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Quality Assurance Report for Year 2017 Estuarine Water Quality Datasonde Monitoring

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Quality Assurance Report for Year 2017 Estuarine Water Quality Datasonde Monitoring

Prepared by: Lara Martin, University of New Hampshire (UNH), Jackson Estuarine Laboratory (JEL)

Background:
This project is coordinated by the Piscataqua Region Estuaries Partnership (PREP), which is part of the U.S. Environmental Protection Agency’s (EPA) National Estuary Program, a joint local/state/federal program established under the Clean Water Act with the goal of protecting and enhancing nationally significant estuarine resources. PREP receives its funding from the EPA and is administered by the University of New Hampshire (UNH).

Actual funding for this work comes from many sources, including: Great Bay National Estuarine Research Reserve (GBNERR), a partnership between NH Fish & Game and NOAA; EPA; NH Department of Environmental Services (NHDES); and municipalities in the Piscataqua Region Watershed.

Purpose:
To document the quality assurance checks and decisions regarding water quality measurements from datasondes deployed in the Great Bay Estuary and the Hampton-Seabrook Estuary in 2017. This document focuses on datasonde (automated sensors) measurements only. See related documents on “Grab Sample” measurements at: https://scholars.unh.edu/prep/. Datasonde parameters include: temperature, conductivity (salinity), dissolved oxygen, turbidity, depth, pH, total chlorophyll, and fluorescent dissolved organic matter (fDOM).

Methods:
The data were reviewed following the protocol developed by NHDES and the NERR system, following the System-Wide Monitoring Program (SWMP). For more details, see Attachment 1. In addition, more information on datasonde and non-datasonde (grab sample) water quality monitoring can be found by looking at recent Quality Assurance Project Plans (QAPPs), which can be found at: https://scholars.unh.edu/prep.

In 2017, the following stations had datasondes deployed: Little Bay (GRBLB), Great Bay (GRBGB), Great Bay West (GRBGWB), Squamscott River (GRBSQ), Lamprey River (GRBLR), Oyster River (GRBOR), Salmon Falls River (GRBSF), Upper Piscataqua River (GRBUPR), Lower Piscataqua River (GRBLPR), Coastal Marine Laboratory (GRBCML) and Hampton Harbor (HHHR). (See map, page 3.)

The QA system employed for the NERR program includes metadata and data processing via an automated QA Excel macro (see Attachment 2). All other sites were processed using the same macro which utilizes the “flag” codes described below in the “Data Management” section. The macro assigns a “comment” code to further explain each flag. All data is carefully reviewed (manually, as well as using the automated macro) and a determination made as to its validity. Additional flag and comment codes are assigned as needed. Calibration logs are provided as metadata for the non-SWMP stations. (See Attachment 3)

Data management:
All results for any parameter with a -2, -3, -4, or -5 flag were marked as invalid. All data flagged as suspect <1> were thoroughly assessed. Data determined to be anomalous were rejected in the macro or marked as invalid on the final spreadsheet, which will be uploaded into NHDES’ Environmental Monitoring Database.

-5  Outside High Sensor Range
-4  Outside Low Sensor Range
-3  Data Rejected due to QAQC
-2  Missing Data
-1  Optional System-Wide Monitoring Program (SWMP) Supported Parameter
0  Data Passed Initial QAQC Checks
1  Suspect Data
2  Open - reserved for later flag
3  Calculated Data: Non-vented depth/level sensor correction for changes in barometric pressure
4  Historical Data: Pre-auto QAQC
5  Corrected Data
Chlorophyll and Fluorescent Dissolved Organic Matter (fDOM): YSI EXO2 datasondes were used at all sites, except for the Salmon Falls station. Starting in 2017, the EXO2 datasondes were outfitted with optical total algae probes (total chlorophyll and blue-green algae combined) and fDOM probes. The total algae sensors measure total chlorophyll (µg/L) and phycocyanin (µg/L) or phycoerythrin (µg/L). fDOM is measured in quinine sulfate units (1 QSU = 1 ppb quinine sulfate). A YSI 6600 datalogger was used at Salmon Falls that did not have the capacity for these additional optical probes.

Chlorophyll-a and fDOM validation samples were collected at a number of sites (GRBLPR, GRBUPR, GRBLB, GRBGBW, HHHR) to determine whether there is a correlation between sensor readings in the field and grab samples processed in the laboratory. Grab samples were taken with a Niskin water sampler at sonde depth, 0.5 meters off the bottom. Samples were collected during monthly datasonde swaps and mid-way through the deployment, approximately every two weeks.

A simple regression analysis was performed for each site. None of the sites showed a significant correlation between field sensor readings (total chlorophyll and fDOM) and samples analyzed in the laboratory (chlorophyll-a and fDOM). According to YSI, the sensor manufacturer, the sensors are designed to simply serve as a proxy for concentrations in the field and to complement traditional lab analysis methods; therefore, there are accuracy limitations associated with the data that are detailed in the YSI manual, including interference from other fluorescent species, differences in calibration methods, and the effects of cell structure, particle size, organism type, temperature, and light on sensor measurements. Therefore, all data from the total algae and fDOM probes are considered preliminary unless comparisons between the probe data and analytical data demonstrate a statistically significant trend and the data are corrected.

These preliminary data are included in the NHDES submission but have been flagged as invalid and should only be used to look at general trends and not specific concentrations. In the case of chlorophyll, data are considered an estimate as there is a poor correlation between probe readings and extracted chlorophyll-a grab sample data. Similarly, fDOM data are also considered an estimate as there is a poor correlation between probe readings and laboratory fluorometric grab sample analysis. Samples have not yet been collected to assess the accuracy of the blue-green algae sensors. Although these data are not valid for NHDES’ assessment purposes, the data were reviewed, and anomalous points were rejected using the QA Excel macro. The data files retain these <3 flags and associated comments to assist NHDES in their assessment process.

**Results**

The automated and manual review resulted in the rejection of some portion of the data collected at all sites. (For details, see next section.) This is normal given the extreme conditions and challenges seen in estuarine environments. The most common challenges were biofouling, battery failure, failure of particular sensors (e.g., pH or temperature), total datasonde failure, errors in the placement or anchoring of the datasonde, and errors in programming the sampling interval.

Nonetheless, the deployed datasondes collected substantial amounts of valid data, each collecting values for ~10 parameters every 15 minutes, between April and December. Detailed results of the automated and manual review of the data are described in the following sections, organized by station.

**Anomalous Readings During Deployment**

**Coastal Marine Laboratory (Station GRBCML)**

**Deployment 2**

**Battery:** Batteries failed 06/30/2017 15:00 EDT. No data were collected through the end of the deployment 07/06/2017 10:45 EDT. Overall, 1.3% of the deployment’s data were not collected.
Deployment 3

**Instrument malfunction – all sensors:** The data sonde failed 07/18/2017 20:30 EDT. There was no data collected through the end of deployment 07/24/2017 10:30 EDT. Overall, 19.5% of the deployment’s data were not collected.

**Dissolved Oxygen:** The post-deployment QA test for dissolved oxygen was outside of the data quality objectives. In this instance, the check failed because the instrument malfunctioned; thus, there were no post-calibration data. The “DO Protocol” requires that the dissolved oxygen data be reviewed to look for anomalous readings, sensor drift, and changes in dissolved oxygen readings before and after sonde calibration or replacement. Review of the time series plot for this deployment does not indicate any unusual trends before the malfunction. Therefore, we consider all DO data from this deployment to be valid.

Deployment 5

**pH:** The pH sensor malfunctioned 09/15/2017 16:45 EDT. There were no data collected through the end of the deployment on 09/18/2017 12:30 EDT.

(Nota drop in pH values [end of blue data series] and recovery [orange data series].)

Deployment 6

**Battery:** Batteries failed 10/11/2017 04:15 EDT. No data were collected through the end of the deployment 10/17/2017 15:15 EDT. Overall, 22.2% of the deployment’s data were not collected.

Salmon Falls (Station GRBSF)

Deployment 1

**Temperature – all sensors:** Catastrophic temperature sensor failures occurred during the following time periods. For YSI 6600 dataloggers, the protocol requires that all parameters be rejected during these events.

08/25/2017 16:00 EDT
08/25/2017 20:00 EDT
08/26/2017 21:45 EDT
Overall, 84.6% of deployment’s data were rejected.

(See blue line for temperature Deployment 1 and orange line for temperature Deployment 2)

Dissolved Oxygen: The post-deployment QA test for dissolved oxygen was outside of the data quality objectives. In this instance, there were no post-calibration data collected as the temperature sensor had failed; thus, data for all parameters were rejected. Following the previously discussed “DO Protocol,” review of the time series plot for this deployment does not indicate any unusual trends outside of the failures. Therefore, we consider all other DO data from this deployment to be valid.

Deployment 2

pH: Due to severe barnacle biofouling, pH data from 10/05/2017 02:30 EDT through end of deployment 10/19/2017 13:00 EDT were rejected.

Turbidity: Due to severe barnacle biofouling, turbidity data from 10/15/2017 17:30 EDT through end of deployment 10/19/2017 13:00 EDT were rejected.

(See end of blue line for evidence of severe biofouling.)
Overall, 8.1% of the deployment’s data were rejected due to the pH and turbidity data rejections.

Great Bay (Station GRBGB)

**Deployment 4**

**Dissolved oxygen:** Dissolved oxygen (saturation % and concentration mg/L) beginning 08/11/2017 22:45 EDT and continuing through the end of the deployment 08/14/2017 13:00 EDT was initially rejected due to biofouling, which led to out-of-range post-calibration dissolved oxygen values. Upon closer review, we decided to also invalidate data from 08/10/2017 02:00 through 08/11/2017 22:30 EDT. (The dissolved oxygen data following the black point was invalidated.)

The post-deployment QA test for dissolved oxygen was outside of the data quality objectives. In this instance, the check failed because the datasonde was severely biofouled. The datalogger post-calibrated out-of-range (87.8% at 100.3% saturation). Following the previously discussed “DO Protocol,” review of the dissolved oxygen saturation time series plot for this deployment shows that the data were valid up until 08/10/2017 02:00 EDT.

**Deployment 5**
Turbidity: The turbidity data from 08/26/2017 06:00 to 11:30 EDT were initially labelled as suspect. The field logs note that there were crabs and fish in the sonde guard when it was retrieved 09/12/2017 08:15 EDT. Accordingly, we believe that this significant turbidity spike and many others during this deployment were most likely caused by the movement of the animals. Therefore, these data were rejected.

(The orange line highlights one of the turbidity spikes that was most likely due to crabs and/or fish.)

Specific conductance and salinity: Specific conductance and salinity from 09/04/2017 21:00 to 09/05/2017 01:00 EDT were initially labelled as suspect or rejected due to a wiper malfunction. Upon closer review, we decided to also invalidate 09/04/2017 20:15 to 20:45 EDT and 09/05/2017 01:15 to 02:15 EDT. As required by the protocol, dissolved oxygen mg/L and depth were also invalidated, as they are parameters calculated using specific conductance data.

Deployment 6

Turbidity: Turbidity data from 09/20/2017 22:45 to 09/21/2017 02:15 EDT were initially labelled as suspect. Upon closer review, we decided to invalidate this time series.

(The data series in orange was invalidated.)

Squamscott River (Station GRBSQ)

Deployment 7
Battery: Batteries failed 10/09/2017 00:45 EDT. No data were collected through the end of the deployment 10/23/2017 10:00 EDT. Overall, 51.2% of the deployment’s data were not collected.

Dissolved Oxygen: The post-deployment QC test for dissolved oxygen was outside of the data quality objectives. In this instance, there were no post-calibration data collected as the instrument’s batteries had died. Following the previously discussed “DO Protocol,” review of the time series plot for this deployment does not indicate any unusual trends. Therefore, we consider all DO data from this deployment to be valid.

Great Bay West (Station GRBGW)

Deployment 1

pH: There were no pH data collected for the entire deployment beginning 06/06/2017 09:45 and continuing through 07/03/2017 11:00 EDT. This was due to a faulty sensor.

Depth: From the beginning of the deployment 06/06/2017 09:45 EDT and continuing through 06/14/2017 12:30 EDT, sensors were out of the water during low tide. As this was a new site, the initial placement of the datasonde was shallower than desired. There were 15 discrete out-of-water events. All data that corresponded with a \( \leq 1 \) psu salinity reading were rejected. Additional data on each side of the events were also rejected if it appeared abnormal. Overall, including the missing pH mentioned above, 5.23% of the deployment’s data were rejected.

(The beginning of the orange line indicates salinity and reflects problems with the depth of the datasonde.)

The datasonde was moved 30 meters towards the channel, into deeper water 06/14/2017 16:30 EDT. Depth change was approximately 1.5 meters. The out-of-water events stopped once the logger was moved to the new location.

(The first shift in the blue line indicates when the depth was corrected, and the data became valid.)
The datasonde was pulled up for inspection 06/28/2017 12:45 EDT. When redeployed 06/28/2017 13:00 EDT, the datasonde was 0.5 meters deeper. (See black point on blue line in figure below.) The slightly modified location and depth caused elevated and more variable turbidity readings through the end of the deployment 07/03/2017 11:00 EDT. (See orange line.) No data were rejected as the turbidity sensor post-calibrated well within range and there were no field notes indicating biofouling. In addition, turbidity values dropped at the end of the deployment. The instrument was returned to the proper location 07/03/2017 11:15 EDT at the beginning of the following deployment.

Deployment 2

Logging Interval: The datasonde was deployed with the wrong logging interval 07/03/2017 11:15 EDT through 07/05/2017 14:30 EDT. Data were collected every 15 hours, rather than every 15 minutes. During this two-day period, only 1.5% of the entire dataset was collected as a result.

Dissolved Oxygen: The post-deployment QC test for dissolved oxygen was outside of the data quality objectives. In this instance, the check failed because the datasonde was programmed with the wrong logging interval. A measurement was taken every fifteen hours, rather than every 15 minutes. Thus, there were no post-calibration data. Following the previously noted “DO Protocol,” review of the time series plot for this deployment does not indicate any unusual trends. Therefore, we consider all DO data from this deployment to be valid.
Deployment 6

**Depth:** The anomalous depth measurement on 09/25/2017 13:15 EDT, the first data point in the deployment, was not rejected as the corresponding measurements were retained.

**Battery:** Batteries failed 10/07/2017 14:15 EDT. No data were collected through the end of the deployment 10/23/2017 12:30 EDT.

**Dissolved Oxygen:** The post-deployment QC test for dissolved oxygen was outside of the data quality objectives. In this instance, there were no post-calibration data collected as the instrument’s batteries had died. Following the previously noted “DO Protocol,” review of the time series plot for this deployment does not indicate any unusual trends. Therefore, we consider all DO data from this deployment to be valid.

Deployment 7

**Depth:** The datasonde was accidentally pulled up and then redeployed at the wrong location and depth 11/09/2017 16:00 EDT. It was returned to the correct location 11/13/2017 13:00 EDT. Data from all parameters that corresponded with a ≤ 1 psu salinity reading were rejected. Additional data on each side of the events were also rejected if they appeared abnormal. During the period from 11/09/2017 16:00 EDT through 11/03/2017 12:45 EDT, there were eight discrete out-of-water events – 3.2% of the data from the entire deployment were rejected. (See yellow line for salinity and orange line for dissolved oxygen.)

(The figures below reflect incorrect datasonde placement. Notice the impact on the yellow salinity data, as well as the orange dissolved oxygen data in the lower figure.)
Little Bay (Station GRBLB)

All deployments

Depth: The bathymetry of this new site posed challenges. It was hard to return the datasonde to the same depth each time as the water quickly dropped from 1-2 meters to 7-9 meters. Determining the location of the drop-off was often difficult. Even though the datasonde was at a different depth each deployment, other parameters were not significantly affected.

Following Deployments 1 and 2, 06/05/2017 13:30 EDT through 07/05/2017 15:00 EDT, the datasonde was moved to a new location after discussion with municipalities and NHDES. All parties agreed that the deeper water would be more representative of the site as a whole. The change did not significantly affect other parameters. (Deployments 1-2 shown in dark blue line and with orange points directly following the dark blue series.)

The datasonde anchor was then deployed on the edge of a deep channel 07/05/2017 15:15 EDT through 08/09/2017 14:45 EDT. Depth change was approximately 6 meters. However, this new placement caused the anchor to regularly fall over and made recovering the instrument difficult. (Deployment 3 is shown in gray.)

The datasonde was then deployed at a different location 20 meters closer to the shoreline 08/10/2017 11:00 EDT. It was placed on a shallower sloped bottom. Depth change was approximately 4 meters. (Deployment 4 shown in yellow.)

Sonde was inadvertently placed in deeper water 09/04/2017 15:00 EDT at the beginning of the deployment, which continued through 10/02/2017 16:00 EDT. (Deployment 5 shown in light blue.)

Sonde was returned to the correct location 10/02/2017 16:15 EDT. (Deployment 6 shown in green.)
Deployment 2

**Logging Interval:** The datasonde was deployed with the wrong logging interval 07/03/2017 12:00 EDT through 07/05/2017 15:00 EDT. Data were collected every 15 hours, rather than every 15 minutes. During this two-day deployment, only 1.5% of the entire dataset was collected as a result.

**Dissolved Oxygen:** The post-deployment QC test for dissolved oxygen was outside of the data quality objectives. In this instance, the check failed because the datasonde was programmed with the wrong logging interval. A measurement was taken every fifteen hours, rather than 15 minutes. Thus, there were no post-calibration data. Following the previously noted “DO Protocol,” review of the time series plot for this deployment does not indicate any unusual trends. Therefore, we consider all DO data from this deployment to be valid.

Deployment 6

**Depth:** Anomalous depth measurements on 10/02/2017 16:15 to 16:30 EDT were not rejected as the corresponding measurements were retained.

**Hampton Harbor (Station HHHR)**

Deployment 3

**Depth:** The datasonde was under the dock when retrieved 09/28/2017 12:00 EDT, most likely due to a capsized anchor. The datasonde was then moved 20 meters out, closer to the channel. Depth change was approximately 1.5-2 meters.

(The blue line following the black point shows the incorrect depth. The green line shows the depth once the datasonde was relocated for the second deployment.)
The relocation of the datasonde on 09/28/2017 12:15 EDT did not affect most parameters, although the variability in dissolved oxygen (% saturation and mg/L) did decrease after the instrument was moved into deeper water.

(See top lines for dissolved oxygen mg/L, and bottom lines for depth.)

**Upper Piscataqua River (Station GRBUPR)**

**Deployment 1**

**Depth:** For the first deployment of the field season, the datasonde was placed at the coordinates of a pre-existing Environmental Monitoring Database site (NH57). It was at this location 05/18/2017 18:45 EDT through the end of the deployment 06/13/2017 11:30 EDT.

We believe the low dissolved oxygen (% saturation and mg/L) and elevated turbidity during this deployment is real, although a function of the shallow deployment of the datasonde. In addition, the datasonde’s wiper brush malfunctioned regularly. This may have been caused by high levels of fouling matter in the shallow water, which the brush may have gotten stuck on. Another possibility is that the wiper may not have been properly calibrated. This issue contributed to the increased turbidity values and caused the abrupt drops in specific conductance and salinity. All the data associated with abnormal wiper readings were rejected. The datasonde was moved to a deeper site 06/13/2017 19:00 EDT.
Deployment 2

Depth: The datasonde was deployed at a new site 06/13/2017 12:15 EDT. Instrument was moved approximately 20 meters closer to the channel and anchored on a level bottom rather than the sloped surface it had been on previously. The new site was 1-1.5 meters deeper. Other parameters were not significantly affected.
Deployment 6

**Battery:** Batteries failed 10/30/2017 12:45 EDT. There were no data collected through the end of the deployment 11/07/2017 09:30 EDT.

**Lower Piscataqua (Station GRBLPR)**

Deployments 1, 2, and 5

**pH:** pH data from the entire deployment beginning on 07/11/2017 10:00 EDT and continuing through 08/11/2017 11:45 EDT were rejected due to a sensor malfunction.

pH data from 08/31/2017 21:15 EDT through 09/11/2017 13:15 EDT were rejected because the sensor failed.

There was no pH sensor on the datasonde for the entire deployment beginning 11/07/2017 09:15 EDT and continuing through 12/11/2017 11:15 EDT.

Deployment 4

**Battery:** Batteries failed 11/02/2017 13:45 EDT. No data were collected through the end of the deployment 11/07/2017 09:00 EDT.

**Lamprey River (GRBLR) & Oyster River (GRBOR)**

The GRBLR and GRBOR datasets were reviewed and no additional anomalous data were detected. Data from both of these sites were previously rejected using the QA Excel macro. These rejections were flagged and assigned comment codes which will be a part of the file uploaded to the EMD.

**Daylight Saving Time Adjustment:** All the data collected by the datasondes were recorded using Eastern Standard Time. To import the data to the NHDES’ Environmental Monitoring Database, the times were converted to “watch time,” (i.e., the time that you would see on a watch at that time, which includes adjustments for Daylight Savings Time). The specific methods for this time conversion are listed below.

On 11/05/2017 at 02:00:00 EDT, clocks changed to 01:00:00 EST. There were two sets of readings at 01:00:00, 01:15:00, 01:30:00 and 01:45:00 for EDT and EST. The first set of readings at 01:00:00, 01:15:00, 01:30:00 and 01:45:00 EDT were deleted and replaced with the readings at 01:00:00, 01:15:00, 01:30:00 and 01:45:00 EST.
Criteria for Acceptance of GBNERR Dissolved Oxygen Datasonde Records for 305(b) Assessment Purposes

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Introduction
Great Bay National Estuarine Research Reserve (GBNERR) and the University of New Hampshire (UNH) deploy datasondes throughout the Great Bay Estuary to monitor water quality during the ice-free season. The New Hampshire Department of Environmental Services (DES) uses measurements from the datasondes to determine whether water quality standards are being met in Great Bay for the Section 305(b) Surface Water Quality Assessments. A violation of water quality standards has implications for point source discharges, municipalities, and other sources of pollutants to the water body. Therefore, the data used for 305(b) purposes must pass certain quality assurance protocols.

GBNERR and UNH review the original data files and remove questionable data. Data and metadata for most of the deployments are available at http://cdmo.baruch.sc.edu/. The quality assurance process described in this document is only relevant for 305(b) purposes. The limitations placed on the data by these criteria do not restrict the use of the data for other purposes.

Purpose
To document the quality assurance criteria that DES will use to determine whether data from the datasondes should be used for 305(b) purposes.

Assumptions
- The generic metadata for the dissolved oxygen probes on the GBNERR/UNH sondes states that, “The reliability of the dissolved oxygen (DO) data after 96 hours post-deployment for non-EDS (Extended Deployment System) data sondes may be problematic due to fouling which forms on the DO probe membrane during some deployments.” UNH utilizes EDS sondes, which use ROX Optical DO sensors. Therefore, all DO measurements of the deployment will be presumed to be accurate unless proven otherwise by quality control (QC) measurements.
- Laboratory calibration checks of DO saturation in a 100% solution will be considered a QC measurement. QC measurements should be completed at the end of each deployment. QC measurements at the beginning of each deployment are not necessary as the instrument will be calibrated to 100% saturation prior to deployment.
- Post deployment QC measurements will be considered to “pass” if the value is within ± 0.5 mg/L of the saturation value, following the EPA Region 1 Laboratory QAPP (EPA, 2011) and the EPA National Coastal Condition Assessment QAPP (EPA, 2010). For the purposes of the calculation, it will be assumed that the QC test is done at standard temperature and pressure (760 mmHg, 25°C). The saturation concentration of dissolved oxygen at standard temperature and pressure is equal to 8.2 mg/L.
- Sonde deployments for which the post-deployment dissolved oxygen readings fail to "pass" the post-deployment QC measurements will be flagged for further review to determine whether the data can be used for 305(b) assessments. This review will look for anomalous readings, sensor drift, and changes in dissolved oxygen readings before and after sonde calibration or replacement. DES will provide a justification for validating some or all of the dissolved oxygen data from these deployments.
- Sonde deployments for which the post-deployment QC measurements were not conducted or are missing will be flagged for further review to determine whether the data can be used for 305(b) assessments. This review will look for anomalous readings, sensor drift, and changes in dissolved oxygen readings before and after sonde calibration or replacement. DES will provide a justification for validating some or all of the dissolved oxygen data from these deployments.
- For all other parameters besides dissolved oxygen, the results retained in the datafile by the GBNERR or UNH project managers will be accepted as valid for 305b purposes.

Quality Assurance Criteria and Process
Step 1: Based on the assumptions listed above, the DO data for each deployment will be evaluated using the QC measurements. The DO measurements in the deployment will determined to be acceptable for 305(b) purposes if the post-deployment QC measurement of dissolved oxygen value is within ± 0.5 mg/L of the saturation value (8.2 mg/L). If the post-deployment QC measurement is reported in units of percent saturation, the measurement will be converted to units of mg/L by multiplying the percent value by 8.2 mg/L. Each deployment will be assigned a category of either “pass” or “fail” relative to this post-deployment QC test.

Step 2: The time series of DO (as % sat) will be plotted for each deployment to verify that the classifications from Step 1 are justified. If DO data from a deployment passed QC tests in Step 1 but had obvious errors based on the plot, then DES may decide to reject the data from this deployment. Likewise, if there is a good explanation for why data from a deployment failed QC tests, then DES may decide to include the data from this deployment. Determinations of this sort will be documented in a memo.

Step 3: DO results that are determined to not be useful for 305(b) purposes will be marked with an “N” in the ResultsValid field for DO in the deployment datafile and then uploaded to the DES Environmental Measurement Database.

Step 4: A quality assurance memo will be prepared summarizing the determinations from this process.

References


Great Bay (GRB) NERR Water Quality Metadata  
April – December 2017  
Latest Update: November 12, 2018

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons

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2) Entry verification –

Deployment data are downloaded from the YSI Exo2 data loggers to a Dell Latitude E5540 laptop (IBM compatible). Files are exported from the KOR Software in an Excel File (.XLS) and uploaded to the CDMO where they undergo automated primary QAQC, automated depth corrections for changes in barometric pressure (cDepth parameter), and then become part of the CDMO’s online provisional database. All pre- and post-deployment data are removed from the file prior to upload. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve for secondary QAQC 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 summary statistics, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove any overlapping deployment data, append files, and export the resulting data file for upload to the CDMO. Upload after secondary QAQC results in ingestion into the database as provisional plus data, recalculation of the cDepth parameter, and finally tertiary QAQC by the CDMO and assimilation into the CDMO’s authoritative online database. Where deployment overlap occurs between files, the data produced by the newly calibrated sonde are generally accepted as being the most accurate. For more information on QAQC flags and codes, see Sections 11 and 12. Tom Gregory and Lara Martin are responsible for data management. GRB archives all raw and QAQC’d files in Dropbox, in addition to back-up hard drives.
3) Research objectives –

YSI EXO2 data loggers were deployed in Great Bay and in the Squamscott, Oyster and Lamprey Rivers as part of the National Estuarine Research Reserves' (NERRS) System-wide Monitoring Program (SWMP). The goal is to develop and maintain temporally intensive long-term datasets of physio-chemical parameters of water quality at locations that are representative of the Great Bay estuarine system. The Great Bay site is relatively unimpacted, while the three tidal river sites (Lamprey, Oyster and Squamscott) have large drainage basins and are impacted by both point (wastewater treatment plants) and nonpoint sources of pollution. In addition to establishing a baseline of water quality and increasing our understanding of the spatial and temporal variability of important indicators of estuarine water quality, the data is used by researchers in the analysis of physical and biological processes.

4) Research methods –

Datasondes are programmed to obtain measurements of specific conductivity, salinity, dissolved oxygen, percent saturation, pH, temperature, depth, and turbidity every 15 minutes (Eastern Standard Time). Only EXO2 sondes were used in 2017 although in previous years YSI model 6600 sondes were used. All are equipped with non-vented depth sensors. The instruments are deployed continuously during ice-free seasons, except for brief periods when they are removed for cleaning, maintenance and recalibration. Pre- and post-deployment calibrations are performed using the diagnostics menu of the YSI Kor software and QAQC procedures developed by NERR Research Coordinators and YSI engineers.

YSI conductivity standard (YSI 3169 – 50 mS/cm) and Fondriest Environmental pH 7 and 10 buffers (FNBU5007-G and FNBU5010-G) are used for calibration. YSI turbidity standard (YSI 6073G – 124 FNU) is used to calibrate turbidity probes. Air-saturated water is used to calibrate percent dissolved oxygen.

During each deployment, field measurements of temperature, salinity, specific conductivity, and dissolved and percent oxygen are recorded using a handheld YSI PRO 2030 field meter.

Total Algae sensors (chlorophyll-a, in addition to either blue-green algae/phycocyanin [BGA-PC] or blue-green algae/phycoerythrin [BGA-PE]) and fDOM sensors are now being deployed at Great Bay reserve sites. Only chlorophyll-a data is QAQC’d using the CDMO macro. Blue-green algae and fDOM data are included in the reported dataset but have not been officially QAQC’d. Please contact the reserve for this data and sensor calibration protocols.

Chlorophyll sensors are individually, or gang calibrated in µg/L units using a 2-point calibration method. Deionized water is used as a 0 standard and a Rhodamine WT dye as the second standard (0.625 mg/L Rhodamine WT dilution--200:1 dilution of the original liquid concentrate). The effect of temperature on the fluorescence of Rhodamine WT dye is accounted for when calibrating the EXO Total Algae sensor. The temperature correction coefficient of the Rhodamine WT standard solution is determined using a table provided by YSI. The true temperature of the standard is cross referenced to tables values to obtain the corrected µg/L chl-a value for Rhodamine WT. The corrected value is entered in the KOR software for calibration.

The post-calibration check is completed by running the sensor in deionized water to determine how far it has drifted from a 0 reading. We track carefully on calibrations to see how much drift there is between deployments.

In October 2017, grab samples were collected at sonde depth at the Great Bay, Lamprey River, and Squamscott River sites. Extracted chlorophyll values were in line with the sonde readings.

<table>
<thead>
<tr>
<th>Site</th>
<th>Date/Time</th>
<th>Sonde Chl-a µg/L</th>
<th>Extracted Chl-a µg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Bay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamprey River</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squamscott River</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Great Bay sonde is deployed 0.5 meters off the bottom in a PVC tube that is attached to the stem of a mushroom anchor.

The Lamprey and Squamscott River sondes are deployed inside piling mounted PVC tubes with the sensors 0.5 meters off the bottom.

Due to shallow depths and narrow channels, the Oyster River sonde must be deployed with the least amount of vertical expression above bottom. This was achieved by mounting the sonde inside a short PVC tube that was attached to the stem of a mushroom anchor. This allows for the sonde to be stationed in an upright position but also makes the anchor less susceptible to dragging than the previous deployment method. The sonde is deployed at 0.3 meters off the bottom.
Currently, none of the sites have telemetry.

5) Site location and character –

Site #1 Great Bay (GB)
Location: Central area of Great Bay proper.
Coordinates are 43° 04' 20" N latitude and 70° 52' 10" W longitude.
Salinity range: 5-32 ppt (seasonally); 0-5 ppt from high to low tide.
Temperature range: -1º C to 24º C (seasonally); 0-3 (from high to low tide)
Depth: 6.5 meters at MLW
Tidal height: 2.7 meters
Bottom type: Mud and rock channel bottom
Tidal velocity: maximum 50 cm/sec
Watersheds: Squamscott, Lamprey and Winnicut Rivers plus smaller streams.
  High tide influence from Little Bay and associated rivers
Pollutant influence: clean reference site

Site #2 Squamscott River (SQ)
Location: Mid channel of the Squamscott River at the Boston and Maine Railroad Bridge, Stratham, NH.
Coordinates are 43° 02' 30" N latitude and 70° 55' 20" W longitude
Salinity range: 0-30 ppt (seasonally); 5-20 ppt from high to low tide.
Temperature range: -1º C to 27º C (seasonally); difference of 0-5º between high and low tide
Depth: 3.5 meters at MLW
Tidal height: 2.7 meters
Bottom type: Mud/oyster channel bottom
Tidal velocity: maximum 50 cm/sec
Watersheds: Exeter River, adjacent marshes
Pollutant influence: Urban stormwater, agriculture, two municipal wastewater treatment plants, residential septic systems

Site #3 Lamprey River (LR)
Location: West bank of the tidal portion of the Lamprey River, approximately 300 m downstream of the dam at Route 108 in Newmarket, NH.
Coordinates are 43° 04' 48" N latitude and 70° 56' 04" W longitude.
Salinity range: 0 - 27 ppt (seasonally); difference of up to 15 ppt between high and low tides.
Temperature range: -1º C to 27º C (seasonally); difference of up to 5º C between high and low tides.
Depth: 3.5 meters
Tidal height: 2.7 meters
Bottom type: Mud/rock
Tidal velocity: maximum 40 cm/sec
Watershed: Lamprey River
Pollutant influence: Urban stormwater, adjacent marina, upstream and downstream wastewater treatment plants, upstream agriculture

Site #4 Oyster River (OR)
Location: In the center channel of the tidal portion of the Oyster River, approximately 300 m downstream of the head of tide dam adjacent to Jackson’s Landing in Durham, NH.
Coordinates are 43° 08' 2.40 N latitude 70° 54' 39.60 W longitude
Salinity range: 0 –32 ppt (seasonally); difference of up to 15 ppt between high and low tides
Temperature range: -1º C to 27º C (seasonally); difference of up to 5º C between high and low tides
Depth: 0.3 meters at MLW, 3 meters at highest high tides
Tidal height: 2.7 meters (maximum)
Bottom type: Mud
Tidal velocity: maximum 40 cm/sec
Watershed: Oyster River
Pollutant influence: Urban stormwater, mooring field and crew dock, downstream wastewater treatment plant, upstream agriculture, residential on-site sewage disposal.

Primary and Secondary SWMP Stations
Latitude and longitude for secondary SWMP sites are approximate. Sondes are deployed at these sites April/May through December.

<table>
<thead>
<tr>
<th>Station Code</th>
<th>SWMP Status</th>
<th>Station Name</th>
<th>Location</th>
<th>Active Dates</th>
<th>Reason Decommissioned</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB</td>
<td>P</td>
<td>Great Bay</td>
<td>43° 04' 20&quot; N, 70° 52' 10&quot; W</td>
<td>Current</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>LR</td>
<td>P</td>
<td>Lamprey River</td>
<td>43° 04' 48&quot; N, 70° 56' 04&quot; W</td>
<td>Current</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>OR</td>
<td>P</td>
<td>Oyster River</td>
<td>43° 08' 02&quot; N, 70° 54' 40&quot; W</td>
<td>Current</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SQ</td>
<td>P</td>
<td>Squamscott River</td>
<td>43° 02' 30&quot; N, 70° 55' 20&quot; W</td>
<td>Current</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

6) Data collection period –

Great Bay data collection began March 31, 2015 at 10:00.
Squamscott River data collection began March 31, 2015 at 10:15.
Lamprey River data collection began April 6, 2016 at 9:30.
Oyster River data collection began April 6, 2016 at 12:00.

The instruments are removed from the water during the winter months due to non-navigable conditions caused by ice and the removal of channel markers. Icing is particularly severe in the rivers and is harmful to instruments, boats, and telemetry equipment.

Great Bay Reserve Deployment Dates 2017

Great Bay
Deploy date and time          Retrieval date and time
04/24/2017 14:00              05/24/2017 11:30
05/24/2017 14:00              06/19/2017 15:15
06/19/2017 15:45              07/19/2017 09:15
07/19/2017 15:30              08/14/2017 12:00
08/14/2017 12:30              09/12/2017 10:30
09/12/2017 14:15              10/10/2017 07:30
10/10/2017 15:00              11/06/2017 12:45
11/06/2017 14:45              12/11/2017 13:45

Lamprey River
Deploy date and time          Retrieval date and time
<table>
<thead>
<tr>
<th>Deploy date and time</th>
<th>Retrieval date and time</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/27/2017 13:15</td>
<td>05/25/2017 12:45</td>
</tr>
<tr>
<td>05/25/2017 13:15</td>
<td>06/19/2017 08:45</td>
</tr>
<tr>
<td>06/19/2017 09:15</td>
<td>07/12/2017 15:45</td>
</tr>
<tr>
<td>07/12/2017 16:00</td>
<td>08/07/2017 11:30</td>
</tr>
<tr>
<td>08/07/2017 13:30</td>
<td>09/04/2017 11:30</td>
</tr>
<tr>
<td>09/04/2017 12:00</td>
<td>10/02/2017 11:45</td>
</tr>
<tr>
<td>10/02/2017 12:00</td>
<td>10/30/2017 09:15</td>
</tr>
<tr>
<td>10/30/2017 09:45</td>
<td>11/21/2017 10:45</td>
</tr>
<tr>
<td>11/21/2017 11:00</td>
<td>12/11/2017 10:30</td>
</tr>
</tbody>
</table>

**7) Distribution** –

NOAA retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The NERRS retains the right to be fully credited for having collected and process the data. Following academic courtesy standards, the NERR site where the data were collected should be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined 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.

Requested citation format:

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 [www.nerrsdata.org](http://www.nerrsdata.org). Data are available in comma delimited format.

8) **Associated researchers and projects** (link to other products or programs) –

As part of the SWMP long-term monitoring program, GRB NERR also monitors 15-minute meteorological along with monthly grab samples and diel sampling for nutrient data which may be correlated with this water quality dataset. These data are available at [www.nerrsdata.org](http://www.nerrsdata.org).

Evaluation of remote data acquisition technologies and advanced water quality sensors. Dr. Richard Langan, CICEET director, and Jeremy LeClair, U.N.H. Funded by CICEET.

Advanced optical monitoring technologies. Ru Morrison. Funded by Center for Ocean Observing and Analysis, U.N.H.

Smelt spawning studies. Kathy Mills, NH Fish & Game, and David Berlinsky, U.N.H. Funded by NOAA Office of Protected Resources via a sub-contract from Maine Department of Marine Resources.

Comprehensive water quality, organic nitrogen and photosynthetically active radiation (PAR) monitoring studies – Dr. Jonathan Pennock, Jackson Estuarine Laboratory. Supported by the New Hampshire Estuaries Project

Eelgrass modeling studies - Dr. Fred Short, Jackson Estuarine Laboratory. Supported by the New Hampshire Estuaries Project and the New Hampshire Port Authority.

Bathymetric modeling and tidal elevation studies conducted by the NOAA – Dr. Larry Mayer, UNH Center for Coastal Ocean Mapping. Supported by the UNH-NOAA Joint Hydrographic Center.

Oyster reef mapping and restoration – Dr. Ray Grizzle, Jackson Estuarine Laboratory. Supported by NH Fish and Game, the NOAA-UNH Joint Hydrographic Center and the Center for Coastal and Ocean Mapping.

Microbial source tracking studies using ribotyping - Dr. Stephen Jones, Jackson Estuarine Laboratory. Supported by NH DES, NHEP and CICEET

Lobster migration and behavior research - Dr. Winsor Watson and Dr. Hunting Howell, UNH Zoology Department. Ten years of studies supported by USDA and Sea Grant that track lobster abundance, movement and behavior in relation to physical and biological variables in the Great Bay Estuary.
II. Physical Structure Descriptors

9) Sensor specifications –

Great Bay NERR deployed only EXO2 sondes this monitoring year. Most of the sondes and probes were manufactured in 2016 and 2017. The reserve is still using one EXO2 from 2013 and three from 2014 and several probes from similar time periods. Typically, the sondes are outfitted with the same set of sensors throughout the monitoring season. The reserve is now using chlorophyll and fDOM probes which are a part of the sensor configuration. The Oyster River sonde does not have chlorophyll or fDOM probes. Sondes are rotated between all the sites.

YSI EXO2 Sonde:

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Wiped probe; Thermistor
Model#: 599827
Range: -5 to 50º C
Accuracy: ±0.2º C
Resolution: 0.001º C

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: Wiped probe; 4-electrode cell with autoranging
Model#: 599827
Range: 0 to 100 mS/cm
Accuracy: ±1% of the reading or 0.002 mS/cm, whichever is greater
Resolution: 0.0001 to 0.01 mS/cm (range dependent)

Parameter: Salinity
Units: practical salinity units (psu)/parts per thousand (ppt). Values calculated using conductivity and temperature data
Model#: 599827
Sensor Type: Wiped probe
Range: 0 to 70 ppt
Accuracy: ±2% of the reading or 0.2 ppt, whichever is greater
Resolution: 0.01 psu

Parameter: Dissolved Oxygen % saturation
Units: percentage (%)
Sensor Type: Optical probe w/ mechanical cleaning
Model#: 599100-01
Range: 0 to 500% air saturation
Accuracy: 0-200% air saturation: +/- 1% of the reading or 1% air saturation, whichever is greater.
200-500% air saturation: +/- 5% or reading
Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)
Units: milligrams/Liter (mg/L)
Sensor Type: Optical probe w/ mechanical cleaning
Model#: 599100-01
Range: 0 to 50 mg/L
Accuracy: 0-20 mg/L: +/-0.1 mg/l or 1% of the reading, whichever is greater
20 to 50 mg/L: +/- 5% of the reading
Resolution: 0.01 mg/L.

Parameter: Non-vented Level - Shallow (Depth)
Units: feet or meters (ft or m)
Sensor Type: Stainless steel strain gauge
Range: 0 to 33 ft (10 m)
Accuracy: +/- 0.013 ft (0.04 m)
Resolution: 0.001 ft (0.001 m)

Parameter: pH
Units: pH units
Sensor Type: Glass combination electrode
Model#: 599702 (wiped)
Range: 0 to 14 units
Accuracy: +/- 0.01 units within +/- 10° of calibration temperature, +/- 0.02 units for entire temperature range
Resolution: 0.01 units

Parameter: Turbidity
Units: formazin nephelometric units (FNU)
Sensor Type: Optical, 90° scatter
Model#: 599101-01
Range: 0 to 4000 FNU
Accuracy: 0 to 999 FNU: 0.3 FNU or +/-2% of reading (whichever is greater).
1000 to 4000 FNU: +/-5% of reading
Resolution: 0 to 999 FNU: 0.01 FNU, 1000 to 4000 FNU: 0.1 FNU

Parameter: Chlorophyll/Total Algae (BGA-PC or PE)
Units: micrograms/Liter (µg/Liter)
Sensor Type: Optical probe with mechanical cleaning
Model#: 599102-01
Range: 0 to 400 µg/Liter
Accuracy: Dependent on methodology
Resolution: 0.1 µg/Liter chl-a, 0.1% FS

Parameter: fDOM (fluorescent dissolved organic matter)
Units: Quinine sulfate units (QSU)
Sensor Type: Optical probe with mechanical cleaning
Model#: 599104-01
Range: 0 to 300 parts per billion (ppb) Quinine Sulfate equivalent (QSE)
Accuracy: Dependent on methodology
Resolution: 0.01 ppb QSE
Detection Limit: 0.07 ppb QSE
**Depth Qualifier:**

The NERR System-Wide Monitoring Program utilizes YSI data sondes that can be equipped with either vented or non-vented depth/level sensors. 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 1.02 cm for every 1 millibar change in atmospheric pressure and is eliminated for vented 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 can be corrected.

In 2010, the CDMO began automatically correcting depth/level data for changes in barometric pressure as measured by the Reserve’s associated meteorological station during data ingestion. These corrected depth/level data are reported as cDepth and cLevel and are assigned QAQC flags and codes based on QAQC protocols. Please see sections 11 and 12 for QAQC flag and code definitions.

**NOTE:** Older depth data cannot be corrected without verifying that the depth offset was in place and whether a vented or non-vented depth sensor was in use. No SWMP data prior to 2006 can be corrected using this method. The following equation is used for corrected depth/level data provided by the CDMO beginning in 2010:

\[(\text{1013-BP}) \times 0.0102 + \text{Depth/Level} = \text{cDepth/cLevel}.\]

**Salinity Units Qualifier:**

In 2013, EXO sondes were approved for SWMP use and began to be utilized by Reserves. While the 6600 series sondes report salinity in parts per thousand (ppt) units, the EXO sondes report practical salinity units (psu). These units are essentially the same and for SWMP purposes are understood to be equivalent, however psu is considered the more appropriate designation. Moving forward the NERR System will assign psu salinity units for all data regardless of sonde type.

**Turbidity Qualifier:**

In 2013, EXO sondes were approved for SWMP use and began to be utilized by Reserves. While the 6600 series sondes report turbidity in nephelometric turbidity units (NTU), the EXO sondes use formazin nephelometric units (FNU). These units are essentially the same but indicate a difference in sensor methodology, for SWMP purposes they will be considered equivalent. Moving forward, the NERR System will use FNU/NTU as the designated units for all turbidity data regardless of sonde type. If turbidity units and sensor methodology are of concern, please see the Sensor Specifications portion of the metadata.
Chlorophyll Fluorescence Disclaimer:

YSI chlorophyll sensors (6025 or 599102-01) are designed to serve as a proxy for chlorophyll concentrations in the field for monitoring applications and complement traditional lab extraction methods; therefore, there are accuracy limitations associated with the data that are detailed in the YSI manual including interference from other fluorescent species, differences in calibration method, and effects of cell structure, particle size, organism type, temperature, and light on sensor measurements.

10) Coded variable definitions –

<table>
<thead>
<tr>
<th>Sampling station</th>
<th>Sampling site code</th>
<th>Station code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Bay</td>
<td>GB</td>
<td>grbgbwq</td>
</tr>
<tr>
<td>Lamprey River</td>
<td>LR</td>
<td>grblrwq</td>
</tr>
<tr>
<td>Oyster River</td>
<td>OR</td>
<td>grborwq</td>
</tr>
<tr>
<td>Squamscott River</td>
<td>SQ</td>
<td>grbsqwq</td>
</tr>
</tbody>
</table>

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 Open - reserved for later flag
3 Calculated data: non-vented depth/level sensor correction for changes in barometric pressure
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, but some comment codes (marked with an * below) can be applied to the entire record in the F_Record column.

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

Corrected Depth/Level Data Codes
GCC  Calculated with data that were corrected during QA/QC
GCM  Calculated value could not be determined due to missing data
GCR  Calculated value could not be determined due to rejected data
GCS  Calculated value suspect due to questionable data
GCU  Calculated value could not be determined due to unavailable data

Sensor Errors
SBO  Blocked optic
SCF  Conductivity sensor failure
SCS  Chlorophyll spike
SDF  Depth port frozen
SDG  Suspect due to sensor diagnostics
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
SQR  Data rejected due to QAQC checks

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
CWE* Significant weather event

13) Post deployment information

<table>
<thead>
<tr>
<th>Great Bay</th>
<th>Deployment date</th>
<th>SpCond</th>
<th>pH 7</th>
<th>pH 10</th>
<th>DO%</th>
<th>Turb 0</th>
<th>Turb 124</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>04/24/2017</td>
<td>49.67</td>
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<td>10.08</td>
<td>101.2</td>
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<td>05/24/2017</td>
<td>50.32</td>
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<td>-0.24</td>
<td>124</td>
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<td></td>
<td>08/14/2017</td>
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<td>7.05</td>
<td>10.04</td>
<td>100.8</td>
<td>0.30</td>
<td>Not collected</td>
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<td>09/12/2017</td>
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<td>7.05</td>
<td>9.97</td>
<td>99.7</td>
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<tr>
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<td>10/10/2017</td>
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<td>0.4</td>
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<tr>
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<td>11/06/2017</td>
<td>49.91</td>
<td>7.08</td>
<td>10.08</td>
<td>100.2</td>
<td>0.33</td>
<td>124.63</td>
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</table>

<table>
<thead>
<tr>
<th>Lamprey River</th>
<th>Deployment date</th>
<th>SpCond</th>
<th>pH 7</th>
<th>pH 10</th>
<th>DO%</th>
<th>Turb 0</th>
<th>Turb 124</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>04/27/2017</td>
<td>50.6</td>
<td>7.05</td>
<td>10.10</td>
<td>100.7</td>
<td>-0.08</td>
<td>126.1</td>
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<td>50.6</td>
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<td>49.81</td>
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<table>
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<th>pH 7</th>
<th>pH 10</th>
<th>DO%</th>
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<th>Turb 124</th>
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<tr>
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<td>7.05</td>
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<td>9.98</td>
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<table>
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<th>SpCond</th>
<th>pH 7</th>
<th>pH 10</th>
<th>DO%</th>
<th>Turb 0</th>
<th>Turb 124</th>
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<tbody>
<tr>
<td></td>
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<td>7.19</td>
<td>10.09</td>
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<td>-0.09</td>
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</tr>
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<td>7.16</td>
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<td>101.5</td>
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<td>117.83</td>
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<tr>
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<td>07/10/2017</td>
<td>49.94</td>
<td>7.08</td>
<td>10.11</td>
<td>99.9</td>
<td>0.01</td>
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<td>49.97</td>
<td>7.02</td>
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<td>101.9</td>
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<td>10.10</td>
<td>100.6</td>
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<td>124.70</td>
</tr>
</tbody>
</table>

14) Other remarks/notes –
Turbidity anomalies – Biological
This type of anomaly includes turbidity readings that are outside of the normal range or greatly elevated above background baseline and unrelated to increased sediment suspension or decreased water column clarity. We believe this data is real and not a sensor malfunction, although not reflective of actual water column turbidity. These extreme values are likely due to biological factors (e.g., fish, crabs, other marine organisms). Our general guideline for flagging single-point spikes which are ≥200 FNU and more than 10 times greater than the surrounding values is to flag the point suspect <1> or to reject <-3> and label it with a turbidity spike [STS] code.

Turbidity anomalies - Suspension
This type of anomaly includes turbidity readings that are either outside the normal range or greatly elevated above background baseline and related to flow or weather-induced suspension. We believe this data is real and not a sensor malfunction, although not reflective of actual water column turbidity. These values are likely due to floating organic matter (e.g., eelgrass, leaves, detritus) suspended in the water column. Our general guideline for flagging this data is to closely analyze readings that are over 200 FNU and more than 5 times the magnitude of the surrounding values and linked to wind or high/changing water currents. These readings may be declared suspect <1> or rejected <-3> and labeled with a turbidity spike [STS] code.

Chlorophyll fluorescence anomalies
Biofouling, floating detritus, and/or a disturbed bottom can cause chlorophyll fluorescence optical sensors to record values which are outside the normal environmental range. A negative chlorophyll data point is flagged <-3> [SNV] according to CDMO flagging rules. Data points over five times the magnitude of surrounding values may be flagged as suspect <1> and labeled with a chlorophyll spike [SCS] code. Additionally, sustained values over 100 µg/L are considered suspect or rejected unless unusual conditions at the site can be verified. Spikes that exceed 400 µg/L are rejected <-3> and labeled with the [SCS] code.

All sites

Significant periods of rain between April 25 and June 6 created noticeable patterns at many of the sites. Rainfall exceeding 1-2 inches over a couple days typically causes the specific conductivity/salinity in the riverine sites to drop to zero.

May 14 – June 6 - Approximately 4-5 inches of rain fell. This was most visible in Great Bay (DO% and mg/L) and Lamprey River (pH, SpCond, salinity, turbidity, DO% and mg/L), Oyster River (SpCond, salinity)

Most stations, in particular Lamprey River, show unusual patterns in many parameters (pH, SpCond, salinity, DO % saturation and mg/L) October 25 through November 5. Three to four inches of rain fell during this period. In addition, there were 35 mph winds, with gusts up to 56 mph.

Great Bay

08/10/2017 11:30 – 08/14/2017 12:00 (end of deployment)
Wiper fell off and sonde was heavily fouled with algae and bryozoans when retrieved. Turbidity, chlorophyll, DO% saturation and mg/L data were labeled suspect or rejected. DO% post calibrated out of range (87.8% post/100.4% true).

08/26/2017 05:00 – 08/26/2017 10:30 (Turbidity <1> STS, CSM)
Our field logs note that there were crabs and fish in the sonde guard when it was retrieved 09/12/2017. We think that this significant turbidity spike may have been caused by the movement of the animals.

09/04/2017 19:15 – 09/05/2017 01:45
(Specific conductivity/Salinity <1> SWM, CSM, Turbidity <-3> SWM, CSM)
Our field logs note that there were crabs and fish in the sonde guard when it was retrieved 09/12/2017. We think that these significant turbidity spikes and perhaps even the malfunctioning wiper may have been caused by the animals. The incorrectly parked wiper led to unusual variability in the specific conductance and salinity readings.

09/03/2017 07:45 – 09/04/2017 01:00 [SCS]
Chlorophyll readings elevated. Data rejected. Rainfall during this period 0.9 inches, 20 – 30 mph winds. Sediment and organic matter from the bottom of the bay were likely suspended in the water column.

Throughout the dataset there are individual and time series data of high chlorophyll readings (~15-30 µg/L) that we believe are not representative of true water column chlorophyll biomass but rather of suspended organic matter or sediment from the bay bottom. There is often a corresponding rise in turbidity which reinforces our hypothesis. There are no signs of sensor malfunctions, so it was decided not to flag this data as suspect or rejected. This is the first year we have collected chlorophyll data on a large-scale and anticipate that we will have a better understanding of trends and variability after another collection season.

**Squamscott**

04/24/2017 13:45 – 05/16/2017 11:00 (GSM, CWD)
During a sonde swap on 05/16/2017 11:15, we discovered the pipe had slid down to the bottom of the piling. The logger was hanging above the bolt in the bottom of the tube. The pipe was reattached 5/16/2017 13:00 at the correct depth. This leads us to believe that for the first deployment 04/24/2017 13:45 through 05/16/2017 11:00, the sonde pipe may have been attached to the piling at a lower point than normal which caused the increased depth readings.

05/28/2017 14:45 – 06/09/2017 10:30 (GSM, CWD, CVT)
On 05/28/2017 14:45 the depth of the logger increased 0.5 meters. We think the sonde was pulled up by a non-staff member and when returned to the water was not put in the pipe. It hung outside the pipe collecting data until 06/09/2017 10:30 when it was pulled up for maintenance. When returned to the sonde tube and its correct depth 06/09/2017 10:45, it was higher in the water column, thus the decreased depth measurements. For this period, the data was not collected per SWMP standard operating procedures.

Most of the data collected when the logger was at the wrong depth, 04/24/2017 13:45 - 05/16/2017 11:00 and 05/28/2017 14:45 - 06/9/2017 10:30 doesn’t seem that unusual. There was less variability in dissolved oxygen (%) and mg/L and temperature because the sonde was closer to the bottom thus less subject to tidal fluctuations. It also appears that the deeper location may have contributed to slightly depressed temperatures.

Sonde batteries ran out of voltage at the Squamscott River station 10/08/2017. There was no data collected from 10/08/2017 24:00 through 10/23/2017 09:00.

**Deployment period: 11/20/2017 through 12/07/2017** – This deployment has many turbidity and chlorophyll spikes. There was only occasional rain and moderate winds throughout these weeks. Sonde when retrieved was clean although logs indicate a lot of loose algae and eelgrass present in and around the sonde. In addition, many of the spikes and elevated readings occurred when the tide was approaching low or starting to flood. The change in water direction may have temporarily stirred up algae and eelgrass from the bottom causing increased turbidity and chlorophyll. This site is surrounded by a very shallow area and as the tide starts to ebb, organic matter coming off the mudflat passes by the sonde. Much of this data was labeled suspect or rejected.

**Oyster River**

08/25/2017 05:30 – 08/31/2017 00:00 (CSM)
There are six instances in this period where on an ebbing tide, dissolved oxygen measured <4 mg/L. This pattern shows a rapid decrease in dissolved oxygen and then a dramatic 15-minute point rebound, often a 20-40% jump. This is a shallow site and we believe that as the warmer, super-saturated water slowly recedes from the mudflats, it
may temporarily stagnate around the sensors and thus the dissolved oxygen decreases. Once the tide recedes further, the river water is contained in the deeper channel where the sonde is located and as the current begins to increase, the low dissolved oxygen water is quickly washed away, and values jump back to normal. This tidal pattern is consistent throughout most of this deployment although dissolved oxygen data does not always drop to such low levels.

08/26/2017 05:00 – 08/26/2017 10:30 (Turbidity <1> STS, CSM)
Our field logs note that there were crabs and fish in the sonde guard when it was retrieved 09/12/2017. We think that this significant turbidity spike may have been caused by the movement of the animals.

09/04/2017 19:15 – 09/05/2017 01:45 (Specific conductivity, Salinity, Turbidity <1> SWM, CSM)
Our field logs note that there were crabs and fish in the sonde guard when it was retrieved 09/12/2017. We think that these significant turbidity spikes and perhaps even the malfunctioning wiper may have been caused by the animals. The incorrectly parked wiper led to unusual variability in the specific conductance and salinity readings.

09/20/2017 03:00 – 09/25/2017 19:15 (CSM)
There are nine instances in this period where on an ebbing tide, dissolved oxygen measured <4 mg/L. This pattern shows a rapid decrease in dissolved oxygen and then a dramatic 15-minute point rebound, often a 20-40% jump. This is a shallow site and we believe that as the warmer, super-saturated water slowly recedes from the mudflats, it may temporarily stagnate around the sensors and thus the dissolved oxygen decreases. Once the tide recedes further, the river water is contained in the deeper channel where the sonde is located and as the current begins to increase, the low dissolved oxygen water is quickly washed away, and values jump back to normal. This tidal pattern is consistent throughout most of this deployment although dissolved oxygen data does not always drop to such low levels.

10/2/2017 12:45 - 10/05/2017 23:30 [SWM]
There were numerous wiper malfunctions in this period. Most did not affect the data. The specific conductivity probe was most affected by the incorrectly parked wiper. This caused a dramatic decrease in a single 15-minute reading and then a return to normal values.

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.

Great Bay Reserve also had 9 non-SWMP sites in 2017. Please contact the reserve for data, calibration records, and site descriptions. See link below for more information on all additional monitoring sites.

https://scholars.unh.edu/cgi/viewcontent.cgi?article=1036&context=prep

UPR – Upper Piscataqua River
LPR – Lower Piscataqua River
SF – Salmon Falls
LB/SFDP – Little Bay (mouth of the Oyster River)
GW/GB81 – Great Bay West
CML – Coastal Marine Lab
HH – Hampton Harbor
Attachment 3

Calibration and Field Logs for Stations
GRBCML, GRBGW, GRBHH, GRBLB, GRBLP, GRBSF, and GRBUP
## NERRS SWMP Water Quality Calibration Log

### Datasonde Maintenance

**Date of Calibration:** 6/1/17  
**Technician(s):** Lara TG  
- Wipers replaced  
- Batteries replaced  
- Format flash disk  
- Wipers park 180° from optics  
- DO membrane replaced  
- Membrane integrity test

### Datasonde and Probe Identification Numbers

- **Datasonde:** 13C100183, 14E100909  
- **pH:** Bad  
- **Turbidity:** 16M101849  

**DO/DOO Conductivity:** 16M101432, 16M100640

**Comments:** From 16L103556, ch. 16M100741 (PC)

---

### Pre/Post Deployment Calibration: (Turn on pH mV and DO Chrg in Report menu)

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
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<tbody>
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<td>%DO @ 100% sat</td>
<td>1%</td>
<td>1%</td>
<td></td>
<td>1%</td>
<td>1%</td>
<td>RP DO chrg (range 25-75)</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>1.5 mm Hg</td>
<td>1.5 mm Hg</td>
<td></td>
<td></td>
<td></td>
<td>RP DO gain (0.8-1.7)</td>
</tr>
<tr>
<td>Original %DO &amp; 100% sat</td>
<td>99.6%</td>
<td>99.6%</td>
<td>100.5%</td>
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<td></td>
<td>Optical DO gain 1.05</td>
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<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>757 mm Hg</td>
<td>757 mm Hg</td>
<td>100.5%</td>
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<td></td>
<td>DO warm up test (8-10%)</td>
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<td>0.038</td>
<td>0.23</td>
<td>-10.332 m</td>
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<td>Cell const (4.6-5.45)</td>
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<td>50 mS cm</td>
<td>50 mS cm</td>
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<td>pH 7 (0 +/- 50 mV)</td>
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<td>pH 10 (180 +/- 50 mV)</td>
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<td>pH 10</td>
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<td>pH 4 (180 +/- 50 mV)</td>
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<td></td>
<td></td>
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<td></td>
<td>DO chrg (range 25-75)</td>
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<td>Turb</td>
<td>124 NTU</td>
<td>124 NTU</td>
<td>123 NTU</td>
<td></td>
<td></td>
<td>DO warm up test (8-10%)</td>
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<tr>
<td>Battery voltage</td>
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<td>5.0 V</td>
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<td></td>
<td></td>
<td>pH 7 (300 +/- 50 mV)</td>
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<tr>
<td></td>
<td>1 (remove unit power)</td>
<td>1 (remove unit power)</td>
<td></td>
<td></td>
<td></td>
<td>pH 10 (180 +/- 50 mV)</td>
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</table>

### Programming

**Interval:**  
**Duration:**  
**Free memory:**  

**Parameters recorded:**
- Date, Time, Temp °C, SpCon, SaO2%, DO mg/L, Depth, pH, Turb, Batt

### Comments - Pre:
- pH probe bad (not calibrated)
- DO #5 see 3/2000 offset = -0.041

### Comments - Post:
- Sample out of water 6+ hours of each new cycle? (check DO)  
- *f)or full calibrated (not BGA)
NERRS SWMP Water Quality Field Log

Reserve: Great Bay  Station Name: G581  File Name: 

Deployment Information

Date Deployed: 6/6/17  Time: 8:30  White Towel: yes

Technician(s):  ZK  Sonde ID #: 123

Field Data:

<table>
<thead>
<tr>
<th>Water Temp</th>
<th>Sp Cond</th>
<th>Salinity</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 °C</td>
<td>27.97 mS/cm</td>
<td>19.3 ppt</td>
</tr>
</tbody>
</table>

DO Percent: 9.6 %

DO Conc.: 8.8 mg/L

Other: 

Comments: Deploy sonde slightly deeper than GPS mark

Grab sample

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 
Comments: 

Retrieval Information

Date Retrieved: 7/3/17  Time: 10:18  White Towel: yes

Technician(s): ZK  Sonde ID #: 123

Field Data:

<table>
<thead>
<tr>
<th>Water Temp</th>
<th>Sp Cond</th>
<th>Salinity</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.8 °C</td>
<td>25.55 mS/cm</td>
<td>25.4 ppt</td>
</tr>
</tbody>
</table>

DO Percent: 11.21 %

DO Conc.: 8.76 mg/L

Other: 

 Fouling Presence: Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydrozoids, S=sponges, T=tunicates, O=other, N=none

Amount: H=heavy, M=moderate, L=light (e.g. A,H,I,J)

Sonde/Cond  Temp/Cond  pH

Comments: overlap w/ 910 @ 10:55 crab in top of sand tube, grab top sample

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 
Comments: 
**Data and Probe Identification Numbers**

<table>
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<tr>
<th>Datasonde:</th>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>pH</th>
<th>Serial Number</th>
<th>Model Number</th>
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<tr>
<td>Vented:</td>
<td>910</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Nickname:</td>
<td></td>
<td>Model Number</td>
<td></td>
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<td></td>
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</tbody>
</table>

**Datasonde Maintenance**

Date of Calibration: 6/21/19

Technician(s): Lorn

Wipers Replaced: TURB, ODO, CHL

Batteries Replaced: DO/ODO membrane replaced

Format Flash Disk: Membrane integrity tested

Wiper parks 180° from optics

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Check Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>20.23</td>
<td>20.23</td>
<td>0.00</td>
<td>12/23/12</td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td>1.7%</td>
<td>1.7%</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Kapid Pulse)</td>
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<td>106.5</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
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<td>100.5%</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>BP @ Cal (Optical)</td>
<td>106</td>
<td>106.5</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>BrO3 @ (Depth Calib)</td>
<td>10.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station Offset</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>160 g/L</td>
<td>160 g/L</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>10.10</td>
<td>10.10</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>10.10</td>
<td>10.10</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>10.10</td>
<td>10.10</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Rhodamine W/Temp</td>
<td>10.44</td>
<td>10.44</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>0.00 g/L</td>
<td>0.00 g/L</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Chl (118)</td>
<td>165.8 g/L</td>
<td>165.8 g/L</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>5.4 V</td>
<td>(remove ext. power 450,000)</td>
<td>5.4 V</td>
<td>(remove ext. power)</td>
</tr>
</tbody>
</table>

**Pre-Deployment**

- RP DO chg (range 25-75)
- Optical DO cal (5000, 10-4, EXO: 0-17, 25)
- RP DO warm up test (gal)
- pH 7 (7-±5 mV)
- pH 10 (±10-±5 mV)
- Calculated pH slope

**Post-Deployment**

- RP DO chg (range 25-75)
- RP DO warm up test (gal)
- pH 7 (7-±5 mV)
- pH 10 (±10-±5 mV)
- Calculated pH slope

**Programming**

- Interval: ____________
- Start date: ____________
- Surt time (STD): ____________
- Battery life: ____________
- Free memory (status): ____________

**Comments-Pre:**

- Measures = 0.061

**Comments-Post:**

-
NERRS SWMP Water Quality Field Log

Reserve: Great Bay
Station Name: 5-581
FileName: 

Deployment Information

Date Deployed: 7/3/17
Time: 10:12
White Towel: Yes

Technician(s): ZK
Sonde ID #: 910

Field Data:

Water Temp
℃
Spot Cond
mS cm
Salinity
psu

DO Percent
%
DO Conc.
mg L⁻¹

Other

Comments: overlap w/ 183 @ 10:15, grab triplicate sample

Infield Maintenance

(note any changes to site during deployment, send tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 

Comments: 

Retrieval Information

Date Retrieved: 7/3/17
Time: 13:31
White Towel: Yes

Technician(s): ZK
Sonde ID #: 910

Field Data:

Water Temp
℃
Spot Cond
mS cm
Salinity
psu

DO Percent
%
DO Conc.
mg L⁻¹

Other

Fouling Presence:
Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light
t (e.g. A, H, B, L)

Sonde Guard

Temp/Cond

pH

External Screen

Dissolved Oxygen

Turbidity

Comments: recover 910 for calibration, deploy 6/7/16, no sample or handheld

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 

Comments: 
**NERRS SWMP Water Quality Calibration Log**

**Station Name:** 2B57

**CDMO Raw File Name:** SB5107d317

### Datasonde and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Datasonde:</th>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>pH:</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vented:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickname:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Datasonde Maintenance

- **Date of Calibration:** 1/1/2017
- **Technician(s):** Lard
- **Wipers Replaced:** TURB
- **Batteries Replaced:** DO/ODO membrane replaced
- **Format Flash Disk:** Membrane integrity test

### Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Senor Diagonistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>23.15 °C</td>
<td></td>
<td></td>
<td>Check Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td>98%</td>
<td>98.5%</td>
<td>0.5%</td>
<td>RPDG chgr (range 25-75)</td>
<td>RPDG gain (0.5-4)</td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>70 mV</td>
<td>70 mV</td>
<td>0 mV</td>
<td>Optical DO gal (5000 × 0.1-4, EXO: 0-47-125)</td>
<td>0 ppm</td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>98%</td>
<td>98%</td>
<td>0%</td>
<td>RPDG warm up test gal (50)</td>
<td>Calculated pH 7.3 (pH 5-8.25)</td>
<td></td>
</tr>
<tr>
<td>BP @ Cal (Optical)</td>
<td>70 mV</td>
<td>70 mV</td>
<td>0 mV</td>
<td>Cell const (5000 × 0.1-4, EXO: 0-47-125)</td>
<td>ph 7 (pH 7.4-8.0 mV)</td>
<td></td>
</tr>
<tr>
<td>Biro Pres. (Depth Calib)</td>
<td>100 psi</td>
<td>100 psi</td>
<td>0 psi</td>
<td>RPDG warm up test gal (50)</td>
<td>pH 10 (&lt;100 ± 50 mV)</td>
<td></td>
</tr>
</tbody>
</table>

### Battery Voltage

- **Chl (0):** 0 mg/L
- **Chl (118):** 165.8 mg/L

### Programming

- **Interval:** mm
- **Duration:** days
- **Free memory:**
- **Parameters recorded:** Temp, DO % sat, pH
- **Comments-Pre:** 0.00 %
- **Comments-Post:**

### Programming Configuration

- Sp Cond: 10
- DO Conc: 0.01 mg/L
- pH: 7.0
- Turbidity: 0.01
- Chlorophyll: 0.01
NERRS SWMP Water Quality Field Log

Reserve: Great Bay  Station Name:  File Name: 

Deployment Information

Date Deployed: 1/19/17  mm.dd-yyyy  Time: 15:31  hh:mm (24hr)  White Towel: yes

Technician(s): ZK  Sonde ID #: 0760

Field Data:

Water Temp  °C  DO Percent  
Sp Cond  mS/cm  DO Conc.  mg/L  
Salinity  ppt  Other  

Comments deploy 0760, no sample or handheld

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date:  Duration:  Maintenance: 

Comments:

Retrieval Information

Date Retrieved: 8/13/17  mm.dd-yyyy  Time: 12:43  hh:mm (24hr)  White Towel: yes

Technician(s): ZK  Sonde ID #: 0760

Field Data:

Water Temp  °C  DO Percent  
Sp Cond  mS/cm  DO Conc.  mg/L  
Salinity  ppt  Other  

Comments deploy 0760, handheld

Fouling Presence: Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponge, T=tunicates, O=other, N=none  Amount: H=heavy, M=moderate, L=light  (e.g. A.H, B.L)

Sonde Guard Temp Cond  pH

External Screen  Dissolved Oxygen  Turbidity

Comments: recover 0760, deploy 910, grab sample, no handheld

overloop @ 10:45

File Retrieval

Sonde Filename:  Print Graph:  Probe Malfunction:  

Comments
NERRS SWMP Water Quality Calibration Log

Datasonde: 10
Serial Number: 76704030
Model Number: 76704030

Turbidity:
Conductivity:
Chlorophyll:
EXD Wiper:

Date of Calibration: 9/21/17

Wipers Replaced: TURB ODO CHL
Batteries Replaced: 
Format Flash Disk: 

Comments: A lot of mud at bottom of grab, needs to be cleaned

Pre/Post Deployment Calibration

Pre-Deployment

Temp
RP % DO @ 100% sat
RP @ cal (Rapid Pulse)
Optical NDO @ 100% sat
DP @ Cal (Optical)
Boro. Pres. (Depth Calib)
Depth
Station Offset
Level
SpCond
ph 7
ph 10
ph 4
Turb
Rhodamine WT Temp
Chl (0)
Chl (11B)
Battery voltage

Post-Deployment

Check Data
17/28

Sensa Diagnostics

RP DO chg (range 25-75)
RP DO gain (2.1-4)
Optical DO gain (4.4-2.4, EXO: 4.4-2.45)
RP DO warm up test (bool)
Cell const (40-35)
EXP (0.55-0.55)
WIFP EXP (0.45-0.15)
pH 10 (-3.5 to 5.5 mV)
pH 10 (-3.5 to 5.5 mV)
RF DO chg (range 25-75)
RP DO warm up test (hfs)
pH 7 (-3 to 10 mV)
pH 4 (-1 to +1 mV)

Calculating pH slope

Interval:
Start date:
Duration:
Free memory:
Parameters recorded:
Temp:
DO % sat:
pH:

Comments-Pre: DO 1.5% high?

Comments-Post: Foulig at end of probe?
NERRS SWMP Water Quality Field Log

Reserve: Great Bay Station Name: G881 File Name: 

Deployment Information

Date Deployed: 8/3/17 mm/dd/yyyy Time: 14:42 h:mm (24hr) White Towel: 

Technician(s): ZK Sonde ID #: 910

Field Data:

Water Temp DO Percent

Sp Cond DO Conc. 

Salinity Other 

Comments: recover 9/10, deploy 9/10, overlap @ 12:45, grab sample in hand. line could use float to prevent fouling.

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 

Duration: 

Maintenance:

Comments:

Retrieval Information

Date Retrieved: 8/24/17 mm/dd/yyyy Time: 14:20 h:mm (24hr) White Towel: 

Technician(s): ZK, LM Sonde ID #: 910

Field Data:

Water Temp DO Percent:

Sp Cond DO Conc. 

Salinity Other 

Fouling Presence: Type: A=algae, B=biotubes, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none

Amount: H=heavy, M=moderate, L=light

(s.e.g. A, H, B, L)

Sonde Guard 

Temp Cond 

pH 

External Screen 

Dissolved Oxygen 

Turbidity 

Comments: recover 9/10, deploy 9/10, grab sample, overlap at 14:30

File Retrieval

Sonde Filename: 

Print Graph: 

Probe Malfunction: 

Comments
**NERRS SWMP Water Quality Calibration Log**

**Station Name:** G-184

**Datasonde and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Sondes Code</th>
<th>Serial Number</th>
<th>pH:</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3174</td>
<td></td>
<td></td>
<td>176107449</td>
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</table>

**Datasonde Maintenance**

<table>
<thead>
<tr>
<th>Date of Calibration</th>
<th>Technician(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/25/17</td>
<td></td>
</tr>
</tbody>
</table>

- Wipers Replaced: TURB
- Batteries Replaced: ODO
- Formal Flash Disk: CHL
- Wiper parks 180° from optics: TURB
- DO/DOO membrane replaced: ODO
- Membrane integrity test: CHL

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>31.9°C</td>
<td>32.0°C</td>
<td>0.1°C</td>
<td></td>
</tr>
<tr>
<td>TURB</td>
<td>100% sat</td>
<td>100%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>ODO</td>
<td>7.4 mHg</td>
<td>7.4 mHg</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>CHL</td>
<td>0.72 m</td>
<td>0.72 m</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.0 offset</td>
<td>0.0 offset</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>40.08 µS/cm</td>
<td>40.08 µS/cm</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>7.28</td>
<td>7.28</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>10.10</td>
<td>10.10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>10.10</td>
<td>10.10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.36</td>
<td>0.36</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Turb (INTU)</td>
<td>25.33 µS/cm</td>
<td>25.33 µS/cm</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Radius (WT Temp)</td>
<td>22°C</td>
<td>22°C</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>0.0 µg/L</td>
<td>0.0 µg/L</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Chl (1118)</td>
<td>5.8 µg/L</td>
<td>5.8 µg/L</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>5.0 V</td>
<td>5.0 V</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Programming**

- Interval: 0 min
- Duration: 0 min
- Parameters recorded: Sp Cond, DO, pH, Depth/Level, Turbidity
- Start date: 9/25/17
- Set clock (status): P or H
- Start time: 4:48 mm:ss
- Battery life: 3 hrs
- Free memory (status): 0.3 M

**Comments:**

- Pre: Calculated pH slope (-17.9, 7.1)
- Post: Calculated pH slope (-17.9, 7.1)

---

**Additional Notes:**

- Calibration issue with DO probe on 9/25/17.
- DO probe has been recalibrated.
- Post-calibration checks show improved accuracy.

---

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
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<td></td>
</tr>
<tr>
<td>TURB</td>
<td>100% sat</td>
<td>100%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>ODO</td>
<td>7.4 mHg</td>
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<td>0</td>
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<td>CHL</td>
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<td>0.72 m</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.0 offset</td>
<td>0.0 offset</td>
<td>0</td>
<td></td>
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<td>SpCond</td>
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<tr>
<td>Radius (WT Temp)</td>
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<td>0</td>
<td></td>
</tr>
<tr>
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<td>0</td>
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<td>0</td>
<td></td>
</tr>
<tr>
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<td>5.0 V</td>
<td>5.0 V</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Programming**

- Interval: 0 min
- Duration: 0 min
- Parameters recorded: Sp Cond, DO, pH, Depth/Level, Turbidity
- Start date: 9/25/17
- Set clock (status): P or H
- Start time: 4:48 mm:ss
- Battery life: 3 hrs
- Free memory (status): 0.3 M

**Comments:**

- Calibration issue with DO probe on 9/25/17.
- DO probe has been recalibrated.
- Post-calibration checks show improved accuracy.

---

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
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</tr>
<tr>
<td>Battery voltage</td>
<td>5.0 V</td>
<td>5.0 V</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Programming**

- Interval: 0 min
- Duration: 0 min
- Parameters recorded: Sp Cond, DO, pH, Depth/Level, Turbidity
- Start date: 9/25/17
- Set clock (status): P or H
- Start time: 4:48 mm:ss
- Battery life: 3 hrs
- Free memory (status): 0.3 M

**Comments:**

- Calibration issue with DO probe on 9/25/17.
- DO probe has been recalibrated.
- Post-calibration checks show improved accuracy.
NERRS SWMP Water Quality Field Log

Reservoir: Great Bay
Station Name: G81
FileName: 

Deployment Information

Date Deployed: 8/29/17
Time: 17:20
White Towel: Yes

Technician(s): ZK, LM
Sonde ID #: 3174

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>7.0°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>39.44</td>
</tr>
<tr>
<td>Salinity</td>
<td>25.6</td>
</tr>
</tbody>
</table>

DO Percent: 18.3 mg/L
DO Conc.: 2.87 mg/L
Other: 

Comments: recover 91D, deploy 3174, grab sample, overlap at 19:30

Infield Maintenance

(mote any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 
Comments: 

Retrieval Information

Date Retrieved: 9/25/17
Time: 8:33
White Towel: Yes

Technician(s): ZK
Sonde ID #: 3174

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>19.4°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>40.72</td>
</tr>
<tr>
<td>Salinity</td>
<td>24.5</td>
</tr>
</tbody>
</table>

DO Percent: 9.4 mg/L
DO Conc.: 7.77 mg/L
Other: 

Fouling Presence:

Type: Algae, Barnacles, Crustaceans, Eggs, Fish, Hydroids, Sponges, Tunicates, Other, None
Amount: Very Heavy, Moderate, Light
(e.g. A III, B I)

Sonde Guard Temp Con: 
External Screen Dissolved Oxygen Turbidity

Comments: remove 3174, last reading at 8:30, grab sample some mud in tip of anchor tube/enclosure

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 
Comments: 
NERRS SWMP Water Quality Calibration Log

Station Name: [Redacted]  CBMO Raw File Name: [Redacted]

Datasonde and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Serial Number</th>
<th>pH</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonde Code</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vented:</td>
<td>Model Number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickname:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of Calibration: [Redacted]  Technician(s): [Redacted]

Wipers Replaced: [Redacted]  ODO  CHL

Batteries Replaced: [Redacted]  DO/ODO membrane replaced: [Redacted]

Format Flash Disk: [Redacted]  Membrane integrity test: [Redacted]

Comments: [Redacted]

Pre/Post Deployment Calibration

**Pre-Deployment**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>20.59</td>
<td>23.59</td>
<td></td>
</tr>
<tr>
<td>TP% DO @ 100% sat</td>
<td>5%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Bp @ cal (Rapid Pulse)</td>
<td>100.5</td>
<td>100.60</td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>100.5</td>
<td>100.6</td>
<td></td>
</tr>
<tr>
<td>Bp @ Cal (Optical)</td>
<td>74.7%</td>
<td>76.8%</td>
<td></td>
</tr>
<tr>
<td>Baro. Press (Depth Calib)</td>
<td>74.8%</td>
<td>76.8%</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.00 ft</td>
<td>0.00 ft</td>
<td>0.10 ft</td>
</tr>
<tr>
<td>Station Offset</td>
<td>4.636 m</td>
<td>4.636 m</td>
<td>0.124 m</td>
</tr>
<tr>
<td>Level</td>
<td>0.10 ft</td>
<td>0.10 ft</td>
<td>0.124 ft</td>
</tr>
<tr>
<td>SpCond</td>
<td>49.82 μS/cm</td>
<td>50.82 μS/cm</td>
<td>0.18 μS/cm</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.03</td>
<td>7.03</td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>7.17</td>
<td>7.17</td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>10.09</td>
<td>10.09</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.3</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Turb (NTU)</td>
<td>0.3</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>24.1°C</td>
<td>24.1°C</td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>0.0 μg/L</td>
<td>0.0 μg/L</td>
<td></td>
</tr>
<tr>
<td>Chl (118)</td>
<td>0.5 μg/L</td>
<td>0.5 μg/L</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>4.5 V</td>
<td>4.5 V</td>
<td></td>
</tr>
</tbody>
</table>

**Sensor Diagnostics**

- EP DO clg (range 25-75)
- EP DO gain (0.1-2)
- Optical DO gain (0.1-2.4, 0.25-2.5)
- EP DO warm up test (0-80)
- Cell const (0.6-4.3, 0.55-4.05)
- pH 7 (0.00-1.00)
- pH 10 (0.00-1.00)
- pH 4 (0.00-1.00)
- Calculated pH Slope: 177.35
  - (15 to 24 is suspect)
  - (7 will result in negative slope)

**Post-Deployment**

- EP DO clg (range 25-75)
- EP DO warm up test (0-80)
- pH 7 (0.00-1.00)
- pH 10 (0.00-1.00)
- pH 4 (0.00-1.00)
- Calculated pH Slope: 171.5
  - (15 to 24 is suspect)

Programming

- Interval: 1 min
- Start date: mm/dd/yyyy
- Start time (STD): 24 h
- Duration: 1 day
- Battery life: 30 days
- Free memory: 30 days
- Set clock (status): Year
- Parameters recorded: Temp
- DO % sat: SpCond
- pH: DO Conc.
- Turb: Turb
- pH mV: pH

Comments-Pre: [Redacted]

Comments-Post: [Redacted]
NERRS SWMP Water Quality Field Log

**Deployment Information**

- **Date Deployed:** 9/25/17
- **Time:** 12:14
- **White Towel:** yes
- **Technician(s):** ZK
- **Sonde ID #:** 3174

**Field Data:**

- **Water Temp:** 80.5°F
- **Sp Cond:** 4010 µs/cm
- **Salinity:** 25.7 ppt
- **DO Percent:** 108.3%
- **DO Conc.:** 8.45 mg/L

**Comments:** deploy 3174, first reading @ 1215

**Infield Maintenance**

(note any changes to site during deployment, sonde tube maintenance, burrowing removal, etc.)

- **Date:**
- **Duration:**
- **Maintenance:**

**Retrieval Information**

- **Date Retrieved:** 10/8/17
- **Time:** 9:55
- **White Towel:** yes
- **Technician(s):** ZK
- **Sonde ID #:** 3174

**Field Data:**

- **Water Temp:** 75°F
- **Sp Cond:** 39.48 µs/cm
- **Salinity:** 35.1 ppt
- **DO Percent:** 91.5%
- **DO Conc.:** 3.98 mg/L

**Fouling Presence:**

- **Type:** A=algae, B=barnacles, C=carras, E=eggs, F=fish, H=hydrozoa, S=sponges, T=tunicates, O=other, N=name
- **Amount:** H=heavy, M=moderate, L=light

**Comments:** recover 3174, sensors on deployment until late today

**File Retrieval**

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**

**Comments:**
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 10/9/17
Time: 11:30
White Towel: Yes

Technician(s): ZK
Sonde ID #: 3174

Field Data:
- Water Temp: 17.4°C
- Sp Cond: 428 μS
- Salinity: 31.2 ppt

Comments: midway sample, small crab, shrimp, and fish

in acid tube, sensors clean

Infield Maintenance

(Note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 
Comments: 

Retrieval Information

Date Retrieved: 
Time: 
White Towel: Yes

Technician(s): 
Sonde ID #: 

Field Data:
- Water Temp: 
- Sp Cond: 
- Salinity: 

DO Percent: 
DO Conc.: 
Other: 

Fouling Presence:
Type: Algae, Biofilms, Crabs, Eels, F-Bait, H-Bait, S-Bait, T-Hair, T-Sponges, T-Birds, T-Mosquitoes, Other, N/A
Amount: H-heavy, M-moderate, L-light

Sonde Guard
Temp Cord
pH

External Screen
Dissolved Oxygen
Turbidity

Comments: 

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 
Comments:
NERRS SWMP Water Quality Calibration Log

Date of Calibration: 10/23/17

Datasonde and Probe Identification Numbers

Datasonde: 178
Serial Number: 11007
Model Number: 11007

pH: 1461011449
Serial Number: 11007
Model Number: 11007

Datasonde Maintenance

Technician(s): LW

Wipers Replaced: TURB
Batteries Replaced: ODO
Format Flash Disk: CHL

Comment:

Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Post-Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>20.53</td>
<td>20.53</td>
<td></td>
<td>1/20</td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>mm Hg</td>
<td>mm Hg</td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>Optical % DO @ 100% sat</td>
<td>101.3</td>
<td>101.3</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>BP @ Cal (Optical)</td>
<td>111.1</td>
<td>111.1</td>
<td>111.1</td>
<td>111.1</td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>711.6</td>
<td>711.6</td>
<td>711.6</td>
<td>711.6</td>
</tr>
<tr>
<td>Depth</td>
<td>0.17 ft</td>
<td>0.157</td>
<td>0.023</td>
<td>0.023</td>
</tr>
<tr>
<td>Station Offset</td>
<td>0.157</td>
<td>0.157</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0 U offset</td>
<td>0 U offset</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>50.65 µS/cm</td>
<td>50.65 µS/cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>7.14</td>
<td>7.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>10.03</td>
<td>10.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>4.08</td>
<td>4.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>NTU</td>
<td>NTU</td>
<td>NTU</td>
<td>NTU</td>
</tr>
<tr>
<td>Turb</td>
<td>NTU</td>
<td>NTU</td>
<td>NTU</td>
<td>NTU</td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>10°C</td>
<td>10°C</td>
<td>10°C</td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>0 µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td></td>
</tr>
<tr>
<td>Chl (118)</td>
<td>165 µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td></td>
</tr>
<tr>
<td>Battery Voltage</td>
<td>5.0 V</td>
<td>5.0 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sensor Diagnostics

Pre/Deployment

- RP DO chr (range 25-35)
- RP DO gain (0.34)
- Optical DO gain (0.74, 0.65, 0.74, 0.74)
- RP DC warm up test (0 V)
- Cell const (0.10, 0.10, 0.10, 0.10)
- pH 7 (±0.50 mV)
- pH 10 (±10 mV)
- pH 4 (±10 mV)
- Calculated pH slope (0.0)

Post-Deployment

- RP DO chr (range 25-35)
- RP DC warm up test (0 V)
- pH 7 (±0.50 mV)
- pH 10 (±10 mV)
- pH 4 (±10 mV)
- Calculated pH slope (±0.0)

Programming

Interval: 60 min
Duration: 24 hr
Free memory: 476 MB
Parameters recorded:
- Temp
- DO % sat
- pH

Comments-Pre:

Comments-Post:

BGA-PC 0.07 from 0.03
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 10/3/17
Time: 11:35
White Towel: Yes
Technician(s): 2K
Sonde ID #: 178

Field Data:

- Water Temp: 14.5 °C
- Sp Cond: 42.42 µs/cm
- Salinity: 27.3 ppt
- DO Percent: 90.7 %
- DO Conc: 2.42 mg/L

Comments: deploy 178, first reading at 11:45, grab sample

Infield Maintenance

(Note any changes to site during deployment, sonde tube maintenance, hooking removal, etc.)

Date: 
Duration: 
Maintenance: 
Comments: 

Retrieval Information

Date Retrieved: 11/8/17
Time: 9:59
White Towel: Yes
Technician(s): CE
Sonde ID #: 178

Field Data:

- Water Temp: 6.5 °C
- Sp Cond: 32.12 µs/cm
- Salinity: 14.7 ppt
- DO Percent: 95.8 %
- DO Conc: 10.69 mg/L

Notes:
Type: A-algae, B-barnacles, C-crabs, E-eggs, F-fish, H-hydras, N-sponges, T-tunicates, O-other, None
Amount: H-heavy, M-moderate, L-light

Sonde Guard: 
Temp Cond: 
pH: 
External Screen: 
Dissolved Oxygen: 
Turbidity: 
Comments: recover 178, deploy 179, overlap at 1000, grab sample

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 
Comments: 

**NERRS SWMP Water Quality Field Log**

**Deployment Information**

- **Date Deployed:** [1/1/17]
- **Time:** 16:30
- **White Towel:** Yes
- **Technician(s):** [2]<br>

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>11.2°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>28.19 uS/cm</td>
</tr>
<tr>
<td>Salinity</td>
<td>17.4 uS/cm</td>
</tr>
<tr>
<td>DO Conc</td>
<td>8.79 mg/L</td>
</tr>
</tbody>
</table>
| DO Percent | 87.8%

**Comments:** Midway sample

**Infield Maintenance**

(Notes any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

**Retrieval Information**

<table>
<thead>
<tr>
<th>Date Retrieved</th>
<th>[11/9/17]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technician(s):</td>
<td>[CP]</td>
</tr>
</tbody>
</table>

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>[CP]</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>[28.19 uS/cm]</td>
</tr>
<tr>
<td>Salinity</td>
<td>[17.4 uS/cm]</td>
</tr>
</tbody>
</table>

**Endling Presence:** Type: A=algae, B=bamacles, C=....

- Amount: H=heavy, M=moderate

**Sonde Guard Temp Cond pH**

**Comments:**

- 11/9/17
  - CP pulled up sonde accidentally thinking it drifted from GB. Replaced back in slightly wrong spot (just NW of LB channel) w/ ~ 5-6ft of slack line 1 hr off high tide (10.6' Portland). Out of water 1535-1545 EST.

- 11/13/17
  - CP+2K moved to waypoint from T6 ~1240 but 2K realized this spot was previously relocated by of low water, so we moved it one last time to ZK's spot (~75ft closer to channel, eastward). Took waypoint back in water ~1307.
## NERRS SWMP Water Quality Calibration Log

**Site Name:** GB81  
**File Name:** GB811120

### Dataasonde Maintenance
- **Date of Calibration:** 11/14
- **Wipers replaced**
- **Batteries replaced**
- **Format flash disk**
- **Turbidity**
- **DO/O2**
  - Wipers parks 180° from optics
  - DO membrane replaced
  - Membrane integrity test

### Dataasonde and Probe Identification Numbers
- **Dataasonde:** 179 M102179
- **pH:** 16M104231
- **Turbidity:** 14M102399
- **DO/O2:** 16M104399
  - Conductivity
  - Wiper

### Pre/Post Deployment Calibration
- **Pre-Deployment Standards**
  - %DO @ 100% sat:
    - Before Cal: 1%
    - Calibrated: 1%
    - Error: 1%
  - BF @ cal (Rapid Pulse):
    - Before Cal: 11
    - Calibrated: 11
    - Error: 11
  - Optical %DO @ 100% sat:
    - Before Cal: 70.18
    - Calibrated: 70.13
    - Error: 70.03
  - 0 cal (Optical):
    - Before Cal: 17.01
    - Calibrated: 17.08
    - Error: 17.03
  - Buro. Pres. (Depth Calib): 0.038
  - Depth: 0.038
  - SpCond: 50 mS/cm

### Error
- **Post-Deployment Standards**
  - %DO @ 100% sat:
    - Before Cal: 1%
    - Calibrated: 1%
    - Error: 1%
  - BF @ cal (Rapid Pulse):
    - Before Cal: 11
    - Calibrated: 11
    - Error: 11
  - Optical %DO @ 100% sat:
    - Before Cal: 70.18
    - Calibrated: 70.13
    - Error: 70.03
  - 0 cal (Optical):
    - Before Cal: 17.01
    - Calibrated: 17.08
    - Error: 17.03
  - Buro. Pres. (Depth Calib): 0.038
  - Depth: 0.038
  - SpCond: 50 mS/cm

### Programming
- **Interval**
- **Duration**
- **Free memory**
- **Parameters recorded:** Date, Time, Temp° C, SpCon, Sal, DO%, DO mg/L, Depth, pH, Turb, Bath

### Comments - Pre:
- **chl = BGA - 0.07
  - Depth = 20 m
  - Battery life = 120 days
  - Free bytes = 120 MB
  - Programming = -

### Comments - Post:
- **chl = BGA - 0.07
  - Depth = 20 m
  - Battery life = 120 days
  - Free bytes = 120 MB
  - Programming = -

---

**T = 20.99**

**Tb = 20.99**

**Sonde clean**

**chl = -0.1**

**BGA = -0.07**

**chl = -0.1**

**250m = -0.01**
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 11/20/17  Time: 9:54

Technician(s): ZK  Sonde ID #: 179

Field Data:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>5.0</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>32.20</td>
</tr>
<tr>
<td>Salinity</td>
<td>19.7</td>
</tr>
</tbody>
</table>

DO Percent:

- DO Percent: 95.8
- DO Conc: 10.69

Comments: recover 179, deploy 179, overlap at 1000, grab sample

Infield Maintenance

(note any changes to site during deployment, sondetube maintenance, binomial removal, etc.)

Date:     Duration:     Maintenance:

Comments:

Retrieval Information

Date Retrieved: 11/20/17  Time: 14:02

Technician(s): ZK  Sonde ID #: 179

Field Data:

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>3.1</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>24.07</td>
</tr>
<tr>
<td>Salinity</td>
<td>14.3</td>
</tr>
</tbody>
</table>

DO Percent:

- DO Percent: 87.5
- DO Conc: 10.69

Other:

- Other:

Faults Presence:

- Type: Algae, B-animals, C-crabs, E-segs, F-fish, H-hyroids, S-sponges, T-tunicae, O-other, N-none
- Amount: H-heavy, M-moderate, L-light

- Sonde Guard
- Temp Cond
- pH

- External Screen
- Dissolved Oxygen
- Turbidity

Comments: recover 179 for season, overlap w/handheld at 1400

File Retrieval

Sonde Filename:     Print Graph:     Probe Malfunction:

Comments:
**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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</tr>
</tbody>
</table>

**Datasonde Maintenance**

- Wipers Replaced: [TURB] [ODO] [CHL]
- Batteries Replaced: [TURB] [ODO] [CHL]
- Format Flash Disk: [TURB] [ODO] [CHL]
- Comments: [New installation on 7/24/2017]

**Programming**

- Interval: [xxx] min
- Duration: [xxx] days
- Free memory: [xxx] hours

**Parameters recorded:**

- Temp: [xxx]
- DO % sat: [xxx]
- pH: [xxx]
- Temperature: [xxx]
- Conductivity: [xxx]
- Turbidity: [xxx]
- pH mV: [xxx]

**Comments-Pre:**

**Comments-Post:**

Battery voltage: [xxx] V

### Pre/Post Deployment

**Pre-Deployment**

- Temperature: 25.2°C
- Temp: 25.2°C
- pH: [xxx]
- RP DO % sat: [xxx]

**Post-Deployment**

- Temperature: 25.2°C
- Temp: 25.2°C
- pH: [xxx]
- RP DO % sat: [xxx]

**Sensor Diagnostics**

- RP DO cal: [xxx]
- Optical DO gain: [xxx]
- Cell cal: [xxx]
- pH 7: [xxx]
- pH 10: [xxx]
- Calculated pH slope: [xxx]

**Calculate pH slope**

- (pH will result in negative slope)

- Calculated pH slope: [xxx]

**Battery voltage:**

- 7.5 V (removes: power 600,000)
NERRS SWMP Water Quality Calibration Log

DataSonde and Probe Identification Numbers

Datasonde: Serial Number: pH: Serial Number: Model Number:
Vented: Model Number: ODO:
Nickname: Turbidity:

DataSonde Maintenance

Date of Calibration: Wiper pads 180° from optics:
Technician(s):

Wipers Replaced: ODO: CHL:
Batteries Replaced: DO/ODO membrane replaced:
Format Flash Disk:
Membrane integrity test

Comment: ODM 16 10 14 990

Pre/Post Deployment Calibration

Pre-Deployment

Post-Deployment

Sensor Diagnostics

Pre-Deployment

Programing

Interval: Start date: Start time (STD):
Duration: sonde file name: Battery life:
Free memory: Voltage:
Parameters recorded:
Temp: Sp Cond:
DO % sat: DO Conc.:
pH: Turbidity:
pH mV:

Comments-Pre:
Comments-Post:

CHL @ 0 0 20
ODM 0 07
NERRS SWMP Water Quality Field Log

Deployement Information

Date Deployed: 01/23/17
Time: 0900
White Towel: yes
Technician(s): 75
Sonde ID #: 178

Field Data:

Water Temp: 20.6°C
Sp Cond: 41.29 mS/cm
Salinity: 26.5
DO Percent: 80.5%
DO Conc: <24 mg/l
Other: sensors clean
Comments: "recover 075 sensors clean"

Infield Maintenance

(not any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 

Comments

Retrieval Information

Date Retrieved: 
Time: 
White Towel: yes
Technician(s): 
Sonde ID #: 

Field Data:

Water Temp: 
Sp Cond: 
Salinity: 
DO Percent: 
DO Conc: 
Other: 

Fouling Presence: Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light
Sonde-Guard: 
Temp/Cond: 
pH: 
Comments

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 
Comments
### Datasondes and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vented</td>
<td>4/76</td>
<td>76</td>
</tr>
<tr>
<td>Nickel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Datasonde Maintenance

<table>
<thead>
<tr>
<th>Date of Calibration</th>
<th>Technician(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/25/17</td>
<td></td>
</tr>
</tbody>
</table>

### Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>23.5°F</td>
<td>23.0°F</td>
<td>-0.5°F</td>
</tr>
<tr>
<td>RH % DO @ 100% sat</td>
<td>44%</td>
<td>44%</td>
<td>0%</td>
</tr>
<tr>
<td>RP @ cal (Rapid Pulse)</td>
<td>1011 μg/L</td>
<td>1005 μg/L</td>
<td>6 μg/L</td>
</tr>
<tr>
<td>Optical % DO @ 100% sat</td>
<td>1011 μg/L</td>
<td>1005 μg/L</td>
<td>6 μg/L</td>
</tr>
<tr>
<td>Baro Pres (Depth Calib)</td>
<td>743 mHg</td>
<td>738 mHg</td>
<td>5 mHg</td>
</tr>
<tr>
<td>Depth</td>
<td>0.0 m</td>
<td>0.05 m</td>
<td>0.05 m</td>
</tr>
<tr>
<td>Station Offset</td>
<td>0.0</td>
<td>0.05</td>
<td>0.05 m</td>
</tr>
</tbody>
</table>

### Pre-Deployment

- RP DO chg range 25-75
- RP DO gain (0:1:4)
- Optical DO gain (2.5:1:4.1.8:0.87:1.25)
- RP DO warm up test (good)
- Cell count (0.0-4.5:4.6:1.8:0.6:0.1:0.05:0.002)
- pH 7 (0.15-30.0 mV)
- pH 10 (-150 to 50 mV)
- pH 1 (+150 to 50 mV)
- Calculated pH slope
- Chlorophyll:
- Battery Voltage:

### Programming

- Interval: 15 min
- Start date: 09/25/17
- Start time (STD): 24 hrs: 00 min
- Battery life: 148 hours
- Free memory (status): BY sec (%)
- Temp: Sp Cond
- DO % sat
- pH
- TURB
- RHODAMINE WT TEMP
- CHL (9)
- CHL (118)

### Comments - Pre:

```
1st set of data for tapers from optics.
```

### Comments - Post:

```
Probes have clouds of small organic matter.
```
### NERRS SWMP Water Quality Field Log

#### Deployment Information

- **Date Deployed:** 21/20/17
- **Time:** 11:25
- **White Towel:** yes
- **Sonde ID #:** 670

#### Field Data:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>85.2°F</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>42.4</td>
</tr>
<tr>
<td>Salinity</td>
<td>11.1 ppm</td>
</tr>
</tbody>
</table>

#### Comments:

- 115 overlap sonde had been under dock & anchor over
- May have fallen over

#### Infield Maintenance

(Note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

- **Date:**
- **Duration:**
- **Maintenance:**
- **Comments:**

#### Recovery 176

- **Date Retrieved:**
- **Time:**
- **White Towel:** yes
- **Sonde ID #:**

#### Field Data:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>85.2°F</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>42.4</td>
</tr>
<tr>
<td>Salinity</td>
<td>11.1 ppm</td>
</tr>
</tbody>
</table>

#### Comments:

- Val sample 9129 0745
- Mid stake
- Sonde design

#### Fouling Presence

- **Type:** Algae, Barnacles, Crabs, E-eggs, F-fish, H-hydroids, S-sponges, T-tunicates, O-other, N-none
- **Amount:** H-heavy, M-moderate, L-light (e.g. A H B L)

- **Sonde Guard Temp-Cond pH**
- **External Screen**
- **Dissolved Oxygen**
- **Turbidity**

#### File Retrieval

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**

#### Comments:
### NERRS SWMP Water Quality Calibration Log

**Data sonde and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>Model Number</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>910</td>
<td>16370090164</td>
<td></td>
<td>163700364</td>
<td></td>
</tr>
<tr>
<td>Vented</td>
<td></td>
<td></td>
<td>Turbidity</td>
<td>163700251</td>
</tr>
<tr>
<td>Nickname</td>
<td></td>
<td></td>
<td>Conductivity</td>
<td>163700293</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chlorophyll</td>
<td>163700473</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EXO Wiper</td>
<td>163704979</td>
</tr>
</tbody>
</table>

**Data sonde Maintenance**

<table>
<thead>
<tr>
<th>Date of Calibration</th>
<th>Technician(s)</th>
<th>Wipers Replaced</th>
<th>Batteries Replaced</th>
<th>Format Flash Disk</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/30/17</td>
<td>LMA</td>
<td>TURB</td>
<td></td>
<td></td>
<td>[fom 161110018]</td>
</tr>
</tbody>
</table>

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Pre/Post-Deployment</th>
<th>Pre/Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>13.56</td>
<td>13.57</td>
<td>-0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td>1.8</td>
<td>1.8</td>
<td>0</td>
<td>Check Disc</td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>101.0</td>
<td>101.0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>99.0</td>
<td>99.0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ Cal (Optica)</td>
<td>102.0</td>
<td>102.0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baro Pres. (Depth Calib)</td>
<td>7497.3</td>
<td>7497.3 (760.0 for vented sonde)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.47</td>
<td>0.47</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station Offset</td>
<td>0.49</td>
<td>0.49</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.7</td>
<td>0.7</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>49.76</td>
<td>49.76</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ph 7</td>
<td>7.0</td>
<td>7.0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>7.0</td>
<td>7.0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>7.0</td>
<td>7.0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.007</td>
<td>0.007</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.007</td>
<td>0.007</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>12°C</td>
<td>12°C</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (118)</td>
<td>0.046</td>
<td>0.046</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>6.2V</td>
<td>(current draw power -50/50Hz)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Programming**

<table>
<thead>
<tr>
<th>Interval</th>
<th>Start date</th>
<th>Start time (STD)</th>
<th>Duration</th>
<th>Send file name</th>
<th>Battery Life</th>
<th>Free memory (status):</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**Comments**

**Pre:** pH low, cal/10/30 cal'd (100m not _called 10/30_.)

**Post:** Wipers still off - Light fouling, crust, green algae, from 0.80 to 0.64.
NERRS SWMP Water Quality Field Log

**Deployment Information**

- **Date Deployed:** 11/3/19
- **Time:** 05:00
- **White Towel:** Yes
- **Technician(s):** TJP
- **Sonde ID #:**

**Field Data:**

- **Water Temp:** No meter
- **Sp Cond:** ns/cm
- **Salinity:**
- **DO Percent:**
- **DO Conc:** mg/L
- **Other:**

**Comments:**

*Val sample, reverse overlap @ 05:00 anchor line was pulled so swapped sample 180, prob ~ 02:45 recover 676, clean*

**Infield Maintenance**

*(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)*

**Retrieval Information**

- **Date Retrieved:**
- **Time:**
- **White Towel:** Yes
- **Technician(s):**
- **Sonde ID #:**

**Field Data:**

- **Water Temp:** §
- **Sp Cond:** mmhos
- **Salinity:**
- **DO Percent:**
- **DO Conc:** mg/L
- **Other:**

**Fouling Presence:**

- **Type:** A-algae, B-urchins, C-crabs, E-eels, F-fish, H-hybrids, S-sponges, T-tunicates, U-other, N-none
- **Amount:** H-heavy, M-moderate, L-light (e.g. A H H H)

- **Sonde Guard**
- **Temp Cond**
- **pH**

**Comments**

**File Retrieval**

- **Sonde Filename:**
- **Print Graphs:**
- **Probe Malfunction:**

**Comments**
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: [mm dd yyyy]
Time: [hh:mm (24hr)]
White Towel: [yes/no]

Technician(s): [Name]
Sonde ID #: [ID]

Field Data:
Water Temp [°C]
Sp Cond [µS/cm]
Salinity [psu]

DO Percent
DO Conc.
Other

Comments

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: [mm dd yyyy]
Duration: [Time]
Maintenance: [Details]

Comments

Retrieval Information

Date Retrieved: [mm dd yyyy]
Time: [hh:mm (24hr)]
White Towel: [yes/no]

Technician(s): [Name]
Sonde ID #: [ID]

Field Data:
Water Temp [°C]
Sp Cond [µS/cm]
Salinity [psu]

DO Percent
DO Conc.
Other

Fouling Presence:
Type: [Type]
Amount: [Heavy, Moderate, Light]

Sonde: [Brand]
Temp: [Temperature]
Cond: [Conductivity]
pH

External Screen
Dissolved Oxygen
Lighting

Comments:
[Handwritten notes: brush had fallen off, sensors clean, [other notes]]

File Retrieval

Sonde Filename: [File]
Print Graph: [Yes/No]
Probe Malfunction: [Yes/No]

Comments
# NERRS SWMP Water Quality Calibration Log

## Dataasonde Maintenance

<table>
<thead>
<tr>
<th>Date of Calibration:</th>
<th>Technician(s):</th>
<th>TURB</th>
<th>ODO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/1/17</td>
<td>L Nerl</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Wipers replaced
- Batteries replaced
- Format flash disk
- Wipers park 180° from optics
- DO membrane replaced
- Membrane integrity test

## Dataasonde and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Dataasonde</th>
<th>pH</th>
<th>Turbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>178</td>
<td>16.010.2453</td>
<td>16.010.127</td>
</tr>
</tbody>
</table>

Comments: cal 16.010.2453 (PC)

## Pre/Post Deployment Calibration

### Pre-Deployment

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>mm Hg</td>
<td>mm Hg</td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>m</td>
<td>m</td>
<td>(760.0 for vented sound)</td>
</tr>
<tr>
<td>Depth</td>
<td>0.038</td>
<td>offset</td>
<td>0.03</td>
</tr>
<tr>
<td>SpCond</td>
<td>50</td>
<td>mS cm</td>
<td>50</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.12</td>
<td>7.12</td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>10.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>7.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0</td>
<td>NTU</td>
<td>0</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>4.9</td>
<td>V</td>
<td>V (remove ext. power -4.6 to 4.8)</td>
</tr>
</tbody>
</table>

### Post-Deployment

<table>
<thead>
<tr>
<th>Sensor Diagnostics</th>
<th>Pre-Deployment</th>
<th>Pre-Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>m</td>
<td>m</td>
</tr>
<tr>
<td>Depth</td>
<td>0.038</td>
<td>offset</td>
</tr>
<tr>
<td>SpCond</td>
<td>50</td>
<td>mS cm</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.12</td>
<td>7.12</td>
</tr>
<tr>
<td>pH 10</td>
<td>10.23</td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>7.96</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0</td>
<td>NTU</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>4.9</td>
<td>V</td>
</tr>
</tbody>
</table>

## Programming

- Interval: days
- Duration: days
- Free memory: days
- Start date: mm/dd/yyyy
- Start time (AD time): hh:mm
- Battery life: days
- Free bytes (status): k
- End time: days
- Date, Time, Temp°C, SpCond, Sal, DO%, DO mg/L, Depth, pH, Turb, Batt

Parameters recorded:

- Date, Time, Temp°C, SpCond, Sal, DO%, DO mg/L, Depth, pH, Turb, Batt

Comments - Pre:

- Offset: 0.027
- Cal: 16.010.2453, Temp = 20.1 ± 2°C

Comments - Post:

- Offset: 0.09
NERRS SWMP Water Quality Field Log

Reserve: Great Bay
Station Name: SF138
File Name: 

Deployment Information

Date Deployed: 9/13/17
Time: 12:00
White Towel: yes

Technician(s): TK
Sonde ID #: 178

Field Data:
Water Temp 24.1° C
Sp Cond 1.98 mS cm
Salinity 0.4g L

DO Percent 8.44 g L
Other

Comments deployed a little deeper than mark
grab sample

Infield Maintenance
(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 

Comments 

Retrieval Information

Date Retrieved: 9/13/17
Time: 10:45
White Towel: yes

Technician(s): TK
Sonde ID #: 178

Field Data:
Water Temp 24.1° C
Sp Cond 1.98 mS cm
Salinity 0.4g L

DO Percent 8.44 g L
Other

 Fouling Presence:
Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=unicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light

Sonde Guard
Temp Cond
pH

External Screen
Dissolved Oxygen
Turbidity

Comments former 178 now 911
grab triplicate sample

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 

Comments
**NERRS SWMP Water Quality Calibration Log**

**Station Name:** SFDP

**Datasonde and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Serial Number</th>
<th>pH</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonde Code</td>
<td>Number</td>
<td>RP DO:</td>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>Vented:</td>
<td></td>
<td>ODO:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickname</td>
<td></td>
<td>Turbidity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conductivity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chlorophyll:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EXO Wiper:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Datasonde Maintenance**

- **Date of Calibration:** 1/29/17
- **Technician(s):** TURB ODO CHL
- **Wipers Replaced:** TURB ODO CHL
- **Batteries Replaced:** TURB ODO CHL
- **Format Disk:** TURB ODO CHL

**Deployment Calibration**

**Pre-Deployment**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>20.95°C</td>
<td>20.96°C</td>
<td>0.01%</td>
</tr>
<tr>
<td>RP DO (%)</td>
<td>100%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>100.9%</td>
<td>100.9%</td>
<td>0%</td>
</tr>
<tr>
<td>Optical DO @ 100% sat</td>
<td>100.9%</td>
<td>100.9%</td>
<td>0%</td>
</tr>
<tr>
<td>BP @ cal (Optical)</td>
<td>100.9%</td>
<td>100.9%</td>
<td>0%</td>
</tr>
<tr>
<td>Bares. Pres. (Depth Calib)</td>
<td>100.9%</td>
<td>100.9%</td>
<td>0%</td>
</tr>
<tr>
<td>Depth</td>
<td>0.135 m</td>
<td>0.135 m</td>
<td>0%</td>
</tr>
<tr>
<td>Station Offset</td>
<td>0 m</td>
<td>0 m</td>
<td>0%</td>
</tr>
<tr>
<td>Level</td>
<td>0 m</td>
<td>0 m</td>
<td>0%</td>
</tr>
<tr>
<td>SpCond</td>
<td>593 μS/cm</td>
<td>593 μS/cm</td>
<td>0%</td>
</tr>
<tr>
<td>pH</td>
<td>7.19</td>
<td>7.19</td>
<td>0%</td>
</tr>
<tr>
<td>ph 10</td>
<td>7.0</td>
<td>7.0</td>
<td>0%</td>
</tr>
<tr>
<td>ph 4</td>
<td>7.0</td>
<td>7.0</td>
<td>0%</td>
</tr>
<tr>
<td>Turb</td>
<td>0.00 NTU</td>
<td>0.00 NTU</td>
<td>0%</td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>20.9°C</td>
<td>20.9°C</td>
<td>0%</td>
</tr>
<tr>
<td>Chl (μg/L)</td>
<td>1.17</td>
<td>1.17</td>
<td>0%</td>
</tr>
<tr>
<td>Chl (μg/L)</td>
<td>1.17</td>
<td>1.17</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Post-Deployment**

- **Check Date:** 1/31/09
- **Calibrated Error:** 0.10%
- **Post-Deployment Calibration:**
  - RP DO chrg (range 25-75)
  - RP DO chrg (gain 0.3-4)
  - Optical DO gain (600: 0.74, EXO: 0.97-1.23)
  - RP DO warm up test (h, m, s)
  - Cell const (gpm: 0-2 gpm, EXO 2-10 gpm, WP: EXO 11-14 gpm, 15+ gpm)
  - pH 7 (0-50 mV)
  - pH 4 (0-50 mV)
  - Calculated pH slope

**Battery Voltage:** 1.17 V (removed external power 650/653)

**Programming**

- **Interval:** 1 day
- **Start Date:** 1/31/09
- **Start Time (STD):**
- **Duration:** 4 day
- **Sonde file name:**
- **Set clock (status):** Y or N
- **Parameters recorded:**
- **Temp:**
- **DO % sat:**
- **pH:**
- **Salinity:**
- **Depth/Level:**
- **Chlorophyll:**
- **Battery Voltage:**

**Comments-Pre:**

- **Comments-Post:**
**NERRS SWMP Water Quality Field Log**

**Deployment Information**

Date Deployed: **7/14/17**  
Time: **10:34**  
White Towel: **yes**

Technician(s): [Name]  
Sonde ID #: **411**

**Field Data:**

| Water Temp | **21.1** °C |
| Sp Cond | **1,218** µS/cm |
| Salinity | **0.16** psu |

**Comments:** deployed 911, recovered 178, overlap @ 10:45, grab

**Infield Maintenance**

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: **7/15/17**  
Duration: **1 hr**  
Maintenance: **Re-calibration**

*Comments: pulled from 12:30 - 2:00, for re-calibration
- took vs sample on 7/16 at 10:12, no handheld.*

**Retrieval Information**

Date Retrieved: **8/9/17**  
Time: **2:30**  
White Towel: **yes**

Technician(s): [Name]  
Sonde ID #: **411**

**Field Data:**

| Water Temp |  |
| Sp Cond |  |
| Salinity |  |

**Fouling Presence:**  
Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydras, S=sponges, T=tunicates, O=other, N=none  
Amount: H=heavy, M=moderate, L=light  
(e.g. A.H, B.L)

**Comments:** due to recover 911, repositioned anchor to shallower site.

**File Retrieval**

Sonde Filename:  
Print Graph:  
Probe Malfunction:  

Comments
### NERRS SWMP Water Quality Calibration Log

**Station Name:** SED028101

**CDMO Raw File Name:** stud89

---

**Dataonde and Probe Identification Numbers**

- **Dataonde:** [16.100.36]
- **Serial Number:** [16.100.36]
- **Model Number:** [16.100.36]
- **pH:** [16.100.36]
- **DO:** [16.100.36]
- **Turbidity:** [16.100.36]
- **Conductivity:** [16.100.36]
- **Chlorophyll:** [16.100.36]
- **EXO Wiper:** [16.100.36]

---

**Dataonde Maintenance**

- **Date of Calibration:** 7/28/17
- **Wipers Replaced:**
  - **TURB:**
  - **ODO:**
  - **CHL:**
- **Batteries Replaced:**
  - **TURB:**
  - **ODO:**
  - **CHL:**
- **Format Flash Disk:**
  - **TURB:**
  - **ODO:**
  - **CHL:**
- **Comments:**
  - Wiper parks 180° from orifices:
  - DO/DO membrane replaced:
  - Membrane integrity test

---

**Pre/Post Deployment Calibration**

![Table of Calibration Results]

**Pre-Deployment**

- **Temperature (°C):** Before Cal: [8.8], Calibrated: [9.0], Error: [0.2]
- **pH:** Before Cal: [7.2], Calibrated: [7.2], Error: [0.2]
- **DO (%):** Before Cal: [1.0], Calibrated: [1.0], Error: [0.2]
- **Conductivity (μS/cm):** Before Cal: [1.2], Calibrated: [1.2], Error: [0.2]
- **Temperature (°C):** Before Cal: [10.0], Calibrated: [10.0], Error: [0.2]

**Post-Deployment**

- **Temperature (°C):** Before Cal: [10.0], Calibrated: [10.0], Error: [0.2]
- **pH:** Before Cal: [10.0], Calibrated: [10.0], Error: [0.2]
- **DO (%):** Before Cal: [10.0], Calibrated: [10.0], Error: [0.2]
- **Conductivity (μS/cm):** Before Cal: [10.0], Calibrated: [10.0], Error: [0.2]
- **Temperature (°C):** Before Cal: [10.0], Calibrated: [10.0], Error: [0.2]

**Sensor Diagnoses**

- **Pre-Deployment**
  - **RP DO charge:** [10.0]
  - **RP DO gain:** [0.74]
  - **Optical DO gain:** [0.44]
  - **RP DO warm up test:** [0.44]
  - **Cell cal:** [0.74]
  - **pH 7:** [6.0]
  - **pH 4:** [6.0]
  - **Calculated pH slope:** [6.0]

- **Post-Deployment**
  - **RP DO charge:** [10.0]
  - **RP DO warm up test:** [0.44]
  - **pH 7:** [6.0]
  - **pH 4:** [6.0]
  - **Calculated pH slope:** [6.0]

---

**Programming**

- **Interval:** [1.0] minutes
- **Duration:** [1.0] days
- **Free memory:** [1.0] bytes
- **Parameters recorded:** Temp, Sp Cond, DO, pH, Turbidity, φmV, Salinity, DO conc., pH, Turbidity

**Comments-Pre:**

Very high turbidity, no calcd.

---

**Comments-Post:**

Very high mud, forces clean.
### NERRS SWMP Water Quality Field Log

**Deployment Information**

- **Date Deployed:** 8/10/17
- **Time:** 10:01
- **White Towel:** Yes
- **Technician(s):** ZK
- **Sonde ID #:** 911

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>20.8°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>41.54 mg/L</td>
</tr>
<tr>
<td>Salinity</td>
<td>16.0 ppt</td>
</tr>
</tbody>
</table>

**DO Percent:** 46.1%

**DO Conc.:** 7.49 mg/L

**Other:**

**Comments:** Deploy 911 at new location 43.1256, -70.8161 with longer line, on shallower bottom, grab sample.

### Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

- **Date:**
- **Duration:**
- **Maintenance:**

**Comments:**

### Retrieval Information

- **Date Retrieved:** 9/14/17
- **Time:** 12:30
- **White Towel:** Yes
- **Technician(s):** ZK
- **Sonde ID #:** 911

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>14.16°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>82.74 mg/L</td>
</tr>
<tr>
<td>Salinity</td>
<td>27.0 ppt</td>
</tr>
</tbody>
</table>

**DO Percent:** 100.9%

**DO Conc.:** 8.33 mg/L

**Other:**

**Feathering Presence:**
- **Type:** A=algae, B= barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none
- **Amount:** H=heavy, M=moderate, L=light

- **Sonde Guard:** A/L
- **Temp Cond:** External Screen
- **pH:** Dissolved Oxygen
- **Turbidity:**

**Comments:** Return 911, last reading at 12:30, grab sample.

### File Retrieval

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**

**Comments:**
# NERRS SWMP Water Quality Calibration Log

**Station Name:** [Redacted]

**CDMO Raw File Name:** SEP090417

## Datasonde and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonde Code</td>
<td>Serial Number</td>
<td>Model Number</td>
</tr>
<tr>
<td>177</td>
<td>16J101303</td>
<td>[Redacted]</td>
</tr>
<tr>
<td>16M102177</td>
<td>13M1020275</td>
<td>[Redacted]</td>
</tr>
</tbody>
</table>

## Datasonde Maintenance

- **Date of Calibration:** [Redacted]
- **Wipers Replaced:** [Redacted]
- **Batteries Replaced:** [Redacted]
- **Format Flash Disk:** [Redacted]
- **Comments:**

  "From 1/27/17, probe was replaced from 14M102177. Datasonde just back from USI, all probes new to sonde."

## Pre/Post Deployment Calibration

### Before Calibrating

<table>
<thead>
<tr>
<th>Standard</th>
<th>Before Cal.</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>17.00</td>
<td>19.15</td>
<td>%</td>
</tr>
<tr>
<td>RH % DO @ 100% sat</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>BP @ col (Rapid Pulse)</td>
<td>mm Hg</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ col (Optical)</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buro, Pres. (Depth Calib)</td>
<td>mm Hg</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.00 off</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Station Offset</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.00 off</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>49.29</td>
<td>50.62 %</td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>7.41</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.52</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.52</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>g/l</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Chl (118)</td>
<td>g/l</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>(remove exp. power=5h, 6034)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Error Calculation

- **Error:** [Redacted]

### Post-Calibrating

<table>
<thead>
<tr>
<th>Standard</th>
<th>Error</th>
<th>Check Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>%</td>
<td>10/3/17</td>
</tr>
<tr>
<td>RH % DO @ 100% sat</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>BP @ col (Rapid Pulse)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>BP @ col (Optical)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Buro, Pres. (Depth Calib)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Depth</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Station Offset</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Level</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>SpCond</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>pH 7</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>pH 10</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>pH 4</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Turb</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Chl (0)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Chl (118)</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>(remove exp. power=5h, 6034)</td>
<td></td>
</tr>
</tbody>
</table>

### Sensor Diagnostics

- **Pre-Deployment:**
  - RP DO chgr (range 25-75):
  - RP DO gain (pH 4):
  - Optical DO gain (pH 6-8):
  - RP DO warm up test (pH 4):
  - Cell const (range 6500-60000):
  - EXO 5 65-6, Y (Y=X)
  - pH 7 (pH 6-8):
  - pH 10 (pH 6-8):
  - pH 4 (pH 6-8):
  - Calculated pH slope
    - [Redacted]
    - [Redacted]

- **Post-Deployment:**
  - RP DO chgr (range 25-75):
  - RP DO warm up test (pH 4):
  - pH 7 (pH 6-8):
  - pH 10 (pH 6-8):
  - pH 4 (pH 6-8):
  - Calculated pH slope
    - [Redacted]
    - [Redacted]

### Programming

- **Interval:** nn
- **Start Date:** [Redacted]
- **Start Time (STD):** [Redacted]
- **Duration:** dd
- **Sonde File Name:** [Redacted]
- **Battery Life:** [Redacted]
- **Free Memory (Status):** [Redacted]
- **Temp:** [Redacted]
- **DO % Sat:** [Redacted]
- **pH:** [Redacted]
- **Sp Cond.:** [Redacted]
- **DO Conc.:** [Redacted]
- **Turbidity:** [Redacted]
- **Depth/Lvl:** [Redacted]
- **Salinity:** [Redacted]
- **Chlorophyll:** [Redacted]
- **Battery Voltage:** [Redacted]

### Comments

- **Pre:**
  - Lab reset station broken - used local source
  - BGA-Pc 0.02
  - pH a little low

- **Post:**
  - [Redacted]
NERRS SWMP Water Quality Field Log

Reserve: Great Bay
Station Name: SEdp
File Name: 

Deployment Information

Date Deployed: 9/4/17 mm dd yyyy
Time: 13:53 hh mm (24hr)
White Towel: Y

Technician(s): ZK
Sonde ID #: 177

Field Data:

- Water Temp: 
- Sp Cond: mS cm
- Salinity: 

DO Percent: 
DO Conc: mg/l
Other: 

Comments: Deploy 177 after 1h 23m gap from 1230 - 1353

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 

Comments: 

Retrieval Information

Date Retrieved: 10/21/17 mm dd yyyy
Time: 15:15 hh mm (24hr)
White Towel: Y

Technician(s): ZK
Sonde ID #: 177

Field Data:

- Water Temp: 18.3°C
- Sp Cond: 426.3 mS cm
- Salinity: 27.5 ppt

DO Percent: 105.3 mg/l
DO Conc: 8.54 mg/l
Other: 

 Fouling Presence:
Type: A=algae, B=barnacles, C=corals, D=eggs, F=fish, H=hydroїd, S=spings, T=tunicates, N=other, N=nanos
Amount: H=heavY, M=moderate, L=light
(e.g. A H B L)

- Sonde Guard: ALL
- Temp Cond: 
- pH: 

External Screen: 
Dissolved Oxygen: 
Turbidity: 

Comments: Recover 177, deploy 9/10, grab sample, overlap at 1515

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 

Comments: 


### NERRS SWMP Water Quality Calibration Log

#### Reserve:

#### Station Name: [Redacted]

#### CDMS Raw File Name: [Redacted]

#### Sonde Code: 910

#### Vented: [Redacted]

#### Model Number: 165170234

#### Serial Numbers:

- **Serial Number:** 165170410
- **Model Number:** 165170364
- **Serial Number:** 165170421
- **Model Number:** 165170383
- **Serial Number:** 165170483
- **Model Number:** 165170592

#### Turbidity: 175.8

#### Conductivity: [Redacted]

#### Chlorophyll: [Redacted]

#### EXO Wiper: [Redacted]

#### Date of Calibration: 14/11/10

#### Technician(s): [Redacted]

#### Wipers Replaced: TURB ODO CHL

#### Batteries Replaced: [Redacted]

#### Format Flash Disk: [Redacted]

#### Membrane integrity test: [Redacted]

#### Comments: [Redacted]

#### Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Check Date</th>
<th>Pre/Post-Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>19.7°C</td>
<td>19.7°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP % DO @ 100% sal</td>
<td>9.1%</td>
<td>9.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ Cal (Rapid Pulse)</td>
<td>[Redacted]</td>
<td>[Redacted]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical % DO @ 100% sal</td>
<td>101.7%</td>
<td>101.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ Cal (Optical)</td>
<td>1.23 Hg</td>
<td>1.23 Hg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baro Prec (Depth Calib)</td>
<td>112.2 Hg</td>
<td>112.2 Hg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.36 ft</td>
<td>0.77 ft</td>
<td></td>
<td>0.20 ft</td>
<td></td>
</tr>
<tr>
<td>Station Offset</td>
<td>0.16 ft</td>
<td>0.16 ft</td>
<td></td>
<td>0.22 ft</td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.0 offset</td>
<td>0.0 offset</td>
<td></td>
<td>0.0 offset</td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>min/cm</td>
<td>min/cm</td>
<td></td>
<td>min/cm</td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>9.79</td>
<td>9.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>[Redacted]</td>
<td>[Redacted]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>[Redacted]</td>
<td>[Redacted]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>[Redacted]</td>
<td>[Redacted]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>0.0 mg/L</td>
<td>mg/L</td>
<td></td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>Chl (11B)</td>
<td>11B mg/L</td>
<td>mg/L</td>
<td></td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>Battery Voltage</td>
<td>4.9 V</td>
<td>(remove ext power: 4.50 V)</td>
<td></td>
<td>4.7 V</td>
<td>(remove ext power: 4.40 V)</td>
</tr>
</tbody>
</table>

#### Sensor Diagnostics

- **Pre/Deployment:**
  - RP DO chrg (range 25-75)
  - RP DO gain: 0.1 - 1.0
  - Optical DO gain: 3.6 (4.0 - 2.3, 3.6 - 1.0)
  - RP DO warm up test (5 min)
  - Cell const (4.0, 6.4 - 4.5)
  - pH: 7 (0.1 x 50 mV)
  - pH 10 (-1.0 x 50 mV)
  - pH 4 (+100 x 50 mV)
  - Calculated pH Slope: 0.1
  - (1.5 x 100 mV results in negative slope)

- **Post/Deployment:**
  - RP DO chrg (range 25-75)
  - RP DO warm up test (5 min)
  - pH 7 (0.1 x 50 mV)
  - pH 10 (-1.0 x 50 mV)
  - pH 4 (+100 x 50 mV)
  - Calculated pH Slope: 1.0
  - (1.5 x 100 mV results in negative slope)

#### Programming

- **Interval:** [Redacted]
- **Duration:** [Redacted]
- **Free Memory:** [Redacted]
- **Parameters recorded:** [Redacted]
- **Temp:** [Redacted]
- **DO % sat:** [Redacted]
- **DO Conc:** [Redacted]
- **pH:** [Redacted]
- **pH mV:** [Redacted]
- **Sp Cond:** [Redacted]
- **DO Cond:** [Redacted]
- **Turbidity:** [Redacted]
- **Salinity:** [Redacted]
- **Depth/Level:** [Redacted]
- **Chlorophyll:** [Redacted]
- **Battery Voltage:** [Redacted]

#### Comments:

- **Pre:**
  - From 1.03
  - [Redacted]
  - pH also [Redacted]

- **Post:**
  - From 1.03
  - 24.7 mg/L
# NERRS SWMP Water Quality Field Log

**Reserve:** Great Bay  
**Station Name:** SFDP  
**FileName:**  

## Deployment Information

| Date Deployed: | 10/21/7 | Time: | 15:15 | White Towel: | Yes |

**Technician(s):** ZK  
**Sonde ID #:** 910  

### Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Unit</th>
<th>DO Percent</th>
<th>DO Conc.</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>18.5</td>
<td>°C</td>
<td>105.3</td>
<td>8.54</td>
<td></td>
</tr>
<tr>
<td>Sp Cond</td>
<td>42.6</td>
<td>mS/cm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salinity</td>
<td>3.7</td>
<td>ppt</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:** recover 177. deploy 910  
grab sample

## Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

| Date: |  | Duration: |  | Maintenance: |  |

**Comments:**

## Retrieval Information

| Date Retrieved: | 11/30/17 | Time: | 12:35 | White Towel: | Yes |

**Technician(s):** ZK, LA  
**Sonde ID #:** 910  

### Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Unit</th>
<th>DO Percent</th>
<th>DO Conc.</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>13.4</td>
<td>°C</td>
<td>91.5</td>
<td>7.40</td>
<td></td>
</tr>
<tr>
<td>Sp Cond</td>
<td>41.8</td>
<td>mS/cm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salinity</td>
<td>38.8</td>
<td>ppt</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fouling Presence:** Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=trumpets, O=other, N=none  
Amount: H=heavy, M=moderate, L=light  
(e.g. A H B L)

**Sonde Guard**  
**Temp Cond**  
**pH**  

**Comments:** recover 910, deploy 675, overlap at 124.5, grab sample  

clean-light mud

## File Retrieval

| Sonde Filename: |  | Print Graph: |  | Probe Malfunction: |  |

**Comments:**
**NERRS SWMP Water Quality Calibration Log**

**Station Name:**

**CDMO Raw File Name:**

**Datasonde and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>ph</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>475</td>
<td>14A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP DO:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ODO:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turbidity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conductivity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorophyll:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXO Wiper:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Datasonde Maintenance**

<table>
<thead>
<tr>
<th>Wipers Replaced</th>
<th>Turb</th>
<th>ODO</th>
<th>CHL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Batteries Replaced</th>
<th>Turb</th>
<th>ODO</th>
<th>CHL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO/ODO membrane replaced</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Battery Membrane integrity test</th>
<th>Turb</th>
<th>ODO</th>
<th>CHL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

`CFDm 16M100186`

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>23.1F</td>
<td>23.19</td>
<td>Check Date</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical 1540 DO @ 100% sat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ Cal (Optical)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baro, Pres. (Depths Calib)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.02 ft</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Station Offset</td>
<td>0.0285</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.0 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>50.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ph 7</td>
<td>7.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ph 10</td>
<td>7.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ph 4</td>
<td>0.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (mL)</td>
<td>0.0 mL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (1100)</td>
<td>165.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery Voltage</td>
<td>1.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Programming**

<table>
<thead>
<tr>
<th>Interval</th>
<th>Start date</th>
<th>Start time (STD)</th>
<th>Battery life</th>
<th>Free memory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters recorded:</th>
<th>Temp:</th>
<th>DO % sat:</th>
<th>ph:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sp Cond:</th>
<th>DO Conc:</th>
<th>Turbidity:</th>
<th>pH mV:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

`CFL = 0  
AG4 = 0.02  
CFL = -0.04`
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 1/5/2017 Time: 12:35
White Towel: Yes
Technician(s): 
Sonde ID #: 675

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>13.3°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>24.8 µS/cm</td>
</tr>
<tr>
<td>Salinity</td>
<td>38.83 psu</td>
</tr>
</tbody>
</table>

Comments: Recover 675, deploy 675, overlap at 1245, grab sample

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, hindcasting removal, etc.)

Date: 
Duration: 
Maintenance: 
Comments: 

Retrieval Information

Date Retrieved: 1/7/2017 Time: 10:47
White Towel: Yes

Technician(s): JK
Sonde ID #: 675

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>5.20°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>42.70 µS/cm</td>
</tr>
<tr>
<td>Salinity</td>
<td>37.0 psu</td>
</tr>
</tbody>
</table>

DO Percent: 93.1%
DO Conc: 9.88 mg/L

Floating Presence:

Type: A=algae, B=barred, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light

Comments: Recover 675, overlap w/ 3174 at 10:45 instead of handheld, no sample

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 
Comments: 
**NERRS SWMP Water Quality Calibration Log**

**Station Name:** LPR

**CDMO Raw File Name:** LPR071117

### Datasonde and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Serial Number</th>
<th>pH</th>
<th>Model Number</th>
<th>Serial Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>183</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14670089</td>
<td>ODO</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>161701432</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Datasonde Maintenance

- Date of Calibration: 7/5/17
- Wipers Replaced: TURB, ODO, CHL
- Batteries Replaced: DO/ODO
- Format Flash Disk: Membrane integrity test

### Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Degression</th>
<th>Post-Degression</th>
<th>Sensor Diagnostics Pre-Degression</th>
<th>Pre-Degression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>72.0°F</td>
<td>72.10°F</td>
<td>Check Date:</td>
<td></td>
</tr>
<tr>
<td>RO % DO @ 100% sat</td>
<td>3%</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP @ cal (Rapid Pulse)</td>
<td>1.24 mV</td>
<td>1.24 mV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical % DO @ 100% sat</td>
<td>101%</td>
<td>101%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Optical)</td>
<td>101%</td>
<td>101%</td>
<td>Optical DO gain (25ppb): 0.0745</td>
<td>1.05</td>
</tr>
<tr>
<td>Euro. Press (Depth Calib)</td>
<td>19.63 mHg</td>
<td>19.63 mHg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.05 m</td>
<td>0.05 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station Offset</td>
<td>0.05 m</td>
<td>0.05 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>7.0</td>
<td>7.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine W/ Temp</td>
<td>8°C</td>
<td>8°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (6)</td>
<td>2.0 mg/L</td>
<td>2.0 mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (118)</td>
<td>6.5-8 mg/L</td>
<td>6.5-8 mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>6.2 V</td>
<td>6.2 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Programming

- Interval: min
- Duration: days
- Start date: mm/dd/yyyy
- Start time (STD): 24 hrs
- Battery life: days
- Free memory (status): %
- Parameters recorded:
  - Temp
  - SpCond
  - DO Conc.
  - Turbidity
  - pH
- Comments Pre: Offset = 0.095
- Comments Post: Do a little clean

**Light fouling, photoactive clean.**
NERRS SWMP Water Quality Field Log

Reserve: Great Bay  Station Name: EPR  File Name: 

Deployment Information

Date Deployed: 21/11/17  Time: 9:00  White Towel: 

Technician(s): CK  Sonde ID #: 183

Field Data:
- Water Temp: °C
- Sp Cond: mS/cm
- Salinity: ppt

DO Percent: %
- DO Conc.: mg/L

Comments deploy for season, On bottom, potential drift

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 1/10/17  Duration:  Maintenance: 

Comments

Retrieval Information

Date Retrieved: 8/11/17  Time: 11:01  White Towel: 

Technician(s): CK  Sonde ID #: 183

Field Data:
- Water Temp: 18.1 °C
- Sp Cond: 42.2 mS/cm
- Salinity: 27.2 ppt

DO Percent: 99.6 %
- DO Conc.: 8.11 mg/L

Fouling Presence: Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light

Sonde/Guard Temp/Cond pH

External Screen Dissolved Oxygen Turbidity

Comments: recover 183, deploy 10/19, grab sample for val
### NERRS SWMP Water Quality Calibration Log

**Data sonde and probe identification numbers**

<table>
<thead>
<tr>
<th>Data sonde</th>
<th>Serial number</th>
<th>Model number</th>
<th>pH:</th>
<th>DO:</th>
<th>Turbidity:</th>
<th>Conductivity:</th>
<th>Chlorophyll:</th>
<th>EXO Wiper:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data sonde maintenance**

- **Date of calibration:**
- **Technician(s):**
- **Wipers replaced:**
- **Batteries replaced:**
- **Format flash disk:**
- **Membrane integrity test:**
- **Comments:**
  - Sonde just back from 51 - new main board
  - DO 0.3% high

### Pre/Post deployment calibration

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Post-Deployment</th>
<th>Pre-Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>20°C</td>
<td>20°C</td>
<td>0</td>
<td>9/11</td>
<td>9/11</td>
</tr>
<tr>
<td>RH % DO @ 100% sat</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Bp cal (Rapid Pulse)</td>
<td>mm Hg</td>
<td>mm Hg</td>
<td>101</td>
<td>101</td>
<td>101</td>
</tr>
<tr>
<td>Optical % DO at 100% sat</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Bp cal (Optical)</td>
<td>mm Hg</td>
<td>mm Hg</td>
<td>101</td>
<td>101</td>
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<tr>
<td>BPR Prec. (Depth Calib)</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
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<tr>
<td>Depth</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
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<tr>
<td>Station Offset</td>
<td>m</td>
<td>m</td>
<td>m</td>
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<tr>
<td>Level</td>
<td>m</td>
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<tr>
<td>SpCond</td>
<td>µS/cm</td>
<td>µS/cm</td>
<td>µS/cm</td>
<td>µS/cm</td>
<td>µS/cm</td>
</tr>
<tr>
<td>pH 7</td>
<td></td>
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<td></td>
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<td>pH 10</td>
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<tr>
<td>pH 4</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
<td>°C</td>
</tr>
<tr>
<td>Chl (O)</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
<td>µg/L</td>
</tr>
<tr>
<td>Chl (118)</td>
<td>165</td>
<td>165</td>
<td>165</td>
<td>165</td>
<td>165</td>
</tr>
</tbody>
</table>

**Battery voltage**
- 6.0 V (remove ext. power to 6.0V)
- 6.5 V (remove ext. power)

**Pre-deployment diagnostics**

- **Post-deployment diagnostics**

**Programming**

- **Interval:**
- **Duration:**
- **Free memory:**
- **Parameters recorded:**
- **Temp:**
- **DO % sat:**
- **pH:**
- **Comments Pre:**
- **Comments Post:**

**Calculated pH slope**

- 0.1 V (6.7 V)
- 0.1 V (6.7 V)

**DO 0.3% high**

**PH "acid" 8/31 00:15**

**Very hot water brush splashed. faces clean**
NERRS SWMP Water Quality Field Log

Reserv: Great Bay
Station Name: LPR
File Name: 

Deployment Information

Date Deployed: 8/11/17
Time: 11:01
White Towel: yes

Technician(s): 2K
Sonde ID #: 674

Field Data:

<table>
<thead>
<tr>
<th>Water Temp</th>
<th>Sp Cond</th>
<th>Salinity</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.1 c</td>
<td>41.2 S</td>
<td>27.2 ppt</td>
</tr>
</tbody>
</table>

DO Percent

DO Conc.

Other

Comments: recover 183, deploy 674, grab sample

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 

Comments: 

Retrieval Information

Date Retrieved: 9/11/17
Time: 12:30
White Towel: yes

Technician(s): 2K
Sonde ID #: 674

Field Data:

<table>
<thead>
<tr>
<th>Water Temp</th>
<th>Sp Cond</th>
<th>Salinity</th>
</tr>
</thead>
<tbody>
<tr>
<td>no data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DO Percent

DO Conc.

Other

Fouling Presence: Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydrroids, S=sponges, T=tunicates, O=other, N=none

Amount: H=heavy, M=moderate, L=light

(e.g. A, H, B, L)

Sonde Guard
Temp Cond
pH

External Screen
Dissolved Oxygen
Turbidity

Comments: recover 674, deploy 173, overlap at 12:30

no data due to malfunctioning

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 

Comments: 
NERRS SWMP Water Quality Calibration Log

Station Name: ___________  CDMO Raw File Name: LPR091117

Datasonde and Probe Identification Numbers

Datasound:  Sonde Code: 173  Serial Number: ___________
Vented: Model Number: ___________
Nickname: ____________  pH: ___________
Serial Number: ___________
Model Number: ___________
BP @ Cal (Rapid Pulse): 609 mm Hg  Optical DO @ 100% sat: 99.8%  DO: ___________
BP @ Cal (Optical): 611 mm Hg  Measured: ___________
Baro. Prec. (Depth Calib): 1047.8 mm Hg
Depth: 0.18 m  Station Offset: ___________
Level: ___________
Sp Cond: 50.18 mS/cm  Set clock (status): ___________
ph 7: 7.01  16/3/17
ph 10: 8.07
ph 4: 9.14
Turb: 0.3 NTU  Turb: 10 0.4 NTU
Turb: ___________
Rhodamine WT Temp: ___________
Chl (0) 0.00 mg/L
Chl (118) 0.16 mg/L
Battery voltage: 5.3 V

Pre/Post Deployment Calibration

Pre-Deployment

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Check Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>20.4°C</td>
<td>20.4°C</td>
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<td>___________</td>
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<tr>
<td>DO % sat</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
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<tr>
<td>Baro. Prec.</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
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<tr>
<td>Depth</td>
<td>___________</td>
<td>___________</td>
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<tr>
<td>Sp Cond</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>ph 7</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
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<tr>
<td>ph 4</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
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<tr>
<td>Turb</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>___________</td>
<td>___________</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td>Chl (0)</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>Chl (118)</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
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</table>

Post-Deployment

<table>
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</thead>
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<td>Temp</td>
<td>20.4°C</td>
<td>20.4°C</td>
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<td>___________</td>
</tr>
<tr>
<td>DO % sat</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>Baro. Prec.</td>
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<td>___________</td>
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<td>___________</td>
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<tr>
<td>Depth</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
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<tr>
<td>Sp Cond</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>ph 7</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>ph 4</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>Turb</td>
<td>___________</td>
<td>___________</td>
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<td>___________</td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>___________</td>
<td>___________</td>
<td></td>
<td>___________</td>
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<tr>
<td>Chl (0)</td>
<td>___________</td>
<td>___________</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td>Chl (118)</td>
<td>___________</td>
<td>___________</td>
<td></td>
<td>___________</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>___________</td>
<td>___________</td>
<td></td>
<td>___________</td>
</tr>
</tbody>
</table>

Sensor Diagnostics

Pre-Deployment

| DO DOCHG (range 25-75) | ___________|
| DO Gain (pH 7.4) | ___________|
| Optical DO gain (0.054, 0.04, EXO: 0.037, 0.15) | ___________|
| DO DO warm up test (10-15) | ___________|
| pH 7 (pH 7) | ___________|
| pH 10 (pH 10) | ___________|
| pH 4 (pH 4) | ___________|
| Calculated pH error | ___________|
| pH 7 (pH 7) | ___________|
| pH 10 (pH 10) | ___________|
| pH 4 (pH 4) | ___________|
| Calculated pH error | ___________|

Post-Deployment

| DO DOCHG (range 25-75) | ___________|
| DO Gain (pH 7.4) | ___________|
| Optical DO gain (0.054, 0.04, EXO: 0.037, 0.15) | ___________|
| DO DO warm up test (10-15) | ___________|
| pH 7 (pH 7) | ___________|
| pH 10 (pH 10) | ___________|
| pH 4 (pH 4) | ___________|
| Calculated pH error | ___________|

Programming

Interval: ___________ min  Start date: ___________  Start time (STD): ___________
Duration: ___________  send file name: ___________  Battery life: ___________
Free memory: ___________  Set clock (status): ___________  Free memory (status): ___________
Parameter recorded: ___________
Temp: ___________
DO % sat: ___________
pH: ___________
Turbidity: ___________
Chlorophyll: ___________
Salinity: ___________
Depth/Level: ___________
Battery Voltage: ___________
Comments Pre: ___________
Comments Post: ___________
**NERRS SWMP Water Quality Field Log**

**Reserve:** Great Bay  
**Station Name:** LPK  
**File Name:**  

---

**Deployment Information**

**Date Deployed:** 4/11/17  
**Time:** 12:30  
**White Towel:** yes  
**Sonde ID #:** 173  

**Technician(s):** ZK  
**Field Data:**
- **Water Temp:**  
- **Sp Cond:**  
- **Salinity:**  
- **DO Percent:**  
- **DO Conc.:**  
- **Other:**  

**Comments:** recover 674, deploy 173, overlap at 1230 due to malfunction  

---

**Infield Maintenance**  
*(Note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)*

**Date:**  
**Duration:**  
**Maintenance:**  
**Comments:**  

---

**Retrieval Information**

**Date Retrieved:** 5/11/17  
**Time:** 12:26  
**White Towel:** yes  
**Sonde ID #:** 173  

**Technician(s):** ZK  
**Field Data:**
- **Water Temp:** 15.0°C  
- **Sp Cond:**  
- **Salinity:** 28.3  
- **DO Percent:**  
- **DO Conc.:**  
- **Other:**  

**Fouling Presence:**
- **Type:** A=algae, B=urchins, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none  
- **Amount:** H=heavy, M=moderate, L=light  

---

**Comments:** recover 173, deploy 674, overlap + hand hold at 1230, grab sample  

---

**File Retrieval**

**Sonde Filename:**  
**Print Graph:**  
**Probe Malfunction:**  
**Comments:**  

---
**NERRS SWMP Water Quality Calibration Log**

**Sonde Code**: 074

**Serial Number**: 150100320

**Model Number**:

### Datasonde and Probe Identification Numbers

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<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>pH</td>
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<tr>
<td>DO</td>
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<tr>
<td>ODO</td>
<td></td>
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<tr>
<td>Turbidity</td>
<td></td>
</tr>
<tr>
<td>Conductivity</td>
<td></td>
</tr>
<tr>
<td>Chlorophyll</td>
<td></td>
</tr>
<tr>
<td>EXU Wiper</td>
<td></td>
</tr>
</tbody>
</table>

**Date of Calibration**: 10/17/2017

**Technician (s)**: LM

**Wipers Replaced**: TURB

**Batteries Replaced**: ODO

**Wiper pads 180° from optics**: CHL

**DO/ODO membrane replaced**: ODO

**Membrane integrity test**: CHL

**Comments**: From 16M100325

---

### PrePost Deployment Calibration

<table>
<thead>
<tr>
<th>Standard</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Post-Deployment</th>
<th>Pre-Deployment</th>
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<td>22.39</td>
<td>21.32</td>
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<td>DO %</td>
<td>1%</td>
<td>1%</td>
<td></td>
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</tr>
<tr>
<td>DO cal (Rapid Pulse)</td>
<td>100%</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical 45DO @ 100% sat</td>
<td>101%</td>
<td>101%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Optical 45DO @ 100% cal (Optical)</td>
<td>101%</td>
<td>101%</td>
<td></td>
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<td></td>
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<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>101 mHg</td>
<td>101 mHg</td>
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<td>pH 10</td>
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<td>10.08</td>
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<td>pH 4</td>
<td>0.00</td>
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<td>0.00</td>
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<tr>
<td>Turb</td>
<td>0.19</td>
<td>0.19</td>
<td></td>
<td>0.26</td>
<td>0.26</td>
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<td>Turb</td>
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<td>0.0 ug/l</td>
<td>0.0 ug/l</td>
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<td>0.0 ug/l</td>
<td>0.0 ug/l</td>
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<tr>
<td>Chl (118)</td>
<td>16.8 ug/l</td>
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<td>16.8 ug/l</td>
<td>16.8 ug/l</td>
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<td>Battery voltage</td>
<td>4.8 V</td>
<td>4.8 V</td>
<td></td>
<td>4.7 V</td>
<td>4.7 V</td>
</tr>
</tbody>
</table>

---

### Sensor Diagnostics

- **Pre-Deployment**
  - DO cal (range 20-50)
  - DO calibration (DO calibration range 20-50)
  - Optical DO calibration (DO calibration range 20-50)
  - DO warm up test (DO warm up test range 20-50)
  - pH 7 (range 6-8.5)
  - pH 10 (range 9-12)
  - pH 4 (range 4-6)
  - Calculated pH slope
    - (less than 0.01)

- **Post-Deployment**
  - DO calibration
  - DO warm up test (DO warm up test range 20-50)
  - pH 7 (range 6-8.5)
  - pH 10 (range 9-12)
  - pH 4 (range 4-6)
  - Calculated pH slope
    - (less than 0.01)

---

### Programming

- **Interval**: 1 hour
- **Duration**: 1 day
- **Free memory**: 1MB
- **Parameters recorded**:
  - Temp
  - Sp Cond
  - DO Conc
  - Turbidity
  - pH
  - mV
- **Start date**: 9/12/17
- **Start time**: (STD): 24 hours
- **Battery life**: 24 hours
- **Free memory**: 1MB
- **Battery voltage**: 4.7V

---

**Comments-Pre**: N/A

**Comments-Post**: N/A

---

**Bar** = -0.02

**Temp** = 12°C

**pH** = 7.00

**Chl** = 10 ug/l
**NOTES**

**Date Deployed:** 10/18/17

**Technician(s):** CK

**Sonde ID #:** 1074

**Field Data:**
- **Water Temp:** 15.0°C
- **Sp Cond:** 43.7 kΩ cm
- **Salinity:** 28.3 ppt
- **DO Percent:** 77.4%
- **DO Conc.:** 8.58 mg/L

**Comments:**
- recover 173, deploy 674, overlap + handheld at 1730.
- grab sample

---

**Infield Maintenance**

(note: any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

**Date:**

**Duration:**

**Maintenance:**

---

**Date Retrieved:** 11/7/17

**Technician(s):** CK

**Sonde ID #:** 474

**Field Data:**
- **Water Temp:** 11.0°C
- **Sp Cond:** 34.3 kΩ cm
- **Salinity:** 91.5 ppt
- **DO Percent:** 91.3%
- **DO Conc.:** 8.80 mg/L

**Fouling Presence:**
- Type: Algae, Barnacles, Crabs, Eggs, Fish, Hydroids, Sponges, Tunicates, Other, None
- Amount: Heavy, Moderate, Light

**Sonde Guard:**
- External Screen: Disposed

**Temp Cond.:**
- Dissolved Oxygen: Talked

**pH:**
- Turbidity: Talked

**Comments:**
- recover 674, deploy 173, both overlap at 9:15 with handheld
- grab sample, very little biofouling, no scrape

---

**File Retrieval**

**Sonde Filename:**

**Print Graph:**

**Probe Malfunction:**

**Comments:**

### NERRS SWMP Water Quality Calibration Log

**DataSonde Maintenance**

- **Date of Calibration:** 11/4/17
- **Technician(s):** LMP
- **Wipers replaced**
- **Batteries replaced**
- **Format flash disk**
- **Wipers park 180° from optics**
- **DO membrane replaced**
- **Membrane integrity test**

**DataSonde and Probe Identification Numbers**

- **DataSonde:** EXO 173
- **pH:** 16M100173
- **Turbidity:** 16M1001838
- **DO:** 16M101743
- **Conductivity:** 16M100101

**Comments:** Wiper 16M101302

---

### Pre/Post Deployment Calibration:

**Pre/Deployment Standards**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>1%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>175 ml</td>
<td>175 ml</td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>100.0%</td>
<td>99.0%</td>
<td></td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>175.3</td>
<td>175.3</td>
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</tr>
<tr>
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<td>pH 7</td>
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<td>pH 10</td>
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<tr>
<td>pH 4</td>
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<tr>
<td>Turb</td>
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</tr>
<tr>
<td>Battery voltage</td>
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</table>

**Post/Deployment Standards**

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<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>1%</td>
<td>1%</td>
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</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>175 ml</td>
<td>175 ml</td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>175.3</td>
<td>175.3</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.038 m</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>50 mS/cm</td>
<td>50 mS/cm</td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sensor Diagnostics**

- **Pre/Deployment**
  - RP DO chrg (range 25-75)
  - RP DO gain (0.8-1.7)
  - Optical DO gain
  - DO warm up test (hi/lo)
  - Cell const (4.45 ± 0.5)
  - pH 7 (±0.05 mV)
  - pH 10 (±0.15 mV)
  - pH 4 (±0.15 mV)
  - Calculated pH slope: 1.74

- **Post/Deployment**
  - DO chrg (range 25-75)
  - DO warm up test (hi/lo)
  - pH 7 (±0.05 mV)
  - pH 10 (±0.15 mV)
  - pH 4 (±0.15 mV)
  - Calculated pH slope: 0.9

**Programming**

- Interval: max
- Duration: days
- Free Memory: days
- Start Date: mm/dd/yyyy
- Start time: hh:mm
- Battery Life: days
- Free Bytes: status
- End time: hh:mm

**Parameters recorded:** Date, Time, Temp C, SpCond, Sal, DO%, DO mg/L, Depth, pH, Turb, Batt

**Comments:**

- **Pre:** No pH probe or salinometer probe
- **Post:** Saline clean

---

**Turb a little low**
NERRS SWMP Water Quality Field Log

Reserve: Great Bay       Station Name: LPR       File Name: 

**Deployment Information**

Date Deployed: 11/7/17   Time: 9:08   White Towel: yes

Technician(s): 2K       Sonde ID #: 173

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>11.0</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>2.73</td>
</tr>
<tr>
<td>Salinity</td>
<td>21.5</td>
</tr>
<tr>
<td>DO Percent</td>
<td>91.3</td>
</tr>
<tr>
<td>DO Conc.</td>
<td>0.066</td>
</tr>
</tbody>
</table>

**Comments:**

*grab sample*

**Infield Maintenance**

(note any changes to site during deployment, sonde tube maintenance, histoviling removal, etc.)

Date:     Duration:     Maintenance:

**Retrieval Information**

Date Retrieved: 12/11/17   Time: 11:17   White Towel: yes

Technician(s): 2K       Sonde ID #: 173

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>5.93</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>15.15</td>
</tr>
<tr>
<td>Salinity</td>
<td>28.72</td>
</tr>
<tr>
<td>DO Percent</td>
<td>85.7</td>
</tr>
<tr>
<td>DO Conc.</td>
<td>9.14</td>
</tr>
</tbody>
</table>

**Salinity Presence:**

Type: A=algae, B=sharkal, C=crabs, F=fish, H=hydrant, S=sponge, T-tunicates, O=other, N=none

Amount: H=heavy, M=moderate, L=light

<table>
<thead>
<tr>
<th>Screen</th>
<th>External Screen</th>
<th>Dissolved Oxygen</th>
<th>Turbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonde Guard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp Cond</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

*cover 173 for season, overlap w/ 3174 at 11:16 insted of handheld, no sample*

**File Retrieval**

Sonde Filename:     Print Graph:     Probe Malfunction: 

Comments
# NERRS SWMP Water Quality Calibration Log

## Site Name: 57  
File Name:  

### Sonde Maintenance

- **Date of Calibration:** 5/18/17
- **Technician(s):** TG  
- **Wipers replaced**  
- **Batteries replaced**  
- **Format flash disk**  
- **Wipers park 180° from optics**  
- **DO membrane replaced**  
- **Membrane integrity test**  

### Sonde and Probe Identification Numbers

- **Data Sonde:** 16M102178  
- **pH:** 16M103716  
- **Turbidity:** 16M101478  
- **DO/ODO Conductivity:** 16M101438  
- **16M100995**

### Comments

- All new  
- 2009 16M10490

---

### Pre/Post Deployment Calibration

**Pre/Post Deployment Calibration:** (turn on pH mV and DO Chrg in Report menu)

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Calibrated</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>1%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>BF @ cal (Rapid Puls)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.038 offest</td>
<td>0.057</td>
<td>-0.332 offest</td>
</tr>
<tr>
<td>SpCond</td>
<td>50 mS/cm</td>
<td>49.5 mS/cm</td>
<td>0.5 mS/cm</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.16</td>
<td>7</td>
<td>0.06</td>
</tr>
<tr>
<td>pH 10</td>
<td>10</td>
<td>10</td>
<td>0.06</td>
</tr>
<tr>
<td>pH 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0 NTU</td>
<td>0.4 NTU</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>124 NTU</td>
<td>117.4 NTU</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>2.1 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sensor Diagnostics

- **Pre/Deployment:**  
  - DO Chrg (range 25-75)  
  - DO gain (0.8-1.7)  
  - Optical DO gain  
  - DO warm up test (hi/lo)  
  - Cell cons (4.6-5.45)  
  - pH 7 (0 +/- 50 mV)  
  - pH 10 (-110 +/- 50 mV)  
  - pH 4 (+180 +/- 50 mV)  
  - Calculated pH slope 174.5

- **Post/Deployment:**  
  - DO Chrg (range 25-75)  
  - DO warm up test (hi/lo)  
  - pH 7 (0 +/- 50 mV)  
  - pH 10 (+180 +/- 50 mV)  
  - pH 4 (+180 +/- 50 mV)  
  - Calculated pH slope 174.5

### Programming

- **Interval:**  
- **Duration:**  
- **Free Memory:**  
- **Parameters recorded:** Date, Time, Temp °C, SpCon, Sal, DO%, DO mg/L, Depth, pH, Turb. Batt

### Comments - Pre:  
- Offset = -0.027, T = 21.33, \( \Delta T = 21.36 \)

### Comments - Post:  
- Error = 0.027
- Wiper failed issues
- TURB 240 true 63.5 (correlated 64.2)
- TURB offset 0.027
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 5/18/2017 mm.dd.yyyy  Time: 12:45 hh:mm (24hr)  White Towel: yes

Technician(s): [Signature]  Sonde ID #: 177

Field Data:

Water Temp: 16.7°C  DO Percent: 109.2%  mg/L
Sp Cond: 113 mS/m  DO Conc.: 10.48 mg/L
Salinity: 23.2 ppt  Other:

Comments: New site, new actual 57, see GPS

Infield Maintenance

(note any changes to site during deployment, send tube maintenance, biofouling removal, etc.)

Date: 5/10  Duration: 15/15  Maintenance:

Comments: Grab vals sample

Retrieval Information

Date Retrieved: 5/10 mm.dd.yyyy  Time: 12:45 hh:mm (24hr)  White Towel: yes

Technician(s): [Signature]  Sonde ID #: [Signature]

Field Data:

Water Temp:  DO Percent: 
Sp Cond: 113 mS/m  DO Conc.: 
Salinity: 23.2 ppt  Other:

Fouling Presence:
Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=unicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light  (e.g. A,H,B,L)

Sonde/Guard Temp/Cond:  External Screen
pH:  Dissolved Oxygen

Comments:

File Retrieval

Sonde Filename:  Print Graph:  Probe Malfunction:

Comments:
NERRS SWMP Water Quality Field Log

**Deployment Information**

- **Date Deployed:** 01/31/17
- **Time:** 10:41
- **White Towel:** Yes
- **Technician(s):** ZK
- **Sonde ID #:** 6775
- **Water Temp:** 19.5°C
- **Sp Cond:** 12.84 mS/cm
- **Salinity:** 7.5 ppt
- **DO Percent:** 91.1%
- **DO Conc.:** 7.88 mg/l

**Comments:** Recover 176 at 57 Sonde waypoint. 4/3. 15872 70.80435. Deploy 675 at new waypoint 68RUPR. Grab sample data at old 57 waypoint.

**Infield Maintenance**

(Note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

- **Date:**
- **Duration:**
- **Maintenance:**

**Retention Information**

- **Date Retrieved:** 04/06
- **Time:** 11:58
- **White Towel:** Yes
- **Technician(s):** ZK
- **Sonde ID #:** 6775
- **Water Temp:** 14.9°C
- **Sp Cond:** 3.25 mS/cm
- **Salinity:** 3.5 ppt
- **DO Percent:** 91.7%
- **DO Conc.:** 8.88 mg/l

**Fouling Presence:**

- **Type:** A=algae, B=barnacles, C=clams, E=eggs, F=fish, H=hydras, S=sponges, T=tunicates, O=other, N=none
- **Amount:** H=heavy, M=moderate, L=light

- **Sonde Guard**
- **Temp Cond**
- **pH**
- **External Screen**
- **Dissolved Oxygen**
- **Turbidity**


**File Retrieval**

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**

**Comments:**
**NERRS SWMP Water Quality Calibration Log**

**Datasonde and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>pH</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>178</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Datasonde Maintenance**

<table>
<thead>
<tr>
<th>Date of Calibration</th>
<th>Wipers Replaced</th>
<th>Technician(s.)</th>
<th>TURB</th>
<th>ODO</th>
<th>CHL</th>
<th>Wiper parks 180° from optics</th>
<th>DO/ODO membrane replaced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>TURB</td>
<td>ODO</td>
<td>CHL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>22.0°C</td>
<td>22.0°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td>100.2%</td>
<td>100.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP @ (Kapad Pule)</td>
<td>10.1 mHg</td>
<td>10.1 mHg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP @ Optical</td>
<td>10.1 mHg</td>
<td>10.1 mHg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>166.6 m</td>
<td>166.6 m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>0.15 ft</td>
<td>0.07 ft</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Station Offset Level</td>
<td>0.0 ft</td>
<td>0.0 ft</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>58 mg/L</td>
<td>58 mg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>7.1</td>
<td>7.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>0.08</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>INTUPN2</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>24°C</td>
<td>24°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Battery Voltage**

| Battery voltage | 5.4 V | (measure ext. power @10/240A1) | 5.4 V | (measure ext. power @10/240A1) |

**Comments**

| Offsets: 0.007 | \(\text{Chl} \text{ on} \text{Dec} \text{9,} \text{cal} \text{d} \text{d}^2 \) |

**Programming**

<table>
<thead>
<tr>
<th>Interval</th>
<th>Duration</th>
<th>Start date:</th>
<th>Start time (STD):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1248 mm as</td>
</tr>
</tbody>
</table>

**Free memory:**

<table>
<thead>
<tr>
<th>Parameters recorded</th>
<th>Temp</th>
<th>DO % sat</th>
<th>pH</th>
<th>Salinity</th>
<th>Depth/Level</th>
<th>Chlorophyll</th>
<th>Battery Voltage:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Free memory (status):**

<table>
<thead>
<tr>
<th>attery life:</th>
<th>&quot;A&quot;</th>
<th></th>
</tr>
</thead>
</table>

**Comments-Post:**

"red algae, colored tunicates on propes"
NERRS SWMP Water Quality Field Log

Reserve: Great Bay
Station Name: UPR
File Name:

Deployment Information

Date Deployed: 7/10/17 mm/dd/yyyy
Time: 11:58 hr:mm (24hr)
White Towel:

Technician(s): ZK
Sonde ID #: 178

Field Data:

Water Temp: 18.9 °C
Sp Cond: 37.38 psu
Salinity: 23.7 ppt

DO Percent: 110.7 %
DO Conc.: 8.98 mg/l

Comments: deploy for season: On bottom, no cleaning, recover 675, deploy 178, overlap

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date:
Duration:
Maintenance:

Comments

Retrieval Information

Date Retrieved: 8/14/17 mm/dd/yyyy
Time: 3:52 hr:mm (24hr)
White Towel:

Technicians(s): ZK
Sonde ID #: 178

Field Data:

Water Temp: 22.0 °C
Sp Cond: 45.0 psu
Salinity: 29.1 ppt

DO Percent: 103.3 %
DO Conc.: 8.18 mg/l

Fouling Presence: Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydrans, S=sponges, T=tunicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light (e.g. A/H, B/L)

Sonde/Guard Temp/Cond pH

External Screen Dissolved Oxygen Turbidity

Comments: deploy 673, recover 178, grab sample, overlap at 4:00
## Data Log

### Station Name: LPR

#### Data and Probe Identification Numbers
- **Data Date:** 13/11/2017
- **Serial Number:** pH: [Serial Number]
- **Model Number:** DO: [Serial Number]
- **Turbidity:** [Serial Number]
- **Conductivity:** [Serial Number]
- **Chlorophyll:** [Serial Number]
- **EXO Wiper:** [Serial Number]

#### Data and Maintenance
- **Date of Calibration:** 13/11/2017
- **Technician(s):** [Name]

#### Wipers Replaced
- **Turbidity:** [Status]
- **DO:** [Status]
- **Chlorophyll:** [Status]
- **DO/DOO membrane replaced:** [Status]
- **Membrane integrity test:** [Status]

### PrePost Deployment Calibration

<table>
<thead>
<tr>
<th>Standard/Parameter</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Error %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temp</strong></td>
<td>11.8°C</td>
<td>11.8°C</td>
<td>0%</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>7.5</td>
<td>7.5</td>
<td>0%</td>
</tr>
<tr>
<td><strong>DO</strong></td>
<td>8.5 mg/L</td>
<td>8.5 mg/L</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Salinity</strong></td>
<td>34.2 g/L</td>
<td>34.2 g/L</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Turbidity</strong></td>
<td>0 NTU</td>
<td>0 NTU</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Conductivity</strong></td>
<td>90 µS/cm</td>
<td>90 µS/cm</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Chlorophyll</strong></td>
<td>10 µg/L</td>
<td>10 µg/L</td>
<td>0%</td>
</tr>
<tr>
<td><strong>DO-O2</strong></td>
<td>8.5 mg/L</td>
<td>8.5 mg/L</td>
<td>0%</td>
</tr>
</tbody>
</table>

#### Pre-Deployment Diagnostics
- **DO**
  - Chrg: [Status]
  - Gain: [Status]
- **DO-O2**
  - Chrg: [Status]
  - Gain: [Status]
- **Salinity**
  - Cell const: [Status]
  - EXO 515-519: [Status]
- **pH**
  - Chrg: [Status]
  - Gain: [Status]
- **Turbidity**
  - Chrg: [Status]
  - Gain: [Status]
- **Conductivity**
  - Chrg: [Status]
  - Gain: [Status]
- **Chlorophyll**
  - Chrg: [Status]
  - Gain: [Status]
- **Membrane integrity test:** [Status]

### Programming
- **Interval:** 10 minutes
- **Duration:** 2 hours
- **Free memory:** 4.4 Gb

### Battery Voltage
- **Value:** 14.1 V

### Comments
- **Pre:** [Comments]
- **Post:** [Comments]
NERRS SWMP Water Quality Field Log

Reserve: Great Bay  Station Name: LPR  File Name: [blank]

Deployment Information

Date Deployed: 8/14/17  mm dd yyyy  Time: 3:52  hh mm (24hr)  White Towel: [blank]

Technician(s): [blank]  Sonde ID #: 673

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>23.0 °C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>45.0 mS/cm</td>
</tr>
<tr>
<td>Salinity</td>
<td>3.4 ppt</td>
</tr>
</tbody>
</table>

DO Percent: 108.3 %  DO Conc: 8.18 mg/L

Comments: deploy 673, recover 178, grab sample

Overlap at 4:00

Infield Maintenance

(note any changes to site during deployment, sondes tube maintenance, biofouling removal, etc.)

Date: [blank]  Duration: [blank]  Maintenance: [blank]

Comments: [blank]

Retrieval Information

Date Retrieved: 9/11/17  mm dd yyyy  Time: 13:00  hh mm (24hr)  White Towel: [blank]

Technician(s): [blank]  Sonde ID #: 673

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>[no data]</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>[no data]</td>
</tr>
<tr>
<td>Salinity</td>
<td>[no data]</td>
</tr>
</tbody>
</table>

DO Percent: [no data]  DO Conc: [no data]  Other: [no data]

FOSSILING PRESENCE: [blank]

Comments: recover 673, deploy 911, overlap at 1300

no data due to malfunctioning YSI

File Retrieval

Sonde Filename: [blank]  Print Graph: [blank]  Probe Malfunction: [blank]

Comments: [blank]
### NERRS SWMP Water Quality Calibration Log

**Station Name:**

**CDMO Raw File Name:** DPR091117

### Datasonde and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>pH</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>911</td>
<td></td>
<td></td>
<td>1617003288</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RP DO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GDO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turbidity</td>
<td>1617003288</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conductivity</td>
<td>1617003288</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chlorophyll</td>
<td>1617003288</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EXO Wiper</td>
<td>1617003288</td>
<td></td>
</tr>
</tbody>
</table>

### Datasonde Maintenance

**Date of Calibration:** 01/14

- **Wipers Replaced:** TURB, ODO, CHL
- **Batteries Replaced:**
- **Format Flash Disk:**
- **Membrane integrity test:**

**Comments:** 16/10 3546

### Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standard</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Error</th>
<th>Pre-Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>20.4°C</td>
<td>20.5°C</td>
<td>±0.1°C</td>
<td>±0.1°C</td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td>1%</td>
<td>1%</td>
<td>±0.1%</td>
<td>±0.1%</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>101 ± 1 mm Hg</td>
<td>101 ± 1 mm Hg</td>
<td>±0.1%</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Optical % DO @ 100% sat</td>
<td>1000 ± 3</td>
<td>1000 ± 3</td>
<td>±0.1%</td>
<td>±0.1%</td>
</tr>
<tr>
<td>BP @ cal (Optical)</td>
<td>14.1 ± 0.1 L s⁻¹</td>
<td>14.1 ± 0.1 L s⁻¹</td>
<td>±0.1%</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Baro. Pres. (Depth-Calib)</td>
<td>18.3 ± 0.5 m Hg</td>
<td>18.3 ± 0.5 m Hg</td>
<td>±0.1%</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Depth</td>
<td>0.16 m</td>
<td>0.15 m</td>
<td>±0.01 m</td>
<td>±0.01 m</td>
</tr>
<tr>
<td>Station Offset</td>
<td>0.115</td>
<td>0.027</td>
<td>0.0 offset</td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.01 m</td>
<td>0.01 m</td>
<td>±0.0 m</td>
<td>±0.0 m</td>
</tr>
<tr>
<td>SpCond</td>
<td>478 ± 1 mS/cm</td>
<td>478 ± 1 mS/cm</td>
<td>±0.1%</td>
<td>±0.1%</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.03</td>
<td>7.04</td>
<td>±0.01</td>
<td>±0.01</td>
</tr>
<tr>
<td>pH 10</td>
<td>0.01</td>
<td>0.01</td>
<td>±0.01</td>
<td>±0.01</td>
</tr>
<tr>
<td>pH 4</td>
<td>7.07</td>
<td>7.07</td>
<td>±0.01</td>
<td>±0.01</td>
</tr>
<tr>
<td>Turb</td>
<td>1.05</td>
<td>1.05</td>
<td>±0.01</td>
<td>±0.01</td>
</tr>
<tr>
<td>Turb</td>
<td>0.08</td>
<td>0.08</td>
<td>±0.01</td>
<td>±0.01</td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>25°C</td>
<td>25°C</td>
<td>±0.5°C</td>
<td>±0.5°C</td>
</tr>
<tr>
<td>Chl (0)</td>
<td>6.2 µg/L</td>
<td>6.2 µg/L</td>
<td>±0.2 µg/L</td>
<td>±0.2 µg/L</td>
</tr>
<tr>
<td>Chl (118)</td>
<td>16.8 µg/L</td>
<td>16.8 µg/L</td>
<td>±0.8 µg/L</td>
<td>±0.8 µg/L</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>5.0 V</td>
<td>5.0 V</td>
<td>±0.2 V</td>
<td>±0.2 V</td>
</tr>
</tbody>
</table>

### Sensor Diagnostics

**Pre-Deployment**
- RP DO chE (range 15-75)
- RP DO gain (2.07-4)
- Optical DO gain (sdoo, 9.7-1.4, EXO 0.17-4.25)
- RP DO warm up test (mv)
- Cell test (sdoo 4.0-5.5, EXO 5-6.0, NPO 4.11-6.15)
- pH 7 (0-50 mV)
- pH 10 (0-50 mV)
- pH 4 (<10 ± 50 mV)
- Calculated pH slope
  - (0-7.1 expected)
- (negative slope)

**Post-Deployment**
- RP DO chE (range 15-75)
- RP DO warm up test (mv)
- pH 7 (0-50 mV)
- pH 10 (0-50 mV)
- pH 4 (<10 ± 50 mV)
- Calculated pH slope
  - (7.1 expected)
- (negative slope)

### Programming

**Interval:** 0.25 h

**Duration:** 6 h

**Free memory:** 0.0 Mbps

**Parameters recorded:**
- Temp
- DO % sat
- pH
- Turbidity
- pH mV

**Comments-PRE:**

**Comments-POST:**

*Did not cal. Best post values were tight on.*

Post: 22.49 m 32.5 15.8 15.8 15.8

*Typing: 10-21*

*Very hot fountain. Faces clean*
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 9/11/17
Time: 14:00
White Towel: yes

Technician(s): ZK
Sonde ID #: 911

Field Data:

Water Temp: 5°C
Sp Cond: 42.60 mS/cm
Salinity: 27.4

DO Percent: 80.5%
DO Conc.: 1.6 mg/L
Other:

Comments: Recover 673, deploy 911, overlap at 1300 data due to malfunctioning YSI

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 

Comments: 

Retrieval Information

Date Retrieved: 10/10/17
Time: 12:48
White Towel: yes

Technician(s): ZK
Sonde ID #: 911

Field Data:

Water Temp: 14.5°C
Sp Cond: 42.60 mS/cm
Salinity: 27.4

DO Percent: 80.5%
DO Conc.: 1.6 mg/L
Other:

Faulting Presence: Type: A=algae, B=biomass, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light

Sonde Guard
Temp Cond
ph:

External Screen
Dissolved Oxygen
Turbidity:

Comments: Recover 911, deploy 673, overlap and handhold at 1300, stakele hadly rushed on anchor, bring drill and new shackled next visit

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 

Comments: 
**NERIS SWMP Water Quality Calibration Log**

**Datasonde and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Datasonde</th>
<th>Serial Number</th>
<th>pH</th>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>16103219</td>
<td></td>
</tr>
</tbody>
</table>

**Datasonde Maintenance**

<table>
<thead>
<tr>
<th>Date of Calibration</th>
<th>Technician(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/10/2017</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wipers Replaced</th>
<th>Batteries Replaced</th>
<th>Format Flash Disk</th>
</tr>
</thead>
<tbody>
<tr>
<td>TURB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ODO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

"From 16M/10/17 87"

### Pre/Post Deployment Calibration

#### Standards

<table>
<thead>
<tr>
<th>Temp</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Check Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.3°C</td>
<td>20.3°C</td>
<td>-0.00°C</td>
<td>0.00°C</td>
<td>11/3/17</td>
</tr>
</tbody>
</table>

#### Pre-Deployment

- **RP DO chrg (range 25-75)**
- **RP DO gain (0.3-4.4)**
- **Optical DO gain (6000: 0.7-1.4, EXO 900-1.35)**
- **RP DO warm up test (25°C)**
- **Cell const (gates 4-60 42, EXO 5.0-1.4, WPD/EXO 4.0-5.0)**
- **pH 7 (+/- 0.01 mV)**
- **pH 10 (+/- 0.10 mV)**
- **pH 4 (+/- 0.05 mV)**
- **Calculated pH slope**

#### Post-Deployment

- **RP DO chrg (range 25-75)**
- **RP DO warm up test (25°C)**
- **pH 7 (+/- 0.01 mV)**
- **pH 10 (+/- 0.10 mV)**
- **pH 4 (+/- 0.05 mV)**
- **Calculated pH Slope**

### Programming

- **Interval:** min
- **Duration:** days
- **Date file name:**
- **Start clock (status):** hr or N
- **Free memory (status):**
- **Temp:**
- **DO % sat:**
- **pH:**
- **Turbidity:**
- **Chlorophyll:**
- **Battery Voltage:**

### Comments: Pre

"Ca/09/4 cld'd from htr (ca/3d 9/11/17)"

**Comments-Post:**

"Turb probe died 10/30/17 3:15 be of used batteries"
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 01/10/17 Time: 12:45

Technician(s): ZK Sonde ID #: 073

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>16.5 °C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>42.40 mg/L</td>
</tr>
<tr>
<td>Salinity</td>
<td>27.4 ppt</td>
</tr>
</tbody>
</table>

DO Percent: 80.5 %
DO Conc: 6.68 mg/L

Comments: Recover 911, deploy 073, overlap + hand held at 1800
Shackle had been rusted on anchor, bring new shackle next visit

Infield Maintenance

(note any changes to site during deployment, sondable maintenance, biofouling removal, etc.)

Date: [ ] Duration: [ ] Maintenance: [ ]

Comments: [ ]

Retrieval Information

Date Retrieved: 01/17/17 Time: 9:50

Technician(s): ZK Sonde ID #: 073

Field Data:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>11.1 °C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>8.61 mg/L</td>
</tr>
<tr>
<td>Salinity</td>
<td>1.8 ppt</td>
</tr>
</tbody>
</table>

DO Percent: 87.5 %
DO Conc: 8.87 mg/L

Fouling Presence:
Type: A=algae, B=baracles, C=crabs, D=eggs, E=fish, F=hydroids, G=spargues, H=snails, O=other, N=none

Amount: H=heavy, M=moderate, L=light

Sonde Guard Temp Cond pH

External Screen Dissolved Oxygen Turbidity

Comments: Recover 073, deploy 177, overlap at 9:45, grab sample

File Retrieval

Sonde Filename: [ ] Print Graph: [ ] Probe Malfunction: [ ]

Comments: [ ]
### NERRS SWMP Water Quality Calibration Log

#### Datasonde Maintenance

**Date of Calibration:** 11/6/17  
**Technician(s):** LM

- Wipers replaced
- Batteries replaced
- Format flash disk
- Wipers park 180° from optics
- DO membrane replaced
- Membrane integrity test

#### Datasonde and Probe Identification Numbers

- **pH:** 10.1  
- **Turbidity:** 0.75
- **DO/DO:** 3 (cap 17)
- **Conductivity:** 16.010.284
- **Wiper:** 13C10315

**Comments:**

Calibrated 16m10356 from 17F10108

---

### Pre/Post Deployment Calibration

**Pre-Deployment Calibration:** (turn on pH mV and DO Chrg in Report menu)

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>1 %</td>
<td>1 %</td>
<td>0 %</td>
</tr>
<tr>
<td>BP @ cal (Rapid Puls)</td>
<td>100 mm Hg</td>
<td>100.5 mm Hg</td>
<td>1 %</td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>157.7 mm Hg</td>
<td>157.5 mm Hg</td>
<td>0.2 mm Hg</td>
</tr>
<tr>
<td>(760.0 for vented scale)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>0.038 m</td>
<td>0.038 m</td>
<td>0.04 m</td>
</tr>
<tr>
<td>Depth</td>
<td>50 m羽m</td>
<td>50 m羽m</td>
<td>0.0 m</td>
</tr>
<tr>
<td>SpCond</td>
<td>49.73 mS/cm</td>
<td>50 mS/cm</td>
<td>0.27 mS/cm</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.01</td>
<td>7.01</td>
<td>0.001</td>
</tr>
<tr>
<td>pH 10</td>
<td>9.99</td>
<td>9.99</td>
<td>0.0001</td>
</tr>
<tr>
<td>pH 4</td>
<td>10.12</td>
<td>10.12</td>
<td>0.0001</td>
</tr>
<tr>
<td>Turb</td>
<td>0.15 NTU</td>
<td>0.15 NTU</td>
<td>-0.04 NTU</td>
</tr>
<tr>
<td>Turb</td>
<td>123.94 NTU</td>
<td>123.94 NTU</td>
<td>-0.04 NTU</td>
</tr>
</tbody>
</table>

**Battery voltage:**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Charged</th>
<th>Test</th>
</tr>
</thead>
</table>
| 6.07 V  | (remove ext. power-650, 603h) | 9.5 V | (remove ext. power)

---

### Sensor Diagnostics

**Pre-Deployment**

- RP DO chrg (range 25-75)
- RP DO gain (0.8-1.7)
- Optical DO gain
- DO warm up test (0.0)
- Cell const (4.6-5.45)
- pH 7 (0 +/- 50 mV)
- pH 10 (180 +/- 50 mV)
- pH 4 (180 +/- 50 mV)
- Calculated pH slope 174.3

**Post-Deployment**

- DO chrg (range 25-75)
- DO warm up test (0.0)
- pH 7 (0 +/- 50 mV)
- pH 10 (180 +/- 50 mV)
- pH 4 (180 +/- 50 mV)
- Calculated pH slope 174.0

---

### Programming

- **Interval:**
- **Duration:**
- **Free memory:**
- **Parameters recorded:** Date, Time, Temp°C, SpCon, Sal, DO%, DO mg/L, Depth, pH, Turb, Batt

### Comments

- **Pre:**
  - **Time:** 21.74
  - **Temp:** 20.0
  - **Chg:** 0.01
  - **Add:** 0.0

- **Post:**
  - **Time:** 21.74
  - **Temp:** 20.0
  - **Chg:** 0.01
  - **Add:** 0.0
**NERRS SWMP Water Quality Field Log**

**Deployment Information**

- **Date Deployed:** 11/17/17
- **Time:** 11:52 am
- **White Towel:** Yes
- **Technician(s):** 2K
- **Sonde ID #:** 177

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>11.1</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>16.1</td>
</tr>
<tr>
<td>Salinity</td>
<td>16.0</td>
</tr>
<tr>
<td>DO Percent</td>
<td>88.5</td>
</tr>
<tr>
<td>DO Conc.</td>
<td>8.87</td>
</tr>
</tbody>
</table>

**Comments:**

- Over 673, deployed 177, overlap at 9:45, grab sample
- Replaced shackle on anchor

**Infield Maintenance**

*Note any changes to site during deployment, sonde tube maintenance, binocular removal, etc.*

- **Date:**
- **Duration:**
- **Maintenance:**

**Retrieval Information**

- **Date Retrieved:** 12/17/17
- **Time:** 11:47 am
- **White Towel:** Yes
- **Technician(s):** 2K
- **Sonde ID #:** 177

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>3.79</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>23.86</td>
</tr>
<tr>
<td>Salinity</td>
<td>14.2</td>
</tr>
<tr>
<td>DO Percent</td>
<td>95.0</td>
</tr>
<tr>
<td>DO Conc.</td>
<td>11.38</td>
</tr>
</tbody>
</table>

**Fouling Presence:**

- **Type:** A-algae, B-fish, C-corals, E-eggs, F-fish, H-hydrads, S-sponges, T-turbinates, O-other, N-none
- **Amount:** H-heavy, M-moderate, L-light

**Comments:**

- Recover 177 for season, overlap at 11:45 with 3174
- Instead of handheld, no sample

**File Retrieval**

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**

**Comments**
NERRS SWMP Water Quality Calibration Log

Date of Calibration: 2/25/17

Datasonde Maintenance

Wipers replaced
TURB ODO
Batteries replaced

Data on Site Name: Eml
FileName: CL042617

Datasonde and Probe Identification Numbers

Datasonde DO/ODO Conductivity
pH 18M 102174
Turbidity 18M 102199

Pre/Post Deployment Calibration:

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>Before Cal</td>
<td>Calibrated</td>
<td>RP DO chg (range 25-75)</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulsar)</td>
<td>mm Hg</td>
<td>mm Hg</td>
<td>RP DO gain (0.8-1.7)</td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>77/1 mHg</td>
<td>77/1 mHg</td>
<td>Optical DO gain</td>
</tr>
<tr>
<td>0.38 (Optical)</td>
<td>mm Hg</td>
<td>mm Hg</td>
<td>DO warm up test (1h/0s)</td>
</tr>
<tr>
<td>Baro. Pres (Depth Calib)</td>
<td>771 mHg</td>
<td>771 mHg</td>
<td>Cell const (4.6-5.45)</td>
</tr>
<tr>
<td>Depth</td>
<td>0.13 m</td>
<td>0.13 m</td>
<td>pH 7 (0 +/- 50 mV)</td>
</tr>
<tr>
<td>SpCond</td>
<td>50 mS cm</td>
<td>50 mS cm</td>
<td>pH 10 (+180 +/- 50 mV)</td>
</tr>
<tr>
<td>pH 7</td>
<td>7/7</td>
<td>7/7</td>
<td>pH 4 (+180 +/- 50 mV)</td>
</tr>
<tr>
<td>pH 10</td>
<td>10/10</td>
<td>10/10</td>
<td>Calculated pH slope</td>
</tr>
<tr>
<td>pH 4</td>
<td>10/10</td>
<td>10/10</td>
<td>17.4</td>
</tr>
<tr>
<td>Turb</td>
<td>0.12 NTU</td>
<td>0.12 NTU</td>
<td>Did not post-cal pH (10.7)</td>
</tr>
<tr>
<td>Turb</td>
<td>0.12 NTU</td>
<td>0.12 NTU</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>0 V</td>
<td>0 V</td>
<td></td>
</tr>
</tbody>
</table>

Programming

Interval: [ ]
Duration: [ ]
Free memory: [ ]

Parameters recorded:
Date, Time, Temp°C, SpCon, Sal, DO%, DO mg/L, Depth, pH, Turb, Batt

Comments - Pre: offset = 0.15 1 - 17.83 7s = 17.86

Comments - Post: Turb high or post - cal
NERRS SWMP Water Quality Field Log

**Deployment Information**

Date Deployed: 4/26/2017  mm.dd.yyyy  Time: 1500  hh.mm (24hr)  White Towel: yes

Technician(s):  [Signature]

Sonde ID #: 625

**Field Data:**

- Water Temp: [Temperature in °C]
- Sp Cond: [Conductivity in µS/cm]
- Salinity: [Salinity in ppt]

**Comments:**

Deployed H 675  3/9

**Infield Maintenance**

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date:  
Duration:  
Maintenance:  

Comments:

**Retrieval Information**

Date Retrieved:  mm.dd.yyyy  Time:  hh.mm (24hr)  White Towel: yes

Technician(s):  [Signature]

Sonde ID #: [ID Number]

**Field Data:**

- Water Temp: [Temperature in °C]
- Sp Cond: [Conductivity in µS/cm]
- Salinity: [Salinity in ppt]

**Fouling Presence:**

Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none

Amount: H=heavy, M=moderate, L=light (e.g. A H B L)

Sonde/Guard Temp/Cond pH

External Screen  Dissolved Oxygen  Turbidity

Comments: Light fouling on probes

**File Retrieval**

DO paint fairly seawater

Sonde Filename:  
Print Graph:  
Probe Malfunction:  

Comments:
# NERRS SWMP Water Quality Calibration Log

**Date of Calibration:** 1/4/17

**Technician(s):** [Name]

### Datasonde Maintenance
- Wipers replaced
- Battery replaced
- Format flash disk
- Wipers park 180° from optics
- DO membrane replaced
- Membrane integrity test

### Data/Sonde and Probe Identification Numbers
- **Dassonde:** 14A100674
- **pH:** 14A.100785
- **Turbidity:** 13.610307
- **DO/ODO:** 13M102172
- **Conductivity:** 16A103242

### Comments
- ADOM 16M100181 (PC)
- pH Ty replaced 9/6/16

### Pre/Post Deployment Calibration:
- (run on pH nV and DO Chrg in Report menu)

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Pre-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>0.2</td>
<td>RP DO chrg (range 25-75)</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>101</td>
<td>101</td>
<td>10.2</td>
<td>0.9</td>
<td>Optical DO gain</td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>75</td>
<td>75</td>
<td>0.5</td>
<td>0.1</td>
<td>DO warm up test (hi/lo)</td>
</tr>
<tr>
<td>cal (Optical)</td>
<td>150</td>
<td>150</td>
<td>0.5</td>
<td>0.1</td>
<td>Cell const (4.6-5.45)</td>
</tr>
<tr>
<td>Bare. Pres. (Depth Calib)</td>
<td>750</td>
<td>750</td>
<td>0.5</td>
<td>0.1</td>
<td>pH 7 (0 +/- 50 mV)</td>
</tr>
<tr>
<td>Depth</td>
<td>0.038</td>
<td>0.038</td>
<td>0.005</td>
<td>0.005</td>
<td>pH 10 (+180 +/- 50 mV)</td>
</tr>
<tr>
<td>SpCond</td>
<td>50.3</td>
<td>50.3</td>
<td>0.5</td>
<td>0.1</td>
<td>pH 4 (+180 +/- 50 mV)</td>
</tr>
<tr>
<td>pH 7</td>
<td>7</td>
<td>7</td>
<td>0.5</td>
<td>0.1</td>
<td>Calculated pH slope</td>
</tr>
<tr>
<td>pH 10</td>
<td>10</td>
<td>10</td>
<td>0.5</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>10</td>
<td>10</td>
<td>0.5</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0.04</td>
<td>0.04</td>
<td>0.01</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>2.5</td>
<td>2.5</td>
<td>0.04</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>5.3</td>
<td>5.3</td>
<td></td>
<td></td>
<td>(remove ext. power 450, 638K)</td>
</tr>
</tbody>
</table>

### Programming
- Data file name: [Name]
- Start clock (status): [Status]
- Free bytes (status): [Free]
- End time: [Time]
- Parameters recorded: Date, Time, Temp°C, SpCond, Sal, DO%, DO mg/L, Depth, pH, Turb, Bath

**Comments - Post:**
- [Comment]

**AOM/CSO calibrated in April?**
- Yes

**Not this month:**
- [Comment]
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 6/17/17 mm dd yyyy  Time: 10:32 hh mm (24hr) White Towel: yes
Technician(s): ZK Sonde ID #: 

Field Data:

Water Temp 10.5 °C DO Percent 100.1%
Sp Cond 38.8 mS cm
Salinity 4.1 ppt
DO Conc. 4.99 mg/L

Comments: retrieve sonde deploy sonde grab sample may have missed overlap

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: Maintenance:
Duration:

Comments

Retrieval Information

Date Retrieved: mm dd yyyy Time: hh mm (24hr) White Towel: yes

Technician(s):

Sonde ID #: 

Field Data:

Water Temp °C
Sp Cond mS cm
Salinity ppt

DO Percent %
DO Conc. mg/L
Other

Fouling Presence:

Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=nice
Amount: H=heavy, M=moderate, L=light
(e.g. A H, B L)

Sonde Guard
Temp Cond
pH

External Screen
Dissolved Oxygen
Turbidity

Comments

File Retrieval

Sonde Filename: Print Graph: Probe Malfunction:

Comments
**NERRS SWMP Water Quality Field Log**

**Deployment Information**

- **Date Deployed:** 6/12/12
- **Time:** 12:30
- **Technician(s):**
- **Sonde ID #:** 1777
- **White Towel:** Yes

**Field Data:**

- Water Temp: 15.2°C
- Sp Cond: 21.74 mS
- Salinity: 28.2

**Comments:** 1345 overlap, recover 6.74, clean

---

**Infield Maintenance**

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

- **Date:**
- **Duration:**
- **Maintenance:**
- **Comments:**

---

**Retrieval Information**

- **Date Retrieved:** 6/12/12
- **Time:** 9:40
- **Technician(s):**
- **Sonde ID #:** 1777

**Field Data:**

- Water Temp: 14.0°C
- Sp Cond: 21.1 mS
- Salinity: 28.2

**DO Percent:** 11.4%
**DO Conc.:** 10.76 mg/L

**Fouling Presence:**
- Type: A=algae, B=baracles, C=crabs, E=egg, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=none
- Amount: H=heavy, M=moderate, L=light

**Sonde Guard Temp/Cond pH:**
- External Screen: 
- Dissolved Oxygen: 
- Turbidity: 

**Comments:** 1/2" blue mussel ~ 6" ocean pot in guard

---

**File Retrieval**

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**
- **Comments:**
**NERRS SWMP Water Quality Calibration Log**

**Datasondé and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>pH</th>
<th>DO</th>
<th>Turbidity</th>
<th>Conductivity</th>
<th>Chlorophyll</th>
<th>EXO Wiper</th>
</tr>
</thead>
<tbody>
<tr>
<td>674</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>14A109788</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Datasondé Maintenance**

- **Date of Calibration:** 11/17/17
- **Wipers Replaced:** TURB, ODO, CHL
- **Batteries Replaced:**
- **Format Flash Disk:**
- **Comments:** Replaced DO, replaced 9/10/16

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Post-Cal</th>
<th>Error</th>
<th>Check Date</th>
<th>Pre-Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Post-Cal</th>
<th>Error</th>
<th>Check Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.0°C</td>
<td>22.0°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP % DO @ 100% sat</td>
<td>100%</td>
<td>100%</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bp @ cal (Rapid Pulse)</td>
<td>100 %</td>
<td>100 %</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical % DO @ 100% sat</td>
<td>100%</td>
<td>100%</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BP @ Cal (Optical)</td>
<td>100%</td>
<td>100%</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>100%</td>
<td>100%</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Depth [cm] offset</td>
<td>0.53</td>
<td>0.10</td>
<td>0.43</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Station Offset</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Level [cm] offset</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>SpCond</td>
<td>59</td>
<td>50</td>
<td>9</td>
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<td></td>
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</tr>
<tr>
<td>pH 7</td>
<td>7.10</td>
<td>7.10</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH 10</td>
<td>10</td>
<td>10</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>pH 4</td>
<td>7</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>5.5</td>
<td>5.5</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine WT/Temp</td>
<td>35°C</td>
<td>35°C</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (0) [ug/L]</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (118) [ug/L]</td>
<td>165</td>
<td>165</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>5.2 V</td>
<td>5.2 V</td>
<td>0.09 V</td>
<td>(remove ext power &lt;5.40 V)</td>
<td></td>
<td>(remove ext power &lt;5.40 V)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Programming**

- **Interval:**
- **Duration:**
- **Free memory:**
- **Parameter recorded:**
  - Temp
  - DO % sat
  - pH
  - Sp Cond
  - DO Conc.
  - Turbidity
  - pH mV
- **Comments-Pre:** OFF set = 0.095
- **Comments-Post:** Sonde nud 7/18 195 (W/ VDHC 7/16 230°)

**Sensor Diagnostics**

- **Pre-Deployment**
  - RP DO chrg (100, 250, 250)
  - RP DO gain (10, 25, 25)
  - Optical DO gain (250, 300, 300)
  - RP DO warm up test (100)
  - pH 7 (-0.2, 20 mV)
  - pH 10 (+1.0, +0.5 mV)
  - pH 14 (+1.0, +0.5 mV)
- **Post-Deployment**
  - RP DO chrg (100, 250, 250)
  - RP DO warm up test (100)
  - pH 7 (+0.5, +0.5 mV)
  - pH 10 (+1.0, +0.5 mV)
  - pH 14 (+1.0, +0.5 mV)
  - Calculated pH slope (C++ is correct)

**Battery Voltage:**

- (remove ext power <5.40 V)
NERRS SWMP Water Quality Field Log

Date Deployed: 7/1/17

Date Retrieved: 7/14/17

Field Data:
- Water Temp: 14.8°C
- Sp Cond: 22.1 µS/cm
- Salinity: 27.1 ppt
- DO Percent: 100.1%
- DO Conc.: 10.76 mg/L

Fouling Presence:
- Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponge, T=tunicates, O=other, N=none
- Amount: H=heavy, M=moderate, L=light

Comments:
YSI from gate location - floating duck. Tool valid. Sample w/ mud low tide at 1500 est.

Infield Maintenance
(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date:
Duration:
Maintenance:
Comments:

Retrieval Information

Date Retrieved: 7/14/17

Field Data:
- Water Temp: 17.5°C
- Sp Cond: 42.21 µS/cm
- Salinity: 27.2 ppt
- DO Percent: 108.7%
- DO Conc.: 8.16 mg/L

Sonde/Guard Temp/Cond
pH

External Screen
Dissolved Oxygen
Turbidity

Comments:
Very little biofouling. Recover 6/74, deploy 7/17. Overlay

File Retrieval

Sonde Filename:
Print Graph:
Probe Malfunction:

Comments:
**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Cal</td>
<td>Calibrated</td>
<td>Error</td>
</tr>
<tr>
<td>Temp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td>320.17 mmHg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>100.06%</td>
<td>99.8%</td>
<td></td>
</tr>
<tr>
<td>BP @ cal (Optical)</td>
<td>508.13 mmHg</td>
<td>598.10%</td>
<td></td>
</tr>
<tr>
<td>Baro Prot. (Depth Calib)</td>
<td>578.06 mB</td>
<td>578.06 mB</td>
<td></td>
</tr>
<tr>
<td>Depths</td>
<td>0 in offset</td>
<td>0.06 m</td>
<td>0.06 m</td>
</tr>
<tr>
<td>Station Offset</td>
<td>0 in offset</td>
<td>0 in offset</td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0 in offset</td>
<td>0 in offset</td>
<td></td>
</tr>
<tr>
<td>SpCond</td>
<td>49.8 mg/L</td>
<td>49.8 mg/L</td>
<td></td>
</tr>
<tr>
<td>pH 7</td>
<td>7.21</td>
<td>7.21</td>
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</tr>
<tr>
<td>pH 10</td>
<td>7.3</td>
<td>7.3</td>
<td></td>
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<tr>
<td>pH 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td>INTUPH</td>
<td>INTUPH</td>
<td>INTUPH</td>
</tr>
<tr>
<td>Rhodamine WT Temp</td>
<td>25.2°C</td>
<td>25.2°C</td>
<td></td>
</tr>
<tr>
<td>Chl (0)</td>
<td>0.0 µg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (118)</td>
<td>0.0 µg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>5.0 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Post-Deployment**

|                   |               |                   |                   |
|                   |               |                   |                   |

**Programming**

- Interval: ____________
- Duration: ____________
- Free memory: ____________
- Parameters recorded: ____________
- Temp: ____________
- DO % sat: ____________
- pH: ____________

**Comments-Pre:**

**Comments-Post:**

Very high fouling, faces clean
NERRS SWMP Water Quality Field Log

Reserve: Great Bay  Station Name: CML  File Name: 

Deployment Information

Date Deployed: 17/24/17  mm dd yyyy  Time: 9:39  ch mm (24hr)  White Towel: yes
Technician(s): ZK  Sonde ID #: 176

Field Data:

Water Temp 12.5 °C  Sp Cond 46.21 μS cm
Salinity 2.2

DO Percent 102.7 %
DO Conc. 8.76 mg/L

Comments: recover 176, deploy 176, took duplicate val sample

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date:  Duration:  Maintenance:

Comments:

Retrieval Information

Date Retrieved: 8/2/17  mm dd yyyy  Time: 10:35  ch mm (24hr)  White Towel: yes

Technician(s): ZK  Sonde ID #: 2174

Field Data:

Water Temp 11.0 °C  Sp Cond 43.27 μS cm
Salinity 2.81

DO Percent 107.3 %
DO Conc. 8.84 mg/L

Fouling Presence: Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T-turulence, O=other, N=none

Amount: H=heavy, M=moderate, L=light

(e.g. A H, B L)

Sonde Guard Temp Cond pH

External Screen Dissolved Oxygen Turbidity

Comments: recover 176, deploy 174, overlap at 10:45, grab sample

File Retrieval

Sonde Filename:  Print Graph:  Probe Malfunction: 

Comments: 
**NERRS SWMP Water Quality Calibration Log**

**Serial and Probe Identification Numbers**

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>YW071301</td>
</tr>
<tr>
<td>DO</td>
<td>YW071303</td>
</tr>
<tr>
<td>ODO</td>
<td>YW071301</td>
</tr>
<tr>
<td>Turbidity</td>
<td>YW071301</td>
</tr>
<tr>
<td>Conductivity</td>
<td>YW071301</td>
</tr>
<tr>
<td>Chlorophyll</td>
<td>YW071301</td>
</tr>
<tr>
<td>EXO Wiper</td>
<td>YW071301</td>
</tr>
</tbody>
</table>

**Data Log**

- **Date of Calibration:** 8/21/2007
- **Technician(s):**
  - TURB
  - ODO
  - CHL
- **Wipers Replaced:**
  - TURB
  - DO
  - CHL
- **Batteries Replaced:**
  - DO
  - ODO
  - CHL
- **Format Flash Dist.:**
  - DO
  - ODO
  - CHL
- **Comments:**
  - From 16/9/101082

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Deployment</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>32.6°F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodamine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (U)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl (U111)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sensor Diagnostics**

- **Pre-Deployment:**
  - RP DO chrg (leave 24-72 h)
  - RP DO gain (0.7-9.4)
  - Optical DO gain (6.1-6.5, 6.1-6.5, 6.1-6.5)
  - RP DO warm up test (60 s)
  - Cell const (excess 1.0-1.5, excess 1.0-1.5, excess 1.0-1.5)
  - pH 7 (65.5-50 mV)
  - pH 10 (110-150 mV)
  - pH 4 (150-200 mV)
  - Calculated pH slope

**Post-Deployment:**

- RP DO chrg (leave 24-72 h)
- RP DO warm up test (60 s)
- pH 7 (65.5-50 mV)
- pH 10 (110-150 mV)
- pH 4 (150-200 mV)
- Calculated pH slope

**Programming**

- **Interval:**
- **Duration:**
- **Free memory:**
- **Parameters recorded:**
  - Sp Cond
  - DO sat
  - pH
- **Comments Pre:**
  - Code 1086A - PC/DO
  - Code 1086A (a)
- **Comments Post:**
  - From #5 all over
  - Wipers fell off during deployment
  - pH died?
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 8/8/17
Time: 10:35
White Towel: Yes

Technician(s): ZK
Sonde ID #: 2174

Field Data:
- Water Temp: 16.0 °C
- Sp Cond: 43.57 mS/cm
- Salinity: 28.1 ppt
- DO Percent: 117.3%
- DO Conc.: 9.84 mg/L

Comments: Recover 176, deploy 174, overlap at 10:45, grab sample

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: 
Duration: 
Maintenance: 

Comments

Retrieval Information

Date Retrieved: 9/18/17
Time: 11:32
White Towel: Yes

Technician(s): ZK
Sonde ID #: 2174

Field Data:
- Water Temp: 14.2 °C
- Sp Cond: 44.20 mS/cm
- Salinity: 29.5 ppt
- DO Percent: 130.1%
- DO Conc.: 11.31 mg/L

Comments: Recover 2174, deploy 178, overlap at 11:45

File Retrieval

Sonde Filename: 
Print Graph: 
Probe Malfunction: 

Comments
**NERRS SWMP Water Quality Field Log**

**Deployment Information**
- **Date Deployed:** 8/28/17
- **Time:** 12:15
- **White Towel:** Yes
- **Technician(s):** ZK
- **Sonde ID #:** 2174

**Field Data:**
- **Water Temp:** 10.2°C
- **Sp Cond:** 43.4 mS/cm
- **Salinity:** 27.4 psu
- **DO Percent:** 19.2%
- **DO Conc.:** 4.19 mg/L

**Comments:** no deploy/recover, grab sample checked probe, wiped sensors clean

**Infield Maintenance**
(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)
- **Date:**
- **Duration:**
- **Maintenance:**

**Retrieval Information**
- **Date Retrieved:**
- **Time:**
- **White Towel:** Yes
- **Technician(s):**
- **Sonde ID #:**

**Field Data:**
- **Water Temp:**
- **Sp Cond:** mS/cm
- **Salinity:** psu
- **DO Percent:**
- **DO Conc.:**

**Fouling Presence:**
- **Type:** A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=turbinates, O=other, N=none
- **Amount:** H=heavy, M=moderate, L=light

**Sonde Guard Temp/Cond pH**

**Comments**

**File Retrieval**
- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**

**Comments**
### NERRS SWMP Water Quality Calibration Log

**Station Name:**

**CDMO Raw File Name:** 011091817

### Datasonde and Probe Identification Numbers

<table>
<thead>
<tr>
<th>Sonde Code</th>
<th>Serial Number</th>
<th>pH:</th>
<th>DO:</th>
<th>ODO:</th>
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</thead>
<tbody>
<tr>
<td>178</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>16776</td>
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<table>
<thead>
<tr>
<th>Turbidity:</th>
<th>Conductivity:</th>
<th>Chlorophyll:</th>
<th>EXO Wiper:</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Datasonde Maintenance**

- **Date of Calibration:** 9/18/17
- **Technician(s):**
  - TURB
  - ODO
  - CHL
- **Wipers Replaced:** TURB, ODO, CHL
- **Wiper parks 100° from optics:**
- **Batteries Replaced:**
- **DO/CDO membrane replaced:**
- **Membrane integrity test:**
- **Comments:** From 16/100183

### Pre/Post Deployment Calibration

#### Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Pre-Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>POST-Cal</th>
<th>Check Date</th>
<th>RET-CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP % DO @ 100% sat</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
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</tr>
<tr>
<td>Optical % DO @ 100% sat</td>
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<tr>
<td>BP @ cal (Optical)</td>
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<tr>
<td>Baro. Pres. (Depth Calib)</td>
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</tr>
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<td>pH 4</td>
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</tr>
<tr>
<td>Turb</td>
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</tr>
<tr>
<td>Rhodamin Wf Temp</td>
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<td>Chl (0)</td>
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<tr>
<td>Chl (118) 105 R ugt</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

#### Battery Voltage

- **Battery Voltage:** 4.5V (remove extra power 050/0528)
- **Pre-Deployment:** 4.5V (remove extra power 050/0528)

#### Post-Deployment

- **Battery Voltage:** 4.5V (remove extra power 050/0528)

#### Programming

- **Interval:**
- **Duration:**
- **Free Memory:**
- **Parameters Recorded:** Temp, DO 90 sat, pH, DO Conc, Turbidity, Eh mV
- **Comments-Pre:**
- **Comments-Post:**
  - Battery dead - last reading 10/11/300

---

**Notes:**

- T = 20.45 Tg = 20.4
- Q6A 0.1
- Very H. Reading
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 9/18/17

Time: 11:36

White Towel: Yes

Technician(s): ZK

Sonde ID #: 178

Field Data:

Water Temp: 14.2°C

Sp Cond: 44.20 mS/m

Salinity: 28.5 ppt

DO Percent: 100.1%

DO Conc.: 11.3 mg/L

Other:

Comments: recover 2174, deploy 178, overlap at 11:45

Infield Maintenance

(no changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date: __________

Duration: __________

Maintenance: __________

Retrieval Information

Date Retrieved: 10/17/17

Time: 14:20

White Towel: Yes

Technician(s): CD

Sonde ID #: 178

Field Data:

Water Temp: 16.8°C

Sp Cond: 44.76 mS/m

Salinity: 28.9 ppt

DO Percent: 86.4%

DO Conc.: 7.69 mg/L

Other:

Comments: 3 sand lance at 1 crab in sonde tube, recover 178

File Retrieval

Sonde Filename: __________

Print Graph: __________

Probe Malfunction: __________

Comments: __________
**NERRS SWMP Water Quality Field Log**

**Deployment Information**

- **Date Deployed:** 10/3/17
- **Time:** 9:15
- **White Towel:** Yes
- **Sonde ID #:** 78

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td>15.3°C</td>
</tr>
<tr>
<td>Sp Cond</td>
<td>44.13</td>
</tr>
<tr>
<td>Salinity</td>
<td>26.5</td>
</tr>
</tbody>
</table>

**Comments:** Midway sample, handhold at 9:15 sensors clean, fish in sonde tube

**Infield Maintenance**

(Note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

- **Date:**
- **Duration:**
- **Maintenance:**

**Retrieval Information**

- **Date Retrieved:**
- **Time:**
- **White Towel:** Yes
- **Sonde ID #:**

**Field Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Temp</td>
<td></td>
</tr>
<tr>
<td>Sp Cond</td>
<td></td>
</tr>
<tr>
<td>Salinity</td>
<td></td>
</tr>
</tbody>
</table>

** Fouling Presence:**

- **Type:** A=algae, B=biomass, C=crabs, E=eggs, F=fish, H=hydrolys, S=sponges, T=unicates, O=other, N=none
- **Amount:** H=heavy, M=moderate, L=light

<table>
<thead>
<tr>
<th>Sonde Guard</th>
<th>Temp Cond</th>
<th>External Screen</th>
<th>Dissolved Oxygen</th>
<th>Turbidity</th>
</tr>
</thead>
</table>

**Comments:**

**File Retrieval**

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**

**Comments:**
## NERRS SWMP Water Quality Calibration Log

### Data and Probe Identification Numbers

- **Dataсонde Code**: Sanda Code
- **Serial Number**: 179
- **pH**: pH
- **Serial Number**: 179
- **Model Number**: 179
- **Turbidity**: Turbidity
- **Conductivity**: Conductivity
- **Chlorophyll**: Chlorophyll
- **EXO Wiper**: EXO Wiper

### DataSonde Maintenance

- **Date of Calibration**: 10/16/17
- **Technician(s)**: LMA
- **Wipers Replaced**: TURB ODO CHL
- **Wiper parks 180° from optics**: TURB ODO CHL
- **Batteries Replaced**: TURB ODO CHL
- **Flash Disk**: Membrane integrity test: NEW PH 10.4 PDMM 169/1010189

### Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standard</th>
<th>Pre-Calibrated</th>
<th>Calibrated</th>
<th>Error</th>
<th>Post-Calibrated</th>
<th>Error</th>
<th>Date</th>
<th>Pre-Calibrated</th>
<th>Calibrated</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>22.22°C</td>
<td>22.18°C</td>
<td>0.04°C</td>
<td>22.18°C</td>
<td>0.04°C</td>
<td>11/13</td>
<td>22.18°C</td>
<td>0.04°C</td>
<td>0.04°C</td>
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<tr>
<td>DO% DO @ 100% sat</td>
<td>7.00 mg/L</td>
<td>7.00 mg/L</td>
<td>0.00 mg/L</td>
<td>7.00 mg/L</td>
<td>0.00 mg/L</td>
<td>11/13</td>
<td>7.00 mg/L</td>
<td>0.00 mg/L</td>
<td>0.00 mg/L</td>
</tr>
</tbody>
</table>

### Sensor Diagnostics

- **pH**: pH 10 (+10 to +50 mV)
- **pH 7**: pH 7 (+2 to +30 mV)
- **pH 4**: pH 4 (+180 to +50 mV)
- **Calculated pH Slope**: (+15 is suspect)
- **(pH will resist in negative slope)**

### Interval

- **11/13**
- **Temp**: 22.18°C
- **DO% DO @ 100% sat**: 7.00 mg/L
- **pH**: pH 7

### Comments-Pre

- **cbk ltd calch 9/13**
- **EMO not calc’d 9/13**

### Comments-Post

- **Some very clean**
- **BGA = -0.01**
- **PDMM = -0.01**
NERRS SWMP Water Quality Field Log

**Deployment Information**

Date Deployed: 10/17/17
Time: 14:20
Technician(s): CP
Sonde ID #: 179

**Field Data:**
- Water Temp: 19.8 °C
- Sp Cond: 44.70 μS/cm
- Salinity: 28.9 ppt
- DO Percent: 86.4
- DO Conc.: 7.6 mg/L

**Comments:** recover 178, deploy 179, overlap at 14:30

**Infield Maintenance**

(Note any changes to site during deployment, sonde tube maintenance, tubing removal, etc.)

Date: 11/7/17
Duration: 0:10
Maintenance: suggesting removal

Comments: due to clean tube opening + replace bolt

**Retrieval Information**

Date Retrieved: 11/13/17
Time: 16:20
Technician(s): K
Sonide ID #: 179

**Field Data:**
- Water Temp: 8.2 °C
- Sp Cond: 41.01 μS/cm
- Salinity: 28.0 ppt
- DO Percent: 90.6
- DO Conc.: 4.10 mg/L

**Finding Presence:**
- Type: Algae, B-harmoles, Crabs, Fish, Hydroids, Sponges, Tunicates, Other
- Amount: None, H-heavy, M-moderate, L-light

**Comments:** recover 179, deploy 174, overlap at 16:15, grab sample

**File Retrieval**

Sonde Filename: 
Print Graph: 
Probe Malfunction: 

Comments: 
UNH Jackson Estuarine Lab Water Quality Monitoring

Station: CML
Technicians: CP

Date: 10/17/17
Serial #:

Time: 1420
Tide:

Water Quality Parameters

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>DO (mg/L)</th>
<th>DO (% Sat)</th>
<th>Salinity (ppt)</th>
<th>Temp (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>7.69</td>
<td>86.4</td>
<td>28.9</td>
<td>18.8</td>
</tr>
</tbody>
</table>

Environmental Conditions

<table>
<thead>
<tr>
<th>Cloud Cover (%)</th>
<th>Precipitation</th>
<th>Ebb/Flood</th>
<th>Wave Height (m)</th>
<th>Wind Direction</th>
<th>Wind Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>- E -</td>
<td>W</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Light Cast/PAR Measurements

Bottom Depth: 810 (m)

Check if applicable

☐ 3X Light
☐ 3X Grab
☐ No Light Cast Measured

Notes:

- Overlap sonde 1400-1434, Deployed 16103179
- Retrieved 161102178/931769
- Swagged sonde at 1440 est. Found 2 sand lenses avg 3.25 long & 3" crab in sand gravel
- Off floating duck 6ft
- 1.5hr before LT
**NERRS SWMP Water Quality Field Log**

**Deployment Information**

- **Date Deployed:** [ ]
- **Time:** [ ]
- **White Towel:** [ ]
- **Technician(s):** [ ]
- **Sonde ID #:** [ ]

**Field Data:**

- **Water Temp:** [ ]
- **Sp Cond:** [ ]
- **Salinity:** [ ]

**Comments:** [ ]

**Infield Maintenance**

(made any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

- **Date:** [ ]
- **Duration:** [ ]
- **Maintenance:** [ ]

**Retrieval Information**

- **Date Retrieved:** [ ]
- **Time:** [ ]
- **White Towel:** [ ]
- **Technician(s):** [ ]
- **Sonde ID #:** [ ]

**Field Data:**

- **Water Temp:** [ ]
- **Sp Cond:** [ ]
- **Salinity:** [ ]

**Faulting Presence:**

- **Type:** A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydrants, S=sponges, T=tumtum, O=other, N=none
- **Amount:** H=heavy, M=moderate, L=light

**Sonde Guard**

- **Temp Cond**
- **pH**

**External Screen**

- **Dissolved Oxygen**
- **Turbidity**

**File Retrieval**

- **Sonde Filename:** [ ]
- **Print Graph:** [ ]
- **Probe Malfunction:** [ ]

**Comments:** [ ]
# NERRS SWMP Water Quality Calibration Log

**Datasonde Maintenance**

- Date of Calibration: 11/13/17
- Technician(s): [Signature]

<table>
<thead>
<tr>
<th>Wipers replaced</th>
<th>TURB</th>
<th>ODO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wipers park 180° from optics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Batteries replaced</th>
<th>TURB</th>
<th>ODO</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO membrane replaced</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Format flash disk</th>
<th>TURB</th>
<th>ODO</th>
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</thead>
<tbody>
<tr>
<td>Membrane integrity test</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Datasonde and Probe Identification Numbers**

- Datasonde: 674 14APXO
- DO/ODO: 16M10434
- pH: 16M103220
- Turbidity: 16M101482
- Conductivity: 16M100644

**Comments**

- From 16M100185 cal 16M101740

---

**Pre/Post Deployment Calibration**

<table>
<thead>
<tr>
<th>Standards</th>
<th>Pre-Deployment</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>Before Cal</td>
<td>Calibrated</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>BP @ cal (Rapid Pulse)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>101.6%</td>
<td>101.6%</td>
<td>1%</td>
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<tr>
<td>Baro. Pres. (Depth Calib)</td>
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<td>Depth 0.038 offset</td>
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<td>pH 10</td>
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<td>10.25</td>
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<td>0.06</td>
</tr>
<tr>
<td>Turb 24 NTU</td>
<td>12.09</td>
<td>12.09</td>
<td>123.5</td>
</tr>
</tbody>
</table>

**Programming**

<table>
<thead>
<tr>
<th>Interval</th>
<th>Duration</th>
<th>Free memory</th>
<th>Parameters recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Date, Time, Temp°C, SpCon, Sal, DO%, DO mg/L, Deph, pH, Turb, Batt</td>
</tr>
</tbody>
</table>

**Remarks**

- Pre: 16M10434, cal, BGA - PL cal'd
- Post: 16M101740

**Comments**

- Post: 16M100185 cal 16M101740

---

**Battery voltage**

- 6.0 V (remove ext. power 05/09/03)
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: [YMB17]  mm.dd.yyyy  Time: [09:20]  hh:mm  (24hr)  White Towel: [YES]

Technician(s): [2K]  Sonde ID #: [674]

Field Data:

Water Temp: [8.2 °C]  DO Percent: [90.6 %]
Sp Cond: [41.01]  DO Conc.: [9.76 mg/L]
Salinity: [26.0]  Other: 

Comments: recover 179, deploy 674, overlap at 1615, grab sample

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date:  Duration: 

Maintenance:

Comments:

Retrieval Information

Date Retrieved: [MM.DD.YYYY]  Time: [hh:mm]  Sonde ID #: 

Technician(s):

Field Data:

Water Temp:  DO Percent: 
Sp Cond:  DO Conc.: 
Salinity:  Other: 

Fouling Presence:

Type: A=algae, B=macrophytes, C=crabs, E=eggs, F=fish, H=hydrates, S=sponges, T-tunicates, O=other, N=none
Amount: H=heavy, M=moderate, L=light (e.g. A H M I)

Sonde Guard: External Screen
Temp/Cond: Dissolved Oxygen
pH:

Turbidity:

Comments:

File Retrieval

Sonde Filename:  Print Graph: 
Probe Malfunction:

Comments: 
### NERRS SWMP Water Quality Calibration Log

#### DataSonde Maintenance
- Date of Calibration: [mm/dd/yyyy]
- Technician(s): [TG]
- Wipers replaced
- Batteries replaced
- Format flash disk
- Wipers park 180° from optics
- DO membrane replaced
- Membrane integrity test

#### DataSonde and Probe Identification Numbers
- DataSonde: [A]
- pH: [6.06]
- Turbidity: [6.0]
- DO/ODO: [Conductivity]

#### Pre/Post Deployment Calibration
- Turn on pH mV and DO Chrg in Report menu

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Pre-Deploymen</th>
<th>Post-Deploymen</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>/</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
<td>RP DO chrg (range 25-75)</td>
</tr>
<tr>
<td>BP @ cuL (Rapid Pulse)</td>
<td>1 mm Hg</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
<td>RP DO gain (0.8-1.7)</td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>100.4 %</td>
<td>/</td>
<td></td>
<td></td>
<td>MECHANICAL PP</td>
<td>Optical DO gain</td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>0.038</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
<td>DO warm up test (h%)</td>
</tr>
<tr>
<td>SpCond</td>
<td>50.4 mS/cm</td>
<td>50.0 mS/cm</td>
<td>0.4 mS/cm</td>
<td></td>
<td></td>
<td>Cell const (1.6-5.45)</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.14</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>pH 7 (0 +/- 50 mV)</td>
</tr>
<tr>
<td>pH 10</td>
<td>9.27</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>pH 10 (+/- 50 mV)</td>
</tr>
<tr>
<td>pH 4</td>
<td>/</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
<td>pH 4 (+/- 50 mV)</td>
</tr>
<tr>
<td>Turb</td>
<td>0.0 NTU</td>
<td>0 NTU</td>
<td>0 NTU</td>
<td></td>
<td></td>
<td>Calculated pH slope</td>
</tr>
<tr>
<td>Turb</td>
<td>0 NTU</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>3.0</td>
<td>/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Programming
- Interval: [mm/dd/yyyy]
- Duration: [mm/dd/yyyy]
- Start Date: [mm/dd/yyyy]
- Start Time (h:mm): [mm/dd/yyyy]
- Free Memory: [mm/dd/yyyy]
- Free Bytes (Status): [mm/dd/yyyy]
- Battery Life: [mm/dd/yyyy]
- End Date: [mm/dd/yyyy]
- End Time: [mm/dd/yyyy]

#### Parameters recorded:
- Date, Time, Temp °C, SpCond, Sal, DO%, DO mg/L, Depth, pH, Turb, Batt

#### Comments - Pre:
- T = 23.13 °C = 23.10

#### Comments - Post:
- 50 °C out of range / 38.15 °C
NERRS SWMP Water Quality Field Log

Deployment Information

Date Deployed: 9/23/17  mm.dd/yyyy  Time: 1820  hs mm (24 hr)  White Towel: Yes

Technician(s):

Field Data:

Water Temp  °C
Sp Cond  mS cm
Salinity  ppt

DO Percent
DO Conc.
Other

Sonde ID #:

Comments

Infield Maintenance

(note any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

Date:  Duration:  Maintenance:

Comments

Retrieval Information

Date Retrieved:  mm.dd/yyyy  Time:  hs mm (24 hr)  White Towel: Yes

Technician(s):

Field Data:

Water Temp  °C
Sp Cond  mS cm
Salinity  ppt

DO Percent
DO Conc.
Other

Sonde ID #:

Faulting Presence:

Type: A=algae, B=barnacles, C=crabs, E=eggs, F=fish, H=hydroids, S=sponges, T=tunicates, O=other, N=nano
Amount: H=heavy, M=moderate, L=light

External Screen
Dissolved Oxygen
Turbidity

Comments

File Retrieval

Sonde Filename:

Print Graph:

 Probe Malfunction:

Comments
## NERRS SWMP Water Quality Calibration Log

### Datasonde Maintenance

- Date of Calibration: 9/19/17
- Technician(s):
  - TURB
  - ODO

- Wipers replaced
- Batteries replaced
- Format flash disk

- Wipers park 180° from optics
- DO membrane replaced
- Membrane integrity test

### Datasonde and Probe Identification Numbers

- Datasonde: 3x2
- pH
- Turbidity:
  - DO/DO
  - Conductivity

### Pre/Post Deployment Calibration

<table>
<thead>
<tr>
<th>Standards</th>
<th>Before Cal</th>
<th>Calibrated</th>
<th>Error</th>
<th>Post-Deployment</th>
<th>Sensor Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>%DO @ 100% sat</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>RP DO chrg (range 25-75)</td>
</tr>
<tr>
<td>BP @ cal (Rapid Puls)</td>
<td>101.8</td>
<td>101.8</td>
<td>0.0</td>
<td>101.8</td>
<td>RP DO gain (0.8-1.7)</td>
</tr>
<tr>
<td>Optical %DO @ 100% sat</td>
<td>101.8</td>
<td>101.8</td>
<td>0.0</td>
<td>101.8</td>
<td>Optical DO gain</td>
</tr>
<tr>
<td>Baro. Pres. (Depth Calib)</td>
<td>0.063</td>
<td>0.073</td>
<td>0.010</td>
<td>0.073</td>
<td>DO warm up test (hi/lo)</td>
</tr>
<tr>
<td>Depth</td>
<td>0.038</td>
<td>0.038</td>
<td>0.0</td>
<td>0.073</td>
<td>Cell const (4.6-5.45)</td>
</tr>
<tr>
<td>SpCond</td>
<td>50</td>
<td>45.5</td>
<td>-4.5</td>
<td>50</td>
<td>pH 7 (0 +/- 50 mV)</td>
</tr>
<tr>
<td>pH 7</td>
<td>7.44</td>
<td>7.44</td>
<td>0.0</td>
<td>7.44</td>
<td>pH 10 (±-180 +/- 50 mV)</td>
</tr>
<tr>
<td>pH 10</td>
<td>10.06</td>
<td>10.06</td>
<td>0.0</td>
<td>10.06</td>
<td>pH 4 (±180 +/- 50 mV)</td>
</tr>
<tr>
<td>pH 4</td>
<td>4.13</td>
<td>4.13</td>
<td>0.0</td>
<td>4.13</td>
<td>Calculated pH slope 1.47</td>
</tr>
<tr>
<td>Turb</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
<td>0.4</td>
<td>Calculated pH slope 0.0</td>
</tr>
<tr>
<td>Turb</td>
<td>1.26</td>
<td>1.26</td>
<td>0.0</td>
<td>1.26</td>
<td></td>
</tr>
<tr>
<td>Battery voltage</td>
<td>13.8</td>
<td>13.8</td>
<td>0.0</td>
<td>13.8</td>
<td></td>
</tr>
</tbody>
</table>

### Programming

- Interval: 1 min
- Duration: 1 days
- Free memory: 1 days

- Parameters recorded:
  - Date, Time, Temp °C, SpCond, Sal, DO%, DO mg/L, Depth, pH, Turb, Batt

### Comments

- Pre: T = 20.0°C, Ts = 31.94° - Temp off!
- Post: 2.03% out of range - did not accept pH values BAF
### Deployment Information

- **Date Deployed:** 9/20/17
- **Time:** 11:00
- **White Towel:** Yes
- **Technician(s):** [Signature]
- **Sonde ID #:** 222
- **Field Date:**
  - **Water Temp:** 19.5°C
  - **Sp Cond:** 59.7 mS/cm
  - **Salinity:** 21.4
- **DO Percent:** 10
- **DO Conc.:** 0.1 mg/l
- **Other:**

### Infield Maintenance

(Notes any changes to site during deployment, sonde tube maintenance, biofouling removal, etc.)

- **Date:**
- **Duration:**
- **Maintenance:**
- **Comments:**

### Retrieval Information

- **Date Retrieved:** 9/20/17
- **Time:** 12:00
- **White Towel:** Yes
- **Technician(s):** [Signature]
- **Sonde ID #:**
- **Field Date:**
  - **Water Temp:**
  - **Sp Cond:**
  - **Salinity:**
- **DO Percent:**
- **DO Conc.:**
- **Other:**

### Fouling Presence

- **Type:** Algae, Barnacles, Crabs, Eels, Fish, Hydroids, Sponges, Tunicates, Other, None
- **Amount:** Heavy, Moderate, Light
- **Sonde Guard:**
- **Temp Cond:**
- **pH:**
- **External Screen:**
- **Dissolved Oxygen:**
- **Turbidity:**

### File Retrieval

- **Sonde Filename:**
- **Print Graph:**
- **Probe Malfunction:**
- **Comments:**

---

Comment: 100 overlap, recover.