
SEABROOK HARBOR BEACH

Water Quality Report
Summer 2009



**Seabrook Harbor Beach, Seabrook
Water Quality Report
Summer 2009**



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History of the Beach Program

The New Hampshire Department of Environmental Services (NHDES) recognizes a public health threat may exist within recreational waters and tests the water at the state's beaches to ensure swimmers are not exposed to disease-causing pathogens or cyanobacteria scums. The NHDES has operated a Public Beach Inspection Program, commonly called the Beach Program, for over 20 years.

The New Hampshire coastal beach monitoring program was initiated in 1989 with the DES inspecting five beaches. In October 2000, the United States Congress amended the Clean Water Act to include the BEACH Act. The Environmental Protection Agency (EPA) was then authorized to award grants to eligible states to develop and implement monitoring and notification programs. These programs protect the public from exposure to pathogenic microorganisms in coastal recreation waters.

The DES first received grant funds in 2002. Since then the New Hampshire Beach Program has successfully met all of the EPA's performance criteria requirements (National Beach Guidance and Required Performance Criteria for Grants) and continues to expand the monitoring and notification program. Weekly summer monitoring throughout the state was conducted at nine beaches in 2002, and has since nearly doubled to 17 by 2009. The Beach program strives to expand sampling to include all coastal New Hampshire beaches.

Coastal beaches are monitored for the presence of the fecal bacteria *Enterococci* which are present in the intestines of warm-blooded animals including humans. Fecal bacteria, when present in high concentrations and ingested, can commonly cause gastrointestinal illnesses such as nausea, vomiting and diarrhea. These indicator organisms signify the possible presence of other potentially disease-causing organisms in the waterbody.

Beach monitoring and bacteria source tracking have been implemented to protect public health. In a collaborative effort, the NHDES Beach program, towns, beach managers, recreational directors and health inspectors encourage public awareness of sources of pollution and environmental responsibilities. Thank you for your interest and concern in New Hampshire's water quality.

Beach Statistics

Seabrook Harbor Beach, located on the west side of Ocean Boulevard, is owned and maintained by the town of Seabrook. Seabrook Harbor Beach is also referred to as Seabrook Inner Harbor.

Seabrook Harbor Beach is a 1,180-foot long sandy beach. The beach is used by the public for fishing and other recreational activities. There are multiple access points to the beach area from the parking lot and surrounding neighborhood. Lifeguards are not present throughout the summer, but toilet facilities are available (Figure 1).



Figure 1. Seabrook Harbor Beach sampling locations and restroom facility.

Waterfowl are frequently observed at the beach. The most commonly observed waterfowl are gulls, although plovers and cormorants are observed occasionally as well. There are restrictions for dogs on the beach, but the beach inspectors observed one dog August 12.

Seabrook Town Beach Ordinances

The Town of Seabrook has the following ordinances that apply to all town beaches:

1. Alcohol is prohibited at town beaches.
2. Dogs are not permitted on town beaches from 8 am to 6 pm from Memorial Day to Labor Day. People with dogs are not to permit the dog to defecate on the beach.
3. Surfing is prohibited at all times at Seabrook Beach except within 100 feet either side of Thompson Rock and within 100 feet either side of Round Rock.

Assessing Your Beach

Sampling Frequency and Location

In 2003, the beach program developed a risk-based evaluation process to determine how often a beach should be monitored. Beaches with a bigger potential impact on the health of visitors are monitored more often than beaches with a smaller impact. Annually, each beach is evaluated by the beach program on several criteria within three main categories: beach history, microbial pathogen sources, and beach use. Additionally, a beach that appears on the most recent 303(d) list as “not supporting primary recreational contact” is elevated to the most intense inspection schedule. The Federal Clean Water Act (CWA) requires each state to present a 303(d) list to the EPA every two years that indicates surface waters that are impaired or threatened by a pollutant or pollutants. A tidal beach is listed if there were two or more exceedances of the state standard of 104 Enterococci counts/100 ml during sampling in the last five years. Exceptions to the rule can be made if a large number of recent samples are all below the state standard.

Based on the evaluations, beaches are assigned a Tier I, Tier II, or Tier III status. Tier I beaches are considered “high priority” and have an increased potential to affect public health due to heavy beach use, previous elevated bacteria levels sampled, potential bacteria sources near the beach, inclusion on the 303(d) list, or a combination of these factors. Tier II beaches are “medium priority” and Tier III are “low priority” beaches that have less potential to affect public health. Beach sample frequency is based on Tier status; Tier I beaches are sampled twice per week, Tier II beaches are sampled once per week, and Tier III beaches are sampled every other week.

The number of samples collected at each beach is determined by the beach length. Beaches less than 100 feet in length are sampled at left and right locations one-third of the distance from either end of the beach. Beaches greater than 100 feet in length are bracketed into thirds and sampled at left, center and right locations. Routine sample collection may be enhanced by sampling known or suspected pollution sources

to the beach area. Storm event sampling may be conducted at beaches where watershed runoff resulting from rainfall is expected to impact beach water quality.

Seabrook Harbor Beach is listed as impaired for primary recreational contact on the 303(d) list since five samples collected exceeded the Enterococci state standard for public beaches during the last the assessment period. Based on the past beach use, sample results, and 303(d) assessment, Seabrook Harbor Beach is classified as a Tier I beach indicating high priority and sampling is conducted twice a week. The frequency of sampling at Seabrook Harbor has increased since the launch of the beach evaluation process implemented in the 2003 sampling season. The beach sampling increased from once every other week to once a week in 2004 due to increased beach data and a recognition of potential bacteria sources. Sampling frequency changed again in 2006, when the beach was reclassified as an impaired beach due to exceedances in 2005. Since 2006, Seabrook Harbor is sampled twice each week throughout the summer. Seabrook Harbor Beach samples are collected at the left, center, and right stations regularly (Table 1). All stations are evenly distributed along the shoreline and can be accessed via the parking lot (Figure 1).

Table 1. Seabrook Harbor Beach Station Descriptions and Latitude/Longitude Points.

Station Description	Latitude	Longitude
Left Sample Station: Access the station by the path located at the south end of beach. The sample is collected out from the access point.	42.888419°	-70.819165°
Center Sample Station: Access the station between the fifth & sixth wooden post south of the restroom facilities. The sample is collected straight out from the access point.	42.888977°	-70.818727°
Right Sample Station: Access the station by the path located at the north end of beach. The sample is collected straight out from the access point.	42.889654°	-70.818685°

Coastal Water Quality Standards and 2009 Results

Beaches are monitored to ensure compliance with state water quality standards. Marine waters are analyzed for the presence of the fecal bacteria Enterococci. Enterococci are known as indicator organisms, meaning their presence may indicate the presence of other pathogenic organisms. The state standard for Enterococci at public beaches is 104 counts/100 ml of water in one sample. When either two or more samples taken at a beach exceed the standard or when one sample exceeds 174 counts/100 ml. A beach advisory is issued and posted on the beach website, beach managers are notified, and signs are placed at the entrances to the beach to warn the public of the potential health threat posed by water contact at the beach. Beach advisories remain in effect until subsequent beach sampling reflects results below the state standard.

The 2009 sampling season began May 26th. The summer sampling season encompassed 99 days. Additional sampling was conducted weekly at each coastal beach until September 23. Precipitation was recorded on 48 days during the summer sampling season and four times during the September sampling, based on precipitation recorded at the Seabrook Power Station. Wetfall during the May sampling totaled 1.15 inches and June wetfall totaled 7.04 inches. July and August yielded 7.44 and 5.02 inches of rain respectively. During the fall sampling, 0.69 inches of rain fell from September 11-13 and a trace was recorded on September 18th.

At Seabrook Harbor Beach, 28 routine inspections, one safety inspection, and two advisory inspections were conducted during the summer of 2009. Three additional inspections occurred after Labor Day. One hundred and four samples were collected and tested for Enterococci (Appendix B). Four samples collected in 2009 exceeded the Enterococci state standard at Seabrook Harbor (Figure 2) and two advisories were issued. The violations occurring in 2009 were the most in any one season since 2003 (Figure 3).

On June 22, 2009, Enterococci results from the left and right sampling stations were 190/100 ml and 200/100ml respectively. A beach advisory was posted when the results were made available after 4 pm on June 23rd. One possible cause for high bacteria counts may correspond to the 0.18 inches of wetfall in the previous 24 hours. On June 23, 2009, a routine inspection was conducted after 0.22 inches of rain fell in the previous 24 hours. An advisory inspection was conducted on the morning of June 24, 2009, based on the results from the initial elevated result reported on the 22nd. The advisory was removed after 4 pm on June 24th when the results from the previous day's sampling confirmed that Enterococci levels were within the state standards.

At 4 pm June 25, 2009, the results from the previous day's sampling showed the left station had 110 counts of Enterococci/100 ml of water. The center and right stations did not have bacteria above the state standard. A safety inspection was conducted on June 26, 2009. The results on June 27, 2009, showed the left station result was again high, 300 counts/100 ml of water and another beach advisory was issued. Since the results were not available until mid-day on Saturday, a sample could not be collected and sampled by the laboratory until the next morning, Sunday, June 27th. At the time, the weather was inhospitable to swimming with 1.17 inches of total wetfall on June 26th. The decision was made to postpone sampling until Monday, June 29th. The results for samples collected at all stations on both June 29th and 30th were 10 counts/100 ml of water or less.

Concerns

Boats moored in the harbor continue to be a concern. Between 10 and 20 boats were moored in the harbor during the 2009 beach season. Some boats contain onboard toilet facilities, and although discharging waste into the harbor is illegal, documented cases of sewer discharges in other coastal regions have been recorded. The New Hampshire DES Shellfish Program has also expressed concerns about the threat that boat sewage poses to the shellfish beds in the harbor. If a boat is observed discharging to the harbor, please notify the DES, Clean Vessel Act Program, the Coast

Guard, or Marine Patrol. There are sufficient boat pump-out facilities located along the coast and mobile pump-out boats where boat sewage can be pumped out in a safe and legal manner.

Seabrook Harbor Adopt-a-Beach Program

In response to growing concern over the amount of litter and marine debris impacting visual and environmental aspects of Hampton Beach, the beach program partnered with the Blue Ocean Society for Marine Protection (BOS) from Portsmouth, N.H. Both parties met to discuss the development of an Adopt-a-Beach Program at Hampton Beach in the spring of 2005. A formal Memorandum of Agreement stated that the Blue Ocean Society would add Hampton Beach to their Adopt-a-Beach Program and that the beach program would supply materials such as gloves, garbage bags, scales and pencils to volunteers who clean Hampton Beach.

In the fall of 2009, the Memorandum of Agreement between the DES and the BOS was revised to acknowledge the 16 mainland coastal beaches monitored by DES and divided into 23 sections available for adoption through the BOS. Previously, only five sections at Hampton Beach State Park were recognized. Currently, 19 sections are adopted including the Seabrook Inner Harbor beach. The Florida Power & Light Company Seabrook Station employees are the current stewards of Seabrook Inner Harbor.

Volunteers conduct beach clean-ups monthly. All litter washed up or left behind at the beach is weighed, categorized and recorded for analysis by the BOS. The most numerous items found at Seabrook Inner Harbor Beach in past years were cigarette butts, beverage containers, and packaging materials. The BOS produces an annual summary of clean-ups and litter collected at all coastal beaches. The 2009 report will be available for downloading in early 2010 on the BOS website:
www.blueoceansociety.org/Research/pollution_research.html.

Please contact either Sonya Carlson, beach program coordinator, or Jen Kennedy, (603) 431-0260 or **jen@blueoceansociety.org** for information about adopting orphaned beach sections.

Future Projects

No future plans beyond regular sampling are scheduled for Seabrook Harbor Beach. If you have questions or concerns about this beach, any other NH beach or the beach program in general, please contact Sonya Carlson at (603) 271-0698 or **sonya.carlson@des.nh.gov**.

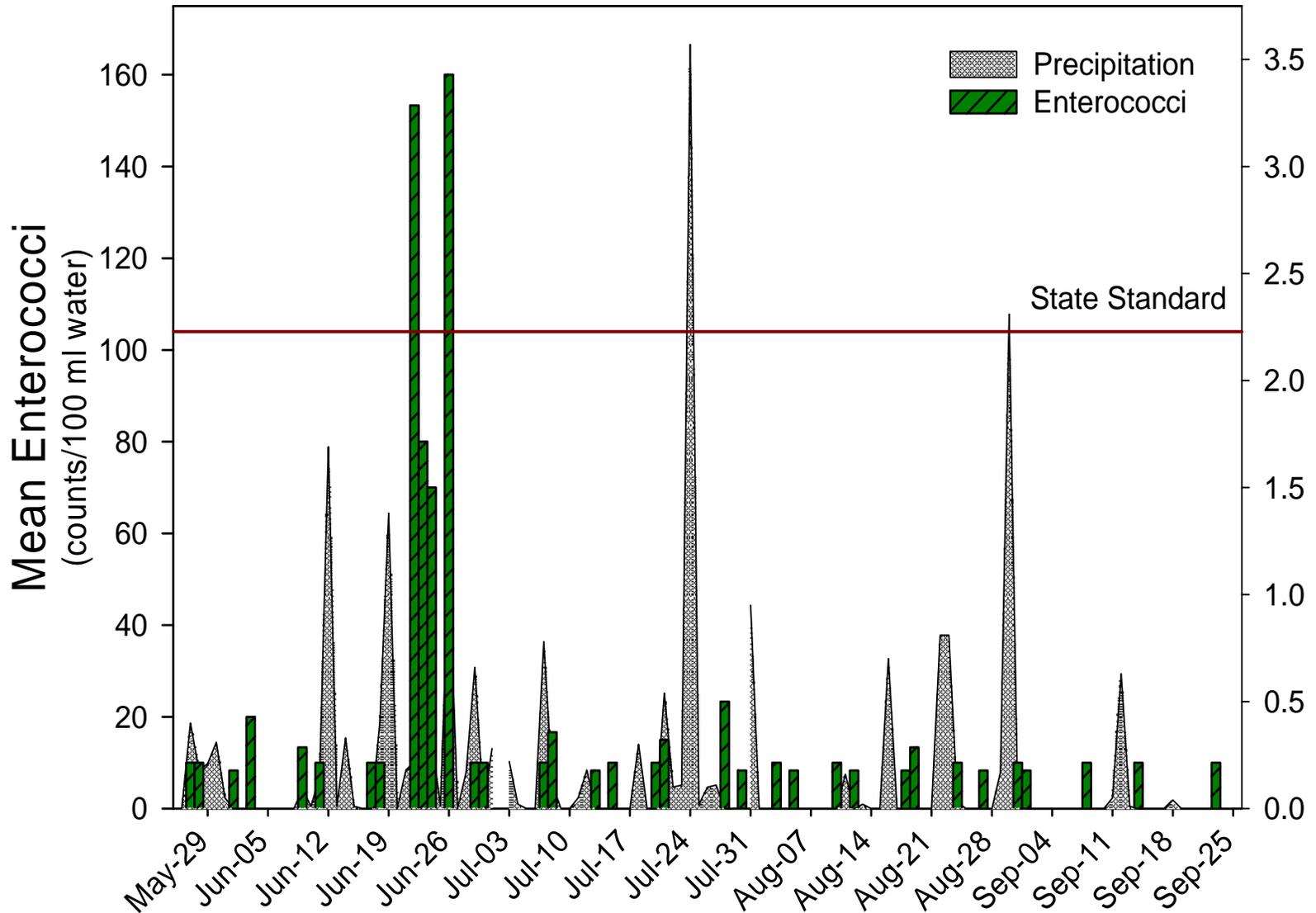


Figure 2. Seabrook Harbor Beach 2009 Enterococci Data. Enterococci values are the mean of the three collected beach samples. Two advisories were posted at Seabrook Harbor Beach during the summer of 2009 for violations of the state standard of 104 counts/100 ml of water. See Appendix B for all results from all stations for the 2009 sampling season.

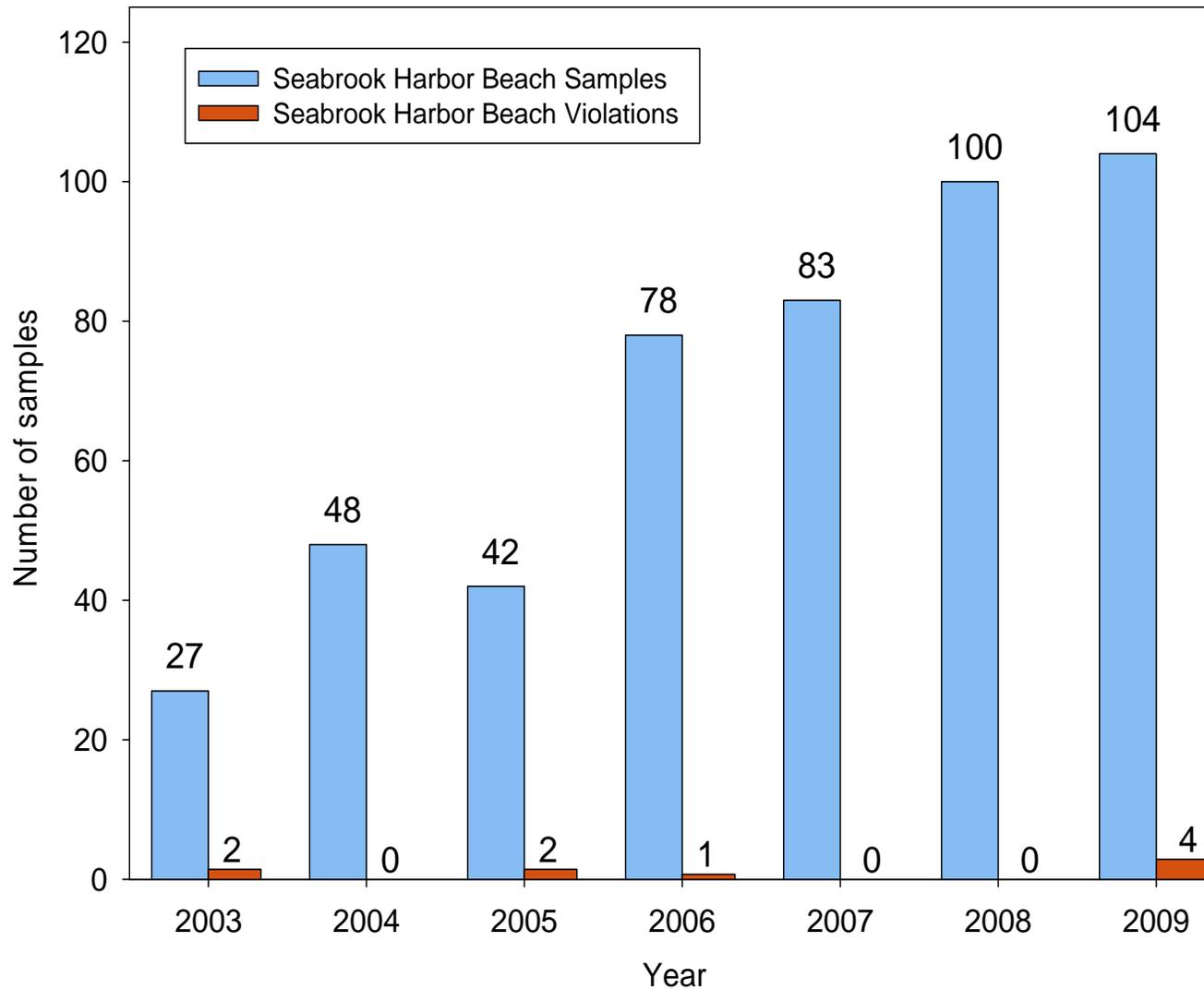


Figure 3. Enterococci samples and violations at Seabrook Harbor Beach. An exceedance of the state standard for Enterococci bacteria is a violation. All violations recorded at NH coastal beaches when violations occurred at Seabrook Harbor Beach are: 5 total violations in 2003, 4 total violations in 2005, 23 total violations in 2006, and 15 total violations in 2009.

Appendix A: Special Topic 2009 - Bacteria Source Identification

The NHDES Beach Program is responsible for monitoring the quality of New Hampshire's Public Bathing Beaches, conducting special investigations and cooperatively working with local communities to improve beach water quality. The Beach Program also identifies local community actions that reduce pollutants from possible contamination sources.

Potential contamination sources within a watershed include improper disposal of human, pet, and livestock waste, land use, stormwater runoff, and wildlife. Once identified, source reduction can be prioritized by severity of bacteria loading and our ability to manage the source. Human wastewater and livestock contributions are more easily managed than those of wildlife, though the best management practices designed to reduce stormwater runoff will also reduce contributions from wildlife.

In 2008 the Beach Program initiated a bacteria source identification program at New Hampshire's coastal swimming waters. The ultimate goal of this project was to improve our coastal water quality by eliminating major contributors of fecal bacteria at their sources.

The first phase of the study initiated in 2008 was comprised of the following six main tasks:

1. Data collection.
2. Data interpretation, including statistical analysis of elevated beach bacteria events
3. Computer modeling to estimate bacteria loading.
4. Review of existing literature about the study area and study topic.
5. Interviewing local environmental professionals with experience and background in the study areas.
6. Report Production summarizing our findings.

The initial study area for this bacteria source investigation included the watersheds of all 16 coastal beaches monitored by the NHDES Beach Program. Phase one of this project served as a platform to thoroughly review the watersheds of New Hampshire's coastal beaches and allowed DES to narrow the study area to the most impacted watersheds.

DES is conducting the 2009 second phase of this investigation which focuses on three coastal beach watersheds of concern: New Castle Town Beach Watershed, Wallis Sands Watershed in Rye, and North Hampton State Beach Watershed. Extensive wet and dry weather sampling will be conducted throughout each focus watershed to determine where bacteria sources are located. Suspected sources are bracketed by sampling above and below a location in the watershed. A bacteria source is identified when high bacteria counts are measured downstream, but not upstream of a potential bacteria source in the watershed. Once an area of elevated bacteria levels is identified, the area will be investigated further to pinpoint the pollution source.

A watershed management plan (WMP) will be developed for each of the focus beach watersheds. These WMP documents will identify the bacteria sources, prioritize them for remediation, and provide remediation options. The NHDES Beach Program looks forward to working with the towns of New Castle, Rye, and North Hampton as well as other local parties to improve the water quality of their coastal swimming beaches.

In the late summer of 2009, Beach Program staff attended public meetings in each town and introduced the idea of developing a municipal and state partnership. As partners, each watershed could apply for EPA Clean Water Act grant monies to help fund the reduction of bacterial pollution to these coastal beaches. All grant funding requires a 40% match in funds from each town which may be matched as services in lieu of payment, such as work performed by town employees or volunteers. Several remediation projects will be outlined in each WMP and the town will then select the corrective actions that can be implemented.

The suggested partnerships were received well by most of the towns. When the watershed management planning documents are finished, the NHDES Beach Program anticipates a positive and productive partnership with the towns of New Castle, Rye, and North Hampton to protect and improve the water quality at the coastal beaches.

Additional phase two tasks include investigating bacteria transport to the beaches by ocean currents and statistical analysis of elevated beach bacteria events. Elevated bacteria results from beach locations will be compared with environmental data such as amount of rain, tide height, temperature, and solar irradiance occurring at the same time. Identifying the environmental factors that best correlate with the observance of high bacteria counts in beach water could allow staff to predict when conditions may cause elevated bacteria levels before they occur.

Appendix B: Seabrook Harbor Beach 2009 Data by Date

Date	Enterococci (count/100 ml)			Inspection Type	Rainfall in previous 24 hours (inches)	Number of bathers	Animal Presence
	Left	Center	Right				
5/27/09	<10	<10	<10	Routine	0	0	6 birds
5/28/09	<10	<10	10	Routine	0.4	0	5 birds
6/1/09	<10	<5	10	Routine	0.05	0	3 birds
6/3/09	<10	40	<10	Routine	0	0	0
6/9/09	<10	20	<10	Routine	0	0	15 birds
6/11/09	<10	<10	<10	Routine	0.01	0	10 birds
6/17/09	<10	<10	10	Routine	0	1	6 birds
6/18/09	<10	<10	<10	Routine	0	2	14 birds
6/22/09	190	70	200	Routine	0.18	1	24 birds
6/23/09	90	70	80	Routine	0.22	0	21 birds
6/24/09	110	60	40	Advisory	0.21	0	25 birds
6/26/09	300	<10	20	Safety	0.01	0	8 birds
6/29/09	<10	<10	<10	Advisory	0.17	0	19 birds
6/30/09	10	10	10	Routine	0.66	1	1 bird
7/7/09	10	20	<10	Routine	0	0	12 birds
7/8/09	20	<10	<10	Routine	0.78	0	12 birds
7/13/09	<5	<10	<10	Routine	0.18	0	3 birds
7/15/09	<10	<10	<10	Routine	0	2	2 birds
7/20/09	<10	30	<10	Routine	0	0	0
7/21/09	10	30	5	Routine	0	0	0
7/28/09	30	<10	<10	Routine	0.11	1	3 birds
7/30/09	10	<10	5	Routine	0	0	1 bird
8/3/09	10	10	<10	Routine	0	3	4 birds
8/5/09	<10	<10	5	Routine	0	0	20 birds
8/10/09	<10	<10	<10	Routine	0	0	0
8/12/09	<10	<10	<5	Routine	0.16	0	18 birds, 1 dog
8/18/09	<10	<10	<5	Routine	0	4	0
8/19/09	20	<10	10	Routine	0	0	2 birds
8/24/09	10	<10	<10	Routine	0.81	0	18 gulls, 6 cormorants
8/27/09	<5	<10	<10	Routine	0	0	45 gulls, 2 cormorants
8/31/09	<10	<10	<10	Routine	2.31	0	9 birds
9/1/09	<5	<10	<10	Routine	0.01	0	7 gulls, 11 plovers
9/8/09	<10	<10	<10	Fall	0	0	23 gulls, 1 bird
9/14/09	<10	<10	<10	Fall	0.01	0	2 birds
9/23/09	10	<10	<10	Fall	0	0	15 gulls