RHODE ISLAND DEPARTMENT OF HEALTH

BEACHES ENVIRONMETNAL ASSESSMENT
AND COASTAL HEALTH PROGRAM

2018 RHODE ISLAND BEACH AND RECREATIONAL WATER QUALITY REPORT

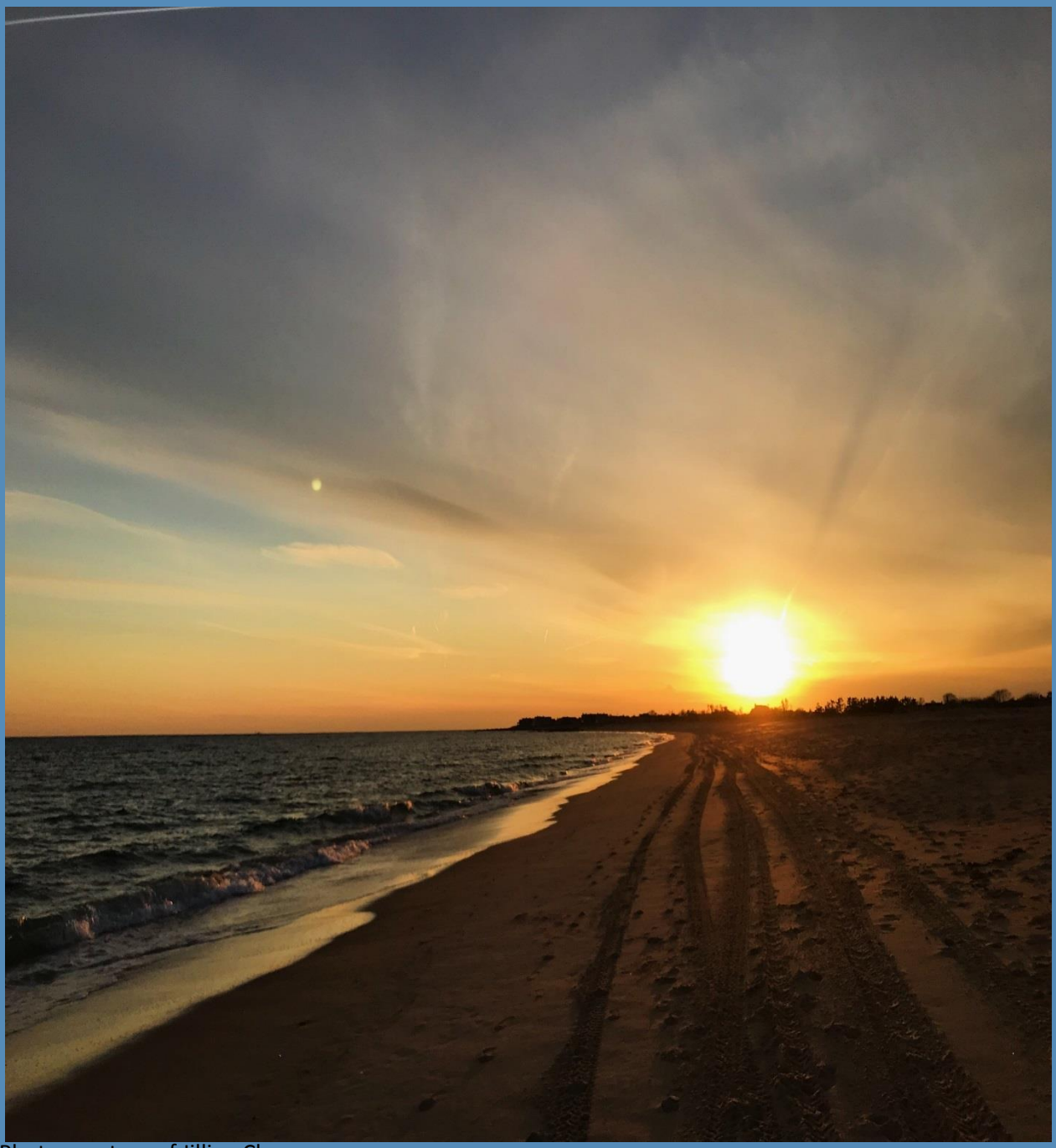

Photo courtesy of Jillian Chopy,
Seasonal Policy Intern

2018 RHODE ISLAND BEACH AND RECREATIONAL WATER QUALITY REPORT

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1.0 Executive Summary

The Rhode Island Department of Health (RIDOH) is responsible for the licensing and regulation of bathing beach facilities in the State of Rhode Island, including both fresh and saltwater beaches. Funding for the Beach Program is provided by the United States Environmental Protection Agency (USEPA) through the Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000, an amendment to the Federal Water Pollution Control Act (also known as the Clean Water Act) of 1972. These funds support primary programmatic activities including: sanitary surveys, development and implementation of a risk-based monitoring plan, bacteriological testing at marine beaches, and a public notification system.

During the 2018 Beach Season (from May 29th through August 31st) approximately 1,500 samples were collected by RIDOH from 69 licensed saltwater beaches (Appendix A). Samples were analyzed for *Enterococcus* bacteria using the IDEXX Enterolert Method (EPA Method 1600).

The 2018 bathing season exhibited a decrease in both saltwater beach closure events and closure days compared to the 2017 season. The total of 20 closure events over 60 closure days was less than the 28 events and 73 days in 2017. The closures in 2018 occurred at 12 beaches. The total volume of rainfall was similar in 2018 and 2017 (9.4 vs 8.8 inches, respectively). There were six significant rainfall instances (greater than one-half inch in a 24-hour period) in 2018 vs seven in 2017. Notably, conditions in 2014 and 2007 also had similar low rainfall, with 6.8 and 8.2 inches of rain, including seven and six significant rain events, respectively. During these years there were more (43 and 36) closure events.

Currently, RIDOH does not conduct surface water monitoring at freshwater bathing beaches. To ensure public safety, freshwater beach managers are responsible for sampling and following RIDOH approved regulations and monitoring recommendations.

1.0 PROGRAM STANDARDS

1.1 Mission

The mission of the RIDOH is to prevent disease and to protect and promote the health and safety of the people of Rhode Island. Within RIDOH, the Beach Program works to protect the public from illness associated with swimming in contaminated bathing waters. The Beach Program furthers this mission through continuous monitoring during the bathing season and by assisting beach owners and managers with finding and eliminating sources of contamination.

1.2 History

RIDOH began monitoring beaches in the summer of 1995. Prior to 1995, the Rhode Island Department of Environmental Management (RIDEM) was responsible for monitoring recreational waters.

In 1999, development of a comprehensive beach-monitoring program began under a USEPA Environmental Monitoring for Public Access and Community Tracking (EMPACT) Grant titled Bacterial Water Quality Monitoring at Upper Narragansett Bay Bathing Beaches. This grant enabled RIDOH to establish a public notification system including a website, telephone hotline, and beach signage system. RIDOH evaluated conditions in Upper Narragansett Bay, which has long been impacted by urban runoff, point source discharges, and combined sewer overflows (CSOs).

The EMPACT Program provided RIDOH with the resources to sample 23 stations in the Upper Narragansett Bay during wet and dry weather. The study concluded that additional sampling was necessary at the licensed Upper Bay beaches to adequately protect the public. In addition, due to identified contamination sources and analytical results, the areas north of Conimicut Point in Warwick and Nayatt Point in Barrington were deemed unsuitable to serve as licensed facilities.

In 2000, Congress enacted the Beaches Environmental Assessment and Coastal Health (BEACH) Act, an amendment to the Federal Water Pollution Control Act. The BEACH Act authorizes USEPA to distribute grants to eligible states, territories, and tribes to reduce the risk of disease and illness in the nation's bathing waters. State objectives under this program were published by USEPA in June 2002. The National Beach Guidance and Required Performance Criteria for Grants document promulgated by USEPA further stipulates several requirements of the BEACH Act, including: a tiered categorization of beaches according to risk, identification and mitigation of pollution sources, a risk communication plan, and specific beach monitoring information.

Since 2000, USEPA has provided RIDOH with over $3.2 million in beach grants to manage Rhode Island's Beach Program. These grants have provided RIDOH with the resources to monitor Rhode Island's licensed bathing beaches, identify sources (point and non-point) of contamination, and work with Rhode Island's municipalities to eliminate those sources of contamination and improve coastal water quality in Rhode Island.

1.3 Enacted Legislation

In accordance with the Rhode Island Regulation 216-RICR-50-10-3 (1/17/2018), and prior Regulation (R23-21-RF(A)(1.4 as amended January 2002) within the General Laws of Rhode Island, a "bathing beach" is defined as a natural area or tract of land that is used in connection with swimming and/or bathing in any waters of the state provided:

a) It is open to the public by permit and/or payment of a fee; or

b) It is maintained as a private club or association requiring membership fees or dues; or

c) It is maintained with or without charge for the recreation of groups of ten (10) or more children.

Please Note: Due to the important monitoring and protections provided by licensed beaches, RIDOH recommends only swimming at licensed bathing beach facilities.

Also per Rhode Island Regulation 216-RICR-50-10-3 (1/17/2018), and prior Regulation (R23-21-RF(A)(1.4 as amended January 2002), licensing of recreational facilities requires facilities to have electrical service; refuse storage and disposal; sewage disposal facilities; adequate toilets, showers, or lavatories with hot and cold running water; a drinkable water supply; and the water adjacent to a bathing beach must meet bacteriological standards. Specific requirements are dependent on the number of users. Reference to these requirements can be found within the Rules and Regulations for Licensing of Recreation Facilities within the General Laws of Rhode Island (Appendix B).

Per R23-22.5 Drowning Prevention and Lifesaving

Beach Rules and Regulations Promulgated in Accordance with Chapter 3343 of the Public Health Laws of 1954

1. All individuals employed as lifeguards after June 30, 1954 at bathing areas within the State of Rhode Island shall hold an active state lifeguard certification card as issued by the Division of Parks and Recreation, within RIDEM. Lifeguards holding surf cards may be employed at either surf or non-surf bathing areas. Lifeguards holding non-surf cards shall be employed only at non-surf bathing areas. All certification cards are active during the season of their employment and until the following June 30 unless suspended or revoked by the Division of Parks and Recreation.

2. All bathing areas shall provide lifeguard equipment and personnel according to the requirements of the Division of Parks and Recreation and shall provide such equipment and personnel whenever the facilities of the area are open for business.

3. All lifesaving equipment shall be maintained in good operating condition ready for immediate use.

4. All bathing areas shall post conspicuously the hours of duty of lifeguard personnel.

5. A telephone for emergency calls shall be readily accessible from every bathing area. Numbers of police, fire, and rescue units of the area shall be posted conspicuously beside the telephone.

6. No power boats shall be allowed within any bathing and swimming area. The management of each bathing area shall maintain his area free from driftwood and other objects which may cause injury.

7. No bathing area shall operate on any given day unless a state certified lifeguard is present during all hours which the facilities are being used.

8. During periods of severe surf, undertow and other emergency conditions the Recreational Safety Inspectors of the Division of Parks and Recreation shall have the authority to close any and all bathing areas whenever such action is deemed necessary in the interest of public safety. Whenever a bathing area has been closed because of the aforesaid conditions, lifeguards shall be retained on the beach to caution prospective bathers against entering the water.

9. The bathing season shall, for each year, last from May 30th until 6:00 PM of each Labor Day unless the Division of Parks and Recreation gives notice to the contrary.

1.4 Standards

Recreational water quality standards for Rhode Island saltwater bathing waters are under review, but currently apply a single sample standard, also known as the Beach Action Value (BAV) of 60 *Enterococcus* (measured in most probable number [MPN]) per 100 milliliters (ml) of water. An additional standard, a geometric mean of 30 *Enterococcus* (MPN), is applied as a running average standard.

The analytical method for monitoring for conformance with the standards utilizes the IDEXX Enterolert© 1600, a USEPA-approved method to enumerate *Enterococcus*. Enterolert© provides a range of *Enterococcus* counts from less than 10 to greater than 24,192 MPN/100ml. The principal imitation of IDEXX Enterolert© is that it takes more than 24 hours from sample reception at the laboratory to reporting of analytical result. In other words, there is over a full day delay from when the sample is collected to when the results are received. Decisions to close and/or re-open a beach are generally made in the late afternoon on the day after sample collection. This translates to risk for beach-goers who may be exposed to contaminated water that will not be identified until the next day. In addition, the delay may result in beaches remaining closed for more than a full day after they may have become safe for swimming.

RIDOH is continuously reviewing promising new methods that would better meet the intent of standards to protect public health without unnecessary restrictions of use, including new analytical methods and predictive modeling (see Section 4).

The current single sample standard is used as a trigger to consider the recommendation for a beach closure. Actual closure recommendations involve additional considerations (e.g., environmental conditions and weather predictions) that determine the likelihood that adverse water quality would persist.

2.0 NATIONAL BEACH GUIDANCE AND REQUIRED PERFORMANCE CRITERIA FOR GRANTS, 2014 ED.

USEPA has developed 11 performance criteria for the implementation of monitoring, assessment and notification programs. To be eligible for a grant to implement a monitoring and notification program the state, tribal, or local government's program must be consistent with these performance criteria. These performance criteria are based on and incorporate other requirements of the BEACH Act as well. The 11 performance criteria listed below are quoted directly from the National Beach Guidance and Required Performance Criteria for Grants, 2014 Ed (US EPA 2014)

Performance Criterion 1: Risk-based Beach Evaluation and Classification Process

Performance criterion 1 requires a state or tribe to develop a risk-based beach evaluation and classification process and apply the process to its coastal recreation waters. The process must describe the factors used in the state's or tribe's evaluation and classification process and explain how the state's or tribe's coastal recreation waters are ranked as a result of the process. That process must result in a list of specific coastal recreation waters adjacent to beaches or similar points of access used by the public.

Performance Criterion 2: Tiered Monitoring Plan

Performance criterion 2 requires a state or tribe to develop a tiered monitoring plan. The plan must adequately address the frequency and location of monitoring and the assessment of coastal recreation waters on the basis of the periods of recreational use of the waters, the nature and extent of use during certain periods, the proximity of the waters to known point and nonpoint sources of pollution, and any effect of storm events on the waters. EPA has added three new considerations to the basis for developing the tiered monitoring plan.

Performance Criterion 3: Methods and Assessment Procedures

Performance criterion 3 requires a state or tribe to develop detailed assessment methods and procedures. States and tribes must adequately address and submit to EPA methods for detecting levels of pathogens and pathogen indicators that are harmful to human health in coastal recreation areas. States and tribes must also provide documentation to support the validity of methods other than those that EPA validated or approved. Finally, states and tribes must identify and submit to EPA assessment procedures for identifying short-term increases in pathogens and pathogen indicators that are harmful to human health in coastal recreation areas.

Performance Criterion 4: Monitoring Report Submission

Performance criterion 4 requires states and tribes to develop a mechanism to collect and report monitoring data in timely reports. States and tribes must report their monitoring data to the

public in a timely manner, including posting on a website. They must report their monitoring data to EPA at least annually or at a frequency required by the EPA Administrator. EPA encourages states to coordinate closely with local governments to ensure that monitoring information is submitted consistently. Reported data must be consistent with the list of required data elements.

Performance Criterion 5: Delegation of Monitoring Responsibilities

Performance criterion 5 requires a state to document any delegation of monitoring responsibilities that might have been made to local governments. If monitoring responsibilities are delegated to local governments, the state grant recipient must describe the process by which the state may delegate to local governments responsibility for implementing the monitoring program.

Performance Criterion 6: Public Notification and Risk Communication Plan

Performance criterion 6 requires that a state or tribe develop a public notification and risk communication plan. The plan must describe the state's or tribe's public notification efforts and measures to inform the public of the potential risks associated with water contact activities in the coastal recreation waters that do not meet applicable Water Quality Standards (WQS).

The state or tribe must adequately identify measures to promptly communicate the occurrence, nature, location, pollutants involved, and extent of any exceedance or likelihood of exceedance of applicable WQS for pathogens and pathogen indicators. The state or tribe must identify how it will promptly communicate that information to EPA. States are responsible for identifying how they will promptly communicate the failure to meet applicable standards to a designated official of the local government in the area adjoining the coastal recreation waters with water quality problems.

A state or tribal government program must describe procedures for posting signs at beaches or similar points of access, or for taking functionally equivalent communication measures that are sufficient to give notice to the public that the coastal recreation waters are not meeting or are not expected to meet applicable WQS for pathogens and pathogen indicators.

Performance Criterion 7: Actions to Notify the Public

Performance criterion 7 requires that a state or tribe give notice to the public when coastal recreation waters are not meeting or are not expected to meet applicable WQS for pathogens and pathogen indicators.

A state or tribe must post signs at beaches or similar points of access or must provide functionally equivalent communication measures that are sufficient to give notice to the public that the coastal recreation waters are not meeting or are not expected to meet applicable WQS for pathogens and pathogen indicators.

Performance Criterion 8: Notification Report Submission

Performance criterion 8 requires that states and tribes compile their notification data into timely reports. States and tribes must report to EPA the actions they have taken to notify the public when WQS are exceeded.

Performance Criterion 9: Delegation of Notification Responsibilities

Performance criterion 9 requires that states describe any notification responsibility they have delegated or intend to delegate to local governments. The state must describe the process by which the state may delegate to local governments responsibility for implementing the notification program.

Performance Criterion 10: Adoption of New or Revised WQS and Identification and Use of a Beach Notification Threshold

Performance criterion 10 is a new criterion, intended to focus on adoption of new or revised WQS as required by CWA section 303(i)(1)(B) and identification and use of an appropriate beach notification threshold. These requirements apply to states and tribes receiving grants under CWA section 406(b), and they will be implemented through conditions included in the grants.

Performance Criterion 11: Public Evaluation of Program

Performance criterion 11 requires that states and tribes provide the public with an opportunity to review the program through public notice and provide an opportunity to comment. This is not a one-time requirement; public input must be sought whenever a state or tribe makes significant changes to its beach program. If a state or tribe significantly changes its List of Beaches, beach ranking, or other elements of its monitoring and notification program, the public must have an opportunity to review the changes before implementation. Further, states and tribes should consult with the applicable EPA Region prior to making significant program changes.

The public evaluation can be accomplished through notice and public comment, meetings, forums, or workshops. For example, when classifying and ranking beaches, it is beneficial to gather input from members of the community regarding the recreational waters they would like monitored. Annual public or community meetings, surveys of the users at the beach, local newspaper articles, or other sources can provide insight into public opinion about the beach, including why the beach is or is not used (e.g., for sunning, running, swimming, or surfing); perceptions of water quality and health problems; and whether beach users desire a monitoring and notification program (if none exists) or how satisfied they are with the current program.

3.0 2018 DATA SUMMARY

During the 2018 bathing season the number of saltwater beach closure events and closure days decreased compared to the 2017 season. Closure events are defined as each occasion when a

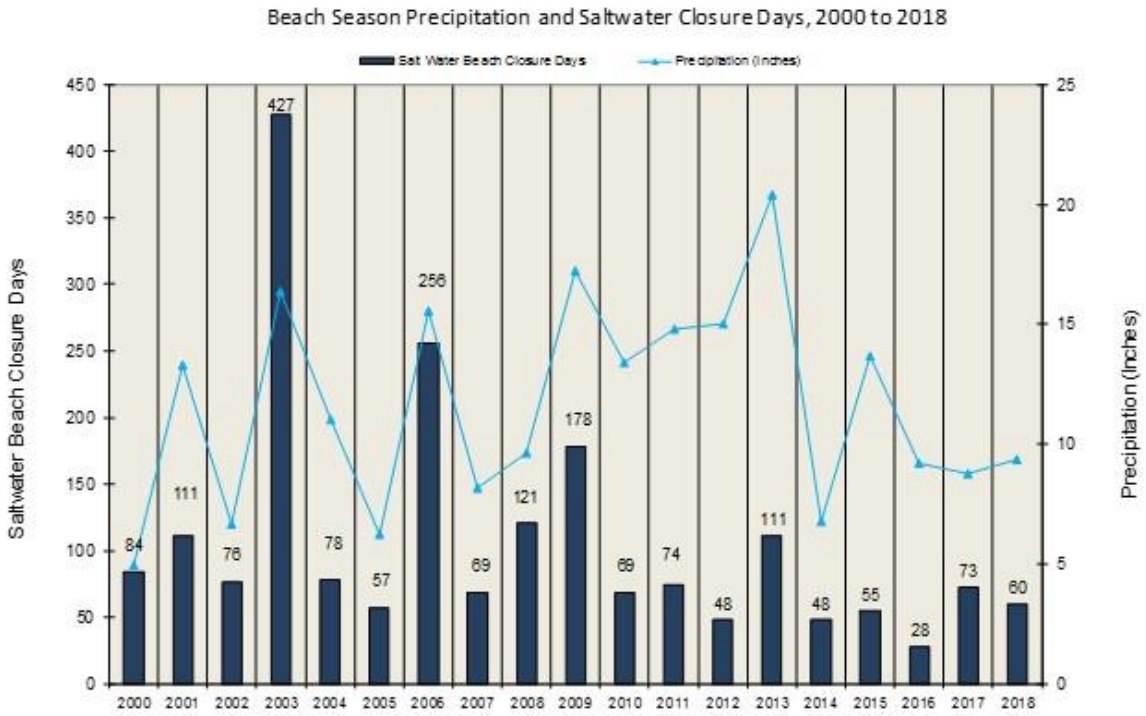
closure recommendation occurs (on a per-beach basis). Closure days are the accumulation of all of the days when beaches were closed over one or more closure events.

In 2018, the total of 20 closure events over 60 closure days was less than the 28 events and 73 days in 2017. The closures in 2018 occurred at 11 beaches, down from 15 in 2017. The total volume of rainfall was similar in 2018 and 2017 (9.4 vs 8.8 inches, respectively). There were six significant rainfall instances (greater than one-half inch in a 24-hour period) in 2018 vs seven in 2017.

Both years exceeded the record low closures in 2016 (12 closure events spread over 23 days) even though total rainfall in 2016 was similar (9.2 inches) to the last two years

The years 2014 and 2007 also had low rainfall, with 6.8 and 8.2 inches of rain, including seven and six significant rain events, respectively. During these years there were more closure events (34, both years) than in 2016-2018 (12-28). Yet, in 2014 and 2007 closure days were nearly identical (73 and 69), and within the range of the most recent years (23-73).

Figure 1. Rhode Island Saltwater Beach Closure Days and Precipitation 2000-2018



The annual closure days from 2000 through 2018, along with seasonal rainfall are shown in Figure 1, and are tabulated in Appendix B - Closure Evaluation Spreadsheet. The number of closure days has been the standard tracking measure to capture variability in water quality related closures. However, unlike the number of closure events which has a direct association with water quality, the count of closure days is dependent on management at each beach, including the time needed

to conduct follow up sampling required to affirm that it is safe to lift a closure advisory. The number of closure days may the best representation of impact to beach-goers, while the number of events is a better expression of water quality conditions from year to year. While It appears that we may be in a sustaining period of less beach closures (< 100 per season) and less association of water quality with rain, we have not had a moderately wet season since 2015 (13.7"). Since 2009, the influence of rainfall on the magnitude of beach closures appears diminished, however establishing this as a persistent pattern would require data for one or more years with high magnitude of rain (e.g., >15"). Closure data for wet years, which occurred in 2003, 2006, 2008 and 2013 corresponded with a steady downward trend while total rain ranged from 15.5 to 20.4", well above the records for 2014-2018.

If the reduced association to rain and downward trend in closure events prevails during a heavy rain year, it would be strong supportive evidence that beneficial changes correlate with a major management initiative: the installation of stormwater infrastructure to prevent high volumes of combined sewer overflow from the state's largest treatment sewage treatment plant from reaching Narragansett Bay. The new facility, located on Narragansett Bay at Fields Point in Providence, dramatically reduced overflow of untreated wastewater during wet weather events, beginning in October 2008. The number of beach closure days per inch of rain decreased from a mean of 13.3 for the period from 2003 (first year when Enterolert was used) through 2008 to 5.8 for the period from 2009 through 2018. This difference is statistically significant (T test, p=0.0074) while the average rainfall over those periods were not significantly different. Still, there is considerable uncertainty in this analysis with respect to trends particularly because it includes all licensed saltwater beaches in the state, including many outside of Narragansett Bay.

Table 1 show the distribution of 2018 beach closure days across nine Rhode Island towns. More than half (56%) of all closure days occurred in Warwick. However, the 30 closure days in Warwick were associated with three extended closure events (Table 2), partially due to delays in resampling to clear the beaches for reopening.

Table 1. Comparison of 2018 Saltwater Beach Closure Rates by City/Town.

2018 Rate of Beach Closures by Town			
% of Closures	**Town**	**Closure Days**	**Beaches**
2%	Bristol	1	Bristol Town Beach
5%	Little Compton	3	Goosewing Beach
13%	Middletown	8	Third Beach, Peabody's Beach
5%	Narragansett	3	Bonnet Shores Beach Club
8%	North Kingstown	5	Camp Grosvenor
15%	Portsmouth	9	Sandy Point Beach
2%	Warren	1	Warren Town Beach
50%	Warwick	30	Oakland Beach, Conimicut Point Beach Goddard Park State Beach

While both closure days and closure events are important metrics, the number of closure events may be a more reliable gage to characterize water quality and health risks. This is because beaches remain closed for a variety of reasons (e.g., sampling logistics), not always related to water quality and health risks. In 2018, only Conimicut Point Beach in Warwick, with fourteen closure days over four events and Sandy Point Beach in Portsmouth, with nine closure days over two events were closed for protracted periods due to persistent water quality problems. It is also of note that eight of the eleven beaches had only one or two closure events during 2018. Conimicut Point and Goddard State Park beaches in Warwick had four and three closures, respectively. Camp Grosvenor in North Kingstown also had three closures. Each 2018 closure event is detailed in Table 2.

Table 2. 2018 Beach Closures by Date.

2018 Saltwater Beach Closure Summary by Town				
Closure Date	Re-Opened Date	Beach	City/Town	Number of Days
6/12/2018	6/14/2018	Goddard Park State Beach	Warwick	2
6/29/2018	7/3/2018	Oakland Beach	Warwick	4
7/3/2018	7/6/2018	Peabody's Beach	Middletown	3
7/12/2018	7/14/2018	Camp Grosvenor	North Kingstown	2
7/13/2018	7/17/2018	Goddard Park State Beach	Warwick	4
7/17/2018	7/19/2018	Camp Grosvenor	North Kingstown	2
7/18/2018	7/24/2018	Conimicut Point Beach	Warwick	6
7/24/2018	7/28/2018	Goddard Park State Beach	Warwick	4
7/26/2018	7/31/2018	Conimicut Point Beach	Warwick	5
8/1/2018	8/4/2018	Goosewing Beach	Little Compton	3
8/7/2018	8/8/2018	Warren Town Beach	Warren	1
8/8/2018	8/11/2018	Bonnet Shores Beach Club	Narragansett	3
8/10/2018	8/15/2018	Third Beach	Middletown	5
8/15/2018	8/17/2018	Conimicut Point Beach	Warwick	2
8/15/2018	8/16/2018	Sandy Point Beach	Porstmouth	1
8/15/2018	8/16/2018	Bristol Town Beach	Bristol	1
8/17/2018	8/25/2018	Sandy Point Beach	Porstmouth	8
8/24/2018	closed for season	Camp Grosvenor	North Kingstown	1
8/27/2018	closed for season	Conimicut Point Beach	Warwick	1
8/31/2018	9/2/2018	Oakland Beach	Warwick	2

4.0 PROJECTS

4.1 Beach Season Kick-Off Meeting

Each year the Beach Program holds a topic-based meeting for beach owners/managers, cities/towns, state agencies, laboratories, and any interested stakeholders. Meetings may

include guest speakers knowledgeable in the applicable topic as well as federal representatives to answer questions and concerns.

The 2018 Kick-Off Meeting was held on May 9, 2018 at the Jamestown Library. The meeting focused on Sanitary Surveys, and Sean McCormick presented guidelines for both abbreviated and more extensive surveys, as established by U.S.EPA.

Sherry Poucher presented findings from preliminary statistical modeling that might lead to a predictive capability for high-risk beaches, as well as 2018 results from saltwater and freshwater monitoring. A copy of the 2018 Beach Season Kick-Off Meeting invitation and Agenda can be found in Appendix F.

4.2 Statistical Modeling to Predict Water Quality

During 2018, RIDOH collaborated with the non-profit organization Clean Ocean Access (COA) who submitted a proposal to improve our understanding of current marine beach water quality status and trends within the Narragansett Bay. The proposed project intends to reach beyond beach closure data to evaluate actual water quality monitoring data to potentially detect trends not evident in the closure data. The proposal also plans to better understand the factors that influence water quality through use of "Virtual Beach", a statistical modeling software package supported by U.S. EPA. The project was awarded a $16,000 grant in December 2018, to be split between RIDOH and COA.

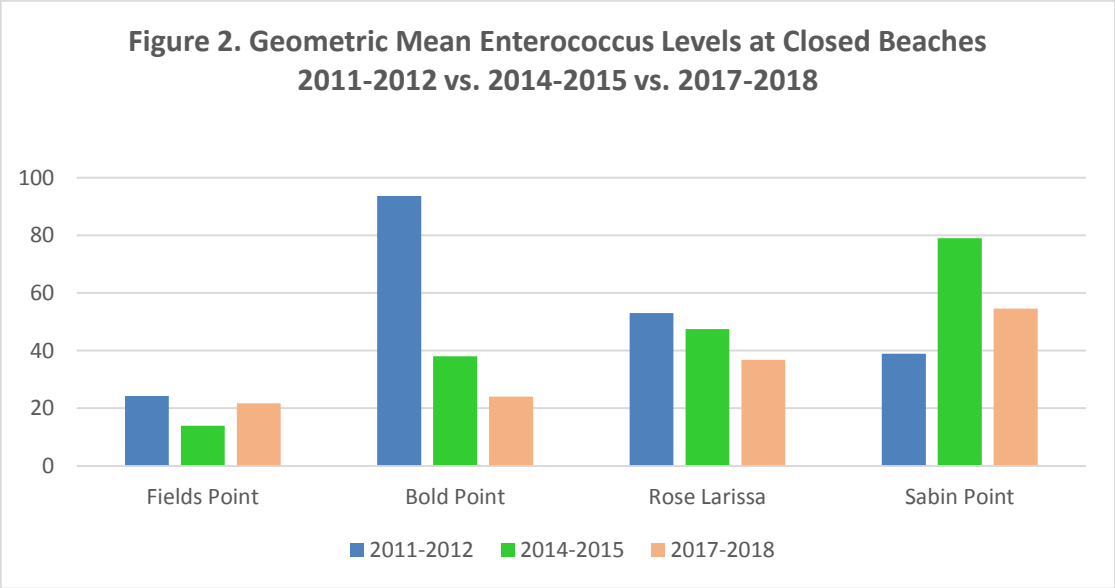
4.3 Urban Beach Initiative

In 2018, RIDOH completed the formal study to statistically examine status and trends of water quality at four areas in upper Narragansett Bay: Bold Point and Fields Point in Providence, and Rose Larissa and Sabin Point in East Providence. The objective was to determine if these locations might prove to be suitable for primary contact recreation. The formal study was conducted by John Snow Inc. (JSI). It included data from 20011 through 2015, but analysis consistent with the JSI study continued with additional data collected through 2018. Due to the paucity of Enterococcus data (9 to 29 sample days per year), the analysis grouped results from the years 2011 and 2012 to compare with results from 2014 and 2015 and now with additional 2017-2018 data. The years 2013 and 2016 were excluded from the present analysis because results were only available for Fields Point and Sabin Point, but results from these years were neither the highest nor lowest over the study period. It is also of note that 2013 was a heavy rain year (20.4"), outside of the 99% normal distribution of the rainfall for the period.

Results, as summarized below (Figure 3), indicate that current conditions at Providence's Fields Point are better than East Providence's Rose Larissa and Sabin Point. East Providence's Bold Point appears to be improving. The improvements at the Bold Point are consistent with wastewater treatment plant upgrades which have been on-going there, lagged behind the major improvements which were completed at the Field's Point treatment plant by 2014. Fields Point and Bold Point are approaching conditions at three urban beaches that are open for swimming, Barrington, Warren and Bristol town beaches. At these town beaches, annual geometric mean concentrations are generally near 20 cfu/100 ml or less. The East Providence beaches, Rose

Larissa and Sabin Point, continue to have geometric means > 30 cfu/100 ml, which is one of U.S EPA's recommended criteria to determine impairment for recreational use.

At East Providence sites, local inputs may be contributing to the persistent water quality problems.



The urban beaches should be a priority for additional management actions, whether it be the continued need for pathogen load reductions, or, where conditions have improved, to develop the needed community infrastructure that would promote recreational use. During the hot summer months, many Rhode Islanders use recreational beaches as sanctuaries to escape the heat. Populations most in need are those living in Rhode Island's urban core, where buildings and pavement heat retention elevates temperatures through the "heat island effect". These populations are also some of the most at risk in the state for water-borne illness as social and economic restraints interfere with access to cleaner, more costly water bodies. Southern Rhode Island waterbodies may also not be accessible to at-risk communities due to restrictions in public transportation. Working to create clean, healthy, and safe recreational outlets for at-risk communities is an integral part of the BEACH Program's mission.

Bristol Town Beach is a preeminent and nationally acclaimed example for how to re-claim an underutilized recreational water asset. The comprehensive program in Bristol demonstrated that combining best management practices to improve water quality with local initiatives such as camps and other promotions of recreational uses have leveraged the beach resource to develop an exceptional asset for the town.

2018 marked the Urban Beach Initiative's eighth season. Since the start of this project, monitoring locations and schedules have been adjusted to potential bather population as well as

municipal interest in opening a recreational outlet. For instance, Stillhouse Cove in Cranston was added to the program in 2014.

Collaboration with Save the Bay is an integral part of the Urban Beach Initiative. The Narragansett Bay Keeper along with fellow staff assist with staffing and training of water quality monitors as well as grant guidance and application support for remediation work at the beaches. RIDOH will continue to work closely with Save the Bay as we continue to examine water quality in upper Narragansett Bay.

4.4 Rapid Testing Project: qPRC

The Rapid Testing study was successfully completed in 2018. The first objective was to build capacity to perform quantitative Polymerase Chain Reaction (qPCR; EPA Method 1609) to quantify fecal indicator bacteria, *Enterococcus,* in beach water samples. The State laboratory is now fully competent and practiced in this method. The other objective was to establish the utility of the method for beach water quality testing in Rhode Island. Unfortunately, the method, tested on two of the most severely impacted beaches in the state, did not prove to be a reliable surrogate for other EPA approved methods (Enterolert and Membrane Filtration). Nonetheless, the new qPCR capabilities at the laboratory can be used for enumeration and for targeting pathogenic strains of *Vibrio*, as well as for rabies confirmation and for various microbial source tracking functions. Having completed qPCR training and analysis of over 400 samples for this study, it is expected that additional applications would require little if any further training.

The project methods and findings are detailed in two reports, one completed through contract support for statistical analysis provided by the John Snow Institute (JSI). The second is a manuscript-style report which includes study background, information regarding experimental design, and a discussion of findings in the context of methodological uncertainties as well as practical application limitations of the method as a routine tool for beach water quality monitoring. The project was funded through USEPA's grants for research within Southeast New England Coastal Watersheds (SNEP).

4.5 Adoption of USEPA Beach Action Value (BAV)

The bacteria threshold, also known as the Beach Action Value (BAV), was reduced from 104 colony forming units (cfu) of *Enterococcus* per 100 milliliters of water to 60 cfu/100mL in 2015 in response to EPA guidance (US EPA 2014). It is important to note that comparison with the BAV benchmark is only one of several factors, including degree of exceedance, that the Beach Program uses to determine the closure and re-opening of a beach. Other factors include weather and hydrography which drive the duration of a potential adverse exposure condition, as well as site history. After consideration for these additional factors, a sample result that exceeds the BAV may trigger either a closure or additional sampling.

EPA's decision to revise the BAV downward was based on a revised definition of water-borne disease. Under the new construct, a fever is no longer required for a person to be considered ill from swimming. The new definition included anyone who experiences diarrhea, vomiting, nausea, and/or a fever.

While EPA has changed the symptoms that qualify as illness, the target limit to restrict the number of illnesses remains at no more than 32 per 1,000 primary recreators. Epidemiological data previously correlated this limit with an *Enterococcus* count of 104 cfu per 100 mL of water. With the new illness definition, the BAV dropped to 60 cfu per 100 mL of water. EPA makes the following statement for states and tribes regarding adoption of the revised BAV:

> *States and tribes must identify a beach notification threshold. This threshold does not need to be adopted into a state's or tribe's WQS. In the 2012 RWQC EPA suggests use of a specific value, the Beach Action Value (BAV), which is the 75th percentile value of the water quality distributions for the CWA section 304(a) recommended criteria (i.e., the 75th percentile values for 32 NGI per 1,000 recreators or 36 NGI per 1,000 recreators for one of the two indicator-method combinations (Enterococci or E. coli by culture) or qPCR (on a site-specific basis and with the appropriate analyses (see section 4.4.2.3)) as the threshold value for determining whether to take a beach notification action. EPA selected the 75th percentile value because it corresponds to the percentile of the SSM values many states currently use as beach notification thresholds.*

The RI Beach Program has adopted the new BAV of 60 cfu/100mL. The BAV will continue to be one of several factors that influence the closure and subsequent re-opening of a beach with respect to health risks.

4.6 Publication of the 2009 RI Beach Sand Study

In 2009 the BEACH Program investigated bacterial contamination in sand at 10 coastal beaches throughout Rhode Island. Eight of the 10 locations have known sources of contamination and close due to high bacteria levels on a regular basis. Sand and water samples were collected along with data on wind speed, direction, wave intensity, and precipitation.

The study manuscript (Parris et al., 2016) was published in the April 8th, 2016 issue of the Journal of Environmental Health (JEH). The study reported statistically significant gradients in *Enterococcus* concentrations among tidal zones, with dry (supra-tidal, or above high tide mark) sand having the highest level, followed by wet (intra-tidal, or below high tide mark) and underwater sand. There were two beaches without a statistically significant gradient (Easton's Beach and Conimicut Point); for these beaches, mean levels were uniformly high in all three zones. Beaches with higher wave action had significantly lower *Enterococcus* count levels in wet and underwater sand compared to beaches with lower wave action. Results from the sand study are just a first step. Further investigation with respect to fate, transport and associated exposure risks is needed.

5.0 2019 PROJECTED ACTIVITIES

5.1 Monitoring Program

Beach interns will conduct sampling at coastal beaches from Memorial Day through Labor Day. Approximately 1600 samples will be collected, submitted, and analyzed for *Enterococcus* during the summer season.

5.2 Illness Tracking

The BEACH Program will work with the Division of Infectious Disease and Epidemiology to research and develop standard operating procedures for tracking and responding to water-borne disease and illness.

5.3 Data Submission

The BEACH Program will prepare both notification and monitoring data for submission to EPA's Environmental Exchange Network Services Center. Verification of the submittals, and updates and corrections in historic data will be accomplished using EPA's new Verification Tool, and with assistance from EPA contract staff.

5.4 Reporting

Annual Season Report

Reporting of previous year's data will be prepared and submitted to EPA Region 1 as required. The Season Report will include analysis and descriptions of data collected and trends affecting the beaches and water quality of Rhode Island.

5.5 Outreach

2019 Beach Season Kickoff

The Beach Program will hold a one-day meeting for beach owners, managers, and interested stakeholders to kick-off the summer season. Each year is a unique theme with presenters and take-home materials on the day's topic. The annual kick-off meeting also provides an opportunity for beaches to ask questions, sign up for summer training and events hosted by RIDOH and to network with other beaches and state officials.

"Beach Program at Your Beach"

Beach Program at your Beach is a summer education and outreach event hosted by the BEACH Program. Two sampling interns spend Fridays from Memorial Day through Labor Day setting up a table event for beaches and summer camps interested in learning about water quality and healthy beaches. Events with larger groups of children will have an Enviroscape presentation, Beach Bingo, Beach Trivia, and Scavenger hunts. Facility staff supervises all summer camp events. Beaches are notified of this opportunity at the annual Kick-off meeting and through their annual facility packets. 2019 will be the eighth year for "Beach Program at your Beach".

5.6 Risk Assessment

Sanitary Surveys and Modeling

The Beach Program will conduct Sanitary Surveys to identify potential sources of contamination, risks to public health, and environmental impairments leading to the evaluation and classification of saltwater beaches. RIDOH will use the new template and survey guidance recommended in the 2014 Beaches Environmental Assessment and Coastal Health Act Guidance Document to perform these assessments. Beach Program staff will work with any beach manager who expresses interest in a modelling tool such as Virtual Beach to enhance the ability to predict and close and open their beach, reducing the contribution of standard EDEXX results that require a 24-hour turn-around time from sample collection to reported results.

Rank Beaches by Tier

Step four of the Risk-based Beach Evaluation and Classification Process is to rank beaches by tiers. Using information and data gathered from beach evaluations and sanitary surveys the BEACH Program will evaluate the current tier classification and determine if changes in the tier rank are needed, and if so, make the appropriate changes.

5.7 Statistical Modeling to Predict Water Quality

During 2019, the collaborative project between COA and RIDOH will be conducted for the Narragansett Bay Estuary Program (NBEP). NBEP identified a need to improve our understanding of current marine beach water quality status and trends within the Narragansett Bay, reaching beyond beach closure data to evaluate actual water quality monitoring data to potentially detect

trends not evident in the closure data, and to better understand the factors that influence water quality.

The project objective to develop case studies for two beaches with historic and persistent water quality problems: Oakland Beach in Warwick and Easton's Beach in Newport. The study will conduct evaluations of raw *Enterococcus* data to establish status with respect to state water quality standards, and to evaluate trends over time. Then each data set will be used to test a new statistical tool to identify relationships between *Enterococcus* and environmental variables. Specifically, the project will apply the EPA-sponsored software, "Virtual Beach" to better describe the environmental factors affecting the highly variable *Enterococcus* data. Optimally, the models could be used not only to predict water quality for more timely and appropriate management actions to better protect public health but also to better understand root causes of contamination.

5.8. Investigate New Rapid Testing Technology (TECTA)

The Beach Program will investigate the value of TECTA, a new technology that may provide an alternative to Enterolert, allowing reportable results in a shorter time frame. The technical basis for the technology parallels IDEXX Enterolert, using the same selective media and fluorescent substrate principles, but takes advantage of the relationship between detection time and concentration. The benefit is that it would allow early reporting of high concentrations. Methods proposed for testing TECTA will build on experience gained in testing qPCR. The tests will focus on parallel testing with TECTA, Enterolert and Membrane Filtration methods, with field samples spiked with *Enterococcus faecium* and *Enterococcus faecalis* over a range of relevant concentrations. During 2019, the Beach Program intends to finalize a trial arrangement with Pathogen Detection Systems, Inc., the supplier of TECTA

5.9 Beaches Environmental Assessment Plan

Over the next three to five years, the Beach Program will work to develop an environmental assessment plan for Rhode Island Coastal beaches. This plan will refresh beach specific information/data such as sources of contamination, stormwater improvement projects, review water quality, and public access. This plan may include the following:

- Site-specific comprehensive assessments for coastal beaches
- Sanitary surveys using USEPA's new template and survey guidance recommended in the 2014 Beaches Environmental Assessment and Coastal Health Act Guidance Document
- Incorporate rapid testing methods, as appropriate
- Data collection to better characterize temporal and spatial variability
- Use of forensic dogs to identify sources and pathways of contamination

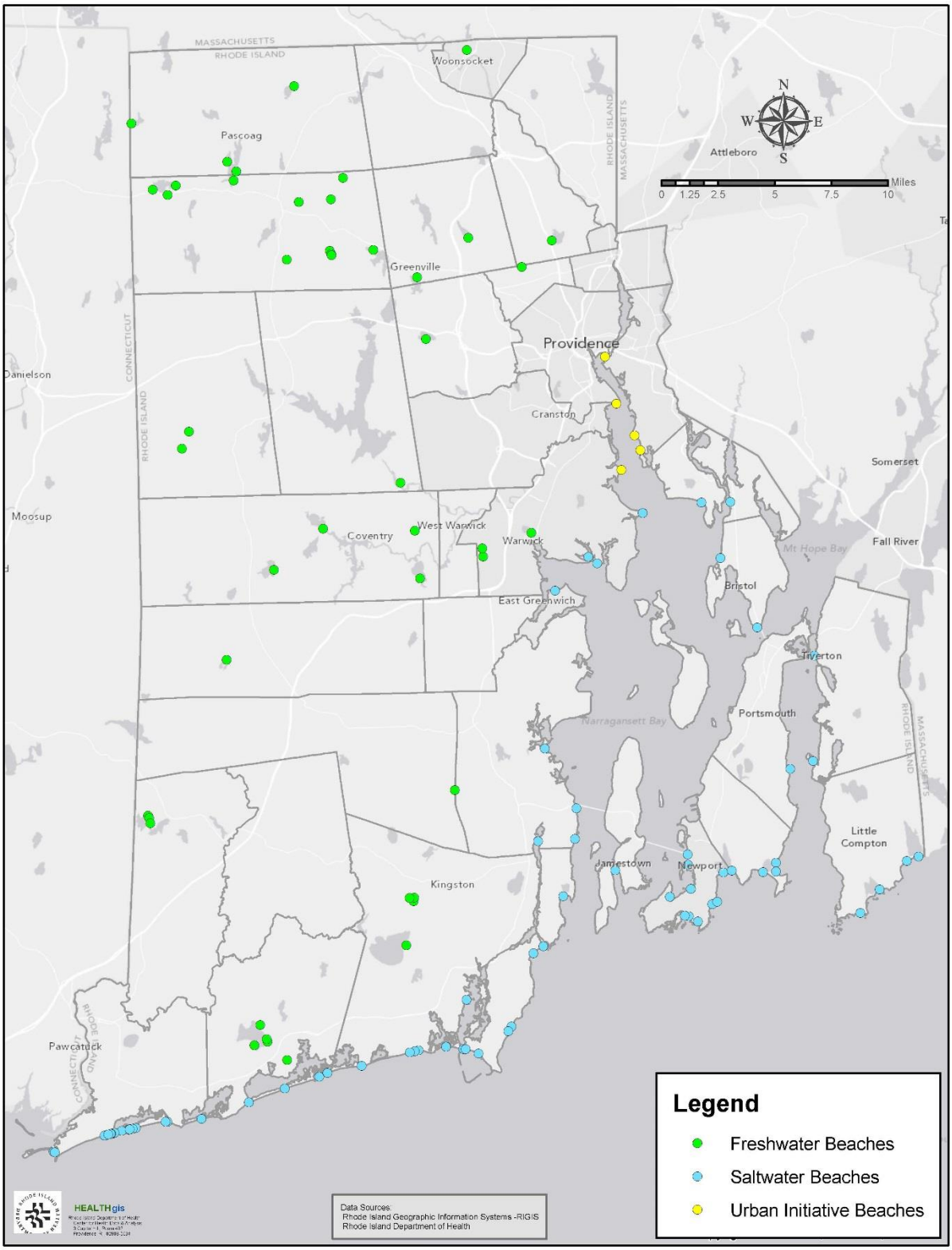
- Identification and characterization of the nature and extent of groundwater seepage
- Develop predictive models in areas with known sources of contamination that pose the greatest risk to public health.
- Incorporate predictive models into beach closures/advisories to better protect the public
- Hold stakeholder workshops, sampler training, etc.

5.10 New Recreational Water Quality Criteria Standards

The BEACH Program will work to assist the Rhode Island Department of Environmental Management (RIDEM) with the gathering, reviewing, and reporting of state-wide water quality data to meeting recreational water quality standards (RWQS) in Rhode Island. The BEACH Program will also provide a beach-by-beach assessment of all beach water quality monitoring and notification data collected by RIDOH to characterize which beaches are meeting U.S. EPA recommended criteria.

APPENDIX A

Map of Rhode Island Licensed and Urban Beaches


MASSACHUSETTS
RHODE ISLAND
Woonsocket
Pascoag
Attleboro
N
W
E
S
0 1.25 2.5 5 7.5 10
Miles
Greenville
Providence
CONNECTICUT
RHODE ISLAND
Danielson
Cranston
Somerset
Moosup
Coventry
West Warwick
Warwick
Mt Hope Bay
Fall River
Bristol
East Greenwich
Tiverton
Narragansett Bay
Portsmouth
Little Compton
Jamestown
Newport
Kingston
Pawcatuck
Legend
Freshwater Beaches
Saltwater Beaches
Urban Initiative Beaches
HEALTHgis
Data Sources:
Rhode Island Geographic Information Systems -RIGIS
Rhode Island Department of Health

APPENDIX B
Closure Evaluation Spreadsheet 2000-2018

Rhode Island Department of Health Beach Monitoring Program

Closure Evaluation Spreadsheet

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Number of Monitored Freshwater Beaches	51	51	49	51	47	50	53	49	50	50	42	42	35	46	46	46	35	40	30
Number of Monitored Saltwater Beaches	31	31	70	72	71	69	69	69	74	68	72	70	76	69	69	69	69	69	69
Total Number of Monitored Beaches	82	82	119	123	118	119	122	118	124	118	114	112	111	115	115	115	115	115	98
Sample Count* (RIDOH - EPA Funded Sampling Only)	515	976	1,779	2,567	2,701	3,211	2,769	1,718	1,655	1,770	1,988	2,678	1,680	1,604	1,747	2,025	1,718	1,586	1,506
Rainfall Total (Memorial Day - Labor Day)	4.93	13.32	6.65	16.34	11.04	6.24	15.54	8.18	9.64	17.24	13.42	14.8	15.00	20.42	6.80	13.65	9.21	8.80	9.08
Significant Rain Events (>0.5" in 24-hr)	4	7	6	12	9	4	7	6	6	13	11	9	5	13	7	8	7	7	6
S.W. Closure Events	13	26	27	67	41	30	91	43	52	89	56	37	34	41	36	41	12	23	20
S.W. Closure Days	103	144	103	503	122	65	351	95	161	230	148	74	54	119	52	61	27	78	60

* Sample count estimates do not include approximately 1,000 samples submitted by Beach Operators on an annual basis, which are reviewed by RIDOH.

Notes: Significant Rain Events Calculated from Warwick RI - Central location of state.

APPENDIX C
2018 Beach Action Summary

BEACH	ACTIVITY	NAME	START_DATE	STOP_DATE	NUMBER OF DAYS UNDER ACTION	REASON	ACTION INDICATOR	SOURCE
RI810609	CLOSURE	Goddard Park State Beach	6 /12/2018 : :	6 /14/2018 : :	2	ELEV_BACT	ENTERO	UNKNOWN
RI327519	CLOSURE	Oakland Beach	6 /29/2018 : :	7 /3 /2018 : :	4	ELEV_BACT	ENTERO	STORM
RI276487	CLOSURE	Peabody's Beach	7 /3 /2018 : :	7 /6 /2018 : :	3	ELEV_BACT	ENTERO	UNKNOWN
RI992593	CLOSURE	Camp Grosvenor	7 /12/2018 : :	7 /14/2018 : :	2	ELEV_BACT	ENTERO	UNKNOWN
RI810609	CLOSURE	Goddard Park State Beach	7 /13/2018 : :	7 /17/2018 : :	4	ELEV_BACT	ENTERO	UNKNOWN
RI992593	CLOSURE	Camp Grosvenor	7 /17/2018 : :	7 /19/2018 : :	2	ELEV_BACT	ENTERO	STORM
RI162580	CLOSURE	Conimicut Point Beach	7 /18/2018 : :	7 /24/2018 : :	6	ELEV_BACT	ENTERO	STORM
RI810609	CLOSURE	Goddard Park State Beach	7 /24/2018 : :	7 /28/2018 : :	4	ELEV_BACT	ENTERO	STORM
RI162580	CLOSURE	Conimicut Point Beach	7 /26/2018 : :	7 /31/2018 : :	5	ELEV_BACT	ENTERO	UNKNOWN
RI050828	CLOSURE	Goosewing Beach	8 /1 /2018 : :	8 /4 /2018 : :	3	ELEV_BACT	ENTERO	UNKNOWN
RI397836	CLOSURE	Warren Town Beach	8 /7 /2018 : :	8 /8 /2018 : :	1	ELEV_BACT	ENTERO	UNKNOWN
RI184319	CLOSURE	Bonnet Shores Beach Club	8 /8 /2018 : :	8 /11/2018 : :	3	ELEV_BACT	ENTERO	UNKNOWN
RI840021	CLOSURE	Third Beach	8 /10/2018 : :	8 /15/2018 : :	5	ELEV_BACT	ENTERO	UNKNOWN
RI162580	CLOSURE	Conimicut Point Beach	8 /15/2018 : :	8 /17/2018 : :	2	ELEV_BACT	ENTERO	STORM
RI695386	CLOSURE	Sandy Point Beach	8 /15/2018 : :	8 /16/2018 : :	1	ELEV_BACT	ENTERO	STORM
RI627966	CLOSURE	Bristol Town Beach	8 /15/2018 : :	8 /16/2018 : :	1	ELEV_BACT	ENTERO	STORM
RI695386	CLOSURE	Sandy Point Beach	8 /17/2018 : :	8 /25/2018 : :	8	ELEV_BACT	ENTERO	OTHER
RI992593	CLOSURE	Camp Grosvenor	8 /24/2018 : :	8 /25/2018 : :	1	ELEV_BACT	ENTERO	UNKNOWN
RI162580	CLOSURE	Conimicut Point Beach	8 /25/2018 : :	8 /26/2018 : :	1	ELEV_BACT	ENTERO	UNKNOWN
RI327519	CLOSURE	Oakland Beach	8 /26/2018 : :	9 /2 /2018 : :	2	ELEV_BACT	ENTERO	UNKNOWN

APPENDIX D
2016 Meteorological Data

Available on Request

APPENDIX E
2018 Urban Beach Results

Date/Time	Sample Station	SAMPLE ID	Sample Result (cfu/100 ml)
7/9/2018 8:18	BOLD POINT-01	1802851-01	10
7/23/2018 9:09	BOLD POINT-01	1803156-01	10
8/6/2018 8:27	BOLD POINT-01	1803432-01	10
6/18/2018 9:25	BOLD POINT-01	1802552-01	10
6/25/2018 8:39	BOLD POINT-01	1802674-01	51
7/2/2018 9:10	BOLD POINT-01	1802778-01	52
7/16/2018 8:30	BOLD POINT-01	1803017-01	10
7/30/2018 8:32	BOLD POINT-01	1803293-01	10
8/15/2018 8:48	BOLD POINT-01	1803611-01	146
8/20/2018 8:43	BOLD POINT-01	1803690-01	63
8/27/2018 9:54	BOLD POINT-01	1803831-01	10
7/9/2018 8:18	BOLD POINT-01 DUP	1802851-02	41
7/23/2018 9:09	BOLD POINT-01 DUP	1803156-02	10
7/30/2018 8:32	BOLD POINT-01 DUP	1803293-02	10
8/6/2018 8:27	BOLD POINT-01 DUP	1803432-02	20
8/20/2018 8:43	BOLD POINT-01 DUP	1803690-02	31
6/18/2018 9:25	BOLD POINT-01 DUP	1802552-02	10
6/25/2018 8:39	BOLD POINT-01 DUP	1802674-02	52
7/2/2018 9:10	BOLD POINT-01 DUP	1802778-02	146
7/16/2018 8:30	BOLD POINT-01 DUP	1803017-02	10
8/15/2018 8:48	BOLD POINT-01 DUP	1803611-02	259
8/27/2018 9:54	BOLD POINT-01 DUP	1803831-02	10
6/18/2018 8:56	FIELDS POINT-01	1802550-01	41
6/25/2018 8:08	FIELDS POINT-01	1802672-01	10
7/2/2018 8:41	FIELDS POINT-01	1802777-01	10
7/9/2018 7:40	FIELDS POINT-01	1802850-01	41
7/16/2018 8:02	FIELDS POINT-01	1803015-01	10
7/23/2018 8:42	FIELDS POINT-01	1803154-01	20
7/30/2018 7:58	FIELDS POINT-01	1803292-01	10
8/6/2018 7:57	FIELDS POINT-01	1803430-01	10
8/15/2018 8:16	FIELDS POINT-01	1803612-01	148
8/20/2018 8:10	FIELDS POINT-01	1803691-01	10
8/27/2018 9:30	FIELDS POINT-01	1803832-01	187
6/18/2018 8:57	FIELDS POINT-01 DUP	1802550-02	20
6/25/2018 8:08	FIELDS POINT-01 DUP	1802672-02	20
7/2/2018 8:41	FIELDS POINT-01 DUP	1802777-02	10
7/9/2018 7:40	FIELDS POINT-01 DUP	1802850-02	20
7/16/2018 8:02	FIELDS POINT-01 DUP	1803015-02	10
7/23/2018 8:42	FIELDS POINT-01 DUP	1803154-02	10
7/30/2018 7:58	FIELDS POINT-01 DUP	1803292-02	10

Date/Time	Sample Station	SAMPLE ID	Sample Result (cfu/100 ml)
8/6/2018 7:57	FIELDS POINT-01 DUP	1803430-02	10
8/15/2018 8:16	FIELDS POINT-01 DUP	1803612-02	107
8/20/2018 8:10	FIELDS POINT-01 DUP	1803691-02	10
8/27/2018 9:30	FIELDS POINT-01 DUP	1803832-02	228
5/31/2018 7:39	ROSE LARISSA-01	1802268-01	31
6/4/2018 10:25	ROSE LARISSA-01	1802299-01	199
6/6/2018 10:47	ROSE LARISSA-01	1802354-01	20
6/11/2018 10:20	ROSE LARISSA-01	1802435-01	41
6/14/2018 11:13	ROSE LARISSA-01	1802538-01	206
6/19/2018 10:50	ROSE LARISSA-01	1802599-01	10
6/21/2018 10:52	ROSE LARISSA-01	1802655-01	10
6/25/2018 10:18	ROSE LARISSA-01	1802678-01	10
6/27/2018 10:28	ROSE LARISSA-01	1802724-01	10
7/2/2018 10:35	ROSE LARISSA-01	1802782-01	52
7/10/2018 10:50	ROSE LARISSA-01	1802909-01	10
7/12/2018 10:51	ROSE LARISSA-01	1802980-01	10
7/17/2018 11:01	ROSE LARISSA-01	1803064-01	41
7/19/2018 11:13	ROSE LARISSA-01	1803134-01	10
7/23/2018 11:00	ROSE LARISSA-01	1803165-01	10
7/25/2018 10:43	ROSE LARISSA-01	1803245-01	10
7/30/2018 10:51	ROSE LARISSA-01	1803296-01	10
8/2/2018 11:05	ROSE LARISSA-01	1803376-01	41
8/7/2018 11:15	ROSE LARISSA-01	1803477-01	10
8/9/2018 11:12	ROSE LARISSA-01	1803550-01	327
8/14/2018 10:51	ROSE LARISSA-01	1803582-01	2380
8/16/2018 10:52	ROSE LARISSA-01	1803663-01	20
8/20/2018 10:17	ROSE LARISSA-01	1803704-01	20
8/22/2018 10:54	ROSE LARISSA-01	1803769-01	10
8/29/2018 10:59	ROSE LARISSA-01	1803893-01	3870
5/31/2018 7:35	ROSE LARISSA-02	1802268-02	10
6/4/2018 10:23	ROSE LARISSA-02	1802299-02	52
6/6/2018 10:41	ROSE LARISSA-02	1802354-02	31
6/11/2018 10:22	ROSE LARISSA-02	1802435-02	73
6/14/2018 11:09	ROSE LARISSA-02	1802538-02	345
6/19/2018 10:53	ROSE LARISSA-02	1802599-02	10
6/21/2018 10:55	ROSE LARISSA-02	1802655-02	10
6/25/2018 10:22	ROSE LARISSA-02	1802678-02	10
6/27/2018 10:31	ROSE LARISSA-02	1802724-02	10
7/2/2018 10:30	ROSE LARISSA-02	1802782-02	134
7/10/2018 10:55	ROSE LARISSA-02	1802909-02	10

Date/Time	Sample Station	SAMPLE ID	Sample Result (cfu/100 ml)
7/12/2018 10:59	ROSE LARISSA-02	1802980-02	75
7/17/2018 11:05	ROSE LARISSA-02	1803064-02	73
7/19/2018 11:12	ROSE LARISSA-02	1803134-02	10
7/23/2018 11:05	ROSE LARISSA-02	1803165-02	10
7/25/2018 10:45	ROSE LARISSA-02	1803245-02	10
7/30/2018 10:48	ROSE LARISSA-02	1803296-02	10
8/2/2018 11:05	ROSE LARISSA-02	1803376-02	10
8/7/2018 11:17	ROSE LARISSA-02	1803477-02	107
8/9/2018 11:15	ROSE LARISSA-02	1803550-02	85
8/14/2018 10:54	ROSE LARISSA-02	1803582-02	2100
8/16/2018 10:56	ROSE LARISSA-02	1803663-02	63
8/20/2018 10:23	ROSE LARISSA-02	1803704-02	20
8/22/2018 10:55	ROSE LARISSA-02	1803769-02	10
8/27/2018 11:01	ROSE LARISSA-02	1803846-01	31
8/29/2018 10:32	ROSE LARISSA-02	1803893-02	4610
5/31/2018 7:33	ROSE LARISSA-03	1802268-03	31
6/4/2018 10:20	ROSE LARISSA-03	1802299-03	73
6/6/2018 10:35	ROSE LARISSA-03	1802354-03	20
6/11/2018 10:25	ROSE LARISSA-03	1802435-03	72
6/14/2018 11:07	ROSE LARISSA-03	1802538-03	173
6/19/2018 10:57	ROSE LARISSA-03	1802599-03	10
6/21/2018 10:59	ROSE LARISSA-03	1802655-03	10
6/25/2018 10:25	ROSE LARISSA-03	1802678-03	20
6/27/2018 10:33	ROSE LARISSA-03	1802724-03	10
7/2/2018 10:25	ROSE LARISSA-03	1802782-03	10
7/10/2018 11:00	ROSE LARISSA-03	1802909-03	10
7/12/2018 10:55	ROSE LARISSA-03	1802980-03	10
7/17/2018 11:03	ROSE LARISSA-03	1803064-03	141
7/19/2018 11:10	ROSE LARISSA-03	1803134-03	10
7/23/2018 11:10	ROSE LARISSA-03	1803165-03	20
7/25/2018 10:49	ROSE LARISSA-03	1803245-03	30
7/30/2018 7:49	ROSE LARISSA-03	1803296-03	10
8/2/2018 11:07	ROSE LARISSA-03	1803376-03	10
8/7/2018 11:19	ROSE LARISSA-03	1803477-03	75
8/9/2018 11:19	ROSE LARISSA-03	1803550-03	63
8/14/2018 10:56	ROSE LARISSA-03	1803582-03	2180
8/16/2018 10:59	ROSE LARISSA-03	1803663-03	30
8/20/2018 10:33	ROSE LARISSA-03	1803704-03	10
8/22/2018 10:59	ROSE LARISSA-03	1803769-03	10
8/29/2018 10:36	ROSE LARISSA-03	1803893-03	63

Date/Time	Sample Station	SAMPLE ID	Sample Result (cfu/100 ml)
5/31/2018 7:12	SABIN POINT-01	1802267-01	288
6/4/2018 10:40	SABIN POINT-01	1802298-01	3260
6/6/2018 10:25	SABIN POINT-01	1802355-01	20
6/11/2018 10:35	SABIN POINT-01	1802436-01	52
6/14/2018 10:39	SABIN POINT-01	1802539-01	20
6/19/2018 11:15	SABIN POINT-01	1802596-01	10
6/21/2018 11:07	SABIN POINT-01	1802658-01	30
6/25/2018 10:45	SABIN POINT-01	1802677-01	10
6/27/2018 10:59	SABIN POINT-01	1802725-01	92
7/2/2018 10:40	SABIN POINT-01	1802783-01	134
7/10/2018 11:00	SABIN POINT-01	1802913-01	10
7/12/2018 11:11	SABIN POINT-01	1802981-01	138
7/17/2018 11:11	SABIN POINT-01	1803063-01	6650
7/19/2018 11:21	SABIN POINT-01	1803138-01	10
7/23/2018 11:20	SABIN POINT-01	1803169-01	52
7/25/2018 11:01	SABIN POINT-01	1803244-01	10
7/30/2018 11:08	SABIN POINT-01	1803304-01	20
8/2/2018 11:15	SABIN POINT-01	1803381-01	41
8/7/2018 11:31	SABIN POINT-01	1803478-01	158
8/9/2018 11:31	SABIN POINT-01	1803546-01	199
8/14/2018 10:03	SABIN POINT-01	1803580-01	537
8/16/2018 11:06	SABIN POINT-01	1803659-01	41
8/20/2018 10:52	SABIN POINT-01	1803695-01	10
8/22/2018 11:13	SABIN POINT-01	1803773-01	1250
8/27/2018 11:09	SABIN POINT-01	1803847-01	798
8/29/2018 10:51	SABIN POINT-01	1803901-01	10
6/4/2018 10:35	SABIN POINT-02	1802298-02	24200
6/6/2018 10:27	SABIN POINT-02	1802355-02	9210
7/2/2018 10:42	SABIN POINT-02	1802783-02	10
8/22/2018 11:09	SABIN POINT-02	1803773-02	24200
6/18/2018 9:04	Stillhouse Cove	1802551-01	10
6/25/2018 8:22	Stillhouse Cove	1802673-01	10
7/2/2018 8:52	Stillhouse Cove	1802779-01	73
7/9/2018 7:50	Stillhouse Cove	1802852-01	10
7/16/2018 8:11	Stillhouse Cove	1803016-01	10
7/23/2018 8:50	Stillhouse Cove	1803155-01	51
7/30/2018 8:10	Stillhouse Cove	1803294-01	20
8/6/2018 8:06	Stillhouse Cove	1803431-01	10
8/15/2018 8:30	Stillhouse Cove	1803613-01	20
8/20/2018 8:24	Stillhouse Cove	1803692-01	122

Date/Time	Sample Station	SAMPLE ID	Sample Result (cfu/100 ml)
8/27/2018 9:39	Stillhouse Cove	1803833-01	10
6/18/2018 9:04	Stillhouse Cove DUP	1802551-02	10
6/25/2018 8:22	Stillhouse Cove DUP	1802673-02	10
7/2/2018 8:52	Stillhouse Cove DUP	1802779-02	62
7/9/2018 7:50	Stillhouse Cove DUP	1802852-02	20
7/16/2018 8:11	Stillhouse Cove DUP	1803016-02	20
7/23/2018 8:50	Stillhouse Cove DUP	1803155-02	41
7/30/2018 8:10	Stillhouse Cove DUP	1803294-02	10
8/6/2018 8:06	Stillhouse Cove DUP	1803431-02	10
8/15/2018 8:30	Stillhouse Cove DUP	1803613-02	20
8/20/2018 8:24	Stillhouse Cove DUP	1803692-02	144
8/27/2018 9:39	Stillhouse Cove DUP	1803833-02	10

APPENDIX F
Kick-Off Meeting Invitation

Rhode Island Department of Health 2018 Beach Season Kick-Off

The RIDOH Beach Program has an informational program planned for our 2018 kick-off meeting. Please come to join fellow beach owners and managers, volunteer organizations, and state/federal personnel involved in Rhode Island's beaches.

On the agenda:

- Skin cancer outreach program: volunteer your beach!
- 2017 Updates to the regulations, and 2017 data
- Survey, survey, survey: you can't make it better if you don't know what's wrong. Updates needed, and we can help!
- Outcome from the 2016-2018 rapid testing project
- Predictive modeling – it's worked elsewhere; can it help us here in Rhode Island? What are the implications for beach closures… open forum - let's talk!

Where: Jamestown Philomenian Library
26 North Road
Jamestown, RI
When: May 10, 2018 at 10:10 a.m.

Please RSVP[1] to Sherry Poucher
Phone: 401-222-7727
Email: sherry.poucher@health.ri.gov By May 4, 2018

[1] But do come even if you don't rsvp.