

1. Identification Information

1.1 Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet-Winyah Bay (NIW) National Estuarine Research Reserve

8.2 Publication Date: 20031121

8.4 Title: North Inlet-Winyah Bay National Estuarine Research Reserve's (NERR) Estuarine Water Quality Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 1993-2002

8.6 Geospatial Data Presentation Form: comma delimited digital data and spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Water Quality Long-Term Monitoring Database for the North Inlet and Winyah Bay Estuaries, South Carolina

8.7.2 Issue Identification: October 25, 1993 - December 31, 2002

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.9 Other Citation Details: These data were collected under the auspices and protocols of the North Inlet-Winyah Bay NERR. The National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP) protocols took effect in 1995. This database and the associated metadata are the Baruch Institute's versions, are independent of the NERR/CDMO versions, and follow Baruch's quality control and assurance procedures in addition to NERR SWMP protocols.

8.10 Online linkage: <http://links.baruch.sc.edu/data/>

8.11 Larger Work Citation:

8. Citation Information:

8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: 2002

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: tab-delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: <http://cdmo.baruch.sc.edu>

1.2 Description

1.2.1 Abstract:

The North Inlet Estuary and the adjacent lower northeastern section of the Winyah Bay Estuary were designated as part of the National Estuarine Research Reserve System in 1992. The North Inlet-Winyah Bay (NIW) NERR's water quality monitoring program began on October 25, 1993. The System-Wide Monitoring Program (SWMP) was initiated in 1995 to set protocols for monitoring the estuarine environment at all NERR sites. Water quality data for the NIW NERR were collected under these protocols throughout the rest of the dataset. Four sites were chosen to best represent pristine and impacted locations within the reserve **and data were collected using dataloggers automated instruments used to record water quality indicators**). The Oyster Landing site is located near the center of the reserve and the Clambank site is located on a waterway that receives run-off from the undeveloped area of the reserve, both are considered pristine. The Debidue Creek and Thousand Acre sites are located in waterways that receive run-off from heavily developed areas. Dataloggers were mounted in 4 inch diameter PVC pipes, strapped to treated 2 inch by 6 inch boards, and then attached with stainless steel bands to a piling at each site. The PVC pipes that house the dataloggers have two large cut out "windows" near the bottom to give the probes direct contact with the water column. A stop bolt placed through the PVC pipe below the windows keeps the datalogger exactly one foot (30 cm) above the creek bottom. Measurements of water temperature, specific conductivity, salinity, dissolved oxygen (percent saturation and mg/L), water level, pH, and turbidity were taken every 30 minutes over collecting periods of approximately two weeks. The two-week sampling period was chosen based on the expected battery life of the datalogger and to minimize the impact of biofouling on the individual probes. At the end of the collecting period the dataloggers were brought to the laboratory, the data were downloaded, and the instruments were cleaned and recalibrated following the relevant service manual and SWMP protocols. Post-calibration readings were also taken from each instrument in fresh standard to determine if any of the probes exhibited drift. After approximately 24 hours of down time, the dataloggers were re-deployed. Down time was minimized whenever possible by using extra dataloggers in rotation for back-to-back deployments. This database and metadata document are the Baruch Institute's

versions, are independent of the NERR/CDMO versions, and follow Baruch's quality control and assurance procedures in addition to NERR SWMP protocols.

1.2.2 Purpose:

The National Oceanographic and Atmospheric Administrations' (NOAA) National Estuarine Research Reserve System (NERRS) implemented the NERR System-wide Monitoring Program (SWMP) in order "to identify and track short-term variability and long-term changes in the integrity and biodiversity of representative estuarine ecosystems and coastal watersheds for the purpose of contributing to effective national, regional, and site specific coastal zone management." The first component, and the initial focus, of this comprehensive plan is the monitoring of abiotic factors such as water quality and meteorological parameters.

The principal objective of this dataset is to monitor and archive water quality data for the North Inlet-Winyah Bay NERR in order to observe environmental variability, changes, or trends over time, for use in short and long-term studies at North Inlet and in Winyah Bay, and for comparisons to other NERR sites. As part of the NERR System-wide monitoring program, coastal managers will also use this data to make informed decisions on local and regional issues.

1.2.3. Supplemental Information:

Datalogger Documentation

Throughout the course of this database, different datalogger models were employed. Initially, the Hydrolab Datasonde 3 was used to collect water temperature, specific conductivity, salinity, dissolved oxygen (percent saturation and milligrams per Liter), and depth data. In 1995, when the SWMP was initiated, the YSI 6000 UPG became the primary datalogger model and Hydrolab Datasondes were used as substitutes when necessary. The YSI 6000 UPG was capable of measuring pH and turbidity in addition to the parameters collected previously, and these parameters were eventually phased in. Finally, starting in 2000, the aging 6000 UPG dataloggers were gradually replaced with the YSI 6600 model. The 6600 collects data for the same parameters as the 6000 UPG, with nearly identical sensor specifications, it's simply a newer model (see the Attribute Accuracy section for more information). Data availability and documentation of data collected with the Hydrolab versus YSI models are detailed in the Completeness Report portion of this document.

Thousand Acre Site:

The Thousand Acre sampling site is subject to silt-laden runoff from Thousand Acre Marsh during and after rain events. As a result, excessive fouling of the probes was often a concern. There were also problems with the sample location, which led to contamination of the datalogger with mud. The sample location was moved twice over the course of the database in attempts to reduce mud contamination. See the Thousand Acre site description below for further information.

Turbidity Data:

The turbidity sensor range of measurement is from 0 to 1000 NTUs. Readings over 1000 should not be used based on their face value, however, they are valuable in that they may indicate turbidity events that are greater than the sensor's range of measurement, and are retained in the dataset as a result. These data were only considered erroneous and removed/deleted if they occurred for an extended period of time, the probe reported the same values repeatedly, or if there was another indication of sensor malfunction due to excessive fouling. In addition, large negative values were sometimes recorded. Prior to 1997, the turbidity probe had a "rollover" problem, where the sensor would rollover after experiencing a large turbidity reading and then report a large negative reading. This problem was corrected with new software from YSI that was released in January of 1997 and appears to have been implemented at the sample sites in mid-March of 1997. These large negative readings were considered erroneous, documented in the anomalous data documentation, and removed from the final database (see the Anomalous Data Documentation for more information). The turbidity data for the Thousand Acre site in particular were often problematic, with readings over 1000 NTUs and, in 1996 and 1997, large negative values (resulting from the rollover problem) occurring frequently.

Additional Water Quality Data:

Water Quality data were also recorded under the same protocols at two other locations, Alderly Landing (located on the west side of the Hobcaw Barony property on an old rice field drainage ditch) and Caledonia Creek (located on a nearby golf course). These data will be available as part of the Best Management Practices database which is scheduled to be rescued, documented, and published on Baruch's website (<http://links.baruch.sc.edu/data/>) at a later date. Contact Baruch's Data Manager for more information on these data.

1.3 Time Period of Content:

9.3 Range of Dates/Times

9.3.1 Beginning Date: 19931025

9.3.2 Beginning Time: 1400

9.3.3 Ending Date: 20021231

9.3.4 Ending Time: 2330

1.3.1 Currentness Reference: Observed

1.4 Status:

1.4.1 Progress: Complete

1.4.2 Maintenance and update frequency: As needed

99.1.5.1 Description of Geographic Extent:

The North Inlet-Winyah Bay National Estuarine Research Reserve is located on the southeastern coast of the United States on the Atlantic Ocean in two tidal estuaries, North Inlet and Winyah Bay, near Georgetown, South Carolina. The North Inlet estuary, located approximately 10 km east of Georgetown, is a bar-built Class C type estuary (Pritchard, 1955). The North Inlet estuary is composed of numerous winding tidal creeks, and is considered a pristine tidal estuary due to minimal anthropogenic impacts. The watershed drains a 24.8 km² area of mostly pine forest and a moderately developed residential watershed to the north. The Winyah Bay estuary, classified as a Class B type estuary by Pritchard (1955), originates in the Blue Ridge Mountains of North Carolina and is one of the largest river-estuary ecosystems on the Eastern Seaboard. The Winyah Bay watershed is approximately 46,736 km² and the four major rivers that drain into Winyah Bay are heavily impacted by agriculture, mining, and industry. The mouth of Winyah Bay is located 14.4 km south of the mouth of North Inlet Estuary. Descriptions of the individual monitoring sites are as follows:

Pritchard, D.W. 1955. Estuarine circulation patterns. Proc. Am. Soc. Civ. Eng. 81(717):1-11.

Clambank Creek (CB): The Clambank Creek monitoring site is located roughly in the center of the NIW reserve and is part of the North Inlet Estuary. The site is surrounded by a Spartina marsh and drains associated uplands. Salinity ranges from 0 to 36 parts per thousand. The bottom is mostly comprised of oyster shell hash and some fine sediment. This site is considered pristine and is influenced by its close proximity to the mouth of the Inlet.

Debidue Creek (DC): The Debidue Creek monitoring site is located in an ocean-dominated Spartina marsh that was formerly surrounded by pine-dominated uplands, and is part of the North Inlet Estuary. The site is approximately 1 kilometer south of the Debordieu Colony, a large development partially built on man-made canals that drain into the northern portion of Debidue Creek, and is considered impacted. Salinity can range from 0 to 36 parts per thousand and average tidal flux is approximately 2 meters. The creek has an average depth of 2.2 meters MHW and an average width of 70 meters MHW at the sample site. The bottom is mostly comprised of oyster shell hash with some fine sediment and detritus.

Oyster Landing (OL): The Oyster Landing monitoring site is considered a fairly pristine and undisturbed area in the North Inlet Estuary. Samples are collected at the end of the Oyster Landing pier from the floating dock, which is adjacent to the NIW NERR weather station. The pier stretches into the upper reaches of Crab Haul Creek in the mid-western portion of North Inlet and is approximately 2.8 kilometers from the headwaters of Crab Haul Creek. The creek drains pine forested uplands and wetlands. Salinity can range from 0 to 36 parts per thousand and average tidal flux is approximately 1.4 meters. The creek has an average depth of approximately 2 meters MHW and an average width of approximately 150 meters MHW at the sample site. The bottom is mostly comprised of oyster shell hash with some fine sediment and detritus.

Thousand Acre (TA): The Thousand Acre monitoring site is located in the Thousand Acre Marsh tidal creek, near the creek mouth, in the Winyah Bay Estuary. Prior to 7/19/1999, the sampling location was approximately 30 meters northeast of the west bridge of Thousand Acre Marsh. Heavy siltation near the creek bank at this site caused repeated problems with mud contamination and, as a result, the sampling location was moved to the northwest corner of the west bridge, about 15 meters from the mouth of the creek. At this new location, the datalogger was attached to the bridge itself, creek depth was approximately 2 meters MHW, and the creek width was approximately 10 meters. On 08/13/02 the sampling location was moved 6 feet closer to the middle of the creek in response to continued problems with excessive silt/mud deposition. The datalogger was still attached to the west bridge, but the new location was approximately 3 feet deeper. The Thousand Acre Marsh tidal creek empties into the northeastern side of the mid-portion of Winyah Bay and drains the Thousand Acre Marsh and surrounding pine forested uplands and vegetated wetlands. Salinity ranges from 0 to

26 parts per thousand and tidal flux is approximately 1 meter. The bottom is composed mostly of fine sediments and detritus. Georgetown is located about 5 kilometers upstream from the Thousand Acre site on the western side of Winyah Bay and is home to a number of heavy industries, including a steel plant, paper mill, chemical plant, and a coal fired plant. A public sewage treatment plant, which discharges into the bay, is also located in Georgetown.

Clambank Creek monitoring site: -79.1930 W, 33.3339 N
 Debidue Creek monitoring site: -79.1681 W, 33.3603 N
 Oyster Landing monitoring site (in Crab Haul Creek): -79.1928 W, 33.3494 N
 Thousand Acre monitoring site: -79.2600 W, 33.2992 N

1.5.1.1 West Bounding Coordinate: -79.270

1.5.1.2 East Bounding Coordinate: -79.153

1.5.1.3 North Bounding Coordinate: 33.366

1.5.1.4 South Bounding Coordinate: 33.296

1.6 Keywords

1.6.1 Theme

1.6.1.1 Theme Keyword Thesaurus:	None
1.6.1.2 Theme Keyword:	COASTAL
1.6.1.2 Theme Keyword:	CONDUCTIVITY
1.6.1.2 Theme Keyword:	DATALOGGER
1.6.1.2 Theme Keyword:	DEPTH
1.6.1.2 Theme Keyword:	DISSOLVED OXYGEN
1.6.1.2 Theme Keyword:	ECOSYSTEMS
1.6.1.2 Theme Keyword:	ESTUARINE
1.6.1.2 Theme Keyword:	ESTUARY
1.6.1.2 Theme Keyword:	HYDROLAB
1.6.1.2 Theme Keyword:	LONG-TERM
1.6.1.2 Theme Keyword:	LONG-TERM ECOLOGICAL RESEARCH
1.6.1.2 Theme Keyword:	MARSH
1.6.1.2 Theme Keyword:	NATIONAL ESTUARINE RESEARCH RESERVE
1.6.1.2 Theme Keyword:	NERR
1.6.1.2 Theme Keyword:	PERCENT SATURATION
1.6.1.2 Theme Keyword:	PH
1.6.1.2 Theme Keyword:	SALINITY
1.6.1.2 Theme Keyword:	SALT MARSH
1.6.1.2 Theme Keyword:	SPECIFIC CONDUCTIVITY
1.6.1.2 Theme Keyword:	SWMP
1.6.1.2 Theme Keyword:	SYSTEM-WIDE MONITORING PROGRAM
1.6.1.2 Theme Keyword:	TIDAL CREEK
1.6.1.2 Theme Keyword:	TIDE
1.6.1.2 Theme Keyword:	TURBIDITY
1.6.1.2 Theme Keyword:	WATER LEVEL
1.6.1.2 Theme Keyword:	WATER QUALITY
1.6.1.2 Theme Keyword:	WATER TEMPERATURE
1.6.1.2 Theme Keyword:	YSI

1.6.2 Place

1.6.2.1 Place Keyword Thesaurus:	None
1.6.2.2 Place Keyword:	ATLANTIC COAST
1.6.2.2 Place Keyword:	CLAMBANK CREEK
1.6.2.2 Place Keyword:	COASTAL
1.6.2.2 Place Keyword:	CRAB HAUL CREEK
1.6.2.2 Place Keyword:	DEBIDUE CREEK
1.6.2.2 Place Keyword:	DEBORDIEU COLONY
1.6.2.2 Place Keyword:	EAST COAST
1.6.2.2 Place Keyword:	GEORGETOWN COUNTY

1.6.2.2 Place Keyword:	HOBCAW BARONY
1.6.2.2 Place Keyword:	NORTH INLET
1.6.2.2 Place Keyword:	NORTH INLET-WINYAH BAY NERR
1.6.2.2 Place Keyword:	OYSTER LANDING
1.6.2.2 Place Keyword:	SOUTH CAROLINA
1.6.2.2 Place Keyword:	SOUTHEAST COAST
1.6.2.2 Place Keyword:	THOUSAND ACRE MARSH
1.6.2.2 Place Keyword:	THOUSAND ACRE MARSH TIDAL CREEK
1.6.2.2 Place Keyword:	THOUSAND ACRE RICE FIELD
1.6.2.2 Place Keyword:	WINYAH BAY
1.6.2.2 Place Keyword:	USA

1.6.3 Stratum

1.6.3.1 Stratum Keyword Thesaurus:	None
1.6.3.2 Stratum Keyword:	WATER COLUMN

1.6.4 Temporal

1.6.4.1 Temporal Keyword Thesaurus:	None
1.6.4.2 Temporal Keyword:	DAY
1.6.4.2 Temporal Keyword:	WEEK
1.6.4.2 Temporal Keyword:	MONTH
1.6.4.2 Temporal Keyword:	YEAR
1.6.4.2 Temporal Keyword:	1993
1.6.4.2 Temporal Keyword:	1994
1.6.4.2 Temporal Keyword:	1995
1.6.4.2 Temporal Keyword:	1996
1.6.4.2 Temporal Keyword:	1997
1.6.4.2 Temporal Keyword:	1998
1.6.4.2 Temporal Keyword:	1999
1.6.4.2 Temporal Keyword:	2000
1.6.4.2 Temporal Keyword:	2001
1.6.4.2 Temporal Keyword:	2002
1.6.4.2 Temporal Keyword:	1993-2002
1.6.4.2 Temporal Keyword:	1990s
1.6.4.2 Temporal Keyword:	2000s

1.7 Access Constraints:

None; however, it is strongly recommended that these data be acquired directly from the Belle W. Baruch Institute for Marine and Coastal Sciences and not indirectly through other sources which may have changed the data in some way.

1.8 Use Constraints:

Following academic courtesy standards, the PIs (originators), the North Inlet – Winyah Bay NERR site, the University of South Carolina's Belle W. Baruch Institute for Marine and Coastal Sciences, and Grantor (see Data Set Credit section) should be fully acknowledged in any subsequent publications in which any part of these data are used. Use of the data without completely reading and understanding the metadata is not recommended. The Baruch Institute, Baruch Institute researchers, and Grantor are not responsible for the use and/or misuse of data from this database. See the section on Distribution Liability for more information.

1.9 Point of Contact:

10.2 Contact Organization Primary

10.2.1 Contact Organization:	Univ. of South Carolina's Baruch Institute
10.2.2 Contact Person:	Ginger Ogburn-Matthews
10.3 Contact Position:	Research Data Manager & Analyst

10.4 Contact Address

10.4.1 Address Type:	Mailing Address
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10.4.2 Address: USC Baruch Marine Field Laboratory
10.4.2 Address: P.O. Box 1630
10.4.3 City: Georgetown
10.4.4 State or Province: South Carolina
10.4.5 Postal Code: 29442
10.4.6 Country: USA
10.5 Contact Voice Telephone: (843) 546-6219
10.7 Contact Facsimile Telephone: (843) 546-1632
10.8 Contact Electronic Mail Address: ginger@belle.baruch.sc.edu
10.9 Hours of Service: 8:30 am to 4:30 pm Mon.- Friday

1.11 Data Set Credit:

Data collection has been supported by the University of South Carolina (USC) and the National Oceanic & Atmospheric Administration (NOAA) through the Office of Ocean and Coastal Resource Management, Estuarine Reserves Division (initial award number NA270R0322-01 October 15, 1992). The North Inlet – Winyah Bay National Estuarine Research Reserve, overseen by USC's Belle W. Baruch Institute for Marine and Coastal Sciences, is in charge of gathering, managing, and distributing these data for research, education, and coastal zone management purposes. Several researchers, technicians, and data managers contributed to the dataset.

1.14 Native Data Set Environment

The .dat and .csv versions of the raw data files were uploaded to a PC from either YSI or Hydrolab dataloggers. Processing of the data occurred within MS Excel spreadsheets. Final data are maintained in Microsoft Excel 2000 and duplicates are saved in comma delimited text (.csv) format. Some process files are also available in .csv format.

1.15 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet-Winyah Bay (NIW) National Estuarine Research Reserve

8.2 Publication Date: 2002

8.4 Title: North Inlet-Winyah Bay National Estuarine Research Reserve's (NERR) Estuarine Water Quality Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 1995-2002

8.6 Geospatial Data Presentation Form: tab delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: NERR Centralized Data Management Office

8.9 Other Citation Details: These data were collected under the auspices and protocols of the North Inlet-Winyah Bay NERR. The National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP) protocols took effect in 1995. This is the NERR/CDMO version of the database.

8.10 Online linkage: <http://cdmo.baruch.sc.edu>

8.11 Larger Work Citation:

8. Citation Information:

8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: 2003

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: tab-delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: <http://cdmo.baruch.sc.edu>

1.15 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve

8.1 Originator: D. Allen

8.1 Originator: A. Lohrer

8.2 Publication Date: 2002

8.4 Title: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve Meteorological Data, North Inlet Estuary, Georgetown, South Carolina: 2001-2002.

8.6 Geospatial Data Presentation Form: MS Access database and tab-delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.9 Other Citation Details: These data were collected under the auspices and protocols of the National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP). This is the NERR/CDMO version of the database.

8.10 Online Linkage: <http://cdmo.baruch.sc.edu>

8.11 Larger Work Citation:

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8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: 2003

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: tab-delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: <http://cdmo.baruch.sc.edu>

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve

8.1 Originator: D. Allen

8.1 Originator: A. Lohrer

8.2 Publication Date: Unpublished material

8.4 Title: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve Meteorological Data, North Inlet Estuary, Georgetown, South Carolina: 2000.

8.6 Geospatial Data Presentation Form: MS Access database and tab-delimited text (spreadsheet)

8.9 Other Citation Details: These data were collected under the auspices and protocols of the National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP). This is the NERR/CDMO version of the database.

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8. Citation Information:

8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: 2001

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: tab-delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office URL: <http://cdmo.baruch.sc.edu>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: North Inlet – Winyah Bay (NIW) National Estuarine Research Reserve

8.1 Originator: D. Allen

8.1 Originator: E. Chipouras

8.2 Publication Date: 20020701

8.4 Title: North Inlet – Winyah Bay (NIW) National Estuarine Research Reserve Meteorological Data, North Inlet Estuary, Georgetown, South Carolina: 1997 – 1999.

8.6 Geospatial Data Presentation Form: comma delimited text and MS Excel spreadsheet

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: The Belle W. Baruch Institute for Marine Biology and Coastal Research, Baruch Marine Field Lab, University of South Carolina

8.9 Other Citation Details: These data were collected under the auspices and protocols of the National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP), but the data were not considered official SWMP data until the year 2000. This database and the associated metadata are the Baruch Institute's versions, are independent of the NERR/CDMO versions, and follow Baruch's quality control and assurance procedures in addition to NERR SWMP protocols.

8.10 Online Linkage: <http://links.baruch.sc.edu/data/>

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8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

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8.2 Publication Date: 2002

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8.6 Geospatial Data Presentation Form: tab-delimited text (spreadsheet)

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8.8.1 Publication Place: Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office URL: <http://cdmo.baruch.sc.edu>

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet-Winyah Bay (NIW) National Estuarine Research Reserve

8.2 Publication Date: unpublished material

8.4 Title: North Inlet-Winyah Bay National Estuarine Research Reserve's (NERR) Estuarine Surface Water Nutrient, Suspended Sediment, and Chlorophyll a Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 2002-2003

8.6 Geospatial Data Presentation Form: MS Access database and tab-delimited text (spreadsheet)

8.9 Other Citation Details: These data were collected under the auspices and protocols of the National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP). This is the NERR/CDMO version of the database.

8.11 Larger Work Citation:

8. Citation Information:

8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: unpublished material

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: tab-delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office URL: <http://cdmo.baruch.sc.edu>

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: North Inlet-Winyah Bay (NIW) National Estuarine Research Reserve

8.2 Publication Date: 20030328

8.4 Title: North Inlet-Winyah Bay National Estuarine Research Reserve's (NERR) Estuarine Surface Water Nutrient, Suspended Sediment, and Chlorophyll a Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 1993-2001

8.6 Geospatial Data Presentation Form: comma delimited digital data and MS Excel spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Water Chemistry, Chlorophyll a, and Suspended Sediment Long-Term Monitoring Database for the North Inlet Estuary, South Carolina

8.7.2 Issue Identification: June 1, 1993 - December 31, 2001

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina, USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine Biology and Coastal Research, University of South Carolina

8.9 Other Citation Details: These data were collected under the auspices and protocols of the North Inlet-Winyah Bay NERR. The National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP) began their own protocols in the year 2002. This database and the associated metadata are the Baruch Institute's versions, are independent of the NERR/CDMO versions, and follow Baruch's quality control and assurance procedures in addition to NIW NERR protocols.

8.10 Online linkage: <http://links.baruch.sc.edu/data/>

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: D. Allen

8.1 Originator: Joe Schubauer-Berigan

8.2 Publication Date: unpublished material

8.4 Title: Best Management Practice Study for Two Golf Courses in Georgetown County: 1995-1997

8.6 Geospatial Data Presentation Form: comma delimited digital data and MS Excel spreadsheet

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Elizabeth Blood (Daily Estuarine Surface Water Nutrient Chemistry and Water Quality Data)

8.1 Originator: Leonard Robert Gardener (Suspended Sediments)

8.1 Originator: Richard Zingmark (Phytoplankton Biomass - Chlorophyll a and Phaeophytin)

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.2 Publication Date: 19981120

8.4 Title: Long Term Ecological Research (LTER) Daily Estuarine Surface Water Nutrient and Water Quality, Suspended Sediment, and Chlorophyll a Data for the North Inlet Estuary, Georgetown, SC: 1978-1993

8.6 Geospatial Data Presentation Form: comma delimited digital data and MS Excel spreadsheet

8.7 Series Information:

8.7.1 Series Name: Baruch Institute's Water Chemistry, Chlorophyll a, and Suspended Sediment Long-Term Monitoring Database for the North Inlet Estuary, South Carolina

8.7.2 Issue Identification: September 1, 1978 - June 30, 1993

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine Biology and Coastal Research, University of South Carolina

8.10 Online Linkage: <http://links.baruch.sc.edu/data/>

2. Data Quality Information

2.1 Attribute Accuracy

2.1.1 Attribute Accuracy Report:

The attribute accuracy report below contains information on the sensors comprising the Hydrolab Datasonde 3, YSI 6000 UPG, and YSI 6600 dataloggers.

Hydrolab Datasonde 3

Water Temperature:

Range of Measurement: -5 to 50 degrees Celsius

Resolution: 0.01 degrees Celsius

Accuracy: plus or minus 0.15 degrees Celsius

Specific Conductivity:

Range of Measurement: 0 to 100 milliSiemens/centimeter

Resolution: four digits

Accuracy: plus or minus 1 percent of range provided by cell block (saltwater or freshwater)

*the ranges for each block are changed automatically (autoranged) to provide the most digits available

**the saltwater block ranges are from 0 to 1.5, 1.5 to 15, and 15 to 100 milliSiemens/centimeter

***automatic temperature compensation

Salinity:

Range of Measurement: 0 to 70 parts per thousand

Resolution: 0.1 parts per thousand

Accuracy: plus or minus 0.2 parts per thousand

*calculated from specific conductance

Dissolved Oxygen:

Range of Measurement: 0 to 20 milligrams per Liter

Resolution: 0.01 milligrams per Liter

Accuracy: plus or minus 0.2 milligrams per Liter

*automatic compensation for temperature and salinity

**may also be reported in percent saturation

Depth:

Range of Measurement: 0 to 100 meters

Resolution: 0.1 meters

Accuracy: plus or minus 0.45 meters (this is a non-vented probe, barometric pressure changes may produce additional error up to 0.3 meters)

*automatic compensation for specific conductance

YSI 6000 UPG and 6600 dataloggers

Water Temperature:

Range of measurement: -5 to 45 degrees Celsius

Resolution: 0.01 degrees Celsius

Accuracy: plus or minus 0.15 degrees Celsius

Specific Conductivity:

6000 UPG:

Range of measurement: 0 to 100 milliSiemens/centimeter

Resolution: 0.01 milliSiemens/centimeter

Accuracy: plus or minus (0.5 percent of reading plus 0.001 milliSiemens/centimeter)

*calculated automatically from conductivity readings

6600:

Range of measurement: 0 to 100 milliSiemens/centimeter

Resolution: 0.001 milliSiemens/centimeter to 0.1 milliSiemens/centimeter (range dependent)

Accuracy: plus or minus (0.5 percent of reading plus 0.001 milliSiemens/centimeter)

*calculated automatically from conductivity readings

Salinity:

Range of measurement: 0 to 70 parts per thousand

Resolution: 0.01 parts per thousand

Accuracy: plus or minus 1 percent of reading or 0.1 parts per thousand, whichever is greater

*salinity values are calculated from conductivity and temperature readings

Dissolved Oxygen (percent saturation):

6000 UPG:

Range of measurement: 0 to 200 percent air saturation

Resolution: 0.1 percent air saturation

Accuracy: plus or minus 2 percent air saturation

6600:

Range of measurement: 0 to 500 percent air saturation

Resolution: 0.1 percent air saturation

Accuracy:

0-200 percent air saturation: plus or minus 2 percent of the reading or 2 percent air saturation (greater of)

200-500 percent air saturation: plus or minus 6 percent of reading

Dissolved Oxygen (milligrams per Liter):

6000 UPG:

Range of measurement: 0 to 20 milligrams per Liter

Resolution: 0.01 milligrams per Liter

Accuracy: plus or minus 0.2 milligrams per Liter

*calculated from percent air saturation, temperature, and salinity

6600:

Range of measurement: 0 to 50 milligrams per Liter

Resolution: 0.01 milligrams per Liter

Accuracy:

0-20 milligrams per Liter: plus or minus 2 percent of the reading or 0.2 milligrams per Liter (greater of)

20-50 milligrams per Liter: plus or minus 6 percent of the reading

*calculated from percent air saturation, temperature, and salinity

Depth:

Range of measurement: 0 to 9.1 meters

Resolution: 0.001 meters

Accuracy: plus or minus 0.018 meters (this is a non-vented probe, barometric pressure changes may produce additional error up to 0.3 meters)

pH:

Range of measurement: 2 to 14 units

Resolution: 0.01 units

Accuracy: plus or minus 0.2 units

Turbidity:

Range of measurement: 0 to 1000 Nephelometric Turbidity Units (NTUs), relative to calibration standards

Resolution: 0.1 NTUs

Accuracy: plus or minus 5 percent of reading or 2 NTUs, whichever is greater

2.1.2 Quantitative Attribute Accuracy Assessment

2.1.2 .1 Attribute Accuracy Value

<u>Parameter</u>	<u>Number of Decimal Places</u>
Water Temperature	1
Specific Conductivity	1 (Hydrolab Datasonde 3)
Specific Conductivity	2 (YSI 6000 UPG, YSI 6600-S)
Salinity	1
Dissolved Oxygen (percent saturation)	1
Dissolved Oxygen (milligrams/Liter)	1
Depth	2
pH	1 (YSI dataloggers only)
Turbidity	0 (YSI dataloggers only)

2.1.2.2 Attribute Accuracy Explanation:

Date: The date values are integers and have no decimal places assigned to them, they are accurate to the whole number.

Time: The time values are integers and have no decimal places assigned to them. Time is generally considered to be accurate to within 5 minutes.

Water Temperature: Based on the accuracy and resolution of the sensors, as reported by Hydrolab for the Datasonde 3 and YSI for the 6000 UPG and 6600 dataloggers, water temperature readings are reported in degrees Celsius with one decimal place.

Specific Conductivity: Based on the accuracy and resolution of the Hydrolab Datasonde 3 sensor, specific conductivity readings are reported in milliSiemens/centimeter with one decimal place. Based on the accuracy and resolution of the YSI 6000 UPG and YSI 6600 sensors, specific conductivity readings are reported in milliSiemens/centimeter with two decimal places.

Salinity: Based on the accuracy and resolution of the sensors, as reported by Hydrolab for the Datasonde 3 and YSI for the 6000 UPG and 6600 dataloggers, salinity values are reported in parts per thousand with one decimal place.

Dissolved Oxygen (percent saturation): Based on the accuracy and resolution of the sensors, as reported by Hydrolab for the Datasonde 3 and YSI for the 6000 UPG and 6600 dataloggers, dissolved oxygen readings are reported in percent saturation with one decimal place.

Dissolved Oxygen (milligrams per Liter): Based on the accuracy and resolution of the sensors, as reported by Hydrolab for the Datasonde 3 and YSI for the 6000 UPG and 6600 dataloggers, dissolved oxygen values are reported in milligrams per Liter with one decimal place.

Depth: Depth readings are reported in meters with two decimal places based on the range of measurement and needs of researchers and other users. However, readings collected with the Hydrolab Datasonde 3 and YSI 6000 UPG and 6600 dataloggers are not accurate to this level. All probes used were non-vented and, as a result, did not compensate for changes in barometric pressure, which may cause error (up to 0.3 meters) in addition to the accuracy limitations of the probe. Users should utilize these data only for reference purposes or should reduce the number of decimal places reported to one. These data should not be used as a substitute for tide gauge readings.

pH: Based on the accuracy and resolution of the sensors, as reported by YSI for the 6000 UPG and 6600 dataloggers, pH values are reported in pH units with one decimal place.

Turbidity: Based on the accuracy and resolution of the sensors, as reported by YSI for the 6000 UPG and 6600 dataloggers, turbidity readings are reported in Nephelometric Turbidity Units to the nearest whole number.

2.2 Logical Consistency Report:

Not applicable

2.3 Completeness Report:

The MS Excel final data files were verified for typographical errors by both the NERR Technician and the Rescue Project Data Manager. The following schedule provides availability information for the final data set and differentiates between data collected with the Hydrolab Datasonde 3 and data collected with either of the YSI dataloggers (the YSI units are essentially the same). There may be missing data within these availability periods. Missing and Anomalous Data Documentation for each site are available in separate files and are also published on the NERRWQ.1993-2002 Final CD and Baruch's web site. The missing and anomalous data documentation pertains only to Baruch's final rescued/published 2003 data set, and may differ from that reported by the NIW NERR and the NERR Centralized Data Management Office (CDMO). All occurrences of missing data were marked with a period in the final data set.

Data Availability (mm/dd/yyyy):

Clambank:

10/25/1993 – 06/30/1995 (Hydrolab)

08/17/2001 – 12/31/2002 (YSI)

Debidue Creek:

3/5/1998 – 12/31/2002 (YSI)

Oyster Landing:

10/25/1993 – 12/31/2002

10/25/1993 – 02/01/1995 (Hydrolab)

02/06/1995 – 03/01/1995 (YSI)

03/01/1995 – 01/04/1996 (Hydrolab)

01/04/1996 – 12/31/2002 (YSI)

Thousand Acre:

4/15/1994 – 12/31/2002

04/15/1994 – 04/24/1995 (Hydrolab)

05/08/1995 – 05/19/1995 (YSI)

05/19/1995 – 06/05/1995 (Hydrolab)

06/05/1995 – 06/19/1995 (YSI)

06/19/1995 – 07/18/1995 (Hydrolab)

07/18/1995 – 11/22/1995 (YSI)

11/28/1995 – 12/21/1995 (Hydrolab)

12/21/1995 – 12/31/2002 (YSI)

2.5 Lineage

2.5.1 Methodology

2.5.1.1 Methodology Type: Field Collection Procedures and Protocols

2.5.1.3 Methodology Description: Field Collection Protocol

Hydrolab datasondes or YSI dataloggers were deployed into 4 inch diameter PVC pipes, which were strapped to treated 2 inch by 6 inch boards. The PVC pipe and board units were then attached with stainless steel bands to a piling at each site. The PVC pipes that house the dataloggers have two large windows cut out near the bottom to enable the probes to have direct contact with the water column. A stop bolt placed through the PVC pipe below the “windows” keeps the datalogger exactly one foot (30 cm) above the creek bottom. Measurements of water temperature, specific conductivity, salinity, dissolved oxygen (percent saturation and mg/L), water level, pH, and turbidity were taken every 30 minutes over collecting periods of approximately two weeks. The two-week sampling period was chosen based on the expected battery life of the datalogger and to minimize the impact of biofouling on the individual probes. Down time was minimized whenever possible by using extra dataloggers in rotation for back-to-back deployments.

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: National Estuarine Research Reserve System, Centralized Data Management Office

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: V. Ogburn-Matthews

8.1 Originator: M.E. Crane

8.1 Originator: W. Jefferson

8.1 Originator: T.D. Small

8.1 Originator: D. Porter

8.2 Publication Date: 20000207

8.4 Title: CDMO Operations Manual, Version 4.0

8.6 Geospatial Data Presentation Form: Published Manual

8.8 Publication Information

8.8.1 Publication Place: Belle W. Baruch Marine Laboratory, Georgetown, SC

8.8.2 Publisher: National Estuarine Research Reserve System, Centralized Data Management Office

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: National Estuarine Research Reserve System, Centralized Data Management Office

8.1 Originator: Mike Lizotte

8.2 Publication Date: 200012

8.4 Title: YSI 6000 Multi-Parameter Water Quality Monitor Standard Operating Procedure, Version 3.0

8.6 Geospatial Data Presentation Form: Published Manual

8.8 Publication Information

8.8.1 Publication Place: Belle W. Baruch Marine Laboratory, Georgetown, SC

8.8.2 Publisher: National Estuarine Research Reserve System, Centralized Data Management Office

8.10 Online Linkage: <http://cdmo.baruch.sc.edu>

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: YSI Incorporated

8.2 Publication Date: 200201

8.4 Title: YSI Environmental Operations Manual; 6-Series Environmental Monitoring Systems

8.6 Geospatial Data Presentation Form: Manual

8.8 Publication Information:

8.8.1 Publication Place: Yellow Springs, Ohio

8.8.2 Publisher: YSI Incorporated

8.9 Other Citation Details: This manual pertains to the YSI 6600 (6-Series) datalogger and the publication date refers to Revision B

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: YSI Incorporated

8.2 Publication Date: 199704

8.4 Title: 6000 UPG Multi-Parameter Water Quality Monitor Instruction Manual

8.6 Geospatial Data Presentation Form: Manual

8.8 Publication Information:

8.8.1 Publication Place: Yellow Springs, Ohio

8.8.2 Publisher: YSI Incorporated

8.9 Other Citation Details: The publication date refers to Revision E of this manual

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: Hydrolab Corporation

8.2 Publication Date: 199104

8.4 Title: Datasonde 3 Multiparameter Water Quality Datalogger Operating Manual

8.6 Geospatial Data Presentation Form: Manual

8.8 Publication Information:

8.8.1 Publication Place: Austin, Texas

8.8.2 Publisher: Hydrolab Corporation

2.5.1 Methodology

2.5.1.1 Methodology Type: Laboratory Procedures and Protocols

2.5.1.3 Methodology Description: Laboratory Protocol

At the end of the collecting period the dataloggers were brought to the laboratory, the data were downloaded, and the instruments were cleaned and recalibrated following the appropriate datasonde/datalogger service manual and SWMP protocols.

Hydrolab Datasonde 3:

At the end of each two-week period, the Datasonde3 is brought back into the laboratory for downloading, cleaning, any maintenance that may be necessary, and recalibration. These procedures are carried out according to the methods as described in the Hydrolab Datasonde 3 Operating Manual, in sections 3 and 7 (this manual has been archived with the NERRWQ Notebooks at the Baruch Marine Field Laboratory). After approximately six hours of down time, the datasondes were redeployed for another two-week period.

YSI 6000 UPG/YSI 6600

At the end of each sampling interval, the dataloggers are brought back to the laboratory and the data were downloaded. Before cleaning the instruments, post-calibration readings were taken from each to determine if any of the probes exhibited drift. The instruments were then cleaned and recalibrated following the methods described in the relevant YSI Operators Manual (manuals for both the 6000 UPG and 6600 have been archived with the NERRWQ Notebooks at the Baruch Marine Field Laboratory and as part of the NERRWQ Published CD) and the SWMP protocols detailed in the "NERR SWMP YSI Standard Operating Procedures, version 3.0" or the "CDMO Operations Manual, version 4.0". These

documents may be found at <http://cdmo.baruch.sc.edu/geninfo.html>. The pH probe was calibrated using a two-point method and either 4,7 or 7,10 standards. The turbidity probe calibration also used a two-point method with 0 & 100 Nephelometric Turbidity Units standards. Specific conductivity was calibrated using a one-point method and a 10 milliSiemens/centimeter standard, which was purchased through either Fisher Scientific or YSI Incorporated. The turbidity wiper and dissolved oxygen membrane were replaced after each deployment. After approximately 24 hours of down time for cleaning, recalibration, and to allow the DO membrane to relax overnight, the YSI dataloggers were redeployed.

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: National Estuarine Research Reserve System, Centralized Data Management Office

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: V. Ogburn-Matthews

8.1 Originator: M.E. Crane

8.1 Originator: W. Jefferson

8.1 Originator: T.D. Small

8.1 Originator: D. Porter

8.2 Publication Date: 20000207

8.4 Title: CDMO Operations Manual, Version 4.0

8.6 Geospatial Data Presentation Form: Published Manual

8.8 Publication Information

8.8.1 Publication Place: Belle W. Baruch Marine Laboratory, Georgetown, SC

8.8.2 Publisher: National Estuarine Research Reserve System, Centralized Data Management Office

8.10 Online Linkage: <http://cdmo.baruch.sc.edu>

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: National Estuarine Research Reserve System, Centralized Data Management Office

8.1 Originator: Mike Lizotte

8.2 Publication Date: 200012

8.4 Title: YSI 6000 Multi-Parameter Water Quality Monitor Standard Operating Procedure, Version 3.0

8.6 Geospatial Data Presentation Form: Published Manual

8.8 Publication Information

8.8.1 Publication Place: Belle W. Baruch Marine Laboratory, Georgetown, SC

8.8.2 Publisher: National Estuarine Research Reserve System, Centralized Data Management Office

8.10 Online Linkage: <http://cdmo.baruch.sc.edu>

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: YSI Incorporated

8.2 Publication Date: 200201

8.4 Title: YSI Environmental Operations Manual; 6-Series Environmental Monitoring Systems

8.6 Geospatial Data Presentation Form: Manual

8.8 Publication Information:

8.8.1 Publication Place: Yellow Springs, Ohio

8.8.2 Publisher: YSI Incorporated

8.9 Other Citation Details: This manual pertains to the YSI 6600 (6-Series) datalogger and the publication date refers to Revision B

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: YSI Incorporated

8.2 Publication Date: 199704

8.4 Title: 6000 UPG Multi-Parameter Water Quality Monitor Instruction Manual

8.6 Geospatial Data Presentation Form: Manual

8.8 Publication Information:

8.8.1 Publication Place: Yellow Springs, Ohio

8.8.2 Publisher: YSI Incorporated

8.9 Other Citation Details: The publication date refers to Revision E of this manual

2.5.1.4 Methodology Citation:

8. Citation Information

8.1 Originator: Hydrolab Corporation

8.2 Publication Date: 199104

8.4 Title: Datasonde 3 Multiparameter Water Quality Datalogger Operating Manual

8.6 Geospatial Data Presentation Form: Manual

8.8 Publication Information:

8.8.1 Publication Place: Austin, Texas

8.8.2 Publisher: Hydrolab Corporation

2.5.3.1 Process Description:

Baruch or NERR Water Quality Technicians downloaded data from the datasonde/dataloggers and saved the files in .csv or .txt format. These raw data files were QA/QC'd by the technician and merged into monthly, and then yearly, Excel files (in .csv and .xls formats). The yearly process files were managed in a number of different ways over the years. Yearly files from 1993-1995 were archived on Baruch's mainframe located on the University of South Carolina's Columbia campus. Files beginning in 1995 (depending on the sample site) were collected under SWMP protocols, QA/QC'd by the CDMO, and posted to the NIWB NERR portion of their website. Additional files were maintained by Baruch's Data Manager and various data technicians.

2002-2003 Data Rescue Project:

The Rescue Project Data Manager collected all water quality files from all sources: the Baruch Data Manager's computer, FTP downloads from the University of South Carolina's mainframe in Columbia, the NERR Technicians computer, and the files posted by the CDMO on the NIWB NERR portion of their website. These files were then organized and verified to determine which compiled yearly data files were the most recent and reliable versions of the data. For the 1995 and more recent data, which were collected under SWMP protocols, the files posted by the CDMO were used. The CDMO files were considered the most reliable and had been QA/QC'd to the standards published in the CDMO's Operations manual (archived as part of the NERRWQ Published CD and published at <http://cdmo.baruch.sc.edu/geninfo.html>). Where necessary, the Rescue Project Data Manager compiled raw data files into yearly spreadsheets, verified the data, added date and time columns, removed the battery voltage column, inserted headers, formatted columns, and inserted periods as missing data markers for missing data points. This process was necessary for the Clambank 1994 and 1996 files, as well as the Thousand Acre 1994 file. For files obtained from the CDMO website the columns were reformatted and column headers were inserted.

Data Verification and Quality Control:

All existing metadata documents, including the incomplete "NERR Logbooks" were then cross-referenced with the data files in order to document all missing and anomalous data and record any possible explanations. In addition, all data files were graphed for QA/QC purposes. The Rescue Project Manager evaluated these graphics and all missing and anomalous data documentation before making final determinations on anomalous or erroneous data for Baruch's Final 1993 – 2002 published database. The following standards, based on the CDMO's and Baruch's Data Management protocols, were used to evaluate the data and document any anomalous or erroneous data:

All Sensors:

Any readings that appeared abnormal or inconsistent were noted as Questionable Data in the Anomalous Data documentation. Readings that the Rescue Project Data Manager determined to be erroneous (large discontinuity, out of range, corresponding documentation, etc.) were noted as erroneous, deleted from the final data file, and any possible/noted explanations were given. All erroneous data removed from the final database were also documented in the Missing Data documentation.

Temperature:

Failure of the temperature probe also affects specific conductivity, salinity, dissolved oxygen (milligrams per Liter), depth, pH, and turbidity readings. As a result, if it was determined that the temperature probe failed, these readings were also noted as erroneous and removed from the database. Temperature probe failures were very rare.

Specific Conductivity and Salinity:

Failure of the conductivity probe affects specific conductivity, salinity, dissolved oxygen (milligrams per Liter), and depth readings. As a result, if it was determined that the conductivity probe failed, these readings were also noted as erroneous and removed from the database. The conductivity probe rarely exhibits catastrophic failure, but is susceptible to drift during deployment.

Dissolved Oxygen (percent saturation and milligrams per Liter):

Particularly problematic for the DO probe are tears in the sensor membrane and fouling of the membrane. A membrane tear is typically evidenced by a sharp discontinuity and/or a steady climb in readings to unreasonable values, followed by readings that drift back to varying extents. This is considered a catastrophic failure and all readings taken after the discontinuity are considered erroneous, documented, and deleted. The sensor may also experience drift caused by the deposition of biological material on the membrane (fouling). The Rescue Project Data Manager made determinations as to whether or not data suspected of drift were reasonable or not. In extreme cases, data were classified as erroneous and removed from the dataset. Typically both dissolved oxygen parameters have matching missing, anomalous, and erroneous data documentation, however, the milligrams per Liter values are calculations based on readings taken by the conductivity and temperature probes. As a result, there are occasions where the two parameters differ.

Depth:

This probe is very susceptible to changes in barometric pressure and, under the right conditions, may produce negative readings although the sensor is under water. As a result, the Rescue Project Data Manager consulted the readings from other sensors before making a determination as to whether or not the sensors were out of the water. The best indications that the unit was out of the water are obvious problems (very small values) with the specific conductivity and salinity values. With corroborating evidence from these parameters, all data from the period were determined to be erroneous, documented and deleted from the final dataset. If negative values occurred but the specific conductivity and salinity values did not indicate that the probes were out of the water, all data were retained and noted as Questionable.

Questionable or erroneous depth values were never removed from the dataset alone, as depth readings are important indicators of where the readings were taken in the water column. On several occasions, the Rescue Project Data Manager had to go back to the raw data, track down, and reinsert negative depth values that had simply been deleted by previous data technicians despite the fact that all other parameters appeared reasonable and the negative readings were within the range of error of the sensor. Occasionally, depth values were positive, but near zero (and within the range of error of the sensor), and other parameters indicated that the probes were out of the water. These instances were classified as erroneous and removed from the dataset.

pH:

The pH sensor rarely exhibits catastrophic failure, but is susceptible to drift during deployment.

Turbidity:

The turbidity probe sometimes registers readings outside of its range of measurement (greater than 1000). While the actual value is not accurate beyond this range, the readings are valuable in that they may indicate turbidity events that are greater than the sensor's ability to measure. These large readings may also be caused by Spartina "rack" or an animal passing in front of the optics. As a result, all readings over 1000 are noted as questionable in the anomalous data documentation, but were retained in the dataset. In situations where these extreme values were repeated for an extended period, or if there was another indication of sensor malfunction or fouling, the readings were classified as erroneous and removed from the final data file. Prior to 1997, large negative values (outside of the sensors range of error) were recorded as part of a "rollover" problem associated with large positive readings. These large negative readings were documented as erroneous and deleted from the final dataset. Small negative values (close to or within the sensors range of error) occurred from time to time as well and were documented as questionable data. On several occasions the Rescue Project Data Manager returned small negative turbidity readings (within the range of error of the sensor) to the dataset that had been deleted by data technicians inconsistently. Turbidity readings of zero were not noted as questionable data, despite the fact that the sensor may have recorded a small negative value that was rounded to zero in the final dataset when the appropriate number of decimal places (none) was recorded. The turbidity probe is fairly susceptible to mud and silt contamination.

Clambank 1996 Data:

After compiling the raw files for all Clambank 1996 data, the Rescue Project Data Manager determined that these data were mostly erroneous and all were questionable. The NERR Log Books confirmed that there were ongoing problems with the Datasonde used for this site and that the Data Technician was unable to properly recalibrate the unit as a result. There was also a problem with battery power draining rapidly. The unit was sent off for repair, but returned with the same

problems. After conferring with the 2003 NERR Water Quality Technician it was determined that these data were not reliable and would be removed from the final database completely.

Data Set Archival:

All calibration documentation hardcopies were scanned and converted to .jpg format for archival. These images, along with all raw and processed data, documentation, programs, and protocols, were archived on the NERRWQ Archive CD as part of the 2002-2003 Rescue Project. The final, rescued data set was archived in both .xls and .csv formats, along with graphics and metadata, on the NERRWQ.PUBLISH CD, in the NERRWQ notebook (maintained by Baruch's Data Manager at the Field Lab), and on-line at <http://links.baruch.sc.edu/data/>. The NERR Logbooks and calibration documentation hardcopies are maintained by the NERR Technician and located at the Baruch Marine Field Laboratory.

2.5.2.3 Process Date: 20031101

3 Spatial Data Organization Information:

3.1 Indirect Spatial Reference:

Hobcaw Barony and the North Inlet Estuary are located in Georgetown County, South Carolina, USA

3.2 Direct Spatial Reference Method: Point

5. Entity_and_Attribute_Information:

5.2 Overview_Description:

5.2.1 Entity_and_Attribute_Overview:

Date: The date on which the readings were recorded in mm/dd/yyyy format.

Time: The Eastern Standard Time that the current water temperature, specific conductivity, salinity, dissolved oxygen (percent saturation and milligrams/Liter), depth, pH, and turbidity readings were recorded. Time is reported in hh:mm format and readings were taken on the hour and half hour.

Temp: Water temperature as recorded in degrees Celsius by the Hydrolab datasonde or YSI datalogger.

SpCond: Specific conductivity as recorded in milliSiemens/centimeter by the Hydrolab datasonde or YSI datalogger.

Salinity: Salinity as recorded in parts per thousand by the Hydrolab datasonde or YSI datalogger.

DO (percent saturation): Dissolved Oxygen as recorded in percent saturation by the Hydrolab datasonde or YSI datalogger.

DO (milligrams/Liter): Dissolved Oxygen as recorded in milligrams/Liter by the Hydrolab datasonde or YSI datalogger.

Depth: Depth as recorded in meters by the Hydrolab datasonde or YSI datalogger.

pH: pH as recorded by the Hydrolab datasonde or YSI datalogger.

Turb: Turbidity as recorded in Nephelometric Turbidity Units (NTUs) by the YSI datalogger.

<u>Variable</u>	<u>Type (total size of value.number of decimal places)</u>	<u>Range of Measurement (min-max)*</u>
Date (mm/dd/yyyy)	Integer	1 – 12, 1 – 31, 1993 – 2002
Time (hh:mm)	Integer	00:00 – 23:30
Water Temperature	Real 4.1	0.3 – 37.2
Specific Conductivity	Real 4.1	0.1 – 60.0
Salinity	Real 4.1	0.0 – 40.2
Dissolved Oxygen (percent saturation)	Real 5.1	0.0 – 264.0
Dissolved Oxygen (milligrams/Liter)	Real 4.1	0.0 – 21.1
Depth	Real 5.2	-0.31 – 3.23
pH	Real 3.1	5.2 – 9.9

*Range of measurement values are actual highest and lowest values collected during the database timeframe. They may include values that are considered anomalous.

5.2.2 Entity and Attribute Detail Citation:

Definitions were developed by the NERRS CDMO and Baruch Institute's researchers, data managers, and technicians; no published standards for entity definitions were used to define the entities used in this dataset. However, the general use of these entity type definitions are understood by the chemical and biological communities at large.

6. Distribution Information

6.1 Distributor:

10.2 Contact Organization Primary

10.1.2 Contact Organization:

Univ. of South Carolina's Baruch Institute

10.1.1 Contact Person:

Ginger Ogburn-Matthews

10.3 Contact Position:

Research Data Manager & Analyst

10.4 Contact Address

10.4.1 Address Type:

Mailing Address

10.4.2 Address:

USC Baruch Marine Field Lab

10.4.2 Address:

PO Box 1630

10.4.3 City:

Georgetown

10.4.4 State or Province:

South Carolina

10.4.5 Postal Code:

29442

10.4.6 Country:

USA

10.5 Contact Voice Telephone:

(843) 546-6219

10.7 Contact Facsimile Telephone:

(843) 546-1632

10.8 Contact Electronic Mail Address:

ginger@belle.baruch.sc.edu

10.9 Hours of Service:

8:30 am to 4:30 pm EST/EDT Mon.- Friday

6.2 Resource Description:

Data Set Identification names:

North Inlet-Winyah Bay NERR Water Quality Data

NIW NERR Water Quality

NERRWQ

NIW NERR Data

North Inlet Ecosystem Monitoring

Baruch Institute Water Quality Long-Term Monitoring Database

Identification of Directories and Files:

The NERRWQ CDs contain the complete Final 1993-2002 Database, graphics, and metadata, as well as all raw and process files used or created throughout the archival of this database. The NERRWQ PUBLISH CD contains the following files in the following directories:

NERRWQ.FINAL (Directory Size: 12.7 MB, 42 folders, 307 files)

FINAL.DOCUMENTATION (Directory Size: 12.7 MB, 2 folders, 28 files)

NERRWQ.1993-2002.FGDC.METADATA.doc

NERRWQ.1993-2002.FGDC.METADATA.txt

NERRWQ.CB.AnomalousData.doc

NERRWQ.CB.AnomalousData.txt

NERRWQ.CB.MissingData.doc

NERRWQ.CB.MissingData.txt

NERRWQ.DC.AnomalousData.doc

NERRWQ.DC.AnomalousData.txt

NERRWQ.DC.MissingData.doc

NERRWQ.DC.MissingData.txt

NERRWQ.OL.AnomalousData.doc

NERRWQ.OL.AnomalousData.txt
NERRWQ.OL.MissingData.doc
NERRWQ.OL.MissingData.txt
NERRWQ.TA.AnomalousData.doc
NERRWQ.TA.AnomalousData.txt
NERRWQ.TA.MissingData.doc
NERRWQ.TA.MissingData.txt
NERRWQ.Sites.DOQQ.jpg

Manuals (Directory Size: 10.5 MB, 3 files)

CDMO.OpsManual.v4.0.pdf
YSI6000UPG.manual.pdf
YSI6600.manual.pdf

SitePhotos (Directory Size: 792 KB, 8 files)

CB.YSI.jpg
ClambankAerial.jpg
DebidueCreek.Aerial.jpg
DC.YSI.jpg
OL.YSI.jpg
OysterLandingAerial.jpg
TA.YSI.jpg
ThousandAcreAerial.jpg

FINAL.DATA (Directory Size: 74.2 MB, 4 folders, 58 files)

CB (Directory Size: 8.93 MB, 10 files)

NERRWQ.CB.1993.xls
NERRWQ.CB.1993.csv
NERRWQ.CB.1994.xls
NERRWQ.CB.1994.csv
NERRWQ.CB.1995.xls
NERRWQ.CB.1995.csv
NERRWQ.CB.2001.xls
NERRWQ.CB.2001.csv
NERRWQ.CB.2002.xls
NERRWQ.CB.2002.csv

DC (Directory Size: 13.6 MB, 10 files)

NERRWQ.DC.1998.xls
NERRWQ.DC.1998.csv
NERRWQ.DC.1999.xls
NERRWQ.DC.1999.csv
NERRWQ.DC.2000.xls
NERRWQ.DC.2000.csv
NERRWQ.DC.2001.xls
NERRWQ.DC.2001.csv
NERRWQ.DC.2002.xls
NERRWQ.DC.2002.csv

OL (Directory Size: 26.6 MB, 20 files)

NERRWQ.OL.1993.xls
NERRWQ.OL.1993.csv
NERRWQ.OL.1994.xls
NERRWQ.OL.1994.csv
NERRWQ.OL.1995.xls
NERRWQ.OL.1995.csv
NERRWQ.OL.1996.xls

NERRWQ.OL.1996.csv
NERRWQ.OL.1997.xls
NERRWQ.OL.1997.csv
NERRWQ.OL.1998.xls
NERRWQ.OL.1998.csv
NERRWQ.OL.1999.xls
NERRWQ.OL.1999.csv
NERRWQ.OL.2000.xls
NERRWQ.OL.2000.csv
NERRWQ.OL.2001.xls
NERRWQ.OL.2001.csv
NERRWQ.OL.2002.xls
NERRWQ.OL.2002.csv

TA (Directory Size: 24.9 MB, 18 files)

NERRWQ.TA.1994.xls
NERRWQ.TA.1994.csv
NERRWQ.TA.1995.xls
NERRWQ.TA.1995.csv
NERRWQ.TA.1996.xls
NERRWQ.TA.1996.csv
NERRWQ.TA.1997.xls
NERRWQ.TA.1997.csv
NERRWQ.TA.1998.xls
NERRWQ.TA.1998.csv
NERRWQ.TA.1999.xls
NERRWQ.TA.1999.csv
NERRWQ.TA.2000.xls
NERRWQ.TA.2000.csv
NERRWQ.TA.2001.xls
NERRWQ.TA.2001.csv
NERRWQ.TA.2002.xls
NERRWQ.TA.2002.csv

FINAL.GRAPHICS (Directory Size: 158 MB, 33 folders, 218 files)

CB (Directory Size: 20.4 MB, 5 folders, 34 files)

1993

CB.1993.Depth.jpg
CB.1993.DO%.jpg
CB.1993.DOmGL.jpg
CB.1993.Salinity.jpg
CB.1993.SpCond.jpg
CB.1993.Temp.jpg

1994

CB.1994.Depth.jpg
CB.1994.DO%.jpg
CB.1994.DOmGL.jpg
CB.1994.Salinity.jpg
CB.1994.SpCond.jpg
CB.1994.Temp.jpg

1995

CB.1995.Depth.jpg
CB.1995.DO%.jpg
CB.1995.DOmGL.jpg
CB.1995.Salinity.jpg
CB.1995.SpCond.jpg
CB.1995.Temp.jpg

2001

CB.2001.Depth.jpg
CB.2001.DO%.jpg
CB.2001.DOmGL.jpg
CB.2001.pH.jpg
CB.2001.Salinity.jpg
CB.2001.SpCond.jpg
CB.2001.Temp.jpg
CB.2001.Turb.jpg

2002

CB.2002.Depth.jpg
CB.2002.DO%.jpg
CB.2002.DOmGL.jpg
CB.2002.pH.jpg
CB.2002.Salinity.jpg
CB.2002.SpCond.jpg
CB.2002.Temp.jpg
CB.2002.Turb.jpg

DC (Directory Size: 28.3 MB, 5 folders, 40 files)

1998

DC.1998.Depth.jpg
DC.1998.DO%.jpg
DC.1998.DOmGL.jpg
DC.1998.pH.jpg
DC.1998.Salinity.jpg
DC.1998.SpCond.jpg
DC.1998.Temp.jpg
DC.1998.Turb.jpg

1999

DC.1999.Depth.jpg
DC.1999.DO%.jpg
DC.1999.DOmGL.jpg
DC.1999.pH.jpg
DC.1999.Salinity.jpg
DC.1999.SpCond.jpg
DC.1999.Temp.jpg
DC.1999.Turb.jpg

2000

DC.2000.Depth.jpg
DC.2000.DO%.jpg
DC.2000.DOmGL.jpg
DC.2000.pH.jpg
DC.2000.Salinity.jpg
DC.2000.SpCond.jpg
DC.2000.Temp.jpg
DC.2000.Turb.jpg

2001

DC.2001.Depth.jpg
DC.2001.DO%.jpg
DC.2001.DOmGL.jpg
DC.2001.pH.jpg
DC.2001.Salinity.jpg
DC.2001.SpCond.jpg
DC.2001.Temp.jpg
DC.2001.Turb.jpg

2002

DC.2002.Depth.jpg
DC.2002.DO%.jpg
DC.2002.DOmGL.jpg
DC.2002.pH.jpg
DC.2002.Salinity.jpg
DC.2002.SpCond.jpg
DC.2002.Temp.jpg
DC.2002.Turb.jpg

OL (Directory Size: 56.2 MB, 10 folders, 75 files)

1993

OL.1993.Depth.jpg
OL.1993.DO%.jpg
OL.1993.DOmGL.jpg
OL.1993.Salinity.jpg
OL.1993.SpCond.jpg
OL.1993.Temp.jpg

1994

OL.1994.Depth.jpg
OL.1994.DO%.jpg
OL.1994.DOmGL.jpg
OL.1994.Salinity.jpg
OL.1994.SpCond.jpg
OL.1994.Temp.jpg

1995

OL.1995.Depth.jpg
OL.1995.DO%.jpg
OL.1995.DOmGL.jpg
OL.1995.Salinity.jpg
OL.1995.SpCond.jpg
OL.1995.Temp.jpg
OL.1995.Turb.jpg

1996

OL.1996.Depth.jpg
OL.1996.DO%.jpg
OL.1996.DOmGL.jpg
OL.1996.pH.jpg
OL.1996.Salinity.jpg
OL.1996.SpCond.jpg
OL.1996.Temp.jpg
OL.1996.Turb.jpg

1997

OL.1997.Depth.jpg
OL.1997.DO%.jpg
OL.1997.DOmGL.jpg
OL.1997.pH.jpg
OL.1997.Salinity.jpg
OL.1997.SpCond.jpg
OL.1997.Temp.jpg
OL.1997.Turb.jpg

1998

OL.1998.Depth.jpg
OL.1998.DO%.jpg
OL.1998.DOmGL.jpg
OL.1998.pH.jpg
OL.1998.Salinity.jpg
OL.1998.SpCond.jpg

OL.1998.Temp.jpg
OL.1998.Turb.jpg

1999

OL.1999.Depth.jpg
OL.1999.DO%.jpg
OL.1999.DOmGL.jpg
OL.1999.pH.jpg
OL.1999.Salinity.jpg
OL.1999.SpCond.jpg
OL.1999.Temp.jpg
OL.1999.Turb.jpg

2000

OL.2000.Depth.jpg
OL.2000.DO%.jpg
OL.2000.DOmGL.jpg
OL.2000.pH.jpg
OL.2000.Salinity.jpg
OL.2000.SpCond.jpg
OL.2000.Temp.jpg
OL.2000.Turb.jpg

2001

OL.2001.Depth.jpg
OL.2001.DO%.jpg
OL.2001.DOmGL.jpg
OL.2001.pH.jpg
OL.2001.Salinity.jpg
OL.2001.SpCond.jpg
OL.2001.Temp.jpg
OL.2001.Turb.jpg

2002

OL.2002.Depth.jpg
OL.2002.DO%.jpg
OL.2002.DOmGL.jpg
OL.2002.pH.jpg
OL.2002.Salinity.jpg
OL.2002.SpCond.jpg
OL.2002.Temp.jpg
OL.2002.Turb.jpg

TA (Directory Size: 52.9 MB, 9 folders, 69 files)

1994

TA.1994.Depth.jpg
TA.1994.DO%.jpg
TA.1994.DOmGL.jpg
TA.1994.Salinity.jpg
TA.1994.SpCond.jpg
TA.1994.Temp.jpg

1995

TA.1995.Depth.jpg
TA.1995.DO%.jpg
TA.1995.DOmGL.jpg
TA.1995.pH.jpg
TA.1995.Salinity.jpg
TA.1995.SpCond.jpg
TA.1995.Temp.jpg

1996

TA.1996.Depth.jpg

TA.1996.DO%.jpg
TA.1996.DOmGL.jpg
TA.1996.pH.jpg
TA.1996.Salinity.jpg
TA.1996.SpCond.jpg
TA.1996.Temp.jpg
TA.1996.Turb.jpg

1997

TA.1997.Depth.jpg
TA.1997.DO%.jpg
TA.1997.DOmGL.jpg
TA.1997.pH.jpg
TA.1997.Salinity.jpg
TA.1997.SpCond.jpg
TA.1997.Temp.jpg
TA.1997.Turb.jpg

1998

TA.1998.Depth.jpg
TA.1998.DO%.jpg
TA.1998.DOmGL.jpg
TA.1998.pH.jpg
TA.1998.Salinity.jpg
TA.1998.SpCond.jpg
TA.1998.Temp.jpg
TA.1998.Turb.jpg

1999

TA.1999.Depth.jpg
TA.1999.DO%.jpg
TA.1999.DOmGL.jpg
TA.1999.pH.jpg
TA.1999.Salinity.jpg
TA.1999.SpCond.jpg
TA.1999.Temp.jpg
TA.1999.Turb.jpg

2000

TA.2000.Depth.jpg
TA.2000.DO%.jpg
TA.2000.DOmGL.jpg
TA.2000.pH.jpg
TA.2000.Salinity.jpg
TA.2000.SpCond.jpg
TA.2000.Temp.jpg
TA.2000.Turb.jpg

2001

TA.2001.Depth.jpg
TA.2001.DO%.jpg
TA.2001.DOmGL.jpg
TA.2001.pH.jpg
TA.2001.Salinity.jpg
TA.2001.SpCond.jpg
TA.2001.Temp.jpg
TA.2001.Turb.jpg

2002

TA.2002.Depth.jpg
TA.2002.DO%.jpg
TA.2002.DOmGL.jpg
TA.2002.pH.jpg

TA.2002.Salinity.jpg
TA.2002.SpCond.jpg
TA.2002.Temp.jpg
TA.2002.Turb.jpg

6.3 Distribution Liability:

According to the Belle W. Baruch Institute for Marine and Coastal Sciences:

The data sets are only as good as the quality assurance and quality control procedures outlined in the Metadata. The user bears all responsibility for its subsequent use in any further analyses or comparisons. No warranty expressed or implied is made regarding the accuracy or utility of any data collected, managed, or disseminated for general or scientific purposes by the Belle W. Baruch Institute for Marine and Coastal Sciences. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly required that these data be directly acquired from the Belle W. Baruch Institute for Marine and Coastal Sciences and not indirectly through other sources which may have changed the data in some way. It is strongly recommended that careful attention be paid to the contents of the metadata file associated with these data. Neither the Belle W. Baruch Institute for Marine and Coastal Sciences, nor the National Science Foundation shall be held liable for unprofessional use of the data described and/or contained herein.

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program:

The dataset enclosed within this package/transmission is only as good as the quality assurance/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.

6.4 Standard Order Process

6.4.2. Digital Form

6.4.2.1 Digital Transfer Information

6.4.2.1.1. Format Name: EXCEL (.XLS) or WORD (.DOC) format as well as .CSV or .TXT (text only) format.

6.4.2.1.2 Format Version Number: Microsoft Office Professional 2000

6.4.2.1.6 File Decompression Technique: No compression applied

6.4.2.2 Digital Transfer Option

6.4.2.2.1 Computer Contact Information

6.4.2.2.1.1 Network Address

6.4.2.2.1.1.1 Network Resource Name: <http://links.baruch.sc.edu/data/>

6.4.3 Fees: None

6.5 Custom Order Process:

If requesting Non-digital (Paper (hard copy) printout), a fee of \$50 per hour (with a one-hour minimum) plus the cost of supplies will be imposed. As an offline option, CD-ROMs are available at the cost of \$5.00 each. This fee pays for the CD, the creation of the CD, and mailing charges.

7. Metadata Reference Information

7.1 Metadata Date: 20031121

7.2 Metadata Review Date: 20040416

7.4 Metadata Contact:

10.2 Contact Organization Primary

10.1.2 Contact Organization:

Univ. of South Carolina's Baruch Institute

10.1.1 Contact Person:

Ginger Ogburn-Matthews

10.3 Contact Position:

Research Data Manager & Analyst

10.4 Contact Address

10.4.1 Address Type:

Mailing Address

10.4.2 Address:

USC Baruch Marine Field Lab

10.4.2 Address:

PO Box 1630

10.4.3 City:

Georgetown

10.4.4 State or Province:	South Carolina
10.4.5 Postal Code:	29442
10.4.6 Country:	USA
10.5 Contact Voice Telephone:	(843) 546-6219
10.7 Contact Facsimile Telephone:	(843) 546-1632
10.8 Contact Electronic Mail Address:	ginger@belle.baruch.sc.edu
10.9 Hours of Service:	8:30 am to 4:30 pm EST/EDT Mon.- Friday

7.5 Metadata Standard Name:

Content Standard for Digital Geospatial Metadata, Part 1: Biological Data Profile

7.6 Metadata Standard Version: FGDC-STD_001.1-1999