ACE NERR Water Quality Metadata
January - December 2018
Latest Update: 7/24/2020

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons

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2) Entry verification

Deployment data are uploaded from the YSI data logger to a Personal Computer (IBM compatible). Files are exported from EcoWatch in a comma-delimited format (.CDF), EcoWatch Lite in a comma separated file (CSV) or KOR Software in an Excel File (.XLS) and uploaded to the CDMO where they undergo automated primary QAQC; automated depth/level corrections for changes in barometric pressure (cDepth or cLevel parameters); and 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 the data being ingested into the database as provisional plus data, recalculation of cDepth or cLevel parameters, and finally a 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 is generally accepted as being the most accurate. For more information on QAQC flags and codes, see Sections 11 and 12. Denise Sanger and Saundra Upchurch were responsible for these tasks.

3) Research objectives

Long-term water quality monitoring in the ACE Basin provides a unique opportunity to increase understanding of how various environmental factors influence estuarine processes. Based on discussions with local Coastal Zone Management (CZM) personnel and ACE Basin NERR staff knowledge of land use within the Reserve, the South Edisto River drainage basin was selected because it is well suited for studying contrasting hydrographic conditions and land use patterns.

The two major objectives of the ACE Basin monitoring program are: 1) compare water quality conditions in shallow creeks along a salinity gradient and at different levels of development in the South Edisto River watershed, and 2) track changes to the saltwater demarcation line in the South Edisto River as a result of prolonged drought, extraction of river water, and sea level rise.

The program began on March 3, 1995 in two tributaries of the South Edisto River, Big Bay Creek and St. Pierre Creek; in October 2002, monitoring stations were established in Fishing Creek and Mosquito Creek, tributaries

of the South Edisto River. In 2014, two sites were established in the South Edisto River proper at Jehossee Island and Grove Plantation.

Four primary monitoring stations (Edisto Island [replacement for Big Bay], Fishing Creek, Mosquito Creek and St. Pierre Creek) are used to study contrasting land use patterns in the reserve. The two "treatment" sites are Edisto Island and Mosquito Creek, where boat traffic is moderate to heavy and residential and commercial development is moderate. St. Pierre Creek and Fishing Creek, where boat traffic is light and development is sparse, are designated as "control" sites. The four sites are located along a salinity gradient ranging from the polyhaline (Edisto Island & St. Pierre Creek) to mesohaline (Mosquito Creek) to oligohaline (Fishing Creek). See *Section 5 - Site Location and Character* for detailed descriptions of the sites.

The secondary stations at Jehossee Island and Grove Plantation are used to track changes in the saltwater demarcation line. These two stations extend our coverage of the salinity gradient in the South Edisto River from the polyhaline to the limnetic zone. The Jehossee Island station is located in the oligohaline zone, and the Grove Plantation station is in the limnetic zone, approximately 0.1 nautical miles downstream of the legal saltwater demarcation line. See *Section 5 - Site Location and Character* for detailed descriptions of the sites.

In 2018, a site was established in the Charleston Harbor, which is approximately 53 km from St. Helena Sound estuary. This project strengthens the NERRS and IOOS collaborations and efforts to integrate long term monitoring data between the two programs. The establishment of this station provides a multitude of benefits to a variety of stakeholders, including recreational and commercial boating interests, scientists, and managers. The deepening of Charleston Harbor Estuary to accommodate larger vessels will begin in early 2018, which may alter salinity regimes and circulation patterns within the harbor, and water quality data before and after this project will be of great value in assessing the project impacts.

YSI electronic data loggers are deployed to monitor the water temperature, specific conductance, dissolved oxygen, water level, pH and turbidity conditions, approximately 0.5 meters above the creek bottom. Turbidity monitoring was added to the program on April 11, 1996. Initially the loggers measured the parameters at 15 minute intervals; on August 11, 1995, the sampling interval was changed to 30 minutes; and on December 12, 2007, the sampling interval was changed back to 15 minutes.

4) Research methods

In 2018, a single YSI 6600 series data logger was deployed at three of the monitoring stations (Mosquito Creek, Grove Plantation and Jehossee Island) and a single EXO2 at the other three stations (Edisto Island, Fishing Creek, and St. Pierre). The data logger is attached to a deployment mount at each station to ensure that the sensor is positioned approximately 0.5 m from the creek bottom during a deployment. At each monitoring station, the deployment mount consists of a PVC pipe that is attached vertically to a stable structure. To facilitate water flow across the sensors, approximately two-inch diameter holes are drilled into the PVC pipes. In 2017-2018, additional holes were drilled into the new or refurbished tubes before they were swapped with tube at deployment mount.

A Sutron Sat-Link2 transmitter was installed at the St. Pierre station on 06/28/2006 and transmits data to the NOAA GOES satellite, NESDIS ID #3B02F20A; in 2017, the Sat-Link2 was replaced with a Storm3 transmitter. A Sutron Sat-Link2 transmitter was installed at the Fishing Creek station on 02/20/2013 NESDIS ID #3B04B1CE. As of August 31, 2015, Fishing Creek station was no longer transmitting data and the Sutron Sat-Link2 transmitter was installed at the Grove Plantation station on 06/08/2016 and began transmitting data on 06/15/2016 at 10:15 to the NOAA GOES satellite, NESDIS ID #3B04B1CE. On 04/04/2018, the Charleston Harbor site began transmitting data to the NOAA GOES satellite, NESDIS ID #3B008FBC. The St. Pierre, Grove Plantation, and Charleston Harbor transmissions are scheduled hourly and contain four (4) data sets reflecting fifteen-minute data sampling intervals. Upon receipt by the CDMO, the data undergoes the same automated primary QAQC process detailed in Section 2 above. The "real-time" telemetry data become part of the provisional dataset until undergoing secondary and tertiary QAQC and assimilation in the CDMO's authoritative online database. Provisional and authoritative data are available at http://cdmo.baruch.sc.edu.

Before the data loggers are deployed dissolved oxygen (DO) membranes on rapid pulse DO sensors are changed and allowed to stretch for 24 hours, and the voltage of the batteries are checked. The sondes are calibrated and programmed in accordance with guidelines set by CDMO and ACE Basin Reserve. The water depth sensor is zeroed in air by applying a depth offset during calibration that is calculated using the barometric pressure in the laboratory. The DO sensors on the YSI 6600 sondes are calibrated by the water saturated air method, and the EXO2 sensors are calibrated by air saturated water method; barometric pressure (mmHg) readings are measured with a YSI handheld. In addition to the procedures outlined in the CDMO manual, we conduct a DO membrane integrity test prior to deployment to determine if the membrane was installed properly or was damaged during calibration. The chlorophyll sensors installed on sondes at the Charleston Harbor site are calibrated by a two point method (0 standard and a temperature dependent rhodamine dye solution).

To minimize fouling (i.e., settlement of barnacles and sponges) of data loggers, sensors are wrapped in nonconductive copper tape. A plastic mesh is wrapped around the sensor guard to keep out large animals (i.e. crabs, fish). In addition, the inside of the PVC tubes are brushed after every deployment to remove fouling organisms. The PVC tube is replaced with a new or refurbished tube at least once a year.

The data loggers are deployed for one to two weeks during the summer months (April – September), and the sampling period is extended up to one month during the cooler months (October – March). A data logger is retrieved and replaced with a newly calibrated data logger prior to a 15-minute reading to prevent interruption of data collection. In-situ readings (water temperature, specific conductivity, salinity, and dissolved oxygen [% air sat and mg/L]) are measured with a hand-held YSI unit during the last 15-minute reading of the deployment to determine how much drift in the readings occurred during the deployment. At the Charleston Harbor site, starting on March 5th of 2018, paired grab and sensor chlorophyll measurements are collected at the surface at the end of each deployment, and starting on June 27th, paired grab and sensor measurements are collected at the surface at the beginning as well as the end of each deployment. Grab samples are processed according to NERR CDMO protocols on a Turner Fluorometer. Chlorophyll is only collected at the Charleston Harbor site starting on March 5th of 2018. Ambient conditions (i.e., precipitation and wind speed and direction) also are recorded.

When the data loggers are retrieved, they are taken to the laboratory for cleaning, post-deployment checks and servicing, in accordance with guidelines set by CDMO and ACE Basin Reserve. Post-deployment checks of all the parameters except turbidity are done before cleaning the data loggers. Turbidity checks are performed after cleaning the data loggers to prevent contamination of the turbidity standard. A DO membrane integrity test also is conducted to determine if the membrane was damaged during deployment.

A series of diagnostic values, including dissolved oxygen charge, dissolved oxygen gain, and pH millivolt value at pH 7 and at pH 10, are recorded during calibration and post-deployment checks of data loggers. These diagnostic values are strong indicators of the individual sensor performance, and they are used to determine the accuracy of the data.

The data are downloaded, and the dataset is reviewed to determine if any equipment malfunctions occurred during deployment that need immediate attention.

5) Site location and character

ACE Basin National Estuarine Research Reserve is one of the largest undeveloped estuaries on the East Coast. The study area encompasses the Ashepoo, Combahee and South Edisto River basins, which empty into St. Helena Sound. The NERR consists of approximately 60,702 ha (150,000 ac) of diverse estuarine wetlands providing preserved habitats for fish and wildlife.

The South Edisto River has a drainage area of approximately 394,176 ha (974,030 ac), encompassing the area between Four Holes Swamp and St. Helena Sound. The river receives considerable input of freshwater (average annual streamflow is 74 m^3/s (2613.29 ft^3/sec). The official saltwater-freshwater demarcation line on the river lies at river mile 20 (32.19 km); however, during periods of very low flow, the saltwater interface can intrude to river mile 32 (51.5 km), which is approximately 12 river miles (19.31 km) from the inland boundary of the reserve. Salt marshes of smooth cordgrass (*Spartina alterniflora*) dominate the wetlands in the polyhaline and mesohaline, while waterfowl impoundments are the dominant land cover in the oligohaline and limnetic waters.

The average tidal range in the South Edisto River is approximately 2.0 m (6.6 ft), with a maximum of 2.8 m (9.2 ft) and a minimum of 1.4 m (4.6 ft). The bottom habitat at all stations consists of mud which is intermixed with dead shell hash at the saltwater sites.

Station Code	SWMP Status	Station Name	Location	Active Dates	Reason Decommissioned	Notes
aceeiwq	P	Edisto Island	32.5040 N -80.3247 W	01/01/2015 00:00 - current	N/A	N/A
acefcwq	P	Fishing Creek	32.63593 N -80.36556 W	10/01/2002 00:00 - current	N/A	N/A
acemcwq	P	Mosquito Creek	32.5558 N -80.4380 W	10/01/2002 00:00 - current	N/A	N/A
acespwq	P	St. Pierre	32.52800 N -80.36144 W	03/01/1995 00:00 – current	N/A	N/A
acegpwq	S	Grove Plantation	32.6637 N -80.4130 W	01/01/2015 00:00 – current	N/A	N/A
acejiwq	S	Jehossee Island	32.6209 N -80.3965 W	01/01/2015 00:00 – current	N/A	N/A
acechwq	S	Charleston Harbor	32.7573 N -79.8589 W	01/01/2018 00:00 – 08/30/2018	see Charleston Harbor description below	Data only avail. from ACE
acebbwq	P	Big Bay	32.4941 N -80.3241 W	03/01/1995 00:00 - 12/31/2014 00:00	see Big Bay description below	N/A
acercwq	P	Rock Creek	32.54850 N -80.50361 W	03/01/1996 00:00 - 05/01/1996 00:00	see Rock Creek description	N/A

Primary Monitoring Stations

Three of the four primary stations (Edisto Island, Fishing Creek, and St. Pierre Creek) are in tributaries of the South Edisto River and one station (Mosquito Creek) is in a tributary of both the South Edisto and Ashepoo rivers. The descriptions of the sites are as follow:

Edisto Island (EI) – GPS coordinates: 32.5040 N and -80.3247 W
On January 1, 2015, Edisto Island water quality station replaced the Big Bay station as a primary station. The Edisto Island station is approximately 1.27 km (0.68 nautical miles) upstream of the previous site (Big Bay) and is located on a dock at the Edisto Beach State Park. Water quality data was collected at both stations for 8 months and the overall results were very similar. Edisto Island station is also designated as a "treatment" site because of its proximity to developed areas. In 2018, the mean depth at the station was 2.58 m (8.1 ft), and the mean salinity was 29.50 practical salinity units (psu).

The eastern bank of the Big Bay creek, at the new station is bordered by *Spartina alterniflora* and *Salicornia virginica*. The high ground is dominated by maritime forest, characterized by live oak (*Quercus virginiana*), slash pine (*Pinus taeda*); and cabbage palmetto (*Sabal palmetto*). A marsh island with no high ground borders the western bank; while American oyster (*Crassostrea virginica*) forms a reef along both creek banks. Boat traffic is heavy, especially during the warmer months, and the creek is closed to shellfish harvesting because of the surrounding human activities. Nonpoint sources of pollution, including fertilizers, pesticides, herbicides and PAHs, to the monitoring station are surface runoff from lawns, golf courses, and paved ramps. Docks and bulkheads are constructed of concrete or wood treated with creosote, CCA-treated, or Wolmanized process.

Fishing Creek (FC) – GPS coordinates: 32.63593 N and -80.36556 W

This monitoring station is in a tributary of Fishing Creek, approximately 2 km (1.08 nautical miles) from the mouth of the creek and is located approximately 5 m (16.41 ft) from the northern bank of the creek. The tributary flows through the eastern half of Jehossee Island, a Wildlife Management Area (WMA) protected by the USFWS, and Fishing Creek forms the northeast border of the island. The station is surrounded by extensive *Spartina cynosuroides* marsh and vast mud flats. The upland area is characterized by slash pine, live oak, and cabbage palmetto. In 2018, the mean depth at the station was 2.41 m (7.71ft.), and the mean salinity was 7.9 practical salinity units (psu).

The Fishing Creek monitoring station is designated as a "control" site because there is no development in the immediate area, and boat traffic is relatively light in the creek. The WMA contains impoundments (formerly rice fields) that are managed as wildlife habitat for endangered fauna and migratory waterfowl. No pesticides or herbicides are applied to the wetlands. Water level in the wetland is regulated by rice trunks that control the flow of water between the impoundment and the South Edisto River.

Mosquito Creek (MC) – GPS coordinates: 32.5558 N and -80.4380 W
This monitoring station is in Mosquito Creek (a tributary of both the South Edisto and Ashepoo rivers), approximately 2.51 km (1.36 nautical miles) from the Ashepoo River and 12 km (6.48 nautical miles) from the South Edisto River, and it is approximately 5 m (16.41 ft) from the southern bank of the creek. In 2018, the mean depth at the station was 3.91 m (11.84 ft), and the mean salinity was 16.1 practical salinity units (psu).

The Mosquito Creek station is designated as a "treatment" site because of the land use practices in the surrounding area. Agriculture fields and impounded wetlands are found upstream of the monitoring station. Approximately fifteen docks constructed of creosote, concrete, Wolmanized or CCA treated wood; a public boat landing; a commercial seafood business with commercial shrimp boats and a fueling dock are located approximately 1.00 km (0.54 nautical miles) downstream of the monitoring station. The major contributor of nonpoint source pollution to the monitoring station is surface runoff from the impoundments and agricultural lands that contain high levels of nutrients and, at times, herbicides and pesticides. Impoundment trunks open and drain into the creek increasing the nutrient load and possibly introducing herbicides and pesticides. Vegetation in the area includes salt marsh dominated by *Spartina alterniflora* and *Juncus roemerianus*. Upland fringe areas consist of cabbage palmetto, live oaks and pine trees.

St. Pierre Creek (SP) – GPS coordinates: 32.52800 N and -80.36144 W
This monitoring station is in a small tributary of St. Pierre Creek, approximately 0.25 km (0.13 nautical miles) from the mouth of the creek, and it is approximately 5 m (16.41 ft) from the northern bank of the creek. The tributary flows through the southern portion of Bailey Island, and the creek forms the eastern border of the island. The monitoring station is surrounded by a wide expanse of *Spartina alterniflora* marsh. Extensive mud flats and oyster reefs fringe the banks. Maritime forest communities comprised of species such as wax myrtles (*Morella cerifera*), live oaks (*Quercus virginiana*), and palmettos dominate the upland areas. In 2018, the mean depth at the station was 1.87 m (5.97 ft), and the mean salinity was 28.4 practical salinity units (psu).

The St. Pierre Creek station is designated as a "control" site because development in the immediate area was sparse when the station was established on March 3, 1995, and the tributary is subject to relatively light boat traffic. In 1996, the 695-acre (281.26 ha) island was sold, and the owners partnered with The Nature Conservancy to design a conservation-based development. Four hundred and three acres in the center of Bailey Island were set aside as a nature preserve that is managed by The Nature Conservancy, and the number of residential lots on the remaining 292 acres (118.17 ha) is limited to 67 (27.11 ha). Access to the island is limited to one bridge and all roads on the island are single lane and made of crushed seashells. In addition, a conservation manual was developed for the property owners that provide specific lot designs and construction guidelines as well as landscaping guidelines to protect the maritime and estuarine habitats.

Secondary Monitoring Stations

Both secondary stations (Grove Plantation and Jehossee Island) are in the South Edisto River proper. The descriptions of the sites are as follow:

Grove Plantation (GP) – GPS coordinates: 32.6637 N and -80.4130 W

This monitoring station is in the South Edisto River located at the Grove Plantation unit of the ACE Basin National Wildlife Refuge, which is owned and managed by the US Fish and Wildlife Service (USFWS). The station is approximately 18 m (59 ft) from the eastern bank of the Edisto River. The station is surrounded by tidal freshwater fringe marsh and managed wetlands (aka "waterfowl impoundments"). The upland area is dominated by pine-mixed hardwood forest that is characterized by several species of oaks and pines. During years of normal rainfall, the salinity at this station generally is below 1 ppt, but it will increase if rainfall is low. In 2018, the average depth at the station was 3.29 m (8.20 ft), and the mean salinity was 0.3 practical salinity units (psu).

Jehossee Island (JI) – GPS coordinates: 32.6209 N and -80.3965 W
This monitoring station is in the South Edisto River. It is located at the Jehossee Island unit of the ACE Basin National Wildlife Refuge, which is owned and managed by the USFWS. The station is surrounded by *Spartina cynosuroides* fringe marsh and managed wetlands (aka "waterfowl impoundments"). The upland area is dominated by inland maritime forest that is characterized by slash pine, live oak, and cabbage palmetto. During years of normal rainfall, the salinity at this station generally is between 5 and 10 ppt, and it will increase if rainfall is low. In 2018, the average depth at the station was 4.63 m (11.48 ft), and the mean salinity was 6.9 practical salinity units (psu).

Inactive Monitoring Stations

Big Bay and Rock Creek are inactive stations, and the descriptions of the sites are as follow:

Big Bay (BB) - GPS coordinates: 32.4941 N and -80.3241 W
This monitoring station was in Big Bay Creek proper, approximately 2 km (1.24 mi) from the mouth of the creek and was located about 5 m (16.41 ft) from the southern bank of the creek. It was a "treatment" site because it was subject to nonpoint source pollution and was surrounded by moderate level of development. The southern bank of the Big Bay Creek near this station was bordered by residential and commercial development, with little setback from the bordering *Spartina alterniflora* marsh. For instance, there are over forty private docks, two commercial seafood docks and a marina with 75 slips, three paved boat ramps, and two fueling areas along the southern bank. Docks and bulkheads are constructed of concrete, or creosote, CCA-treated or Wolmanized material. Boat traffic was heavy, especially during the warmer months, and the creek is closed to shellfish harvesting because of the surrounding human activities. The major sources of nonpoint source pollution were surface runoff from lawns, golf courses, and paved ramps that contain fertilizers, pesticides, herbicides and PAHs. All of the high ground along the southern bank was developed (i.e., residential homes, condominiums and restaurants); and maritime plant communities have been replaced by golf courses, lawns and ornamental gardens. Small patches of a few maritime species (i.e. live oak (*Quercus virginiana*), cabbage palmetto (*Sabal palmetto*), and Southern red cedar (*Juniperus silicicola*)) are found along the roads. In contrast, the northern bank was bordered by a wide expanse of *Spartina alterniflora* marsh, and no high ground is present. American oyster (*Crassostrea virginica*) forms a reef along the creek banks, especially the northern side, and on intertidal mud flats within the creek. The site was moved to Edisto Island due to the dock upon which it was located was owned by a private individual that was not maintaining the structure. Water quality data was collected at both stations for 8 months and the overall results were very similar.

Charleston Harbor (CH) - GPS coordinates: 32.7573 N and -79.8589 W
The Charleston Harbor station was about 85 meters from Fort Moultrie on Sullivans Island to the east, and about 0.8 km north from the mouth of Charleston Harbor Estuary. Fort Moultrie is a National Monument and part of the Fort Sumter National Park. The station was surrounded by water on three sides, and by beach to the east. The Charleston Harbor data and metadata are only available by contacting the reserve directly. Data were collected from 11/29/2017 to 08/30/2018. The site was destroyed on 08/30/2019.

Rock Creek (RC) - GPS coordinates: 32.54850 N and -80.50361 W
The Rock Creek site was located near an impoundment on North Hutchinson Island. The site was surrounded by *Spartina alterniflora* marsh, and the upland areas were dominated by maritime forest with wax myrtles, live oaks, and palmettos. An impoundment (a managed wildlife habitat) bordered the *Spartina alterniflora* marsh near the site, and the outlet canal for the impoundment was about one meter away from the site. There was no development and very

little boat traffic in this portion of the Reserve. The site was discontinued due to the loss of the deployment mount and data logger in July 1995.

6) Data collection period

The end times below marked with an asterisk (*) coincide with the last actual reading in that deployment so the times will not be in consecutive order with the following deployment begin time. The gap between the end time of one deployment and the begin time of the next deployment is attributed to either missing or rejected data due to in field maintenance, battery failure, or collector error. **Note**: see Section 14 for more information about the stations.

Edisto Island

BEGAN	ENDED	SONDE
12/01/2017 - 12:45	01/10/2018 - 11:30	EXO2
01/10/2018 - 11:45	02/13/2018 - 12:00	EXO2
02/13/2018 - 12:15	02/26/2018 - 19:45*	EXO2
03/08/2018 - 10:15	04/11/2018 - 12:00	EXO2
04/11/2018 - 12:15	04/24/2018 - 09:00	EXO2
04/24/2018 - 09:15	05/08/2018 - 08:30	EXO2
05/08/2018 - 08:45	05/24/2018 - 11:45	EXO2
05/24/2018 - 12:00	06/06/2018 - 07:45	EXO2
06/06/2018 - 08:00	06/20/2018 - 09:45	EXO2
06/20/2018 - 10:00	07/10/2018 - 11:45	EXO2
07/10/2018 - 12:00	07/24/2018 - 11:30*	EXO2
07/24/2018 - 12:00	08/09/2018 - 13:30*	EXO2
08/09/2018 - 14:00	08/21/2018 - 13:00	EXO2
08/21/2018 - 13:15	09/04/2018 - 09:00	EXO2
09/04/2018 - 09:15	09/19/2018 - 07:15	EXO2
09/19/2018 - 07:30	10/03/2018 - 08:30	EXO2
10/03/2018 - 08:45	11/05/2018 - 12:00	EXO2
11/05/2018 - 12:15	12/03/2018 - 10:30	EXO2
12/03/2018 - 10:45	01/03/2019 - 13:15	EXO2

Fishing Creek

BEGAN	ENDED	SONDE
12/04/2017 - 15:30	01/09/2018 - 15:15	EXO2
01/09/2018 - 15:30	02/13/2018 - 13:15	EXO2
02/13/2018 - 13:30	03/06/2018 - 10:45	EXO2
03/06/2018 - 11:00	04/11/2018 - 11:00	EXO2
04/11/2018 - 11:15	04/24/2018 - 09:45	EXO2
04/24/2018 - 10:00	05/09/2018 - 09:00	EXO2
05/09/2018 - 09:15	05/23/2018 - 12:45	EXO2
05/23/2018 - 13:00	06/07/2018 - 08:00	EXO2
06/07/2018 - 08:15	06/20/2018 - 11:15	EXO2
06/20/2018 - 11:30	07/03/2018 - 12:00	EXO2
07/03/2018 - 12:15	07/09/2018 - 10:00	EXO2
07/09/2018 - 10:15	07/24/2018 - 12:15	EXO2
07/24/2018 - 12:30	08/06/2018 - 09:30	EXO2
08/06/2018 - 09:45	08/21/2018 - 12:15	EXO2
08/21/2018 - 12:30	09/05/2018 - 09:30	EXO2
09/05/2018 - 09:45	09/19/2018 - 10:45	EXO2
09/19/2018 - 11:00	10/04/2018 - 09:45	EXO2
10/04/2018 - 10:00	11/05/2018 - 12:00	EXO2
11/05/2018 - 12:15	12/03/2018 - 11:15	EXO2
12/03/2018 - 11:30	01/03/2019 - 12:00	EXO2

Grove Plantation

BEGAN	ENDED	SONDE
12/19/2017 - 11:15	01/16/2018 - 14:15	6600 EDS/V2
01/16/2018 - 14:30	02/13/2018 - 12:30	6600 EDS/V2
02/13/2018 - 12:45	03/06/2018 - 11:30	6600 EDS/V2
03/06/2018 - 11:45	04/11/2018 - 10:30	6600 EDS/V2
04/11/2018 - 10:45	04/24/2018 - 09:15	6600 EDS/V2
04/24/2018 - 09:30	05/09/2018 - 09:45	6600 EDS/V2
05/09/2018 - 10:00	05/23/2018 - 12:00	6600 EDS/V2
05/23/2018 - 12:15	05/31/2018 - 10:00	6600 EDS/V2
05/31/2018 - 10:15	06/07/2018 - 08:45	6600 EDS/V2
06/07/2018 - 09:00	06/20/2018 - 10:30	6600 EDS/V2
06/20/2018 - 10:45	07/03/2018 - 11:30	6600 EDS/V2
07/03/2018 - 11:45	07/09/2018 - 10:45	6600 EDS/V2
07/09/2018 - 11:00	07/24/2018 - 11:30	6600 EDS/V2
07/24/2018 - 11:45	08/06/2018 - 10:00	6600 EDS/V2
08/06/2018 - 10:15	08/21/2018 - 11:30	6600 EDS/V2
08/21/2018 - 11:45	09/05/2018 - 10:00	6600 EDS/V2
09/05/2018 - 10:15	09/19/2018 - 10:15	6600 EDS/V2
09/19/2018 - 10:30	10/04/2018 - 10:15	6600 EDS/V2
10/04/2018 - 10:30	11/05/2018 - 12:45	6600 EDS/V2
11/05/2018 - 13:00	12/03/2018 - 11:45	6600 EDS/V2
12/03/2018 - 12:00	01/03/2019 - 12:45	6600 EDS/V2

Jehossee Island

BEGAN	ENDED	SONDE
12/04/2017 - 14:00	01/09/2018 - 14:45	6600 EDS/V2
01/09/2018 - 15:00	01/30/2018 - 13:15*	6600 EDS/V2
01/30/2018 - 14:15	02/13/2018 - 11:45	6600 EDS/V2
02/13/2018 - 12:00	03/06/2018 - 14:30	6600 EDS/V2
03/06/2018 - 14:45	04/11/2018 - 10:00	6600 EDS/V2
04/11/2018 - 10:15	04/24/2018 - 08:30	6600 EDS/V2
04/24/2018 - 08:45	05/09/2018 - 08:15	6600 EDS/V2
05/09/2018 - 08:30	05/23/2018 - 11:15	6600 EDS/V2
05/23/2018 - 11:30	06/07/2018 - 07:30	6600 EDS/V2
06/07/2018 - 07:45	06/20/2018 - 09:30	6600 EDS/V2
06/20/2018 - 09:45	07/03/2018 - 10:45	6600 EDS/V2
07/03/2018 - 11:00	07/09/2018 - 09:15	6600 EDS/V2
07/09/2018 - 09:30	07/24/2018 - 10:45	6600 EDS/V2
07/24/2018 - 11:00	08/06/2018 - 10:45	6600 EDS/V2
08/06/2018 - 11:00	08/21/2018 - 10:45	6600 EDS/V2
08/21/2018 - 11:00	09/05/2018 - 08:45	6600 EDS/V2
09/05/2018 - 09:00	09/19/2018 - 09:30	6600 EDS/V2
09/19/2018 - 09:45	10/04/2018 - 09:00	6600 EDS/V2
10/04/2018 - 09:15	11/05/2018 - 11:30	6600 EDS/V2
11/05/2018 - 11:45	12/03/2018 - 10:45	6600 EDS/V2
12/03/2018 - 11:00	01/03/2019 - 11:15	6600 EDS/V2

Mosquito Creek

BEGAN	ENDED	SONDE
12/04/2018 - 13:15	01/09/2018 - 14:00	6600 EDS/V2
01/09/2018 - 14:15	02/06/2018 - 12:30*	6600 EDS/V2
02/06/2018 - 13:00	02/13/2018 - 11:00	6600 EDS/V2

02/13/2018 - 11:15	02/27/2018 - 12:15*	6600 EDS/V2
02/27/2018 - 15:00	03/06/2018 - 13:45	6600 EDS/V2
03/06/2018 - 14:00	04/11/2018 - 09:15	6600 EDS/V2
04/11/2018 - 09:30	04/24/2018 - 07:45	6600 EDS/V2
04/24/2018 - 08:00	05/09/2018 - 07:15	6600 EDS/V2
05/09/2018 - 07:30	05/23/2018 - 09:45	6600 EDS/V2
05/23/2018 - 10:00	06/07/2018 - 06:30	6600 EDS/V2
06/07/2018 - 06:45	06/20/2018 - 07:45	6600 EDS/V2
06/20/2018 - 08:00	07/03/2018 - 09:45	6600 EDS/V2
07/03/2018 - 10:00	07/09/2018 - 08:30	6600 EDS/V2
07/09/2018 - 08:45	07/24/2018 - 09:45	6600 EDS/V2
07/24/2018 - 10:00	08/06/2018 - 08:30	6600 EDS/V2
08/06/2018 - 08:45	08/21/2018 - 09:00	6600 EDS/V2
08/21/2018 - 09:15	09/05/2018 - 08:00	6600 EDS/V2
09/05/2018 - 08:15	09/19/2018 - 08:45	6600 EDS/V2
09/19/2018 - 09:00	10/04/2018 - 08:00	6600 EDS/V2
10/04/2018 - 08:15	11/05/2018 - 10:30	6600 EDS/V2
11/05/2018 - 10:45	12/03/2018 - 10:00	EXO2
12/03/2018 - 10:15	01/03/2019 - 10:30	EXO2

St. Pierre

BEGAN	ENDED	SONDE
12/04/2017 - 12:00	01/09/2018 - 13:30	EXO2
01/09/2018 - 13:45	01/16/2018 - 11:15	EXO2
01/16/2018 - 11:30	02/13/2018 - 10:15	EXO2
02/13/2018 - 10:30	02/23/2018 - 12:30	EXO2
02/23/2018 - 12:45	03/06/2018 - 12:45	EXO2
03/06/2018 - 13:00	04/11/2018 - 08:30	EXO2
04/11/2018 - 08:45	04/24/2018 - 06:45	EXO2
04/24/2018 - 07:00	05/08/2018 - 07:30	EXO2
05/08/2018 - 07:45	05/23/2018 - 10:30	EXO2
05/23/2018 - 10:45	06/06/2018 - 06:45	EXO2
06/06/2018 - 07:00	06/20/2018 - 08:30	EXO2
06/20/2018 - 08:45	07/03/2018 - 09:00	EXO2
07/03/2018 - 09:15	07/09/2018 - 07:30	EXO2
07/09/2018 - 07:45	07/24/2018 - 08:45	EXO2
07/24/2018 - 09:00	08/06/2018 - 07:30	EXO2
08/06/2018 - 07:45	08/21/2018 - 09:45*	EXO2
08/21/2018 - 10:15	09/04/2018 - 08:00	EXO2
09/04/2018 - 08:15	09/19/2018 - 08:00	EXO2
09/19/2018 - 08:15	10/03/2018 - 07:15	EXO2
10/03/2018 - 07:30	11/05/2015 - 09:15	EXO2
11/05/2018 - 09:30	12/03/2018 - 09:00	EXO2
12/03/2018 - 09:15	01/03/2019 - 09:30	EXO2

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 processed 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:
NOAA National Estuarine Research Reserve System (NERRS). System-wide Monitoring Program. Data accessed from the NOAA NERRS Centralized Data Management Office website: http://www.nerrsdata.org/; *accessed* 12 October 2018.

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. Data are available in comma delimited format.

8) Associated researchers and projects

As part of the System-wide Monitoring Program (SWMP), nutrient and weather data are gathered at the ACE NERR in conjunction with water quality data obtained by YSI 6600-EDS or YSI EXO2 data loggers and meteorological data obtained by a Campbell Scientific CR1000 data logger. Diel nutrient samples are gathered once per month at the St. Pierre water quality monitoring station, and grab samples are obtained at each of the four primary sites once per month. The concentrations of the following parameters are measured and recorded for the nutrient monitoring program: ammonium (NH4), nitrite + nitrate (NO2 + NO3), ortho-phosphate (PO4), and chlorophyll-a (Chl-a). Real-time weather data are gathered 24/7 and is transmitted to the Centralized Data Management Office (CDMO). Historic water quality, nutrient, and weather data can be obtained at http://cdmo.baruch.sc.edu. Information about other studies conducted in the ACE Basin may be obtained from the ACE NERR Research Coordinator.

II. Physical Structure Descriptors

9) Sensor specifications

ACE NERR deployed mainly EXO2 data sondes and 6600 EDS/V2 data sondes in 2018. 6600 sondes were deployed at GP and JI sites for all 2018 deployments. EXO2 sondes were deployed at EI, FC, SP, and CH sites for all 2018 deployments. MC was a 6600 data sonde until 11/05/2018 when the site was converted to EXO2 data sondes. All of the EXO2 data sondes are configured the same with the exception of the CH site which also measures chlorophyll. The 6600 data sondes are configured the same with the exception of DO. The GP site utilized optical DO sensors for the entire year. The JI site utilized the rapid-pulse DO sensors until the 11/05/2018 deployment when optical DO sensors replaced the rapid-pulse DO sensors.

YSI 6600EDS data sonde:

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Thermistor
Model#: 6560
Range: -5 to 50 C
Accuracy: +/- 0.15
Resolution: 0.01 C

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

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

Parameter: Dissolved Oxygen % saturation
Units: percent air saturation (%)
Sensor Type: Rapid Pulse - Clark type, polargraphic
Model#: 6562
Range: 0 to 500% air saturation
Accuracy: 0-200% air saturation: +/- 2% of the reading or 2% air saturation, whichever is greater; 200 to 500% air saturation: +/- 6% of the 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: Rapid Pulse - Clark type, polargraphic
Model#: 6562
Range: 0 to 50 mg/L
Accuracy: 0-20 mg/L: +/- 2% of the reading or 0.2 mg/L, whichever is greater
20 to 50 mg/L: +/- 6% of the reading
Resolution: 0.01 mg/L

Parameter: Dissolved Oxygen % saturation
Units: percent air saturation (%)
Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6150 ROX
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: +/- 15% 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#: 6150 ROX
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: +/- 15% 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 30 ft (9.1 m)
Accuracy: +/- 0.06 ft (0.018 m)
Resolution: 0.001 ft (0.001 m)

Parameter: pH – bulb probe
Units: pH units
Sensor Type: Glass combination electrode
Model#: 6561 or 6561FG
Range: 0 to 14 units
Accuracy: +/- 0.2 units
Resolution: 0.01 units

Parameter: Turbidity
Units: nephelometric turbidity units (NTU)
Sensor Type: Optical, 90 degree scatter, with mechanical cleaning
Model#: 6136
Range: 0 to 1000 NTU
Accuracy: +/- 2% of reading or 0.3 NTU (whichever is greater)
Resolution: 0.1 NTU

YSI EXO Sonde:

Parameter: Temperature
Units: Celsius (C)
Sensor Type: CT2 Probe, Thermistor
Model#: 599870
Range: -5 to 50 C
Accuracy: -5 to 35: +/- 0.01, 35 to 50: +/- .005
Resolution: 0.01 C

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

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: CT2 Probe, 4-electrode cell with autoranging
Model#: 599870
Range: 0 to 200 mS/cm
Accuracy: 0 to 100: +/- 0.5% of reading or 0.001 mS/cm; 100 to 200: +/- 1% of reading
Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependant)

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)
Sensor Type: CT2 probe, Calculated from conductivity and temperature
Range: 0 to 70 psu
Accuracy: +/- 1.0% of reading pr 0.1 ppt, whichever is greater
Resolution: 0.01 psu

Parameter: Salinity
Units: practical salinity units (psu)/parts per thousand (ppt)
Model#: 599827
Sensor Type: Wiped probe; Calculated from conductivity and temperature
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
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 (0.004 m)
Resolution: 0.001 ft (0.001 m)

Parameter: pH
Units: pH units
Sensor Type: Glass combination electrode
Model#: 599701(guarded) or 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 degree 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
Units: micrograms/Liter
Sensor Type: Optical probe
Model#: 599102-01
Range: 0 to 400 ug/Liter
Accuracy: Dependent on methodology
Resolution: 0.1 ug/L chl a, 0.1% FS

Dissolved Oxygen Qualifier (Rapid Pulse / Clark type sensor):
The reliability of dissolved oxygen (DO) data collected with the rapid pulse / Clark type sensor 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 (Wenner et al. 2001). Some Reserves utilize the YSI 6600 EDS data sondes, which increase DO accuracy and longevity by reducing the environmental effects of fouling. Optical DO probes have further improved data reliability. The user is therefore advised to consult the metadata for sensor type information and to exercise caution when utilizing rapid pulse / Clark type sensor DO data beyond the initial 96-hour time period. Potential drift is not always problematic for some uses of the data, i.e. periodicity analysis. It should also be noted that the amount of fouling is very site specific and that not all data are affected. If there are concerns about fouling impacts on DO data beyond any information documented in the metadata and/or QAQC flags/codes, please contact the Research Coordinator at the specific NERR site regarding site and seasonal variation in fouling of the DO sensor.

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: ((1013-BP)*0.0102) + Depth/Level = 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

Sampling station:	Sampling site code:	Station code:
Edisto Island	EI	aceeiwq
Fishing Creek	FC	acefcwq
Grove Plantation	GP	acegpwq
Jehossee Island	JI	acejiwq
Mosquito Creek	MC	acemcwq
St. Pierre Creek	SP	acespwq

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

Edisto Island

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
12/01/2017	49.25	101.7	101.7	0.101	6.94	9.98	0.36	112.41
01/09/2018	49.33	101.3	101.3	0.169	7.12	10.10	0.08	115.45
02/13/2018	48.82	99.8	100.6	0.073	7.02	10.05	-0.18	111.48
03/08/2018	49.60	100.4	100.9	0.097	7.12	10.14	-0.73	154.36
04/11/2018	49.50	99.4	100.0	-0.012	7.07	10.10	0.65	119.57
04/24/2018	3.45	99.7	100.0	0.062	7.08	10.10	0.45	120.55
05/08/2018	14.32	100.4	100.4	0.065	7.01	10.03	0.45	116.96
05/24/2018	49.37	99.3	99.3	-0.023	7.04	10.09	0.02	118.28
06/06/2018	49.53	98.0	98.6	-0.012	7.16	10.20	-0.11	134.52
06/20/2018	49.48	99.3	100.9	0.048	7.14	10.16	0.06	120.12
07/10/2018	49.23	99.3	99.0	0.010	7.06	10.13	0.40	121.91
07/24/2018	49.40	99.0	99.0	0.035	7.16	10.14	-0.18	123.49
08/09/2018	50.24	99.3	100.1	0.039	7.09	10.14	0.09	146.46
08/21/2018	49.61	100.4	100.9	0.099	7.10	10.14	-0.04	123.86
09/04/2018	49.62	98.6	100.3	0.092	7.07	10.24	0.15	123.93
09/19/2018	49.80	100.2	100.6	0.083	7.12	10.10	0.36	124.26
10/03/2018	48.01	98.5	99.8	0.047	7.15	10.22	-0.01	127.70
11/05/2018	50.55	99.3	101.5	0.087	7.20	10.22	-0.09	133.32
12/03/2018	50.12	100.1	102.3	0.143	7.15	10.16	0.10	115.12

Fishing Creek

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
12/04/2017	48.74	100.0	101.7	0.102	7.42	10.40	0.51	125.03
01/09/2018	49.26	101.8	101.8	0.217	7.70	10.62	0.45	114.14
02/13/2018	48.47	97.2	99.2	-0.008	7.22	10.22	0.17	115.59
03/06/2018	50.05	100.4	101.7	0.092	7.14	10.15	0.26	152.45
04/11/2018	50.41	101.2	102.2	-0.008	7.12	10.12	0.34	119.89
04/24/2018	50.70	102.4	103.5	0.066	7.12	10.13	0.44	122.92
05/09/2018	49.99	99.8	100.6	0.071	6.98	10.03	0.26	121.07
05/23/2018	49.07	100.4	101.7	0.083	7.15	10.14	0.34	116.00
06/07/2018	49.61	99.7	100.1	-0.018	7.09	10.13	-0.07	138.25
06/20/2018	50.16	100.4	101.6	0.123	7.08	10.12	-0.38	121.54
07/03/2018	49.88	100.4	100.1	0.035	6.96	10.00	0.54	128.28
07/09/2018	49.88	99.6	100.2	0.018	10.45	13.58	0.17	122.66
07/24/2018	49.91	99.9	100.3	0.055	7.09	10.11	0.24	126.21
08/06/2018	49.90	99.5	100.3	0.037	7.15	10.16	-0.11	148.97
08/21/2018	49.91	100.1	100.7	0.102	7.09	10.07	0.15	123.73
09/05/2018	49.95	99.2	100.8	0.083	7.11	10.24	-0.22	127.16
09/19/2018	49.95	99.9	100.7	0.080	7.13	10.20	-0.11	125.02
10/04/2018	49.99	99.8	100.2	0.061	7.16	10.19	0.31	127.17
11/05/2018	50.21	99.8	101.2	0.089	7.11	10.15	0.08	133.28
12/03/2018	50.93	99.6	101.5	0.113	7.12	10.15	0.35	116.50

Grove Plantation

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
12/19/2018	48.56	100.8	101.4	0.106	6.94	9.93	0.1	113.6
01/16/2018	48.64	100.1	100.9	0.090	7.02	9.94	0.4	116.1
02/13/2018	49.00	98.9	99.7	-0.036	7.01	10.02	-0.3	112.3
03/06/2018	50.74	100.0	101.3	0.065	7.04	10.00	-0.6	153.3
04/11/2018	49.39	99.5	100.4	-0.016	7.09	10.10	0.2	121.0
04/24/2018	50.01	100.8	100.7	0.058	7.00	9.96	0.3	123.2
05/09/2018	49.97	99.6	100.3	0.071	7.04	10.05	0.8	123.1
05/23/2018	49.55	100.2	100.2	0.004	6.94	9.64	-0.2	122.0
05/31/2018	49.09	100.7	100.6	0.080	6.99	9.96	0.1	120.2
06/07/2018	49.46	99.3	99.7	-0.034	7.06	10.03	-0.4	139.2
06/20/2018	50.26	99.7	100.6	0.117	7.15	10.14	-0.1	125.5
07/03/2018	50.23	101.2	101.0	0.037	7.03	10.05	0.3	118.0
07/09/2018	49.61	100.5	99.6	0.006	7.05	10.04	0.9	123.8
07/24/2018	49.90	101.1	100.1	0.038	7.01	10.00	-0.5	127.2
08/06/2018	49.20	100.7	100.3	0.029	6.81	9.79	-0.3	150.9
08/21/2018	49.67	100.2	100.7	0.067	6.96	9.97	1286.9	1282.8
09/05/2018	49.72	100.5	100.5	0.070	7.08	10.20	0.4	126.8
09/19/2018	49.77	100.3	100.3	0.062	7.11	10.20	0.4	126.6
10/04/2018	49.62	100.4	100.8	0.043	6.98	9.99	-0.1	130.1
11/05/2018	49.48	99.0	100.4	0.074	7.08	10.14	0.2	134.7
12/03/2018	49.81	99.9	101.6	0.095	7.01	10.15	0.5	118.3

Jehossee Island

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
12/04/2017	50.60	108.6	95.1	0.116	7.05	10.04	-0.6	118.6
01/09/2018	49.05	70.0	60.3	0.070	6.90	9.84	-0.1	129.6
01/30/2018	49.78	104.4	104.4	0.096	7.06	10.06	1.3	120.5
02/13/2018	48.82	91.0	93.2	-0.035	7.17	10.16	0.5	112.4
03/06/2018	50.35	74.9	41.8	0.079	7.13	10.13	-0.5	150.4
04/11/2018	49.68	101.6	98.6	-0.020	7.14	10.14	-1.0	120.6
04/24/2018	50.12	96.3	91.9	0.055	7.06	10.08	0.6	122.2
05/09/2018	50.03	88.5	59.8	0.071	7.10	10.13	0.0	122.5
05/23/2018	49.25	107.4	136.9	0.072	6.97	9.98	-0.2	119.7
06/07/2018	49.68	106.4	92.8	-0.057	7.10	10.10	0.1	138.4
06/20/2018	50.07	104.4	95.8	0.086	7.09	10.12	-0.3	120.4
07/03/2018	49.97	101.5	65.8	0.034	7.04	10.05	0.1	123.2
07/09/2018	49.81	99.3	95.9	-0.065	7.03	9.88	0.5	121.4
07/24/2018	49.99	102.6	104.1	0.018	7.06	10.08	0.2	130.0
08/06/2018	49.80	100.1	94.1	0.046	6.94	9.96	0.6	149.6
08/21/2018	62.91	101.4	101.0	0.040	7.01	10.04	0.1	124.7
09/05/2018	48.97	98.1	98.1	0.059	7.07	10.19	0.5	123.8
09/19/2018	45.71	104.1	100.8	0.072	7.07	10.12	0.3	126.3
10/04/2018	42.89	57.5	47.2	0.055	6.99	9.98	-5.5	125.7
11/05/2018	60.16	99.2	100.8	0.071	7.10	10.14	0.7	134.1
12/03/2018	49.89	99.7	101.4	0.108	7.09	10.10	0.1	120.7

Mosquito Creek

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
12/04/2017	50.77	101.3	102.9	0.131	7.01	10.01	0.1	117.7
01/09/2018	49.54	101.1	101.1	0.115	6.95	9.94	-0.6	121.6
02/06/2018	48.93	100.8	101.4	0.101	7.05	10.05	0.5	120.2
02/13/2018	48.50	100.5	100.8	0.085	7.05	10.10	0.0	115.2
02/27/2018	49.73	98.6	97.6	-0.038	7.15	10.12	-0.2	116.2
03/06/2018	49.07	100.4	101.6	0.097	6.99	10.11	-0.5	152.3
04/11/2018	49.80	99.6	100.2	-0.025	7.16	10.17	0.0	120.1
04/24/2018	50.60	100.3	100.1	0.056	7.06	10.08	-0.2	121.8
05/09/2018	50.68	99.4	100.2	0.066	7.10	10.06	0.1	121.7
05/23/2018	49.39	99.4	100.8	0.087	7.23	10.31	0.1	116.6
06/07/2018	50.22	100.8	99.9	-0.035	7.01	9.90	-0.1	137.0
06/20/2018	51.03	99.8	100.8	0.114	7.09	10.12	-0.5	122.2
07/03/2018	50.57	99.9	100.5	0.057	7.23	10.27	0.0	117.2
07/09/2018	49.57	99.1	99.4	0.004	7.16	10.16	0.9	124.2
07/24/2018	50.37	99.7	100.2	0.066	6.91	9.84	-0.3	126.5
08/06/2018	50.77	99.9	100.0	0.029	7.04	10.05	0.0	149.1
08/21/2018	50.89	100.9	101.3	0.098	7.17	10.03	0.3	124.3
09/05/2018	49.88	99.5	100.3	0.076	7.11	10.20	-0.9	123.3
09/19/2018	50.71	100.7	100.8	0.078	6.98	10.05	0.4	124.4
10/04/2018	49.35	100.7	100.9	0.043	7.09	10.11	0.6	128.0
11/05/2018	50.30	99.2	100.7	0.084	7.15	10.22	0.64	131.56
12/03/2018	49.93	99.5	101.4	0.134	7.13	10.16	0.15	116.04

St. Pierre

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
12/04/2017	49.56	102.7	103.4	0.123	7.21	10.17	1.03	129.45
01/09/2018	48.88	101.2	100.9	0.101	7.08	10.03	-0.04	116.14
01/16/2018	49.54	102.0	100.9	0.121	7.11	10.14	0.11	119.45
02/13/2018	48.83	101.6	101.6	0.152	7.10	10.05	-0.18	115.04
02/23/2018	49.09	99.5	100.1	-0.021	7.12	10.11	0.74	117.32
03/06/2018	50.22	100.9	102.0	0.092	7.30	9.59	0.10	150.14
04/11/2018	49.46	99.7	100.8	-0.019	7.17	10.21	0.32	119.78
04/24/2018	49.86	100.6	101.3	0.054	7.15	10.13	0.50	120.79
05/08/2018	49.92	99.3	101.1	0.067	7.08	10.11	0.20	119.12
05/23/2018	49.73	100.7	100.7	-0.020	7.08	10.10	0.10	119.25
06/06/2018	49.49	98.3	100.1	-0.010	7.14	10.17	0.52	137.46
06/20/2018	50.16	100.1	100.3	0.119	7.00	9.98	-0.02	120.96
07/03/2018	50.08	100.2	100.4	0.038	7.08	10.11	0.40	123.86
07/09/2018	49.93	99.4	100.1	0.014	7.18	10.19	0.25	122.38
07/24/2018	49.88	98.9	100.2	0.049	7.09	10.11	0.14	126.40
08/06/2018	49.67	100.0	100.3	0.037	7.13	10.13	0.03	146.70
08/21/2018	49.83	99.3	101.0	0.096	7.10	10.14	-0.10	123.99
09/04/2018	49.92	98.9	100.5	0.083	7.13	10.26	-0.02	123.60
09/19/2018	50.12	100.2	101.4	0.094	7.04	10.10	-0.23	125.13
10/03/2018	49.63	100.1	100.8	0.074	7.09	10.13	-0.02	125.87
11/05/2018	50.21	99.6	101.3	0.079	7.06	10.08	0.10	130.63
12/03/2018	50.06	99.7	101.5	0.143	7.15	10.13	0.14	112.33

14) Other remarks/notes

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.

ACE NERR Water Quality Site Histories

Primary Sites

Edisto Island:

2014 - Water quality station was installed in **May** - Fasteners used to attach tube to the dock.
2015 - Site officially went online on **January** 1. (Coordinates: 32.5040 N and -80.3247 W)
2017 - PVC tube swapped with new tube with more holes along the length of tube on **December 1**.

Fishing Creek:

2002 - Fishing Creek site installed in **October** (Coordinates: 32.63593 N and -80.36556 W).
2010 - Fishing Creek sign post mount was replaced in **January** with a 40-ft, 8-in diameter pressure-treated piling.
2013 - Sutron Sat-Link2 transmitter installed in **March** at Fishing Creek to transmit real-time data.
2015 - Sutron Sat-Link2 telemetry equipment removed on **August 31.**
2016 - Fishing Creek site 6600 sondes were replaced with EXO2 sondes on **December 14**.
2017 - PVC tube swapped with new tube with more holes along the length of tube on **December 11**.

Mosquito Creek:

2002 - Mosquito Creek site installed in **October** (Coordinates: 32.5558 N and -80.4380 W).
2007 - Deployment mount installed 0.5 meters away from old mount in **August**. This is a deeper location.
2009 - Site mount moved due to demolition of old bridge and construction of new one at same location in **August** (about 0.2 meters deeper).
2016 - PVC tube was replaced and a new mounting structure was installed on **May 17**.
2017 - Rapid Pulse DO sensors on YSI 6600 sondes were replaced with Optical DO sensors on **July 5**.
2018 - PVC tube swapped with new tube with more holes along the length of tube on **February 27**.

St. Pierre Creek:

1995 - Water quality station was installed in **October**. (Coordinates: 32.52800 N and -80.36144 W).
2000 - Site moved to other side of channel in **April** (Coordinates changed: 32.5279 N -80.3615 W).
2006 - Sign post mount was replaced in **May** - with a 40-ft, 8-in diameter pressure-treated piling.
2006 - Sutron Sat-Link2 transmitter was installed in **June.**
2016 - PVC tube was re-positioned on piling on **July 18**.
2016 - Yagi antennae was replaced with the top hat design on **September 12**.
2016 – ISCO platforms were removed, and one was installed at different position on **November 4**.
2017 - PVC tube was re-positioned on piling on **June 6** - sonde is now higher on piling.
2017 - Rapid Pulse DO sensors on YSI 6600 sondes were replaced with Optical DO sensors on **July 5**.
2017 - PVC tube swapped with new tube with more holes along the length of tube (see Section 3) on **June 6**.
2017 - Switched to YSI Storm 3 telemetry system on **November 15.**

Secondary Sites

Grove Plantation:

2013 - A 40-ft, 8-in diameter treated pressure piling was installed on **November 8**.
2014 - YSI sonde was deployed on **January 15**.
2015 - Grove Plantation site officially went online on **January 1** (Coordinates: 32.6637N and -80.4130W)
2016 - Grove Plantation telemetry system was installed in **June**.

2016 - Grove Plantation site began transmitting real-time data on **June 15**.
2017 - PVC tube swapped with new tube with more holes along the length of tube on **December 11**.

Jehossee Island:
2013 - Jehossee Island water quality station was installed on **August 19** - PVC tube attached to USFWS dock.
2015 - Jehossee Island site officially went online on **January 1** (Coordinates: 32.6209 N and -80.3965 W).
2018 - PVC tube swapped with new tube with more holes along the length of tube on **January 30**.

Inactive Stations

Big Bay:
1995 - Big Bay water quality station was installed in tributary of Big Bay Creek in **March** (Coordinates: 32 29.662N and -80 19.427W)
2001- Big Bay station replaced in **October** due to old age and excessive biofouling of oysters (Coordinates: 32 29 38.72125N and -80 19 21.69864W)
2003 - Big Bay station moved to the creek proper in **July** after embankment collapsed near data logger (Coordinates: 32.4941N and -80.3241W)
2014 - Big Bay site officially went offline on **December 31**.

Charleston Harbor - Charleston Harbor Estuary:
2017 - Deployment mount was installed (PVC tube with holes along the length of the tube is mounted to a 40-ft, 8-in diameter treated pressure piling) **in October**.
2018 - Charleston Harbor site officially went online on **January 1** (Coordinates: 32.7573 N and -79.8589 W).
2018 - Telemetered transmission began on **April 4**.
2018 - Site was destroyed on August 30, 2018.

Rock Creek:
1996- Rock Creek water quality station was installed in **March** (Coordinates: 32.5404 N and -80.4821 W° [approximation because location was not measured while site was active])
1996 - Rock Creek water quality station went offline in **July**.

Blanket Statements: All Stations

Wiper Brush Malfunctioning Coding
Wiper brush used to clean sensors during deployment was lost during some deployments. All post calibration checks were in the acceptable range. Values are flagged as <1> [SWM]. Any other data concerns that occurred during the deployment are listed under the appropriate parameter heading. Note: Other parameters that are wiped by the same brush are flagged.

Missing Data Coding
Sonde was not at the correct depth in the deployment tube for last reading of the deployment. This is caused by sonde being pulled prematurely or deployed during the first reading. These values are considered post deployment values. Values are flagged as <-2>.

Dissolved Oxygen Hypoxia Coding
Dissolved oxygen percent and mg/L readings are coded <0> (CDA) when a hypoxic event is recorded (≤ 3 mg/L).

Turbidity Spike Coding
For YSI 6000 series sondes, turbidity values between 300 and 1000 NTU are coded <1> [STS]. For YSI EXO2 sondes, turbidity values between 300 and 4000 NTU (FNU) are coded <1> [STS]. These spikes are typically observed during low tides, max flood tides, and/or rain events.

Turbidity readings above 1000 NTU for YSI 6000 series sondes and above 4000 NTU (FNU) for YSI EXO2 sondes are rejected and are coded <-3> [STS]. These values are above the sensor specifications.

Turbidity Negative Readings Coding

Negative turbidity values are rejected and are coded <-3> [SNV] (CSM). These values are below the sensor specifications.

Data Editing/Flagging Notes: Organized by Station, Parameter, and Code

Effect of Freshwater Input on Water Quality

Water quality at the SWMP sites are influenced by the river water level and streamflow rate in the South Edisto River at the USGS gauging station at Givhans Ferry. We observe a negative correlation between salinity and the river stage at all sites when the river crests above flood level (+10 feet) or the river level falls below 5 feet. The same negative correlation is observed between streamflow and salinity at the upstream sites, Grove Plantation and Jehossee Island, regardless of the river stage, decreases in salinity occur when streamflow is above 1,500 ft^3/sec and increases when streamflow falls below this threshold. Significant changes in water quality due to freshwater input are flagged as {CWE} in the F-Record column in the data file of the affected site and under the metadata section for the site.

Effect of Significant Rain Events on Water Quality

Water quality at the SWMP sites are influenced by significant rain events during low tides. We observe dips in salinity and dissolved oxygen levels and spikes in turbidity during slack low tide at the sites. Significant or prolonged dips in all parameters are flagged as {CRE} in the F-Record column in the data file of the affected site and under the metadata section for the site.

Significant Weather Events

The significant weather event data listed in the table below is from the National Hurricane Center administered by the National Oceanic and Atmospheric Administration (NOAA) and/or local knowledge. All events listed are ones that have impacted the South Carolina Coast beginning in 2018. Significant changes in water quality due to these weather events are flagged as {CWE} in the F-Record column in the data file of the affected site and under the metadata section for the site.

Significant Weather Event	Date Started	Date Ended	Max Wind Speed
Winter Storm	January 2, 2018	January 5, 2018	
Hurricane Florence	September 14, 2018	September 18, 2018	90 mph

In January, a major winter storm hit the entire Atlantic Coast (NOAA). The storm was due to an arctic high pressure at the surface when an upper-level disturbance moved east across the Southeast USA. This caused surface low pressure to develop near the Bahamas, then move northward near the Gulf Stream, spreading moisture across southeast South Carolina. The precipitation began in the evening across South Carolina as freezing rain with some sleet mixed in, and when temperatures rose above freezing during the afternoon, the rain transitioned to snow that lasted until early evening. A trained spotter at the NOAA quality controlled observations system in Bennetts Point measured five inches of snow at 17:00 on January 3rd. Due to the continued cold air in place even after the storm, snow/ice remained on the ground in spots through the week of January 8th along coastal South Carolina. The ACE Basin weather station in Bennetts Point recorded air temperatures near or below freezing from January 2nd to the 5th. On the 3rd, water temperatures at all WQ monitoring stations dropped to 6◦C and remained at or below 6◦C until the 9th.

Hurricane Florence made landfall in Wilmington, NC at 07:15 on September 14 as a category 1 hurricane, and then traveled along a west-southwesterly path, at a top speed of 5 mph toward South Carolina. Florence was downgraded to a tropical storm, with sustained winds of 65 mph, by the time it entered South Carolina around 09:00 pm on the 14th. The slow-moving (3-5 mph) tropical storm took another three days to pass through the Carolinas. Tropical Storm Florence moved along the west-southwesterly path until Saturday (September 15th) and then turned

northward toward upstate South Carolina and into the Ohio Valley by Monday (September 17th). The ACE Basin weather station in Bennetts Point recorded the changes in the daily pattern in wind direction as result of Florence.

Super-saturated Oxygen Conditions at Water Quality Sites

The waters at Charleston Harbor site, which became an official secondary site in January 1, 2018, are generally super-saturated (> 100% air sat) during the day. The average range in DO from January through April was 85 to 105%, and during the summer, DO generally ranged from 70 to 110%. At the other sites, super-saturated conditions generally only occur when the algal activity is high, and it is not unusual to observe spikes as high as 140% or more during peak algal activity. These spikes in dissolved oxygen due to high algal activity are flagged as <0> (CSM) in the data file of the affected site and under the metadata section for the site.

Edisto Island

All Parameters Blanket Statement for Edisto Island

The data collected from 01/01/2018 - 00:00 to 01/09/2018 - 23:45 during the December 1st deployment (12/01/2017 - 12:45 to 01/10/2018 - 11:30) are flagged due to a significant weather event. The water temperatures during this time were below normal for this time of year and caused by the low air temperature also seen during this time period. On January 3rd South Carolina was hit by a rare winter weather storm bringing below normal temperatures and above normal wintry precipitation. The snowfall only occurred on January 3rd but below normal air temperatures lasted until January 7th and below normal water temperatures lasted until January 9th. The lowest temperature recorded at Edisto Island was 3.5°C. The F_Record column is flagged as {CWE}.

The data were collected at the wrong depth from 07/04/2018 - 11:00 to 07/05/2018 - 12:45 during the June 20th deployment (06/20/2018 - 10:00 to 07/10/2018 - 11:45). The discrepancy was discovered during the internal review of the deployment data file. The sonde raised to a higher position in the tube, either by the tide or a person; the sonde did remain submerged during low tides because the salinity levels did not change. The difference in depth is not considered significant because the S. Edisto River and the creek are well-mixed systems and the sonde was in the same thermocline, as indicated by the water temperature readings. The depth values are flagged as <1> (CWD), and the other parameters are flagged as <0> (CWD). Other errors that occurred during the deployment are listed under the appropriate parameter heading or in a blanket statement. The F_Record column of these rows are flagged as {CSM}.

The data were collected at the wrong depth from 08/07/2018 - 13:00 to 08/09/2018 – 11:00 and 12:30 - 13:30 during the July 24th deployment (07/24/2018 - 12:00 to 08/09/2018 - 13:30). While trying to retrieve the sonde on 08/07/2018 the sonde became stuck in the tube due to fouling. The sonde only came up approximately 0.3 to 0.6 meters inside the tube. The sonde was then stuck at that level and despite many efforts the sonde would not go back to the correct depth. The difference in depth is not considered significant because the S. Edisto River and the creek are well-mixed systems and the sonde was in the same thermocline, as indicated by the water temperature readings. The depth values are flagged as <1> (CWD), and the other parameters are flagged as <0> (CWD). Other errors that occurred during the deployment are listed under the appropriate parameter heading or in a blanket statement. The F_Record column of these rows are flagged as {CSM}.

The data collected from 09/14/2018 - 16:45 to 09/15/2018 - 06:00 during the September 4th deployment (09/04/2018 - 09:15 to 09/19/2018 - 07:15) were flagged due to a significant weather event. On September 14th, Hurricane Florence made landfall at Wilmington, NC, and over the next four days, slowly moved W by SW through South Carolina. The F_Record column of these rows are flagged as {CWE}.

Rejected Data (Flag <-3>)

The data collected on 08/09/2018 - 11:15 to 12:15 during the July 24th deployment (07/24/2018 - 12:00 to 08/09/2018 - 13:30) were rejected due to sensors being partially or completely out of water. This was during the period when the sonde was stuck in the tube at the wrong depth. The specific conductivity values were roughly half of what is expected or near 0 at this site, the temperature values dropped significantly and the dissolved oxygen

values increased significantly which indicate that the sensors were partially or completely out of water. The values for all parameters are flagged <-3> [GOW] (CSM).

Missing Data (Flag <-2>)
The data collected from 02/26/2018 - 20:00 to 03/08/2018 - 10:00 during the February 13th deployment (02/13/2018 - 12:15 to 03/08/2018 - 10:00) were missing due to low battery. The values are flagged as <-2> [GPF] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)
The data collected from 05/05/2018 - 00:00 to 05/08/2018 - 08:30 during the April 24th deployment (04/24/2018 - 09:15 to 05/08/2018 - 08:30) were rejected due to sensor failure. The values were rejected because the readings dropped to a level well outside the range expected at this site, and the post-deployment check of 3.45 mS/cm was well outside the acceptable range. The values are flagged as <-3> [SSM] (CSM).

The data collected from 5/22/2018 - 07:45 to 05/24/2018 - 11:45 during the May 8th deployment (5/8/2018 - 08:45 to 05/24/2018 - 11:45) were rejected due to sensor failure. The values were rejected because the readings dropped to a level well outside the range expected at this site. During the post-deployment check it was noted that eggs were deposited inside the conductivity sensor. The initial post calibration value was 14.82 mS/cm which is well outside the accepted range of 47 - 53 mS/cm; however, after thorough cleaning the sensor read 49.49 mS/cm which is well within the accepted range. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected from 04/24/2018 - 09:15 to 05/04/2018 - 23:45 during the April 24th deployment (04/24/2018 - 09:15 to 05/08/2018 - 08:30) were suspect due to post calibration out of range. The post-deployment check of 3.45 mS/cm was well outside the acceptable range, but the readings were within the range observed at the site. The rest of the deployment was rejected (see statement above). The values are flagged as <1> [SPC] (CSM).

The data collected from 09/15/2018 - 09:15 to 09/19/2018 - 07:15 during the September 4th deployment (09/04/2018 - 09:15 to 09/19/2018 - 07:15) is suspect due to biofouling. Light hydroid growth and algae were noted on the sensor at the time of retrieval. The biofouling resulted in a difference in values between the last reading of this deployment (30.1 PSU) and the first reading of the next deployment (32.3 PSU). The in-situ value of 32.6 PSU is more closely related to the sonde for the next deployment. The depressed and varied salinity pattern during this time was due to an increase in freshwater input caused by Hurricane Irma that came through on 09/14/2018 at 16:45 and can be seen at multiple sites. The values are flagged as <1> [GSM] (CBF).

The data collected from 10/28/2018 - 10:15 to 11/05/2018 - 12:00 during the October 3rd deployment (10/03/2018 - 08:45 to 11/05/2018 - 12:00) is considered suspect due to sensor drift which we attribute to biofouling. The salinity increased by ~3 psu with the deployment of a newly calibrated sonde and biofouling was noted on the sensors. The tidal pattern and values are normal for this site. The values are flagged as <1> [GSM] (CBF).

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)
The DO mg/L data collected from 05/05/2018 - 00:00 to 05/08/2018 - 08:30 during the April 24th deployment (04/24/2018 - 09:15 to 05/08/2018 - 08:30) were rejected due to conductivity sensor failure. The specific conductivity values used to calculate DO were rejected because the post-deployment check of 3.45 mS/cm was outside the acceptable range. The values are flagged as <-3> [SCF] (CSM).

The DO mg/L data collected from 5/22/2018 - 07:45 to 05/24/2018 - 11:45 during the May 8th deployment (5/8/2018 - 08:45 to 05/24/2018 - 11:45) were rejected due to biofouling on the conductivity sensor. The specific conductivity values used to calculate DO were rejected due to egg deposits inside the sensor causing the values to fall far below what is expected at this site. The readings were within the range observed at the site. The values are flagged as <-3> [GSM] (CBF).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)
The data collected from 05/05/2018 - 00:00 to 05/08/2018 - 08:30 during the April 24th deployment (04/24/2018 - 09:15 to 05/08/2018 - 08:30) were rejected due to conductivity sensor failure. The specific conductivity values used to calculate depth were rejected because the post-deployment check of 3.45 mS/cm was outside the acceptable range. The values are flagged as <-3> [SCF] (CSM).

The data collected from 5/22/2018 - 07:45 to 05/24/2018 - 11:45 during the May 8th deployment (5/8/2018 - 08:45 to 05/24/2018 - 11:45) were rejected due to biofouling on the conductivity sensor. The specific conductivity values used to calculate depth were rejected due to egg deposits inside the conductivity sensor causing the values to fall far below what is expected at this site. The readings were within the range observed at the site. The values are flagged as <-3> [GSM] (CBF).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)
The first pH value of the February 13th deployment (02/13/2018 - 12:15 to 03/08/2018 - 10:00) was rejected due to dip in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of

the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The value is flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected during the following deployments were suspect due to post-deployment sensor diagnostics being out of range. The accepted pH mV range for pH 1 is 0 +/- 50. The values are flagged as <1> [SDG] (CSM).

08/09/2018 - 14:00 to 08/21/2018 - 13:00 (-52.7)
09/04/2018 - 09:15 to 09/19/2018 - 07:15 (-52.5)

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)
The data collected at the following times were rejected due to a turbidity spike. Although the values are within the sensor specifications, they are out of line with surrounding data. There is a two order of magnitude difference between the 15-minute intervals which is not typical. They do not occur at or near low tide, or during a rain event. The values are flagged as <-3> [STS] (CSM).

05/12/2018 - 22:15	07/25/2018 - 20:30	07/26/2018 - 15:15
08/09/2018 - 04:45	10/17/2018 - 17:45	11/13/2018 - 16:00

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Fishing Creek

All Parameters Blanket Statement for Edisto Creek

The data collected from 01/01/2018 - 00:00 to 01/09/2018 - 15:15 during the December 4th deployment (12/04/2017 - 15:30 to 01/09/2018 - 15:15) and from 15:30 to 23:45 on 01/09/2018 during the January 9th deployment (01/09/2018 - 15:30 to 02/13/2018 - 13:15) are flagged due to a significant weather event. The water temperatures during this time were below normal for this time of year and caused by the low air temperature also seen during this time period. On January 3rd South Carolina was hit by a rare winter weather storm bringing below normal temperatures and above normal wintry precipitation. The snowfall only occurred on January 3rd but below normal air temperatures lasted until January 7th and below normal water temperatures lasted until January 9th. The lowest temperature recorded at Fishing Creek was 0.2°C. The F_Record column is flagged as {CWE}.

The data collected from 09/14/2018 - 17:45 to 09/15/2018 - 06:15 during the September 5th deployment (09/05/2018 - 09:45 to 09/19/2018 - 10:45) were flagged due to a significant weather event. On September 14th, Hurricane Florence made landfall at Wilmington, NC, and over the next four days, slowly moved W by SW through South Carolina. The F_Record column of these rows are flagged as {CWE}.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)
The significant fluctuation in DO percent and mg/L from 04/12/2018 - 08:30 to 04/23/2018 - 08:45 during the April 11th deployment (04/11/2018 - 11:15 to 04/24/2018 - 10:00) is not suspect because it is thought to be a naturally occurring event. There was a rain event preceding and during this event, coupled with rising temperatures creating the right conditions for super saturation. pH also reached peak values at peak DO percent values. The nutrient grabs taken on 04/24/2018 resulted in chlorophyll values of 42.559 and 55.295 µg/L which is very high for this site during this time of year. Historically when chlorophyll values are high at this site in April, similar conditions are observed. Values are flagged as <0> (CSM).

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)
The data collected from 02/09/2018 - 00:00 to 02/13/2018 - 13:15 during the January 9th deployment (01/09/2018 - 15:30 to 02/13/2018 - 13:15) were rejected due to post-deployment checks out of range. The pH7 (7.70), pH 10

(10.62), pH7 mV (-70.7) and pH10 mV (-235.6) were outside the acceptable range. The pH slope of 164.9 was within the acceptable range. There was barnacle spat noted on the pH bulb. The readings were higher than the typical range observed at this site at this time of year. Therefore, the pH data from the end of the deployment was rejected. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected during the following deployments were suspect due to post calibration being out of range. The accepted range for pH 7 is 6.7 to 7.3, and for pH 10 it is 9.7 to 10.3. The values are flagged as <1> [SPC] (CSM).
12/04/2017 - 15:30 to 01/09/2018 - 15:15 (7.42, 10.4) 01/09/2018 - 15:30 to 02/08/2018 - 23:45 (7.7, 10.62)
07/09/2018 - 10:15 to 07/24/2018 - 12:15 (10.45, 13.58)

The data collected during the February 13th deployment (02/13/2018 - 13:30 to 03/06/2018 - 10:45) were suspect due to sensor diagnostics out of range. The post deployment check of -58.0 for pH7 mV is outside the accepted range of 0 +/- 50. The readings were within the accepted range for this site. The values are flagged as <1> [SDG] (CSM).

The data collected during the May 23rd (05/23/2018 - 13:00 to 06/07/2018 - 08:00) and June 20th (06/20/2018 - 11:30 to 07/03/2018 - 12:00) deployments are suspect because the pH readings were higher than those of the other sonde deployed at this site. The post-deployment checks were within the acceptable ranges but it was noted that the pH mV were getting higher although not out of range. Some biofouling was noted during the May 23rd deployment. The sensor ultimately failed during the July 9th deployment (see statement above). The reason for the higher readings is unknown but thought to be attributed to an aging sensor. The values are flagged as <1> [GSM] (CCU).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)
The turbidity data collected from 06/15/2018 - 20:15 to 06/17/2018 - 02:30 during the June 7th deployment (06/07/2018 - 08:15 to 06/20/2018 - 11:15) are rejected due to elevated values. The sustained turbid conditions of values mostly above 1000 during this period are not typical for this site. It is thought that biofouling may have been the cause due to the sensor recovering to typical values during the deployment. The values are flagged as <-3> [GSM] (CCU).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The turbidity data collected from 01/01/2018 - 00:00 to 01/09/2018 - 15:15 during the December 4th deployment (12/04/2017 - 15:30 to 01/09/2018 - 15:15) are suspect due to QAQC checks. During the period, the values do not reach low values and the change from this deployment (38 FNU) to the next deployment (4 FNU) was significant; however, the data fluctuates with the tide and the post deployment check was acceptable. The values are flagged as <1> [GSM] (CCU).

Passed Initial QAQC Checks (Flag <0>)

Grove Plantation

All Parameters Blanket Statement for Grove Plantation

The data collected from 01/01/2018 - 00:00 to 01/09/2018 - 23:45 during the December 19th deployment (12/19/2017 - 11:15 to 01/16/2018 - 14:15) are flagged due to a significant weather event. The water temperatures during this time were below normal for this time of year and caused by the low air temperature also seen during this time period. On January 3rd South Carolina was hit by a rare winter weather storm bringing below normal temperatures and above normal wintry precipitation. The snowfall only occurred on January 3rd but below normal air temperatures lasted until January 7th and below normal water temperatures lasted until January 9th. The lowest temperature recorded at Grove Plantation was 1.2°C. The F_Record column is flagged as {CWE}.

The data collected from 09/14/2018 - 18:45 to 09/15/2018 - 07:30 during the September 5th deployment (09/05/2018 - 10:15 to 09/19/2018 - 10:15) were flagged due to a significant weather event. On September 14th, Hurricane Florence made landfall at Wilmington, NC, and over the next four days, slowly moved W by SW through South Carolina. The F_Record column of these rows are flagged as {CWE}.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)
The first DO record of the January 16th deployment at 14:30 (01/16/2018 - 14:30 to 02/13/2018 - 12:30) was rejected due to spikes in DO when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)
The data collected on 09/12/2018 at 14:30 and 14:45 during the September 5th deployment (09/05/2018 - 10:15 to 09/19/2018 - 10:15) were rejected due to erroneous spikes in depth. The depth goes from 3.79 meters to 5.23 meters during an outgoing tide and does not recover until 15:00. The rest of the values are typical for what is seen at this site. The values are flagged as <-3> [GQR] (CCU).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)
The first pH record of the following deployments was rejected due to spikes/dips in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

01/16/2018 - 14:30
05/23/2018 - 12:15

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected during the following deployments were suspect because pH sensor on this sonde was recording lower values than the sensors on other sondes deployed at the site. The post-deployment checks were all within the acceptable ranges. The cause for the lower values is unknown but is thought to be attributed to the age of the sensor. The values are flagged as <1> [GSM] (CCU).

01/01/2018 - 00:00 to 01/16/2018 - 14:15
02/13/2018 - 12:45 to 03/06/2018 - 11:30
05/31/2018 - 10:15 to 06/07/2018 - 08:45
12/03/2018 - 12:00 to 12/31/2018 - 23:45

The data collected during the April 24th deployment (04/24/2018 - 09:30 to 05/09/2018 - 09:45) were suspect due to sensor diagnostics out of range. The post deployment checks were within the acceptable range; however, pH slope was 154.4 which is below what is accepted. The values are flagged as <1> [SDG] (CSM).

The data collected during the May 23rd deployment (05/23/2018 - 12:15 to 05/31/2018 - 10:00) were suspect due to post calibration out of range. The post deployment pH10 check of 9.64 and pH slope of 146.6 were outside the acceptable ranges. The data collected during this time period were within what is typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

The first record of the August 21st deployment (08/21/2018 – 11:45 to 09/05/2018 - 10:00) was flagged due to the post calibration checks for the turbidity sensor. The post-deployment checks for the 0 NTU (1286.9) and 126 NTU (1286.8) were well outside the acceptable range. The data were not suspect because the values were well within the acceptable range for this site. It is believed that the sensor failure happened after the sonde was retrieved. The wiper brush was parked correctly before it removed for cleaning. The sonde and sensor were cleaned, and a new wiper pad was placed on sensor in order to do turbidity post-checks. However, the pad would not park correctly, and the pad did not complete a wipe cycle. The sensor also failed to be re-calibrated. The value is flagged as <0> [GSM] (CND).

Jehossee Island

All Parameters Blanket Statement for Jehossee Island

The data collected from 01/01/2018 - 00:00 to 01/09/2018 - 14:45 during the December 4th deployment (12/04/2017 - 14:00 to 01/09/2018 - 14:45) and from 15:00 to 23:45 on 01/09/2018 during the January 9th deployment (01/09/2018 - 15:00 to 01/30/2018 - 13:15) are flagged due to a significant weather event. The water temperatures during this time were below normal for this time of year and caused by the low air temperature also seen during this time period. On January 3rd South Carolina was hit by a rare winter weather storm bringing below normal temperatures and above normal wintry precipitation. The snowfall only occurred on January 3rd but below normal air temperatures lasted until January 7th and below normal water temperatures lasted until January 9th. The lowest temperature recorded at Jehossee Island was 1.1◦C. The F_Record column is flagged as {CWE}.

The data collected from 09/14/2018 - 17:45 to 09/15/2018 - 06:45 during the September 5th deployment (09/05/2018 - 09:00 to 09/19/2018 - 09:30) were not suspect due to a significant weather event. On September 14th, Hurricane Florence made landfall at Wilmington, NC, and over the next four days, slowly moved W by SW through South Carolina. The F_Record column of these rows are flagged as {CWE}.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data from 13:30 to 14:00 on 01/30/2018 at the end of the January 9th deployment (01/09/2018 - 15:00 to 01/30/2018 - 13:15) are missing due to equipment maintenance. The tube was replaced with a new tube. The values are flagged as <-2> [GMC] (CSM). Note: the design of the deployment tube changed (see Scientific Methods section).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The data collected from 09/26/2018 - 07:45 to 10/04/2018 - 09:00 during the September 19th deployment (09/19/2018 - 09:45 - 10/04/2018 - 09:00) were rejected due to sensor failure. The values were rejected because the values spiked to a level well outside the range expected at this site, and the post-deployment check of 45.71 was outside the acceptable range. The values are flagged as <-3> [SCF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected during the following deployment were suspect due to post calibration out of range. The post-deployment check was outside the accepted range (47 - 53 mS/cm). The data collected during this time period were within what is typically observed at this site. The values are flagged <1> [SPC] (CSM).

08/21/2018 - 11:00 to 09/05/2018 - 08:45 (62.19)
10/04/2018 - 09:15 to 11/05/2018 - 11:30 (42.89)
11/05/2018 - 11:45 to 12/03/2018 - 10:45 (60.16)

The data collected from 09/19/2018 - 09:45 to 09/26/2018 - 07:30 during the September 19th deployment (09/19/2018 - 09:45 to 10/04/2018 - 09:00) were suspect due to post calibration out of range. The post-deployment check of 45.71 mS/cm was outside the accepted range (47 - 53 mS/cm). The data collected during this time period were within what is typically observed at this site. The rest of the deployment was rejected (see statement above). The values are flagged <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)
The data collected from 05/08/2018 - 00:00 to 05/09/2018 - 08:15 during the April 24th deployment (04/24/2018 - 08:45 to 05/09/2018 - 08:15) were rejected due to QAQC checks. The DO increased during a falling tide and the tidal pattern was atypical for this site. The post-deployment checks were within the acceptable range. It is not known what caused the atypical readings. The values are flagged as <-3> [SQR] (CSM).

The data collected from 05/21/2018 - 13:45 to 05/23/2018 - 11:15 during the May 9th deployment (05/09/2018 - 08:30 to 05/23/2018 - 11:15) were rejected due to post calibration out of range. The values were rejected because the post-deployment check was 88% air saturation, and the DO readings changed abruptly and then overall drifted downward. The values are flagged as <-3> [SPC] (CSM).

The DO mg/L data collected from 09/26/2018 - 07:45 to 10/04/2018 - 09:00 during the September 19th deployment (09/19/018 - 09:45 - 10/04/2018 - 09:00) were rejected due to conductivity sensor failure. The specific conductivity values used to calculate DO were rejected due to spikes that are well outside the range expected at this site, and the post-deployment check of 45.71 being outside the acceptable range. The values are flagged as <-3> [SCF] (CSM).

The data collected from 10/22/2018 at 19:45 to 11/05/2018 at 11:30 during the October 4th deployment (10/04/2018 - 09:15 to 11/05/2018 - 11:30) were rejected due to post calibration out of range. The values were rejected because the post-deployment check was 57.5% air saturation, and the readings drifted downward. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected from 01/08/2018 - 00:00 to 01/09/2018 - 14:45 during the December 4th deployment (12/04/2017 - 14:00 to 01/09/2018 - 14:45) were rejected due to QAQC checks. The readings during this time

period were above 100% which is not typical for this site. The post-deployment checks were within the acceptable range. The values are flagged as <1> [GSM] (CCU).

The data collected during the following deployments are suspect due to post calibration was out of range. The post-deployment checks were below the accepted ranges. The values are flagged as <1> [SPC] (CSM).

01/09/2018 - 15:00 to 01/30/2018 - 13:15 (70.0%)
03/06/2018 - 14:45 to 04/11/2018 - 10:00 (74.9%)
05/09/2018 - 08:30 to 05/21/2018 - 13:30 (88.5%)
10/04/2018 - 09:15 to 10/22/2018 - 19:30 (57.5%)

The data collected during the May 23rd deployment (05/23/2018 - 11:30 to 06/07/2018 - 07:30) is suspect due to sensor diagnostics out of range. The DO charge was reading 99.2 which is above the accepted range of 25 to 75. The DO value was 107.4% which is within the acceptable range. The values are flagged as <1> [SDG] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)
The data collected from 09/26/2018 - 07:45 to 10/04/2018 - 09:00 during the September 19th deployment (09/19/2018 - 09:45 to 10/04/2018 - 09:00) were rejected due to conductivity sensor failure. The specific conductivity values used to calculate depth were rejected due to spikes that are well outside the range expected to see at this site, and because the post-deployment check of 45.71 is outside the acceptable range. The values are flagged as <-3> [SCF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)
The data collected during the January 9th deployment (01/09/2018 - 15:00 to 01/30/2018 - 13:15) were rejected due to QAQC checks. The data collected during this time period were well above what is typically observed at this site. The post-deployment checks were within the acceptable ranges. The values are flagged as <-3> [SQR] (CSM).

The first pH value of the following deployments was rejected due to a spike in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

02/13/2018 - 12:00
06/07/2018 - 07:45

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected from 12/27/2018 - 12:30 to 12/28/2018 - 20:15 during the December 3rd deployment (12/03/2018 - 11:00 to 01/03/2019 - 11:15) were suspect due to elevated pH values. The pH values gradually increase starting at 12:30 on 12/27/2018 but at 14:00 the pH jumps 0.5 units in a 15-minute interval which is not typical for this site. The cause for the elevated pH is unknown but thought to be attributed to a rain event or the opening of nearby impoundments. The values are flagged as <1> [GSM] (CCU).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected during the October 4th deployment (10/04/2018 - 09:15 to 11/05/2018 - 11:30) were suspect due to post calibration out of range. The post-deployment check of -5.5 is outside the accepted range (0 +/- 2). The data collected during this time period were within what is typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Mosquito Creek

All Parameters Blanket Statement for Mosquito Creek

The data collected from 01/01/2018 - 00:00 to 01/09/2018 - 14:00 during the December 4th deployment (12/04/2017 - 13:15 to 01/09/2018 - 14:00) and from 14:15 to 23:45 on 01/09/2018 during the January 9th deployment (01/09/2018 - 14:15 to 02/06/2018 - 12:30) are flagged due to a significant weather event. The water temperatures during this time were below normal for this time of year and caused by the low air temperature also seen during this time period. On January 3rd South Carolina was hit by a rare winter weather storm bringing below normal temperatures and above normal wintry precipitation. The snowfall only occurred on January 3rd but below normal air temperatures lasted until January 7th and below normal water temperatures lasted until January 9th. The lowest temperature recorded at Mosquito Creek was 2.8°C. The F_Record column is flagged as {CWE}.

The data collected from 09/14/2018 - 17:45 to 09/15/2018 - 06:45 during the September 5th deployment (09/05/2018 - 08:15 to 09/19/2018 - 08:45) are flagged due to a significant weather event. On September 14th, Hurricane Florence made landfall at Wilmington, NC, and over the next four days, slowly moved W by SW through South Carolina. The F_Record column of these rows are flagged as {CWE}.

The data were collected at the wrong depth during the October 4th deployment (10/04/2018 - 08:15 to 11/05/2018 - 10:30). The external screen from the previous sonde fell off and remained stuck in the deployment mount. It was removed after this deployment. The difference in depth is minimal and not considered significant because the S. Edisto River, Ashepoo River and the creek are well-mixed systems and the sonde was in the same thermocline, as indicated by the water temperature readings. The depth values are flagged as <1> (CWD), and the other parameters are flagged as <0> (CWD). Other errors that occurred during the deployment are listed under the appropriate parameter heading or in a blanket statement. The F_Record column of these rows are flagged as {CSM}.

The 6600 EDS/V2 sondes were replaced with EXO2 sondes before the November 5th deployment. The values recorded by the two types of sondes are similar.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)
The data from 12:30 to 14:45 on 02/27/2018 at end of the February 13 deployment (02/13/2018 - 11:15 to 02/27/2018 - 12:15) are missing due to equipment maintenance. The tube was replaced with a new tube. The values are flagged as <-2> [GMC] (CSM). Note: the design of the deployment tube changed (see Scientific Methods section).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)
The first pH record of the following deployments was rejected due to spikes/dips in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were all within the acceptable ranges. The values are flagged as <-3> [GSM] (CND).
01/09/2018 - 14:15 08/21/2018 - 09:15

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected during the following deployments were suspect because pH sensor on this sonde was recording values higher than the pH sensor on other sonde deployed at this site. The post-deployment checks were all within

the acceptable ranges. The cause for the lower values is unknown but is thought to be attributed to the age of the sensor. The values are flagged as <1> [GSM] (CCU).

02/06/2018 - 13:00 to 02/13/2018 - 11:00 02/27/2018 - 15:00 to 03/06/2018 - 13:45
04/11/2018 - 09:30 to 04/24/2018 - 07:45

The data collected during the May 23rd deployment (05/23/2018 - 10:00 to 06/07/2018 - 06:30) is suspect due to post-calibration out of range. The post deployment check was 10.31 which is above the acceptable range of 9.7 to 10.3. The data collected during this time period are within the acceptable range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the July 24th deployment (07/24/2018 - 10:00 to 08/06/2018 - 08:30) were suspect due to post-calibration sensor diagnostics being out of range. The post-deployment pH slope was 154.8 which is suspect. The data collected during this time period are within the acceptable range typically observed at this site. The values are flagged as <1> [SDG] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)
The data collected on 03/15/2018 at 17:00 is rejected due to a turbidity spike. Although the value is within the sensor specifications, it is out of line with surrounding data. There is an order of magnitude difference between the 15-minute intervals which is not typical. It did not occur at or near low tide, or during a rain event. The value is flagged as <-3> [STS] (CSM).

The data collected from 11/02/2018 – 10:30 to 11/05/2018 – 10:30 during the October 4 deployment (10/04/2018 – 08:15 to 11/05/2018 – 10:30) were rejected due to QAQC checks. The readings during this time period are elevated for an extended period of time, which is not typical for this site. The elevated values could be the result of the mud and tunicates found in the external screen upon retrieval. The values are flagged as <-3> [SQR] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected from 09/12/2018 - 03:00 to 09/19/2018 - 08:45 during the September 5th deployment (09/05/2018 - 08:15 to 09/19/2018 - 08:45) were suspect due to biofouling. It is believed that the presence of mud in the sonde guard and external screen created a microcosm of turbid conditions that were not indicative of the surrounding environment. On 09/14/2018 at 17:45 Hurricane Irma came through indicated by the spike in turbidity but the pattern is atypical for this site. The values are flagged as <1> [GSM] (CBF).

Passed Initial QAQC Checks (Flag <0>)

St. Pierre

All Parameters Blanket Statement for St. Pierre

The data collected from 01/01/2018 - 00:00 to 01/09/2018 - 13:30 during the December 4th deployment (12/04/2017 - 12:00 to 01/09/2018 - 13:30) and 13:45 to 23:45 during the January 9th deployment (01/09/2018 - 13:45 to 01/16/2018 - 11:15) were flagged due to a significant weather event. The water temperatures during this time were below normal for this time of year and caused by the low air temperature also seen during this time period. On January 3rd South Carolina was hit by a rare winter weather storm bringing below normal temperatures and above normal wintry precipitation. The snowfall only occurred on January 3rd but below normal air temperatures lasted until January 7th and below normal water temperatures lasted until January 9th. The lowest temperature recorded at St. Pierre was 0.2◦C. The F_Record column is flagged as {CWE}.

The data collected during the following periods were flagged due to significant rain events. The decrease in salinity and elevated turbidity was caused by rain events that occurred during low tides. No significant changes occurred in dissolved oxygen or pH. The post-deployment checks were within acceptable ranges. The F_Record column is flagged as {CRE}.

04/23/2018 - 18:45 to 21:00	05/28/2018 - 10:00 to 13:00	06/08/2018 - 18:15 to 19:30
12/02/2018 - 20:00 to 21:15	12/14/2018 - 06:30 to 07:30	

The data collected from 09/14/2018 - 16:45 to 09/15/2018 - 06:30 during the September 4th deployment (09/04/2018 - 08:15 to 09/19/2018 - 08:00) are flagged due to a significant weather event. On September 14th, Hurricane Florence made landfall at Wilmington, NC, and over the next four days, slowly moved W by SW through South Carolina. The F_Record column of these rows are flagged as {CWE}.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)
The depth data collected from 02/07/2018 - 08:15 to 02/13/2018 - 10:15 during the January 16th deployment (01/16/2018 - 11:30 to 02/13/2018 - 10:15) disappeared from the EXO2 file. It is unclear why or how this happened. The data are flagged <-2> [SSM] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)
The data collected during the March 6 deployments (03/06/2018 - 13:00 to 04/11/2018 - 08:30) were suspect due to post deployment checks out of range. The pH7 check of 7.3 and pH10 of 9.59 were outside the acceptable range; the post deployment sensor diagnostics were acceptable. The data were not rejected because the values were within the range observed at the site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)