00:00  
03/13/2003 14:30:00 - 16:00:00  
03/14/2003 15:00:00 - 16:30:00  
03/23/2003 11:30:00  
03/26/2003 14:30:00 - 16:00:00  
03/27/2003 12:30:00 - 16:00:00  
03/28/2003 15:00:00 - 16:30:00  
03/31/2003 03:30:00 - 04:30:00  
03/31/2003 15:30:00 - 17:30:00

b) Highly positive turbidity values (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 03/25/2003 | 10:00:00 | 331       |

MM

a) A period of higher than average turbidity values was recorded during the

following dates which was not consistent with the overall dataset. A probable cause for these values was not found so data were not removed.  
03/13/2003 to 03/14/2003

b) Highly positive turbidity spikes (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 03/22/2003 | 03:00:00 | 108       |

e) 03/20/2003 12:00:00 - 03/31/2003 23:30:00, Time values offset by - 1min, data were corrected to closest 00:00 or 00:30 min interval.

f) No pH probe installed due to broken probe; therefore no pH data for the following dates/times:  
03/13/03 11:30:00 - 03/19/03 13:30:00

RC

a) 03/28/2003 through 03/31/2003, Lower than average pH values were recorded. Likely cause not known but possibly related to decreased tidal exchange caused by changes in channel morphology.

b) 03/22/2003 - 03/31/2003, higher than average turbidity values were recorded. Likely cause not known as period does not correspond directly to rain event dates. Data retained.

c) Negative dissolved oxygen outliers from 03/13/2003 20:00:00 - 03/15/2003 08:00:00 were retained in dataset. Reason for anomalous data unknown.

TL

a) Heavy sedimentation, redesign of the deployment holder and holder installation at the station prevented deployment from 03/01/2003 00:00 through 03/11/2003 11:30:00.

b) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.  
03/27/2003 14:00:00 - 17:00:00

April 2003

OS

a) 04/24/2003 through 05/03/2003, Much higher than average dissolved oxygen values were recorded. Likely seasonal.

b) Negative or 0 depth values were recorded during the following dates and

times. Sensors were not out of water so data were not removed

04/01/2003 04:00:00 - 05:00:00

04/01/2003 16:30:00 - 17:00:00

04/07/2003 08:30:00

04/08/2003 11:00:00 - 12:30:00

04/09/2003 10:00:00 - 14:00:00

04/10/2003 12:30:00 - 14:30:00

04/11/2003 15:00:00

04/12/2003 14:30:00 - 15:30:00

04/16/2003 16:30:00

04/17/2003 06:00:00

04/17/2003 16:30:00

04/18/2003 07:00:00

04/20/2003 07:30:00 - 10:00:00

04/21/2003 08:00:00 - 10:30:00

04/22/2003 08:30:00 - 11:30:00

04/25/2003 12:30:00 - 15:30:00

04/26/2003 12:00:00 - 15:30:00

04/27/2003 01:30:00 - 02:30:00

04/27/2003 13:00:00 - 16:00:00

04/28/2003 02:00:00 - 04:00:00

04/28/2003 13:30:00 - 16:00:00

04/29/2003 02:30:00 - 05:00:00

04/29/2003 15:00:00 - 16:00:00

04/30/2003 03:30:00 - 05:30:00

04/30/2003 15:00:00 - 16:00:00

d) 04/24/2003, 15:30:00 to 04/30/2003, 23:30:00; pH values were higher than

average. The reason for this is not known and the period of higher values does

not correspond directly to rain events. Data were not removed.

MM

a) 04/01/2003 through 04/14/2003, Lower than average pH values were recorded.

Likely cause not known but possibly related to decreased tidal exchange caused

by changes in channel morphology.

b) Highly positive turbidity spikes (>100 NTU) were recorded on the following

dates and times which were not consistent with the overall data set. A probable

cause for these values was not found so data were not removed.

| Date | Time | Turbidity |
|------|------|-----------|
|------|------|-----------|

04/02/2003 09:30:00 1059  
04/07/2003 15:00:00 991  
04/21/2003 08:30:00 1858

c) 04/01/2003 00:00:00 - 04/21/2003 12:30:00, Time values offset by - 1min, data were corrected - closest 00:00 or 00:30 min interval.

RC  
None

TL  
a) 04/01/2003 - 04/22/2003, a period of higher than average turbidity values was recorded. A probable cause for these values was not found so data were not removed. Rainfall events were recorded on 04/13/2003 - 04/15/2003, 04/17/2003, and 04/22/2003.

May 2003

OS  
a) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.  
05/01/2003 04:00:00 - 06:30:00  
05/01/2003 15:30:00 - 16:00:00  
05/02/2003 04:00:00 - 07:00:00  
05/03/2003 04:30:00 - 07:30:00  
05/05/2003 07:00:00 - 08:30:00  
05/06/2003 08:00:00 - 09:30:00  
05/07/2003 08:30:00 - 11:30:00  
05/10/2003 12:30:00 - 14:00:00  
05/11/2003 13:30:00 - 14:30:00  
05/12/2003 14:30:00  
05/13/2003 14:30:00 - 15:00:00  
05/14/2003 03:30:00 - 04:30:00  
05/30/2003 04:00:00 - 06:00:00

b) 04/24/2003 through 05/03/2003, Much higher than average dissolved oxygen values were recorded. Likely seasonal.

MM  
a) 05/16/2003, 14:00:00 - 05/31/2003, 23:30:00; all parameters are missing. logger was buried under sediment during deployment. Data were removed by technician.

b) 05/04/2003 22:30:00 to 05/14/2003 12:30:00, pH values are missing due to probe malfunction during deployment. Data were removed by technician.

c) 05/16/2003 through 05/17/2003 and 05/21/2003 through 05/23/2003, higher than average turbidity values were recorded. A probable cause for these values was not found so data were not removed.

d) 05/18/2003 through 05/20/2003 and 05/25/2003 through 05/31/2003, Lower than average turbidity values (0 and -1 NTU) were recorded. A probable cause for these values was not found so data were not removed.

a) Highly positive turbidity spikes (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A rain event on 05/03/2003 may likely be correlated with this value so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 05/03/2003 | 06:00:00 | 2357      |

RC  
None

TL

a) 05/19/2003 - 05/22/2003 and 05/25/2003 - 05/31/2003, a period of higher than average turbidity values was recorded. A probable cause for these values was not found so data were not removed.

b) The following negative turbidity values were recorded which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 05/12/2003 | 10:00:00 | -1        |
| 05/13/2003 | 10:30:00 | -1        |

c) Highly positive turbidity values (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 05/01/2003 | 07:30:00 | 348       |



05/03/2003 07:30:00 372  
05/03/2003 09:00:00 383

June 2003

OS

a) 06/01/2003 - 06/07/2003, higher than average turbidity values were recorded. A probable cause is not known. Data were not removed.

b) Highly positive turbidity values (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 06/10/2003 | 13:30:00 | 133       |
| 06/20/2003 | 17:00:00 | 105       |
| 06/27/2003 | 21:30:00 | 197       |
| 06/29/2003 | 15:30:00 | 141       |

c) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.

|            |          |   |          |
|------------|----------|---|----------|
| 06/02/2003 | 06:00:00 | - | 07:30:00 |
| 06/04/2003 | 08:30:00 | - | 10:00:00 |
| 06/08/2003 | 11:00:00 | - | 12:00:00 |
| 06/24/2003 | 01:30:00 | - | 02:00:00 |
| 06/25/2003 | 02:30:00 | - | 03:30:00 |
| 06/28/2003 | 04:30:00 | - | 06:00:00 |
| 06/29/2003 | 04:30:00 | - | 05:30:00 |

MM

a) 06/01/2003, 00:00:00 - 06/11/2003, 12:30:00; all parameters are missing.

logger was buried under sediment during deployment. Data were removed by technician.

b) 06/01/2003 through 06/11/2003, Lower than average turbidity values (0 and -1 NTU) were recorded. A probable cause could not be found.

c) 06/11/2003 13:00:00 - 06/30/2003 23:30:00, logger not deployed because site had to be moved due to heavy sedimentation.

RC

a) 06/08/2003 through 06/11/2003 and 06/19/2003 through 06/20/2003, higher than average turbidity values were recorded which do not correspond directly to dates of rain events.

TL

a) 06/13/2003 - 06/30/2003, a period of higher than average turbidity values was recorded. A probable cause for these values was not found so data were not removed. Rainfall events were recorded on 06/20/2003 and 06/21/2003.

July 2003

OS

a) 07/18/2003 - 07/31/2003, higher than average turbidity values were recorded. A probable cause is not known. Data were not removed.

b) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.

07/03/2003 06:30:00 - 09:00:00

07/04/2003 07:00:00 - 09:30:00

07/05/2003 07:30:00 - 09:30:00

07/06/2003 08:30:00 - 09:30:00

07/15/2003 06:30:00 - 08:00:00

07/16/2003 06:30:00 - 08:30:00

07/17/2003 06:30:00

c) Highly positive turbidity values (>100 NTU) were recorded on the following

dates and times which were not consistent with the overall data set.

| Date | Time | Turbidity |
|------|------|-----------|
|------|------|-----------|

|            |          |     |
|------------|----------|-----|
| 07/13/2003 | 15:30:00 | 182 |
|------------|----------|-----|

|            |          |     |
|------------|----------|-----|
| 07/22/2003 | 16:30:00 | 217 |
|------------|----------|-----|

|            |          |     |
|------------|----------|-----|
| 07/31/2003 | 01:00:00 | 235 |
|------------|----------|-----|

MM

a) 07/01/2003 00:00:00 - 07/17/2003 05:30:00, logger not deployed because site had to be moved due to heavy sedimentation.

RC

a) 07/01/2003 - 07/09/2003 and 07/24/2003 - 07/31/2003, higher than average turbidity values were recorded. A probable cause for these values was not found.

b) The following slightly negative turbidity value was recorded. A probable cause for this value was not found so data was not removed.

| Date | Time | Turbidity |
|------|------|-----------|
|------|------|-----------|

|            |          |    |
|------------|----------|----|
| 07/08/2003 | 20:00:00 | -1 |
|------------|----------|----|

TL

a) 07/01/2003 - 07/09/2003 and 07/10/2003 - 07/31/2003, a period of higher than average turbidity values was recorded. A probable cause for these values was not found so data were not removed.

August 2003

OS

a) Negative or 0 depth values were recorded during the following dates and

times. Sensors were not out of water so data were not removed.

08/11/2003 05:00:00 - 06:00:00

08/12/2003 05:30:00 - 06:30:00

08/13/2003 06:00:00 - 06:30:00

08/14/2003 06:00:00 - 07:00:00

08/15/2003 06:00:00 - 06:30:00

08/23/2003 02:00:00 - 04:00:00

08/24/2003 03:00:00 - 04:30:00

08/25/2003 03:30:00 - 05:00:00

08/26/2003 04:00:00 - 05:30:00

08/27/2003 05:00:00 - 06:00:00

08/28/2003 05:00:00 - 06:00:00

08/29/2003 05:30:00 - 06:30:00

08/29/2003 17:00:00 - 17:30:00

08/30/2003 05:30:00 - 06:30:00

08/30/2003 18:00:00

08/31/2003 05:30:00 - 07:00:00

08/31/2003 19:00:00 - 19:30:00

b) 08/03/2003 11:00:00 to 08/05/2003 12:00:00; pH values are missing due to probe failure during deployment. Data were removed by technician.

c) 08/01/2003 - 08/05/2003, higher than average turbidity values were recorded. A probable cause is not known. Data were not removed.

d) 08/06/2003 12:30:00 - 08/31/2003 23:30:00, Time values offset by - 1min, data were corrected - closest 00:00 or 00:30 min interval.

MM

a) 08/09/2003 through 08/11/2003, Higher than average turbidity values were recorded. A probable cause for these values was not found so data were not removed.

b) Highly positive turbidity spikes (>100 NTU) were recorded on the following

dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 08/15/2003 | 09:30:00 | 157       |
| 08/24/2003 | 18:30:00 | 801       |
| 08/24/2003 | 19:00:00 | 1780      |
| 08/27/2003 | 20:00:00 | 887       |

RC

a) 08/01/2003 - 08/05/2003, higher than average turbidity values were recorded. A probable cause for these values was not found.

TL

a) 08/01/2003 - 08/05/2003, a period of higher than average turbidity values was recorded. A probable cause for these values was not found so data were not removed.

b) Highly positive turbidity values (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 08/10/2003 | 14:30:00 | 366       |

September 2003

OS

a) 09/04/2003 20:30:00 - 09/09/2003 14:30:00, all values missing, batteries died.

b) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.

|            |                     |
|------------|---------------------|
| 09/02/2003 | 22:00:00 - 22:30:00 |
| 09/03/2003 | 23:00:00 - 23:30:00 |
| 09/04/2003 | 00:00:00 - 01:00:00 |
| 09/12/2003 | 17:00:00 - 17:30:00 |
| 09/13/2003 | 04:30:00 - 06:00:00 |
| 09/13/2003 | 17:30:00 - 18:00:00 |
| 09/16/2003 | 19:30:00 - 21:00:00 |
| 09/17/2003 | 21:30:00 - 23:00:00 |
| 09/18/2003 | 22:00:00 - 23:30:00 |
| 09/19/2003 | 00:00:00 - 01:30:00 |
| 09/19/2003 | 23:00:00 - 23:30:00 |
| 09/20/2003 | 00:00:00 - 02:30:00 |
| 09/21/2003 | 00:30:00 - 03:00:00 |
| 09/22/2003 | 02:00:00 - 03:30:00 |

09/23/2003 02:30:00 - 04:30:00

09/25/2003 16:00:00

09/26/2003 05:00:00

09/26/2003 17:00:00

09/27/2003 05:00:00

c) 09/01/2003 00:00:00 - 09/04/2003 19:30:00, Time values offset by -1min,  
data were corrected - closest 00:00 or 00:30 min interval.

#### MM

a) 09/01/2003 through 09/09/2003 and 09/15/2003 through 09/20/2003, Higher than average turbidity values were recorded. A probable cause for these values was not found so data were not removed.

b) Highly positive turbidity spikes (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 09/21/2003 | 17:30:00 | 169       |
| 09/22/2003 | 18:00:00 | 173       |

c) 09/11/2003 14:30:00 - 09/23/2003 12:30:00, Time values offset by -1min,  
data were corrected - closest 00:00 or 00:30 min interval.

#### RC

a) 09/03/2003 - 09/08/2003, higher than average turbidity values were recorded. A probable cause for these values was not found.

a) 09/11/2003 15:30:00 - 09/23/2003 13:30:00, Time values offset by -1min,  
data were corrected - closest 00:00 or 00:30 min interval.

#### TL

a) Highly positive turbidity values (>100 NTU) were recorded on the following dates and times which were not consistent with the overall data set. A probable cause for these values was not found so data were not removed.

| Date       | Time     | Turbidity |
|------------|----------|-----------|
| 09/12/2003 | 16:00:00 | 102       |
| 09/18/2003 | 20:00:00 | 103       |

October 2003

OS

a) 10/01/2003 - 10/10/2003 Negative DO % and DO mg/l most likely due to red tide conditions observed during retrieval of sonde as well as diurnal tidal conditions occurring at time of anomalous DO data. Data were not deleted.

b) 10/11/2003 00:30:00 to 10/21/2003 13:00:00; DO % and DO mg/l missing. probe malfunction during deployment. Data were removed by technician.

c) Negative or 0 depth values were recorded during the following dates and

times. Sensors were not out of water so data were not removed.

10/01/2003 22:00:00 - 22:30:00

10/02/2003 23:00:00 - 23:30:00

10/03/2003 00:00:00 - 01:00:00

10/04/2003 00:30:00 - 02:00:00

10/05/2003 02:00:00 - 02:30:00

10/29/2003 21:30:00

10/30/2003 22:00:00 - 22:30:00

d) 10/15/2003, 08:00:00 - 10/21/2003, 13:00:00; lower than average variation

in pH values was recorded. Post calibration of the probe did not indicate any

problems so data were not removed.

e) 10/06/2003 - 10/18/2003, Higher than average turbidity values were recorded. A probable cause for these values was not found so data were not removed.

f) Highly positive turbidity values (>100 NTU) were recorded on the following

dates and times which were not consistent with the overall data set. A probable

cause for these values was not found so data were not removed.

Date Time Turbidity

10/19/2003 22:30:00 162

10/20/2003 09:00:00 157

MM

a) Highly positive turbidity spikes (>100 NTU) were recorded on the following

dates and times which were not consistent with the overall data set. A probable

cause for these values was not found so data were not removed.

Date Time Turbidity

10/10/2003 18:00:00 1615

b) 10/14/2003 - 10/21/2003 Low DO % and DO mg/l values most likely due to red tide

conditions observed during retrieval of sonde as well as diurnal tidal conditions occurring at time of anomalous DO data. Data were not deleted.

RC

a) 10/07/2003 22:30:00 to 10/21/2003 12:30:00, Lower than average dissolved oxygen were recorded. Likely cause could not be determined. Data were not removed.

b) 10/14/2003 - 10/21/2003, Higher than average turbidity values were recorded. A probable cause for these values was not found so data were not removed.

TL

a) 10/15/2003 23:30:00 to 10/21/2003 13:30:00, DO % and DO mg/l values missing due to probe malfunction during deployment. Data were removed by technician.

b) Negative or near 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.  
10/21/2003 14:00:00 - 16:00:00

c) 10/12/2003 - 10/21/2003, a period of higher than average turbidity values was recorded which was not consistent with the overall dataset. A probable cause for these values was not found so data were not removed.

d) 10/18/2003 19:30:00 - 10/19/2003 05:00:00, a period of lower than average pH values were recorded which was not consistent with the overall dataset. A probable cause for these values was not found so data were not removed.

November 2003

OS

a) 11/27/2003 through 11/30/2003 Lower than average specific conductivity and salinity values were recorded. Likely cause not known and the period of decreased values does not correspond directly to recorded rain event.

b) Negative or 0 depth values were recorded during the following dates and times. Sensors were not out of water so data were not removed.  
11/01/2003 00:00:00

MM  
None

RC  
None

TL  
None

December 2003

OS

a) Negative or 0 depth values were recorded during the following dates and

times. Sensors were not out of water so data were not removed.

12/22/2003 16:30:00 - 18:00:00

12/23/2003 17:00:00 - 19:00:00

12/24/2003 17:30:00 - 20:00:00

12/25/2003 18:00:00 - 20:00:00

12/29/2003 19:00:00 - 23:00:00

12/30/2003 20:30:00 - 22:30:00

b) Highly positive turbidity values (>100 NTU) were recorded on the following

dates and times which were not consistent with the overall data set. A probable

cause for these values was not found.

| Date | Time | Turbidity |
|------|------|-----------|
|------|------|-----------|

|            |          |     |
|------------|----------|-----|
| 12/23/2003 | 03:30:00 | 128 |
|------------|----------|-----|

|            |          |     |
|------------|----------|-----|
| 12/23/2003 | 05:00:00 | 154 |
|------------|----------|-----|

|            |          |     |
|------------|----------|-----|
| 12/25/2003 | 20:00:00 | 190 |
|------------|----------|-----|

MM

a) 12/27/2003 21:00:00 to 12/31/2003 23:30:00, Higher than average specific

conductivity and salinity values were recorded. Possible macro algal wrack

around deployment holder.

b) 12/10/2003 through 12/18/2003, Higher than average turbidity values were

recorded. A probable cause for these values was not found so data were not

removed.

RC  
None



TL  
None

## 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 where no probes were deployed, maintenance/calibration of equipment, elimination of obvious outliers or elimination of data due to calibration problems (both pre and post). For more details on deleted data, see the Data Anomalies Section. To find out more details about missing data, contact the Research Coordinator at the site submitting the data.

## 13. Post deployment information

np = no probe installed  
nc = no calibration done

| Site | Date     | SpCond<br>Std(50) | DO%<br>std(100) | Depth<br>std(0) | pH<br>std(7) | Turb<br>std(0) |
|------|----------|-------------------|-----------------|-----------------|--------------|----------------|
| MM   | 03/19/03 | 50.30             | 97.7            | -0.012          | np           | 0.6            |
|      | 04/21/03 | 48.98             | 99.4            | 0.000           | 7.15         | 0.0            |
|      | 05/14/03 | 49.92             | 98.6            | -0.036          | 5.99*        | 0.0            |
|      | 06/11/03 | 51.95             | 111.1           | 0.016           | np           | 0.0            |
|      | 08/13/03 | 48.52             | 98.1            | 0.010           | 7.16         | 0.2            |
|      | 09/09/03 | 50.98             | 99.7            | -0.013          | 7.21         | 0.2            |
|      | 09/23/03 | 50.01             | 62.4            | -0.050          | 7.08         | 0.2            |
|      | 10/21/03 | 49.16             | 103.1           | -0.013          | 7.26         | 0.1            |
|      | 11/20/03 | 49.42             | 99.2            | 0.009           | 7.07         | -0.3           |
|      | 12/18/03 | 49.25             | 101.3           | 0.039           | 7.08         | 0.0            |
|      | 01/14/04 | 49.59             | 93.6            | -0.060          | 7.35         | 0.1            |
| OS   | 03/19/03 | 49.79             | 91.1            | -0.008          | 7.11         | nc             |
|      | 04/22/03 | 49.55             | 66.7            | -0.028          | 7.04         | 0.1            |
|      | 05/15/03 | 49.56             | 102.6           | -0.018          | 7.05         | 0.2            |
|      | 06/11/03 | 49.56             | 71.4            | 0.016           | 7.04         | -10.1          |
|      | 07/09/03 | 50.18             | 91.6            | 0.009           | 7.08         | -2.7           |
|      | 08/05/03 | 50.15             | 99.9            | 0.013           | 4.93         | 0.0            |
|      | 09/09/03 | 50.64             | 97.4            | -0.138          | 7.11         | 0.1            |
|      | 09/23/03 | 49.19             | 102.3           | -0.034          | 7.04         | 0.0            |
|      | 10/21/03 | 50.22             | 139.5           | -0.004          | 7.04         | 0.6            |
|      | 11/20/03 | 49.68             | 99.4            | 0.018           | 7.00         | -0.8           |
|      | 12/18/03 | 49.66             | 103.5           | 0.046           | 7.02         | 0.3            |
|      | 01/14/04 | 50.03             | 101.0           | -0.050          | 7.01         | 0.0            |
| RC   | 04/10/03 | 49.37             | 108.5           | -0.008          | 6.95         | -0.5           |
|      | 04/22/03 | 49.55             | 98.9            | -0.017          | 7.03         | 1.1            |
|      | 05/15/03 | 49.35             | 100.2           | 0.002           | 7.03         | -0.6           |

|    |          |       |       |        |      |           |
|----|----------|-------|-------|--------|------|-----------|
|    | 06/11/03 | 49.42 | 99.8  | 0.018  | 7.04 | 0.3       |
|    | 07/09/03 | 49.21 | 76.9  | 0.004  | 7.04 | 0.8       |
|    | 08/05/03 | 49.69 | 48.8  | 0.014  | 7.13 | 0.0       |
|    | 09/09/03 | 49.72 | 100.5 | -0.016 |      | 7.06 0.2  |
|    | 09/23/03 | 49.35 | 107.1 | -0.042 |      | 7.05 0.2  |
|    | 10/21/03 | 48.97 | 126.0 | -0.011 |      | 7.09 0.5  |
|    | 11/20/03 | 49.80 | 100.0 | 0.009  | 7.05 | 0.0       |
|    | 12/18/03 | 49.31 | 100.5 | 0.049  | 7.01 | 0.3       |
|    | 01/14/04 | 50.11 | 102.8 | -0.052 |      | 7.02 -0.8 |
| TL | 03/19/03 | 49.12 | 96.5  | 0.016  | 7.20 | 0.4       |
|    | 04/22/03 | 49.59 | 100.9 | -0.024 |      | 7.11 -0.1 |
|    | 05/15/03 | 49.30 | ???   | -0.013 |      | 7.16 0.5  |
|    | 06/11/03 | 49.65 | 98.8  | -0.006 |      | 7.05 -0.1 |
|    | 07/09/03 | 45.22 | 97.5  | -0.031 |      | 6.99 nc   |
|    | 08/05/03 | 50.80 | nc    | 0.012  | 7.04 | 0.0       |
|    | 09/09/03 | 15.47 | 95.6  | -0.019 |      | 7.12      |
|    | 09/26/03 | 48.42 | 93.0  | 0.005  | 7.06 | 0.3       |
|    | 10/21/03 | 50.35 | 104.2 | -0.037 |      | 6.91 0.0  |
|    | 11/20/03 | 50.03 | 99.3  | -0.016 |      | 7.05 0.5  |
|    | 12/18/03 | 49.67 | 98.8  | 0.050  | 7.02 | -0.1      |
|    | 01/14/04 | 49.49 | 101.4 | -0.040 |      | 7.05 -0.2 |

#### 14. Other Remarks

On 08/13/2020 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.

a) There were a few instances at this NERR site where turbidity recorded small

negative values (-0001 and -0002). Because turbidity has a range of accuracy of

+/-2 NTU, the technician did not edit or delete these values in any way.

b) Hypoxic (< 20%) and super-saturation (>100%) dissolved oxygen events were

recorded at all sites. The events were cyclic (primarily diel) and the duration of each event was less than 24hrs.

c) 2003 Daily Rainfall Totals Recorded at Tijuana Estuary

| Date     | ppt_mm |
|----------|--------|
| 01/15/04 | 0.254b |
| 01/20/04 | 1.27   |
| 02/08/04 | 2.54   |
| 02/11/04 | 9.906  |
| 02/12/04 | 29.464 |
| 02/13/04 | 7.62   |
| 02/14/04 | 9.652  |
| 02/20/04 | 1.016  |
| 02/25/04 | 31.75  |
| 02/27/04 | 6.604  |
| 03/04/04 | 7.874  |
| 03/05/04 | 0.254  |
| 03/15/04 | 25.146 |
| 03/16/04 | 13.97  |
| 04/13/04 | 1.016  |
| 04/14/04 | 28.702 |
| 04/15/04 | 0.254  |
| 04/17/04 | 3.81   |
| 04/22/04 | 0.762  |
| 05/03/04 | 3.302  |
| 05/07/04 | 1.524  |
| 05/08/04 | 0.254  |
| 06/20/04 | 2.032  |
| 06/21/04 | 0.508  |
| 10/10/04 | 0.254  |
| 10/25/04 | 0.254  |
| 11/01/04 | 2.032  |
| 11/12/03 | 6.35   |
| 12/07/03 | 3.556  |
| 12/14/03 | 0.254  |
| 12/20/03 | 0.254  |
| 12/21/03 | 0.254  |
| 12/23/03 | 0.508  |
| 12/24/03 | 0.508  |
| 12/25/03 | 8.382  |

d) Weather related impacts:

TJROSWQ

02/08/2003 through 02/28/2003, lower than average specific conductivity and salinity and higher than average turbidity values were recorded.

Likely

correlated to rain events. See section 14 for rain event details.

Lower than average specific conductivity and salinity values were recorded

throughout the month. Likely correlated to rain events. See section 14 for rain

event details.

03/01/2003 - 03/19/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

04/14/2003 through 04/28/2003; Lower than average specific conductivity and salinity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

04/09/2003 through 04/22/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

05/03/2003 through 05/13/2003; Lower than average specific conductivity and salinity and higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

06/24/2003 - 06/25/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

11/12/2003 through 11/20/2003 Lower than average specific conductivity and salinity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

11/12/2003 - 11/19/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

12/25/2003 through 12/31/2003 Lower than average specific conductivity and salinity and higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

#### TJRMMWQ

03/15/2003, 16:30:00 - 03/19/2003, 13:30:00; Lower than average specific conductivity and salinity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

03/15/2003 to 03/19/2003, highly positive turbidity values were recorded, likely correlated with rain events that occurred 03/15/2003 - 03/16/2003. Data were not removed.

04/14/2003 15:30:00 - 04/21/2003 12:30:00, Lower than average specific conductivity, salinity, and DO values were recorded. Likely correlated to rain

events. See section 14 for rain event details.

04/14/2003 through 04/16/2003, higher than average turbidity values were recorded, likely correlated with rain events that occurred 04/13/2003 - 04/15/2003. See section 14 for rain event details. Data were not removed.

06/23/2003 - 06/30/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

11/13/2003 08:00:00 to 11/14/2003 18:00:00, Lower than average specific conductivity and salinity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

12/25/2003 19:30:00 to 12/27/2003 18:30:00, Lower than average specific conductivity and salinity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

TJRRCWQ

02/11/2003 through 02/28/2003, lower than average specific conductivity, salinity, and dissolved oxygen values were recorded. Likely correlated to rain events and resulting changes in channel morphology which caused decreased tidal exchange. See section 14 for rain event details.

02/12/2003 through 02/28/2003, higher than average depth values were recorded. Likely correlated to rain events and resulting changes in channel morphology. See section 14 for rain event details.

Lower than average specific conductivity and salinity values were recorded throughout the month. Likely correlated to rain events. See section 14 for rain event details.

03/15/2003 through 03/16/2003, higher than average depth values were recorded. Likely correlated to rain events. See section 14 for rain event details.

03/01/2003 - 03/20/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

03/22/2003 - 03/31/2003, higher than average turbidity values were recorded. Likely cause not known as period does not correspond directly to rain event dates. Data retained.

Anomalous dissolved oxygen data 03/15/2003 19:30:00 - 03/23/2003 05:00:00 due to rain. See Section 14 for more rain details.

Lower than average specific conductivity and salinity and higher than average turbidity values were recorded throughout the month. Likely correlated to rain events and resulting changes in channel morphology which caused decreased tidal exchange at the station. See section 14 for rain event details.

04/14/2003 through 04/22/2003, much lower than average dissolved oxygen and were recorded, likely correlated to large rain event on 4/14/2003. See section 14 for rain event details.

04/14/2003 through 04/15/2003, higher than average depth values were recorded. Likely correlated to rain events. See section 14 for rain event details.

05/01/2003 through 05/04/2003 and 05/09/2003 through 05/14/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

05/01/2003 through 05/13/2003, Lower than average specific conductivity and salinity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

11/12/2003 - 11/14/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

11/12/2003 - 11/20/2003, Lower than average specific conductivity, salinity, and DO values were recorded. Likely correlated to rain events. See section 14 for rain event details.

12/25/2003 - 12/31/2003, higher than average turbidity values and lower than average specific conductivity, salinity, and DO values were recorded. Likely correlated to rain events. See section 14 for rain event details.

TJRTLWQ

03/11/2003 - 03/19/2003 and 03/21/2003 - 03/31/2003, higher than average turbidity values were recorded. Likely correlated to rain events. See section 14 for rain event details.

05/04/2003 - 05/15/2003, a period of higher than average turbidity values

was recorded. Likely correlated to rain events. See section 14 for rain event details.

11/12/2003 - 11/16/2003, lower than average salinity and specific conductivity values, likely correlated with rain event. See section 14 for rain event details.

12/23/2003 - 12/31/2003, a period of higher than average turbidity values was recorded. Likely correlated to rain events. See section 14 for rain event details.