

Tijuana River (TJR) NERR Water Quality Metadata
January to December 2007
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I. Data Set and Research Descriptors

1) Principal Investigators and contact persons

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2) Entry Verification

Deployment data are uploaded from the YSI data logger to a Personal Computer (IBM compatible). Files are exported from EcoWatch in a comma-delimited format (.CDF) and uploaded to the CDMO where they undergo automated primary QAQC and become part of the CDMO's online provisional database. Excessive pre- and post-deployment data are removed from the file prior to upload with up to 2 hours of pre- and post-deployment data retained to assist in data management. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro. The macro inserts station codes, creates metadata worksheets for flagged data, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove remaining pre- and post-deployment data, append files, and export the resulting data file to the CDMO for tertiary QAQC and assimilation into the CDMO's authoritative online database. Where deployment overlap occurs between files, the data produced by the

newly calibrated sonde is generally accepted as being the most accurate. For more information on QAQC flags and codes, see Sections 11 and 12.

- . The person responsible for data management is Michelle Cordrey.

3) Research Objectives

The Tijuana River National Estuarine Research Reserve is impacted heavily by periodic raw sewage outflows and urban development. About a quarter of the reserve's 2,531 acres are tidally influenced and few channels are 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.

Four YSI datalogger stations are installed at the Tijuana River reserve. Station locations are 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 and ended October 2007 to episodic sedimentation events. A third datalogger station is located at the inlet to the Model Marsh, a 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 newest site, called Boca Rio, was established in December 2004 and is located near the mouth of the Tijuana River. This station replaces the River Channel station, which was established in August 2002 to monitor the Tijuana River, the largest source of freshwater to the Reserve. This station was discontinued in November 2004 due to unusually heavy sedimentation from intense rainfall events.

4) Research Methods (Dataloggers)

Dataloggers at the Model Marsh, Oneonta Slough, and Boca Rio 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. Tidal Linkage station dataloggers 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 between two and four weeks, with measurements taken every 30 minutes. Beginning 12/20/2006 the sampling interval at the Oneonta Slough station was changed to 15minute intervals. Measurements for specific conductivity, salinity, dissolved oxygen (percent saturation), dissolved oxygen (mg/l), temperature, turbidity, pH and water level are recorded. At the end of each sampling period, the YSI dataloggers are brought back to the laboratory for data downloading, cleaning and recalibration. They are usually redeployed in the field within 24 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 (7 and 10) are purchased from Clarkson Scientific, a local supplier. The QA/QC procedures for the collected data are followed from the CDMO Operations Manual version 4.0.

A Sutron Sat-Link2 transmitter was installed at the Oneonta Slough station on 12/20/2006 and transmits data to the NOAA GOES satellite, NESDIS ID #3B0252F2. The transmissions are scheduled hourly and contain four (4) datasets reflecting fifteen minute data sampling intervals. The telemetry data is “Provisional” data and not the “Authentic” dataset used for long term monitoring and study. This data can be viewed by going to <http://cdmo.baruch.sc.edu>.

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 include runoff from the adjacent military airfield and residential area and sewage spills from Mexico into the Tijuana River. Approximately 2/3 of the watershed for the Tijuana River estuary is in Mexico. Vegetation in the area is dominated by common pickleweed (*Salicornia 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. Stream flows 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 storm drains located mostly in the northern arm of the estuary. The entire estuary is shallow and has a relatively small tidal prism (0.36 Mm^3) 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 tide and mouth conditions. Rainfall within the watershed accounts for most of the freshwater entering the reserve with 90% of the mean annual rainfall falling between November and April. Freshwater discharges 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. 0.55 meters NGVD (date of last survey was 2001).
- c) Channel width is approx. 20 meters. Datalogger site is located 1km from the river 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 undisturbed.
- f) Direct impacts may 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 20m north of a newly constructed 20 acre mudflat restoration area in the southern section of the reserve. Latitude is 32deg 32min 52.1sec longitude: 117deg 7min 22.5sec due to heavy sedimentation.
- b) The elevation of the channel bottom: -.39 meters NGVD (date of last survey was 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 current survey data available.
- c) Channel width: 5 meters
- d) Bottom type: very fine mud.

Specific Site characteristics: Boca Rio (BR)

- a) Orientation of site: Datalogger station is located approximately 300 meters north of the Tijuana River in the middle of a channel which runs north to south. Latitude is 32 33 34.3 N and Longitude is 117 deg 07 min 43.7 sec W.
- b) The elevation of channel bottom: No current survey data available
- c) Channel width: Approximately 10 meters
- d) Bottom type: mostly sand, very little mud

6) Data Collection period

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

Oneonta Slough

Deploy Date	Time	Retrieve Date	Time
12/20/2006	12:15	01/05/2007	16:15
01/05/2007	16:45	02/05/2007	16:15
02/05/2007	16:30	03/18/2007	14:15
03/18/2007	14:30	04/13/2007	16:00
04/13/2007	16:15	04/27/2007	12:45
04/27/2007	13:00	05/11/2007	13:15
05/11/2007	13:45	05/30/2007	10:15
05/30/2007	10:30	06/13/2007	14:00
06/13/2007	14:15	06/28/2007	13:30
06/28/2007	13:45	07/11/2007	09:00
07/11/2007	09:15	07/27/2007	13:30
07/27/2007	14:30	08/09/2007	10:45
08/09/2007	11:00	08/28/2007	11:00
08/28/2007	11:15	09/11/2007	16:00
09/11/2007	16:15	10/09/2007	13:00
10/09/2007	13:15	11/06/2007	13:45
11/06/2007	14:00	12/20/2007	16:00
12/20/2007	16:15	01/17/2008	15:45

Tidal Linkage

Deploy Date	Time	Retrieve Date	Time
12/20/2006	17:00	01/03/2007	16:30
01/04/2007	17:45	02/04/2007	16:00
02/05/2007	17:30	03/17/2007	14:00
03/18/2007	16:15	04/12/2007	12:30
04/13/2007	16:30	04/26/2007	10:00
04/30/2007	15:00	05/10/2007	09:15
05/11/2007	16:30	05/29/2007	11:00
05/30/2007	12:45	06/13/2007	12:00
06/13/2007	12:30	06/28/2007	14:00
06/28/2007	14:15	07/11/2007	12:30
07/11/2007	12:45	07/26/2007	07:00
07/27/2007	14:45	08/08/2007	06:30
08/09/2007	13:00	08/27/2007	12:30
08/28/2007	13:30	09/10/2007	13:30
09/11/2007	14:30	10/08/2007	14:30

Model Marsh

Deploy Date	Time	Retrieve Date	Time
12/20/2006	15:00	01/03/2007	15:00
01/04/2007	16:00	02/05/2007	16:00
02/05/2007	16:15	03/18/2007	15:00
03/18/2007	15:15	04/13/2007	15:00
04/13/2007	15:15	04/27/2007	14:15

04/27/2007	14:30	05/11/2007	15:00
05/11/2007	15:15	05/30/2007	11:15
05/30/2007	11:30	06/13/2007	13:15
06/13/2007	13:30	06/28/2007	12:45
06/28/2007	13:00	07/11/2007	10:00
07/11/2007	10:15	07/27/2007	13:00
07/27/2007	13:15	08/09/2007	11:30
08/09/2007	11:45	08/28/2007	12:45
08/28/2007	13:00	09/11/2007	13:15
09/11/2007	13:30	10/08/2007	13:45
11/06/2007	15:15	12/20/2007	15:00
12/20/2007	15:15	01/17/2008	15:00

Boca Rio

Deploy Date	Time	Retrieve Date	Time
12/20/2006	16:00	01/03/2007	16:00
01/04/2007	16:45	02/05/2007	16:45
02/05/2007	17:00	03/18/2007	15:30
03/18/2007	15:45	04/12/2007	11:45
04/13/2007	14:00	04/26/2007	11:15
04/27/2007	12:00	05/11/2007	14:00
05/11/2007	14:15	05/30/2007	12:00
05/30/2007	12:15	06/13/2007	14:30
06/13/2007	14:45	06/28/2007	11:45
06/28/2007	12:00	07/11/2007	12:00
07/11/2007	12:15	07/27/2007	13:45
07/27/2007	13:45	08/09/2007	12:30
08/09/2007	12:45	08/28/2007	10:30
08/28/2007	10:45	09/10/2007	13:00
09/11/2007	14:00	10/08/2007	14:00
10/09/2007	13:45	11/05/2007	15:15
11/06/2007	14:30	12/20/2007	14:15
12/20/2007	14:15	01/17/2008	14:00

7) Distribution

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 this 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 Principal Investigators and Contact Persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page <http://cdmo.baruch.sc.edu/>. Data are available in text tab-delimited format

8) Associated researchers and projects

The research program at the TRNERR focuses on adaptive approaches to wetlands management, which involves coupling scientific investigation with management action. One focal area of research continues to be adaptive restoration, and the TRNERR has a long history of science-based restoration efforts. These programs incorporate descriptive and experimental approaches to investigate biotic and abiotic responses to marsh restoration, including ways to better achieve desired ecosystem responses. Another active area of research is invasive species ecology and management. Although estuaries are typically invaded by a broad suite of species from many habitat types, current research is focusing on terrestrial and riparian invaders able to cross ecotones and invade salt marsh habitats. Researchers at the TRNERR are investigating mechanisms of invasions, impacts of invaders, and ecosystem recovery after exotic species control.

NERR SWMP water quality and weather data are used in a variety of reserve-based and external research and education programs. Water quality data from the Tijuana River, which rarely experiences mouth closure, provides an interesting contrast to data from other regional systems, which experience frequent closure events. Also, SWMP water quality data are incorporated into a high school curriculum developed at the reserve. 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 nutrient sampling and flow studies are being conducted by Dr. Richard Gersberg of the San Diego State University Department of Public Health. In addition, much of the reserve is used as a testbed for research related to adaptive marsh restoration, with recent attention on the Model Marsh. 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) Sensor Specifications

YSI 6600EDS datalogger

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Thermistor
Model #: 6560
Range: -5 to 45 °C
Accuracy: +/-0.15 °C
Resolution: 0.01 °C

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: 4-electrode cell with autoranging
Model #: 6560
Range: 0 to 100 mS/cm
Accuracy: +/-0.5% of reading + 0.001 mS/cm
Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependent)

Parameter: Salinity
Units: parts per thousand (ppt)
Sensor Type: Calculated from conductivity and temperature
Range: 0 to 70 ppt
Accuracy: +/- 1.0% of reading or 0.1 ppt, whichever is greater
Resolution: 0.01 ppt

Parameter: Rapid Pulse Dissolved Oxygen % saturation
Units: percent air saturation (%)
Sensor Type: Rapid Pulse – Clark type, polarographic
Model #: 6562
Range: 0 to 500 % air saturation
Accuracy: 0-200 % air saturation, +/- 2 % of the reading or 2 % air saturation, whichever is greater; 200-500 % air saturation, +/- 6 % of the reading
Resolution: 0.1 % air saturation

Parameter: Rapid Pulse Dissolved Oxygen mg/L (Calculated from % air saturation, temperature and salinity)
Units: milligrams per Liter (mg/L)
Sensor Type: Rapid Pulse – Clark type, polarographic
Model #: 6562
Range: 0 to 50 mg/L
Accuracy: 0 to 20 mg/L, +/- 2 % of the reading or 0.2 mg/L, whichever is greater; 20 to 50 mg/L, +/- 6 % of the reading
Resolution: 0.01 mg/L

Parameter: ROX Optical Dissolved Oxygen % saturation
Units: percent air saturation (%)

Sensor Type: ROX, Optical Luminescence

Model #:6150

Range: 0 to 500% air saturation

Accuracy: 0 to 200% air saturation, +/- 1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation, +/- 15% of reading; Relative to Calibration Gases

Resolution: 0.1% air saturation

Temperature Range: -5 to 50C

Parameter: ROX Optical Dissolved Oxygen, mg/L (Calculated from % air saturation, temperature and salinity)

Sensor Type: ROX, Optical Luminescence

Model #:6150

Range: 0 to 50mg/L

Accuracy: 0 to 20mg/L, +/- 1% of the reading or 0.1 mg/L, whichever is greater 20 to 50 mg/L, +/- 15% of the reading; Relative to Calibration Gases

Resolution: 0.01mg/L

Temperature Range: -5 to 50C

Parameter: Non-Vented Level – Shallow (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 30 ft (9.1 m)

Accuracy: +/- 0.06 ft (0.018 m)

Resolution: 0.001 ft (0.001 m)

Parameter: Vented Level – Deep (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 656 ft (200 m)

Accuracy: +/- 1 ft (0.3 m)

Resolution: 0.001 ft (0.001 m)

Parameter: pH

Units: units

Sensor Type: Glass combination electrode

Model #: 6561

Range: 0 to 14 units

Accuracy: +/- 0.2 units

Resolution: 0.01 units

Parameter: Turbidity

Units: nephelometric turbidity units (NTU)

Sensor Type: Optical, 90 ° scatter, with mechanical cleaning

Model #: 6136

Range: 0 to 1000 NTU

Accuracy: +/- 5 % reading or 2 NTU (whichever is greater)
Resolution: 0.1 NTU

Depth Qualifier:

The NERR System-Wide Monitoring Program utilizes YSI datasondes that can be equipped with either depth or water level sensors. Both sensors measure water depth, but by convention, level sensors refer to atmospherically vented measurements and depth refers to non-vented measurements. Readings for both vented and non-vented sensors are automatically compensated for water density change due to variations in temperature and salinity; but for all non-vented depth measurements, changes in atmospheric pressure between calibrations appear as changes in water depth. The error is equal to approximately 1.03 cm for every 1 millibar change in atmospheric pressure, and is eliminated for level sensors because they are vented to the atmosphere throughout the deployment time interval.

Beginning in 2006, NERR SWMP standard calibration protocol calls for all non-vented depth sensors to read 0 meters at a (local) barometric pressure of 1013.25 mb (760 mm/hg). To achieve this, each site calibrates their depth sensor with a depth offset number, which is calculated using the actual atmospheric pressure at the time of calibration and the equation provided in the SWMP calibration sheet or Digital Calibration Log. This offset procedure standardizes each depth calibration for the entire NERR System. If accurate atmospheric pressure data are available, non-vented sensor depth measurements at any NERR site can be corrected. The Research Coordinator at the specific NERR site should be contacted in order to obtain information regarding atmospheric pressure data availability.

10) Coded variable definitions

Sampling Station Name	Sampling Site Code	Station Code
Oneonta Slough	OS	tjroswq
Model Marsh	MM	tjrmwq
Tidal Linkage	TL	tjrtlwq
Boca Rio	BR	tjrbrwq

11) QAQC flag definitions –

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). During primary automated QAQC (performed by the CDMO), -5, -4, and -2 flags are applied automatically to indicate data that is missing and above or below sensor range. All remaining data are then flagged 0, passing initial QAQC checks. During secondary and tertiary QAQC 1, -3, and 5 flags may be used to note data as suspect, rejected due to QAQC, or corrected.

-5	Outside High Sensor Range
-4	Outside Low Sensor Range
-3	Data Rejected due to QAQC
-2	Missing Data
-1	Optional SWMP Supported Parameter
0	Data Passed Initial QAQC Checks
1	Suspect Data
2	<i>Open - reserved for later flag</i>
3	<i>Open - reserved for later flag</i>
4	Historical Data: Pre-Auto QAQC
5	Corrected Data

12) QAQC code definitions –

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the associated flag column. There are three (3) different code categories, general, sensor, and comment. General errors document general problems with the deployment or YSI datasonde, sensor errors are sensor specific, and comment codes are used to further document conditions or a problem with the data. Only one general or sensor error and one comment code can be applied to a particular data point.

General Errors

GIC	No Instrument Deployed Due to Ice
GIM	Instrument Malfunction
GIT	Instrument Recording Error; Recovered Telemetry Data
GMC	No Instrument Deployed Due to Maintenance/Calibration
GNF	Deployment Tube Clogged / No Flow
GOW	Out of Water Event
GPF	Power Failure / Low Battery
GQR	Data Rejected Due to QA/QC Checks
GSM	See Metadata

Sensor Errors

SBO	Blocked Optic
SCF	Conductivity Sensor Failure
SDF	Depth Port Frozen
SDO	DO Suspect
SDP	DO Membrane Puncture
SIC	Incorrect Calibration / Contaminated Standard
SNV	Negative Value
SOW	Sensor Out of Water
SPC	Post Calibration Out of Range
SSD	Sensor Drift
SSM	Sensor Malfunction
SSR	Sensor Removed / Not Deployed
STF	Catastrophic Temperature Sensor Failure
STS	Turbidity Spike
SWM	Wiper Malfunction / Loss

Comments

CAB	Algal Bloom
CAF	Acceptable Calibration/Accuracy Error of Sensor
CAP	Depth Sensor in Water, Affected by Atmospheric Pressure
CBF	Biofouling
CCU	Cause Unknown
CDA	DO Hypoxia (<3 mg/L)
CDB	Disturbed Bottom
CDF	Data Appear to Fit Conditions
CFK	Fish Kill

CIP	Surface Ice Present at Sample Station
CLT	Low Tide
CMC	In Field Maintenance/Cleaning
CMD	Mud in Probe Guard
CND	New Deployment Begins
CRE	Significant Rain Event
CSM	See Metadata
CTS	Turbidity Spike
CVT	Possible Vandalism/Tampering
CWD	Data Collected at Wrong Depth

13) Post deployment information

np = no probe installed

nc = no calibration done

numbers in parentheses are used if standard differs from those stated.

Site	Date	DO% Std(100)	SpCond std(50)	pH std(7)	Turb std(0)
OS	01/05/2007	93.5	49.93	7.24	-2
	02/05/2007	106	49.02	6.8	0.6
	03/18/2007	62	50.2	7.05	0.2
	04/13/2007	118.7	47.88	6.52	-0.8
	04/27/2007	93.2	49.51	7.03	-0.4
	05/11/2007	100.7	50.18	6.89	0.6
	05/30/2007	99.1	50.47	6.86	0.6
	06/13/2007	101	49.18	6.76	2.7
	06/28/2007	101	49.69	6.93	0.3
	07/11/2007	100.1	50.87	6.98	-0.3
	07/27/2007	101.7	49.73	6.99	-0.2
	08/09/2007	101.9	49.86	7.05	2.2
	08/28/2007	94.1	49.55	6.97	-0.02
	09/11/2007	102.6	49.6	7.04	0.1

	10/09/2007	100.1	50.55	7.01	0.3
	11/06/2007	101.0	49.65	7.04	0.6
	12/20/2007	99.5	51.79	7.04	0.3
MM	01/03/2007	66	49.6	7.31	-0.9
	02/05/2007	94.2	49.83	6.91	-0.5
	03/18/2007	99.5	49.65	7.14	1.2
	04/13/2007	100.2	50.29	ND	-1.2
	04/27/2007	104.1	48.99	7.01	1
	05/14/2007	103.3	49.19	7.01	0.9
	05/30/2007	103.5	50.09	6.96	3.5
	06/13/2007	102.7	49.67	7.06	0.7
	06/28/2007	102	50.46	7.03	-3.2
	07/11/2007	102.3	49.81	7.05	0.6
	07/27/2007	102.5	49.36	6.89	0.5
	08/09/2007	102.7	ND	7.05	0.3
	08/28/2007	112.0	48.98	7.12	-2.0
	09/11/2007	99.7	49.99	6.84	0.2
	10/09/2007	98.5	49.45	7.05	0.6
	11/06/2007	109.0	50.25	7.06	2.4
	12/20/2007	108.6	53.12	6.32	1.7
BR	01/03/2007	87	49.9	6.92	-1.1
	02/05/2007	86.2	49.75	6.92	0.4
	03/18/2007	134	52.5	7.14	0.6
	04/12/2007	110.8	49.68	6.82	-1.4
	04/26/2007	106.9	49.65	6.88	-3.8
	05/11/2007	107.1	49.3	6.94	0.3
	05/30/2007	102.3	51.03	6.65	0.6
	06/13/2007	101.8	49.34	6.96	1.6
	06/28/2007	109.1	50.58	6.61	1.6
	07/11/2007	100.4	50.22	7.01	0.1
	07/27/2007	99.1	52.27	6.79	1.1
	08/09/2007	104	50.57	7.03	-3.7
	08/28/2007	102.7	50.51	6.98	0.4
	09/11/2007	99.8	50.33	7.04	-0.2
	10/09/2007	101.9	49.49	ND	ND
	11/06/2007	100.00	49.88	6.96	0.4
	12/20/2007	128.7	52.28	7.02	1.3
TL	1/3/2007	98.7	49.3	7.05	-0.2
	2/4/2007	94	50.2	6.97	0.5
	3/17/2007	71.4	50.48	7.21	0
	4/12/2007	105.4	49.36	6.858	-0.9
	4/26/2007	106.9	49.02	7.07	-0.5
	5/10/2007	101.5	49.11	6.93	-0.3

5/29/2007	74.3	37.69	7	0
6/13/2007	500	49.95	7.52	0.1
6/28/2007	106.1	50.08	7.04	0.2
7/11/2007*	98.2	50.19	ND	0.1
7/26/2007*	119	50.03	7.09	-0.9
8/8/2007*	106	50.66	6.98	-0.3
08/28/2007	**	50.10	6.92	0.1
09/11/2007	100.4	50.43	7.10	1.3

* = ROX probe used

** = too unstable to get reading

15) Other Remarks

Data are missing due to equipment or associated specific probes not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. Any NANs in the dataset stand for “not a number” and are the result of low power, disconnected wires, or out of range readings. If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

a) the first deployment of 2007 for Boca Rio, Model Marsh and Tidal Linkage was set at a logging interval of 30 minutes. All subsequent deployments at all sites were set at a 15 minute interval

b) The Boca Rio station experiences discharge events following weather events that impact temperature, SpCond and salinity data throughout the time period from January to April. These are marked 1 CSM in the data file.

c) Tidal Linkage:

deployment from 7/11/07 12:45 to 7/26/07 07:00 utilized the ROX optical probe for recording oxygen saturation

deployment from 7/27/07 14:45 to 8/8/07 06:30 utilized the ROX optical probe for recording oxygen saturation

deployment from 8/9/07 13:00 to 8/27/07 12:30 utilized the ROX optical probe for recording oxygen saturation

d) For the deployment from 2/5 17:30 to 3/17 14:00 the Tidal Linkage site had fouling of the tube and was inundated by sediment. This sedimentation affected all parameters.

e) Tidal Linkage deployment from 4/30 15:00 to 5/10 09:15 depth was accidentally turned off during this deployment.

f) Tidal Linkage deployment from 6/28 14:15 to 7/11 12:30 the pH probe was removed but the parameter was not disabled.

g) At Model Marsh from 12/20/07 to 12/31/07 23:45 the deployment tube and sonde guard filled with sand. All parameters were affected by the sand. The turbidity wiper had also fallen off.

h) At the Oneonta Slough station from 11/30/07 15:45 to 12/16/07 06:00 turbidity data is affected by both a rain event and fouling, causing periods of elevated readings.

i) At the Oneonta Slough station from 12/22/07 5:45 to 12/31/07 23:45 turbidity readings are affected by a rain event and kelp being wrapped around the wiper shaft, causing periods of elevated readings and some larger spikes.

j) The Tidal Linkage site experienced sedimentation throughout the year. This started during storm events and gradually worsened as 2007 progressed. Data is marked throughout the year when this sedimentation became severe enough to impact data.

k) Tijuana River Discharges Near the International Border - Discharge in Millions of gallons per day (mgd)

Date	MGD ***
1/5/2007	3.88
1/29/2007	11.18
1/30/2007	79.87
1/31/2007	110.22
2/1/2007	49.29
2/2/2007	40.62
2/3/2007	33.55
2/4/2007	29.21
2/5/2007	26.24
2/6/2007	21.45
2/7/2007	10.04
2/11/2007	1.14
2/12/2007	8.22
2/13/2007	112.73
2/14/2007	90.14
2/15/2007	83.52
2/16/2007	63.90
2/17/2007	52.94
2/18/2007	111.59
2/19/2007	235.05
2/20/2007	103.38
2/21/2007	58.65
2/22/2007	54.77
2/23/2007	75.54
2/24/2007	36.51
2/25/2007	29.44
2/26/2007	23.51
2/27/2007	82.61

2/28/2007	58.65
3/1/2007	32.41
3/2/2007	26.93
3/3/2007	27.16
3/4/2007	18.48
3/5/2007	15.29
3/6/2007	2.51
3/7/2007	1.37
3/8/2007	0.46
3/9/2007	0.46
3/11/2007	0.46
3/12/2007	1.14
3/21/2007	5.48
3/22/2007	13.69
3/23/2007	17.12
3/24/2007	15.97
3/25/2007	14.61
3/26/2007	5.93
4/20/2007	29.90
4/21/2007	17.34
4/22/2007	11.41
4/23/2007	11.64
4/24/2007	8.90
4/25/2007	5.93
9/22/2007	0.23

No data from 10/1/07 through 12/31/07