

# **RHODE ISLAND DEPARTMENT OF HEALTH BEACH MONITORING PROGRAM**

## **2006 SEASON REPORT**



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Office of Food Protection/Environmental Health  
3 Capitol Hill, Room 203  
Providence, RI 02908

[www.ribeaches.org](http://www.ribeaches.org)

PREPARED BY: Bonnie Blair, Beach Program Coordinator

Amy Mocarsky, Beach Program Assistant

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## Executive Summary

The Rhode Island Department of Health (HEALTH) is responsible for the licensing and regulating of bathing beach facilities in the State of Rhode Island. With help from the United States Environmental Protection Agency (USEPA), HEALTH monitors all 122 licensed beaches throughout the State. Licensed beaches include salt and freshwater, as well as public and private facilities.

The water quality sampling is carried out at a frequency determined by HEALTH's risk based monitoring plan. Based on this plan, and with funding provided by the USEPA, sampling is conducted by HEALTH throughout the beach season at saltwater beaches. Freshwater beach sampling is not currently funded. Therefore, HEALTH requires licensed freshwater facility managers to sample bathing waters adjacent to their facilities.

From May to September 2006, HEALTH collected approximately 2,800 samples from all 69 licensed marine bathing beaches. Approximately 1,000 samples were collected by the 53 licensed freshwater facilities. All samples were analyzed for Enterococci, as required in the federal BEACH Act.

The 2006 bathing season saw an increase in beach closures and closure days from the 2005 season. Whereas only 65 beach closure days were recorded for 2005, 351 beach closure days were recorded for 2006. The intensity and total volume of rainfall was lower during the summer of 2005 (June 1 to August 31) than the summer of 2006. Total rainfall increased from only 6.24 inches in 2005 to 14.65 inches in 2006. Significant rainfall instances (>.50" in a 24-hour period from June 1-August 31 at TF Green) were similar, with 4 instances in 2005 and 5 instances in 2006.<sup>1</sup>

Furthermore, as HEALTH refines its sampling strategies, monitoring efforts are focused in areas of greatest concern and sample collection is targeted for times when high bacteria counts are most likely to be present. It should be noted that total closure data is based on federally funded saltwater beach sampling *and* privately funded freshwater beach sampling.

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<sup>1</sup> <http://www.erh.noaa.gov/box/dailystns.shtml> NOAA Northeast Environmental Climate Data website.

## 1.0 OVERVIEW OF PROGRAM ACTIVITIES

### 1.1 Mission

The mission of HEALTH's Beach Monitoring Program is to protect the public from illness associated with swimming in contaminated bathing waters. HEALTH licenses recreational bathing beaches throughout the state. This authority has been granted to HEALTH through the General Laws of Rhode Island (**Appendix A**)<sup>2</sup>. Regulations require HEALTH to ensure beach water meets bacteriological standards and if those standards are not met the facility's license can be suspended until bacteria levels are within acceptable limits.

### 1.2 Background

HEALTH began monitoring beaches in the summer of 1995. Bathing beaches monitored under this program are licensed as Recreational Facilities by HEALTH. Prior to 1995, the Rhode Island Department of Environmental Management was responsible for monitoring beaches. A "bathing beach" is defined by HEALTH as an 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.

Licensing 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. From approximately 1995 to 1999, beach monitoring was inconsistent and most beaches were only monitored once per season.

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 HEALTH to establish a public notification system that included a website, telephone hotline, and a beach flagging system. HEALTH also evaluated conditions in Upper Narragansett Bay, which has long been impacted by urban runoff, point source discharges, and combined sewer overflows.

The EMPACT Program provided HEALTH the resources to sample 23 stations in the Upper Narragansett Bay (7 stations were located at licensed beaches) in wet and dry weather. The conclusion of this study determined that additional sampling was needed at the licensed Upper Bay beaches to adequately protect the public. Also, it was determined that areas north of Conimicut Point in Warwick and Nayatt Point in Barrington were not suitable for licensing at this time. Water quality, especially during wet weather, represented an unacceptable risk to public health.

In 2000, Congress enacted the Beaches Environmental Assessment and Coastal Health (BEACH) Act, an amendment to the Federal Water Pollution Control Act (a.k.a. The Clean Water Act),

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<sup>2</sup> R.I.G.L. Chapter 23-21

which authorized USEPA to distribute grants to eligible states and Indian tribes to reduce the risk of disease and illness in the nation’s bathing waters. State objectives under this program were published by the USEPA in June 2002. The National Beach Guidance and Required Performance Criteria for Grants document outlined several requirements of the BEACH Act which include: a list and categorization of beaches according to risk, identification and mitigation of sources of pollution that may have an impact on bathing waters, the development of a risk communication plan, and providing USEPA with specific beach monitoring information<sup>3</sup>.

Since 2000, the USEPA has provided HEALTH with over \$1 million in beach grants to manage Rhode Island’s Beach Monitoring Program. These grants have provided HEALTH the resources to vastly improve the beach monitoring program and to develop a broad base of knowledge at Rhode Island’s licensed beaches.

### 1.3 Funding and Budget Information for 2006 Beach Season

During the 2006 beach season, EPA provided HEALTH with \$213,140 for the Beach Monitoring Program. These funds support the primary Beach Monitoring Program activities which include: sanitary surveys, which identify risk and potential sources of fecal contamination at beaches, development and implementation of a risk based monitoring plan, and bacteriological testing at marine beaches. During the 2006 season, 122 bathing beaches met the “bathing beaches” criteria above and were licensed with HEALTH as recreational facilities (69 of the bathing beaches were marine).

The following table summarizes how funds were spent:

<i>Budget Category</i>	<i>Percentage of Grant</i>
Salaries for Staff	52.11 %
Supplies and Equipment	19.95 %
Miscellaneous Administrative Costs	12.31 %
Interns (including mileage for sampling efforts)	12.29 %
Travel (mileage) for Full Time Staff, Including Conferences, Training, etc.	3.34 %

Currently, USEPA grants do not provide funds to monitor freshwater bathing beaches. Freshwater beach managers are responsible for sampling on a HEALTH approved sampling schedule, submitting the samples for laboratory analysis at a state certified laboratory, and submitting the results to HEALTH in a timely manner.

### 1.4 Sampling

In 2003, sample frequencies at all beaches were increased to provide HEALTH an expanded view of water quality throughout Rhode Island waters. Beaches previously exempt from monitoring activities were sampled, and beaches with known problems were sampled at a much greater frequency. The sample results were necessary in order to refine HEALTH’s risk based monitoring plan. Several beaches were moved to a Tier I sample schedule, which is the highest risk level and requires a minimum of once per week sampling. Pollution sources were documented and additional sampling was conducted to protect public health. Based on assessment of the 2003 sample results, samples have been collected on a predetermined schedule during subsequent

<sup>3</sup> 33 U.S.C. 1362 sections 104, 303, 406, 502, and 518(e)

bathing seasons. Continued evaluation of sample results is conducted in order to refine sample frequency.

Lab results are faxed or emailed immediately to HEALTH and the facility operator. If any action is necessary, the beach manager is notified and HEALTH's public notification procedures are followed. Upon closure, the facility is required to test daily until bacteria levels fall within acceptable limits. When it is determined that bacteria levels permit the re-opening of a facility, notification procedures are followed to inform the public of the change of status. Current public notification procedures in place include; a 24 hour hotline, website ([www.ribeaches.org](http://www.ribeaches.org)), and a standard press release which is faxed to 22 major TV, radio, and print media outlets throughout Rhode Island.

During the 2006 bathing season HEALTH was provided with federal funds to monitor all 69 licensed marine bathing beaches. From May to September, 2,769 tests were analyzed for Enterococci and Fecal Coliform (the majority of beaches were sampled for only Enterococci, high risk beaches were sampled for Fecal Coliform as well). Please note that this sample count does not include approximately 1,000 samples submitted by Beach Operators throughout the season, which are received and reviewed by HEALTH. The 2006 bathing season was the third season HEALTH made open/closure decisions based on the USEPA recommended indicator bacteria Enterococci.

### **1.5 Standards**

The Rhode Island Department of Environmental Management (RIDEM) and USEPA set water quality standards. Rhode Island's current bathing water standards are as follows: marine bathing waters must not exceed a single sample standard of 104 colony forming units (cfu) per 100 milliliters (mL) of Enterococci and freshwaters must not exceed 61 cfu/100mL of Enterococci.

## 2.0 PERFORMANCE CRITERION

EPA developed nine performance criteria for the implementation of monitoring, assessment and notification programs. In order to be eligible for a beach grant, the states, tribes or local government's monitoring and notification program must be consistent with the performance criteria. The following sections describe the performance criteria, and Rhode Island's compliance with them.

### 2.1 Risk-Based Beach Evaluation and Classification Plan (Performance Criterion 1)

To evaluate and classify risk at Rhode Island's licensed coastal beaches the following steps were taken: identification of coastal recreational waters, identification of bathing beaches, beach evaluations – sanitary surveys, water quality evaluations, and procedures for a change in classification.

#### 2.1.1 Identification of Coastal Recreational Waters

The Rhode Island Department of Environmental Management (RIDEM) is responsible for the classification of waters along Rhode Island's 420 miles of coastline<sup>4</sup>. Coastal waters are classified as SA, SB, SB1, or SC. RIDEM's Use Classification definitions are found below:

*(a). Class SA\*- These waters are designated for shellfish harvesting for direct human consumption, primary and secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation and industrial cooling. These waters shall have good aesthetic value.*

*(b). Class SB\*- These waters are designated for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.*

*(c). Class SB1\*- These waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value. Primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges. However all Class SB criteria must be met.*

*(d). Class SC\*- These waters are designated for secondary contact recreational activities, and fish and wildlife habitat. They shall be suitable for aquacultural uses, navigation, and industrial cooling. These waters shall have good aesthetic value.*<sup>5</sup>

No waters of the state are designated as SC. All licensed bathing areas are located in Class SA or SB waters.

<sup>4</sup> "NOAA Coastal Zone Management-Rhode Island Coastal Management Program"

<http://www.ocrm.nos.noaa.gov/czm/czmrhodeisland.html>

<sup>5</sup> "Water Quality Regulations". State of Rhode Island and Providence Plantations-Department of Environmental Management Water Resources: August 6, 1997 (Regulation EVM 112-88.97-1).

RIDEM designates all coastal waters of the state as “swimmable”. RIDEM has determined 69% of estuarine waters (108.66 square miles) fully support all uses, while 30% of waters (47.57 square miles) are considered impaired for one or more uses. RIDEM states 90% of the State’s estuarine waters (140.3 square miles) meet their swimming use, while 10 % (15.45 square miles) are considered impaired due to violations of the Fecal Coliform criteria.<sup>6</sup>

### **2.1.2 Identification of Bathing Beaches**

Statutes (R.I.G.L. 23-21-Relating to Licensing of Recreational Facilities & R.I.G.L. 23-21.1 Sanitation Standards for Bathing Beaches) require HEALTH to license recreational facilities, which include bathing beaches. A bathing beach, as found in regulations adopted pursuant to R.I.G.L. 23-21, is defined as:

’Bathing Beach’ shall mean any natural area or tract of land which 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<sup>7</sup>*

HEALTH currently licenses 122 bathing beaches; this includes freshwater and coastal facilities, as well as public and private bathing areas. There are 69 coastal licensed beaches in 15 different communities.

As required in the BEACH Act, HEALTH has identified beaches and “similar points of access”<sup>8</sup> which have the potential to be used by the public. HEALTH does not promote or endorse the use of non-licensed beaches for primary contact recreation. These areas are not monitored or inspected for safety. HEALTH always recommends swimming at designated, licensed bathing beaches.

### **2.1.3 Beach Evaluations – Sanitary Surveys**

To adequately assess the risk to bathers and classify coastal bathing beaches HEALTH developed a Beach Sanitary Survey. Beach surveys were started during the 2002 bathing season and were completed before the start of the 2003 bathing season. Evaluation criteria were derived from the following sources: *National Beach Guidance and Required Performance Criteria for Grants – Appendix G*, materials from the Food and Drug Administration’s *Applied Concepts in Sanitation Surveys of Shellfish Growing Areas* course, and materials from the joint DOE/EPA *Water Quality Standards Academy*. Surveys were developed to evaluate and review existing information and current conditions at the beach.

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<sup>6</sup> *State of Rhode Island and Providence Plantations: 2004 Section 305(b) State of the State’s Waters Report* State of Rhode Island and Providence Plantations, Department of Environmental Management Office of Water Resources.

<sup>7</sup> “Rules and Regulations for Licensing of Recreational Facilities (R23-21-RF)”. State of Rhode Island and Providence Plantations-Department of Health: June 1983 (as amended).

<sup>8</sup> As identified in the Beaches Environmental Assessment and Coastal Health Act (P.L. 106-284)

Point values were assigned to each criteria and the total value was recorded. High point values were given to direct known sources of pollution (i.e. CSOs), high usage (>10,000 bathers), and to facilities that have exhibited poor water quality in the past (past closures).

Preliminary risk groups were given according to survey scores. Scores ranging from 0-75 were classified as Tier 3 (low risk); scores ranging from 76-100 were classified as Tier 2 (moderate risk); and scores greater than 101 were classified as Tier 1 (high risk). Additional sampling was conducted by HEALTH during the 2002-bathing season to better characterize water quality at the 69 coastal beaches. Prior to 2002, 37 bathing areas were exempt from sampling. Additional sampling was required at these and other bathing areas to adequately assess conditions. Using best professional judgment HEALTH evaluated the results of this sample information and preliminary risk groups, then assigned final risk classifications. HEALTH continuously monitors each of the beaches to ensure that the Tier Classification and associated sample frequency adequately addresses potential health risks.

**Appendix B** includes a copy of the sanitary survey form currently used by HEALTH. In addition to sanitary surveys, which are conducted a minimum of every five years; beach samplers are given a daily survey form to complete at each beach during each sampling event. A copy of this form can be found in **Appendix C**. The data on this form is entered on a daily basis into our database system. This survey form provides further information on beach conditions, thereby increasing monitoring effectiveness. HEALTH will continue to perform routine sanitary surveys and daily surveys at licensed coastal beaches.

#### ***2.1.4 Water Quality Evaluations***

HEALTH conducted sampling during the 2002 bathing season to evaluate water quality at all of Rhode Island's coastal licensed beaches. Water quality samples were collected from all 69 licensed coastal beaches and tested for both Fecal Coliform and Enterococci. All sampling was conducted consistent with HEALTH's EPA approved Quality Assurance Project Plan. A more thorough description of HEALTH's monitoring strategy can be found in Section 3.0 (Tiered Monitoring Plan) of this document. HEALTH continuously evaluates water quality conditions at all licensed facilities. Since 2002, some licensed beaches have closed and/or opened. As beaches change their status, the water quality is evaluated at each new facility in order to determine the appropriate Tier Classification and associated public health risk.

#### ***2.1.5 Change in Classification***

Sample results are reviewed annually to determine if a change in classification is needed. If sample results show an increased frequency of violations, an increase in the number of closure days, or a general deterioration of water quality in the area, the bathing area may require an increase in sampling effort. In addition, if water quality has improved and known/suspected sources of bacterial contamination have been eliminated, a less stringent sample schedule may be implemented. HEALTH will determine if a change in classification is considered necessary, either an increase or decrease in monitoring effort. EPA will be notified of the change electronically.

Furthermore, Sanitary Surveys will be conducted on all licensed coastal beaches at least every five (5) years. A comprehensive evaluation of conditions at coastal bathing beaches in Rhode Island will be conducted at this time. Surveys will allow HEALTH to evaluate program advancement toward minimizing the risk to bathers and the elimination of known or potential

sources of contamination. An increase or decrease of water quality standard violations, closures, and general degradation/improvements in water quality will be documented.

## **2.2 Tiered Monitoring Plan (Criterion 2)**

To develop a tiered monitoring plan HEALTH had to identify the following factors: the period and extent of use, the frequency of monitoring needed, the location of monitoring, the methods to be used, and assessment procedures for short term increases in pathogen indicators.

### **2.2.1 *Period and Extent of Recreational Use***

Rhode Island's bathing season generally runs from two weeks before Memorial Day to two weeks after Labor Day. The time of heaviest usage at bathing facilities is between July 4<sup>th</sup> and Labor Day. At some facilities, user populations swell to over 10,000 users per day<sup>9</sup>. According to the Rhode Island Economic Development Corporation, tourism is one of Rhode Island's fastest growing industries with an estimated 15.7 million visitors in 2000.<sup>10</sup> It should be noted that surfing and other water activities are common at many of Rhode Island beaches, and these activities continue throughout the entire year.

### **2.2.2 *Frequency of Monitoring***

Sampling of recreational beaches occurs two weeks before Memorial Day and concludes two weeks after Labor Day. Sample frequencies were established upon completion of the extensive Beach Surveys, both the Review of Existing Information and the Field Sanitary Survey. Sample frequencies, according to risk classification, will be as follows; Tier I will be sampled at a minimum weekly frequency, Tier II bathing areas will be sampled at a minimum monthly frequency, and Tier III bathing areas will be sampled at a minimum bi-yearly frequency. These sample frequencies may be increased if HEALTH determines a more stringent sample schedule is appropriate. An increased monitoring effort will be required if known or potential sources of pollution have been documented, HEALTH will determine if the minimum sample schedule does not adequately protect public health.

If testing results violate the recreational water quality standard for Enterococci during the bathing season, the bathing area will be sampled daily until indicator organism levels fall within acceptable limits. Furthermore, if the bathing area is not already classified as high risk, it will be tested on a Tier I risk level for four (4) weeks. If after four weeks test results do not show additional violations of Rhode Island's water quality standards, the bathing area will revert to its original sample schedule. If sample results reveal further violations of the standard, the bathing area will remain on a Tier I sample schedule for the remainder of the bathing season and the risk classification will be reevaluated at the end of the season.

### **2.2.3 *Location of Monitoring***

All licensed coastal beaches will be monitored for Enterococci. The number of samples collected on a beach is dependent on the length of coastline and the presence of physical barriers to circulation (jetties, groins, etc.). Furthermore, streams and pipes will be sampled as needed (wet weather events, investigations, etc).

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<sup>9</sup> HEALTH Beach Facility Questionnaire, 1999 Bathing Season.

<sup>10</sup> "Tourism: Rhode Island's 2nd Largest and Fastest Growing Industry"  
<http://www.visitrhodeisland.com/toolbar/industry/industry.html>

Beaches that are less than 300 linear feet of shoreline are required to take a minimum of one sample. If only one sample is collected, it is taken from the center of that bathing area. Beaches that are between 300 and 700 linear feet of shoreline are required to take a minimum of two water samples. Samples are collected with approximately equal distances between stations and the ends of the beach. Beaches that are greater than 700 linear feet of shoreline require a minimum of three water samples. Samples are collected with approximately equal distances between stations and the ends of the beach.

**2.2.4 Methods**

To assess the presence of harmful levels of pathogen indicators in Rhode Island’s bathing waters, HEALTH will use the IDEXX Enterolert™ method for the enumeration of Enterococci. Through an EMPACT project, HEALTH was able to evaluate the EPA Method 1600 (M-1600) and the Enterolert™ method. Based on HEALTH’s findings, the EPA M-1600 was less sensitive; often producing false negatives, and required an additional 24-hour validation period to provide accurate results.<sup>11</sup> Because of these factors, HEALTH has questioned M-1600 reliability as a “real-time” indicator. Enterolert™ provides HEALTH a range of Enterococci from <10 to >24,192.

**2.2.5 Assessment Procedures for Short-term Increases**

Assessment procedures for short-term increases in pathogen indicators in recreational waters are found in Table 1. If HEALTH’s assessment procedures do not identify the source of pollution; RIDEM, through a Memorandum of Agreement (MOA), will assist in the identification and elimination of pollution sources.

**Table 1. Assessment Procedures for Short Term Increases**

Type of Pollution	Assessment Procedures
Point Source of Pollution (storm water run-off point, pipe, etc.)	<ol style="list-style-type: none"> <li>1. Sample discharge, end of pipe, etc.</li> <li>2. Bracket point source. Radiate from point source in 50 foot increments</li> <li>3. Close area affected by pollution</li> <li>4. Identify any “up-stream” sources of pollution through a sanitary survey.</li> <li>5. If a sanitary survey does not reveal pollution source, contact RIDEM for assistance.</li> </ol>
Unknown Source of Pollution	<ol style="list-style-type: none"> <li>1. Close affected area of bathing beach.</li> <li>2. Perform a sanitary survey to identify possible sources of pollutants.</li> <li>3. If a sanitary survey does not reveal pollution source, contact RIDEM for assistance.</li> </ol>

<sup>11</sup> “Bacterial Water Quality Monitoring at Upper Narragansett Bay Bathing Beaches.” Davis and Freestone; Rhode Island Department of Health, May 2001.

### **2.3 Monitoring Report Submission (Criterion 3)**

As required by Criterion 3 of the Performance Manual, HEALTH provides the public and EPA all monitoring data. The public has access to all monitoring data through HEALTH's beach monitoring website ([www.ribeaches.org](http://www.ribeaches.org)). The website is updated daily to provide the public real-time beach water quality information. EPA can also access data through the public website and are given a year data report of all sample result findings.

### **2.4 Methods and Assessment Procedures (Criterion 4)**

Methods to be used and assessment procedures were developed through the tiered monitoring plan.

#### **2.4.1 Methods**

To assess the presence of harmful levels of pathogen indicators in Rhode Island's bathing waters, HEALTH will use the IDEXX Enterolert™ method for the enumeration of Enterococci. Through an EMPACT project, HEALTH was able to evaluate the EPA Method 1600 (M-1600) and the Enterolert™ method. Based on HEALTH's findings, the EPA M-1600 was less sensitive; often producing false negatives, and required an additional 24-hour validation period to provide accurate results.<sup>12</sup> Because of these factors, HEALTH has questioned M-1600 reliability as a "real-time" indicator. Enterolert™ provides HEALTH a range of Enterococci from <10 to >24,192.

#### **2.4.2 Assessment Procedures**

Assessment procedures for short-term increases in pathogen indicators in recreational waters are found in Table 1 (above). If HEALTH's assessment procedures do not identify the source of pollution; RIDEM, through a Memorandum of Agreement (MOA), will assist in the identification and elimination of pollution sources.

### **2.5 Public Notification and Risk Communication Plan (Criterion 5)**

HEALTH's public notification plan includes a beach flagging/signage system, a 24-hour telephone hotline, a website, and a press release. The purpose of this plan is to quickly notify the public of potential risk associated with swimming in contaminated bathing waters. These notification procedures are detailed in Sections 7.0, 8.0 and 9.0.

### **2.6 Measures to Notify EPA and Local Governments/Beach Managers (Criterion 6)**

EPA will be notified of all beach closures and openings through HEALTH's web-based management system. Every time a beach is opened/closed a press releases will be emailed to HEALTH Region 1 contact. Furthermore, EPA will receive an end of season report of all violations and closures/openings during that year's bathing season.

Beach managers will be notified immediately by telephone and emailed/faxed a press release after the decision to close a beach is made. The beach manager/operator will inform bathers, post any signs, raise a closure flag, or perform any other duties necessary to inform beach users that the bathing area does not currently meet water quality standards. Beach managers and the locally

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<sup>12</sup> "Bacterial Water Quality Monitoring at Upper Narragansett Bay Bathing Beaches." Davis and Freestone; Rhode Island Department of Health, May 2001.

affected government will receive a faxed press release prior to general distribution of the closure notice.

## **2.7 Measures to Notify the Public (Criterion 7)**

HEALTH has employed several methods to notify the public of beach closures; including a 24-hour telephone hotline, a daily updated website, a flagging system at several beaches, and a standard formatted press release. All notification methods are employed for each beach closure.

### **2.7.1 24-Hour Telephone Hotline (401.222.2751)**

The script for HEALTH's 24-hour telephone hotline can be found below. This hotline is updated as beaches are closed and opened.

*"Hello, you have reached the Rhode Island Department of Health's Bathing Beaches Hotline. The following licensed beaches are closed due to high bacteria levels...(list beaches). Also, there are...(number of advisories) advisories in effect. An advisory has been issued for Upper Narragansett Bay. The Department of Health discourages swimming and other full body contact activities north of Conimicut Point. These waters are directly affected by pollution inputs due to heavy rains and discharges from area wastewater treatment facilities. Water contact should be avoided for a minimum of three days after heavy rainfall. For more information please contact us at 222-2749 or visit our website at [www.ribeaches.org](http://www.ribeaches.org). If this is an after hours emergency please call 272-5952."*

### **2.7.2 Beach Monitoring Website ([www.ribeaches.org](http://www.ribeaches.org))**

HEALTH initially created a Beach Monitoring website through an EPA EMPACT grant in 2000. This website has been updated to include current sample data and additional beach related information. The website lists all beach water quality data collected during the bathing season and contains a current list of closures and advisories. The Beach Monitoring website has been expanded to include maps of licensed coastal bathing beaches, sample stations, and known or potential sources of pollution. Also, being offered since the 2005-bathing season is the RIBeach Watch service, which allows the public to sign up and receive email notifications whenever a sample or closure/opening event occurs at their favorite beach. **Appendix D** shows the [www.ribeaches.org](http://www.ribeaches.org) homepage for the beach program.

### **2.7.3 Beach Flagging/Signage System**

HEALTH also created a beach flagging system through the EMPACT Program. The flagging system was found to be most effective, by beach managers, to notify the public of the open/closed status of their facility. Currently the northern most Tier I beaches in Narragansett Bay (Conimicut Point, City Park, Oakland Beach, Goddard Park, Barrington Town Beach, Warren Town Beach, and Bristol Town Beach) have the blue (open) and red (closed) beach flags. If funds permit, HEALTH would like to expand the flagging system to all Tier I beaches.

In addition to the flags at several beaches, all licensed bathing areas are required to have signs of adequate size to inform users that the facility is closed due to high levels of bacteria. A standard format beach closure sign has been developed and required language will be provided to beach managers/operators as needed.

#### **2.7.4 Standard Format Press Release**

During the 2001 bathing season, HEALTH developed a standard press release for beach openings/closures; these procedures were updated in April of 2003. The Beach Program Administrator will distribute the press release to Rhode Island's 22 major media outlets; which include television, newspapers, and radio stations. The standard format press release is distributed within 30 minutes of a beach closure.

#### **2.8 Notification Report Data Submission Plan (Criterion 8)**

The BEACH Program requires HEALTH to submit all beach monitoring and notification data to EPA. Currently, HEALTH submits information yearly through EPA's central data exchange (CDX). To collect and submit this information HEALTH has hired a contractor to manage a web-based data system. The following outlines the collection, storage, and transmission of beach monitoring information.

HEALTH, through our database, has created a BEACH run scheduling system based upon our Tiered Monitoring Plan. The system schedules sampling runs consistent with sample frequency and number outlined in the Tiered Monitoring Plan. Also, comprehensive real-time updates of all trip information, station visit information and field activity information are made to HEALTH'S beach database.

Water samples are delivered to the HEALTH Laboratories, consistent with handling and storage procedures outlined in HEALTH's QAPP. After the completion of the testing process, laboratory personnel complete electronic entry forms for each sample. These forms update the result and laboratory information in HEALTH's beach database. Samples are then reviewed by HEALTH staff to determine if any change in status is required (opening/closing). If a change in status is required, public notification procedures are followed. The database records all monitoring and notification data required by EPA. A four-stage process is undertaken prior to submission of data to EPA. First, the data is reviewed to ensure compliance with EPA requirements. Second, the data is normalized (if applicable). Third, the data is migrated into the EPA approved XML schema. Finally, the XML file undergoes conformance testing, and then is submitted to CDX.

As required by EPA, HEALTH maintains geographic information for all beaches and sample locations in Geographic Information System. This information has already been sent to EPA and updates will be provided as required. Additional information is collect through RI's Beach GIS system such as stormwater runoff points, discharge pipes, etc. HEALTH is currently in the process of providing maps of all the licensed beaches through the website at [www.ribeaches.org](http://www.ribeaches.org).

In addition to required information, HEALTH collects data in the following data: daily beach surveys, sanitary surveys, daily rainfall totals and one hour maximums, daily temperature information, and reported illness information.

All beach data resides in a web accessible, open database complaint relational database schema. The data structure allows for permission based on facility access and is stored in redundancy. The public is granted access to monitoring and beach status information through HEALTH's Beach Monitoring website. This site allows the public to search, query, and extract data for their use.

## **2.9 Public Evaluation of Program (Criterion 9)**

HEALTH conducted two public comment periods for this program. First, EPA, DEM, and all licensed beach managers were given the opportunity to evaluate the sanitary survey procedures. Comments from this group were used to better classify risk at licensed bathing beaches in Rhode Island. Second, the public was given an opportunity to comment on the full monitoring and public notification plans. Notice was sent out to all licensed beaches, the HEALTH public hearing mailing list, and a general online notification for an informal public hearing. The informal public hearing was held at HEALTH and the public was given additional time to comment electronically or in writing. HEALTH plans to organize a workshop/meet-and-greet seminar in the near future in order to obtain public comments and suggestions on the existing program.

### **3.0 FLAGSHIP BEACHES**

The USEPA defines flagship beaches as high-use beaches that were selected for targeted attention. HEALTH and the USEPA chose beaches for flagship designations based on three criteria: the beach had a history of closures; extended periods of poor water quality were recorded for that beach; and the beach served a diverse socioeconomic user group. During the 2002 season, Goddard Park in Warwick, Warren Town Beach in Warren, and King Park Swim Area in Newport were designated as Rhode Island's Flagship Beaches. However, due to the closure of King Park in 2004 by the City of Newport, Scarborough State Beach in Narragansett was designated as a flagship beach. The USEPA expects to see marked improvement in water quality and a reduction in flagship beach closures in the next five years. A detailed description of recent activities and a summary of improvement strategies at these beaches can be found in **Appendix E**. Note: This appendix also covers those beaches that have been identified as "priority beaches" by Governor Carcieri as discussed in Section 5.1.

## 4.0 2006 BEACH SEASON DATA SUMMARY

### 4.1 Sample Results

HEALTH's Beach Program conducted sampling and monitoring activities under the USEPA BEACH Grant Program at all licensed marine beaches.

The total number of samples collected provides a benchmark, which indicates the level of public protection offered by the Beach Monitoring Program. The number of samples has increased, from 281 in 1995 to over 2,700 in 2006. The number of facilities tested has increased from 82 in 1997 to 122 in 2006, 69 of which are marine beaches. Eliminating sampling exemptions for open ocean beaches accounts for the increase in the number of facilities monitored; however, several facilities have been eliminated because they no longer operate as a bathing beach.

The EPA does not currently fund freshwater beach sampling. Therefore, sampling at freshwater beach facilities in the State of Rhode Island is the responsibility of the beach manager, typically a town representative, or facility owner. HEALTH receives results from either the beach manager or directly from the laboratory.

### 4.2 Tier Classifications for 2006

As part of the performance criteria established by EPA, Rhode Island developed a tiered monitoring plan for licensed beaches throughout the State. The plan addresses the frequency and location of monitoring based on the periods of recreational use of the beach, the nature and extent of use during certain periods, the proximity of beach waters to known point sources and non-point sources of pollution, and any effect storm events may have on the beach waters. In general beaches classified as Tier I in Rhode Island are sampled at least once a week, Tier II beaches are sampled a minimum of once per month, and Tier III beaches are typically sampled less than once per month. The following tables illustrate the classification of each of Rhode Island's beaches during the 2006 beach season:

**Table 2. Tier Classification and Monitoring Frequency for Rhode Island Saltwater Beaches**

Beach Name	County	Tier Classification	Monitoring Frequency
ATLANTIC BEACH CLUB BEACH	Newport County	I	4x/wk
BARRINGTON TOWN BEACH	Bristol County	I	10x/mo
BONNET SHORES BEACH CLUB	Washington County	I	2x/mo
BRISTOL TOWN BEACH	Bristol County	I	3x/wk
CAMP GROSVENOR	Washington County	I	3x/wk
CAMP ST. DOROTHY	Bristol County	I	1x/wk
CAPT ROGER WHEELER	Washington County	I	1x/wk
CITY PARK BEACH	Kent County	I	2x/mo
CONIMICUT POINT BEACH	Kent County	I	3x/wk

Beach Name	County	Tier Classification	Monitoring Frequency
EASTON'S BEACH	Newport County	I	2x/wk
FORT ADAMS STATE PARK	Newport County	I	3x/wk
GODDARD MEMORIAL STATE PARK	Kent County	I	3x/wk
MISQUAMICUT STATE BEACH	Washington County	I	2x/mo
NARRAGANSETT TOWN BEACH	Washington County	I	6x/yr
NORTH KINGSTOWN TOWN BEACH	Washington County	I	10x/mo
OAKLAND BEACH	Kent County	I	3x/wk
SCARBOROUGH STATE BEACH NORTH	Washington County	I	2x/wk
SCARBOROUGH STATE BEACH SOUTH	Washington County	I	2x/wk
THIRD BEACH	Newport County	I	3x/wk
WARREN TOWN BEACH	Bristol County	I	10x/mo
CAMP FULLER-YMCA BEACH	Washington County	II	2x/mo
DUNES CLUB	Washington County	II	2x/mo
FOGLAND BEACH	Newport County	II	2x/mo
MACKEREL COVE BEACH	Newport County	II	1x/mo
PEABODYS BEACH	Newport County	II	2x/mo
PLUM BEACH CLUB	Washington County	II	2x/mo
PULASKI STATE PARK BEACH	Providence County	II	1x/mo
SACHUEST BEACH	Newport County	II	2x/mo
SAUNDERSTOWN YACHT CLUB	Washington County	II	2x/mo
ALFIES	Washington County	II	1x/mo
ANDREA HOTEL	Washington County	II	1x/mo
ATLANTIC BEACH CASINO RESORT	Washington County	II	1x/mo
ATLANTIC BEACH PARK	Washington County	II	1x/mo
ATLANTIC PIZZA AND GRILL	Washington County	II	1x/mo
BLUE SHUTTERS BEACH	Washington County	II	1x/mo
BRIGGS BEACH	Newport County	II	1x/mo
CHARLESTOWN TOWN BEACH	Washington County	II	1x/mo
DUNES PARK	Washington County	II	1x/mo

Beach Name	County	Tier Classification	Monitoring Frequency
GALILEE BEACH CLUB ASSOCIAT	Washington County	II	1x/mo
GOOSEBERRY BEACH	Newport County	II	1x/mo
GOOSEWING BEACH	Newport County	II	1x/mo
GRINELLS BEACH	Newport County	II	2x/mo
HAZARDS BEACH	Newport County	II	1x/mo
JIMS TRAILER PARK	Washington County	II	1x/mo
MATUNUCK TOWN BEACH	Washington County	II	1x/mo
MISQUAMICUT CLUB	Washington County	II	1x/mo
MISQUAMICUT FIRE DISTRICT BEACH	Washington County	II	1x/mo
PADDY'S BEACH	Washington County	II	1x/mo
PLEASANT VIEW INN	Washington County	II	1x/mo
ROY CARPENTER'S BEACH	Washington County	II	1x/mo
SAM'S BEACH	Washington County	II	1x/mo
SANDY POINT BEACH	Newport County	II	2x/mo
SANDY SHORE MOTEL	Washington County	II	1x/mo
SEASIDE BEACH CLUB	Washington County	II	1x/mo
SOUTH SHORE BEACH	Newport County	II	1x/mo
SPOUTING ROCK BEACH ASSOCIATION	Newport County	II	1x/mo
WARRENS POINT BEACH CLUB	Newport County	II	1x/mo
WEEKAPAUG FIRE DISTRICT	Washington County	II	1x/mo
WESTERLY TOWN BEACH-NEW	Washington County	II	1x/mo
WESTERLY TOWN BEACH-OLD	Washington County	II	1x/mo
WILLOW DELL BEACH CLUB	Washington County	II	1x/mo
BALLARDS INN	Washington County	III	2x/yr
CAMP NARROW RIVER	Washington County	III	N.M.
CAPTAIN ZAKS RESTAURANT & GRILLE	Washington County	III	N.M.
CHARLESTOWN BREACHWAY	Washington County	III	2x/yr
EAST BEACH	Washington County	III	2x/yr
EAST MATUNUCK STATE BEACH	Washington County	III	2x/yr

Beach Name	County	Tier Classification	Monitoring Frequency
FRED BENSON TOWN BEACH	Washington County	III	2x/yr
KING PARK SWIM AREA	Newport County	III	N.M.
OCEAN HOUSE	Washington County	III	2x/yr
SALTY BRINE BEACH	Washington County	III	2x/yr
SURF HOTEL	Washington County	III	2x/yr
ANNAWAMSCUTT BEACH	Bristol County	III	N.M.
BAIA BEACH	Bristol County	III	N.M.
BARRINGTON UNNAMED #1	Bristol County	III	N.M.
BARRINGTON UNNAMED #2	Bristol County	III	N.M.
BARRINGTON UNNAMED #3	Bristol County	III	N.M.
BARRINGTON UNNAMED #4	Bristol County	III	N.M.
BLOCK ISLAND UNNAMED #1	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #10	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #11	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #12	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #2	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #3	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #4	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #5	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #6	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #7	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #8	Washington County	III	N.M.
BLOCK ISLAND UNNAMED #9	Washington County	III	N.M.
BOLD POINT	Providence County	III	N.M.
BRISTOL UNNAMED #1	Bristol County	III	N.M.
BRISTOL UNNAMED #2	Bristol County	III	N.M.
BROWNING BEACH	Washington County	III	N.M.
BULLOCKS NECK	Providence County	III	N.M.
BUTTONWOODS BEACH	Kent County	III	N.M.

Beach Name	County	Tier Classification	Monitoring Frequency
CAFE PASTURE BEACH	Washington County	III	N.M.
CAMP CROSBY	Bristol County	III	N.M.
CEDAR TREE POINT	Kent County	III	N.M.
CHARLESTOWN BEACH	Washington County	III	N.M.
CHARLESTOWN UNNAMED #1	Washington County	III	N.M.
CHARLESTOWN UNNAMED #2	Washington County	III	N.M.
CHEPIWANOXET	Kent County	III	N.M.
COLE FARM BEACH	Kent County	III	N.M.
COLLINS BEACH	Newport County	III	N.M.
CONIMICUT POINT NORTH	Kent County	III	N.M.
CRANSTON UNNAMED #1	Providence County	III	N.M.
CRANSTON UNNAMED #2	Providence County	III	N.M.
CRESCENT BEACH	Providence County	III	N.M.
DEEP HOLE BEACH	Washington County	III	N.M.
EAST PROVIDENCE UNNAMED #1	Providence County	III	N.M.
EAST PROVIDENCE UNNAMED #2	Providence County	III	N.M.
FORT GETTY	Newport County	III	N.M.
FORT WEATHERILL	Newport County	III	N.M.
GASPEE POINT	Kent County	III	N.M.
GREEN HILL BEACH	Washington County	III	N.M.
HOPEWORTH BEACH	Bristol County	III	N.M.
ISLAND PARK	Newport County	III	N.M.
JAMESTOWN UNNAMED #1	Newport County	III	N.M.
JAMESTOWN UNNAMED #2	Newport County	III	N.M.
JAMESTOWN UNNAMED #3	Newport County	III	N.M.
JAMESTOWN UNNAMED #4	Newport County	III	N.M.
JUNIPER BEACH	Bristol County	III	N.M.
KELLY BEACH	Washington County	III	N.M.
KINGS BEACH	Newport County	III	N.M.

Beach Name	County	Tier Classification	Monitoring Frequency
LATHAM PARK	Bristol County	III	N.M.
LITTLE COMPTON UNNAMED #1	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #10	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #11	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #2	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #3	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #4	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #5	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #6	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #7	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #8	Newport County	III	N.M.
LITTLE COMPTON UNNAMED #9	Newport County	III	N.M.
LONGMEADOW	Kent County	III	N.M.
MCCORRIE POINT	Newport County	III	N.M.
MIDDLETOWN UNNAMED #1	Newport County	III	N.M.
MIDDLETOWN UNNAMED #2	Newport County	III	N.M.
MILL COVE BEACH	Kent County	III	N.M.
MOONSTONE BEACH	Washington County	III	N.M.
NAPA TREE POINT BEACH	Washington County	III	N.M.
NARRAGANSETT UNNAMED #1	Washington County	III	N.M.
NARRAGANSETT UNNAMED #10	Washington County	III	N.M.
NARRAGANSETT UNNAMED #11	Washington County	III	N.M.
NARRAGANSETT UNNAMED #3	Washington County	III	N.M.
NARRAGANSETT UNNAMED #4	Washington County	III	N.M.
NARRAGANSETT UNNAMED #5	Washington County	III	N.M.
NARRAGANSETT UNNAMED #6	Washington County	III	N.M.
NARRAGANSETT UNNAMED #7	Washington County	III	N.M.
NARRAGANSETT UNNAMED #8	Washington County	III	N.M.
NARRAGANSETT UNNAMED #9	Washington County	III	N.M.

Beach Name	County	Tier Classification	Monitoring Frequency
NARRAGANSETT UNNAMED #2	Washington County	III	N.M.
NEWPORT UNNAMED #1	Newport County	III	N.M.
NEWPORT UNNAMED #2	Newport County	III	N.M.
NORTH KINGSTOWN UNNAMED #1	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #10	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #11	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #12	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #13	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #2	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #3	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #4	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #5	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #6	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #7	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #8	Washington County	III	N.M.
NORTH KINGSTOWN UNNAMED #9	Washington County	III	N.M.
PATIENCE ISLAND UNNAMED #1	Newport County	III	N.M.
PORTSMOUTH UNNAMED #1	Newport County	III	N.M.
PORTSMOUTH UNNAMED #10	Newport County	III	N.M.
PORTSMOUTH UNNAMED #11	Newport County	III	N.M.
PORTSMOUTH UNNAMED #12	Newport County	III	N.M.
PORTSMOUTH UNNAMED #13	Newport County	III	N.M.
PORTSMOUTH UNNAMED #14	Newport County	III	N.M.
PORTSMOUTH UNNAMED #2	Newport County	III	N.M.
PORTSMOUTH UNNAMED #3	Newport County	III	N.M.
PORTSMOUTH UNNAMED #4	Newport County	III	N.M.
PORTSMOUTH UNNAMED #5	Newport County	III	N.M.
PORTSMOUTH UNNAMED #6	Newport County	III	N.M.
PORTSMOUTH UNNAMED #7	Newport County	III	N.M.

Beach Name	County	Tier Classification	Monitoring Frequency
PORTSMOUTH UNNAMED #8	Newport County	III	N.M.
PORTSMOUTH UNNAMED #9	Newport County	III	N.M.
POTOWOMUT	Kent County	III	N.M.
PRUDENCE ISLAND UNNAMED #1	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #10	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #11	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #2	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #3	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #4	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #5	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #6	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #7	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #8	Newport County	III	N.M.
PRUDENCE ISLAND UNNAMED #9	Newport County	III	N.M.
QUONOHOTAUG BEACH	Washington County	III	N.M.
ROCKY BEACH	Newport County	III	N.M.
ROCKY POINT	Kent County	III	N.M.
RUGGLES BEACH	Newport County	III	N.M.
RUMSTICK POINT	Bristol County	III	N.M.
SABINS POINT	Providence County	III	N.M.
SAPOWET BEACH	Newport County	III	N.M.
SEASIDE BEACH	Newport County	III	N.M.
SOUTH KINGSTOWN UNNAMED #1	Washington County	III	N.M.
SOUTH KINGSTOWN UNNAMED #2	Washington County	III	N.M.
SOUTH KINGSTOWN UNNAMED #3	Washington County	III	N.M.
SOUTH KINGSTOWN UNNAMED #4	Washington County	III	N.M.
SOUTH KINGSTOWN UNNAMED #5	Washington County	III	N.M.
TEDDYS BEACH	Newport County	III	N.M.
TIVERTON UNNAMED #1	Newport County	III	N.M.

Beach Name	County	Tier Classification	Monitoring Frequency
TIVERTON UNNAMED #10	Newport County	III	N.M.
TIVERTON UNNAMED #11	Newport County	III	N.M.
TIVERTON UNNAMED #12	Newport County	III	N.M.
TIVERTON UNNAMED #2	Newport County	III	N.M.
TIVERTON UNNAMED #3	Newport County	III	N.M.
TIVERTON UNNAMED #4	Newport County	III	N.M.
TIVERTON UNNAMED #5	Newport County	III	N.M.
TIVERTON UNNAMED #6	Newport County	III	N.M.
TIVERTON UNNAMED #7	Newport County	III	N.M.
TIVERTON UNNAMED #8	Newport County	III	N.M.
TIVERTON UNNAMED #9	Newport County	III	N.M.
TOUISSET BEACH	Bristol County	III	N.M.
TRUSTOM BEACH	Washington County	III	N.M.
WARREN UNNAMED #1	Bristol County	III	N.M.
WARREN UNNAMED #2	Bristol County	III	N.M.
WARWICK UNNAMED #1	Kent County	III	N.M.
WARWICK UNNAMED #2	Kent County	III	N.M.
WEST BEACH	Newport County	III	N.M.
WESTERLY UNAMED # 1	Washington County	III	N.M.
WESTERLY UNAMED # 2	Washington County	III	N.M.
WESTERLY UNAMED # 3	Washington County	III	N.M.
WESTERLY UNAMED # 4	Washington County	III	N.M.
WESTQUAGE BEACH	Washington County	III	N.M.

N.M. - Not Monitored

**Table 3. Tier Classification and Monitoring Frequency for Rhode Island Freshwater Beaches**

Beach Name	County	Tier Classification	Monitoring Frequency
GORTON POND BEACH	Kent County	I	1x/wk

Beach Name	County	Tier Classification	Monitoring Frequency
KENT COUNTY YMCA	Kent County	I	1x/wk
LINCOLN WOODS STATE PARK BEACH	Providence County	I	1x/wk
WORLD WAR II MEMORIAL STATE PARK BEACH	Providence County	I	1x/wk
AQUAPAUG SCOUT RESERVATION	Washington County	II	1x/mo
BEACH POND BEACH	Washington County	II	1x/mo
BOWDISH LAKE CAMPGROUND	Providence County	II	1x/mo
BRIAR POINT BEACH	Kent County	II	1x/mo
BROWNING MILL POND BEACH	Washington County	II	1x/mo
BURLINGAME STATE PARK CAMPGROUND	Washington County	II	1x/mo
BURLINGAME STATE PARK PICNIC AREA	Washington County	II	1x/mo
CAMP ALDERSGATE	Providence County	II	1x/mo
CAMP AYOHO	Kent County	II	1x/mo
CAMP CANONICUS	Washington County	II	1x/mo
CAMP COOKIE	Providence County	II	1x/mo
CAMP DAVIS	Washington County	II	1x/mo
CAMP HOFFMAN	Washington County	II	1x/mo
CAMP MASSASOIT	Providence County	II	2x/mo
CAMP MEEHAN	Providence County	II	1x/mo
CAMP NOKEWA	Washington County	II	1x/mo
CAMP RUGGLES	Providence County	II	1x/mo
CAMP SHEPARD	Providence County	II	1x/mo
CAMP WATCHAUG	Washington County	II	1x/mo
CAMP WATCHAUG WOHELO	Washington County	II	1x/mo
CAMP WATMOUGH	Providence County	II	1x/mo
COLWELL'S CAMPGROUND	Kent County	II	1x/mo
DIFONZO RECREATION AREA	Providence County	II	1x/mo
DYER WOODS NUDIST CAMPGROUND	Providence County	II	1x/mo
ECHO LAKE CAMPS	Providence County	II	1x/mo

Beach Name	County	Tier Classification	Monitoring Frequency
EPISCOPAL CONFERENCE CENTER BEACH	Providence County	II	1x/mo
GEORGE WASHINGTON CAMPGROUND	Providence County	II	1x/mo
GEORGIAVILLE POND BEACH	Providence County	II	1x/mo
GINNY-B CAMPGROUND BEACH	Providence County	II	1x/mo
GLOCESTER COUNTRY CLUB BEACH	Providence County	II	1x/mo
GOVERNOR NOTTE PARK BEACH	Providence County	II	1x/mo
HARMONY HILL SCHOOL	Providence County	II	1x/mo
HOLIDAY ACRES CAMPGROUND	Providence County	II	1x/mo
HOPE COMMUNITY SERVICES BEACH	Providence County	II	1x/mo
KINGSTONS CAMP	Washington County	II	1x/mo
LARKIN'S POND BEACH	Washington County	II	1x/mo
MARION IRONS BEACH	Providence County	II	1x/mo
MATER SPEI DAY CAMP	Providence County	II	1x/mo
NINIGRET PARK BEACH	Washington County	II	2x/mo
PASTORE LEISURE CENTER-LADD SCHOOL CAMP	Washington County	II	1x/mo
SLACK"S POND BEACH	Providence County	II	1x/mo
SPRING LAKE BEACH	Providence County	II	1x/mo
W ALTON JONES BEACH	Kent County	II	1x/mo
WESTWOOD YMCA BEACH	Kent County	II	1x/mo
YAWGOOG SCOUT RESERVATION	Washington County	II	1x/mo
BREEZY LAKE BEACH	Kent County	III	N.M.
LITTLE BEACH	Washington County	III	N.M.
LITTLE POND BEACH	Kent County	III	N.M.
SAND POND BEACH	Kent County	III	N.M.
WHISPERING PINES CAMPGROUND	Washington County	III	N.M.

Beach Name	County	Tier Classification	Monitoring Frequency
WORDEN POND FAMILY CAMPGROUND BEACH	Washington County	III	N.M.

N.M. - Not Monitored

**Table 4. Summary of Tier Classifications**

Classification	Number of Freshwater Beaches	Number of Saltwater Beaches
Tier I	4	20
Tier II	45	41
Tier III	6	174

### 4.3 Closures

There were 91 recorded closures totaling 351 closure days during the 2006 season. This represents an 81% increase in closure days from the 2005 bathing season (there were 30 closures totaling 65 closure days in 2005). Even though significant rainfall (>.50" in a 24-hour period from June 1-August 31 at the TF Green) only rose from 4 instances in 2005 to 7 instances in 2006, overall rainfall increased 57% from 6.24" in 2005 to 14.65" in 2006<sup>13</sup>. Based on historical data, a direct connection between rainfall and beach closures is evident.

In addition, the USEPA BEACH grants allow HEALTH to more comprehensively study areas where water quality exceeds the bacterial standard. For example: because of known bacteria issues in the upper regions of the Narragansett Bay, areas located north of Prudence Island were sampled several times weekly during the 2006 bathing season. Intensive sampling allowed HEALTH to precisely define areas of higher bacteria concentrations in an effort to more easily delineate bacterial sources. Enhanced monitoring activities further protect public health; however, they also have resulted in an increase in the number of beach closures. It should be noted that closure data is based on federally funded saltwater beach sampling *and* privately funded freshwater beach sampling. Table 5 summarizes 2006 closure days at each beach.

**Table 5. 2006 Beach Closures**

Beach Name	Days Closed	Problems
Atlantic Beach Club	30	Stormwater, Pump station, Newport CSO?
Barrington Town Beach	14	Run-off, Providence CSO?
Bonnet Shores Beach	2	Run-off
Bristol Town Beach	16	Run-off, Wildlife, Providence CSO?
Browning Mill Pond	21	Wildlife

<sup>13</sup> <http://www.erh.noaa.gov/box/dailystns.shtml> NOAA Northeast Environmental Climate Data website

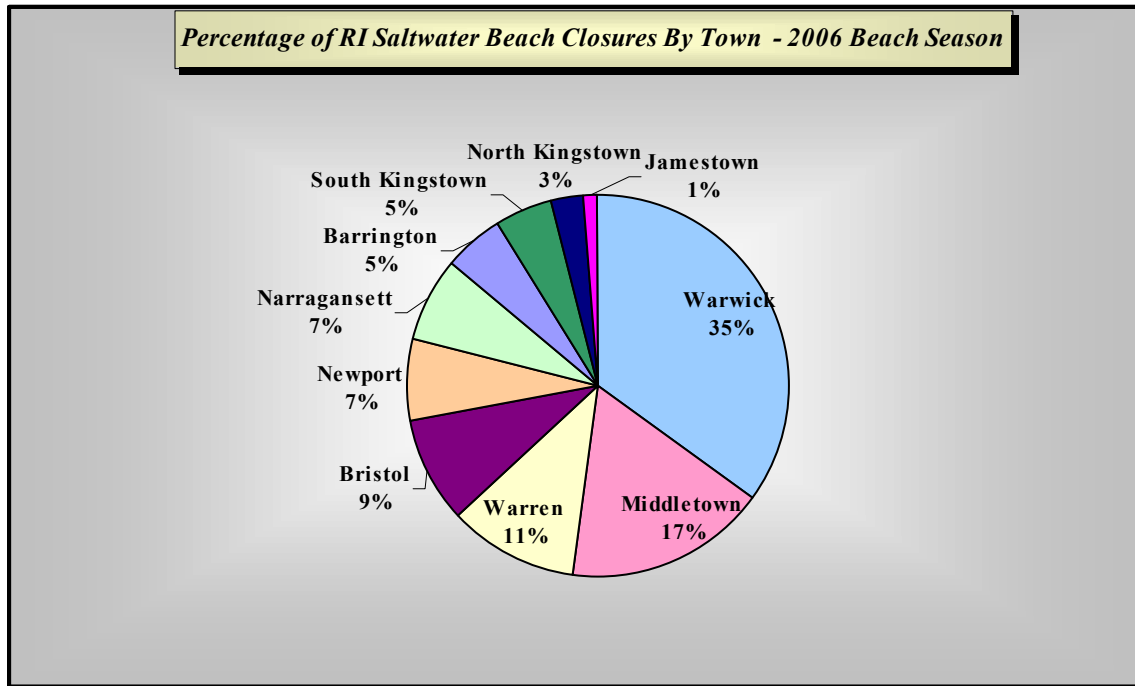
<b>Beach Name</b>	<b>Days Closed</b>	<b>Problems</b>
Buck Hill Campground	6	Run-off, Wildlife
Camp Fuller	8	Run-off, Wildlife
Camp Grosvenor	4	Run-off, Wildlife
Camp Massasoit	4	Run-off, Wildlife
Camp Meehan	4	Run-off, Wildlife
Camp Ruggles	1	Run-off, Wildlife
Camp St. Dorothy	6	Run-off, Newport CSO?
City Park	17	Run-off, Boats, Wildlife
Conimicut Point	47	Providence CSO?, Wildlife, Run-off
Easton's Beach	12	Stormwater, Pump station, Newport CSO?
Fort Adams	7	Run-off, Boats
Goddard Park	10	Run-off, Boats, Wildlife
Gorton Pond	47	Run-off
Governor Notte Park	2	Wildlife
Holiday Acres	2	Run-off, Wildlife
Kent County YMCA	8	Run-off, Wildlife
Mackerel Cove	2	Run-off
Matunuck Town Beach	2	Run-off?
North Kingstown Town Beach	1	Run-off, Boats
Oakland Beach	15	Run-off, Wildlife
Saunderstown Yacht Club	2	Run-off, Boats
Scarborough State Beach - North	8	Stormwater Run-off
Scarborough State Beach - South	8	Stormwater Run-off
Third Beach	14	Run-off, Boats
Warren Town Beach	29	Run-off, Boats
Willow Dell Beach Club	2	Run-off?
Total:	<b>351</b>	

The following tables and charts document the percentage of closures attributed to each town.  
 Note: all saltwater closure days occurred within ten of Rhode Island's coastal towns and all freshwater closure days occurred within six of Rhode Island's towns.

**Table 6. Percentage of Saltwater Beach Closure Days By Town for the 2006 Bathing Season**

<b>Percentage of Total Saltwater Closure Days</b>	<b>City/Town</b>	<b>Number of Closure Days</b>	<b>Facilities Closed</b>
35	Warwick	89	City Park Beach, Conimicut Point Beach, Goddard State Park Beach, Oakland Beach
17	Middletown	44	Atlantic Beach Club Beach, Third Beach
11	Warren	29	Warren Town Beach
9	Bristol	22	Bristol Town Beach, Camp St. Dorothy
7	Newport	19	Easton's Beach, Fort Adams State Beach
7	Narragansett	18	Scarborough State Beach North, Scarborough State Beach South, Bonnet Shores Beach Club Beach
5	Barrington	14	Barrington Town Beach
5	South Kingstown	12	Matunuck Town Beach, Willow Dell Beach Club Beach, YMCA Camp Fuller Beach
3	North Kingstown	7	Camp Grosvenor Beach, North Kingstown Town Beach, Saunderstown Yacht Club Beach
1	Jamestown	2	Mackerel Cove
<b>100</b>		<b>256</b>	

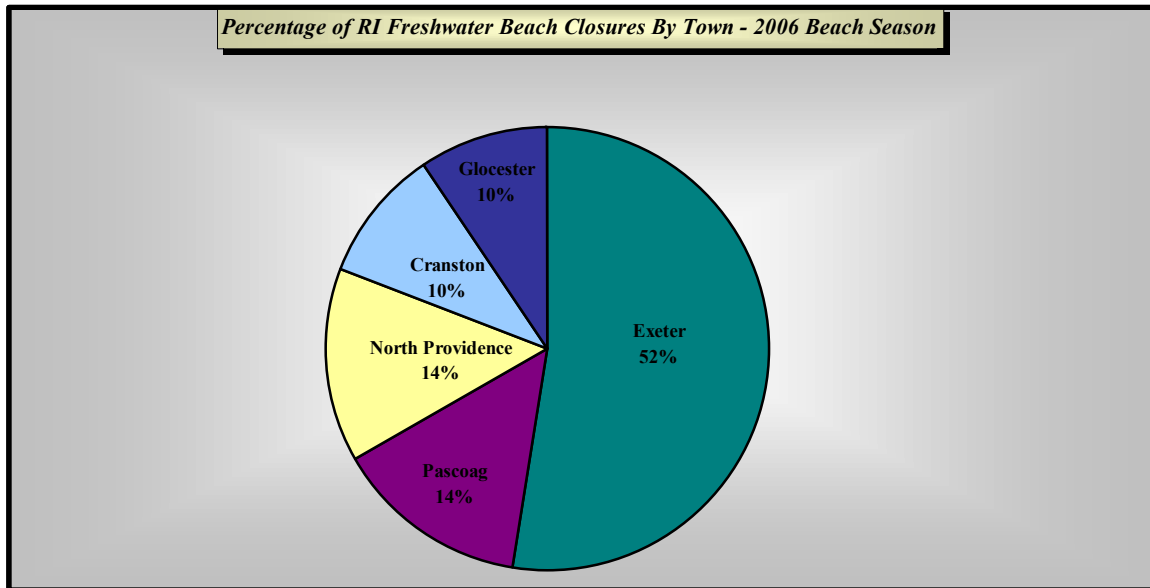
**Chart 6a. Saltwater Beach Closure Days By Town for the 2006 Bathing Season**



**Table 7. Percentage of Freshwater Beach Closure Days By Town for the 2006 Bathing Season**

Percentage of Total Freshwater Closure Days	City/Town	Number of Closure Days	Facilities Closed
58	Warwick	55	Gorton Pond, Kent County YMCA
22	Exeter	21	Browning Mill Pond
6	Pascoag	6	Buck Hill Campground
6	North Providence	6	Camp Meehan, Governor Notte Park
4	Cranston	4	Camp Massasoit
4	Glocester	3	Holiday Acres Campground, Camp Ruggles
<b>100</b>		<b>95</b>	

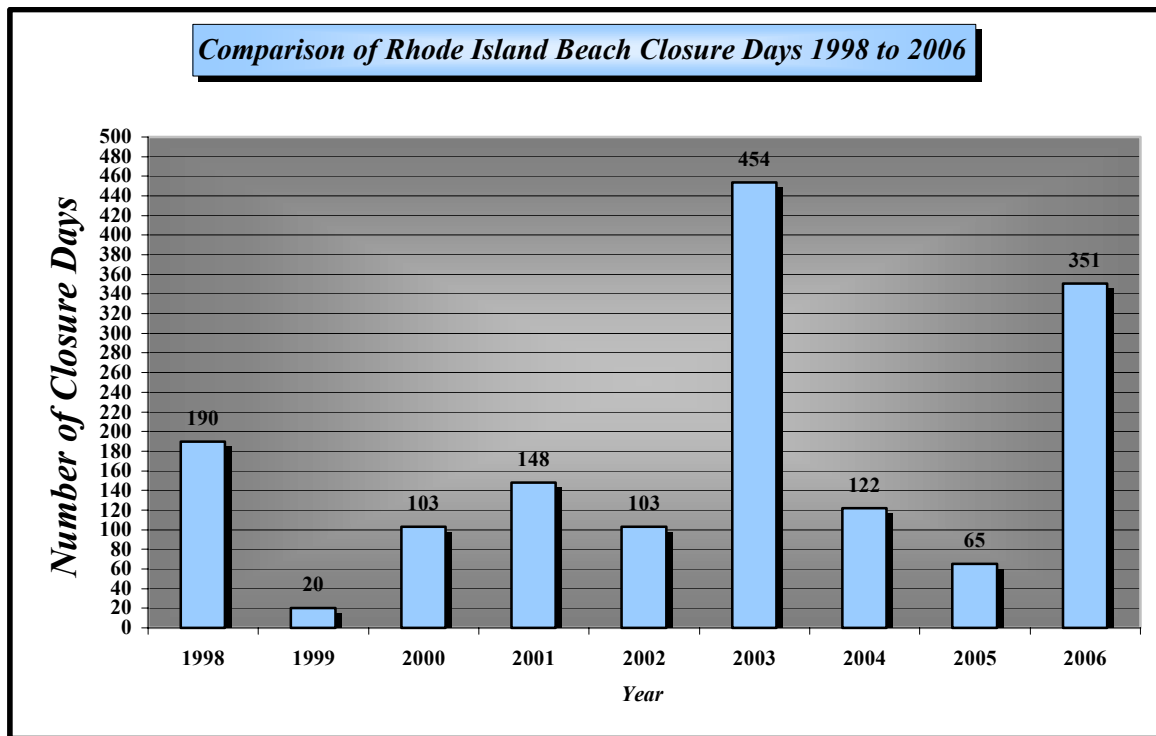
**Chart 7a. Freshwater Beach Closure Days By Town for the 2006 Bathing Season**



**Table 8. Summary and Evaluation of Five-Year Trends (2002-2006) in regards to rainfall and sampling data**

	2002	2003	2004	2005	2006
<b>Number of Licensed Freshwater Beaches</b>	49	51	47	53	53
<b>Number of Licensed Saltwater Beaches</b>	70	72	71	63	69
<b>Total Number of Licensed Beaches</b>	119	123	118	118	122
<b>Sample Count*</b> (RIDOH - EPA Funded Sampling Only)	1,779	2,567	2,701	3,211	2,769 **
<b>Rainfall Total</b> - As recorded at TF Green between June 1st and Aug 31st (inches)	5.67	14.96	10.99	6.24	14.65
<b>Significant Rain Events</b> (>0.5" in 24-hr)	5	11	9	4	7
<b>Closure Events</b>	27	67	41	30	91
<b>Closure Days</b>	103	459	118	65	351
* Sample count estimates do not include approximately 1,000 samples submitted by Beach Operators on an annual basis, which are reviewed by RIDOH.					
** Although the 2006 sample count may appear less than the 2005, more samples were required to be collected by Beach Operators in 2006, than 2005.					

Chart 8a. *Five-Year Trends (2002-2006 )*



A table detailing beach closure days for each beach, from 1998 to 2006, is included in **Appendix F**.

## 5.0 SPECIAL STUDIES

### 5.1 Governor's Priority Beaches

During the summer of 2003, the environmental health of Narragansett Bay was questioned because of several unfortunate events. In particular, Rhode Islanders experienced the highest number of recorded beach closures and Greenwich Bay experienced the worst fish kill in the State in the last 50 years. In response to these events, Governor Carcieri formed the Governor's Narragansett Bay and Watershed Planning Commission to coordinate and plan for the environmental and economic health of the Bay. Ten study panels were formed with experts from state and federal government, academia, non-governmental organizations, private firms and the public.

In March of 2004, the Commission issued a report detailing recommendations to improve the health of Narragansett Bay. On July 22, 2004, Governor Carcieri responded to the report, charging HEALTH, Department of Environmental Management (DEM) and the Department of Transportation (DOT) with developing an improvement strategy for 10 priority beaches. In December 2004, HEALTH, DEM and DOT issued the *Joint Improvement Strategy for 10 Priority Beaches* report outlining the next steps to be taken to identify and correct pollution problems at 10 priority beaches. A table illustrating the issues facing the priority beaches and outlining improvement strategies currently in progress and/or planned at each of the priority beaches can be found in **Appendix E**.

### 5.2 Easton's and Atlantic Beach Club

During the 2006 beach season, Easton's Beach was closed for 12 days and Atlantic Beach Club Beach (located next to Easton's) was closed for 30 days. Compared to 2 closure days for both beaches in 2005, this represents a significant increase. In the fall of 2006, HEALTH's Beach Program provided EPA grant money to a local Newport volunteer organization, Clean Ocean Access (COA), to continue sampling Easton's Beach (Newport, RI), Atlantic Beach Club Beach (Middletown, RI) and Sachuest Beach (Middletown, RI) during the off-season when surfers utilize the beach area. This study is unique since HEALTH does not generally sample any of Rhode Island's beaches during the off-season (with the exception of short-term special studies). HEALTH agreed to pay for sample analysis from October through December, and COA agreed to provide all necessary manpower.

Twice per week sampling was originally performed at all three beaches, however based on consistently low bacteria counts at Sachuest Beach, sampling was discontinued there in December. COA's involvement parallels the sentiment of many citizens of Middletown and Newport to get involved with issues affecting the water they swim in. The City of Newport and Town of Middletown have also demonstrated a dedicated effort to work collectively towards methods to eradicate local water pollution problems. After petitioning the City of Newport, COA was able to convince Newport officials to support continued funding of these off-season sampling efforts. The City of Newport has agreed to fund sampling until "beach season" begins and HEALTH begins its sampling efforts.

The COA study is focusing monitoring efforts in the main swimming areas as well as nearby stormwater outfall areas. The outfall areas are suspected to be affecting water quality within the designated swimming areas.

### **5.3 Greenwich Bay**

Beaches located in the City of Warwick have accounted for the largest percentage of closures by city/town over the last several years. From 2005 to 2006, closures in Warwick increased dramatically from 37 to 89 closure days. A portion of this increase can be attributed to the increased rainfall in 2006. However, it should be noted that many closures in Greenwich Bay occurred when there was no preceding rainfall. This pattern implies that the large amount of closures may be due to other factors, including possible impacts from combined sewer overflows (CSOs) in the upper bay.

HEALTH is currently working with RIDEM to determine if CSOs in the upper bay may be contributing to beach closures. Additionally, RIDEM's Total Maximum Daily Load (TMDL) Program details comprehensive management actions that will be taken, but their benefit will not be known for several years. In cooperation with the TMDL Program, the Coastal Resource Management Council's (CRMC's) Greenwich Bay Special Area Management Plan (SAMP) will focus on all aspects of pollution sources within the Greenwich Bay watershed.

EPA's National Epidemiological and Environmental Assessment of Recreational (NEEAR) Water Study will be conducted at Goddard State Park Beach from June 23rd through Labor Day on weekends and holidays this upcoming beach season. Representatives from EPA, the Center for Disease Control (CDC) and Westat (EPA's contractor) will be conducting interviews of beach goers and collecting water samples throughout the beach season.

In February 2007, HEALTH met with EPA, RIDEM and Westat to discuss the study and to set up collaboration for the upcoming months. The main goals of the study are to determine new ways of analyzing water samples to provide real-time water quality measurements (i.e. rapid 2-hour tests), and to help gain a better understanding between water pollution, swimming at the beach, and peoples' health (through interviews regarding illness, exposure, etc.). The NEEAR Study website, <http://www.epa.gov/nheerl/near>, provides more in-depth information. HEALTH hopes this study will draw more attention to the water quality within Greenwich Bay, and particularly at Goddard State Park Beach, which is a very popular summer destination for Rhode Islanders.

## **6.0 FUTURE ACTIVITIES**

### **6.1 Geographic Information Systems**

GIS has improved monitoring efficiency and accuracy; the system has assisted in identifying known sources of pollution and is assisting in the development of a beach closure model based on rainfall. The Beach Monitoring Program staff feels strongly that GIS capabilities will continue to greatly improve the ability to protect the public from swimming in contaminated bathing waters. Additionally, HEALTH has been utilizing GIS capabilities to update the freshwater beaches database. HEALTH is in the process of generating GIS data for each of the freshwater beaches located in Rhode Island. Surveys are currently underway of all marine beaches and will be utilized to revise and improve the GIS saltwater database.

### **6.2 Web Based Data/Public Notification System**

HEALTH has developed a web-based management system to manage all beach related data and perform statistical analysis. This system provides the public with all sample data, open/closed status, and general beach information. All public notification procedures have been streamlined and are conducted at the touch of a button from any computer with an Internet connection. A 24 hour telephone hotline, website, and a pre-approved list of media outlets is notified instantaneously after the decision to close a beach has been made. This system also allows HEALTH to transmit beach related data, as required under the BEACH Act, with incredible ease. The alternative to this system is the entering of data into the USEPA's current system STORET. Press releases are now issued in a much more timely manner, and staff time is not wasted traveling to the HEALTH's Cannon Building to conduct after hours notifications. HEALTH will continue to perfect this system. **Appendix D** includes the opening webpage for HEALTH's Beach Monitoring Program.

### **6.3 Web Based Data/Laboratory Results and Sample Schedule Integration**

As discussed above, HEALTH has developed a web-based management system to manage all beach related data. HEALTH is continuing to improve this system by developing an automated sampling schedule system. Sample schedules will be entered into the system on a daily basis. All sample submittal forms and sample container labels will be generated through the sample scheduler. This system will save valuable time spent by the interns. Additionally, the system will soon be updated to allow results received from the laboratory to be sent directly to the web-based management system upon approval from the beach program manager. Therefore, interns will be spending less time on data entry and their time can be spent on more useful tasks. HEALTH will continue to work with our database manager to adapt the system in order to improve its capabilities.

### **6.4 Improved Freshwater Beach Monitoring**

The EPA does not currently fund freshwater beach sampling. Therefore, sampling at freshwater beach facilities in the State of Rhode Island is the responsibility of the beach manager, typically a town representative, or facility owner. HEALTH receives results from either the beach manager or directly from the laboratory. To date, freshwater beach sampling has been sporadic. Results have not been submitted to HEALTH on a timely basis, and in some instances, not at all. As stated in Section 5.1, freshwater beach surveys were conducted at Rhode Island's 53 licensed freshwater facilities. Additionally, HEALTH found several beach facilities operating without a

license. HEALTH plans to develop a complete GIS database of surveyed beaches, and plans to initiate a tracking system in order to measure freshwater facilities compliance with applicable monitoring schedules.

### **6.5 Predictive Modeling**

During the 2006 season, HEALTH began to develop and utilize predictive measures at beaches in Rhode Island that tend to have high closure rates. Since sampling has increased steadily over the past several years, there is more data available to create these models. Comparing past results to such variables as rainfall and observed wildlife/boat activity has also created useful data that can be incorporated. Currently, the turn around time for sampling results is 24 hours. Due to this fact, HEALTH's goal is to utilize past data to create a system that will dictate appropriate closing/opening measures in a more timely manner to ensure better public health. However, the development of predictive models is dependent upon large sample data sets, and therefore there is a definite need for further collection of samples after rain events, etc. and continued development of models.

**Appendix A**

Rules and Regulations for Licensing of Recreational Facilities

**RULES AND REGULATIONS FOR  
LICENSING OF RECREATIONAL FACILITIES**

[R23-21-RF]

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

DEPARTMENT OF HEALTH

May 1980

*AS AMENDED*

June 1983

**January 2002 (re-filing in accordance with  
the provisions of section 42-35-4.1 of the  
Rhode Island General Laws, as amended)**

These amended rules and regulations are promulgated pursuant to the authority conferred under sections 23-1-5, 23-1-17 and 23-21-4 of the General Laws of Rhode Island of 1956, as amended, and are established for the purpose of defining the minimal standards for recreational facilities consistent with statutory provisions.

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## **PART A DEFINITIONS AND ADMINISTRATION**

### **Section 1.0 DEFINITIONS**

Wherever used in these rules and regulations the following terms shall be construed as follows:

- 1.1 "Adequate" shall mean that which is needed to accomplish the intended purpose in keeping with good public health practice.
- 1.2 "Amusement Place" shall mean any tract of land together with the structures located thereon, the principle use of which is to provide a "midway" of amusement, or animal or vehicle racing for public amusement or recreation.
- 1.3 "Bathing" shall mean swimming and the related activities connected thereto.
- 1.4 "Bathing Beach" shall mean any natural area or tract of land which 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 fee or dues; or
  - (c) It is maintained with or without charge for the recreation of groups of ten (10) or more children.
- 1.5 "Department" shall mean Rhode Island Department of Health.
- 1.6 "Director" shall mean the Director of the Rhode Island Department of Health or his duly authorized agents.
- 1.7 "Drainage Unit" shall mean a pit filled with crushed stone for soil absorption of potable water overflow at drinking facilities or watering stations.
- 1.8 "Family Camp" shall mean any place maintained to accommodate tents, mobile camping units, trailers, recreation vehicles, etc., in which separate sites are provided or made available for individuals, families or other groups of similar size. Service buildings may or may not be provided.
  - (a) "Primitive Family Camp" shall mean a place provided to accommodate camping with or without tents and/or shelters. Such places are usually **NOT** accessible to automobiles and/or recreation vehicles. A primitive family camp is a site at which basic needs for camp operation such as buildings, water supply systems, toilets, lavatories, showers and cooking facilities are **NOT** usually provided.
  - (b) "Caravan, Safari, Rally" shall mean an affiliated group of recreational vehicles assembled for a short term camping experience.
- 1.9 "Family Campsite" shall mean a portion of land in a camping area for the placement of a recreational vehicle and/or tent for the exclusive use of its occupants.
- 1.10 "Garbage" shall mean the putrescible animal and vegetable wastes that result from the handling, preparation and consumption of food.

- 1.11 "Hotel, Motel, Motor Court, Inn, Tourist Cabins" shall mean any building or group of buildings with six or more rooms, or accommodations for more than eight individuals, used for temporary occupancy for lodging or sleeping and further provided they are served by a private or non-community water supply or individual sewage disposal system.
- 1.12 "Mobile Home" shall mean a prefabricated, one-family dwelling unit, to which temporary wheels can be attached for transportation to a permanent location or foundation. Mobile homes are excluded from the provisions of these regulations.
- 1.13 "Operator" shall refer to any person who:
- (a) Alone or jointly or severally with others owns an establishment covered in these regulations; or
  - (b) Has care, charge or control of an establishment as agent or lessee of the owner or as an independent contractor.
- 1.14 "Person" will be held to mean any individual, firm, co-partnership, association or private or municipal corporation.
- 1.15 "Plastic Waste Insert" shall mean any liner which consists of a non-dissolvable material used as a convenience for the collection and disposal of refuse and human waste; e.g., liners for portable "Jonny" camp units, can liners, etc.
- 1.16 "Potable Water" shall mean water free from impurities present in amounts sufficient to cause disease or harmful physiological effects and conforming in its bacteriological, radiological and chemical quality to the requirement of the Rhode Island Department of Health Public Drinking Water Regulations.
- 1.17 "Primitive or Outpost Youth/Adult Camp" shall mean a camp or other site at which the basic needs such as places of abode, water supply systems and permanent toilet and cooking facilities are not usually provided.
- 1.18 "Recreation Facility" shall mean to include but not be limited to hotels, motels, motor courts or inns, tourist cabins establishments, camping areas, amusement places, bathing beaches, mobile recreational vehicle facilities and parks.
- 1.19 "Recreational Vehicle" shall mean a vehicle which may or may not be motor propelled, that is used primarily for recreation purposes on land. It includes motor homes, travel trailers, "pop-top" trailers, fold-out trailers, vans and other similar vehicles primarily designed for camping or overnight occupancy.
- (a) "Dependent Recreational Vehicle" shall mean a vehicle which has no permanent toilet, lavatory and shower facilities and is dependent upon a service building for toilet, lavatory and shower facilities.
  - (b) "Independent or Self-Contained Recreational Vehicle" shall mean a vehicle which can operate independent of connections to sewer, water and electric systems. It may contain a water-flushed toilet, lavatory, bath, shower and kitchen sink, all of which are connected to water storage and sewage holding tanks located within the vehicle.

- 1.20 "Refuse" shall mean all putrescible and non-putrescible solid wastes including garbage, rubbish, ashes and biological wastes.
- 1.21 "Rubbish" shall mean all non-putrescible solid wastes consisting of both combustible and non-combustible materials such as paper, tin cans, glass bottles, bedding, rags, crockery, metals, etc.
- 1.22 "Sanitary Station (Dump Station)" shall mean a facility used for receiving and disposing of wastes from various types of holding tanks.
- 1.23 "Sanitary Sewage" shall mean any human or animal excremental liquid or substance including the discharge of water closets, laundry tubs, washing machines, sinks, dishwashers and the contents of septic tanks, cesspools or privies. Waste water from dishwashing procedures, handwashing, bathing and shower facilities will be considered sewage.
- 1.24 "Service Building" shall mean a structure housing toilets, lavatories, showers and such other facilities as may be required.
- 1.25 "Shall or Must" shall be used to state mandatory requirements.
- 1.26 "Should or May" shall be used to state recommended or advisory procedures or equipment.
- 1.27 "Travel Trailer" shall mean a vehicular, portable structure built on a chassis with permanent wheels for the purpose of towing from place to place as a temporary residence for travel, recreation or vacation use.
- 1.28 "Watering Station" shall mean a centralized potable water supply outlet.
- 1.29 "Youth/Adult Camp" shall mean any camp, primitive or outpost camp, or residential camp which conducts a program for 10 or more campers.
  - (a) "Day Camp" - A camp operated for less than 24 hours in any one day not including day care centers as defined in section 23-28.1-5 of the General Laws. Day campers will be limited to two overnight programs per week.
  - (b) "Residential Camp" shall mean a camp which provides overnight facilities.

Section 2.0 ADMINISTRATION

- 2.1 ISSUANCE AND EXPIRATION OF LICENSE - No person shall maintain within this state any recreation facility or use as defined in Section 1.0 until such person shall have obtained a license therefore from the department in accordance with the requirements of section 2 of Chapter 23-21 of the General Laws of Rhode Island of 1956, as amended. Licenses are not transferable. All licenses must be prominently displayed at the licensed location.
- 2.2 LICENSE APPLICATION - The initial application for a license must be on forms provided. A detailed plan drawn to scale showing the entire site, location and layout of buildings, recreational vehicle sites, complete details of water supplies, pumps and service including well logs, sewage and refuse disposal units, bathing areas and all available unit sites must be approved by the Director prior to any construction and before any license can be issued. Plans and construction must comply with

all applicable existing laws and regulations. Additions or alterations subsequent to the submission of such will be made only with the approval of the Director.

- 2.3 **SUSPENSION OR REVOCATION OF LICENSE** - The Director may suspend or revoke any license for violation of the provisions of Chapter 23-21 of the Rhode Island General Laws or these regulations. The provisions of section 3 of Chapter 23-21 shall apply.
- 2.4 **VARIANCES** - In the event of special situations or unusual conditions, the Director may grant variances to these regulations. Requests for variances will be submitted in writing and detail to the licensing authority.
- 2.5 **RETROACTIVITY** - Recreational facilities licensed by the Department prior to 10 June 1980, the effective date of these rules and regulations, may be deemed acceptable with respect to said design and construction if they are capable of being maintained in a sanitary condition that protects the public health.
- 2.6 **PENALTY FOR VIOLATIONS** - Any person who violates the foregoing regulations shall be subject to the provisions of section 8 of Chapter 23-21 of the General Laws of Rhode Island of 1956, as amended, entitled Licensing of Recreational Facilities.
- 2.7 **SEVERABILITY** - If any provision of these regulations or the application thereof to any facility or circumstance shall be held invalid, such invalidity shall not affect the provisions or application of the regulations which can be given effect, and to this end the provisions of the regulations are declared to be severable.

## **PART B GENERAL REQUIREMENTS**

### **Section 3.0 ANIMALS AND PETS**

- (a) No owner or person in charge of a dog, cat or other pet animal shall permit it to run at large or to commit any nuisance within the limits of any recreational facility under these regulations. Any kennels, pens or other areas provided for such pets shall be maintained in a sanitary condition at all times.
- (b) The applicable provisions of Title 4, entitled Animal Health of the General Laws of Rhode Island of 1956, as amended, shall apply where applicable.
- (c) Horses and other farm animals must be stabled at least five hundred (500) feet away from living quarters, dining halls and kitchens in order to minimize odor and nuisance problems. Temporary shelters, corrals, tie rails or hitching posts shall not be located within two hundred (200) feet of any dining hall or other place where food is prepared, cooked or served. Stables must have cleanable floors properly drained and maintained. Drainage from stables and temporary quarters shall not contaminate any spring, stream, lake or other water drainage. All manure must be removed, stored or disposed of in a manner that prevents insect breeding.

### **Section 4.0 REPORTING OF COMMUNICABLE DISEASE**

- 4.1 Cases of communicable disease designated as "reportable diseases" by the Director of Health shall be reported promptly to the Rhode Island Department of Health in accordance with the "Regulations

Pertaining to Reporting of Communicable Disease" of the Rhode Island Department of Health.

- (a) When infectious diseases present a potential hazard or occur in epidemic form in campers, these shall be reported to the Rhode Island Department of Health, even if not designated as "reportable diseases".

#### Section 5.0 CURTAILMENT OF UTILITIES OR SERVICES

- 5.1 No person shall cause the water, or sewage disposal, service facility or equipment which is required to be made available under these minimum standards to be shut off or removed except for such temporary period as may be necessary during actual repairs or alterations or during temporary emergencies when curtailment of service is approved by the Director.

#### Section 6.0 ELECTRICAL DISTRIBUTION SYSTEM

- 6.1 Electrical wiring system provided shall consist of approved fixtures, equipment and appurtenances installed and maintained in accordance with the State Building Code.

#### Section 7.0 FOOD SERVICE

- 7.1 All food operations will comply with the requirements of Chapters 23-1, 21-27 and 21-31 of the General Laws of 1956, as amended, and the regulations adopted thereunder.

#### Section 8.0 LAUNDRY FACILITIES

- (a) If laundry facilities are provided in a recreational facility, there must be a separate room or building set aside for the use of washing machines and this use confined to the inhabitants of that recreational facility;
- (b) All laundry rooms will have floors that are impervious to water, easily cleaned and sloped to floor drains connected to the sewerage disposal system. The floors will be maintained in a sanitary condition at all times. Walls and partitions in laundries will be constructed of easily cleanable and impervious material;
- (c) Laundries will have 40 foot candles of lighting and be properly ventilated.

#### Section 9.0 PEST CONTROL

- (a) Grounds, buildings, parking areas, and structures must be maintained reasonably free of insect and rodent infestation and harborages;
- (b) Extermination methods and other measures to control pests must conform with requirements of the Department of Environmental Management where applicable or as approved by the Director.

#### Section 10.0 REFUSE STORAGE AND DISPOSAL

- (a) The operator shall provide an adequate storage area and maintain, in a clean and sanitary condition, as many receptacles for the storage of garbage and rubbish as are necessary to contain the accumulation between collections. Garbage and rubbish should be disposed of at

least twice weekly;

- (b) Garbage must be stored in fly-tight, water-tight, rodent-proof receptacles of metal or other durable material and properly covered;
- (c) The storage, collection and disposal of refuse must be so conducted as to create no health hazards, rodent harborage, insect breeding areas, accident or fire hazards or air pollution;
- (d) When garbage and rubbish is to be disposed of on the grounds, disposal must be approved by the Director of Environmental Management and shall be in accordance with Chapter 46, Title 23.

#### Section 11.0 SEPTIC TANK CLEANERS

11.1 Any establishment under these regulations that has apparatus for the removal of septage or sanitary sewage must comply with the provisions of Chapter 23-49, Rhode Island General Laws of 1956, as amended.

#### Section 12.0 SEWAGE DISPOSAL FACILITIES

- (a) Sewage must be disposed of in accordance with rules and regulations adopted under the authority of section 42-17.1-2(L), (M) and (R) of the Public Laws of 1978, Chapter 131, section 6;
- (b) Primitive or outpost camps will utilize methods approved by the Director.

#### Section 13.0 SWIMMING POOLS AND BATHING BEACHES

- (a) Where a swimming pool is provided, it will be constructed and operated in accordance with Chapter 23-22 of the General Laws of 1956, as amended, and all state regulations applicable;
- (b) Bathing beach water must meet bacteriological and safety standards as determined by the department, or the Department of Environmental Management.

#### Section 14.0 TOILETS, LAVATORIES AND SHOWERS

- (a) Each recreational facility will provide the number of toilets, showers or lavatories or fraction thereof as cited in Tables HIV of the appendix, and such facilities will be maintained clean, sanitary, well-lighted and in good repair;
- (b) Handwashing facilities will be adjacent to toilet facilities and urinals;
- (c) Potable hot and cold running water will be provided at all showers and lavatories unless a variance has been granted;
- (d) Approved hand cleaner and approved hand drying facilities will be provided at all lavatories unless a variance has been granted;
- (e) Proper ventilation will be provided;
- (f) 40 foot candles of light will be provided unless otherwise exempted;

- (g) Duckboards will not be used in showers.

### Section 15.0 WATER SUPPLY

- (a) The operator of all recreational facilities will supply potable water, under pressure, adequate for the needs of such facility. The water supply must be obtained from a source approved in writing by the Department and so distributed as to be readily available. If there is more than one well serving the recreational facility, each well must be visually, readily identifiable by name, number, color or some other means on or about the well;
- (b) The operator shall install and maintain all pipes and pumps delivering potable water in accordance with the State Building Code;
- (c) There must be no physical connection between any pipe carrying water from a potable water source and any pipe carrying water from any other source without written approval of the Director;
- (d) Drinking fountains shall be of a design meeting the following general criteria based on the National Plumbing Code, 1955 revision and installed in accordance with the State Building Code:
  - (1) The fountain shall be constructed of an impervious material and have an easily cleanable bowl and other surfaces;
  - (2) The jet of water must be at an angle preventing water from falling back into the orifice;
  - (3) The end of the nozzle must be protected by guards preventing the person using the fountain from contacting the nozzle;
  - (4) The nozzle must discharge above the edge of the bowl so an air gap is provided to prevent a possible cross-connection;
  - (5) Proper drainage must be provided to carry off water promptly.

## **PART C SPECIAL REQUIREMENTS**

### **SUBSECTION I**

#### Section 16.0 YOUTH/ADULT CAMPS

- 16.1 Toilets, Urinals and Privies - (1) Non-water carried sewage disposal systems such as pit privies, latrines and urinals may not be less than 100 feet from a kitchen or food service area; (2) Residential camps shall provide handwashing and shower facilities and will meet the minimum requirements as cited in Table II; (3) Sleeping areas shall not be more than 200 feet from a toilet or urinal nor less than 50 feet from any non-water carried toilets and/or urinals.
- 16.2 Handwashing and Showers, Etc. - (1) Handwashing and shower facilities shall be supplied with sufficient warm and cold running water; (2) Showers or bathtubs, when provided, must be in the living quarters or in a centrally located structure; (3) Handwashing facilities, shower stalls, bathtub areas and dressing compartments must be maintained in a clean and sanitary condition; (4) Day camps are not required to provide shower facilities; however, they must meet the requirements cited

in Table III; (5) Primitive or outpost camps are exempt from handwashing and shower facility requirements, as shown in Tables II and III.

- 16.3 Primitive (Outpost) Requirements - Basic standards of sanitation relative to waste and sewage disposal, water supply, lavatory, bathing facilities and food sanitation apply to all primitive camping including but not limited to the following: (1) Counselors must be trained in the basic principles of food protection and sanitation and a list of trained personnel certified by the director of camping for the particular organization shall be available; (2) Each individual shall have available approved clean, fresh water for lavatory needs; (3) Warm water and adequate facilities shall be available for handwashing; (4) Adequate facilities shall be provided for approved methods of sanitizing eating and drinking utensils; (5) slit trenches or "cat hole" disposal of human excreta or other recognized methods of sewage disposal must be provided.

## **SUBSECTION II**

### **Section 17.0 FAMILY CAMPS**

- 17.1 Waste Disposal - (1) One recreational vehicle sanitary station (dump station) with a foot-operated seal cover, or equivalent, providing sanitary closure of the sewer pipe inlet when not in use shall be provided for each 150 family campsites; (2) When potable water is supplied to an individual campsite, an approved means of sewage collection and/or disposal must be provided.
- 17.2 Potable Water Supply - A potable watering station must be provided for supplying recreational vehicle storage tanks. All necessary procedures must be taken to assure the safety of the water supply. A watering station must be at least fifty (50) feet away from a sanitary station. A sign at least two (2) feet by two (2) feet must be posted at each potable water station stating, in proportional lettering, "POTABLE WATER. NOT TO BE USED FOR FLUSHING WASTE TANKS".
- 17.3 Service Building - A central service building containing all necessary toilet and other required plumbing facilities must be provided for all recreational vehicle parking areas, except those reserved exclusively for independent recreational vehicles. Service buildings shall be located convenient to the parking spaces, but in no case more than five hundred (500) feet away. (See Table IV for required plumbing facilities.)
- 17.4 Primitive Camps - Basic standards of sanitation relative to waste and sewage disposal apply. Campers are responsible for using safe water for drinking and culinary purposes.
- 17.5 A Camping Caravan - Safari - Rally may be accommodated in an area maintained and licensed as a recreational facility provided adequate facilities are present to accommodate the types of recreational vehicles or tents involved. A camping caravan - safari - rally may be held on land not maintained as a recreational facility if prior approval is obtained from the Department of Health. Approved, adequate facilities must be readily available for good personal hygienic and public health protection. Approvals are limited to a three (3) day period.

**APPENDIX**

**PLUMBING FIXTURE REQUIREMENTS**

**Table I**

**Motels, Hotels, Cabins, Amusement Places, Bathing Beaches**

<b>Facility</b>	<b>Toilets</b>	<b>Urinals</b>	<b>Handwashing Facilities</b>	<b>Bathtubs or Showers</b>
Motels, Hotels, Cabins, etc	1*	-	1*	1*
Amusement Places and Bathing Beaches	1/500 Male 1/500 Female	1/500 Male	1/500 Male 1/500 Female	-

\*Per dwelling unit

**Table II**

**Youth - Residential Camps**

<b>Number Served</b>	<b>Boys</b>		<b>Girls</b>	<b>Boys or Girls</b>	
	<b>Toilets</b>	<b>Urinals</b>	<b>Toilets</b>	<b>Handwashing Facilities</b>	<b>Bathtubs or Showers</b>
1-10	1	-	1	1	1
11-18	1	1	2	2	2
19-33	2	1	2	3	2
34-48	2	2	3	3	3
49-63	3	2	4	4	4
64-79	3	3	5	4	5
80-95	4	3	6	5	6

**Table III**

**Youth - Day Camps**

<b>Facilities</b>	<b>Boys</b>	<b>Girls</b>
Toilets*	1/60	1/35
Urinals*	1/60	-
Handwashing*	1/33	1/33

\*Per number of individuals served

**Table IV**

**Family Camps**

<b>Number of Sites</b>	<b>Toilets</b>		<b>Urinals</b>	<b>Handwashing Facilities</b>		<b>Showers</b>		<b>Other (a)</b>
	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>	
1-30	2	2	1	2	2	1	1	1
31-45	2	2	1	3	3	1	1	1
46-60	2	3	2	3	3	2	2	1
61-80	3	4	2	4	4	2	2	1
81-100	3	4	2	4	4	3	3	1
100+ (b)								

- (a) A flushing toilet (without seat) shall be provided, at each service building, for disposal of liquid wastes unless a sanitary station is conveniently accessible.
- (b) For recreational vehicle areas having more than 100 sites there shall be provided 1 additional toilet and lavatory, for each sex, for each additional 30 sites; 1 additional shower, for each sex, for each additional 40 sites; and 1 additional men's urinal for each additional 100 sites.

**Appendix B**

Sanitary Survey Form



## Rhode Island Department of Health Beach Monitoring Program



### Sanitary Survey

**BEACH NAME:**

**DATE:**

#### Beach History and Known Sources of Contamination:

Does the Beach meet its use classification?	YES/NO (if no, high risk)						
303d Listed?	YES/NO (add 1 point per impairment)						
Confirmed Illness Reports?	YES/NO (if yes, add 5 points)						
Closed during the 2005 Bathing Season?	1-5days 1 Point	6-10days 2 Points	11-15days 3 Points	16-20days 4 Points	21-25days 5 Points	26-30days 6 Points	
Closed during the 2004 Bathing Season?	1-5days 1 Point	6-10days 2 Points	16-20days 4 Points				
Closed during the 2003 Bathing Season?	1-5days 1 Point	6-10days 2 Points					
Closed during the 2002 Bathing Season?	1-5 days 1 Point	6-10days 2 Points	11-15days 3 Points	21-25days 5 Points	26-30days 6 Points	31-35days 7 Points	
Is the beach located in an UA or DPA?	YES/NO (if yes, add 10 points)						
Number of PS Discharges within a 5 mile radius?	(1 point per discharge)						
Is the area subject to CSO's or SSO's?	YES/NO (if yes, add 25 points)						
Is the area subject to Agricultural run-off?	YES/NO						
The nearest POTW is _____ miles away?	0-1 mile 15 points	1-2 miles 10 points	2-3 miles 5 points	3-4 miles 3 points	4-5 miles 1 point		
Number of POTW's within 5 miles?	(1 point per POTW)						
Level of Private Septic Systems?	High 10 points		Medium 5 points		Low 1 point		
Is there a TMDL in progress?	YES/NO (if yes, subtract 5 points)						
Ave. # of times the geomean standard was violated?	(1 point per exceedance)						
Ave. # of times the single sample standard was violated?	(1 point per exceedance)						
How important is this beach to the local economy?	High 10 points		Medium 5 points		Low 1 point		
Number of Marine Pump-Outs within 5 miles?	(Subtract 1 point per facility)						

**Field Survey:**

Sanitary facilities located at Beach?	YES/NO (if no, add 5 points)					
Number of Marinas to likely have an effect on the beach?	(1 point per marina)					
Level of boat traffic?	High 10 points	Medium 5 points	Low 1 point			
Wild animals present on/near beach?	YES/NO (if yes, add 5 points)					
Domestic animals on/near beach?	YES/NO (if yes, add 5 points)					
Approx. # of Birds on a typical 100ft. section of beach?	(.25 points per bird)					
Ave. # of users during peak beach season?	1-500 5 points	501-1500 10 points	1500-5000 15 points	5001-10000 20 points	>10001 25 points	
Ave # of off-peak users (primary contact)?	1-25 1 point	26-50 5 points	>50 10 points			
Density of susceptible population?	0-33% 5 points	34-67% 10 points	68-100% 15 points			
Visible stormwater run-off?	YES/NO (if yes, 5 points per occurrence)					
Pipes at/adjacent to beach?	YES/NO (if yes, pipe <12"-1 point, >12"-2 points)					
Presence of floatable debris?	YES/NO (if yes, add 5 points)					
Presence of scum/oil sheen?	YES/NO (if yes, add 5 points)					

**General Information:**

Length of beach			
Location of pipes?			
Location of sampling points?			
Location of stormwater run-off points?			
Distance to stream/river?			
Wrack present?	YES/NO	Width:	Do they rake? YES/NO

Grand Total:	
--------------	--

**Comments**

**Appendix C**

Daily Survey Form

## Bathing Beach Daily Survey

Name of Beach: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Water Temp: \_\_\_\_\_

### Weather Conditions:

Sunny & Clear \_\_\_\_\_ Cloudy & Overcast \_\_\_\_\_ Rainy \_\_\_\_\_ Foggy \_\_\_\_\_ Windy \_\_\_\_\_

### Tidal Conditions:

Slow \_\_\_\_\_ Moderate \_\_\_\_\_ High \_\_\_\_\_ High Tide \_\_\_\_\_ Low Tide \_\_\_\_\_

### Activity on Beach:

Approx.# of People \_\_\_\_\_ Adults \_\_\_\_\_ Children \_\_\_\_\_

Swimming \_\_\_\_\_ Sunbathing \_\_\_\_\_ Fishing \_\_\_\_\_ Boating \_\_\_\_\_ Walking \_\_\_\_\_ Other \_\_\_\_\_

### Conditions of the Beach:

Overall Appearance \_\_\_\_\_ Debris on Beach \_\_\_\_\_ Debris in Water \_\_\_\_\_

Vegetation in Water:    1       2       3       4       5  
                                 <25%   25%   50%   75%   100% Cover in 1 meter quadrat

Vegetation on Shore:   1       2       3       4       5  
                                 <25%   25%   50%   75%   100% Cover in 1 meter quadrat

Width of Wrack on shore (in meters) \_\_\_\_\_

Visible sewage or sewage odor \_\_\_\_\_

### Conditions of Water:

Clear \_\_\_\_\_ Cloudy & Murky \_\_\_\_\_ Oily Film \_\_\_\_\_

### Sources of Pollution:

Waterfowl Approx.#-Seagulls \_\_\_\_\_ Ducks \_\_\_\_\_ Geese \_\_\_\_\_ Swans \_\_\_\_\_

Approx. # of Boats \_\_\_\_\_

### Wind and Weather Conditions:

\_\_\_\_\_

### Additional Comments:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Appendix D**

Homepage for HEALTH's Beach Monitoring Program



# Rhode Island Department of Health

DAVID R. GIFFORD, M.D., MPH, DIRECTOR  
DONALD L. CARGIERI, GOVERNOR

www.health.ri.gov



- HOME
- HEALTH TOPICS
- NEWS
- DATA
- PROGRAMS
- PUBLICATIONS
- SITE MAP

Beach Monitoring Home

## Beach Water Quality Monitoring

Today is March 15 2007  
[Today's weather and ozone forecast](#)

News and Publications

Closures and Advisories

Water Quality Information

Fact Sheets for Beach Goers

Illness Complaint Form

Related Links

RIBeach Watch Login

Content Syndication

The purpose of the Rhode Island Department of Health Beach Monitoring Program is to provide real-time water quality and safety information concerning all 118 licensed bathing facilities. Through effective management of these beaches, the Department of Health can minimize public health risks associated with swimming in contaminated waters.

For information regarding Recent Beach Closures and/or Openings please see the "RECENT BEACH CLOSURES" section in the right-hand menu. Alternatively you can use the "SEARCH BEACH RESULTS" feature on the right-hand menu to search for a specific beach by beach name or by town to see a full water quality monitoring history for that beach.

- [Recent Closures and Advisories](#)
- [Recent Press Releases](#)
- [Fact Sheets for Beach Goers](#)

If you have any questions, comments or suggestions for the Bathing Beaches Monitoring Program website, please contact us at: [ribeaches@doh.state.ri.us](mailto:ribeaches@doh.state.ri.us)

Bathing Beaches Monitoring Program  
3 Capitol Hill, Room 203  
Providence, RI 02908-5097  
(401) 222-2749  
Bonnie Blair - Beach Coordinator  
[bonnie.blair@health.ri.gov](mailto:bonnie.blair@health.ri.gov)

For questions or comments on the Bathing Beaches Monitoring Program site, please e-mail [RIBeaches@health.ri.gov](mailto:RIBeaches@health.ri.gov)

### SEARCH BEACH RESULTS

Any Beach

↑ Select a Beach or Select a Town ↓

Any Town

Search  ← Click Search

### BEACH SEARCH TIPS

Select a Beach or Town to search. When complete you will be presented with an alphabetical list of all beaches that match your search criteria.

### RECENT PRESS RELEASES

- ▶ No Recent Press Releases Available.
- ▶ [More ...](#)

### RECENT BEACH CLOSURES

- ▶ No Recent Beach Closures Available.
- ▶ [More ...](#)



**Appendix E**

Status Of Flagship Beaches and Governor's Priority Beaches

## Status of Flagship Beaches and Governor's Priority Beaches

BEACH NAME	LOCATION	PROBLEMS/IMPACTS	PROPOSED SOLUTIONS	CURRENT STATUS
<b>Barrington Town Beach</b>	Bay Road, Barrington	Wildlife/Birds, Potential CSO/SSO Impacts	Cover trashcans and empty cans regularly in order to control waterfowl/bird populations. Conduct a comprehensive site assessment to identify storm water impacts and any correctable sources of pollution. Refocus sampling efforts in the Upper Narragansett Bay to study the contrast between existing offshore data and existing bathing beach data.	HEALTH has met with RIDEM and NBC to discuss and coordinate wet weather sampling activities at Barrington. HEALTH is planning to collect beach samples while NBC collects offshore samples in the vicinity of the beach during a four-day wet weather event. HEALTH, RIDEM and NBC are ready to mobilize when weather cooperates. HEALTH began a comprehensive survey of the beach area in the fall of 2006 to study stormwater impacts to the beach area.
<b>Bristol Town Beach</b>	Asylum Road, Bristol	Stormwater, Wildlife/Birds, Potential CSO/SSO Impacts	Cover trashcans and empty cans regularly in order to control waterfowl/bird populations. Conduct a comprehensive site assessment to identify storm water impacts and any correctable sources of pollution. Determine the source of high bacteria in the wetland swale, which discharges to the beach. Refocus sampling efforts in the Upper Narragansett Bay to study the contrast between existing offshore data and existing bathing beach data.	HEALTH conducted a comprehensive survey with RIDEM in the summer of 2006 to study stormwater impacts to the beach area. HEALTH has met with RIDEM and NBC to discuss and coordinate wet weather sampling activities at Bristol. RIDEM will collect beach samples while NBC collects offshore samples in the vicinity of the beach during a four-day wet weather event. HEALTH, RIDEM and NBC are ready to mobilize when weather cooperates.
<b>City Park Beach</b>	Asylum Road, Warwick	Stormwater, Boater Discharge, Wildlife/Birds	Cover trashcans and empty cans regularly in order to control waterfowl/bird populations. Implement Greenwich Bay Total Maximum Daily Load (TMDL) water quality restoration plan and the Special Area Management Plan (SAMP). Implement the State's "No Discharge Law".	Over the 2006 beach season, HEALTH attempted to collect samples on several consecutive days after significant rain events. Based on preliminary data, it appears that Greenwich Bay beaches are typically impacted by rain events greater than 2-inches, but appear to flush within a 24-hour dry period. Maintenance staff increased efforts to empty trash bins and remove all potential sources that might attract wildlife.

## Status of Flagship Beaches and Governor's Priority Beaches

BEACH NAME	LOCATION	PROBLEMS/IMPACTS	PROPOSED SOLUTIONS	CURRENT STATUS
<b>Conimicut Point Beach</b>	Point Avenue, Warwick	Wildlife/Birds, Potential CSO/SSO Impacts	Cover trashcans and empty cans regularly in order to control waterfowl/bird populations. Conduct sampling in vicinity of Mill Cove area to ensure no bacteria from this area is contributing to beach closures. Refocus sampling efforts in the Upper Narragansett Bay to study the contrast between existing offshore data and existing bathing beach data.	HEALTH conducted a comprehensive survey in the Spring of 2006 to study stormwater impacts to the beach area, and in the vicinity of Mill Cove. HEALTH has met with RIDEM and NBC to discuss and coordinate wet weather sampling activities at Conimicut. HEALTH will collect beach samples while NBC collects offshore samples in the vicinity of the beach during a four-day wet weather event. HEALTH, RIDEM and NBC are ready to mobilize when weather cooperates. Additionally, during the 2006 Beach Season, HEALTH collected samples at two stream outlets approximately twice per week if the tide was going out, in order to determine what potential bacterial influence these areas may have on the beach area. HEALTH will analyze these results to determine if these sources impacted the beach area and will continue to sample the streams in future seasons.
<b>Easton's Beach*</b>	Memorial Boulevard, Newport	Stormwater, CSO/SSO, vegetation	Investigate sources of pollution in the Newport and Middletown stormwater drainage systems impacting the stream that discharges between Easton's Beach and the Atlantic Beach Club Beach. Correct any sewage disposal violations found. RIDOT will identify any State owned drains that may be contributing to the pollution problem. Remove excessive amounts of seaweed from Easton's Beach under an approved CRMC permit.	During the 2006 beach season, Easton's Beach was closed for 12 days and Atlantic Beach Club Beach (located next to Easton's) was closed for 30 days. Compared to 2 closure days for both beaches in 2005, this represents a dramatic increase. Numerous studies conducted in the vicinity of Easton's Beach have determined that stormwater from several outfalls, a stream, pump station overflows and seaweed are all sources impacting the water quality in this area. Based on a Consent Agreement between RIDEM and the Town of Middletown, during the 2006 beach season Middletown sampled the beach area and various other locations after rain events greater than 0.5-inches. Additionally, the Consent Agreement required the Town of Middletown to sample after two sewer overflows from the Wave Avenue Pump Station in order to determine impacts to the beach area. Middletown collected these samples during the 2006 beach season. Sampling after rain events will continue for the Town of Middletown for the next two beach seasons. Additionally, the Town of Middletown is currently upgrading the sewer infrastructure in the vicinity of Easton's Beach, as well as the Wave Avenue Pump Station. Upgrades are scheduled to be completed by May 2007. The Town of Middletown is also studying potential solutions to stormwater issues in the vicinity of the beach area. HEALTH met with Town of Middletown and City of Newport officials, RIDEM and local environmental groups several times over the 2006 beach season to work on strategies to improve water quality and to keep an open dialogue between all those involved. Currently, HEALTH's Beach Program is collaborating with a local volunteer organization, Clean Ocean Access, to study the water quality of Easton's Bay during the off-season. This group samples Easton's Beach and the Atlantic

## Status of Flagship Beaches and Governor's Priority Beaches

BEACH NAME	LOCATION	PROBLEMS/IMPACTS	PROPOSED SOLUTIONS	CURRENT STATUS
				<p>Beach Club Beach bi-weekly to monitor water for those who use the beaches during the off-season, primarily surfers. If bacteria counts are high, the beach is notified and appropriate measures are used to inform those who may be using the water. In addition to sampling Easton's Beach, the organization also has sampled during the off-season at Sachusest Beach in Middletown, RI. The Clean Ocean Access study is one of the first efforts made to monitor water quality during non-bathing times of the year. Recently, the City of Newport agreed to take on funding of the ongoing study.</p>
<p>Goddard Memorial Park State Beach**</p>	<p>Ives Road, Warwick</p>	<p>Stormwater, Boater Discharge, Wildlife/Birds</p>	<p>Cover trashcans and empty cans regularly in order to control waterfowl/bird populations. Conduct wet weather sampling to determine the impact of stormwater drains onto the beach. If bacteria loadings are significant, RIDEM will conduct a feasibility study to evaluate abatement measures for the runoff. Implement Greenwich Bay Total Maximum Daily Load (TMDL) water quality restoration plan and the Special Area Management Plan (SAMP). Implement the State's "No Discharge Law".</p>	<p>Over the 2006 beach season, HEALTH attempted to collect samples on several consecutive days after significant rain events. Based on preliminary data, it appears that Greenwich Bay beaches are typically impacted by rain events greater than 2-inches, but appear to flush within a 24-hour dry period. It was also noted that certain sample stations would have higher counts than others based on a population of geese that frequented the area. Maintenance staff increased efforts to empty trash bins and remove all potential sources that might attract wildlife. The Chapel Hill, North Carolina chapter of EPA is in the process of scheduling an epidemiology study at Goddard Park. This study will attempt to find correlations between bacteria levels in the water and numbers and types of illness that are reported by the public.</p>

## Status of Flagship Beaches and Governor's Priority Beaches

BEACH NAME	LOCATION	PROBLEMS/IMPACTS	PROPOSED SOLUTIONS	CURRENT STATUS
<b>King Park Beach</b>	Wellington Avenue, Newport	Stormwater, Boater Discharge, Wildlife/Birds, CSO/SSO	In 2004, the City of Newport closed this facility due to budget constraints. However, many bathers still use this facility during summer months and therefore, the correction of pollution problems at this beach is still important. Cover trashcans and empty cans regularly in order to control waterfowl/bird populations. HEALTH and RIDEM will conduct a survey of this facility to evaluate stormwater effects. RIDEM will continue to work with the City of Newport to eliminate CSOs. Implement the State's "No Discharge Law".	Over the beach season, HEALTH conducted several quick surveys at this facility to see if people were swimming at the beach area, and to observe the amount of wildlife. On all occasions, no people were in the water, and wildlife was limited to just a few gulls. Conditions at this facility should continue to improve as the "No Discharge Law" is enforced, and the City of Newport improves its sewer and stormwater infrastructure.
<b>Oakland Beach</b>	Oakland Beach Avenue, Warwick	Stormwater, Boater Discharge, Wildlife/Birds	Cover trashcans and empty cans regularly in order to control waterfowl/bird populations. Implement Greenwich Bay Total Maximum Daily Load (TMDL) water quality restoration plan and the Special Area Management Plan (SAMP). Implement the State's "No Discharge Law".	Over the 2006 beach season, HEALTH attempted to collect samples on several consecutive days after significant rain events. Based on preliminary data, it appears that Greenwich Bay beaches are typically impacted by rain events greater than 2-inches, but appear to flush within a 24-hour dry period. It was also noted that certain sample stations would have higher counts than others based on a population of geese that frequented the area. Maintenance staff increased efforts to empty trash bins and remove all potential sources that might attract wildlife.

## Status of Flagship Beaches and Governor's Priority Beaches

BEACH NAME	LOCATION	PROBLEMS/IMPACTS	PROPOSED SOLUTIONS	CURRENT STATUS
Scarborough State Beach**	Ocean Road, Narragansett	Stormwater, Wildlife/Birds	Sewer the Black Point Area. Sewer Knowles Campground. Additional measures needed to treat stormwater and/or remove sources from beach area. Smart Sponge Plus Material (a bacteria reduction system) was inserted into three of the stormwater outfalls on the beach by an engineering company in cooperation with RIDOT. Possibility of re-directing stormwater flow by moving the existing pipes in a way that will decrease the number of swimming areas affected by pollution inputs from outfalls.	Twice a week monitoring during the 2005 bathing season showed continued violations of the single sample and geometric mean standard in each of the outfall pipes on a regular basis. HEALTH met with RIDOT in January 2006 to discuss the 2005 sample results obtained by HEALTH. According to RIDOT, the Smart Sponge® was not installed in the correct manner, thereby stormwater was not properly treated by the sponge. In March 2006, HEALTH and RIDEM decided that the Smart Sponge technique may not be sufficient to eliminate high bacteria counts during all wet weather events and asked RIDOT to develop additional stormwater solution strategies at Scarborough. RIDOT is currently working on this request. Possible solutions to be investigated include determining flow from nearby wetlands, use of grassy areas for infiltration instead of discharging to the beach area and the potential of diverting several of the discharge outfalls further from the swimming area. Additionally, based on the known high bacteria counts at the stormwater outfalls, HEALTH required the beach facility to post signs at all stormwater outfalls, stating not to swim within 200-feet of any running outfall. Signs were posted by August 2006. RIDOT stated that they would be conducting a flow study in the waters off of Scarborough State Beach. The results of this study will help determine bacteria flow patterns and establish areas where the bacteria tends to linger. Once the study is done, a pipe adjustment plan may be implemented which would potentially divert stormwater to 2 main output areas on the beach. HEALTH will continue to research solutions and collaborate with RIDOT and RIDEM to implement new strategies at Scarborough State Beach, one of the most highly visited beaches by the public in RI. In January of 2007, RIDOT led a meeting with HEALTH and RIDEM to provide an update on measures taken to improve the water quality at Scarborough.

## Status of Flagship Beaches and Governor's Priority Beaches

BEACH NAME	LOCATION	PROBLEMS/IMPACTS	PROPOSED SOLUTIONS	CURRENT STATUS
Warren Town Beach**	Water Street, Warren	Stormwater, Boater Discharge	RIDEM will work with the Town of Warren to use the 319 Grant Program to fund additional storm water remediation efforts at the Warren Town Beach and in the upstream Palmer River watershed. HEALTH will conduct additional wet weather sampling to ensure all local pollution sources have been addressed.	In 2003, site evaluations were conducted at the beach. Two stormwater pipes were identified to be emitting water with high bacteria counts onto the beach. Further studies revealed that a sewer overflow pipe located approximately 6 feet from the suspect stormwater pipes was in disrepair. Upon repair of the sewer infrastructure, wet weather sampling activities showed dramatic improvement in bacteria levels. Twice a week monitoring during the 2004 bathing season showed no violations of either the single sample or geometric mean standard. Warren Town Beach was closed for only one day in 2005 after a substantial rainfall event of greater than 2.6 inches of rain in a 24-hour period. However, during the 2006 beach season, twice a week monitoring by HEALTH and twice per month monitoring by the beach facility, resulted in 29 beach closure days, the majority of closures resulting from heavy rainfall. HEALTH met with Warren city officials during the winter of 2006 to discuss further steps that need to be taken to hopefully identify and fix the problem before the start of the 2007 bathing season. In an effort to monitor bacterial levels further 'upstream' from the beach area, wet and dry weather sampling of nearby stormwater catch basins is currently underway.

\*Atlantic Beach Club Beach is located directly adjacent to Easton's Beach and is separated from this facility by a stream which drains two ponds, as well as handles overflows from the Wave Avenue Pump Station. As such, the Atlantic Beach Club Beach has been experiencing similar issues and closures as Easton's, and is being included in all investigative and improvement efforts.

\*\*In 2002, the USEPA and HEALTH designated three beaches in Rhode Island as "Flagship Beaches". The USEPA defines Flagship Beaches as high-use beaches with a history of closures, extended periods of poor water quality and serving a diverse socioeconomic user group. During the 2002 season, Goddard Park in Warwick, Warren Town Beach in Warren, and King Park Swim Area in Newport were designated as Rhode Island's Flagship Beaches. However, due to the closure of King Park in 2004 by the City of Newport, Scarborough State Beach in Narragansett was designated as a Flagship Beach. Recent activities at these beaches were discussed above. The USEPA expects to see marked improvement in water quality and a reduction in Flagship Beach closures in the next five years (by 2007).

**Appendix F**

Rhode Island Beach Closures 1998 to 2006

## RHODE ISLAND BEACH CLOSURES 1998 to 2006

Beach	Freshwater (FW)/ Saltwater (SW)	1998		Days	1999		Days	2000		Days	2001		Days	2002		Days	2003		Days	2004		Days	2005		Days	2006		Days
		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Open		Closed	Open		Closed	Open		Closed	Open		Closed	Open		Closed	Open	
Atlantic Beach Club	SW																7/25/03	7/26/03	1	7/29/04	7/30/04	1	8/30/05	9/1/05	2	6/7/06	6/11/06	4
																	8/8/03	8/12/03	4	8/6/04	8/7/04	1				6/25/06	6/27/06	2
																				8/15/04	8/18/04	3				7/6/06	7/10/06	4
																				8/20/04	8/24/04	4				7/11/06	7/25/06	14
																									7/29/06	7/31/06	2	
																									8/1/06	8/3/06	2	
																									8/28/06	8/30/06	2	
Aquapaug Scout Reservation	FW																											
Barrington Town Beach	SW	6/16/98	7/10/98	24													5/29/03	6/10/03	12	7/1/04	7/3/04	2	7/26/05	7/28/05	2	6/8/06	6/13/06	5
		7/13/98	7/17/98	4													7/24/03	7/26/03	2	8/24/04	8/26/04	2	8/31/05	9/1/05	1	6/25/06	6/27/06	2
																	8/5/03	8/15/03	10							6/29/06	6/30/06	1
																										7/27/06	7/29/06	2
																										8/16/06	8/18/06	2
																										8/29/06	8/31/06	2
Bonnet Shores Beach	SW										8/15/01	8/25/01	10				6/24/03	6/27/03	3									
																										6/21/06	6/23/06	2
Bristol Town Beach	SW	6/16/98	6/26/98	10													5/29/03	6/10/03	12	6/2/04	6/3/04	1	8/31/05	9/1/05	1	6/6/06	6/13/06	7
																	6/24/03	6/26/03	2	7/29/04	7/31/04	2				6/16/06	6/17/06	1
																										6/25/06	7/1/06	6
																										8/29/06	8/31/06	2
																	8/9/03	8/21/03	12									
Browning Mill Pond	FW																									7/20/06	8/10/06	21
Buck Hill Campground	FW																									6/29/06	7/5/06	6
Camp Canonicus	FW										8/17/01	8/27/01	10															
Camp Fuller	SW																									7/5/06	7/13/06	8
Camp Grosvenor	SW - Brackish																7/24/03	7/30/03	6	7/1/04	7/8/04	7	7/27/05	7/28/05	1	8/17/06	8/18/06	1
																										8/21/06	8/24/06	3
Camp Massasoit	FW				7/21/99	7/22/99	1	7/3/00	7/5/00	2							7/21/03	7/31/03	8	8/12/04	8/20/04	8				8/11/06	8/15/06	4
Camp Meehan	FW							7/24/00	8/3/00	10							8/15/03	9/1/03	17							7/21/06	7/25/06	4
Camp Narrow River	SW - Brackish										Closed Entire Season			Closed Entire Season			Closed Entire Season			Closed Entire Season						No longer operating beach		

## RHODE ISLAND BEACH CLOSURES 1998 to 2006

Beach	Freshwater (FW)/ Saltwater (SW)	1998		Days	1999		Days	2000		Days	2001		Days	2002		Days	2003		Days	2004		Days	2005		Days	2006		Days					
		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Opened						
Camp Ruggles	FW																								6/28/06	6/29/06	1						
Camp St. Dorothy	SW																								7/27/06	8/2/06	6						
Captain Roger Wheeler	SW																8/15/03	8/16/03	1														
City Park	SW	6/16/98	7/13/98	27							8/15/01	9/3/01	19	8/2/02	8/9/02	7	6/26/03	6/27/03	1	7/7/04	7/8/04	1	6/17/05	6/21/05	4	6/8/06	6/13/06	5					
														8/14/02	8/22/02	8	7/24/03	7/31/03	7	7/23/04	7/27/04	4	8/30/05	9/2/05	3	6/25/06	6/27/06	2					
																			8/5/03	8/13/03	8												
																	8/14/03	8/21/03	7														
Colwell's Camp Ground	FW																								6/30/04	7/3/04	3						
Conimicut Point	SW	6/16/98	7/13/98	27	9/1/99	9/2/99	1																										
Dyer Woods Nudist Campground	FW																								6/28/04	7/1/04	3						
																									7/3/04	7/15/04	11						
Easton's Beach	SW																																
Fort Adams	SW	6/17/98	6/18/98	1				8/16/00	8/19/00	3	5/25/01	5/30/01	5	7/25/02	7/29/02	4	8/9/03	8/11/03	2	6/2/04	6/4/04	2	8/31/05	9/1/05	1	6/8/06	6/11/06	3					
Georgiville Pond	FW	7/15/98	7/24/98	9																													
Glocester Country Club	FW																6/30/03	7/2/03	2	No Samples Collected			No Samples Collected										

## RHODE ISLAND BEACH CLOSURES 1998 to 2006

Beach	Freshwater (FW)/ Saltwater (SW)	1998		Days	1999		Days	2000		Days	2001		Days	2002		Days	2003		Days	2004		Days	2005		Days	2006		Days	
		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Open		Closed	Open		Closed	Open		Closed	Open		Closed	Open		Closed	Open		
Goddard Park	SW	6/16/98	6/26/98	10	8/30/99	9/6/99	7	8/2/00	8/4/00	2	5/25/01	5/30/01	5	6/21/02	6/22/02	1	5/28/03	5/30/03	2				8/30/05	9/1/05	2	6/8/06	6/13/06	5	
		7/3/98	7/7/98	4				8/11/00	8/25/00	14	6/29/01	7/2/01	3	8/2/02	8/7/02	5	6/24/03	6/25/03	1							6/25/06	6/27/06	2	
												7/13/01	7/18/01	5	8/17/02	8/18/02	1	8/6/03	8/13/03	7							7/11/06	7/13/06	2
												8/9/01	8/10/01	1				8/17/03	8/26/03	9							8/29/06	8/30/06	1
												8/15/01	8/16/01	1				8/30/03	9/1/03	2									
												8/17/01	8/25/01	8															
												8/29/01	9/3/01	5															
																8/20/02	9/2/02	13	6/25/03	7/3/03	8				9/2/05	9/3/05	1	6/8/06	6/13/06
Gorton Pond	FW																7/10/03	7/15/03	5							6/15/06	6/20/06	5	
																										6/25/06	6/30/06	5	
																										7/7/06	7/13/06	6	
																										7/27/06	8/3/06	7	
																										8/17/06	8/25/06	8	
Govenor Notte Park	FW																7/18/03	7/26/03	8	6/18/04	6/22/04	4	6/17/05	6/18/05	1	7/19/06	7/21/06	2	
																					8/23/04	8/24/04	1						
Holiday Acres	FW																						7/1/05	7/2/05	1	8/12/06	8/14/06	2	
																							7/28/05	7/30/05	2				
Kent County YMCA	FW										7/6/01	7/21/01	15	6/27/02	7/1/02	4	6/25/03	6/30/03	5	6/18/04	6/22/04	4				6/29/06	7/7/06	8	
														7/25/02	7/29/02	4	8/6/03	8/12/03	6										
King Park	SW	6/17/98	6/18/98	1	8/8/99	8/12/99	4	7/28/00	8/4/00	7	7/5/01	7/6/01	1	6/11/02	6/13/02	2	5/27/03	5/30/03	3	6/2/03	6/3/04	1							
		7/1/98	7/2/98	1	8/18/99	8/20/99	2				7/11/01	7/13/01	2	6/26/02	7/1/02	5	6/8/03	6/12/03	4	6/11/04	6/17/04	7							
											7/26/01	7/30/01	4	7/25/02	7/27/02	2	6/19/03	6/25/03	6										
											8/13/01	8/17/01	4	7/29/02	7/31/02	2	7/3/03	7/5/03	2	Closed For Season in July 2004			Closed for Entire Season			No longer operating beach			
											8/20/01	8/22/01	2	8/2/02	8/4/02	2	7/24/03	7/26/03	2										
															8/31/02	9/2/02	2	8/8/03	8/12/03	4									
																8/15/03	8/20/03	5											
Lincoln Woods	FW	7/20/98	7/23/98	3	7/9/99	7/11/99	2				5/25/01	5/30/01	5	6/27/02	6/28/02	1	6/27/03	6/29/03	2										
					7/23/99	7/24/99	1				6/29/01	7/3/01	4	8/1/02	8/5/02	4	8/1/03	8/4/03	3										
Mackerel Cove	SW																									8/29/06	8/31/06	2	
Matunuck Town Beach	SW																									7/11/06	7/13/06	2	
Ninigret Park	FW																8/14/03	8/15/03	1				8/31/05	9/1/05	1				
North Kingstown Town Beach	SW																6/6/03	6/12/03	6	6/2/04	6/7/04	5				8/29/06	8/30/06	1	
																	6/19/03	6/24/03	5	7/20/04	7/22/04	2							

## RHODE ISLAND BEACH CLOSURES 1998 to 2006

Beach	Freshwater (FW)/ Saltwater (SW)	1998		Days	1999		Days	2000		Days	2001		Days	2002		Days	2003		Days	2004		Days	2005		Days	2006		Days			
		Closed	Opened		Closed	Opened		Closed	Opened		Closed	Open		Closed	Open		Closed	Open		Closed	Open		Closed	Open		Closed	Open				
Oakland Beach	SW	6/16/98	7/17/98	31				8/1/00	8/11/00	10	8/17/01	8/19/01	2	7/30/02	8/1/02	2	6/18/03	6/21/03	3	6/3/04	6/5/04	2	7/26/05	7/28/05	2	6/8/06	6/13/06	5			
											8/22/01	9/1/01	10	8/7/02	8/9/02	2	6/25/03	7/3/03	8	7/16/04	7/20/04	4	8/23/05	8/25/05	2	6/15/06	6/16/06	1			
Pulaski Park	FW							6/12/00	6/15/00	3																					
Saunderstown Yacht Club	SW																6/6/03	6/12/03	6							6/27/06	6/29/06	2			
Scarborough State Beach North	SW																6/6/03	6/14/03	2	7/29/04	7/30/04	1	8/30/05	9/1/05	2	6/7/06	6/11/06	4			
																	6/14/03	6/16/03	2	8/15/04	8/17/04	2				6/25/06	6/27/06	2			
																		6/16/03	6/19/03	1							8/28/06	8/30/06	2		
																		6/19/03	6/20/03	1											
Scarborough State Beach South	SW																6/10/03	6/12/03	2	7/29/04	7/30/04	1	8/30/05	9/1/05	2	6/7/06	6/11/06	4			
																	6/12/03	6/14/03	2	8/15/04	8/17/04	2				6/25/06	6/27/06	2			
																		6/14/03	6/16/03	2							8/28/06	8/30/06	2		
																		6/16/03	6/19/03	1											
Third Beach	SW							8/2/00	9/15/00	44							8/19/03	8/21/03	2				8/31/05	9/2/05	2	6/9/06	6/11/06	2			
Warren Town Beach	SW	6/16/98	7/24/98	38	8/30/99	9/1/99	2	7/3/00	7/7/00	4	6/21/01	6/27/01	6	6/7/02	6/11/02	4	5/29/03	6/19/03	21				8/31/05	9/1/05	1	6/6/06	6/13/06	7			
																		6/24/03	6/28/03	4							6/25/06	7/1/06	6		
																		8/30/02	9/2/02	3							7/15/06	7/25/06	10		
																		7/4/03	7/26/03	22							8/1/06	8/3/06	2		
																										8/16/06	8/18/06	2			
																										8/29/06	8/31/06	2			
Willow Dell Beach Club	SW																									8/11/06	8/13/06	2			
Worden Pond	FW							7/14/00	7/18/00	4												5/20/04	5/26/04	6	No Samples Collected		No longer operating beach				
																						6/17/04	6/18/04	1							
<b>Total Closure Days Per Year</b>				<b>190</b>		<b>20</b>			<b>103</b>			<b>148</b>		<b>103</b>		<b>459</b>		<b>122</b>		<b>65</b>				<b>65</b>			<b>351</b>				