

REPORT OF SANITARY SURVEY

AREA B-9

STUMP SOUND AREA

MARCH 2008 THROUGH OCTOBER 2012

Prepared 2/13

Approved By: _____

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The B-9 area of coastal North Carolina, which includes the Stump Sound area in Pender and Onslow Counties, lies in the southern portion of the state off the Atlantic Ocean. Review of the bacteriological data since the last triennial survey of 2010 indicates an overall decline in bacteriological water quality statistics in most areas of B-9. As a result of this report, an expanded closure of approximately 10 acres will occur in the vicinity of Beach House Marina.

1.0 SANITARY SURVEY

1.1 INTRODUCTION

Area B-9 is composed of all the waters between the North Topsail High Rise Bridge and ICWW Channel Marker #71, to include all waters of Goose Bay, Rogers Bay, Turkey Creek, Spicer Bay, Kings Creek, Barlow Creek, Waters Bay, and all other tributaries within said boundaries. Area B-9 contains 5,769 total water acres and drains a land area of approximately 40 square miles (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 B-9 was completed in May, 2011. Additionally, an annual update was completed in 2012. The purpose of the evaluation is to identify pollution sources that may adversely impact the suitability of shellfish for consumption. The B-9 growing area is located along the northeastern portion of Pender County and the southeastern part of Onslow County. Municipalities in the growing area include Surf City, North Topsail Beach and Holly Ridge. Also in the growing area are unincorporated portions of Onslow and Pender Counties.

Primary water features within the growing area include the Atlantic Intracoastal Waterway, Kings Creek, Turkey Creek, Batts Mill Creek and all associated tributaries. Also included are Rogers Bay, Waters Bay, Spicer Bay, Goose Bay, as well as smaller creeks and additional smaller waterbodies. Those portions of the growing area within Surf City and Holly Ridge are served by municipal sewer. The town of North Topsail Beach has a regional private sewer service available that is provided by Pluris. Some homes on North Topsail Beach and most of the near shore areas along the mainland side of B-9 rely on septic systems for wastewater disposal.

The population estimate for the growing area is approximately 5,650 individuals (Census 2010). However, this estimate may not account for seasonal increases that take place during the summer months. Based on information from various sources, over 20,000 individuals would be a reasonable approximation for the summer population in B-9. Land uses in the B-9 growing area are largely

residential on the Topsail Island side of the growing area. On the mainland side agriculture predominates, however residential and commercial uses exist 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.

Point Source Pollution

Marinas – Marina facilities are evaluated during the shoreline survey because of their potential to affect the suitability of adjacent shellfish waters 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 within a marina and a portion of the waters beyond are classified as Prohibited and the harvest of shellfish is not allowed. The size of the closure is determined by the type of marina and the number of boat slips at the facility.

The B-9 growing area has five larger multi-slip docking facilities, one of which is a marina (Figure 4) and site visits were conducted at each facility. Three of the dockages have a slip count of 10 slips or less. Beach House Marina in Surf City is a commercial marina. The facility sells fuel and offers waste pump-out service. Additionally, the marina has a dry storage operation on-site. At the time of the 2012 annual survey, there were currently no vessels using the wet slips at the marina. Most of the property is now bank-owned. Slip leases were terminated and the customers that were using the site were required to leave. The marina is located in conditionally approved closed waters and there is a prohibited buffer zone associated with the facility. Based on evaluations made at each marina in B-9, there are no recommendations for expanded closures.

Stormwater – Runoff can adversely impact shellfish growing areas by rapidly transporting bacteria and other contaminants from the land to the water. Runoff from impervious surfaces, subdivisions, and other cleared land is a contributing factor to fecal coliform levels in the B-9 area (Figure 5). Primary drainages in the growing area include Batts Mill Creek, Kings Creek and Turkey Creek. All three creeks are closed to shellfishing due to exceedance of minimum water quality standards for shellfish harvest. Most of the growing area has a relatively small tidal range. This factor may prolong periods of higher bacterial counts following rain events in B-9 when compared to other areas with a greater tidal influence.

Commercial development is expanding near the intersection of NC Highway 210 and NC Highway 50 between Holly Ridge and Surf City. It appears that this area would impact Becky's Creek in B-8 and would also affect B-9, primarily Batts Mill Creek and adjacent waters. Open shellfish waters near Batts Mill Creek are approximately one mile from this area of expanding commercial business.

Golf Courses – North Shore Golf Club is divided by two growing areas, and is included in the C-1 sanitary survey. Nine holes of the 18-hole North Shore golf course are located in B-9. This portion of the course was surveyed for changes or additions to stormwater conveyances as well as any changes to sewer pump stations in the area. Stormwater runoff from the B-9 area of the course would primarily impact Goose Bay, which is open to shellfishing. Bacteriological survey results from Goose Bay suggest that stormwater from the golf course may not be a major contributor to fecal contamination at this time. However, impacts from other substances in golf course runoff are possible. Additional residential growth within this portion of North Shore may increase the amount of stormwater runoff that drains into Goose Bay.

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 failing septic systems, pet wastes, and stormwater. On this survey, aerial photography and GIS parcel data was used to determine the location and extent of each subdivision.

Thirty-four subdivisions ([Figure 6](#)) that are located on or near the water were assessed during this survey. No new subdivisions were identified during this survey. All of the subdivisions visited in this survey existed during the last survey in 2008. Most of the subdivisions experienced little or no growth during the past three years. One exception was Neighborhoods of Holly Ridge. The number of homes has increased by 178 during the past three years. This brings the current home count to 308. Stormwater from this portion of the growing area enters Batts Mill Creek.

Two of the larger campgrounds in the growing area have a majority of campers that are not removed on a seasonal basis. Rogers Bay Campground on Topsail Island had 355 campers during the site visit. The campground is connected to municipal sewer. Topsail Sound RV Park is located on the mainland side of the growing area near Morris Landing. The facility was undergoing an expansion when the site was visited. The expansion will add 40 spaces to the campground which will bring the total to 183. The park had 137 campers during the site visit. The campground utilizes onsite wastewater treatment. There are two aerobic treatment units that are feed by a gravity collection system. The treated wastewater is pumped to two low pressure pipe fields. During the inspection, the system appeared to be well maintained and functioning properly. The drainfields had proper groundcover and showed no signs of failure.

Large portions of the mainland areas of B-9 remain undeveloped. These areas have a potential for future residential growth. Summer House is a good example of a large tract of land that has been developed for homes and other uses. Although the property currently only has seven homes, it does have 1,036 home sites. Availability of wastewater service by OWASA and Pluris would likely influence future development in the B-9 growing area. The Pluris facility (located in C-1) in particular is seeing a steady increase in the number of connections to their system. Many of the new connections are in the C-1 growing area, however some new tie-ins are occurring in B-9 as well. The facility has excess capacity and is also currently undergoing an expansion. Extending sewer service from this plant into the mainland portions of B-9 is a distinct possibility. Additionally, an Onslow Water and Sewer Authority (ONWASA) regional plant (Summer House wastewater plant) may provide additional sewer availability along mainland portions of the growing area.

Onsite Wastewater – Homes and businesses within the town of Surf City are connected to the Surf City sewer system. This includes some areas on the mainland and also a portion of Topsail Island. The town of North Topsail Beach also makes up part of the Topsail Island portion of B-9. This area is served by the Pluris wastewater system. However, some of the homes in this portion of the growing area still rely on septic systems. Inspections of septic systems on North Topsail Beach revealed no failures that would affect shellfish growing waters. Inspections in the remaining portions of the growing area were conducted and no septic system malfunctions were found.

Wastewater Treatment Plants – There are three wastewater treatment facilities in the B-9 growing area (Figure 7). ONWASA operates the Holly Ridge wastewater treatment plant. The facility utilizes a baffled lagoon with aerators for initial treatment. Ultraviolet light (UV) is used for disinfection. Treated wastewater is pumped from the plant to a nearby offsite storage lagoon which has a 13 million gallon holding capacity. Adjacent to the storage lagoon are a series of sprayfields where the treated wastewater is applied. Both the treatment plant and the disposal site were inspected during this survey. No visual deficiencies were noted at either the treatment facility or the sprayfield site. At the treatment plant, the lagoon aerators were all functioning. The freeboard was acceptable and vegetation along the banks was maintained. At the sprayfield site, freeboard in the storage lagoon was within range. Groundcover in the sprayfields was being maintained at the proper height. There was no ponding of water in the fields during inspection. However, there are a few drainage features in the fields. Ponding is likely in these areas during high rainfall period. North Carolina Division of Water Quality inspection reports from 2008 -2011 were reviewed to identify the plants compliance history. Some issues identified were excessive aquatic vegetation in the lagoons, issues with the UV sterilizer on more than one occasion, inoperable generator transfer switch and inadequate winter as well as summer cover crops. The Division issued violations on several occasions during

this survey period for such issues. The current permit for this facility does not set any bacterial limits for the effluent produced by the plant. Therefore, no exceedance or violations for such are noted.

The Town of Surf City operates a wastewater treatment plant that is located off NC Highway 50 between Surf City and Holly Ridge. The plant consists of two large aerated lagoons. The plant also has an upset pond, UV sterilizer and 88 acres of sprayfields. The plant capacity is 700,000 gallons per day, however this capacity is sometimes exceeded during peak flows that usually occur in July. The facility and its adjacent disposal fields were visited during this survey. The contents of the lagoons appeared normal, the freeboards were within proper range and the berms were being maintained. There was no ponding of water on the fields and the fields appeared to be maintained properly. North Carolina Division of Water Quality inspection reports were reviewed for the survey period. Some compliance issues for the facility included poor cover crop on the disposal fields, excessive woody vegetation along the lagoon berms, and issues with a secondary disposal site at Juniper Swamp. To address the capacity issue some improvements to the plant have been implemented and a new offsite disposal site was constructed in Juniper Swamp. The disposal site was to be an infiltration lagoon, however issues with the design and construction of the lagoon have limited its use. A modification is in process that would change the design to a storage lagoon with 120 acres of sprayfields. The facility had no violations for exceeding bacterial limits during this survey period.

A large capacity package wastewater treatment plant was built to serve the development, Summer House on Everett Bay. The system is designed for up to 400,000 gallons per day and will produce reuse quality effluent, but is currently not online. As designed the plant will achieve tertiary treatment level, utilize odor control and use ultraviolet light for disinfection. The facility is designed to use infiltration ponds located within the subdivision for effluent disposal. ONWASA purchased the plant in February, 2009. It is possible that the package plant will become a regional wastewater treatment plant. It would accept some of the flow that currently goes to the Holly Ridge plant, reducing the demand on that facility.

No sewer system overflows were reported from the Pluris wastewater collection system during the last three years. However, Holly Ridge and Surf City both experienced bypasses at their treatment facilities. Also, Surf City had several overflows within their collection system. During the last week of September, 2010 the remnants of tropical storm Nicole resulted in at least 20 inches of rain over much of coastal North Carolina. This event caused flooding and related issues for many of the municipalities along the coast.

The Town of Surf City reported four sewer system overflows during the time period of this Sanitary Survey Report. Two of the spills occurred at Pump Station #29 on Sea Manor Drive, the first in September, 2009 and again in November, 2009. The first spill was estimated at 14,400 gallons and the second at 6,000

gallons. The spill in September, 2009 resulted in a precautionary shellfish closure of adjacent waters that was in place for 21 days. In late September of 2010, Surf City officials reported an overflow at Pump Station #11. The pump station is located on Kinston Avenue in an area that could affect waters in B-8 and B-9. As a precaution, waters near this spill site were closed to shellfishing for 21 days. Following the September 2010 rain event, the disposal fields at the wastewater treatment plant were inundated from the excessive rain. Plant officials had to pump the treated wastewater to their secondary disposal site in Juniper Swamp. The infiltration basin at the Juniper had already been deemed non-compliant by the Division of Water Quality, however pumping to this site may have been the only way to prevent an overflow at the plant. One-million seven hundred thousand gallons of treated wastewater were pumped to this site where a portion of this volume spilled into Juniper swamp.

Approximately 20,000-60,000 gallons of raw sewage spilled into a ditch leading to a tributary of Batts Mill Creek near the Surf City wastewater treatment plant on January 1, 2013. This spill resulted in an additional 21 day shellfish closure for a portion of Stump Sound. All of these sewer system overflows resulted in violations from the Division of Water Quality.

Holly Ridge reported no sewer collection system overflows during the last three years. However, one bypass was reported at their wastewater treatment plant. The bypass occurred during the last week of September, 2010 and was due in part to heavy rains from the remnants of tropical storm Nicole. The spill resulted in the release of approximately 130,000 - 150,000 gallons of partially treated wastewater into a tributary of Kings Creek. As a precaution, waters near the mouth of Kings Creek were closed to shellfishing for 21 days. This spill resulted in a violation from the Division of Water Quality.

During the 2012 annual survey, follow up visits were made at the Surf City and the Holly Ridge wastewater plants. A walkthrough of the plant and the disposal fields was conducted at each plant. General plant operations and any future or ongoing changes were discussed with each plant operator. No visible deficiencies at the Holly Ridge or the Surf City plant and their disposal fields were noted. The most recent Division of Water Quality inspection records indicate both facilities comply with their permit to treat wastewater. The Summerhouse package wastewater treatment plant does not have enough influent to operate. ONWASA owns the plant and in September, 2012, they were issued a pump and haul permit as a transitional means of wastewater removal. No sewer system overflows were reported from any of the service providers in the growing area in the year prior to the annual visit in 2012.

Wildlife and Domestic Animals – Livestock in the growing area mostly consists of horses. There are two commercial stables in B-9 as well as several smaller operations that house fewer numbers of animals (Figure 8). The management of vegetative covers and animal waste was adequate at all of the sites visited. Both

of the stables are located more than two miles from open shellfish waters. Areas within the growing area provide ideal habitat for deer and other mammals. This is particularly true along the mainland portions of B-9 where resident populations of these animals would be the greatest.

Areas of Concern / Poisonous and Deleterious Substances – No areas of concern were identified during this survey. Additionally, no sources of poisonous or deleterious substances were identified in the B-9 growing area.

1.3 HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

Tidal movements in the B-9 area are primarily influenced by New River Inlet in the east and by Topsail Inlet in the west. Currents move relatively slow throughout the area. Salinities are generally high, and ranged from 12 to 40 parts per thousand during the time period of this survey ([Table 6](#)).

Rainfall amounts for the B-9 area are measured using several rain gauges, one of which is in the North Topsail Beach area. Rainfall amounts are recorded, and monthly tally sheets are received by the Shellfish Sanitation and Recreational Water Quality Section. Calls are also made to this contact person as needed to assess rainfall. Monthly rainfall has averaged to be 3.75” during the time period of this Sanitary Survey. This is compared to an average of 3.52” at the time of the last report in 2010. Refer to [Table 7](#) for rainfall amounts during the period of this survey.

For Area B-9, rainfall and the resultant runoff is the process most detrimental to bacteriological water quality. Temporary closures to shellfish harvesting are recommended for the portion of the Stump Sound area that is normally open when rainfall exceeds 1.5” or greater within a 24 hour period.

During the time period of this report, portions of the *Conditionally Approved* waters of Area B-9 that are normally open have been closed 40 times for a total of 299 days due to rainfall and runoff. Five of these closures, totaling 71 days, were caused by extremely heavy rainfall associated with Tropical Storm Hanna in September 2008, Tropical Storm Ida in November 2009, Hurricane Irene in August 2011, Tropical Depression Beryl in May 2012 and Hurricane Sandy in October 2012. Two separate wastewater discharges into B-9 waters caused portions to be closed for a total of 50 days. See [Table 8](#) for a listing of temporary closures in this area and [Table 9](#) for samples collected prior to reopening these areas.

Parts of B-9 are classified as *Conditionally Approved* and are normally closed to shellfish harvest ([Figure 2](#)). These areas can be temporarily opened when weather conditions are favorable and when water and shellfish samples are satisfactory. No temporary openings occurred during the time period of this report. One attempt to open the *Conditionally Approved* section of Kings Creek

occurred on 12/15/11, but the bacteriological results from the shellfish meat sample was not suitable.

1.4 BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

The monitoring of Area B-9 adheres to the systematic random sampling strategy outlined by the National Shellfish Sanitation Program (NSSP) and consists of 30 sample sets from 24 sampling stations ([Figure 2](#)).

The bacteriological survey covered for the preparation of this report included water samples from 3/18/08 through 10/22/12. During that time period, a total of 720 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 10](#) 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.

Three of the twenty-four sampling stations currently exceed approved NSSP bacteriological standards. All three of these stations are located in areas that are closed to shellfish harvest.

Station #5, located at the mouth of Batt's Mill Creek, has a geometric mean of 9.40 and exceeds approved standards with an estimated 90th percentile of 56. This is a slight increase from the 2010 Sanitary Survey Report when the geometric mean was 8.43 and the estimated 90th percentile was 51.

Station #10 is located approximately 100 yards east of the Beach House Marina. This station has a geometric mean of 11.80 and exceeds approved standards with an estimated 90th percentile of 98, which is an increase from 2010 when the geometric mean was 6.60 and the estimated 90th percentile was 44.

Station #20A, located in Turkey Creek, has a geometric mean of 9.04 and exceeds approved standards with an estimated 90th percentile of 99. At the time of the 2010 report, the geometric mean was 6.12 and the estimated 90th percentile was 50.

1.5 SUMMARY OF BACTERIOLOGICAL DATA ANALYSIS

Analysis of the bacteriological data for area B-9 indicates an overall decline in bacteriological water quality since the last Sanitary Survey Report of 2010. This may be partly due to an increase in the average monthly rainfall for this report period versus the last report period. All stations exceeding approved standards are located in areas already closed to shellfish harvest.

Refer to [Table 11](#) for summary and descriptive bacteriological statistics.

1.6 OVERALL EVALUATION AND RECOMMENDATIONS

Bacteriological water quality statistics at station #5 in Batts Mill Creek has shown a slight decline since the last Sanitary Survey Report. A new station, #5A, will be added approximately 200 yards southwest of #5 in the open area in order to ensure the current closure is adequate.

Station #10, located near Beach House Marina, has shown a significant decline in bacteriological water quality statistics in recent years. This station is approximately 30 yards from the current closure line. Because a new station is not able to be added outside the current closure line due to shallowness, the closure will be expanded by approximately 10 acres in order to ensure the closure line is adequate.

Classification of the rest of the B-9 area appears to be adequate. No other changes in classification are necessary at this time.

2.0 CONDITIONAL AREA MANAGEMENT PLAN

2.1 INTRODUCTION

Area B-9 is composed of all the waters between the North Topsail Beach High Rise Bridge and ICWW Channel Marker #71, to include all waters of Goose Bay, Rogers Bay, Turkey Creek, Spicer Bay, Kings Creek, Barlow Creek, Waters Bay, and all other tributaries within said boundaries. See [Figure 2](#) for an area map.

The portion of this area classified as *Conditionally Approved* that is normally open to shellfish harvest includes all waters between the North Topsail Beach High Rise Bridge and the Surf City Bridge. There are portions of Area B-9 that are classified as *Conditionally Approved* that are closed to shellfish harvest on a regular basis. The areas included in this classification are Turkey Creek, the outer portion of Kings Creek at Spicer Bay, Batts Mill Creek, a portion of the Waters Bay area, a portion of the waters near Beach House Marina, and a portion of the waters near Sears Landing ([Figure 2](#)). If management plan criteria are met, these areas can be opened to shellfish harvesting on a temporary basis.

Water quality in the majority of Area B-9 is affected by rainfall and the resultant runoff. The region is a productive shellfish harvest area, and numerous shellfish leases are located in the Stump Sound area.

2.2 MANAGEMENT PLAN

The *Conditionally Approved* section of Area B-9, which is normally open to shellfish harvest, will be immediately recommended closed after 1.5 inches of

rain or greater within 24 hours. This temporarily closed area includes the following:

All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.

This closure includes all waters in the B-9 and C-1 areas. These areas will remain closed until such time as the rainfall event has ended, and sampling indicates water quality meets approved area criteria.

The Turkey Creek, outer portion of Kings Creek at Spicer Bay, Batts Mill Creek, a portion of the Waters Bay area, a portion of the waters near Beach House Marina, and a portion of the waters near Sears Landing are normally closed to shellfish harvesting and are classified as *Conditionally Approved* (Figure 2). These areas are opened to shellfishing on a temporary basis only during periods of favorable weather conditions that make nonpoint source contamination unlikely. Sampling of both water and shellfish meats is conducted prior to opening. Sampling will continue after opening; the frequency to be determined by the area and the hydrographic and meteorological conditions. Each of the conditionally approved closed areas will be recommended closed after 0.5 inches of rain or greater within a 24 hour period or 0.75 inches of rain or greater within a 48 hour period. Recommended closures are immediate.

Rainfall amounts for the B-9 area are measured using rain gauges in the North Topsail Beach and Surf City areas. A private citizen records rainfall amounts, and monthly tally sheets are received by the Shellfish Sanitation and Recreational Water Quality Section. When a rainfall event has occurred, calls are also made to this contact person, as well as others in the area as needed so that accurate information is available to determine temporary closures.

2.3 IMPLEMENTATION OF MANAGEMENT PLAN

If the rainfall level in the management plan for the area is exceeded, a Division of Marine Fisheries (DMF) proclamation is issued for immediate temporary closure of the conditionally approved area. DMF issues the proclamation closing the area and distributes the proclamation by fax, mail, and Internet 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 the DMF Communications Center in Morehead City for information regarding rainfall reports. The DMF Communications Center is on duty 24 hours a 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 the area to return to normal, the temporarily closed area will be sampled. If the results indicate fecal coliform levels to be acceptable, a proclamation is issued 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) *conditionally 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 Stump Sound area, B-9, in Pender and Onslow Counties. 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 B-9 adheres to the systematic random sampling strategy outlined by the National Shellfish Sanitation Program (NSSP) and consists of 30 sample sets from 24 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.

Rain events that exceed management plan criteria of 1.5 inches of rain within a 24-hour period result in a recommendation for temporary closure of the conditionally approved area. Table 8 contains a listing of temporary closures of the conditionally approved waters of Area B-9. Review of the management plan for area B-9 during the time period of this Sanitary Survey Report indicates that all closures were made in accordance with the requirements of the plan, with the

possible exception of two events. The main rain gauge contact is a local government office which has not been open or available to check rainfall amounts on weekends.

A rain event totaling 1.50 inches was reported on the tally sheet for 2/17/10. The tally sheet was not received until the end of the month. A closure was not made as the rain gauge contact was not available on the weekend, and a neighboring gauge in Area C-2 in New River reported 1.4 inches on that day.

The monthly tally sheet showed 1.5 inches for 8/5/11. This gauge is the North Topsail Beach rain gauge. The South Topsail Beach rain gauge reported 0.8 inches of rain, so a closure was made for Area C-1 but not B-9 in accordance with the rain gauge results and radar, as it was not required.

A rain event totaling 1.5 inches was shown for 9/8/12 on the tally sheet, which was not received until the end of the month. A closure was not made as the rain gauge was not available on the weekend. Other neighboring rain gauge contacts were not able to be reached, and the radar appeared to indicate a closure was not necessary.

In order to detect all future events that exceed management plan criteria, calls are now made to the rain gauge locations after any rain event. It is also requested that the rain gauge contact persons call the office after rainfall amounts that exceed the management criteria. Additional resources are now being used to determine the locations and amount of precipitation, such as the NOAA National Weather Service and other commercial weather websites. Additionally, plans are now made to have someone available to check the rain gauge totals on weekends, which was not available up until this time.

There are a number of *Conditionally Approved* areas in B-9 that are normally closed to shellfishing and can be temporarily opened when weather conditions are favorable and when water and shellfish samples are suitable. There have been no temporary openings since the last survey report.

3.3 ADEQUACY OF REPORTING

For coastal North Carolina, rainfall and the resultant runoff is the event 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. The process of developing management plans for conditionally approved areas is complex. Rainfall amounts vary tremendously, and there are often significant differences within a two-mile area. Current procedures for obtaining rainfall information for Area B-9 include the use of several rainfall stations. Monthly tally sheets are received from some of these stations. Rainfall amounts are checked by telephone daily as needed.

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 7](#).

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 B-9 indicates three stations used during the current survey period that exceed NSSP approved criteria. All of these are currently located in *Prohibited* or *Conditionally Approved* waters that are closed to shellfishing; therefore, no changes in classification are necessary in these areas.

3.6 FIELD INSPECTION OF POLLUTION SOURCES

A comprehensive shoreline survey of the B-9 area was completed in May 2011 in accordance with requirements of the NSSP "Guide For The Control of Molluscan Shellfish", Chapter IV, @ .03. Additionally, annual updates occur in years when comprehensive shoreline surveys do not.

3.7 COLLECTION OF WATER SAMPLES

During the time period of this Sanitary Survey Report, Area B-9 has been sampled in accordance with the management plan criteria of the area as required by the conditionally approved classification of the National Shellfish Sanitation Program (NSSP). Area B-9 currently adheres to the systematic random sampling strategy outlined by the NSSP and consists of 30 sampling sets from 24 sampling stations located throughout the area ([Figure 2](#)).

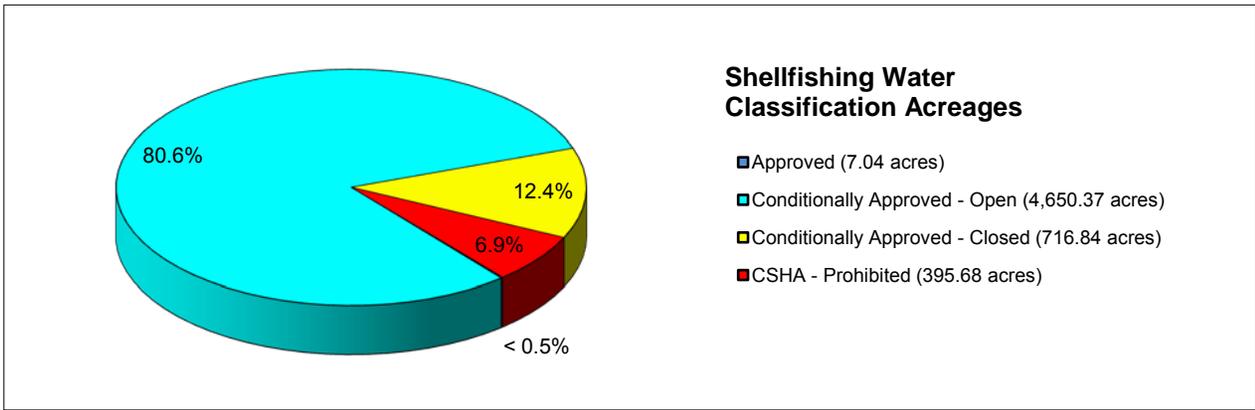
The bacteriological survey covered for the preparation of this report included water samples from 3/18/08 through 10/22/2012. [Table 10](#) lists, for each individual sampling station, the date the sample was obtained, the tidal cycle upon which the sample was taken, and ambient salinity. Fecal coliform MPN and summary statistics are listed here as well.

Additionally, 198 water samples were collected in order to assess status prior to reopening *conditionally approved open* areas that had been closed due to rainfall ([Table 9](#)).

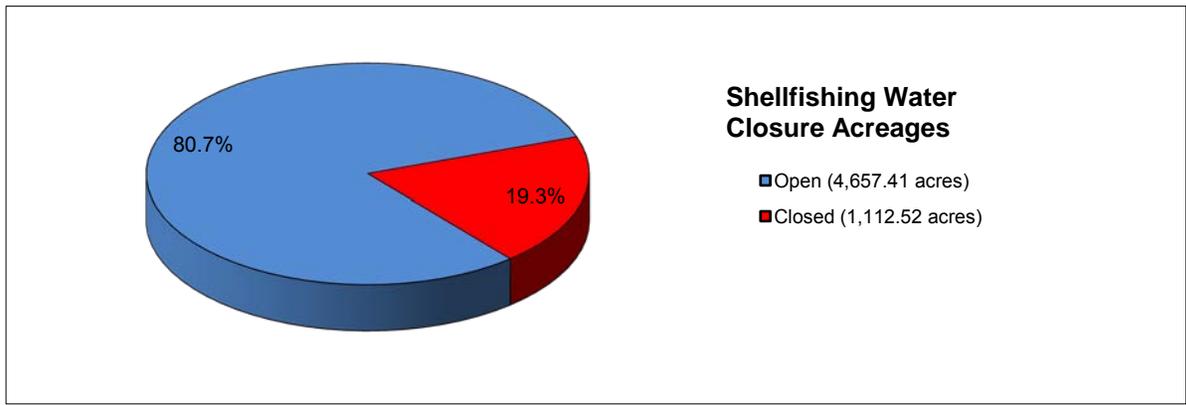
3.8 SUMMARY

The conditionally 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



Classification	Acres	Percent of Total
Approved	7.04	< 0.5%
Conditionally Approved - Open	4,650.37	80.6%
Conditionally Approved - Closed	716.84	12.4%
CSHA - Prohibited	395.68	6.9%
Total	5,769.93	100.0%



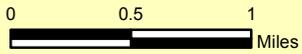
Status	Acres	Percent of Total
Open	4,657.41	80.7%
Closed	1,112.52	19.3%
Total	5,769.93	100.0%

B-9 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



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Sampling Stations

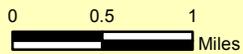
B-9 SAMPLING STATION DESCRIPTIONS**TABLE 1**

STATION#	DESCRIPTION OF SITE	COUNTY
1A	Surf City Bridge	PENDER
3	Waters Bay, 1300 yds. SW of Station #4	PENDER
4	Queens Hole, 1300 yds. NE of Station #3	PENDER
5	Mouth of Batts Mill Creek	PENDER
6	By Flashing Beacon #61, ICWW	PENDER
8A	Peterson Cut	PENDER
10	800 yards south of Day Marker #69, by marina	PENDER
12	Sears Landing north of ICWW and West of Bridge	PENDER
14	By Beacon #49, ICWW	ONSLOW
15	Sea Haven Bay	ONSLOW
18	Tar Landing	ONSLOW
19	Everett Bay	ONSLOW
20	Mouth of Turkey Creek	ONSLOW
20A	Turkey Creek, near ramp	ONSLOW
21	Mouth of Rogers Bay	ONSLOW
22	Goose Bay	ONSLOW
23	Spicer Bay, E of Closure	ONSLOW
24A	Kings Creek, W of Closure	ONSLOW
27	Marker #43, ICWW	ONSLOW
28	At west end of Permuda Island	ONSLOW
29	Permuda Island, Adams Lease	ONSLOW
34A	Old Settlers Beach, E of closure	ONSLOW
35	Middle Cove west of Dixon Point	ONSLOW
36	750 yards south by east of Day Marker #159, in creek	ONSLOW

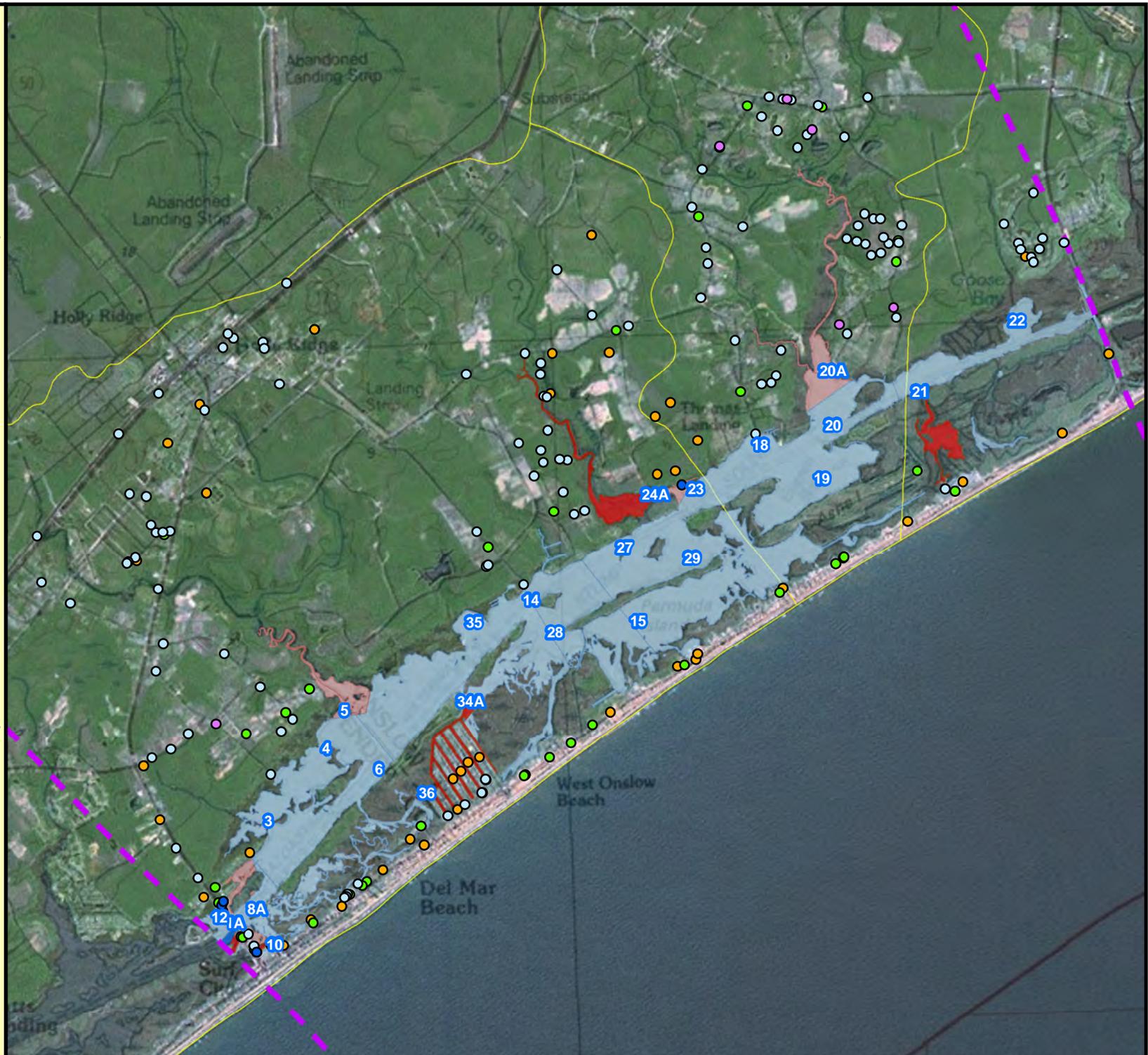
B-9 Growing Area: Actual and Potential Pollution Sources

Legend

- Animals
 - Area 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



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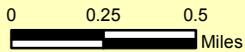


Pollution: All Sources

B-9 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



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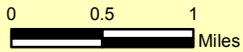
Table 2: Dockage

SGA INDEX	MARINA	SLIP COUNT 2011	SLIP COUNT 2012	COMMENTS
358	BEACH HOUSE MARINA	29	29	
359	SEARS LANDING	10	10	
406	SOUNDS EDGE VILLAGE	10	10	
360	TRADE WINDS OF ANNA MARIA	10	10	
619	SUMMERHOUSE	10	10	PREVIOUSLY UNSURVEYED

B-9 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



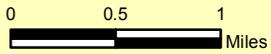
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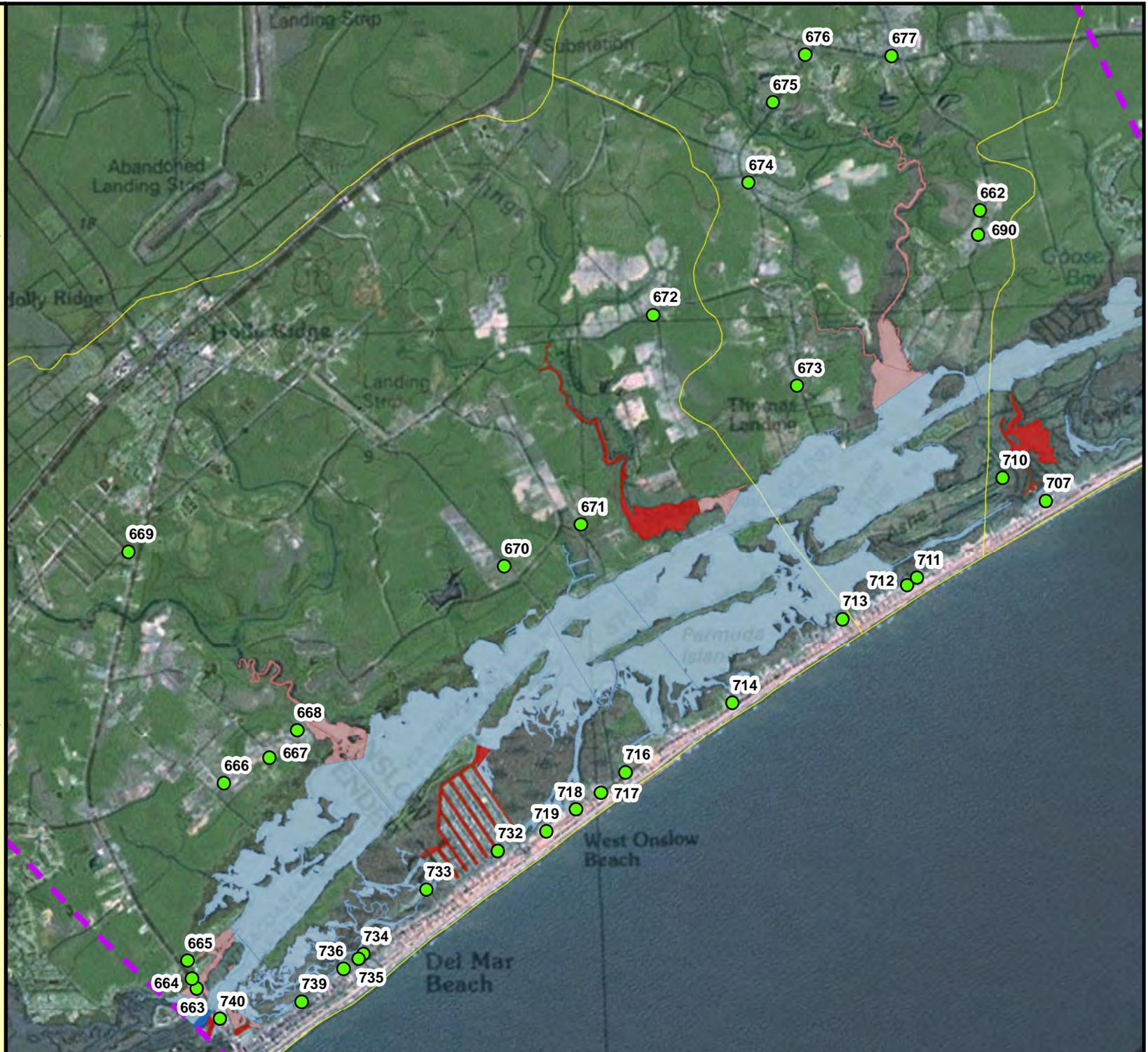
B-9 Growing Area: Subdivisions

Legend

-  Subdivisions
 -  Shellfish Growing Area Boundaries
 -  14-digit Hydrologic Units
- Shellfish Growing Area Classifications**
-  Approved
 -  Conditionally Approved-Open
 -  Conditionally Approved-Closed
 -  Prohibited



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Pollution: Subdivisions

Table 3: Subdivisions

SGA INDEX	SUBDIVISION NAME	LOTS	2009 HOMES	2011 HOMES	GROWTH	COMMENTS
662	CREEKS EDGE	135	88	89	Low	
663	HARBOR POINTE	11	11	22	Low	Each duplex was counted as two homes
664	HARBOR TOWN TOWHHOMES	16	5	5	Low	
665	ATKINSON POINT & SEA MANOR DR	100	80	83	Low	
666	CORDTS LN & HERON COVE RD	25	14	16	Low	
667	HERON COVE	20	8	9	Low	
668	MILL CREEK MOBILE HOME PARK	116	103	105	Low	
669	NEIGHBORHOODS OF HOLLY RIDGE	447	130	308	High	Notable growth since previous survey
670	TOPSAIL SOUND RV PARK	143	118	137	Low	
671	KINGS HARBOR	124	8	49	Low	
672	SUMMERHOUSE ON EVERETT BAY	1036	0	0	Low	
673	ROYAL PALMS	44	4	5	Low	
674	SOUTH PARKER RD	55	40	44	Low	
675	MAINLAND DR	25	19	19	Low	
676	CLEARVIEW DR	80	65	65	Low	
677	LAKE HAVEN	26	24	24	Low	
690	TURKEY CREEK MHP	1	23	21	Low	
707	ROGERS BAY CAMPGROUND	1	480	355	Low	
710	ASHE ISLAND ESTATES	26	6	6	Low	
711	CALINDA CAY	1	16	16	Low	
712	HERON CAY	1	16	16	Low	
713	BURMUDA LANDING	1	60	62	Low	
714	PORTOFINO	38	24	51	Low	Each duplex was counted as two homes
716	THE VILLAGE OF STUMP SOUND	118	83	112	Moderate	
717	SURF CITY CAMPGROUND	1	100	23	Low	High seasonal variation in the number of campers. Around 100 total is typical.
718	WINTER HAVEN	74	60	60	Low	
719	SEASIDE VILLAGE	12	12	12	Low	
732	OLD SETTLERS BEACH	683	594	592	Low	
733	BOCA BAY	20	18	18	Low	
734	WATERS BAY	14	14	14	Low	
735	MANDALAY BAY	19	0	0	Low	
736	EGRET LANDING	18	18	18	Low	
739	TOSAIL COVE	12	19	19	Low	
740	BLACKBEARDS TREASURE CAMPGROUND	1	54	53	Low	Most campers at this facility are permanent

B-9 Growing Area: Wastewater

Legend

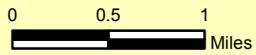
Wastewater

Category

-  LIFTSTATION
-  MUNICIPAL WWTP
-  PACKAGE PLANT
-  OTHER - SEE COMMENTS
-  Shellfish Growing Area Boundaries
-  14-digit Hydrologic Units

Shellfish Growing Area Classifications

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



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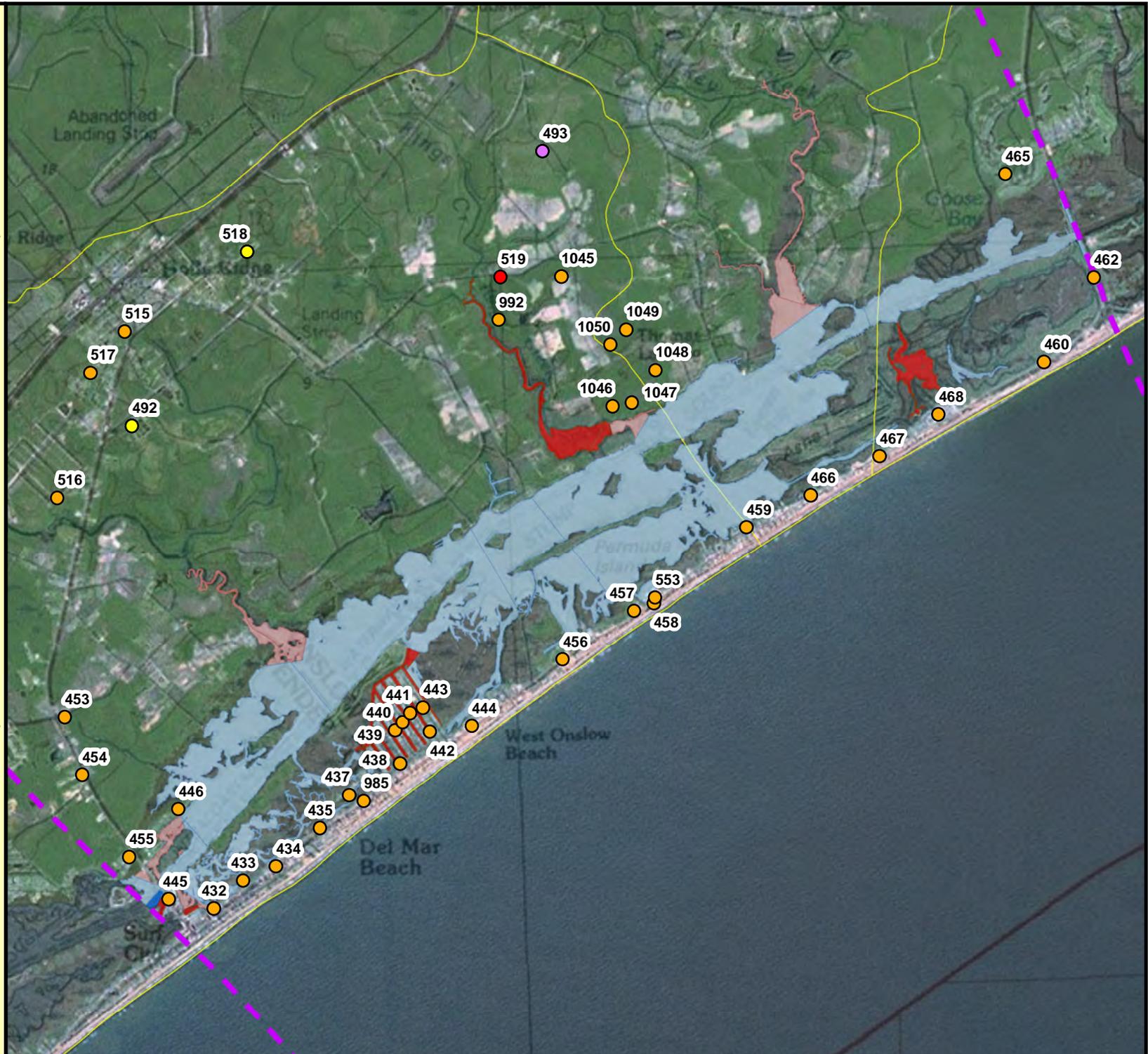


Table 4: Wastewater

SGA INDEX	NAME	CATEGORY	COMMENTS
432	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 12
433	SURF CITY LIFTSTATION	LIFTSTATION	PRIVATE LIFTSTATION @ TOPSAIL COVE
434	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 13
435	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 14
436	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION #16 - INACTIVE
437	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION-BOCA BAY LN - NO ID # POSTED
438	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 17
439	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 18
440	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 19
441	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 20
442	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 21
443	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 22
444	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION # 54
445	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION #23
446	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION #29 - SEA MANOR DRIVE - SEWER SYSTEM OVERFLOWS - 09/09 & 11/09
453	SURF CITY LIFTSTATION	LIFTSTATION	LIFT STATION # 34
454	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION #33
455	SURF CITY LIFTSTATION	LIFTSTATION	LIFT STATION # 24
456	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 17
457	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 18
458	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 40
459	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 22
460	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 14
462	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 25
465	PLURIS LIFTSTATION	LIFTSTATION	LARGE CAPACITY LIFTSTATION AT HIGHRISE BRIDGE. NO ID # POSTED
466	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 23
467	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 24
468	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 42
492	SURF CTY WWTP	MUNICIPAL WWTP	OVERFLOW OF 1.7 MILLION GALLONS TREATED WASTEWATER AT OFFSITE DISPOSAL LAGOON
493	HOLLY RIDGE WWTP - STORAGE LAGOON & SPRAYFIELDS	MUNICIPAL WWTP	
515	HOLLY RIDGE LIFTSTATION	LIFTSTATION	LIFTSTATION - JENKINS STREET
516	HOLLY RIDGE LIFTSTATION	LIFTSTATION	LIFTSTATION - BELVEDERE DRIVE
517	HOLLY RIDGE LIFTSTATION	LIFTSTATION	LIFTSTATION - CYPRESS STREET
518	HOLLY RIDGE WWTP	MUNICIPAL WWTP	BYPASS OF 1.3 - 1.5 MILLIONS GALLONS PARTIALLY TREATED WASTEWATER TO KINGS CREEK TRIBUTARY - 09/10
519	SUMMERHOUSE ON EVERETT BAY PWWT	PACKAGE PLANT	PLANT IS NOT IN OPERATION. POSSIBLE PLANS INCLUDE MAKING THIS A REGIONAL PLANT.
553	PLURIS LIFTSTATION	LIFTSTATION	LIFTSTATION # 41
985	SURF CITY LIFTSTATION	LIFTSTATION	LIFTSTATION #15

B-9 Growing Area: Animals

Legend

Animals

- CATTLE
- HORSES

14-digit Hydrologic Units

Shellfish Growing Area Classifications

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



0 0.25 0.5
Miles



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Table 5: Animals

SGA INDEX	TYPE	COMMENTS
263	HORSES	TRIPLE J STABLES
259	CATTLE	
261	HORSES	MOBLEY'S STABLES
258	HORSES	
262	HORSES	
260	HORSES	

B9 2013 Tides and Salinities

Date	Tidal Stage	Station ID																							
		1A	3	4	5	6	8A	10	12	14	15	18	19	20	20A	21	22	23	24A	27	28	29	34A	35	36
11/20/2007	3/4 EBB											36													
3/18/2008	1/2 EBB	34	32	33	31	34	34	32	32	32	30	32	30	30	30	30	30		30	30	30	33	32	32	
5/20/2008	3/4 FLD	37	37	36	36	36	37	37	37	36	36	35	35	35	35	35	35	35	35	35	36	35	36	36	
6/30/2008	1/2 EBB	38	38	38	37	38	38	38	38	38	36	38	38	37	37	36	37	38	37	37	38	38	37	38	38
8/7/2008	3/4 EBB	37	38	36	35	38	36	36	38	38	36	36	36	35	35	36	34	36	36	36	36	36	36	36	
10/9/2008	3/4 EBB	35	35	34	32	35	35	35	34	35	34	33	34	32	32	31	32	33	32	33	32	33	33	34	32
12/15/2008	1/2 FLD	31	30	26	18	28	30	30	30	28	26	25	28	27	25	28	28	28	27	26	28	26	30	28	30
3/31/2009	LOW	32	32	30	28	32	31	32	33	29	30	28	28	27	28	26	28	30	26	28	30	30	30	30	31
6/1/2009	LOW	38	35	35	34	35	37	36	36	35	33	33	32	32	33	34	32	34	32	33	34	34	35	35	34
7/22/2009	1/4 EBB	35	36	37	36	35	35	35	36	35	35	33	35	33	35	35	35	34	35	36	36	35	36	36	35
9/21/2009	LAST FLD	25	24	28	23	23	25	25	25	24	22	24	24	25	23	24	25	24	25	24	24	22	23	24	24
12/17/2009	1ST EBB	28	23	21	20	25	29	24	25	20	16	20	18	18	16	17	19	18	17	18	18	19	20	19	20
12/28/2009	3/4 EBB	21	19	19	17	18	18	19	20	17	16		13	15	16	12	14	12	12	18	16	16	19	20	19
3/17/2010	HIGH	31	26	26	26	26	31	29	31	24	21	21	21	20	20	21	21	21	23	22	21	21	25	25	25
5/5/2010	LAST EBB	35	35	35	34	35	35	35	35	36	36	36	36	36	31	36	36	36	36	36	36	36	35	35	35
6/30/2010	LOW - 1ST FLD	36	38	38	37	38	36	36	35	36	36	37	39	38	38	36	37	35	37	36	36	38	37	36	38
8/3/2010	1/4 FLD	37	38	38	37	38	39	38	38	38	37	38	37	37	36	37	36	37	36	37	38	37	37	38	38
9/8/2010	LAST EBB	39	39	39	39	38	38	39	39	39	39	39	39	39	38	37	37	37	39	38	39	39	39	39	39
12/16/2010	LAST EBB	33	33	31	29	31	34	32	32	31	31	31	30	30	25	30	30	30	29	31	31	30	31	31	30
3/22/2011	1ST FLD	33	32	31	30	31	34	32	35	31	30	30	30	30	26	30	26	29	29	30	30	30	31	31	31
5/9/2011	3/4 EBB	37	37	36	34	35	36	36	35	36	36	35	35	35	35	35	35	36	35	36	37	36	36	36	37
6/7/2011	LAST EBB	39	39	40	40	39	39	39	39	39	40	39	40	40	39	39	40	40	40	40	40	40	39	39	39
8/2/2011	LATE EBB	39	40	40	39	39	39	39	37	39	39	40	40	39	40	40	39	39	39	39	39	39	39	39	39
12/13/2011	3/4 FLD	38	35	35	33	35	36	36	36	36	35	31	33	32	31	31	31	33	33	32	36	34	33	35	35
12/15/2011	1/4 FLD																								
12/28/2011	1/2 FLD	36	37	31	35	34	36	35	35	32	32	32	32	33	30	32	32	33	31	35	33	34	34	35	38
1/5/2012	1/2 EBB	35	35	35	37	36	35	34	35	32	35	33	35	32	34	32	34	36	32	36	34	35	35	36	31
5/3/2012	1/2 EBB	36	36	36	38	36	35	36	36	36	36	38	37	36	36	36	36	38	36	36	36	36	36	36	38
6/20/2012	LAST FLD	33	35	34	34	35	35	35	34	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
8/16/2012	LAST FLD	34	32	34	31	35	35	32	33	32	31	32	32	31	31	31	31	32	32	32	32	32	34	32	32
9/10/2012	1/2 EBB	31	29	29	29	30	30	29	29	29	26	26	25	26	26	26	25	26	24	29	29	26	29	29	29
10/22/2012	1/2 EBB	36	35	35	32	33	36	36	35	32	33	33	33	34	34	33	32	33	33	34	32	33	35	24	35

Table 7: B-9 Rainfall

RAINFALL 2009 NORTH TOPSAIL													RAINFALL 2010 NORTH TOPSAIL												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1																		0.3	0.44			4.25		1	
2																				0.2					
3		0.3		1						0.15		2.3						0.3		0.5					
4							1.25	0.56														0.8	0.2		
5					0.15	0.3	0.5												0.5						
6					0.5			0.2		0.3		0.15													
7				0.48		0.04				8.5									0.5						
8					0.3																				
9												0.2													
10						0.05													0.1						
11	0.4			0.5								2.75								0.8		0.3			
12												4.9													
13	0.5						0.3	0.85		0.5													1.25		
14						0.4	0.9	0.58				0.2						0.2							
15					0.8			0.6		0.55								0.7							
16			0.2			0.85				0.08							0.15	0.45							
17			1.1																						
18					1.75	0.02											0.26								
19		0.94			0.3	0.02						1.2						3.06	2				0.75		
20												0.48					0.08		0.2						
21																									
22		0.1								0.42								0.08							
23										2.5										0.4					
24							1.5			0.3									0.26						
25							0.5			0.2									0.1						
26										0.5		2.75													
27			0.3		0.2	1				0.8															
28			0.6							0.8	0.15								1			0.5			
29	0.4		0.2					0.3												3.5	0.3				
30	0.1																			0.15					
31				0.1								0.2						0.15		7.25					
TOTAL	1.40	1.34	2.40	1.98	4.10	2.68	4.95	3.09	13.52	2.43	9.33	7.35	3.30	4.62	6.06	0.87	1.49	0.95	5.78	4.16	12.70	5.05	0.80	3.45	

RAINFALL 2011 NORTH TOPSAIL													RAINFALL 2012 NORTH TOPSAIL												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1				0.2				0.25		0.3	0.2		0.06			0.15			0.11		0.22				
2		0.15												0.15				0.29	2.29		0.48				
3		0.2																		1.5	0.34				
4		0.65									0.53					0.12					0.02				
5		1.6						1.5								0.85						0.3	0.1		
6		0.4		0.3								0			0.07		0.03								
7			0.7		0.2					1							0.37	1	1	1.1		0.88			
8		0.72					0.2			0.2								0.7	1.5	1.1		1.1	0.2		
9																			0.15		1.1				
10		0.3	0.2				0.7										0.06		0.3				0.3		
11											0.5								0.3				0.4		
12		0.2																1.1	0.56						
13						0.1		0.15	0.1								0.69		0.93		0.08	1			
14							0.1	0.82													0.06	0.1			
15								0.7													0.15				
16			0.25							0.9									0.9		0.15	0.31			
17												0.12													
18	1.4																						0.2		
19	0.1																						0.25		
20																						2.2			
21																			2.06						
22										0.2									0.1				0.35		
23				0.15				0.1	0.2									0.04	0.1						
24						0.42											0.07	0.4							
25							0.1	0.2	1																
26	1.65								0.4		0.4												0.15		
27			0.35						0.3											0.43			1.25		
28																0.21									
29				0.15		0.3		5.25													2.75	0.15			
30								1				0.4								1	0.3		1.25		
31			1.1													1.43		0.2	1.9						
TOTAL	3.15	4.22	2.60	0.80	0.20	0.82	1.10	10.07	4.30	0.80	1.65	0.65	0.94	1.91	1.77	1.23	3.01	0.79	2.63	11.80	4.70	6.46	4.13	5.55	

Table 7: B-9 Rainfall

RAINFALL 2013 NORTH TOPSAIL												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1												
2	0.24											
3												
4												
5												
6												
7												
8		3.25										
9												
10												
11		0.75										
12		0.15										
13		0.5										
14												
15												
16												
17		0.15										
18												
19												
20		0.15										
21												
22												
23												
24		1.5										
25												
26												
27												
28												
29												
30												
31												
TOTAL	0.24	6.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 8: Temporary Closures Area B-9

DATE	DESCRIPTION	CLOSE	OPEN	REASON
02/13/08	All those waters from the Surf City Bridge to Swan Point	13-Feb		Rainfall
02/16/08	Swan Pt to Surf City Bridge returns to normal boundaries		17-Feb	Sampling
04/04/08	All those waters between ICWW Channel Marker #25 and ICWW Channel Marker #27, to include Goose Bay.	4-Apr		Discharge
04/30/08	All those waters between ICWW Channel Marker #25 and ICWW Channel Marker #27, to include Goose Bay.		30-Apr	Discharge
05/12/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	12-May		Rainfall
05/15/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge returns to normal boundaries.		16-May	Sampling
08/08/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	8-Aug		Rainfall
08/13/08	B-9 returns to normal closure boundaries.		14-Aug	Sampling
09/06/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	6-Sep		TS Hanna
09/09/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		10-Sep	Sampling
09/11/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	11-Sep		Rainfall
09/16/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		17-Sep	Sampling
09/26/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by Snows Cut.	26-Sep		Rainfall, flooding
09/30/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by Snows Cut.		1-Oct	Sampling
10/11/2008	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	11-Oct		Rainfall
10/14/08	All those waters except between ICWW Channel Marker #15, near Galleon Bay, and ICWW Channel Marker #49,m near Morris Landing		15-Oct	Sampling
11/04/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	4-Nov		Rainfall
11/07/08	All those waters between ICWW Channel Marker #53 and the North Topsail High Rise Bridge returns to normal boundaries.		8-Nov	Sampling
11/10/08	All those waters in Stump Sound between ICWW Channel Marker #53, near Old Settlers Canals, and the Surf City Bridge returns to normal boundaries.		11-Nov	Sampling
11/13/08	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	13-Nov		Rainfall

Table 8: Temporary Closures Area B-9

DATE	DESCRIPTION	CLOSE	OPEN	REASON
11/18/08	All those waters between the Surf City Bridge and ICWW Marker #43 returns to normal boundaries.		19-Nov	Sampling
11/18/08	All those waters between ICWW Marker #29 and Swan Point returns to normal boundaries.		19-Nov	Sampling
11/20/08	Stump Sound area between ICWW Marker #29 near Turkey Creek and ICWW Marker #43 near Kings Creek returns to normal boundaries.		21-Nov	Sampling
05/18/09	ICWW to the mainland between Surf City Brdg & Snows Cut closes	18-May		Rainfall
05/18/09	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	18-May		Rainfall
05/22/09	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		23-May	Sampling
06/15/09	All those waters between the North Topsail Beach High-Rise Bridge and the Surf City Bridge.	15-Jun		Rainfall
06/16/09	All those waters from the Surf City Bridge to the Figure Eight Island Bridge, from the ICWW to the mainland.	16-Jun		Rainfall
06/19/09	All those waters between the North Topsail Beach High-Rise Bridge and the Surf City Bridge.		20-Jun	Sampling
06/19/09	All those waters between the Surf City Bridge and ICWW Channel Marker #114 near Futch Creek, from the ICWW to the mainland.		20-Jun	Sampling
06/27/09	All those waters between the North Topsail Beach High-Rise Bridge and the Surf City Bridge.	27-Jun		Rainfall
07/02/09	All those waters between the North Topsail Beach High-Rise Bridge and the Surf City Bridge.		3-Jul	Sampling
07/14/09	All those waters from the Intracoastal Waterway to the mainland between the Surf City Bridge and the Wrightsville Beach Bridge.	14-Jul		Rainfall
07/14/09	All those waters from the North Topsail Beach High Rise Bridge to the Surf City Bridge	14-Jul		Rainfall
07/17/09	All those waters from the Intracoastal Waterway to the mainland between the Surf City Bridge and the Wrightsville Beach Bridge.		18-Jul	Sampling
07/17/09	<u>All those waters</u> from the North Topsail Beach High Rise Bridge to the Surf City Bridge		18-Jul	Sampling
08/13/09	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by a straight line between Sloop Point and Topsail Island.	13-Aug		Rainfall
08/18/09	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by a straight line between Sloop Point and Topsail Island.		19-Aug	Sampling
09/07/09	<u>All those waters</u> from the Intracoastal Waterway to the mainland between the Surf City Bridge and the Figure Eight Island Bridge.	7-Sep		Rainfall
09/07/09	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	7-Sep		Rainfall
09/08/09	<u>All those waters</u> between the Figure Eight Island Bridge in New Hanover County and a straight line beginning at Hall Point near Thorofare Bay, running southeasterly through Fl. Beacon # 20 in Core Sound to a point on the Core Banks shoreline in Carteret County. This includes Stump Sound, Chadwick Bay, New River, Freeman Creek, Bear Creek, Queens Creek, White Oak River, Bogue Sound, Newport River, North River, The Straits, Back Sound and Core Sound, including Jarrett Bay, Oyster Creek, Brett Bay, and Nelson Bay.	8-Sep		Rainfall
09/15/09	All the waters between ICWW Beacon #65A and the Figure Eight Island Bridge to include New River, Chadwick Bay, Stump Sound, and Topsail Sound return to normal boundaries.		16-Sep	Sampling

Table 8: Temporary Closures Area B-9

DATE	DESCRIPTION	CLOSE	OPEN	REASON
09/22/09	<u>All those waters</u> between the North Topsail Beach High-Rise Bridge and Snows Cut.	22-Sep		Rainfall
09/23/09	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by Snows Cut.	23-Sep		Rainfall
10/01/09	B-9 returns to status.		2-Oct	Sampling
11/11/09	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	11-Nov		TS Ida
11/12/09	<u>All those waters</u> bordered on the east and south by a line beginning at Long Point near Rumley Bay thence in a straight line to Lookout Point on the east shore of Thorofare Bay, thence in a straight line across Thorofare Bay to Hall Point near Atlantic, thence in a straight line to Fl. Beacon #20 in Core Sound, thence in a straight line to Fl. Beacon #27 in Core Sound, thence in a straight line to Fl. 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 the South Carolina State Line; to include all of Thorofare Bay, Rumley Bay, Barry Bay, Styron Bay, Nelson Bay, Fulchers Creek, Brett Bay, Oyster Creek, Bells Creek, Tusk Creek, Middens Creek, Jarrett Bay, The Straits, North River, Back Sound; Carrot Island, Newport River, Bogue Sound, White Oak River, Queens Creek, Bear Creek, New River, Stump Sound, Topsail Sound, Myrtle Grove, Masonboro Sound, The Basin, Buzzards Bay, Cape Fear River, Lockwoods Folly River, Shalotte River and all other tributaries within said boundaries.	12-Nov		TS Ida / Excessive Rainfall
11/24/09	All those waters between the Surf City Bridge and Snows Cut returns to status prior to 11/12/09 TS Ida remnants.		25-Nov	Sampling
11/25/09	All those waters bordered on the northeast by a line running from the mainland through ICWW Marker #45 in Stump Sound to the Surf City Bridge returns to status prior to 11/12/09 TS Ida remnants.		26-Nov	Sampling
12/01/09	Stump Sound returns to status prior to 11/12/09 TS Ida remnants.		2-Dec	Sampling
12/03/09	<u>All those waters</u> from the ICWW to the mainland between the Surf City Bridge and Snows Cut.	3-Dec		Rainfall
12/03/09	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	3-Dec		Rainfall
12/16/09	<u>All those waters</u> from Swan Point to the Surf City Bridge returns to normal boundaries.		17-Dec	Sampling
12/16/09	<u>All those waters</u> ICWW to the mainland between the Surf City Bridge and Fl. Beacon #96		17-Dec	Sampling
12/26/09	<u>All those waters</u> from the Intracoastal Waterway to the mainland between the Surf City Bridge and the Figure Eight Island Bridge.	26-Dec		Rainfall
12/26/09	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	26-Dec		Rainfall
01/05/10	B-9 returns to normal boundaries except All those waters bordered on the northeast by a line running from the mainland, near Thomas Landing, through ICWW Marker #37 to a point on Ashe Island, and bordered on the southwest by a line running from the mainland through ICWW Marker #45 and Permuda Island in Stump Sound to a point near Surf City (see map).		6-Jan	Sampling
01/07/10	B-9 returns to normal boundaries.		8-Jan	Sampling
02/06/10	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	6-Feb		Rainfall
02/10/10	B-9 returns to normal boundaries (North Topsail Beach High-Rise Bridge to Surf City Bridge)		11-Feb	Sampling
03/12/10	<u>All those waters</u> bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	12-Mar		Rainfall

Table 8: Temporary Closures Area B-9

DATE	DESCRIPTION	CLOSE	OPEN	REASON
03/16/10	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		17-Mar	Sampling
03/29/10	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	29-Mar		Rainfall
04/09/10	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		10-Apr	Sampling
07/19/10	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	19-Jul		Rainfall
07/22/10	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		23-Jul	Sampling
09/27/10	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the North Topsail Beach High Rise Bridge.	27-Sep		Rainfall
09/28/10	All those waters between IWW Marker #65A, near Salliers Bay and the South Carolina state line, to include Tubbs Inlet, Shallotte River, Lockwoods Folly River, Cape Fear River, Myrtle Grove Sound, Stump Sound, New River and all other tributaries within said boundaries.	28-Sep		Nicole Remnants
10/12/10	A portion of Topsail Sound returns to normal boundaries except All those waters between IWW Fl. Beacon "72" and IWW Beacon "69" near the Surf City Bridge.		13-Oct	Sampling
10/12/10	A portion of Stump Sound returns to normal boundaries except All those waters from the Intracoastal Waterway to the mainland between IWW Beacon "43" and IWW Beacon "37" near Spicer Bay.		13-Oct	Sampling
10/21/10	B-9 returns to normal boundaries		22-Oct	Sampling
01/26/11	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach (south shore of New River Inlet) and bordered on the southwest by the Surf City Bridge.	26-Jan		Rainfall
01/29/11	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach (south shore of New River Inlet) and bordered on the southwest by the Surf City Bridge.		30-Jan	Sampling
02/05/11	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach (south shore of New River Inlet) and bordered on the southwest by the Surf City Bridge.	5-Feb		Rainfall
02/10/11	Stump Sound returns to normal boundaries except all those waters between IWW Marker #39 near Spicer Bay and IWW Marker #57 near Old Settlers Canals.		11-Feb	Sampling
02/12/11	Stump Sound returns to normal boundaries.		13-Feb	Sampling
06/30/11	All those waters between IWW Marker #65A, near Salliers Bay and the Surf City Bridge to include Stump Sound, Everett Bay, Alligator Bay, Chadwick Bay, and all of New River.	30-Jun		Rainfall
07/06/11	All those waters between IWW Marker #65A, near Salliers Bay and the Surf City Bridge to include Stump Sound, Everett Bay, Alligator Bay, Chadwick Bay, and all of New River.		7-Jul	Sampling
08/29/11	All Coastal waters close.	29-Aug		Hurricane Irene
09/03/11	Stump Sound returns to status prior to 8/27/11 Hurricane Irene (B-9 returns to status)		4-Sep	Sampling
10/19/11	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	19-Oct		Rainfall
10/22/11	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		23-Oct	Sampling
03/04/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	4-Mar		Rainfall
03/09/12	All those waters bordered on the northeast by the North Topsail High Rise Bridge and bordered on the southwest by the Surf City Bridge		10-Mar	Sampling
03/30/12	Miscellaneous leases close for relaying	2-Apr		Relay
05/31/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	31-May		TD Beryl
06/05/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		6-Jun	Sampling
07/12/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	12-Jul		Rainfall

Table 8: Temporary Closures Area B-9

DATE	DESCRIPTION	CLOSE	OPEN	REASON
07/17/12	All those waters from Swan Point to the Surf City Bridge return to normal boundaries.		18-Jul	Sampling
08/01/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	1-Aug		Rainfall
08/07/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		8-Aug	Sampling
08/20/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by a straight line beginning at a point at the southern tip of Topsail Beach; running northwesterly to a point on the mainland at Forest Sound Marina, to include Old Topsail Creek, Virginia Creek, Stump Sound, Alligator Bay, and Chadwick Bay.	20-Aug		Rainfall
08/24/12	Topsail Sound, a portion of Stump Sound, and Chadwick Bay return to normal boundaries except All those waters between IWW Marker #31, near Turkey Creek, and IWW Marker #15, near Galleon Bay, to include Alligator Bay.		25-Aug	Sampling
08/29/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by a line running from the mainland through IWW Beacon "105" following the eastern shoreline of Green Channel to the southern tip of Hutaff Island near Rich's Inlet, to include Mill Creek, Old Topsail Creek, Virginia Creek, Stump Sound, Alligator Bay, and Chadwick Bay.	29-Aug		Rainfall
09/05/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by a line running from the mainland through IWW Beacon "105" following the eastern shoreline of Green Channel to the southern tip of Hutaff Island near Rich's Inlet, to include Mill Creek, Old Topsail Creek, Virginia Creek, Stump Sound, Alligator Bay, and Chadwick Bay.		6-Sep	Sampling
09/19/12	All those waters bordered on the northeast by a straight line from Swan Point through IWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	19-Sep		Rainfall
09/25/12	All those waters bordered on the northeast by a straight line from Swan Point through IWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.		26-Sep	Sampling
10/28/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by Snows Cut, to include Myrtle Grove Sound, Masonboro Sound, Middle Sound, Topsail Sound, Stump Sound, Alligator Bay, and Chadwick Bay.	28-Oct		Hurricane Sandy
11/06/12	Stump Sound returns to normal boundaries.		7-Nov	Sampling
11/19/12	All those waters bordered on the northeast by a straight line from Swan Point through ICWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by Snows Cut, to include Myrtle Grove Sound, Masonboro Sound, Middle Sound, Topsail Sound, Stump Sound, Alligator Bay, and Chadwick Bay.	19-Nov		Rainfall
11/24/12	Swan Point to Rich's Inlet, including Stump Sound, Alligator Bay, and Chadwick Bay returns to normal boundaries.		25-Nov	Sampling
12/27/12	All those waters bordered on the northeast by a straight line from Swan Point through IWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by the Surf City Bridge.	27-Dec		Rainfall
01/03/13	Stump Sound returns to normal boundaries including Alligator Bay and Chadwick Bay EXCEPT all those waters between IWW Marker #65 near Waters Bay and IWW Marker #37 near Everett Bay.		4-Jan	Sampling
01/08/13	Stump Sound returns to normal boundaries EXCEPT all those waters between IWW Marker #65 near Waters Bay and IWW Marker #57 near Old Settlers Canals (due to sewer spill Jan. 1, 2013)		9-Jan	Sampling
01/23/13	All those waters between IWW Marker #65 near Waters Bay and IWW Marker #57 near Old Settlers Canals (due to sewer spill Jan. 1, 2013)		24-Jan	Purge time
02/08/13	All those waters bordered on the northeast by a straight line from Swan Point through IWW Channel Marker #4 to the eastern tip of West Onslow Beach, (south shore of New River Inlet), and bordered on the southwest by IWW Marker #98 near Old Topsail Creek (see map).	8-Feb		Rainfall
02/13/13	B-9 returns to normal boundaries		14-Feb	Sampling

Conditional Sampling Area B-9

Table 9

STATION	NO.	08/17/09	09/14/09	09/28/09	09/30/09	11/16/09	11/19/09	11/22/09
33		7.8	2.0	79	4.5	350.0	49.0	33.0
16	A	1.7	17.0	49.0	2.0	130.0	49.0	26.0
14		13.0	1.7	33.0	4.0	79.0	49.0	33.0
13		4.5	1.8	33.0	2.0	170.0	4.5	17.0
13	A	4.5	2.0	23.0	13.0	240.0	17.0	17.0
1	A							

STATION	NO.	11/24/09	11/30/09	12/07/09	12/10/09	12/15/09	12/28/09	01/04/10
33		49	14.0	23.0	4.5	1.7		13
16	A	49.0	4.5	110.0	33.0	4.5		23.0
14		4.0		49.0	49.0	4.5	130.0	6.8
13		2.0		49.0	46.0	7.8		4.5
13	A	4.0		49.0	11.0	11.0	350.0	2.0
1	A						46.0	
27							130	
23	(S55)						lab accident	
18								
							140	
22							170	
29							220	
20	A						170	
12 - Sears Landing							46	
8A - Peterson Cut							130	
10 - bay, W. of Marina							130	
3 - Waters Bay							79	
4 - Queens Hole							130	
5 - Barlow Creek Mouth							110	
6 - Marker #61							170	
34A - Old Settlers Beach, E of closure							33	
36 - Old Settlers Beach, W of closure							79	
35 - Dixon Cove							240	
28 - Permuda Island, west end							79	
15 - Sea Haven Bay							240	
24A - Kings Creek, w of closure							240	
19 - Everett Bay							110	
20 - Turkey Creek Mouth							350	
21 - Mouth of Rogers Bay								

Conditional Sampling Area B-9

Table 9

STATION	NO.	01/06/10	02/09/10	03/15/10	03/31/10	04/08/10	07/21/10	10/06/10
33			6.8	17.0	49.0	1.7	1.7	49.0
16	A	2.0	4.5	6.8	46.0	1.7	1.8	22.0
14			11.0	4.5	23.0	1.7	1.7	7.8
13			4.0	4.5	17.0	1.7	1.7	4.5
13	A		2.0	13.0	33.0	4.0	1.8	7.8
1	A							

STATION	NO.	10/11/10	01/28/11	02/09/11	08/06/12	08/23/12	09/04/12	09/24/12
33		13.0	2.0	13.0	1.7	4.5	4.5	2.0
16	A	4.5	1.7	13.0	1.7	13.0	1.7	4.5
14			4.0	27.0	2.0	4.5	2.0	2.0
13			1.7	4.5	1.7	7.8	4.5	1.7
13	A							
1	A		2.0	4.0	1.7	14.0	4.5	4.5

STATION	NO.	10/30/12	11/01/12	11/05/12	11/20/12	11/23/12	12/28/12	01/02/13
33		79.0	130.0	4.5	240.0	2.0	130.0	2.0
16	A	79.0	33.0	2.0	350.0	4.5	130.0	33.0
14		49.0	13.0	1.7	130.0	4.5	27.0	6.8
13		170.0	7.8	2.0	33.0	4.0	33.0	13.0
13	A							
1	A	130.0	22.0	1.7	350.0	4.5	49.0	4.5

STATION	NO.	01/07/13	02/12/13	02/14/13	02/18/13	02/20/13
33			79.0	170.0	21.0	1.7
16	A	6.8	33.0	79.0	17.0	4.0
14			4.5			
13		1.7	4.0			
13	A	2.0				
1	A		4.5			
5 - Barlow Creek Mouth		2.0				

Table 10 Formatted Data

Station ID: 1A

# Samples:	30	Log Avg:	0.5399
# > 43 MPN:	2	Log Std Dev:	0.5384
# > 260 MPN:	1	Geomean:	3.4662
Median:	1.7	Estimated 90th:	16

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	34	1.7	0.2304
5/20/2008	3/4 FLD	37	1.7	0.2304
6/30/2008	1/2 EBB	38	2.0	0.301
8/7/2008	3/4 EBB	37	1.7	0.2304
10/9/2008	3/4 EBB	35	1.7	0.2304
12/15/2008	1/2 FLD	31	6.8	0.8325
3/31/2009	LOW	32	49.0	1.6902
6/1/2009	LOW	38	1.7	0.2304
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	25	1.7	0.2304
12/17/2009	1ST EBB	28	7.8	0.8921
12/28/2009	3/4 EBB	21	350.0	2.5441
3/17/2010	HIGH	31	4.5	0.6532
5/5/2010	LAST EBB	35	4.5	0.6532
6/30/2010	LOW	36	1.7	0.2304
8/3/2010	1/4 FLD	37	1.7	0.2304
9/8/2010	LAST EBB	39	4.5	0.6532
12/16/2010	LAST EBB	33	1.7	0.2304
3/22/2011	1ST FLD	33	1.7	0.2304
5/9/2011	3/4 EBB	37	2.0	0.301
6/7/2011	LAST EBB	39	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	38	11.0	1.0414
12/28/2011	1/2 FLD	36	13.0	1.1139
1/5/2012	1/2 EBB	35	1.7	0.2304
5/3/2012	1/2 EBB	36	2.0	0.301
6/20/2012	LAST FLD	33	1.7	0.2304
8/16/2012	LAST FLD	34	2.0	0.301
9/10/2012	1/2 EBB	31	17.0	1.2304
10/22/2012	1/2 EBB	36	1.7	0.2304

Station ID: 3

# Samples:	30	Log Avg:	0.5018
# > 43 MPN:	1	Log Std Dev:	0.4596
# > 260 MPN:	0	Geomean:	3.1752
Median:	1.75	Estimated 90th:	12

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	32	13.0	1.1139
5/20/2008	3/4 FLD	37	1.7	0.2304
6/30/2008	1/2 EBB	38	1.7	0.2304
8/7/2008	3/4 EBB	38	1.7	0.2304
10/9/2008	3/4 EBB	35	1.8	0.2553
12/15/2008	1/2 FLD	30	2.0	0.301
3/31/2009	LOW	32	1.7	0.2304
6/1/2009	LOW	35	1.7	0.2304
7/22/2009	1/4 EBB	36	1.7	0.2304
9/21/2009	LAST FLD	24	4.0	0.6021
12/17/2009	1ST EBB	23	4.5	0.6532
12/28/2009	3/4 EBB	19	130.0	2.1139
3/17/2010	HIGH	26	11.0	1.0414
5/5/2010	LAST EBB	35	4.0	0.6021
6/30/2010	LOW	38	1.7	0.2304
8/3/2010	1/4 FLD	38	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	33	2.0	0.301
3/22/2011	1ST FLD	32	1.7	0.2304
5/9/2011	3/4 EBB	37	2.0	0.301
6/7/2011	LAST EBB	39	2.0	0.301
8/2/2011	LATE EBB	40	1.7	0.2304
12/13/2011	3/4 FLD	35	4.5	0.6532
12/28/2011	1/2 FLD	37	22.0	1.3424
1/5/2012	1/2 EBB	35	1.7	0.2304
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	32	1.7	0.2304
9/10/2012	1/2 EBB	29	23.0	1.3617
10/22/2012	1/2 EBB	35	4.5	0.6532

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Station ID: 4

# Samples:	30	Log Avg:	0.6248
# > 43 MPN:	3	Log Std Dev:	0.5654
# > 260 MPN:	0	Geomean:	4.2149
Median:	2	Estimated 90th:	22

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	33	1.7	0.2304
5/20/2008	3/4 FLD	36	1.7	0.2304
6/30/2008	1/2 EBB	38	2.0	0.301
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	34	1.7	0.2304
12/15/2008	1/2 FLD	26	79.0	1.8976
3/31/2009	LOW	30	2.0	0.301
6/1/2009	LOW	35	4.5	0.6532
7/22/2009	1/4 EBB	37	1.7	0.2304
9/21/2009	LAST FLD	28	1.7	0.2304
12/17/2009	1ST EBB	21	7.8	0.8921
12/28/2009	3/4 EBB	19	79.0	1.8976
3/17/2010	HIGH	26	4.5	0.6532
5/5/2010	LAST EBB	35	4.0	0.6021
6/30/2010	LOW	38	1.7	0.2304
8/3/2010	1/4 FLD	38	2.0	0.301
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	31	4.5	0.6532
3/22/2011	1ST FLD	31	4.5	0.6532
5/9/2011	3/4 EBB	36	11.0	1.0414
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	40	1.7	0.2304
12/13/2011	3/4 FLD	35	22.0	1.3424
12/28/2011	1/2 FLD	31	130.0	2.1139
1/5/2012	1/2 EBB	35	1.7	0.2304
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	34	1.7	0.2304
8/16/2012	LAST FLD	34	1.7	0.2304
9/10/2012	1/2 EBB	29	21.0	1.3222
10/22/2012	1/2 EBB	35	7.8	0.8921

Station ID: 5

# Samples:	30	Log Avg:	0.9733
# > 43 MPN:	5	Log Std Dev:	0.6076
# > 260 MPN:	0	Geomean:	9.4037
Median:	11	Estimated 90th:	56

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	31	23.0	1.3617
5/20/2008	3/4 FLD	36	1.7	0.2304
6/30/2008	1/2 EBB	37	1.7	0.2304
8/7/2008	3/4 EBB	35	33.0	1.5185
10/9/2008	3/4 EBB	32	79.0	1.8976
12/15/2008	1/2 FLD	18	170.0	2.2304
3/31/2009	LOW	28	17.0	1.2304
6/1/2009	LOW	34	4.5	0.6532
7/22/2009	1/4 EBB	36	2.0	0.301
9/21/2009	LAST FLD	23	21.0	1.3222
12/17/2009	1ST EBB	20	7.8	0.8921
12/28/2009	3/4 EBB	17	130.0	2.1139
3/17/2010	HIGH	26	13.0	1.1139
5/5/2010	LAST EBB	34	17.0	1.2304
6/30/2010	LOW	37	1.7	0.2304
8/3/2010	1/4 FLD	37	4.5	0.6532
9/8/2010	LAST EBB	39	4.5	0.6532
12/16/2010	LAST EBB	29	7.8	0.8921
3/22/2011	1ST FLD	30	17.0	1.2304
5/9/2011	3/4 EBB	34	13.0	1.1139
6/7/2011	LAST EBB	40	2.0	0.301
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	33	11.0	1.0414
12/28/2011	1/2 FLD	35	49.0	1.6902
1/5/2012	1/2 EBB	37	2.0	0.301
5/3/2012	1/2 EBB	38	1.7	0.2304
6/20/2012	LAST FLD	34	1.7	0.2304
8/16/2012	LAST FLD	31	11.0	1.0414
9/10/2012	1/2 EBB	29	49.0	1.6902
10/22/2012	1/2 EBB	32	22.0	1.3424

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Station ID: 6

# Samples:	30	Log Avg:	0.4465
# > 43 MPN:	1	Log Std Dev:	0.3921
# > 260 MPN:	0	Geomean:	2.7957
Median:	2	Estimated 90th:	8

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	34	1.8	0.2553
5/20/2008	3/4 FLD	36	1.7	0.2304
6/30/2008	1/2 EBB	38	2.0	0.301
8/7/2008	3/4 EBB	38	1.7	0.2304
10/9/2008	3/4 EBB	35	2.0	0.301
12/15/2008	1/2 FLD	28	9.3	0.9685
3/31/2009	LOW	32	4.5	0.6532
6/1/2009	LOW	35	1.7	0.2304
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	23	2.0	0.301
12/17/2009	1ST EBB	25	7.8	0.8921
12/28/2009	3/4 EBB	18	110.0	2.0414
3/17/2010	HIGH	26	6.8	0.8325
5/5/2010	LAST EBB	35	4.5	0.6532
6/30/2010	LOW	38	1.7	0.2304
8/3/2010	1/4 FLD	38	1.7	0.2304
9/8/2010	LAST EBB	38	1.7	0.2304
12/16/2010	LAST EBB	31	1.7	0.2304
3/22/2011	1ST FLD	31	2.0	0.301
5/9/2011	3/4 EBB	35	1.7	0.2304
6/7/2011	LAST EBB	39	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	35	4.5	0.6532
12/28/2011	1/2 FLD	34	11.0	1.0414
1/5/2012	1/2 EBB	36	1.7	0.2304
5/3/2012	1/2 EBB	36	2.0	0.301
6/20/2012	LAST FLD	35	2.0	0.301
8/16/2012	LAST FLD	35	1.7	0.2304
9/10/2012	1/2 EBB	30	2.0	0.301
10/22/2012	1/2 EBB	33	2.0	0.301

Station ID: 8A

# Samples:	30	Log Avg:	0.4824
# > 43 MPN:	1	Log Std Dev:	0.3734
# > 260 MPN:	0	Geomean:	3.0368
Median:	2	Estimated 90th:	9

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	34	2.0	0.301
5/20/2008	3/4 FLD	37	4.5	0.6532
6/30/2008	1/2 EBB	38	4.0	0.6021
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	35	17.0	1.2304
12/15/2008	1/2 FLD	30	13.0	1.1139
3/31/2009	LOW	31	4.5	0.6532
6/1/2009	LOW	37	2.0	0.301
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	25	1.7	0.2304
12/17/2009	1ST EBB	29	4.5	0.6532
12/28/2009	3/4 EBB	18	46.0	1.6628
3/17/2010	HIGH	31	2.0	0.301
5/5/2010	LAST EBB	35	7.8	0.8921
6/30/2010	LOW	36	2.0	0.301
8/3/2010	1/4 FLD	39	2.0	0.301
9/8/2010	LAST EBB	38	2.0	0.301
12/16/2010	LAST EBB	34	1.7	0.2304
3/22/2011	1ST FLD	34	1.7	0.2304
5/9/2011	3/4 EBB	36	1.7	0.2304
6/7/2011	LAST EBB	39	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	36	4.5	0.6532
12/28/2011	1/2 FLD	36	13.0	1.1139
1/5/2012	1/2 EBB	35	1.7	0.2304
5/3/2012	1/2 EBB	35	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	35	2.0	0.301
9/10/2012	1/2 EBB	30	2.0	0.301
10/22/2012	1/2 EBB	36	2.0	0.301

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Station ID: 10

# Samples:	30	Log Avg:	1.0717
# > 43 MPN:	7	Log Std Dev:	0.7185
# > 260 MPN:	1	Geomean:	11.7962
Median:	13	Estimated 90th:	98

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	32	1.7	0.2304
5/20/2008	3/4 FLD	37	1.7	0.2304
6/30/2008	1/2 EBB	38	7.8	0.8921
8/7/2008	3/4 EBB	36	26.0	1.415
10/9/2008	3/4 EBB	35	6.8	0.8325
12/15/2008	1/2 FLD	30	2.0	0.301
3/31/2009	LOW	32	49.0	1.6902
6/1/2009	LOW	36	13.0	1.1139
7/22/2009	1/4 EBB	35	4.5	0.6532
9/21/2009	LAST FLD	25	33.0	1.5185
12/17/2009	1ST EBB	24	2.0	0.301
12/28/2009	3/4 EBB	19	130.0	2.1139
3/17/2010	HIGH	29	2.0	0.301
5/5/2010	LAST EBB	35	79.0	1.8976
6/30/2010	LOW	36	14.0	1.1461
8/3/2010	1/4 FLD	38	17.0	1.2304
9/8/2010	LAST EBB	39	2.0	0.301
12/16/2010	LAST EBB	32	4.0	0.6021
3/22/2011	1ST FLD	32	49.0	1.6902
5/9/2011	3/4 EBB	36	79.0	1.8976
6/7/2011	LAST EBB	39	1.7	0.2304
8/2/2011	LATE EBB	39	22.0	1.3424
12/13/2011	3/4 FLD	36	23.0	1.3617
12/28/2011	1/2 FLD	35	540.0	2.7324
1/5/2012	1/2 EBB	34	1.7	0.2304
5/3/2012	1/2 EBB	36	4.5	0.6532
6/20/2012	LAST FLD	35	240.0	2.3802
8/16/2012	LAST FLD	32	33.0	1.5185
9/10/2012	1/2 EBB	29	13.0	1.1139
10/22/2012	1/2 EBB	36	1.7	0.2304

Station ID: 12

# Samples:	30	Log Avg:	0.7073
# > 43 MPN:	1	Log Std Dev:	0.4771
# > 260 MPN:	0	Geomean:	5.0964
Median:	4.5	Estimated 90th:	20

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	32	1.7	0.2304
5/20/2008	3/4 FLD	37	1.7	0.2304
6/30/2008	1/2 EBB	38	13.0	1.1139
8/7/2008	3/4 EBB	38	1.7	0.2304
10/9/2008	3/4 EBB	34	11.0	1.0414
12/15/2008	1/2 FLD	30	2.0	0.301
3/31/2009	LOW	33	2.0	0.301
6/1/2009	LOW	36	4.0	0.6021
7/22/2009	1/4 EBB	36	4.5	0.6532
9/21/2009	LAST FLD	25	2.0	0.301
12/17/2009	1ST EBB	25	13.0	1.1139
12/28/2009	3/4 EBB	20	170.0	2.2304
3/17/2010	HIGH	31	2.0	0.301
5/5/2010	LAST EBB	35	33.0	1.5185
6/30/2010	LOW	35	2.0	0.301
8/3/2010	1/4 FLD	38	1.8	0.2553
9/8/2010	LAST EBB	39	2.0	0.301
12/16/2010	LAST EBB	32	6.8	0.8325
3/22/2011	1ST FLD	35	7.8	0.8921
5/9/2011	3/4 EBB	35	1.7	0.2304
6/7/2011	LAST EBB	39	2.0	0.301
8/2/2011	LATE EBB	37	4.0	0.6021
12/13/2011	3/4 FLD	36	13.0	1.1139
12/28/2011	1/2 FLD	35	23.0	1.3617
1/5/2012	1/2 EBB	35	4.5	0.6532
5/3/2012	1/2 EBB	36	4.5	0.6532
6/20/2012	LAST FLD	34	7.8	0.8921
8/16/2012	LAST FLD	33	4.5	0.6532
9/10/2012	1/2 EBB	29	13.0	1.1139
10/22/2012	1/2 EBB	35	7.8	0.8921

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Station ID: 14

# Samples:	30	Log Avg:	0.4095
# > 43 MPN:	1	Log Std Dev:	0.4242
# > 260 MPN:	0	Geomean:	2.5674
Median:	1.7	Estimated 90th:	8

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	32	1.7	0.2304
5/20/2008	3/4 FLD	36	1.7	0.2304
6/30/2008	1/2 EBB	38	1.7	0.2304
8/7/2008	3/4 EBB	38	1.7	0.2304
10/9/2008	3/4 EBB	35	2.0	0.301
12/15/2008	1/2 FLD	28	4.5	0.6532
3/31/2009	LOW	29	2.0	0.301
6/1/2009	LOW	35	1.7	0.2304
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	24	1.7	0.2304
12/17/2009	1ST EBB	20	13.0	1.1139
12/28/2009	3/4 EBB	17	130.0	2.1139
3/17/2010	HIGH	24	1.8	0.2553
5/5/2010	LAST EBB	36	2.0	0.301
6/30/2010	LOW	36	2.0	0.301
8/3/2010	1/4 FLD	38	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	31	1.7	0.2304
3/22/2011	1ST FLD	31	1.7	0.2304
5/9/2011	3/4 EBB	36	1.7	0.2304
6/7/2011	LAST EBB	39	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	36	1.7	0.2304
12/28/2011	1/2 FLD	32	6.8	0.8325
1/5/2012	1/2 EBB	32	1.7	0.2304
5/3/2012	1/2 EBB	36	2.0	0.301
6/20/2012	LAST FLD	35	2.0	0.301
8/16/2012	LAST FLD	32	1.7	0.2304
9/10/2012	1/2 EBB	29	23.0	1.3617
10/22/2012	1/2 EBB	32	1.7	0.2304

Station ID: 15

# Samples:	30	Log Avg:	0.3579
# > 43 MPN:	1	Log Std Dev:	0.3603
# > 260 MPN:	0	Geomean:	2.2797
Median:	1.7	Estimated 90th:	6

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	2.0	0.301
5/20/2008	3/4 FLD	36	2.0	0.301
6/30/2008	1/2 EBB	36	1.7	0.2304
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	34	1.7	0.2304
12/15/2008	1/2 FLD	26	1.7	0.2304
3/31/2009	LOW	30	2.0	0.301
6/1/2009	LOW	33	2.0	0.301
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	22	2.0	0.301
12/17/2009	1ST EBB	16	7.8	0.8921
12/28/2009	3/4 EBB	16	79.0	1.8976
3/17/2010	HIGH	21	1.7	0.2304
5/5/2010	LAST EBB	36	1.7	0.2304
6/30/2010	LOW	36	1.7	0.2304
8/3/2010	1/4 FLD	37	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	31	1.7	0.2304
3/22/2011	1ST FLD	30	1.7	0.2304
5/9/2011	3/4 EBB	36	1.7	0.2304
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	35	1.7	0.2304
12/28/2011	1/2 FLD	32	17.0	1.2304
1/5/2012	1/2 EBB	35	1.7	0.2304
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	31	1.7	0.2304
9/10/2012	1/2 EBB	26	2.0	0.301
10/22/2012	1/2 EBB	33	2.0	0.301

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Station ID: 18

# Samples:	30	Log Avg:	0.5727
# > 43 MPN:	1	Log Std Dev:	0.5481
# > 260 MPN:	1	Geomean:	3.7382
Median:	2	Estimated 90th:	18

Date	Tidal Stage	Salinity	FC	Log FC
11/20/2007	3/4 EBB	36	1.7	0.2304
3/18/2008	1/2 EBB	32	2.0	0.301
5/20/2008	3/4 FLD	35	2.0	0.301
6/30/2008	1/2 EBB	38	1.7	0.2304
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	33	1.7	0.2304
12/15/2008	1/2 FLD	25	23.0	1.3617
3/31/2009	LOW	28	4.5	0.6532
6/1/2009	LOW	33	2.0	0.301
7/22/2009	1/4 EBB	33	1.7	0.2304
9/21/2009	LAST FLD	24	33.0	1.5185
12/17/2009	1ST EBB	20	13.0	1.1139
3/17/2010	HIGH	21	22.0	1.3424
5/5/2010	LAST EBB	36	4.5	0.6532
6/30/2010	1ST FLD	37	1.7	0.2304
8/3/2010	1/4 FLD	38	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	31	4.5	0.6532
3/22/2011	1ST FLD	30	1.7	0.2304
5/9/2011	3/4 EBB	35	1.7	0.2304
6/7/2011	LAST EBB	39	13.0	1.1139
8/2/2011	LATE EBB	40	4.0	0.6021
12/13/2011	3/4 FLD	31	7.8	0.8921
12/28/2011	1/2 FLD	32	350.0	2.5441
1/5/2012	1/2 EBB	33	1.7	0.2304
5/3/2012	1/2 EBB	38	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	32	1.7	0.2304
9/10/2012	1/2 EBB	26	2.0	0.301
10/22/2012	1/2 EBB	33	2.0	0.301

Station ID: 19

# Samples:	30	Log Avg:	0.5377
# > 43 MPN:	2	Log Std Dev:	0.5231
# > 260 MPN:	0	Geomean:	3.4490
Median:	1.8	Estimated 90th:	16

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	1.7	0.2304
5/20/2008	3/4 FLD	35	1.7	0.2304
6/30/2008	1/2 EBB	38	1.7	0.2304
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	34	4.5	0.6532
12/15/2008	1/2 FLD	28	4.5	0.6532
3/31/2009	LOW	28	4.5	0.6532
6/1/2009	LOW	32	1.7	0.2304
7/22/2009	1/4 EBB	35	49.0	1.6902
9/21/2009	LAST FLD	24	2.0	0.301
12/17/2009	1ST EBB	18	23.0	1.3617
12/28/2009	3/4 EBB	13	240.0	2.3802
3/17/2010	HIGH	21	13.0	1.1139
5/5/2010	LAST EBB	36	1.7	0.2304
6/30/2010	1ST FLD	39	1.7	0.2304
8/3/2010	1/4 FLD	37	1.7	0.2304
9/8/2010	LAST EBB	39	2.0	0.301
12/16/2010	LAST EBB	30	7.8	0.8921
3/22/2011	1ST FLD	30	1.7	0.2304
5/9/2011	3/4 EBB	35	1.8	0.2553
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	40	1.8	0.2553
12/13/2011	3/4 FLD	33	1.7	0.2304
12/28/2011	1/2 FLD	32	13.0	1.1139
1/5/2012	1/2 EBB	35	1.7	0.2304
5/3/2012	1/2 EBB	37	2.0	0.301
6/20/2012	LAST FLD	35	1.8	0.2553
8/16/2012	LAST FLD	32	2.0	0.301
9/10/2012	1/2 EBB	25	4.5	0.6532
10/22/2012	1/2 EBB	33	1.7	0.2304

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Station ID: 20

# Samples:	30	Log Avg:	0.4961
# > 43 MPN:	1	Log Std Dev:	0.4087
# > 260 MPN:	0	Geomean:	3.1343
Median:	2	Estimated 90th:	10

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	1.7	0.2304
5/20/2008	3/4 FLD	35	2.0	0.301
6/30/2008	1/2 EBB	37	2.0	0.301
8/7/2008	3/4 EBB	35	1.7	0.2304
10/9/2008	3/4 EBB	32	2.0	0.301
12/15/2008	1/2 FLD	27	4.5	0.6532
3/31/2009	LOW	27	7.8	0.8921
6/1/2009	LOW	32	1.8	0.2553
7/22/2009	1/4 EBB	33	4.5	0.6532
9/21/2009	LAST FLD	25	1.7	0.2304
12/17/2009	1ST EBB	18	13.0	1.1139
12/28/2009	3/4 EBB	15	110.0	2.0414
3/17/2010	HIGH	20	17.0	1.2304
5/5/2010	LAST EBB	36	1.7	0.2304
6/30/2010	1ST FLD	38	2.0	0.301
8/3/2010	1/4 FLD	37	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	30	1.7	0.2304
3/22/2011	1ST FLD	30	2.0	0.301
5/9/2011	3/4 EBB	35	1.7	0.2304
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	39	4.0	0.6021
12/13/2011	3/4 FLD	32	7.8	0.8921
12/28/2011	1/2 FLD	33	4.5	0.6532
1/5/2012	1/2 EBB	32	2.0	0.301
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	31	4.5	0.6532
9/10/2012	1/2 EBB	26	2.0	0.301
10/22/2012	1/2 EBB	34	4.0	0.6021

Station ID: 20A

# Samples:	30	Log Avg:	0.9561
# > 43 MPN:	4	Log Std Dev:	0.8136
# > 260 MPN:	2	Geomean:	9.0391
Median:	5.3	Estimated 90th:	99

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	2.0	0.301
5/20/2008	3/4 FLD	35	1.7	0.2304
6/30/2008	1/2 EBB	37	1.7	0.2304
8/7/2008	3/4 EBB	35	4.0	0.6021
10/9/2008	3/4 EBB	32	1700.0	3.2304
12/15/2008	1/2 FLD	25	33.0	1.5185
3/31/2009	LOW	28	23.0	1.3617
6/1/2009	LOW	33	4.0	0.6021
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	23	7.8	0.8921
12/17/2009	1ST EBB	16	17.0	1.2304
12/28/2009	3/4 EBB	16	220.0	2.3424
3/17/2010	HIGH	20	33.0	1.5185
5/5/2010	LAST EBB	31	2.0	0.301
6/30/2010	1ST FLD	38	1.7	0.2304
8/3/2010	1/4 FLD	36	6.1	0.7853
9/8/2010	LAST EBB	38	2.0	0.301
12/16/2010	LAST EBB	25	7.8	0.8921
3/22/2011	1ST FLD	26	4.0	0.6021
5/9/2011	3/4 EBB	35	17.0	1.2304
6/7/2011	LAST EBB	39	1.7	0.2304
8/2/2011	LATE EBB	40	11.0	1.0414
12/13/2011	3/4 FLD	31	17.0	1.2304
12/28/2011	1/2 FLD	30	920.0	2.9638
1/5/2012	1/2 EBB	34	1.7	0.2304
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	31	4.5	0.6532
9/10/2012	1/2 EBB	26	22.0	1.3424
10/22/2012	1/2 EBB	34	79.0	1.8976

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Station ID: 21

# Samples:	30	Log Avg:	0.4848
# > 43 MPN:	2	Log Std Dev:	0.5098
# > 260 MPN:	1	Geomean:	3.0533
Median:	2	Estimated 90th:	13

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	2.0	0.301
5/20/2008	3/4 FLD	35	1.7	0.2304
6/30/2008	1/2 EBB	36	1.7	0.2304
8/7/2008	3/4 EBB	36	2.0	0.301
10/9/2008	3/4 EBB	31	7.8	0.8921
12/15/2008	1/2 FLD	28	6.8	0.8325
3/31/2009	LOW	26	11.0	1.0414
6/1/2009	LOW	34	4.0	0.6021
7/22/2009	1/4 EBB	35	2.0	0.301
9/21/2009	LAST FLD	24	4.5	0.6532
12/17/2009	1ST EBB	17	2.0	0.301
12/28/2009	3/4 EBB	12	350.0	2.5441
3/17/2010	HIGH	21	4.5	0.6532
5/5/2010	LAST EBB	36	1.7	0.2304
6/30/2010	1ST FLD	36	1.7	0.2304
8/3/2010	1/4 FLD	37	1.7	0.2304
9/8/2010	LAST EBB	37	2.0	0.301
12/16/2010	LAST EBB	30	1.7	0.2304
3/22/2011	1ST FLD	30	2.0	0.301
5/9/2011	3/4 EBB	35	1.7	0.2304
6/7/2011	LAST EBB	39	1.7	0.2304
8/2/2011	LATE EBB	40	2.0	0.301
12/13/2011	3/4 FLD	31	1.7	0.2304
12/28/2011	1/2 FLD	32	49.0	1.6902
1/5/2012	1/2 EBB	32	1.7	0.2304
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	31	1.7	0.2304
9/10/2012	1/2 EBB	26	2.0	0.301
10/22/2012	1/2 EBB	33	1.7	0.2304

Station ID: 22

# Samples:	30	Log Avg:	0.5583
# > 43 MPN:	2	Log Std Dev:	0.5013
# > 260 MPN:	0	Geomean:	3.6162
Median:	1.9	Estimated 90th:	15

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	4.5	0.6532
5/20/2008	3/4 FLD	35	1.7	0.2304
6/30/2008	1/2 EBB	37	1.7	0.2304
8/7/2008	3/4 EBB	34	1.8	0.2553
10/9/2008	3/4 EBB	32	7.8	0.8921
12/15/2008	1/2 FLD	28	13.0	1.1139
3/31/2009	LOW	28	4.5	0.6532
6/1/2009	LOW	32	1.7	0.2304
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	25	23.0	1.3617
12/17/2009	1ST EBB	19	4.5	0.6532
12/28/2009	3/4 EBB	14	140.0	2.1461
3/17/2010	HIGH	21	49.0	1.6902
5/5/2010	LAST EBB	36	2.0	0.301
6/30/2010	1ST FLD	37	1.7	0.2304
8/3/2010	1/4 FLD	36	1.7	0.2304
9/8/2010	LAST EBB	37	1.7	0.2304
12/16/2010	LAST EBB	30	1.7	0.2304
3/22/2011	1ST FLD	26	1.7	0.2304
5/9/2011	3/4 EBB	35	1.7	0.2304
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	31	2.0	0.301
12/28/2011	1/2 FLD	32	13.0	1.1139
1/5/2012	1/2 EBB	34	1.7	0.2304
5/3/2012	1/2 EBB	36	2.0	0.301
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	31	2.0	0.301
9/10/2012	1/2 EBB	25	7.8	0.8921
10/22/2012	1/2 EBB	32	7.8	0.8921

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Station ID: 23

# Samples:	30	Log Avg:	0.5592
# > 43 MPN:	3	Log Std Dev:	0.5675
# > 260 MPN:	0	Geomean:	3.6243
Median:	1.85	Estimated 90th:	19

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	2.0	0.301
5/20/2008	3/4 FLD	35	1.7	0.2304
6/30/2008	1/2 EBB	38	1.7	0.2304
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	33	140.0	2.1461
12/15/2008	1/2 FLD	28	1.7	0.2304
3/31/2009	LOW	30	2.0	0.301
6/1/2009	LOW	34	1.7	0.2304
7/22/2009	1/4 EBB	34	1.7	0.2304
9/21/2009	LAST FLD	24	1.7	0.2304
12/17/2009	1ST EBB	18	4.5	0.6532
12/28/2009	3/4 EBB	12	130.0	2.1139
3/17/2010	HIGH	21	7.8	0.8921
5/5/2010	LAST EBB	36	4.0	0.6021
6/30/2010	LOW	35	33.0	1.5185
8/3/2010	1/4 FLD	37	1.7	0.2304
9/8/2010	LAST EBB	37	1.7	0.2304
12/16/2010	LAST EBB	30	4.5	0.6532
3/22/2011	1ST FLD	29	4.5	0.6532
5/9/2011	3/4 EBB	36	2.0	0.301
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	33	2.0	0.301
12/28/2011	1/2 FLD	33	49.0	1.6902
1/5/2012	1/2 EBB	36	2.0	0.301
5/3/2012	1/2 EBB	38	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	32	1.7	0.2304
9/10/2012	1/2 EBB	26	7.8	0.8921
10/22/2012	1/2 EBB	33	1.7	0.2304

Station ID: 24A

# Samples:	30	Log Avg:	0.7879
# > 43 MPN:	3	Log Std Dev:	0.6396
# > 260 MPN:	0	Geomean:	6.1366
Median:	4.5	Estimated 90th:	40

Date	Tidal Stage	Salinity	FC	Log FC
5/20/2008	3/4 FLD	35	1.7	0.2304
6/30/2008	1/2 EBB	37	1.7	0.2304
8/7/2008	3/4 EBB	36	2.0	0.301
10/9/2008	3/4 EBB	32	33.0	1.5185
12/15/2008	1/2 FLD	27	7.8	0.8921
3/31/2009	LOW	26	23.0	1.3617
6/1/2009	LOW	32	1.7	0.2304
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	25	4.5	0.6532
12/17/2009	1ST EBB	17	23.0	1.3617
12/28/2009	3/4 EBB	12	240.0	2.3802
3/17/2010	HIGH	23	2.0	0.301
5/5/2010	LAST EBB	36	27.0	1.4314
6/30/2010	LOW	37	13.0	1.1139
8/3/2010	1/4 FLD	36	9.3	0.9685
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	29	4.5	0.6532
3/22/2011	1ST FLD	29	46.0	1.6628
5/9/2011	3/4 EBB	35	2.0	0.301
6/7/2011	LAST EBB	40	2.0	0.301
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	33	1.8	0.2553
12/15/2011	1/4 FLD	36	4.5	0.6532
12/28/2011	1/2 FLD	31	220.0	2.3424
1/5/2012	1/2 EBB	32	4.5	0.6532
5/3/2012	1/2 EBB	36	1.8	0.2553
6/20/2012	LAST FLD	35	1.8	0.2553
8/16/2012	LAST FLD	32	1.8	0.2553
9/10/2012	1/2 EBB	24	22.0	1.3424
10/22/2012	1/2 EBB	33	11.0	1.0414

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Station ID: 27

# Samples:	30	Log Avg:	0.4666
# > 43 MPN:	1	Log Std Dev:	0.3556
# > 260 MPN:	0	Geomean:	2.9280
Median:	1.85	Estimated 90th:	8

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	4.5	0.6532
5/20/2008	3/4 FLD	35	2.0	0.301
6/30/2008	1/2 EBB	37	1.7	0.2304
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	33	4.5	0.6532
12/15/2008	1/2 FLD	26	2.0	0.301
3/31/2009	LOW	28	14.0	1.1461
6/1/2009	LOW	33	1.7	0.2304
7/22/2009	1/4 EBB	36	1.7	0.2304
9/21/2009	LAST FLD	24	7.8	0.8921
12/17/2009	1ST EBB	18	4.5	0.6532
12/28/2009	3/4 EBB	18	46.0	1.6628
3/17/2010	HIGH	22	4.5	0.6532
5/5/2010	LAST EBB	36	1.7	0.2304
6/30/2010	LOW	36	1.7	0.2304
8/3/2010	1/4 FLD	37	2.0	0.301
9/8/2010	LAST EBB	38	1.7	0.2304
12/16/2010	LAST EBB	31	4.0	0.6021
3/22/2011	1ST FLD	30	4.5	0.6532
5/9/2011	3/4 EBB	36	1.7	0.2304
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	32	1.7	0.2304
12/28/2011	1/2 FLD	35	13.0	1.1139
1/5/2012	1/2 EBB	36	1.7	0.2304
5/3/2012	1/2 EBB	36	2.0	0.301
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	32	1.7	0.2304
9/10/2012	1/2 EBB	29	4.5	0.6532
10/22/2012	1/2 EBB	34	1.7	0.2304

Station ID: 28

# Samples:	30	Log Avg:	0.4038
# > 43 MPN:	1	Log Std Dev:	0.4575
# > 260 MPN:	0	Geomean:	2.5341
Median:	1.7	Estimated 90th:	9

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	4.0	0.6021
5/20/2008	3/4 FLD	36	1.7	0.2304
6/30/2008	1/2 EBB	38	1.7	0.2304
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	32	1.8	0.2553
12/15/2008	1/2 FLD	28	2.0	0.301
3/31/2009	LOW	30	4.5	0.6532
6/1/2009	LOW	34	1.7	0.2304
7/22/2009	1/4 EBB	36	1.7	0.2304
9/21/2009	LAST FLD	24	1.7	0.2304
12/17/2009	1ST EBB	18	13.0	1.1139
12/28/2009	3/4 EBB	16	240.0	2.3802
3/17/2010	HIGH	21	2.0	0.301
5/5/2010	LAST EBB	36	1.7	0.2304
6/30/2010	LOW	36	1.7	0.2304
8/3/2010	1/4 FLD	38	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	31	1.8	0.2553
3/22/2011	1ST FLD	30	1.7	0.2304
5/9/2011	3/4 EBB	37	1.7	0.2304
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	36	1.7	0.2304
12/28/2011	1/2 FLD	33	22.0	1.3424
1/5/2012	1/2 EBB	34	2.0	0.301
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	32	1.7	0.2304
9/10/2012	1/2 EBB	29	1.7	0.2304
10/22/2012	1/2 EBB	32	1.7	0.2304

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Station ID: 29

# Samples:	30	Log Avg:	0.4618
# > 43 MPN:	1	Log Std Dev:	0.4756
# > 260 MPN:	0	Geomean:	2.8960
Median:	1.7	Estimated 90th:	11

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	30	1.7	0.2304
5/20/2008	3/4 FLD	35	1.7	0.2304
6/30/2008	1/2 EBB	38	1.7	0.2304
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	33	1.7	0.2304
12/15/2008	1/2 FLD	26	11.0	1.0414
3/31/2009	LOW	30	1.7	0.2304
6/1/2009	LOW	34	1.7	0.2304
7/22/2009	1/4 EBB	35	1.7	0.2304
9/21/2009	LAST FLD	22	7.8	0.8921
12/17/2009	1ST EBB	19	2.0	0.301
12/28/2009	3/4 EBB	16	170.0	2.2304
3/17/2010	HIGH	21	33.0	1.5185
5/5/2010	LAST EBB	36	4.5	0.6532
6/30/2010	LOW	38	1.7	0.2304
8/3/2010	1/4 FLD	37	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	30	1.7	0.2304
3/22/2011	1ST FLD	30	1.7	0.2304
5/9/2011	3/4 EBB	36	7.8	0.8921
6/7/2011	LAST EBB	40	1.7	0.2304
8/2/2011	LATE EBB	39	1.7	0.2304
12/13/2011	3/4 FLD	34	2.0	0.301
12/28/2011	1/2 FLD	34	13.0	1.1139
1/5/2012	1/2 EBB	35	1.7	0.2304
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	32	1.7	0.2304
9/10/2012	1/2 EBB	26	2.0	0.301
10/22/2012	1/2 EBB	33	1.7	0.2304

Station ID: 34A

# Samples:	30	Log Avg:	0.6571
# > 43 MPN:	1	Log Std Dev:	0.4865
# > 260 MPN:	0	Geomean:	4.5400
Median:	3.25	Estimated 90th:	19

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	33	2.0	0.301
5/20/2008	3/4 FLD	36	2.0	0.301
6/30/2008	1/2 EBB	37	1.7	0.2304
8/7/2008	3/4 EBB	36	2.0	0.301
10/9/2008	3/4 EBB	33	11.0	1.0414
12/15/2008	1/2 FLD	30	1.7	0.2304
3/31/2009	LOW	30	4.5	0.6532
6/1/2009	LOW	35	2.0	0.301
7/22/2009	1/4 EBB	36	7.8	0.8921
9/21/2009	LAST FLD	23	2.0	0.301
12/17/2009	1ST EBB	20	33.0	1.5185
12/28/2009	3/4 EBB	19	170.0	2.2304
3/17/2010	HIGH	25	1.7	0.2304
5/5/2010	LAST EBB	35	26.0	1.415
6/30/2010	LOW	37	2.0	0.301
8/3/2010	1/4 FLD	37	2.0	0.301
9/8/2010	LAST EBB	39	4.5	0.6532
12/16/2010	LAST EBB	31	2.0	0.301
3/22/2011	1ST FLD	31	11.0	1.0414
5/9/2011	3/4 EBB	36	4.5	0.6532
6/7/2011	LAST EBB	39	2.0	0.301
8/2/2011	LATE EBB	39	4.5	0.6532
12/13/2011	3/4 FLD	33	1.7	0.2304
12/28/2011	1/2 FLD	34	13.0	1.1139
1/5/2012	1/2 EBB	35	13.0	1.1139
5/3/2012	1/2 EBB	36	6.1	0.7853
6/20/2012	LAST FLD	35	1.7	0.2304
8/16/2012	LAST FLD	34	2.0	0.301
9/10/2012	1/2 EBB	29	7.8	0.8921
10/22/2012	1/2 EBB	35	7.8	0.8921

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Station ID: 35

# Samples:	30	Log Avg:	0.5252
# > 43 MPN:	2	Log Std Dev:	0.4479
# > 260 MPN:	0	Geomean:	3.3512
Median:	2	Estimated 90th:	12

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	32	1.7	0.2304
5/20/2008	3/4 FLD	36	1.7	0.2304
6/30/2008	1/2 EBB	38	4.5	0.6532
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	34	1.7	0.2304
12/15/2008	1/2 FLD	28	2.0	0.301
3/31/2009	LOW	30	1.7	0.2304
6/1/2009	LOW	35	2.0	0.301
7/22/2009	1/4 EBB	36	1.7	0.2304
9/21/2009	LAST FLD	24	6.8	0.8325
12/17/2009	1ST EBB	19	4.0	0.6021
12/28/2009	3/4 EBB	20	79.0	1.8976
3/17/2010	HIGH	25	2.0	0.301
5/5/2010	LAST EBB	35	49.0	1.6902
6/30/2010	LOW	36	1.7	0.2304
8/3/2010	1/4 FLD	38	1.7	0.2304
9/8/2010	LAST EBB	39	1.7	0.2304
12/16/2010	LAST EBB	31	3.7	0.5682
3/22/2011	1ST FLD	31	4.5	0.6532
5/9/2011	3/4 EBB	36	1.7	0.2304
6/7/2011	LAST EBB	39	23.0	1.3617
8/2/2011	LATE EBB	39	4.0	0.6021
12/13/2011	3/4 FLD	35	4.5	0.6532
12/28/2011	1/2 FLD	35	13.0	1.1139
1/5/2012	1/2 EBB	36	1.7	0.2304
5/3/2012	1/2 EBB	36	1.7	0.2304
6/20/2012	LAST FLD	35	1.8	0.2553
8/16/2012	LAST FLD	32	2.0	0.301
9/10/2012	1/2 EBB	29	4.0	0.6021
10/22/2012	1/2 EBB	24	2.0	0.301

Station ID: 36

# Samples:	30	Log Avg:	0.9034
# > 43 MPN:	3	Log Std Dev:	0.5040
# > 260 MPN:	0	Geomean:	8.0048
Median:	7.8	Estimated 90th:	35

Date	Tidal Stage	Salinity	FC	Log FC
3/18/2008	1/2 EBB	32	2.0	0.301
5/20/2008	3/4 FLD	36	21.0	1.3222
6/30/2008	1/2 EBB	38	6.8	0.8325
8/7/2008	3/4 EBB	36	1.7	0.2304
10/9/2008	3/4 EBB	32	6.8	0.8325
12/15/2008	1/2 FLD	30	7.8	0.8921
3/31/2009	LOW	31	7.8	0.8921
6/1/2009	LOW	34	11.0	1.0414
7/22/2009	1/4 EBB	35	7.8	0.8921
9/21/2009	LAST FLD	24	17.0	1.2304
12/17/2009	1ST EBB	20	2.0	0.301
12/28/2009	3/4 EBB	19	33.0	1.5185
3/17/2010	HIGH	25	7.8	0.8921
5/5/2010	LAST EBB	35	22.0	1.3424
6/30/2010	LOW	38	4.5	0.6532
8/3/2010	1/4 FLD	38	110.0	2.0414
9/8/2010	LAST EBB	39	4.5	0.6532
12/16/2010	LAST EBB	30	13.0	1.1139
3/22/2011	1ST FLD	31	4.5	0.6532
5/9/2011	3/4 EBB	37	22.0	1.3424
6/7/2011	LAST EBB	39	4.5	0.6532
8/2/2011	LATE EBB	39	79.0	1.8976
12/13/2011	3/4 FLD	35	8.3	0.9191
12/28/2011	1/2 FLD	38	70.0	1.8451
1/5/2012	1/2 EBB	31	2.0	0.301
5/3/2012	1/2 EBB	38	1.8	0.2553
6/20/2012	LAST FLD	35	1.8	0.2553
8/16/2012	LAST FLD	32	2.0	0.301
9/10/2012	1/2 EBB	29	4.5	0.6532
10/22/2012	1/2 EBB	35	11.0	1.0414

Table 11 Data Summary

Summary of sampling data through 10/22/2012. Shaded cells indicate stations in waters closed to shellfish harvest.

Station ID:	# Samples:	Median:	Geomean:	Estimated 90th:
1A	30	1.7	3.4662	16
3	30	1.75	3.1752	12
4	30	2	4.2149	22
5	30	11	9.4037	56
6	30	2	2.7957	8
8A	30	2	3.0368	9
10	30	13	11.7962	98
12	30	4.5	5.0964	20
14	30	1.7	2.5674	8
15	30	1.7	2.2797	6
18	30	2	3.7382	18
19	30	1.8	3.4490	16
20	30	2	3.1343	10
20A	30	5.3	9.0391	99
21	30	2	3.0533	13
22	30	1.9	3.6162	15
23	30	1.85	3.6243	19
24A	30	4.5	6.1366	40
27	30	1.85	2.9280	8
28	30	1.7	2.5341	9
29	30	1.7	2.8960	11
34A	30	3.25	4.5400	19
35	30	2	3.3512	12
36	30	7.8	8.0048	35