REPORT OF SANITARY SURVEY

AREA E-2

BOGUE SOUND AREA

JULY 2010 THROUGH JANUARY 2015

Prepared 2/15

Approved By:_____

Date: _____

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FIGURES

TABLES

The E-2 area of coastal North Carolina, which includes the central portion of Bogue Sound, lies in the central portion of the state off the Atlantic Ocean. Portions of the area are managed as *Conditionally Approved*, and a management plan is followed to ensure that shellfish with unacceptable levels of pathogens are not available for harvest. The systematic random sampling strategy is employed for water quality analysis. Bacteriological review and the shoreline survey of pollution sources confirm that all areas of Bogue Sound in E-2 are classified properly. No changes in classification will be recommended at this time. The current Conditional Area Management Plan will continue to be used in the E-2 area.

1.0 SANITARY SURVEY

1.1 INTRODUCTION

Area E-2 includes the waters of Bogue Sound bounded on the east by an imaginary line drawn from the mainland west of Spooners Creek to Bogue Banks just east of the Pine Knoll Shores canals. The area is bounded on the west by an imaginary line beginning on the mainland east of Gales Creek and proceeding through the Intracoastal Waterway (IWW) Beacon #21 across the sound to a point on Bogue Banks at the west end of Salter Path.

Area E-2 contains approximately 7,500 water acres (Figure 1). See Figure 2 for an area map and sampling station locations. Table 1 contains sampling station descriptions.

1.2 SHORELINE SURVEY OF SOURCES OF POLLUTION

Survey Methods

A comprehensive shoreline survey of Area E-2 was completed on December 17th, 2013. Evaluations of properties in the area were conducted by NC Shellfish Sanitation staff to determine potential sources of pollution entering shellfish growing waters. An annual shoreline survey was conducted in 2014 as well.

New actual and potential pollution sources for this survey were mapped using GPS (Figure 3), and pollution source data were collected using Trimble's sub-meter GeoXT GPS receiver with EVEREST multipath rejection technology. Data were collected in the SSF format using real-time corrections from the integrated Wide Area Augmentation System receiver. The data were post-processed using GPS Pathfinder Tools applications in order to get the most precise data. Additionally, a Geographic Information System (GIS) was developed, including pertinent information and digital pictures for each source.

Area E-2: Mainland Shoreline Survey

A comprehensive shoreline survey of the mainland portion of Area E-2 was completed on December 17th, 2013. The Carteret County Health Department

was notified prior to the survey, and they have agreed to provide corrective action and follow-up for any malfunctioning septic systems or illegal onsite wastewater discharges discovered.

The mainland side of Area E-2 includes the waters of Bogue Sound, extending from just east of Gales Creek to just west of Spooners Creek. According to US Census data from 2010, the permanent population within this portion of the growing area is about 3,054, a small increase from the population of 2,729 seen in 2000.

Non-Point Source Pollution

Marinas - Marina facilities are evaluated during the shoreline survey because of their potential to affect the suitability of shellfish for harvest through inputs of both biological and chemical contaminants. A marina is defined as "any water area with a structure (dock, basin, floating dock, etc.) which is utilized for docking or otherwise mooring vessels and constructed to provide temporary or permanent docking space for more than 10 boats" (15A NCAC 18A .0901). The waters enclosed by a marina are classified as *Prohibited* for the harvest of shellfish, and an additional area beyond the marina can also be classified as *Prohibited* depending on the number of boat slips present.

Overall, five marinas were identified (Figure 4) within this portion of the growing area. There have been no significant changes at any of these marinas since the 2010 shoreline survey was completed.

Stormwater – Stormwater can adversely impact shellfish growing areas by rapidly transporting fecal coliform bacteria and other contaminants from the land to the water (Figure 5). Many of the neighborhoods within the E-2 watershed include extensive stormwater systems, and most of these do not include any type of treatment before discharging into the surrounding creeks or the sound. Runoff from these areas can have a significant impact on the growing area during periods of moderate to heavy rain.

The Jumping Run Creek watershed is particularly heavily impacted by stormwater runoff. In addition to runoff from several residential neighborhoods, the creek also receives drainage from a large commercial/industrial park. All of the runoff from this park drains to a series of constructed wetlands that provide at least some treatment before the water is discharged through a large pipe under Highway 24 and into the creek. There are also series of old sandpits that have been converted into ponds along the upper reaches of Jumping Run Creek. During periods of high water, these ponds overflow into an adjacent ditch, which then runs through a mobile home park before flowing into the creek. It is likely that both of these large drainage systems have a significant impact on the water quality of the creek and the adjoining portion of Bogue Sound.

Subdivisions - Subdivisions are noted in the survey as an indicator of population growth, as well as for their tendency to concentrate potential sources of pollution such as septic systems, pet wastes, and stormwater (Figure 6).

The Breakwater subdivision, which was new as of the 2010 survey, has since begun to grow, and now includes 17 homes. This subdivision also includes a curb and gutter stormwater system and a small 6-slip community docking area.

One new subdivision, which has yet to be named, has just begun development to the west of the Soundview neighborhood. At this time, a new road has been built, but it is unclear how many lots will be included.

Otherwise, there has been very little growth within this portion of the growing area since the last survey was completed in 2010.

Onsite Wastewater – Almost all homes within this portion of E-2 are served by onsite wastewater systems. Most of these systems were visited and inspected, and were found to be functioning properly.

The septic issues that were noted during the 2010 survey were revisited, and were found to be functioning properly (Figure 7).

Wastewater Treatment Plants – Although there are no wastewater treatment plants located within this portion of the E-2 watershed, the Brandywine Bay and The Village at Camp Morehead subdivisions maintain a series of liftstations that pump from the E-2 watershed to a package wastewater treatment plant in the E-4 growing area. There have been no reported problems at any of these lift stations in the last several years.

Wildlife and Domestic Animals – Domestic pets and wildlife are both common throughout this portion of E-2, and could have some impact on surrounding water quality. See Figure 8 for locations.

Poisonous or Deleterious Substances – There are no poisonous or deleterious substances of note that could have an impact on this portion of the growing area.

Area E-2: Bogue Banks Shoreline Survey

A comprehensive shoreline survey of the Bogue Banks portion of Area E-2 was completed on December 13th, 2013. The Carteret County Health Department was notified prior to the survey, and they agreed to provide corrective action and follow-up for any malfunctioning septic systems or illegal onsite wastewater discharges discovered.

The Bogue Banks portion of E-2 includes the waters of Bogue Sound extending between the towns of Salter Path and Pine Knoll Shores. According to US Census block data from 2010, the permanent population within this portion of the growing is about 1,177, a slight decrease from the 1,280 seen in 2000. Many of the homes in this area are seasonal, so it is likely that the population fluctuates greatly and is much higher in the summer months.

Non-Point Source Pollution

Wastewater Treatment Plants – Since the 2010 triennial survey was completed, six package wastewater treatment plants have been completely rebuilt within the E-2 watershed, at the Summerwinds, Colony By The Sea, Bogue Shore Club, The Oceans, McGinnis Point, and Genesis Condominium communities (Figure 7).

The new plant at Summerwinds was completed in 2011, and the treatment system includes activated sludge, extended aeration, and membrane filtration, along with a subsurface LPP system. After the new plant was completed, the Nautical Club condominiums connected on to this system as well. The original plan was to construct two dual-path treatment trains, but at this point, a single train is adequate to treat all of the wastewater being generated from these two condominium complexes. As flow increases, the second train will be built.

A new subsurface LPP drainfield was built at Colony by The Sea in 2011 to replace the failing drainfield that was originally in place. In 2012, a new sequencing batch reactor plant was constructed that includes UV disinfection.

New sequencing batch reactor plants were built at The Oceans and Genesis in 2011 as well. Effluent from The Oceans is disinfected with chlorine before being discharged into a large, pre-existing conventional subsurface drainfield, while effluent from Genesis is disinfected by UV before discharging to a series of rotor fields.

A new Advantech system was built at the Bogue Shore Club in 2011, and it makes use of UV disinfection before discharging to a large new subsurface drip irrigation field.

A new tertiary treatment, activated sludge plant was built at McGinnis Point in 2011. Shortly after construction, this plant, which is built entirely out of concrete, experienced issues with cracking and subsequent leakage of wastewater from the walls of the tanks. Some of the tanks were replaced, and some of the other cracks were sealed, and all of the tanks were lined to prevent further problems. Effluent at this plant is disinfected by UV before being discharged to the pre-existing drip irrigation field nearby.

The treatment plants at Windward Dunes, Beachwalk, and Grande Villas, all of which were completed during the 2010 triennial survey, have continued to function well since they went online.

Although the Pine Knoll Shores Aquarium continues to maintain a Zenon ultrafiltration system for wastewater treatment, the ozone disinfection system has malfunctioned, so water is no longer treated to reuse quality to be used in the aquarium restrooms. Instead, all wastewater is now discharged to the large drip irrigation field located in the forest nearby.

As of the annual survey in July 2014, the WWTP at the aquarium had been refurbished, including sandblasting, resealing and repainting. A filter cleaning tower had been added as well. The ozone system continued to have problems, so the plant still made use of UV disinfection.

After having problems meeting their nutrient limits, the owners of the Sea Isle Plantation plant added anoxic zones to the treatment system to help with denitrification. This system has been working well since that time.

There have been no significant changes at the Coral Bay West, Mariners Point, Ocean Bay Villas, Whaler Inn, Ocean Terrace, or Pine Knoll Townes systems in the last several years.

Marinas – There have been no significant changes at any of the marinas within this portion of the growing area. The total slip count within the Mariners Point Marina has dropped from 75 to 54, but this was not due to any change in structure. Rather, the method for including jet-ski slips within the total slip count has changed, and thus the 21 jet-ski slips are no longer included.

The Paradise Bay Mobile Home Park includes a series of canals in which homeowners have built small individual piers for docking their boats. The slip count within these canals has increased slightly in the past few years and now stands at 86. This increase in slip count does not impact the *Prohibited* area boundary surrounding these canals.

Stormwater – Stormwater can adversely impact shellfish growing areas by rapidly transporting fecal coliform bacteria and other contaminants from the land to the water. Although stormwater runoff is not a significant issue along much of Indian Beach, it is the primary contributor to fecal coliform levels within the Pine Knoll Shores canals and along the soundside portion of Salter Path (Figure 5).

Subdivisions – Construction at the Nautical Club Condominiums has been completed, and the facility, which includes 70 condos, is now receiving limited use. All wastewater from the complex is treated at the nearby Summerwinds Package Wastewater Treatment Plant, and all stormwater is retained on the property, where it is treated via infiltration.

Otherwise, there has been very little growth within this portion of E-2. No new subdivisions or condominium complexes have been built, and there have been very few homes built within existing developments.

Onsite Wastewater – Individual onsite wastewater systems serve many of the private residences in Salter Path and Pine Knoll Shores. Many of these systems were visited and inspected during this survey, and all were found to be functioning properly.

Wildlife and Domestic Animals – The Pine Knoll Shores Aquarium has a series of discharges from their exhibits to the wetlands along the back side of the property. The filter backwash from the large ocean tank (20,000 gallons/month of flow) and from the otter tank (3,000 gallons/month of flow) are tested regularly to assure that they are free from contamination. Generally, the ocean tank discharge is free from fecal coliform bacteria, while the otter tank discharge averages between 20 and 30 MPN. Considering the low flow and the fact that there is no direct hydrological connection between the discharge and the sound, the otter tank discharge is not a high concern at this time. Contact will be made with aquarium husbandry staff annually to ensure that sampling results and procedures have not changed.

There is a relatively large population of feral cats that live around the residences and businesses of Salter Path. Several people maintain regular feeding stations on their properties, so these cats spend most of their time near to the water. Waste from these cats could have an impact on surrounding water quality following rainstorms.

1.3 HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

Rainfall and the resultant runoff is the primary source of transport for fecal coliform bacteria in the E-2 area. Runoff from development along Highway 24 on the mainland and along the Jumping Run Creek area have resulted in the adjacent waters being classified as *Conditionally Approved* in the past.

Parts of E-2 are managed by a conditional area management plan. The portion of E-2 classified as *Conditionally Approved* that is normally closed to shellfish harvest includes the waters between channel markers #14 and #19 from the Intracoastal Waterway (IWW) to the mainland, in the Jumping Run Creek area (Figure 2). These waters can be temporarily opened when weather conditions are favorable and when bacterial sampling results of water and shellfish meats are acceptable. There have been 6 temporary openings for a total of 41 days during this report period. See Table 6 for a list of temporary openings in the area and Table 7 for bacteriological data from water samples collected prior to

temporary openings. Acceptable shellfish meat sample results are obtained in addition to acceptable water sample results.

The portion of E-2 classified as *Conditionally Approved* that is normally open to shellfish harvest includes the waters to the east of channel marker #14 from the IWW to the mainland, and the waters to the west of channel marker #19 from the IWW to the mainland (Figure 2). Temporary closures to shellfish harvest occur in these sections of the Bogue Sound after 2.5 inches of rain or greater within a 24-hour period. During the time period of this report, portions of this area have been closed 22 times for a total of 131 days. Five of these closures, totaling 36 days, were due to Tropical Storm Nicole in September 2010, Hurricane Irene in August 2011, Tropical Depression Beryl in May 2012, Hurricane Sandy in October 2012 and Tropical Storm Karen in October 2013. See Table 8 for a listing of temporary closures in this area. Table 9 contains sample results used to reopen the area.

Several rain gauges are used to monitor the rainfall for E-2 area. These include a station in the Pine Knoll Shores area and another in the Brandywine Bay area on the mainland. In addition, rain gauge stations in adjacent growing areas are also used to monitor rainfall in the E-2 area. Average monthly rainfall in the area during the time frame of this report was 4.54 inches (Table 10), which was an increase from the 4.33 inch monthly average during the time period of the last Sanitary Survey.

Tidal movements in the E-2 area of Bogue Sound are primarily influenced by Beaufort Inlet, located approximately seven miles to the east. Currents move slowly throughout the area due to the distance from the inlet. Salinities are generally high and ranged from 24 parts per thousand (ppt) to 38 ppt during the time frame of this report (Table 11).

1.4 BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

The monitoring of Area E-2 adheres to the systematic random sampling strategy outlined by the National Shellfish Sanitation Program (NSSP) and consists of 30 sample sets from 17 sampling stations (Figure 2).

The bacteriological survey covered for the preparation of this report included water samples from 7/28/2010 through 1/12/15. During that time period, a total of 510 water samples were collected during times that the waters were open to the harvest of shellfish, and analyzed for fecal coliform bacteria in compliance with the systematic random sampling regime. Table 12 lists, for each individual sampling station, the date the sample was obtained, the tidal cycle upon which the sample was taken, and ambient salinity. Fecal coliform Most Probable Number (MPN) and summary statistics are listed as well.

1.5 SUMMARY OF BACTERIOLOGICAL DATA ANALYSIS

All stations in E-2 located in waters open to the harvest of shellfish currently meet National Shellfish Sanitation Program (NSSP) criteria for approved shellfishing waters. Station #8A, located outside the mouth of Jumping Run Creek, is exhibiting an estimated 90th percentile of 64, although there have been only 28 samples collected since it was initiated in 2010. This station is located in waters classified as *Conditionally Approved* and closed to the harvest of shellfish.

Station #29A was added outside of the Sea Isle Plantation Marina closed buffer zone in 2014 to ensure the closure is adequate. Station #29, now inactive, had been located within the closed buffer zone and exceeded approved bacteriological standards. There have only been six samples collected so far, with two of the results being elevated. This new station will continue to be monitored closely as more samples are collected.

Stations #4A and #5A are located outside Gull Harbor and Soundview Canal respectively. These stations are located in waters closed to shellfish harvest and are classified as *Conditionally Approved*. They replaced stations #4 and #5 which were located within the *Prohibited* classification in the basin and canal.

Although these two stations may meet approved bacteriological standards achieved by random sampling once they reach a minimum of 30 samples, there is evidence that bacteria levels at these stations becomes elevated after low rainfall thresholds due to the amount area that these basins drain. For this reason, the current classification remains correct.

Station #19C, located off Pine Knoll Shores between the entrance canals, has 28 sample results so far. The current geometric mean is 2.63 and the estimated 90th percentile is 6, which would meet approved standards if the station had a minimum of 30 sample results. This area will be evaluated for a possible opening at the time of the next Sanitary Survey.

Refer to Table 13 for summary and descriptive bacteriological statistics.

1.6 OVERALL EVALUATION AND RECOMMENDATIONS

The E-2 area is classified properly and no changes are necessary at this time.

2.0 CONDITIONAL AREA MANAGEMENT PLAN

2.1 INTRODUCTION

Area E-2 includes the waters of Bogue Sound bounded on the east by an imaginary line drawn from Spooners Creek on the mainland to Hoop Pole Landing on Bogue Banks. The area is bounded on the west by an imaginary line

beginning on the mainland east of Gales Creek and proceeding through IWW Beacon #21 across the Sound to a point on Bogue Banks at the west end of Salter Path. The E-2 area receives drainage from a relatively small area when compared to some other growing areas. Still, water quality in the E-2 area is affected by rainfall and the resultant runoff. As a result, portions of growing area E-2 are managed as conditionally approved.

2.2 MANAGEMENT PLAN

Two classifications are used to conditionally manage the waters of E-2. There is a portion of the E-2 area in Bogue Sound that is normally closed to shellfish harvesting and is classified as *Conditionally Approved Closed*. This area comprises the portion of Bogue Sound between channel markers #14 and #19 from the IWW to the mainland (Figure 2). This area can be opened to shellfishing on a temporary basis during periods of favorable weather conditions that make nonpoint source contamination unlikely. Sampling is conducted of both water and shellfish meats prior to recommending a temporary opening. Sampling continues after opening with the frequency determined by the area and hydrographic and meteorological conditions. Closure of the temporarily opened area occurs after 0.5 inches of rain or greater within a 24-hour period or 0.75 inches of rain within a 48-hour period.

Two sections of Bogue Sound in the E-2 area are classified as *Conditionally Approved Open* (Figure 2). These are the two areas on both sides of the *Conditionally Approved Closed* area between the IWW and the mainland. These two areas are closed after 2.5 inches of rain or greater within a 24-hour period and remain closed until satisfactory bacteriological results are obtained from water samples in the area.

During extremely heavy rainfall events or unusual storm events such as a hurricane, additional temporary closures are recommended. These types of events are classified as emergency closures and would close all waters in the E-2 area. The closures remain in effect until such time as sampling indicates water quality meets approved area criteria and shellfish have had sufficient time to cleanse.

Several rain gauges located are used to monitor the rainfall for E-2 area. These include a station in the Pine Knoll Shores area and another in the Brandywine Bay area on the mainland. In addition, rain gauge stations in adjacent growing areas are also used to monitor rainfall in the E-2 area. Monthly tally sheets are sent in to the Shellfish Sanitation office (Table 10). In addition, the contact person for the rain gauge is asked to call the office when the gauge exceeds 2.5 inches of rain or greater in a 24 hour period. The rain gauge station contacts can be easily contacted by phone for daily rainfall amounts. Additional resources, such as NOAA National Weather Service data is used.

The management plan is subject to change as additional information is collected.

2.3 IMPLEMENTATION OF MANAGEMENT PLAN

If the rainfall level in the management plan for the area is exceeded, a proclamation is issued by DMF resulting in an immediate closure of the area. The proclamation is issued by fax, mail, email or by area law enforcement officers who in turn distribute it to local establishments in the affected area for public notification.

After hours and on weekends, Shellfish Sanitation personnel will be in contact with rain gauges contacts and with the DMF Communications Center for information regarding rainfall reports. The DMF Communications Center is on duty 24 hours per day.

2.4 PATROL OF CLOSED AREA

Patrol of shellfish harvesting areas is the sole responsibility of the Division of Marine Fisheries Marine Patrol Section. For information regarding enforcement of closures and patrol of closed area, see the Patrol Policy of the DMF Marine Patrol Section.

2.5 REOPENING CRITERIA

After the rainfall event has ended and sufficient time has elapsed to allow shellfish to cleanse, the temporarily closed area will be sampled. If the results indicate fecal coliform levels to be acceptable, recommendation will be made to DMF to reopen the area. DMF issues and distributes the proclamation. In accordance with 15A NCAC 113-221 of the DMF rules, a 12-hour notification is required for reopening of closed shellfishing areas.

3.0 CONDITIONAL AREA EVALUATION

3.1 INTRODUCTION

The National Shellfish Sanitation Program (NSSP) C*onditionally Approved* classification for shellfish growing waters allows the utilization of valuable shellfish resources by permitting harvesting when environmental conditions cause fecal coliform levels to be satisfactory in areas that would otherwise be closed to the harvesting of shellfish. In order for the State to be in compliance with NSSP guidelines, conditionally approved areas must be evaluated yearly in accordance with Model Ordinance, Chapter IV, @ 03, C., (3), (a) and (b) of the NSSP Guide For The Control Of Molluscan Shellfish. This report is intended to comply with that portion of the NSSP yearly evaluation of the *Conditionally Approved* area for the Bogue Sound area, E-2, in Carteret County. Each of the six required elements of the evaluation will be included in this report.

3.2 COMPLIANCE WITH MANAGEMENT PLAN

The monitoring of area E-2 adheres to the systematic random sampling strategy outlined by the National Shellfish Sanitation Program (NSSP) and consists of 30 sample sets from 17 sampling stations (Figure 2, Table 1) located throughout the area. The area has additionally been sampled in accordance with management plan criteria for the conditionally approved classification of the NSSP.

During the data period of this sanitary survey report, portions of the conditionally approved section of Area E-2 were temporarily closed 22 times for a total of 131 days. Five of these closures, totaling 36 days, were due to Tropical Storm Nicole in September 2010, Hurricane Irene in August 2011, Tropical Depression Beryl in May 2012, Hurricane Sandy in October 2012 and Tropical Storm Karen in October 2013. See Table 8 for a listing of temporary closures in this area. Table 9 contains sample results used to reopen the area. In accordance with the management plan, sampling is intensified after rainfall events, and reopening of the temporarily closed area does not occur until satisfactory bacteriological results are obtained.

Review of the management plan for area E-2 indicates that all closures were made in accordance with the requirements of the plan. Rain events that exceed management plan criteria of 2.5 inches of rain within a 24-hour period result in a temporary closure proclamation of the conditionally approved area.

3.3 ADEQUACY OF REPORTING

For coastal North Carolina, rainfall, which results in significant runoff, is the process most detrimental for shellfish water quality. Currently, all management plans for *Conditionally Approved* waters are dependent on the amount of rainfall for the particular growing area. Rainfall amounts vary tremendously, and there are often significant differences within a two-mile area. Rainfall information is gathered daily from the rain gauge stations established throughout the coastal region of North Carolina. Current procedures for obtaining rainfall information for Area E-2 include the establishment of rain gauge stations located in Pine Knoll Shores and the Brandywine Bay area. Rainfall amounts are recorded daily. Area E-2 is also monitored for rainfall using gauges in neighboring growing areas.

NOAA Precipitation charts and radar from NOAA and other commercial weather websites are also accessed online in order to validate reported rainfall totals from our reporting stations. Rainfall amounts recorded by the rain gauge stations are included in Table 10.

3.4 COOPERATION OF PERSONS INVOLVED

The conditionally approved area concept is a cooperative effort involving the Marine Patrol and Shellfish Sanitation Sections of the Division of Marine Fisheries (DMF). The Shellfish Sanitation Section is responsible for monitoring conditionally approved growing areas and developing management plans. Patrol of shellfish harvesting waters and authority to open and close these waters is the sole responsibility of the DMF Marine Patrol. The administrative procedures to implement these actions are outlined in a memorandum of understanding between the Division of Marine Fisheries and the Shellfish Sanitation Section. No major problems have occurred with implementing the conditionally approved area concept in North Carolina.

Rainfall information is gathered from various individuals throughout the state including private citizens, DMF marine patrol and Shellfish Sanitation personnel. Additional resources are used to determine the amount and locations of precipitation, such as the NOAA National Weather Service precipitation website.

3.5 COMPLIANCE WITH APPROVED GROWING AREA CRITERIA

Review of the bacteriological data collected for Area E-2 shows that none of the stations located in open shellfishing waters in E-2 currently exceed NSSP approved criteria.

3.6 FIELD INSPECTION OF POLLUTION SOURCES

A comprehensive shoreline survey of Area E-2 was completed on December 17th, 2013. Evaluations of properties in the area were conducted by NC Shellfish Sanitation staff to determine potential sources of pollution entering shellfish growing waters. An annual shoreline survey was conducted in 2014 as well.

3.7 COLLECTION OF WATER SAMPLES

The monitoring of Area E-2 adheres to the systematic random sampling strategy outlined by the National Shellfish Sanitation Program (NSSP) and consists of 30 sample sets from 17 sampling stations (Figure 2).

The bacteriological survey covered for the preparation of this report included water samples from 7/28/2010 through 1/12/15. During that time period, a total of 510 water samples were collected during times that the waters were open to the harvest of shellfish, and analyzed for fecal coliform bacteria in compliance with the systematic random sampling regime. Table 12 lists, for each individual sampling station, the date the sample was obtained, the tidal cycle upon which the sample was taken, and ambient salinity. Fecal coliform Most Probable Number (MPN) and summary statistics are listed as well.

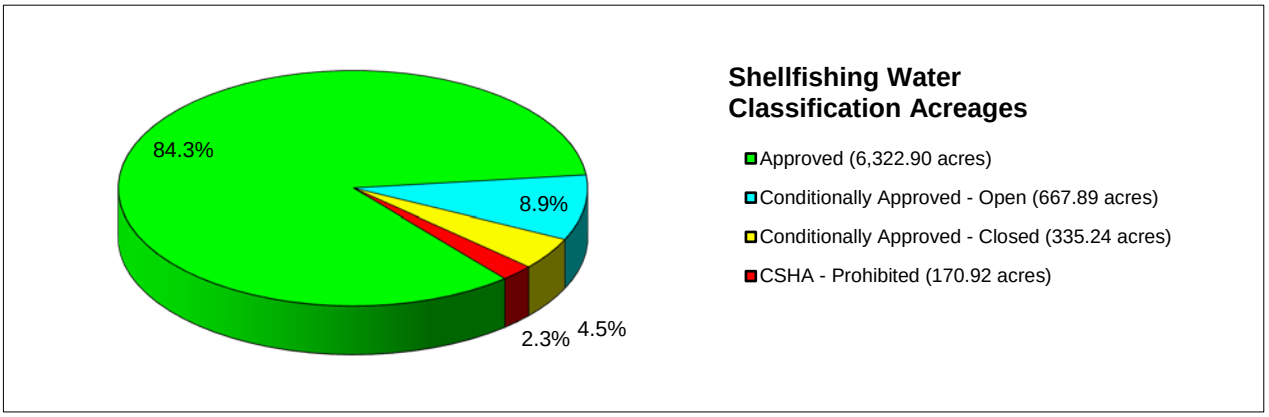
In addition, 85 bacteriological samples were collected and analyzed in order to assess water quality before reopening after temporary closures (Table 9).

3.8 SUMMARY

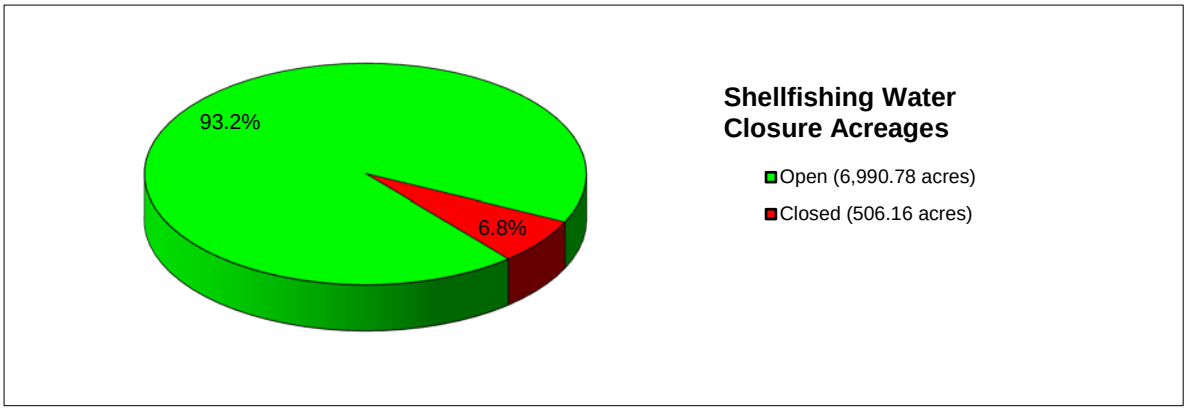
The C*onditionally Approved* area classification of the NSSP provides a way to utilize a resource for direct market purposes that would otherwise only be available for relaying or depuration purposes. Refinement of management plans is critical to assure that shellfish harvested from the conditionally approved growing area are from waters that meet approved area criteria.

Figure 1: Acreage

REGION: (All)	County: (All)	Growing Area: E2



Classification	Acres	Percent of Total
Approved	6,322.90	84.3%
Conditionally Approved - Open	667.89	8.9%
Conditionally Approved - Closed	335.24	4.5%
CSHA - Prohibited	170.92	2.3%
Total	7,496.94	100.0%



Status	Acres	Percent of Total
Open	6,990.78	93.2%
Closed	506.16	6.8%
Total	7,496.94	100.0%

E-2 Growing Area:

Shellfishing Water Sampling Stations

Legend

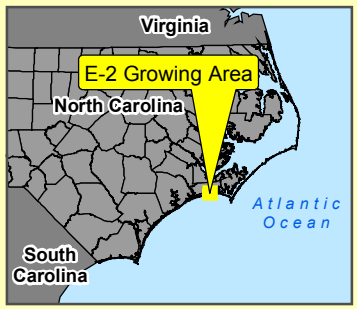
- # Sampling Stations
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 0.3 0.6
Miles



North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
February 11, 2015

Sampling Stations

Table 1: Sampling Station Descriptions

STATION#	DESCRIPTION OF SITE	COUNTY
1	By dock, Camp Morehead	CARTERET
3	Half way between Brandywine Bay & Gull Harbor, along shore	CARTERET
4A	40 yds. outside mouth of Gull Harbor in conditionally approved closed area.	CARTERET
5A	39 yds. outside mouth of Sound View Canal in conditionally approved closed area.	CARTERET
6	Flashing Beacon #13, ICWW	CARTERET
7	Flashing Beacon #17, ICWW	CARTERET
8A	75 yds. outside mouth of Jumping Run Creek in conditionally approved closed area.	CARTERET
10	1200 yards west of Station #9, Presbyterian Camp	CARTERET
11	Flashing Beacon #21	CARTERET
14	By Headen Willis Fish House	CARTERET
17	By old dock, Hoffman Estate	CARTERET
19C	Middle of closed Pine Knoll Shores closed area.	CARTERET
25	450 yards northeast of Station #13, in sound	CARTERET
27	Off point west end of Salter Path	CARTERET
28	Outside of eastern Pine Knoll Shores canal opening	CARTERET
29A	100 yds. north of mouth to Sea Isle Plantation Marina	CARTERET
30A	150 yds. off entrance to Beacons Reach Westport Marina	CARTERET

E-2 Growing Area: Actual and Potential Pollution Sources

Legend

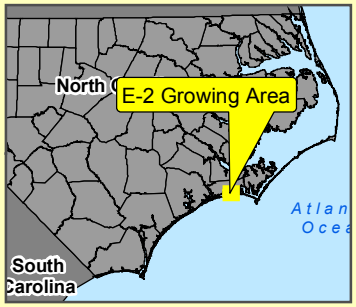
- Animals
- Areas of Concern
- Dockage
- Golf Courses
- Stormwater
- Subdivisions
- Wastewater
- Sampling Stations
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N W E S

0 0.3 0.6 Miles



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Shellfish Sanitation and
Recreational Water Quality Section
February 11, 2015

Pollution: All Sources

E-2
Growing Area:

Dockage

Legend

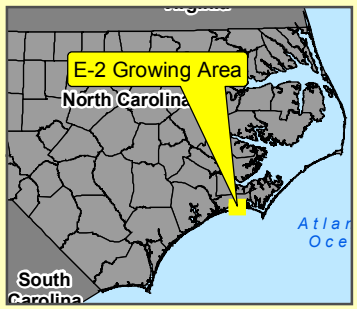
- Dockage
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 0.35 0.7
Miles



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Recreational Water Quality Section
February 11, 2015

Table 2: Marinas

SGA_Index	Marina Name	Total Slips	Pumpout?	Comments
248	Davis Landing	8	No	All Slips Privately Owned
249	Hall Haven	56	No	-
250	Brock Basin	38	No	-
251	Sea Isle Plantation North Marina	96	Yes	-
252	Beacons Reach Marina (Westport)	76	No	Moorings At Mouth of Basin Removed
253	Mariners Point Marina	54	No	PWC Slips Removed From Total Slip Count
254	Homers Point Marina	75	No	-
255	Paradise Bay Mobile Home Park Marina	86	No	Individual Docks In Three Canals
256	Tradewinds Marina	60	No	-
257	Brandywine Bay Marina	40	No	-
258	Gull Harbor Marina	32	No	-
259	Soundview Marina	61	No	Private Docks Lining Canals
260	Somerset Plantation Marina	10	No	-
261	Barnesfield Marina	30	No	Private Docks Lining Canals

E-2
Growing Area:

Stormwater

Legend

- Stormwater
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
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0 0.3 0.6
Miles

North Carolina Department of
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Pollution: Stormwater

E-2
Growing Area:

Subdivisions

Legend

- Subdivisions
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
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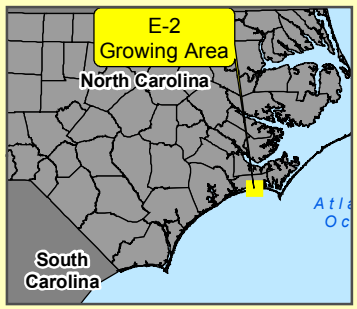
Miles



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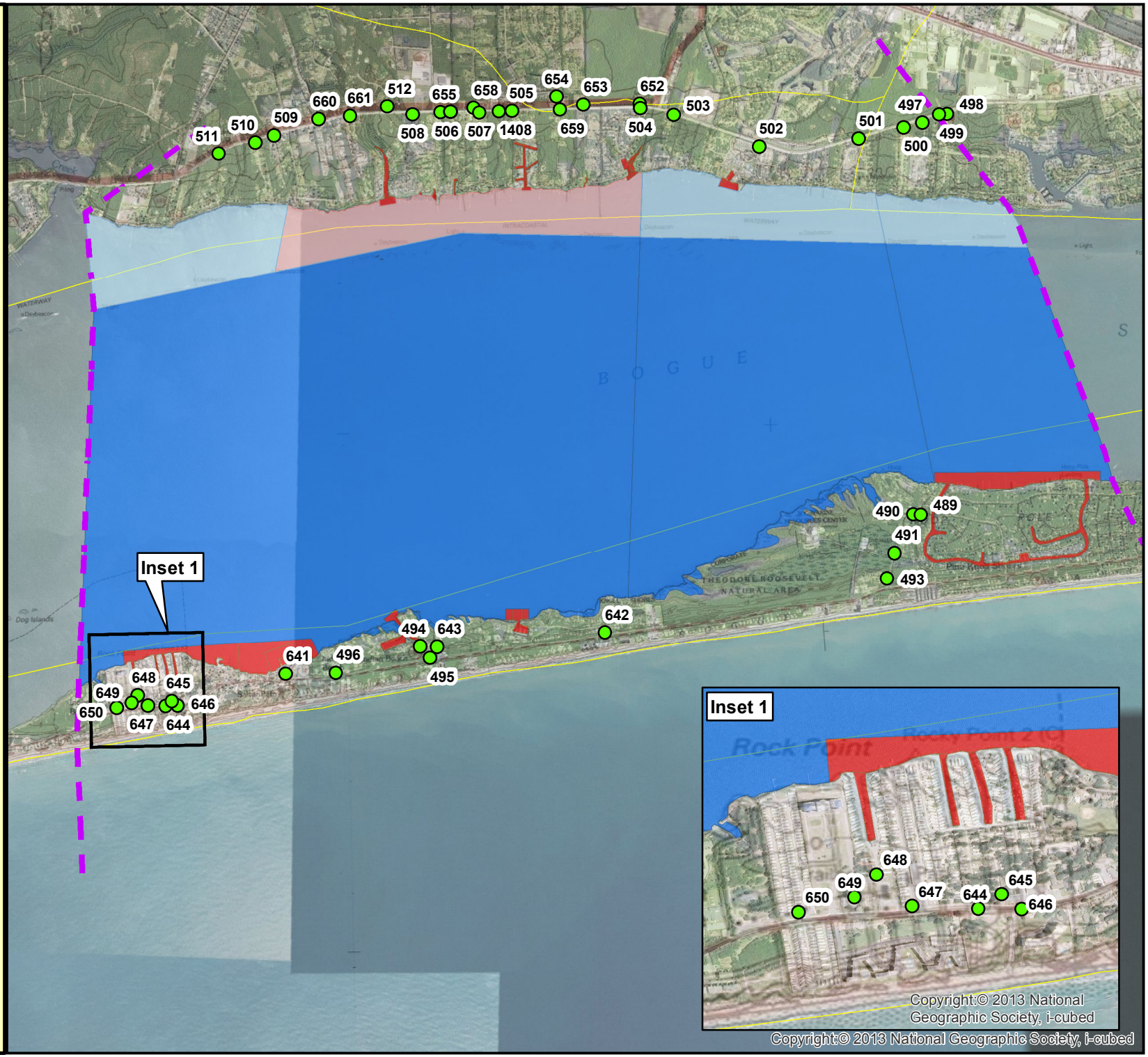

Pollution: Subdivisions

Table 3: Subdivisions

SGA_Index	Subdivision Name	# Lots	# Homes 2010	# Homes 2013
489	Arborvitae and Ramsey Drive	0	86	87
490	McGinnis Point	34	64	64
491	Live Oak Forest	22	18	18
493	Pine Knoll Village	14	11	11
494	Sea Isle Plantation North	85	50	52
495	Sandpiper Village (Soundside)	15	9	9
496	Kiawa	24	14	14
497	Phillips Landing	38	30	30
498	Woodridge	36	35	35
499	Lansdale	13	13	13
500	Bay Colony	30	22	22
501	The Village at Camp Morehead By The Sea	58	36	36
502	Brandywine Bay	520	515	516
503	Bogue Landing	26	12	12
504	Gull Harbor	75	72	72
505	Soundview	56	47	47
506	Somerset Plantation	65	60	60
507	Ho Ho Village	33	30	31
508	Barnesfield	53	42	42
509	Florida Park	73	59	59
510	Buena Vista	29	19	19
511	Deep Bay	26	15	15
512	Trailwood	16	15	15
641	Mariners Point	0	51 Condos	51 Condos
642	Beacons Reach (Soundside)	79	71	71
643	Ocean Bay Villas	0	51 Condos	51 Condos
644	Nautical Places	0	0	0
645	Paradise Bay Mobile Home Park	380	380	380
646	Grande Villas At The Preserve	0	86 Condos	86 Condos
647	Sea Gull Shores Mobile Home Park	41	41	41
648	Tradewinds Mobile Home Park	0	57	61
649	The Nautical Club (Soundside)	0	0	70
650	Oceanfront Mobile Home Park (Soundside)	0	0	141
652	Pinewood	13	9	9
653	Dutch Treat Mobile Home Park	0	108	108
654	Paradise East	282	235	235
655	Breakwater	30	6	17
658	Wooded Acres	35	31	31
659	Twin Oaks	43	25	25
660	Weeping Oaks Mobile Home Park	0	44	55
661	Waters Edge RV Park	88	63	42
1408	Unnamed Subdivision	0	0	0

E-2 Growing Area:

Wastewater

Legend

Wastewater

- PACKAGE PLANT
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
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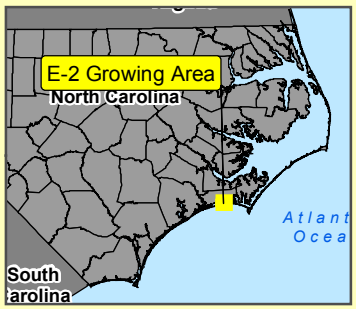
0 0.5 1 Miles



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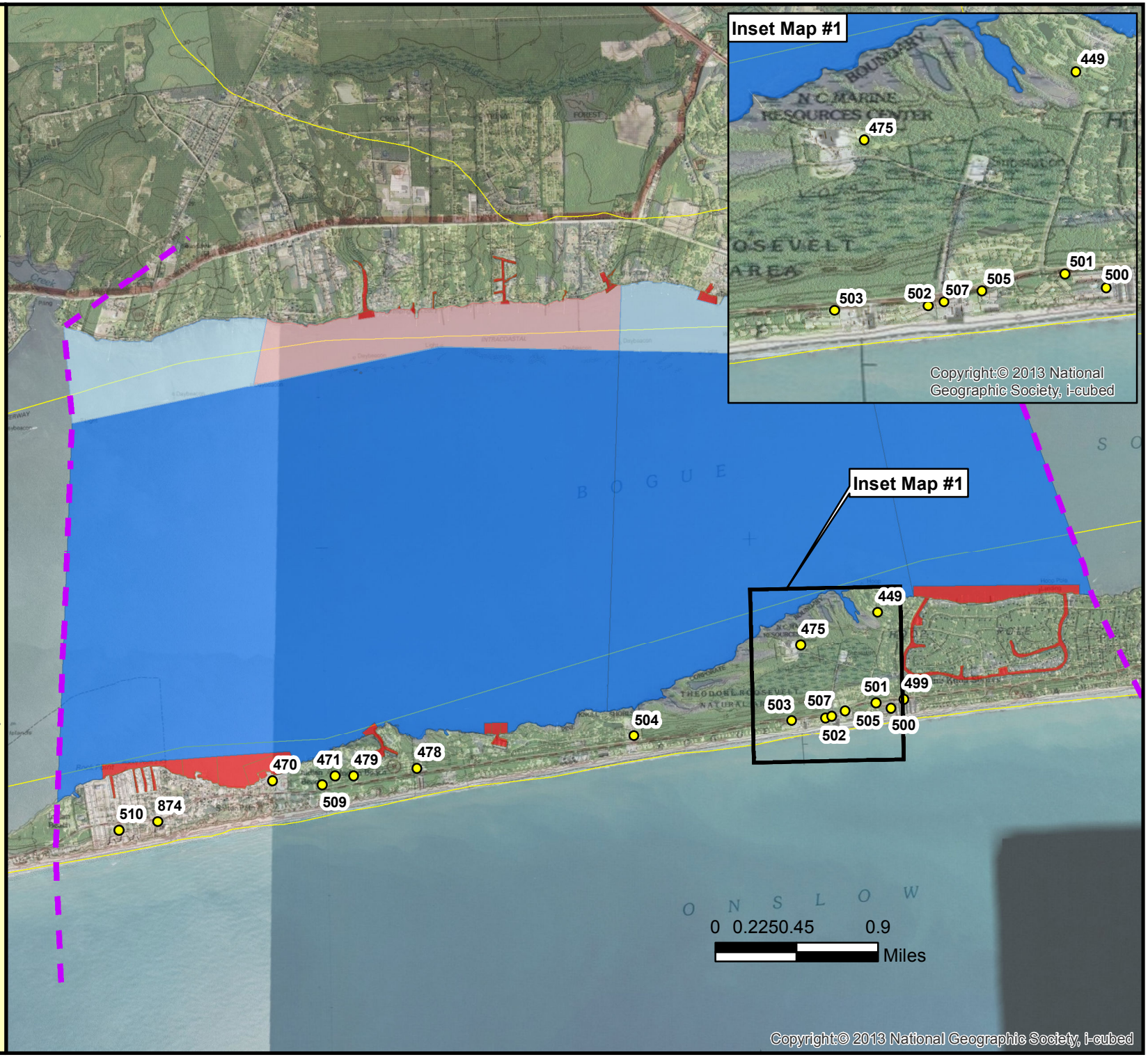


Pollution: Wastewater

Table 4: Wastewater

SGA_Index	Comments
448	McGinnis Point Lift Station; Lift Station Redone
449	McGinnis Point Package Wastewater Treatment Plant; Cracking Walls Replaced and Tanks Lined
469	Mariners Point Lift Station
470	Mariners Point Package Wastewater Treatment Plant
471	Windward Dunes Package Wastewater Treatment Plant; Recip System
472	Beacons Reach Lift Station #3
473	Beacons Reach Lift Station #4
474	Beacons Reach Lift Station #5
475	Pine Knoll Shores Aquarium Wastewater Treatment Plant; Zenon Ultrafiltration System; Reuse System Not Active
476	Aquarium Otter Tanks Drained To Wetland (500 Gallons/Week)
477	Aquarium Fish Tank Backwash System Drains Here
478	Ocean Bay Villas Package Wastewater Treatment Plant
479	Sea Isle Plantation North Package Wastewater Treatment Plant; Added Anoxic Zones To Improve Denitrification
487	Carolina Water Service Lift Station #10
488	Carolina Water Service Lift Station #2
498	Carolina Water Service Lift Station #11
499	Pine Knoll Townes Phase II Package Wastewater Treatment Plant
500	Ocean Terrace Package Wastewater Treatment Plant
501	Genesis Package Wastewater Treatment Plant; Sequencing Batch Reactor Plant
502	Beachwalk Package Wastewater Treatment Plant; New Advantech Plant
503	Bogue Shore Club Package Wastewater Treatment Plant; Advantech System
504	Beacons Reach Package Wastewater Treatment Plant; Includes Large Storage Tank To Hold Water Before Use In Irrigation
505	The Oceans Package Wastewater Treatment Plant; Sequencing Batch Reactor Plant
506	The Oceans Lift Station
507	The Whaler Inn Package Wastewater Treatment Plant
508	The Whaler Inn Lift Station
509	Colony By The Sea Package Wastewater Treatment Plant; New Sequencing Batch Reactor Plant
510	Summerwinds Package Wastewater Treatment Plant; Nautical Club Connected
511	Coral Bay West Package Wastewater Treatment Plant
874	Grande Villas Package Wastewater Treatment Plant
1081	The Nautical Club Lift Station

E-2
Growing Area:

Animals

Legend

Animals

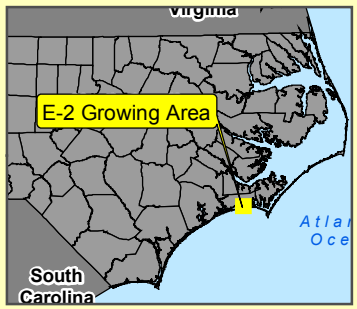
- CATTLE
- DOGS
- GOATS
- HORSES
- POULTRY
- WATERFOWL
- OTHER-SEE COMMENTS
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N W E S

0 0.35 0.7 Miles



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Pollution: Animals

Table 5: Animals

SGA Index	*Comments*
253	Horses
254	Horses

Table 6: Temporary Openings

DATE	DESCRIPTION	CLOSE	OPEN	REASON
03/23/11	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Marker #14 and #19 **with the exception** of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries.		03/24/11	Sampling
03/31/11	**Bogue Sound** - All those waters in the Bogue Sound closed area between Intracoastal Waterway Channel Marker #14 and #19 with the exception of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries.	03/31/11		Rainfall
05/11/11	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19 **with the exception** of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries (see map).		05/12/11	Sampling
05/14/11	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19 **with the exception** of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries (see map).	05/14/11		Rainfall
05/25/11	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19 **with the exception** of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries (see map).		05/26/11	Sampling
06/18/11	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19.	06/18/11		Rainfall
08/24/11	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19 **with the exception** of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries (see map).		08/25/11	Sampling
08/25/11	**Bogue Sound** temporarily opened area closes at sunset, Aug. 26.	08/26/11		impending Hurricane Irene
01/06/12	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19 **with the exception** of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries (see map).		01/07/12	Sampling
01/12/12	**Bogue Sound Area – All those waters** in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19 **with the exception** of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries.	01/12/12		Rainfall
05/30/13	**Bogue Sound Area** – All those waters in the Bogue Sound closed area between Intracoastal Waterway Channel Markers #14 and #19 with the exception of all those waters in Gull Harbor and within 275 feet from the last dockage area, all those waters in Soundview canals and within 325 feet of the last dockage area, all those waters in Jumping Run Creek and within 275 feet of the last dockage area, and all other tributaries, creeks and canals from the mouth upstream within said boundaries (see map).		05/31/13	Sampling
06/04/13	Bogue Sound Area returns to normal boundaries.	06/04/13		Rainfall

Table 7: Temporary Opening Sampling

STATION	NO.	03/21/11	04/25/11	05/09/11	05/23/11	08/22/11	01/04/12	02/05/13	05/28/13	06/04/14
4		2.0	1.7	1.7	1.7		7.8	13.0		
5		2.0	1.7	1.7	1.7		1.7	1.7		
7		1.7	1.7	1.7	1.7	1.7	1.7	2.0	1.7	1.7
7	**A**	4.0	1.7	1.7	1.7	1.7	4.5	1.7	1.7	1.7
8		4.5	1.7	1.7	1.7		2.0	6.8		
9		1.7	1.7	1.7	1.7	2.0	2.0	23.0	1.7	1.7
10		1.7	2.0	1.7	1.7	1.7	2.0	2.0	1.7	1.7
11		1.7	1.7	1.7	1.7	1.7	2.0	1.7	1.7	1.7
4	**A**					2.0			1.7	1.7
5	**A**					1.7			4.5	1.7
8	**A**					1.7			4.0	1.7

Table 8: Temporary Closures

DATE	DESCRIPTION	CLOSE	OPEN	REASON
08/22/10	**All those waters** between the Atlantic Beach High Rise Bridge ICWW Channel Marker #25, near Broak Creek.	08/22/10		Rainfall
08/27/10	**All those waters** between the Atlantic Beach High Rise Bridge ICWW Channel Marker #25, near Broak Creek.		08/28/10	Sampling
09/12/10	**All those waters** in Bogue Sound between the Emerald Isle High Rise Bridge and Fort Macon, to include Tar Landing Bay.	09/12/10		Rainfall
09/15/10	**E-2** returns to status.		09/16/10	Sampling
09/27/10	**All those waters** in Bogue Sound between IWW Marker #29 and Fort Macon, to include Broad Creek and Tar Landing Bay.	09/27/10		Rainfall
09/30/10	**All those waters** between the South Carolina State Line and a straight line beginning at Hall Point near Thorofare Bay in Carteret County; running southeasterly through Fl. Beacon # 20 in Core Sound to a point on the Core Banks shoreline in Carteret County. This includes Tubbs Inlet, Shallotte River, Lockwoods Folly River, Cape Fear River, Myrtle Grove Sound, Topsail Sound, Stump Sound, Chadwick Bay,	09/30/10		Nicole Remnants
10/06/10	A portion of Bogue Sound returns to normal boundaries **except** All those waters between the South Carolina State Line and a straight line beginning at a point on the mainland near Camp Morehead; running southeasterly through IWW Channel Marker "11" in the sound to a point 34º 42.2114' N -76º 49.0289' W on Bogue Banks near the mouth of the western Pine Knoll Shores canal entrance and **Pine Knoll Shores – All those waters** in Bogue Sound 100 yards offshore of Pine Knoll Shores between the permanent closure line at 34º 42.2026' N -76º 48.0601' W and the Bogue Pines boat basin at 34º 42.2346' N -76º 47.7094' W.		10/07/10	Sampling
10/08/10	A portion of Bogue Sound between Fl. Beacon #33 to a point on the mainland near Camp Morehead returns to normal boundaries except all those waters in Bogue Sound 100 yards offshore of Pine Knoll Shores between the permanent closure line and the Bogue Pines boat basin.		10/09/10	Sampling
01/18/11	**All those waters** from the ICWW to the mainland between the Morehead City State Port permanent closure line near 16th Street and ICWW Channel Marker #65A, located just west of Salliers Bay, near New River Inlet, to include White Oak River, Queens Creek and Bear Creek.	01/18/11		Rainfall
01/21/11	E-2 returns to status.		01/22/11	Sampling
08/29/11	**All Coastal waters close.**	08/29/11		Hurricane Irene
08/31/11	A portion of Bogue Inlet **AND** a portion of Bogue Sound returns to normal boundaries **except All those waters** from the IWW to the mainland between IWW Fl. Beacon #55 near Sanders Creek in Onslow County and the Morehead City permanent closure line near 16th Street in Carteret County, to include Queens Creek, White Oak River, and all other creeks and tributaries within said boundaries.		09/01/11	Sampling
09/01/11	**All those waters** in Bogue Sound between the Emerald Isle High-rise Bridge and the permanent closure line near 16th Street in Morehead City returns to status prior to 8/27/11 Hurricane Irene. (E-2 returns to status)		09/02/11	Sampling
10/20/11	**Tar Landing Bay / Bogue Sound** - All those waters from the permanent prohibited area closure line at Fort Macon to the Emerald Isle High Rise Bridge. This includes Tar Landing Bay, Bogue Sound and all other tributaries within the described area.	10/20/11		Rainfall
10/25/11	A portion of Bogue Sound returns to normal boundaries **except** All those waters in Bogue Sound from the ICWW to the mainland between ICWW Beacon #23 and Fl. Beacon #29 to include Broad Creek.		10/26/11	Sampling
05/31/12	**All those waters** from the ICWW to the mainland between the Morehead City State Port permanent closure line near 16th Street and the Emerald Isle High-Rise Bridge.	05/31/12		TD Beryl
06/02/12	The portion of Bogue Sound, ICWW to the mainland, between IWW Beacon #11 near Camp Morehead and the Morehead City State Port permanent closure line near 16th Street returns to normal boundaries.		06/03/12	Sampling
06/06/12	Bogue Sound, from the ISS to the mainland, from IWW Beacon "21" near Gales Creek to IWW #11, near Camp Morehead returns to normal boundaries.		06/07/12	Sampling
10/28/12	All those waters from the IWW to the mainland between Salliers Bay and the Atlantic Beach High-Rise Bridge, to include Salliers Bay, Freeman Creek, Bear Creek, Queens Creek, White Oak River, Deer Creek, Hunting Island Creek, Goose Creek, Sanders Creek, Broad Creek, and Gales Creek.	10/28/12		Hurricane Sandy
11/01/12	E-2 returns to normal boundaries.		11/02/12	Sampling
02/08/13	**All those waters** between the Morehead City State Port closure line and ICWW Channel Marker #65A, located just west of Salliers Bay, near New River Inlet, to include Bogue Sound, Tar Landing Bay, Hoop Pole Creek, Gales Creek, Broad Creek, Sanders Creek, Goose Creek, Hunting Island Creek, Deer Creek, White Oak River, Queens Creek, Bear Creek, Freeman Creek, and Salliers Bay.	02/08/13		Rainfall
02/13/13	IWW to ocean side returns to normal boundaries - IWW to mainland remains closed.		02/14/13	Sampling
02/15/13	E-2 returns to normal boundaries.		02/16/13	Sampling
10/09/13	**Bogue Sound** All those waters from the permanent prohibited area closure line at Fort Macon to the Emerald Isle High Rise Bridge. This includes Tar Landing Bay, the south side of Bogue Sound and all other tributaries within the described area.	10/09/13		TS Karen remants
10/11/13	A portion of Bogue Sound returns to normal boundaries (**a portion of D-4, E-2 and all of E-3**) **EXCEPT** all those waters bordered west by a straight line beginning at a point 34º 40.9206' N -77º 01.8475' W on the mainland near Guthrie Point; running southerly through IWW Beacon "40" to a point 34º 40.3020' N -77º 01.8623' W on Bogue Banks; and bordered on the east by a straight line beginning at a point 34º 43.7375' N -76º 50.6973' W on the mainland near Gull Harbor Marina; running southerly through IWW Beacon "14" to a point 34º 41.6906' N -76º 50.8361' W on Bogue Banks (See Map)		10/12/13	Sampling
10/15/13	E-2 returns to normal boundaries.		10/16/13	Sampling
11/27/13	**Bogue Sound - All those waters** from the IWW to the mainland between the Morehead City State Port permanent closure line near 16th Street and Emerald Isle High-Rise Bridge.	11/27/13		Rainfall

Table 8: Temporary Closures

DATE	DESCRIPTION	CLOSE	OPEN	REASON
12/03/13	Bogue Sound returns to normal boundaries.		12/04/13	Sampling
03/07/14	**All those waters** from the Intracoastal Waterway to the mainland between Morehead Ctiy permanent closure line near 16th Street and Intracoastal Waterway Channel Marker #65A, located just west of Salliers Bay near New River Inlet, to include White Oak River, Queens Creek, Bear Creek, Freeman Creek, and Salliers Bay.	03/07/14		Rainfall
03/11/14	A portion of Bogue Sound (between Emerald Isle High-rise Bridge and the permanent closure line at 16th Street in Morehead City) returns to normal boundaries **EXCEPT** all those waters from the IWW to the mainland between IWW Beacon "27" and IWW Fl. Beacon "25", to include Broad Creek.		03/12/14	Sampling
05/16/14	**Bogue Sound** - All those waters from the IWW to the mainland between Beacon "27", near Broad Creek, and Fl. Beacon "9", near Spooner's Creek.	05/16/14		Rainfall
05/20/14	A portion of Bogue Sound (IWW "20" to Spooner's Creek) returns to normal boundaries **EXCEPT** all those waters from the IWW to the mainland between IWW Beacon "27" and IWW Beacon "20", to include Broad Creek and Gales Creek.		05/21/14	Sampling
05/22/14	Bogue Sound returns to normal boundaries.		05/23/14	Sampling
06/28/14	**Bogue Sound** - All those waters in Bogue Sound from the Intracoastal Waterway to the mainland, between IWW Marker "27" near Broad Creek and IWW Marker "14" near Gull Harbor.	06/28/14		Rainfall
07/01/14	E-2 returns to normal boundaries.		07/01/14	Sampling
07/25/14	**All those waters** between the Emerald Isle High Rise Bridge, and a line beginning at a point on the east shore of Spit Bay near Jarrett Bay; thence in a straight line to the southern end of Davis Island; thence in a straight line to Beacon #37 in Core Sound, thence in a straight line to Shell Point on Harkers Island, thence in a straight line across Back Sound to a point on Shackleford Banks near Banks Bay; to include	07/25/14		Rainfall
07/29/14	E-2 returns to normal boundaries.		07/30/14	Sampling
08/02/14	**All those waters** between Intracoastal Waterway Beacon #65A near Salliers Bay, and a line beginning at the tip of Fort Macon on Bogue Banks across the Morehead City Channel to the southernmost tip of Radio Island, to include Salliers Bay, Freeman Creek, Bear Creek, Queens Creek, White Oak River, Bogue Sound, Tar Landing Bay and all other creeks and tributaries within said boundaries.	08/02/14		Rainfall
08/08/14	A portion of Bogue Sound returns to normal boundaries (beach side) **EXCEPT** All those waters from the Intracoastal Waterway to the mainland between Fl Beacon "45" near Cedar Point and the Morehead City permanent closure line near 16th Street.		08/09/14	Sampling
08/12/14	E-2 returns to normal boundaries.		08/13/14	Sampling
08/19/14	**Bogue Sound** - All those waters from the Emerald Isle High Rise Bridge to the permanent prohibited area closure line at Fort Macon to include Tar Landing Bay, and all other tributaries within the described area.	08/19/14		Rainfall
09/09/14	**Bogue Sound** – All those waters in Bogue Sound bordered on the west by a line beginning at a point 34º 43.7011' N -76º 50.2410' W at Brandywine Bay Marina; running southerly to the dock at the N.C. Aquarium at 34º 42.0583' N -76º49.9064' W and bordered on the east by the permanent prohibited area closure line at Fort Macon to include Tar Landing Bay.	09/09/14		Rainfall
09/12/14	Bogue Sound returns to normal boundaries EXCEPT Hoop Pole Creek area.		09/13/14	Sampling
09/13/14	**All those waters** in Bogue Sound from the IWW to the mainland between the Emerald Isle Bridge and the permanent closure line near 16th Street in Morehead City.	09/13/14		Rainfall
09/16/14	E-2 returns to normal boundaries.		09/17/14	Sampling
10/16/14	**All those waters** in Bogue sound from the IWW to the mainland between IWW Marker #27, near Broad Creek, and the permanent closure line near 16th Street in Morehead City.	10/16/14		Rainfall
10/20/14	A portion of E-2 returns to normal boundaries EXCEPT All those waters from the IWW to the mainland between IWW Beacon "27" near Broad Creek, and IWW Beacon "19", to include Broad Creek and Gales Creek.		10/21/14	Sampling
01/24/15	**All those waters** from the Intracoastal Waterway to the mainland between FL. Beacon "65A", located just west of Salliers Bay, near New River Inlet, and the Morehead City permanent closure line near 16th Street to include Salliers Bay, Freeman Creek, Bear Creek, Queens Cr4eek, and White Oak Rive.	01/24/15		Rainfall
01/28/15	a portion of Bogue Sound returns to normal boundaries except all those waters in Bogue Sound from the Intracoastal Waterway to the mainland, between IWW Marker "27" near Broad Breek and IWW Marker "20" to include all of Broad Creek and Gales Creek		01/29/15	Sampling
01/30/15	Bogue Sound (outside Broad and Gales Creek) returns to normal boundaries.		01/31/15	Sampling

Table 9: Post Rainfall Sampling

STATION	NO.	08/26/10	09/14/10	10/05/10	10/07/10	01/20/11	08/30/11	08/31/11	10/24/11	06/01/12	06/05/12	10/31/12	02/12/13	02/14/13	10/10/13	10/14/13	12/02/13	03/10/14	05/19/14	07/28/14	08/07/14
10				1.7										6.8					4.5		
21						1.7		1.7	2.0			2.0		3.7			2.0		4.5	1.7	
1		1.7	2.0			1.7		2.0	4.5	4.5	2.0	2.0		1.8			2.0	7.8	1.7	2.0	
11															110.0	4.5					
12			1.7		1.7				1.7				23.0		1.7					1.7	4.0
15		1.7	1.8	33.0	1.7		4.5		1.7				1.7		4.5					1.7	1.7
16		1.7	1.8		1.7		4.5		1.7				7.8		1.7					1.7	1.7
19	A	1.7	1.7	2.0			4.5		11.0				2.0		4.5					1.7	1.7
6													7.8								
14					1.7																

STATION	NO.	08/11/14	08/20/14	08/21/14	08/25/14	09/11/14	09/15/14	10/19/14	01/27/15												
10																					
21		1.7		4.5	4.5		1.7	1.7	7.8												
1		2.0		11.0	14.0	2.0	1.7		2.0												
11																					
12			1.7		1.7																
15			1.7		1.7																
16			7.8		4.5	2.0															
19	A		1.7		2.0	4.5															
6																					
14																					

Table 10: Rainfall

RAINFALL - 2015
BRANDYWINE BAY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1												
2												
3												
4	0.60											
5	0.40											
6												
7												
8												
9												
10												
11												
12												
13	0.80											
14	0.20											
15												
16												
17												
18												
19	0.60											
20												
21												
22												
23												
24	2.00											
25	0.70											
26												
27												
28												
29												
30												
31												
TOTAL	5.3	3	0	0	0	0	0	0	0	0	0	0

RAINFALL - 2014
BRANDYWINE BAY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1					0.40							
2	**0.10**	0.05						3.50				
3	0.75				0.10			1.25				
4							1.30	1.00		0.30		
5		0.20					out of town - cum total 0.9	0.40				
6	0.02	0.10	0.10			2.30		0.05	0.20			
7		0.05	2.10					0.01				0.50
8			0.40	1.10				0.90	0.65			
9		0.35		0.10					2.00			0.05
10						0.65		0.05				0.02
11	0.10	0.05									0.40	
12	0.70	.9 thawed frozen precip						0.05		0.10	0.20	
13		1.00	0.10						2.25			
14	0.10					2.30						
15	0.50									1.00		
16		0.10		0.60	2.20		0.50			2.50		
17			0.75		0.60		1.45		0.15		0.30	
18			0.25								0.30	
19				0.50				4.75				
20				1.10								
21				0.10		1.25			0.95			0.05
22	0.20	0.10					0.30	4.50				0.05
23							0.10					0.05
24					0.40			2.25	0.30		0.80	0.30
25							4.40		0.60		0.10	1.25
26			0.60	0.25					0.10		0.25	
27		0.10				0.01	0.33				0.50	
28					0.15	2.10						
29	snow/ice						0.20					0.20
30			0.60	0.10			0.25		0.02	0.06		0.05
31												
TOTAL	2.47	3	4.9	3.85	3.85	8.61	9.73	18.71	7.22	3.96	2.85	2.52

RAINFALL - 2013
BRANDYWINE BAY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.05			1.05	0.33			0.10	
2	**0.30**			0.05	0.25		0.50	0.37	1.25		1.10	0.05
3							0.10					
4				1.90	0.05	0.65			0.85			0.03
5												0.50
6			0.15		0.10				0.30			
7	0.20				1.30	1.05					0.10	
8		3.40			0.05	0.10				0.90	0.20	0.20
9										1.55		0.05
10										0.20		
11						0.15	2.50					0.20
12	0.25	0.30	0.05									
13		0.46	1.00	1.30				0.50				
14		0.10						0.30				
15				0.10				0.20				2.00
16	0.20			0.60				0.50			0.30	
17		0.15				1.80		0.10	0.80			
18	0.50							0.40			0.10	
19			0.53					0.10		0.67		
20		0.20		1.80			0.10	0.90		0.05		
21								0.05				
22							0.15	0.05	0.70		0.01	
23		0.25			0.75					0.50		away
24		0.40						0.10			0.03	
25			0.30			0.30						
26	0.20	0.60					0.45		0.20			
27											2.70	
28						0.20	0.50				0.20	
29	0.10											
30				0.65		0.50	0.25	0.15				0.25
31	0.15											
TOTAL	1.9	5.86	2.03	6.45	2.5	4.75	5.6	4.05	4.1	3.87	4.84	3.28

RAINFALL - 2012
BRANDYWINE BAY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.25				0.20		0.20		
2		0.18				0.10	1.40	0.35		0.50		
3			1.75									
4								0.15	0.25	0.05		
5		0.30	0.40						0.50		0.30	
6				1.00	1.20	0.07						
7		0.10		0.40			0.00	0.70	1.80		0.40	
8			out of town					1.25	0.20	0.05	0.05	0.30
9	0.25	0.06						0.30		0.05		
10	0.30				0.10			0.40				0.10
11		0.20					0.70	0.25				0.30
12	0.80						0.40	0.70				0.20
13						0.04		0.45			0.10	1.45
14							0.10				0.05	
15					out of town - total			0.30				
16								0.70			0.05	0.15
17	0.05	0.40						0.02				0.25
18	0.15				2.4				0.90			0.40
19	0.35	0.30						0.10	0.10		0.50	
20								1.00				
21	0.45		out of town (.8 total)				0.40	0.50				0.40
22	0.20			0.60			0.05	0.30				
23		0.13		0.70	0.08		0.40	0.20				
24		0.04				0.95	0.80	0.70				
25		0.46						0.60				0.10
26			0.20		0.20	0.10		0.05				
27	0.10			0.05						2.60	0.15	1.65
28	0.10	0.05		1.60				0.10				
29					0.05		0.60	0.25				0.35
30								0.05	0.45			0.65
31					2.85		0.55					
TOTA	2.75	2.7	3.95	4.6	6.88	1.66	5.4	9.62	4.3	3.7	1.6	6.3

RAINFALL - 2011
BRANDYWINE BAY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1												
2												
3												
4												
5												0.10
6												0.04
7												
8												0.05
9												
10												0.03
11												
12												
13											*	
14												
15												
16											0.30	
17											0.25	
18											0.10	
19												
20												
21												
22												out of town .6
23											0.25	
24											0.10	
25												
26												
27												
28											0.05	
29											0.15	
30											0.50	
31												0.04
TOTAL	0	0	0	0	0	0	0	0	0	0	1.7	0.86

RAINFALL - 2011
BOGUE SOUND - PINE KNOLL SHORES AREA

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1			0.70					1.10			0.15	
2	TRAC	0.30										
3												
4								trace			0.85	
5		2.30		0.2		trace		0.15				0.10
6		0.40			trace		0.20					
7	0.55	0.75	1.1		trace			0.40				
8				0.2			1.05					
9							0.65					
10	snow		0.20							<.1		
11		0.15										trace
12				trace					0.15	trace		
13					0.40	0.20				0.15		trace
14							trace	VAC		trace		
15												
16				0.35					0.10		trace	trace
17					0.15	0.20			trace	Tann Serv 5.25 7.95	0.95	
18	3.50								<.1			trace
19	0.15					0.10						trace
20					0.15	1.50			0.30			
21				0.15								
22	snow			trace				0.15	trace			trace
23						0.35			0.45		0.55	
24									3.20			
25		0.2							0.90			
26	1.00	trace					0.40		1.65			
27		trace		0.95		0.15	trace	4.9				0.65
28												
29						1.70					0.35	
30								trace	0.30			
31	trace						0.20			<.1		
TOTAL	5.20	4.10	2.00	1.85	0.70	4.20	2.50	6.70	7.05	5.75	2.85	0.75

RAINFALL - 2010
BRANDYWINE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1						0.04		out of town .5 total				
2		0.50				0.06			0.74			
3								0.84		0.05	0.15	
4					0.20			0.80	6.0+		0.24	
5		garage cracked									0.04	
6												
7							out of town - 1.75"					
8								0.08				
9	1.75							0.82				
10												
11						0.10						
12			out of town total 1.2"	1.8 - out of town								
13												
14												
15		0.03										
16											0.42	
17							0.86					
18			0.64				0.52	0.30				
19					0.30							
20						0.26						
21	1.60			0.18			0.11	3.25				
22	0.05	0.80						0.40				
23		0.20	0.30			0.54		0.17				
24			0.16					0.58				
25	0.90		out of town		0.54					0.24		
26					0.40	0.38			3.75			
27			0.16				out of town		1.15			
28									0.80	0.12		
29									4.60			
30	1.05					0.80			4.70		0.78	
31												
TOTAL	5.35	1.53	0.94	0.50	1.44	2.18	1.49	7.24	15.74	0.41	1.63	0.00

Table 11: Tides and Salinities

		Station ID																
Date	Tidal Stage	1	3	4A	5A	6	7	8A	10	11	14	17	19C	25	27	28	29A	30A
7/28/2010	1/2 FLD	36	36			36	36		36	36	37	37		37	37			
9/7/2010	LAST FLD	34	35			35	35		34	33	36	34		36	36			
11/4/2010	1ST EBB	32	32	32	30	32	30	28	28	28	28	28	31	28	28	28		
12/2/2010	1/2 EBB	30	32	30	30	30	30	30	30	30	32	31	30	32	32	30		
2/1/2011	1/4 EBB	30	30	30	30	30	30	30	30	30	30	30	32	32	30	32		
3/24/2011	LAST EBB - 1/4 FLD	30	30	29	30	30	30	30	31	31	32	30	29	33	34	32		
4/13/2011	3/4 EBB	32	32	30	30	32	30	32	31	30	30	30	30	30	32	28		
6/2/2011	1/2 EBB	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35		
8/17/2011	1/2 FLD - 2/3 FLD	38	38	38	38	38	38	38	38	38	38	38	36	38	38	38		
9/21/2011	1/2 EBB	34	34	34	34	33	34	32	32	34	34	34	34	35	34	34		
11/30/2011	1/2 FLD	32	32	32	32	32	32	32	32	32	32	34	34	32	32	32		
1/11/2012	3/4 FLD	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34		
2/16/2012	3/4 EBB	35	35	34	35	35	34	35	33	35	35	35	35	35	34	35		
4/11/2012	1/4 FLD	34	34	34	34	34	34	34	34	34	34	36	36	36	36	36		
6/5/2012	LAST FLD	35	33	33	34	33	35	35	35	35	35	35	35	35	35	33		
9/13/2012	1/4 EBB	34	32	31	30	33	31	30	30	31	32	33	33	32	32	31		
11/8/2012	1/2 EBB	32	32	32	32	32	32	31	32	32	34	33	32	34	34	32		
3/19/2013	2/3 EBB - 3/4 EBB	31	31	29	30	30	30	29	30	31	31	30	30	30	30	30		
4/2/2013	3/4 EBB	30	30	30	30	30	30	30	30	30	32	32	32	32	32	32		
6/4/2013	1/2 EBB	32	32	31	32	31	32	30	32	33	32	31	32	32	32	31		
8/6/2013	LAST FLD	34	34	34	34	34	34	34	34	34	34	34	34	34	34	35		
9/17/2013	1ST EBB	36	34	34	34	36	34	36	34	34	36	36	36	36	36	34		
10/30/2013	1/2 EBB	32	33	33	32	33	33	32	32	33	34	33	33	34	32	33		
1/27/2014	1/2 EBB	30	28	30	30	30	30	30	30	30	32	32	32	30	32	32		
5/2/2014	1/4 FLD	27	27	27	27	26	28	25	28	27	29	29	29	29	29	30	29	29
6/18/2014	LAST EBB	34	35	32	33	34	35	35	33	34	34	35	35	35	35	35	35	34
6/30/2014	3/4 FLD	33	32	32	32	32	32	32	32	31	34	34	34	34	34	34	34	34
8/18/2014	3/4 EBB	26	24	24	24	25	24	24	24	24	26	28	26	24	26	28	26	26
9/17/2014	3/4 EBB	28	28	26	26	26	28	26	26	26	26	28	28	26	26	26	26	26
1/12/2015	1/4 FLD	28	28	28	29	29	28	26	28	28	29	28	29	29	29	29	29	29

Table 12: Bacteriological Data

Station ID: 1

# Samples:	30	**Log Avg:**	0.5595
# > 43 MPN:	1	**Log Std Dev:**	0.4767
# > 260 MPN:	0	**Geomean:**	3.6265
Median:	2	**Estimated 90th:**	14

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	36	1.7	0.2304
9/7/2010	LAST FLD	34	1.7	0.2304
11/4/2010	1ST EBB	32	**130.0**	2.1139
12/2/2010	1/2 EBB	30	13.0	1.1139
2/1/2011	1/4 EBB	30	4.5	0.6532
3/24/2011	1/4 FLD	30	4.0	0.6021
4/13/2011	3/4 EBB	32	2.0	0.301
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	34	**23.0**	1.3617
11/30/2011	1/2 FLD	32	2.0	0.301
1/11/2012	3/4 FLD	35	13.0	1.1139
2/16/2012	3/4 EBB	35	2.0	0.301
4/11/2012	1/4 FLD	34	1.7	0.2304
6/5/2012	LAST FLD	35	2.0	0.301
9/13/2012	1/4 EBB	34	2.0	0.301
11/8/2012	1/2 EBB	32	1.7	0.2304
3/19/2013	2/3 EBB	31	**17.0**	1.2304
4/2/2013	3/4 EBB	30	1.7	0.2304
6/4/2013	1/2 EBB	32	2.0	0.301
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	36	2.0	0.301
10/30/2013	1/2 EBB	32	1.7	0.2304
1/27/2014	1/2 EBB	30	6.8	0.8325
5/2/2014	1/4 FLD	27	6.1	0.7853
6/18/2014	LAST EBB	34	2.0	0.301
6/30/2014	3/4 FLD	33	1.7	0.2304
8/18/2014	3/4 EBB	26	2.0	0.301
9/17/2014	3/4 EBB	28	**23.0**	1.3617
1/12/2015	1/4 FLD	28	4.0	0.6021

Station ID: 3

# Samples:	30	**Log Avg:**	0.4698
# > 43 MPN:	1	**Log Std Dev:**	0.4184
# > 260 MPN:	0	**Geomean:**	2.9497
Median:	1.75	**Estimated 90th:**	10

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	36	1.7	0.2304
9/7/2010	LAST FLD	35	2.0	0.301
11/4/2010	1ST EBB	32	**33.0**	1.5185
12/2/2010	1/2 EBB	32	13.0	1.1139
2/1/2011	1/4 EBB	30	7.8	0.8921
3/24/2011	1/4 FLD	30	7.8	0.8921
4/13/2011	3/4 EBB	32	1.7	0.2304
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	34	1.7	0.2304
11/30/2011	1/2 FLD	32	4.0	0.6021
1/11/2012	3/4 FLD	35	2.0	0.301
2/16/2012	3/4 EBB	35	4.5	0.6532
4/11/2012	1/4 FLD	34	1.7	0.2304
6/5/2012	LAST FLD	33	4.5	0.6532
9/13/2012	1/4 EBB	32	1.8	0.2553
11/8/2012	1/2 EBB	32	1.7	0.2304
3/19/2013	3/4 EBB	31	**79.0**	1.8976
4/2/2013	3/4 EBB	30	1.7	0.2304
6/4/2013	1/2 EBB	32	1.7	0.2304
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	34	2.0	0.301
10/30/2013	1/2 EBB	33	1.7	0.2304
1/27/2014	1/2 EBB	28	1.7	0.2304
5/2/2014	1/4 FLD	27	2.0	0.301
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	32	2.0	0.301
8/18/2014	3/4 EBB	24	1.7	0.2304
9/17/2014	3/4 EBB	28	4.5	0.6532
1/12/2015	1/4 FLD	28	1.7	0.2304

Table 12: Bacteriological Data

Station ID: 4A

# Samples:	28	**Log Avg:**	0.7932
# > 43 MPN:	2	**Log Std Dev:**	0.5511
# > 260 MPN:	0	**Geomean:**	6.2114
Median:	4.5	**Estimated 90th:**	31

Date	Tidal Stage	Salinity	FC	Log FC
11/4/2010	1ST EBB	32	11.0	1.0414
12/2/2010	1/2 EBB	30	7.8	0.8921
2/1/2011	1/4 EBB	30	4.5	0.6532
3/24/2011	1/4 FLD	29	**33.0**	1.5185
4/13/2011	3/4 EBB	30	4.5	0.6532
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	34	**79.0**	1.8976
11/30/2011	1/2 FLD	32	7.8	0.8921
1/11/2012	3/4 FLD	35	2.0	0.301
2/16/2012	3/4 EBB	34	**22.0**	1.3424
4/11/2012	1/4 FLD	34	**17.0**	1.2304
6/5/2012	LAST FLD	33	6.8	0.8325
9/13/2012	1/4 EBB	31	**17.0**	1.2304
11/8/2012	1/2 EBB	32	4.5	0.6532
3/19/2013	3/4 EBB	29	**70.0**	1.8451
4/2/2013	3/4 EBB	30	1.7	0.2304
6/4/2013	1/2 EBB	31	**33.0**	1.5185
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	34	2.0	0.301
10/30/2013	1/2 EBB	33	1.7	0.2304
1/27/2014	1/2 EBB	30	2.0	0.301
5/2/2014	1/4 FLD	27	**33.0**	1.5185
6/18/2014	LAST EBB	32	**17.0**	1.2304
6/30/2014	3/4 FLD	32	2.0	0.301
8/18/2014	3/4 EBB	24	2.0	0.301
9/17/2014	3/4 EBB	26	2.0	0.301
1/12/2015	1/4 FLD	28	2.0	0.301

Station ID: 5A

# Samples:	28	**Log Avg:**	0.6146
# > 43 MPN:	2	**Log Std Dev:**	0.5390
# > 260 MPN:	0	**Geomean:**	4.1174
Median:	2	**Estimated 90th:**	20

Date	Tidal Stage	Salinity	FC	Log FC
11/4/2010	1ST EBB	30	**23.0**	1.3617
12/2/2010	1/2 EBB	30	**23.0**	1.3617
2/1/2011	1/4 EBB	30	2.0	0.301
3/24/2011	LAST EBB	30	**79.0**	1.8976
4/13/2011	3/4 EBB	30	6.1	0.7853
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.8	0.2553
9/21/2011	1/2 EBB	34	**79.0**	1.8976
11/30/2011	1/2 FLD	32	1.7	0.2304
1/11/2012	3/4 FLD	35	2.0	0.301
2/16/2012	3/4 EBB	35	**17.0**	1.2304
4/11/2012	1/4 FLD	34	1.7	0.2304
6/5/2012	LAST FLD	34	1.7	0.2304
9/13/2012	1/4 EBB	30	4.5	0.6532
11/8/2012	1/2 EBB	32	2.0	0.301
3/19/2013	3/4 EBB	30	**33.0**	1.5185
4/2/2013	3/4 EBB	30	2.0	0.301
6/4/2013	1/2 EBB	32	4.0	0.6021
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	34	1.7	0.2304
10/30/2013	1/2 EBB	32	1.7	0.2304
1/27/2014	1/2 EBB	30	2.0	0.301
5/2/2014	1/4 FLD	27	1.8	0.2553
6/18/2014	LAST EBB	33	1.7	0.2304
6/30/2014	3/4 FLD	32	1.8	0.2553
8/18/2014	3/4 EBB	24	2.0	0.301
9/17/2014	3/4 EBB	26	4.5	0.6532
1/12/2015	1/4 FLD	29	6.8	0.8325

Table 12: Bacteriological Data

Station ID: 6

# Samples:	30	**Log Avg:**	0.3973
# > 43 MPN:	0	**Log Std Dev:**	0.3073
# > 260 MPN:	0	**Geomean:**	2.4964
Median:	1.9	**Estimated 90th:**	6

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	36	1.7	0.2304
9/7/2010	LAST FLD	35	4.5	0.6532
11/4/2010	1ST EBB	32	**22.0**	1.3424
12/2/2010	1/2 EBB	30	7.8	0.8921
2/1/2011	1/4 EBB	30	**14.0**	1.1461
3/24/2011	1/4 FLD	30	1.7	0.2304
4/13/2011	3/4 EBB	32	2.0	0.301
6/2/2011	1/2 EBB	35	2.0	0.301
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	33	4.5	0.6532
11/30/2011	1/2 FLD	32	2.0	0.301
1/11/2012	3/4 FLD	35	11.0	1.0414
2/16/2012	3/4 EBB	35	2.0	0.301
4/11/2012	1/4 FLD	34	1.7	0.2304
6/5/2012	LAST FLD	33	1.7	0.2304
9/13/2012	1/4 EBB	33	1.7	0.2304
11/8/2012	1/2 EBB	32	1.7	0.2304
3/19/2013	2/3 EBB	30	1.7	0.2304
4/2/2013	3/4 EBB	30	1.7	0.2304
6/4/2013	1/2 EBB	31	1.7	0.2304
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	36	2.0	0.301
10/30/2013	1/2 EBB	33	1.7	0.2304
1/27/2014	1/2 EBB	30	2.0	0.301
5/2/2014	1/4 FLD	26	1.8	0.2553
6/18/2014	LAST EBB	34	1.7	0.2304
6/30/2014	3/4 FLD	32	1.7	0.2304
8/18/2014	3/4 EBB	25	2.0	0.301
9/17/2014	3/4 EBB	26	2.0	0.301
1/12/2015	1/4 FLD	29	2.0	0.301

Station ID: 7

# Samples:	30	**Log Avg:**	0.3653
# > 43 MPN:	1	**Log Std Dev:**	0.3447
# > 260 MPN:	0	**Geomean:**	2.3191
Median:	1.7	**Estimated 90th:**	6

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	36	1.7	0.2304
9/7/2010	LAST FLD	35	1.7	0.2304
11/4/2010	1ST EBB	30	**17.0**	1.2304
12/2/2010	1/2 EBB	30	11.0	1.0414
2/1/2011	1/4 EBB	30	2.0	0.301
3/24/2011	LAST EBB	30	1.7	0.2304
4/13/2011	3/4 EBB	30	2.0	0.301
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	34	1.7	0.2304
11/30/2011	1/2 FLD	32	2.0	0.301
1/11/2012	3/4 FLD	35	1.7	0.2304
2/16/2012	3/4 EBB	34	2.0	0.301
4/11/2012	1/4 FLD	34	1.7	0.2304
6/5/2012	LAST FLD	35	1.7	0.2304
9/13/2012	1/4 EBB	31	2.0	0.301
11/8/2012	1/2 EBB	32	1.7	0.2304
3/19/2013	3/4 EBB	30	1.7	0.2304
4/2/2013	3/4 EBB	30	1.7	0.2304
6/4/2013	1/2 EBB	32	1.7	0.2304
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	34	1.7	0.2304
10/30/2013	1/2 EBB	33	1.7	0.2304
1/27/2014	1/2 EBB	30	1.7	0.2304
5/2/2014	1/4 FLD	28	4.5	0.6532
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	32	1.7	0.2304
8/18/2014	3/4 EBB	24	1.7	0.2304
9/17/2014	3/4 EBB	28	**49.0**	1.6902
1/12/2015	1/4 FLD	28	1.7	0.2304

Table 12: Bacteriological Data

Station ID: 8A

# Samples:	28	**Log Avg:**	0.8804
# > 43 MPN:	4	**Log Std Dev:**	0.7266
# > 260 MPN:	1	**Geomean:**	7.5928
Median:	5.65	**Estimated 90th:**	64

Date	Tidal Stage	Salinity	FC	Log FC
11/4/2010	1ST EBB	28	**23.0**	1.3617
12/2/2010	1/2 EBB	30	**23.0**	1.3617
2/1/2011	1/4 EBB	30	2.0	0.301
3/24/2011	LAST EBB	30	1.7	0.2304
4/13/2011	3/4 EBB	32	2.0	0.301
6/2/2011	1/2 EBB	35	6.8	0.8325
8/17/2011	1/2 FLD - 2/3 FLD	38	1.8	0.2553
9/21/2011	1/2 EBB	32	**130.0**	2.1139
11/30/2011	1/2 FLD	32	13.0	1.1139
1/11/2012	3/4 FLD	35	2.0	0.301
2/16/2012	3/4 EBB	35	**17.0**	1.2304
4/11/2012	1/4 FLD	34	2.0	0.301
6/5/2012	LAST FLD	35	7.8	0.8921
9/13/2012	1/4 EBB	30	**70.0**	1.8451
11/8/2012	1/2 EBB	31	1.7	0.2304
3/19/2013	3/4 EBB	29	**540.0**	2.7324
4/2/2013	3/4 EBB	30	**14.0**	1.1461
6/4/2013	1/2 EBB	30	**220.0**	2.3424
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	36	4.5	0.6532
10/30/2013	1/2 EBB	32	6.8	0.8325
1/27/2014	1/2 EBB	30	1.7	0.2304
5/2/2014	1/4 FLD	25	**33.0**	1.5185
6/18/2014	LAST EBB	35	2.0	0.301
6/30/2014	3/4 FLD	32	2.0	0.301
8/18/2014	3/4 EBB	24	1.7	0.2304
9/17/2014	3/4 EBB	26	1.7	0.2304
1/12/2015	1/4 FLD	26	**17.0**	1.2304

Station ID: 10

# Samples:	30	**Log Avg:**	0.4390
# > 43 MPN:	0	**Log Std Dev:**	0.3720
# > 260 MPN:	0	**Geomean:**	2.7479
Median:	1.7	**Estimated 90th:**	8

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	36	1.7	0.2304
9/7/2010	LAST FLD	34	4.5	0.6532
11/4/2010	1ST EBB	28	1.7	0.2304
12/2/2010	1/2 EBB	30	**33.0**	1.5185
2/1/2011	1/4 EBB	30	2.0	0.301
3/24/2011	LAST EBB	31	1.7	0.2304
4/13/2011	3/4 EBB	31	1.7	0.2304
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	32	2.0	0.301
11/30/2011	1/2 FLD	32	**22.0**	1.3424
1/11/2012	3/4 FLD	35	1.7	0.2304
2/16/2012	3/4 EBB	33	1.7	0.2304
4/11/2012	1/4 FLD	34	1.7	0.2304
6/5/2012	LAST FLD	35	1.7	0.2304
9/13/2012	1/4 EBB	30	1.7	0.2304
11/8/2012	1/2 EBB	32	2.0	0.301
3/19/2013	3/4 EBB	30	4.5	0.6532
4/2/2013	3/4 EBB	30	1.7	0.2304
6/4/2013	1/2 EBB	32	2.0	0.301
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	34	1.7	0.2304
10/30/2013	1/2 EBB	32	2.0	0.301
1/27/2014	1/2 EBB	30	1.7	0.2304
5/2/2014	1/4 FLD	28	**23.0**	1.3617
6/18/2014	LAST EBB	33	4.5	0.6532
6/30/2014	3/4 FLD	32	2.0	0.301
8/18/2014	3/4 EBB	24	4.0	0.6021
9/17/2014	3/4 EBB	26	7.8	0.8921
1/12/2015	1/4 FLD	28	1.7	0.2304

Table 12: Bacteriological Data

Station ID: 11

# Samples:	30	**Log Avg:**	0.3476
# > 43 MPN:	1	**Log Std Dev:**	0.3130
# > 260 MPN:	0	**Geomean:**	2.2265
Median:	1.7	**Estimated 90th:**	5

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	36	1.7	0.2304
9/7/2010	LAST FLD	33	1.7	0.2304
11/4/2010	1ST EBB	28	1.7	0.2304
12/2/2010	1/2 EBB	30	1.8	0.2553
2/1/2011	1/4 EBB	30	4.5	0.6532
3/24/2011	LAST EBB	31	2.0	0.301
4/13/2011	3/4 EBB	30	1.7	0.2304
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	34	2.0	0.301
11/30/2011	1/2 FLD	32	2.0	0.301
1/11/2012	3/4 FLD	35	1.7	0.2304
2/16/2012	3/4 EBB	35	1.7	0.2304
4/11/2012	1/4 FLD	34	1.7	0.2304
6/5/2012	LAST FLD	35	1.7	0.2304
9/13/2012	1/4 EBB	31	1.7	0.2304
11/8/2012	1/2 EBB	32	2.0	0.301
3/19/2013	3/4 EBB	31	1.7	0.2304
4/2/2013	3/4 EBB	30	1.7	0.2304
6/4/2013	1/2 EBB	33	1.7	0.2304
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	34	1.7	0.2304
10/30/2013	1/2 EBB	33	1.7	0.2304
1/27/2014	1/2 EBB	30	1.7	0.2304
5/2/2014	1/4 FLD	27	**49.0**	1.6902
6/18/2014	LAST EBB	34	1.7	0.2304
6/30/2014	3/4 FLD	31	2.0	0.301
8/18/2014	3/4 EBB	24	1.7	0.2304
9/17/2014	3/4 EBB	26	13.0	1.1139
1/12/2015	1/4 FLD	28	4.0	0.6021

Station ID: 14

# Samples:	30	**Log Avg:**	0.6876
# > 43 MPN:	4	**Log Std Dev:**	0.5932
# > 260 MPN:	0	**Geomean:**	4.8713
Median:	2	**Estimated 90th:**	27

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	37	**22.0**	1.3424
9/7/2010	LAST FLD	36	1.7	0.2304
11/4/2010	1ST EBB	28	**46.0**	1.6628
12/2/2010	1/2 EBB	32	2.0	0.301
2/1/2011	1/4 EBB	30	1.7	0.2304
3/24/2011	LAST EBB	32	1.7	0.2304
4/13/2011	3/4 EBB	30	**14.0**	1.1461
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.8	0.2553
9/21/2011	1/2 EBB	34	13.0	1.1139
11/30/2011	1/2 FLD	32	2.0	0.301
1/11/2012	3/4 FLD	35	2.0	0.301
2/16/2012	3/4 EBB	35	2.0	0.301
4/11/2012	1/4 FLD	34	**46.0**	1.6628
6/5/2012	LAST FLD	35	1.7	0.2304
9/13/2012	1/4 EBB	32	4.0	0.6021
11/8/2012	1/2 EBB	34	1.7	0.2304
3/19/2013	3/4 EBB	31	7.8	0.8921
4/2/2013	3/4 EBB	32	1.7	0.2304
6/4/2013	1/2 EBB	32	**70.0**	1.8451
8/6/2013	LAST FLD	34	7.8	0.8921
9/17/2013	1ST EBB	36	7.8	0.8921
10/30/2013	1/2 EBB	34	1.7	0.2304
1/27/2014	1/2 EBB	32	1.7	0.2304
5/2/2014	1/4 FLD	29	**17.0**	1.2304
6/18/2014	LAST EBB	34	1.7	0.2304
6/30/2014	3/4 FLD	34	1.7	0.2304
8/18/2014	3/4 EBB	26	7.8	0.8921
9/17/2014	3/4 EBB	26	**170.0**	2.2304
1/12/2015	1/4 FLD	29	1.7	0.2304

Table 12: Bacteriological Data

Station ID: 17

# Samples:	30	**Log Avg:**	0.6377
# > 43 MPN:	0	**Log Std Dev:**	0.4158
# > 260 MPN:	0	**Geomean:**	4.3418
Median:	4.25	**Estimated 90th:**	14

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	37	9.3	0.9685
9/7/2010	LAST FLD	34	7.8	0.8921
11/4/2010	1ST EBB	28	**23.0**	1.3617
12/2/2010	1/2 EBB	31	1.8	0.2553
2/1/2011	1/4 EBB	30	**23.0**	1.3617
3/24/2011	1/4 FLD	30	**17.0**	1.2304
4/13/2011	3/4 EBB	30	1.7	0.2304
6/2/2011	1/2 EBB	35	12.0	1.0792
8/17/2011	1/2 FLD - 2/3 FLD	38	1.8	0.2553
9/21/2011	1/2 EBB	34	2.0	0.301
11/30/2011	1/2 FLD	34	1.7	0.2304
1/11/2012	3/4 FLD	35	4.5	0.6532
2/16/2012	3/4 EBB	35	1.7	0.2304
4/11/2012	1/4 FLD	36	1.7	0.2304
6/5/2012	LAST FLD	35	2.0	0.301
9/13/2012	1/4 EBB	33	7.8	0.8921
11/8/2012	1/2 EBB	33	1.7	0.2304
3/19/2013	3/4 EBB	30	**22.0**	1.3424
4/2/2013	3/4 EBB	32	1.7	0.2304
6/4/2013	1/2 EBB	31	4.5	0.6532
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	36	13.0	1.1139
10/30/2013	1/2 EBB	33	7.8	0.8921
1/27/2014	1/2 EBB	32	2.0	0.301
5/2/2014	1/4 FLD	29	4.0	0.6021
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	34	6.8	0.8325
8/18/2014	3/4 EBB	28	4.5	0.6532
9/17/2014	3/4 EBB	28	13.0	1.1139
1/12/2015	1/4 FLD	28	1.7	0.2304

Station ID: 19C

# Samples:	28	**Log Avg:**	0.4195
# > 43 MPN:	0	**Log Std Dev:**	0.2867
# > 260 MPN:	0	**Geomean:**	2.6270
Median:	2	**Estimated 90th:**	6

Date	Tidal Stage	Salinity	FC	Log FC
11/4/2010	1ST EBB	31	**17.0**	1.2304
12/2/2010	1/2 EBB	30	13.0	1.1139
2/1/2011	1/4 EBB	32	6.8	0.8325
3/24/2011	1/4 FLD	29	4.0	0.6021
4/13/2011	3/4 EBB	30	1.7	0.2304
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	36	2.0	0.301
9/21/2011	1/2 EBB	34	2.0	0.301
11/30/2011	1/2 FLD	34	2.0	0.301
1/11/2012	3/4 FLD	35	2.0	0.301
2/16/2012	3/4 EBB	35	6.8	0.8325
4/11/2012	1/4 FLD	36	1.7	0.2304
6/5/2012	LAST FLD	35	1.7	0.2304
9/13/2012	1/4 EBB	33	1.7	0.2304
11/8/2012	1/2 EBB	32	1.7	0.2304
3/19/2013	3/4 EBB	30	2.0	0.301
4/2/2013	3/4 EBB	32	1.7	0.2304
6/4/2013	1/2 EBB	32	2.0	0.301
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	36	4.5	0.6532
10/30/2013	1/2 EBB	33	2.0	0.301
1/27/2014	1/2 EBB	32	4.5	0.6532
5/2/2014	1/4 FLD	29	1.7	0.2304
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	34	1.7	0.2304
8/18/2014	3/4 EBB	26	2.0	0.301
9/17/2014	3/4 EBB	28	4.5	0.6532
1/12/2015	1/4 FLD	29	1.7	0.2304

Table 12: Bacteriological Data

Station ID: 25

# Samples:	30	**Log Avg:**	0.3667
# > 43 MPN:	2	**Log Std Dev:**	0.4467
# > 260 MPN:	0	**Geomean:**	2.3264
Median:	1.7	**Estimated 90th:**	8

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	37	1.7	0.2304
9/7/2010	LAST FLD	36	1.7	0.2304
11/4/2010	1ST EBB	28	**130.0**	2.1139
12/2/2010	1/2 EBB	32	1.7	0.2304
2/1/2011	1/4 EBB	32	1.7	0.2304
3/24/2011	LAST EBB	33	4.5	0.6532
4/13/2011	3/4 EBB	30	1.7	0.2304
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	35	1.7	0.2304
11/30/2011	1/2 FLD	32	1.7	0.2304
1/11/2012	3/4 FLD	35	1.7	0.2304
2/16/2012	3/4 EBB	35	1.7	0.2304
4/11/2012	1/4 FLD	36	1.7	0.2304
6/5/2012	LAST FLD	35	1.7	0.2304
9/13/2012	1/4 EBB	32	1.7	0.2304
11/8/2012	1/2 EBB	34	1.8	0.2553
3/19/2013	3/4 EBB	30	2.0	0.301
4/2/2013	3/4 EBB	32	1.7	0.2304
6/4/2013	1/2 EBB	32	1.7	0.2304
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	36	2.0	0.301
10/30/2013	1/2 EBB	34	1.7	0.2304
1/27/2014	1/2 EBB	30	1.7	0.2304
5/2/2014	1/4 FLD	29	1.7	0.2304
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	34	1.7	0.2304
8/18/2014	3/4 EBB	24	1.7	0.2304
9/17/2014	3/4 EBB	26	**70.0**	1.8451
1/12/2015	1/4 FLD	29	1.7	0.2304

Station ID: 27

# Samples:	30	**Log Avg:**	0.2400
# > 43 MPN:	0	**Log Std Dev:**	0.0220
# > 260 MPN:	0	**Geomean:**	1.7378
Median:	1.7	**Estimated 90th:**	1

Date	Tidal Stage	Salinity	FC	Log FC
7/28/2010	1/2 FLD	37	1.7	0.2304
9/7/2010	LAST FLD	36	1.7	0.2304
11/4/2010	1ST EBB	28	1.8	0.2553
12/2/2010	1/2 EBB	32	2.0	0.301
2/1/2011	1/4 EBB	30	1.7	0.2304
3/24/2011	LAST EBB	34	1.8	0.2553
4/13/2011	3/4 EBB	32	1.7	0.2304
6/2/2011	1/2 EBB	35	1.7	0.2304
8/17/2011	1/2 FLD - 2/3 FLD	38	1.7	0.2304
9/21/2011	1/2 EBB	34	1.7	0.2304
11/30/2011	1/2 FLD	32	1.7	0.2304
1/11/2012	3/4 FLD	35	1.7	0.2304
2/16/2012	3/4 EBB	34	1.7	0.2304
4/11/2012	1/4 FLD	36	1.7	0.2304
6/5/2012	LAST FLD	35	1.7	0.2304
9/13/2012	1/4 EBB	32	1.7	0.2304
11/8/2012	1/2 EBB	34	1.7	0.2304
3/19/2013	3/4 EBB	30	1.7	0.2304
4/2/2013	3/4 EBB	32	1.7	0.2304
6/4/2013	1/2 EBB	32	1.7	0.2304
8/6/2013	LAST FLD	34	1.7	0.2304
9/17/2013	1ST EBB	36	1.7	0.2304
10/30/2013	1/2 EBB	32	1.7	0.2304
1/27/2014	1/2 EBB	32	1.7	0.2304
5/2/2014	1/4 FLD	29	1.8	0.2553
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	34	1.7	0.2304
8/18/2014	3/4 EBB	26	2.0	0.301
9/17/2014	3/4 EBB	26	1.7	0.2304
1/12/2015	1/4 FLD	29	2.0	0.301

Table 12: Bacteriological Data

Station ID: 28

# Samples:	28	**Log Avg:**	0.5301
# > 43 MPN:	1	**Log Std Dev:**	0.4475
# > 260 MPN:	0	**Geomean:**	3.3895
Median:	1.75	**Estimated 90th:**	12

Date	Tidal Stage	Salinity	FC	Log FC
11/4/2010	1ST EBB	28	**79.0**	1.8976
12/2/2010	1/2 EBB	30	**22.0**	1.3424
2/1/2011	1/4 EBB	32	7.8	0.8921
3/24/2011	1/4 FLD	32	7.8	0.8921
4/13/2011	3/4 EBB	28	1.7	0.2304
6/2/2011	1/2 EBB	35	7.8	0.8921
8/17/2011	1/2 FLD - 2/3 FLD	38	1.8	0.2553
9/21/2011	1/2 EBB	34	1.7	0.2304
11/30/2011	1/2 FLD	32	4.5	0.6532
1/11/2012	3/4 FLD	34	**17.0**	1.2304
2/16/2012	3/4 EBB	35	4.5	0.6532
4/11/2012	1/4 FLD	36	1.7	0.2304
6/5/2012	LAST FLD	33	1.7	0.2304
9/13/2012	1/4 EBB	31	1.7	0.2304
11/8/2012	1/2 EBB	32	1.7	0.2304
3/19/2013	3/4 EBB	30	7.8	0.8921
4/2/2013	3/4 EBB	32	1.7	0.2304
6/4/2013	1/2 EBB	31	1.7	0.2304
8/6/2013	LAST FLD	35	1.7	0.2304
9/17/2013	1ST EBB	34	13.0	1.1139
10/30/2013	1/2 EBB	33	1.7	0.2304
1/27/2014	1/2 EBB	32	1.7	0.2304
5/2/2014	1/4 FLD	30	1.7	0.2304
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	34	1.7	0.2304
8/18/2014	3/4 EBB	28	2.0	0.301
9/17/2014	3/4 EBB	26	2.0	0.301
1/12/2015	1/4 FLD	29	2.0	0.301

Station ID: 29A

# Samples:	6	**Log Avg:**	0.8568
# > 43 MPN:	2	**Log Std Dev:**	0.8232
# > 260 MPN:	0	**Geomean:**	7.1909
Median:	3	**Estimated 90th:**	81

Date	Tidal Stage	Salinity	FC	Log FC
5/2/2014	1/4 FLD	29	**46.0**	1.6628
6/18/2014	LAST EBB	35	1.7	0.2304
6/30/2014	3/4 FLD	34	1.7	0.2304
8/18/2014	3/4 EBB	26	4.0	0.6021
9/17/2014	3/4 EBB	26	**130.0**	2.1139
1/12/2015	1/4 FLD	29	2.0	0.301

Table 12: Bacteriological Data

Station ID: 30A

# Samples:	6	**Log Avg:**	0.3009
# > 43 MPN:	0	**Log Std Dev:**	0.1726
# > 260 MPN:	0	**Geomean:**	1.9994
Median:	1.7	**Estimated 90th:**	3

Date	Tidal Stage	Salinity	FC	Log FC
5/2/2014	1/4 FLD	29	1.7	0.2304
6/18/2014	LAST EBB	34	1.7	0.2304
6/30/2014	3/4 FLD	34	1.7	0.2304
8/18/2014	3/4 EBB	26	1.7	0.2304
9/17/2014	3/4 EBB	26	4.5	0.6532
1/12/2015	1/4 FLD	29	1.7	0.2304

Table 13: Summary of Bacteriological Data

Summary of sampling data through 1/12/2015. Shaded cells indicate stations in waters closed to shellfish harvest.

Station ID:	# Samples:	Median:	Geomean:	Estimated 90th:
1	30	2	3.6265	14
3	30	1.75	2.9497	10
4A	28	4.5	6.2114	31
5A	28	2	4.1174	20
6	30	1.9	2.4964	6
7	30	1.7	2.3191	6
8A	28	5.65	7.5928	**64**
10	30	1.7	2.7479	8
11	30	1.7	2.2265	5
14	30	2	4.8713	27
17	30	4.25	4.3418	14
19C	28	2	2.6270	6
25	30	1.7	2.3264	8
27	30	1.7	1.7378	1
28	28	1.75	3.3895	12
29A	6	3	7.1909	**81**
30A	6	1.7	1.9994	3