

State-by-State Results

HOW TO UNDERSTAND THE STATE SUMMARIES: BEACHWATER QUALITY MONITORING PROGRAMS

Program Elements

The BEACH Act authorizes the EPA to award grants to states for implementing programs to monitor coastal recreational waters adjacent to beaches used by the public for compliance with the standards for pathogen indicators. Grant funds are also used to notify the public promptly of any exceedances through posting or equivalent means. The allocations for Fiscal Years 2010 and 2011 are included in Table 5-1: State Distribution of BEACH Act Funding for Beachwater Quality Monitoring and Notification for 2010 and 2011. Many states and localities supplement their BEACH Act funding so that they can achieve the objectives of their beachwater monitoring programs.

Many states and localities supplement their BEACH Act funding so that they can achieve the objectives of their beachwater monitoring programs.

Table 4-1: State Distribution of Beach Act Funding for Beachwater Quality Monitoring and Notification for 2010 and 2011

State or Territory	Fiscal Year 2010 Allocation	Fiscal Year 2011 Allocation
Alabama	\$264,000	\$268,000
Alaska	\$86,000	\$154,000
American Samoa	\$303,000	\$306,000
California	\$520,000	\$524,000
Connecticut	\$225,000	\$228,000
Delaware	\$212,000	\$216,000
Florida	\$531,000	\$539,000
Georgia	\$288,000	\$293,000
Guam	\$304,000	\$307,000
Hawaii	\$326,000	\$331,000
Illinois	\$245,000	\$249,000
Indiana	\$207,000	\$209,000
Louisiana	\$323,000	\$325,000
Maine	\$256,000	\$260,000
Maryland	\$271,000	\$276,000
Massachusetts	\$257,000	\$263,000
Michigan	\$281,000	\$288,000
Minnesota	\$206,000	\$209,000

State or Territory	2010 Allocation	2011 Allocation
Mississippi	\$259,000	\$262,000
New Hampshire	\$206,000	\$209,000
New Jersey	\$280,000	\$285,000
New York	\$351,000	\$357,000
North Carolina	\$305,000	\$311,000
Northern Marianas	\$304,000	\$306,000
Ohio	\$225,000	\$228,000
Oregon	\$230,000	\$234,000
Pennsylvania	\$224,000	\$227,000
Puerto Rico	\$330,000	\$123,000
Rhode Island	\$215,000	\$220,000
South Carolina	\$299,000	\$305,000
Texas	\$386,000	\$392,000
U.S. Virgin Islands	\$304,000	\$306,000
Virginia	\$278,000	\$282,000
Washington	\$272,000	\$277,000
Wisconsin	\$227,000	\$231,000
Total	\$9,800,000	\$9,800,000

Source: EPA Grants Available to Implement Beach Monitoring and Public Notification Programs in 2011, EPA 820-F-10-011, December 2010

Water Quality Standards

The EPA's current beachwater quality standards include a geometric mean indicator density for at least five samples taken at evenly spaced intervals over 30 days, and a single-sample maximum allowable indicator density.¹ Some state and local agencies apply both the geometric mean and the single-sample standards and issue beach closings or advisories if either standard is exceeded; others apply the geometric mean standard or the single-sample standard but not both. Some states apply the single-sample maximum allowable indicator density standard for designated beach areas, some states apply less stringent standards, and some apply designated beach area standards to some of their beaches and less stringent standards to others. Also, there are states that apply additional water quality standards that are not associated with the EPA's standards when they make their closing and advisory decisions. Table 5-2 summarizes the states' use of water quality standards (more details about state standards are given in the individual state summaries).

Table 4-2: State Coastal Beachwater Quality Standards

State	Standards applied:			
	EPA's 30-day geometric mean standard for at least five evenly spaced samples taken over a 30-day period (<i>E. coli</i> density of 126 per 100 mL for freshwater, enterococcus density of 35 per 100 mL for marine water)	EPA's "designated beach area" single sample maximum standard (<i>E. coli</i> density of 235 per 100 mL for freshwater; enterococcus density of 104 per 100 mL for marine water)	Less stringent single sample maximum standard than the EPA's "designated beach area" single sample maximum standard	Additional indicator organism water quality standard(s)
Alabama		•		
Alaska	•		•	•
California	•	•		•
Connecticut ^a	•	•		
Delaware ^b	•	•		
Florida	•	•		•
Georgia	•	•		
Hawaii ^c	•	•		•
Illinois		•		
Indiana		•		
Louisiana	•	•		•
Maine		•		
Maryland ^d	•	•	•	
Massachusetts	•	•		
Michigan ^e	•		•	
Minnesota	•	•		
Mississippi		•		
New Hampshire ^f		•		
New Jersey		•		
New York ^g	•	•		
North Carolina ^h	•	•	•	
Ohio		•		
Oregon			•	
Pennsylvania	•	•		
Rhode Island		•		
South Carolina		•		
Texas		•		
Virginia		•		
Washington ⁱ	•	•		
Wisconsin ^j	•	•		

Source: See individual state summaries

- a Localities in Connecticut determine how they will apply water quality standards; the state guidelines encourage localities to apply the single-sample maximum standard for designated beach areas and encourage localities to consider the 30-day geometric mean standard when making beach closing and advisory decisions.
- b DNA analyses to track the source of bacteria at Slaughter Beach and Prime Hook Beach have shown that non-human sources contribute to indicator bacteria counts at these beaches. Monitoring results at these beaches are adjusted downwards to account for non-human sources at these beaches before the water quality standard is applied.
- c Hawaii applies the geometric mean standard at beaches that are monitored at least five times a month and the single sample maximum standard at other beaches. Hawaii also uses quantitative information about the presence of *Clostridium perfringens* (a tracer for human sewage) when making beach warning decisions.
- d Maryland uses the designated beach area single-sample maximum standard at its Tier 1 and Tier 2 beaches and a less stringent single-sample maximum standard at its Tier 3 beaches.
- e Michigan's geometric mean standard is 130 cfu/100 ml for at least five representatively spaced sampling events over 30 days. Michigan applies a daily maximum standard based on the geometric mean of three simultaneous samples, not a single-sample maximum standard.
- f In New Hampshire, at beaches that are sampled in three locations, when either two or more samples collected at a beach exceed the standard or when one sample exceeds 174 counts/100 ml a beach advisory is issued.
- g For freshwater beaches, New York uses an *E. coli* single-sample maximum of 235 cfu/100 ml or 61 cfu/100 ml for enterococcus (this is the designated beach area standard for enterococcus in freshwater). Whether or not geometric mean standards are applied when making closing and advisory decisions depends on the local beach authority.
- h North Carolina's water quality standards at its Tier 1 beaches are a single-sample maximum of 104 mpn/100 ml water and a running monthly geometric mean of 35 mpn/100 ml. At Tier 2 beaches, the standard is a single-sample maximum of 276 mpn/100 ml, and at Tier 3 beaches, the standard is a single-sample maximum of 500 mpn/100 ml. During April and October, the standard for Tier 1 beaches is generally the same as the standard for Tier 2 beaches.
- i The geometric mean standard of 35 cfu/100 ml is taken into consideration when determining permanent advisories in Washington.
- j In Wisconsin, the geometric mean water quality standard for fresh water may be used to make closing and advisory decisions at high priority beaches.

Monitoring

There is a considerable amount of variability among state beachwater monitoring protocols. Some states perform additional monitoring after exceedances and when they expect beachwater to be contaminated. Others adhere to a schedule that doesn't vary with circumstances. Some states take multiple samples that are composited before analysis, or analyze multiple samples and average the results before applying them to the water quality standard.

States also vary as to how often they sample. Some states monitor their high-priority beaches almost daily, while other states monitor their high-priority beaches once or twice a week. Moreover, sampling techniques differ by state. The EPA recommends that samples be collected 12 inches below the surface in water that is three feet deep, but states report collecting samples at varying depths. Some states are particular about collecting samples at a particular time of day or tidal stage. Samplers in some states wade into the surf and hold the collection container in their hand to collect the sample, others use a telescoping golf ball retriever so samples are collected far from the sampler's body.

Sampling practices can have a major impact on whether or not an advisory or closing is issued. A study conducted at Hobie Beach in Florida found that samples taken at times of high solar radiation were less likely to exceed standards than samples taken when solar radiation was low.² Solar radiation varies with the time of year, the time of day, and the clarity of the atmosphere; it is greatest at high noon near the summer solstice on a clear day. The same study found that enterococcus levels were higher in samples that were collected in knee-deep water than in samples taken in waist-deep water. Table 5-3: Policy-Recommended Water Depth Where Samples are Collected for Coastal States shows the depth of water samples are collected in by state.

State	Ankle-Deep Water	Knee-Deep Water	Waist-Deep Water	Deeper than Waist-Deep
Alabama		•		
Alaska ^a			•	
California	•			
Connecticut ^b			•	
Delaware		•		
Florida ^a			•	

Table 4-3: Policy-Recommended Water Depth Where Samples are Collected for Coastal States

State	Ankle-Deep Water	Knee-Deep Water	Waist-Deep Water	Deeper than Waist-Deep
Georgia ^a			•	
Hawaii ^e		•	•	
Illinois ^e		•	•	
Indiana		•		
Louisiana ^a			•	
Maine ^f		•		
Maryland		•		
Massachusetts ^a			•	
Michigan ^g			•	•
Minnesota		•		
Mississippi ^h		•		
New Hampshire		•		
New Jersey ⁱ		•	•	•
New York ^a			•	
North Carolina		•	•	
Ohio ^a			•	
Oregon ⁱ	•	•		
Pennsylvania ^j		•	•	
Rhode Island ^a			•	
South Carolina ^k		•	•	
Texas ^l		•		
Virginia ^f		•		
Washington		•		
Wisconsin		•		

a Samples are collected in water that is three feet deep.

b Samples are collected in water that is 3-4 feet deep.

c Samples are taken in water that is knee to waist deep.

d Samples are taken in water that is 2-3 feet deep.

e Samples are taken in water that is 3-6 feet deep.

f Samples are taken in water that is 0.5 m deep.

g Samples are taken in water that is between knee and chest deep.

h Samples in the ocean surf are taken in knee-deep water, samples collected from boats are taken in water that is three feet deep, samples taken from piers are taken at the location of the most used area.

i Samples are taken in water that is ankle to knee deep.

j Samples are taken in water that is 30 inches deep.

k Samples are taken in water that is 20-40 inches deep.

l Samples can be collected at the location of greatest swimmer activity instead of in water that is two feet deep under certain conditions.

Public Notification Practices

Along with different standards for triggering an advisory or closure, states vary as to whether or not they issue a public health advisory or close a beach or both when sampling has found bacteria levels that exceed the standards. Some states wait until there have been two consecutive standard violations before an advisory is issued, and some take other factors into account when an exceedance occurs before deciding to issue a closing or advisory.

Methods for notifying the public of health advisories and beach closures are variable among states as well, and for some beaches it may be difficult for beachgoers to get complete information about any notifications. States make use of a variety of notification methods, including the Internet, toll-free phone lines, signs posted at beaches, electronic notifications, newspaper notices, and television and radio coverage in conjunction with the weather report. At a minimum, public notification for beach closings and advisories should include a sign or flag at the beach and an easily located website.

HOW TO READ THE STATE SUMMARIES

The following pages contain the summaries of state beachwater quality standards, monitoring and closing/advisory practices, and NRDC's 2010 monitoring results and closings and advisories, listed alphabetically by state. *It is impossible to make direct comparisons between states or to assess trends over time on the basis of advisory and closure data.* Standards, monitoring, and closing/advisory practices vary from state to state, making it difficult to know, for example, whether a state with many closings has vigilant health officials or has more coastal pollution. High numbers of closings and advisories, while indicating pollution problems, may also indicate that the state or county is making a good effort to protect the public health by vigilantly monitoring its waters, informing the public when they are polluted and taking a precautionary approach to closings and advisories. States with comprehensive programs and closure practices should be commended for their efforts.

A meaningful way of comparing beachwater quality between states or tracking it over time is to compare the percent of monitoring samples taken at each beach that exceed the single-sample maximum standards for designated beach areas. NRDC has provided these values for beaches in all 30 coastal and Great Lakes states.

Many states have dedicated and talented individuals that work hard to improve their beachwater quality and to protect public health when beachwater quality is poor. States that do more than monitor their beachwater and issue closings and advisories should be recognized for their extra efforts.

The state summaries are organized into sections as described below.

Rank in the Nation

Each state's national ranking in percent exceedances is based on the percentage of samples reported to exceed the EPA's applicable single-sample maximum for designated beach areas. For marine water, this standard is an enterococcus density of 104 per 100 ml (based on an acceptable rate of 19 cases of gastroenteritis per thousand swimmers), and for freshwater it is an E. coli density of 235 per 100 ml (based on an acceptable rate of 8 cases of gastroenteritis per thousand swimmers). Rankings go from 1st for the state with the lowest percent exceedances to 30th for the state with the highest percent exceedances.

Key Findings

Beachwater Contamination: The list of contaminated beaches in the state excludes beaches with less than 12 monitoring samples reported during the year.

Reported Sources of Beachwater Contamination Statewide: The EPA asks states to report a cause and a source for each closing and advisory event.

Monitoring Results

This section describes the number of beaches monitored in the state and what their reported monitoring frequency is. The percent of samples that exceeded state standards is given. For this section, NRDC calculated percent exceedance by taking the number of samples exceeding the state's daily maximum standards and dividing that number by the total number of

samples collected during the calendar year (replicate samples on the same day are each counted as an individual sample). These exceedance determinations are used for tracking water quality over time; NRDC does not compare these calculations with specific beach closings or advisories. The list of beaches with exceedances in the state excludes beaches with less than 12 monitoring samples reported during the year.

This section also shows the trends in beachwater quality from 2006 to 2010. When making year-to-year comparisons, NRDC only includes beaches that were sampled all five years. Thus, each state summary has three 2010 percent exceedance rates that might not agree: one that was calculated based on national single-sample maximum water quality standards for designated beach areas, one that was calculated based on the state's single-sample maximum standard, and one that was calculated based on the state's single-sample maximum standard for the set of beaches that appear in all five years from 2006 to 2010.

Sampling Practices: In this section, the state's beach monitoring season is given along with the level of control that the state's program has over local beach monitoring and notification practices. Sampling protocols and factors the states use to determine which beaches to monitor and how frequently to monitor them are also described. This section tells if a state chooses to sample when and where the water quality is suspect, or if monitoring is conducted more frequently after a closing or advisory is issued.

High numbers of closings and advisories may indicate that the state or county is making a good effort to protect public health by vigilantly monitoring its waters and closing beaches when they are polluted.

Closings and Advisories

Number of closings and advisories: The total number of beach closing and advisory days for each beach is included in the monitoring results table mentioned above. In an effort to be consistent in tabulating closings and advisories, NRDC used the following guidelines:

- Closings or advisories issued for an individual beach for one day are counted as one closing/advisory day.
- Extended closings/advisories are those lasting more than 6 but not more than 13 consecutive weeks.
- Permanent closings/advisories include those lasting longer than 13 consecutive weeks.
- If a reported advisory at a specific beach overlapped with a general rain advisory that applied to all beaches within the same jurisdiction, the overlapping days were subtracted from the advisory for that specific beach to avoid double counting. However, if a specific beach was closed during a general rain advisory, NRDC did not modify the reported duration.
- Reported closing/advisory days include only events lasting six consecutive weeks or less. Closing and advisory days for events lasting more than six weeks are reported separately.
- In the case of standing advisories that depend on local conditions, NRDC is typically unable to calculate the number of days attributable to such events, so they are only included to the extent that states report them to the EPA.

Standards and Procedures: This section describes the state standards. Information about any use of predictive models and preemptive standards for issuing beach closings and advisories is included, as well as what factors are involved when a state decides issue a closing or advisory.

Figure 4-1: Why Don't 2010 Percent Exceedances Match?

Beachwater monitoring samples are compared to EPA's single-sample maximum standard for designated beach areas. Some states apply additional standards and some apply standards that are not as strict.

Beachwater monitoring samples are compared to the state's single-sample maximum standards.



FLORIDA
6th in Beachwater Quality
4% of samples exceeded national standards in 2010

Polluted urban and suburban runoff is a major threat to water quality at the nation's coastal beaches. Runoff from storms and irrigation carries pollution from parking lots, yards, and streets directly to waterways. In some parts of the country, stormwater routinely causes overflows from sewage systems. Innovative solutions known as green infrastructure enable communities to naturally absorb or use runoff before it causes problems. The U.S. Environmental Protection Agency is modernizing its national rules for sources of runoff pollution and should develop strong, green infrastructure-based requirements.

Monitoring Results

In 2010, Florida reported 637 coastal beaches, 308 (48%) of which were monitored once a week, 328 (51%) were not monitored, and one (<1%) had no monitoring frequency data. For this section of the report, NRDC looked at the percent of monitoring samples that exceeded the state's daily maximum bacterial standards (all reported samples were used to calculate the 2010 percent exceedance rates, including duplicate samples and samples taken outside the official beach season, if any). In 2010, 4% of all reported beach monitoring samples exceeded the state's daily maximum bacterial standards. The beaches with the highest percent exceedance rates in 2010 were Bayou Chico (62%) in Escambia County, Hagen's Cove (47%) in Taylor County, Garniers (42%) in Okaloosa County, Bayview Park (38%) and Navy Point (Bayou Grande) (38%) in Escambia County, Higgs Beach (37%) in Monroe County, Keaton Beach (32%) in Taylor County, Fort Island Gulf Beach (31%) in Citrus County, Coco Plum Beach (27%) in Monroe County, Crandon Park-Key Biscayne (26%) in Miami-Dade County, Oelsner Park Beach (24%) in Pasco County, Minnesota Street (23%) in Broward County, Monument Beach (22%) in Gulf County, Shired Island (22%) in Dixie County, and Dekle Beach (21%) in Taylor County.

Sampling Practices: Monitoring occurs year-round; peak season is from April to mid-September. The beachwater quality monitoring program is administered by the Florida Department of Health, which determines sampling practices, locations, standards, and notification protocols and practices throughout the state.² Samples are collected 18 inches below the surface in water that is approximately 36 inches deep, usually in the morning. Beaches are prioritized for monitoring on a county-by-county basis. Criteria for monitoring are population served, pollution potential, and rainfall. While this ensures that the most critical beaches in each county

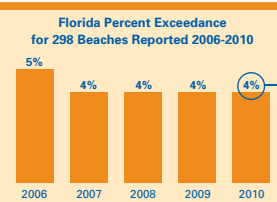
KEY FINDINGS IN FLORIDA

Beachwater Contamination

- (% of samples exceeding state standards in 2010)
- Bayou Chico in Escambia County (62%)
 - Hagen's Cove in Taylor County (47%)
 - Garniers in Okaloosa County (42%)

Reported Sources of Beachwater Contamination

- Statewide (number of closing/advisory days); excludes BP oil disaster
- 1,493 (73%) wildlife
 - 1,448 (71%) stormwater runoff
 - 1,252 (61%) sewage spills/leaks
 - 827 (27%) other sources of contamination
 - 418 (40%) unknown sources of contamination
- Totals exceed total days and 100% because more than one contamination source was reported for most events.



Only samples from a common set of beaches monitored each year from 2006-2009 are included and compared to the state's standards. If a beach was not monitored in all four years, its samples are not included in the comparison.

FL.1 Natural Resources Defense Council Testing the Waters 2011

METHODOLOGY FOR NRDC'S REPORT: SOURCES OF INFORMATION

NRDC relies on the EPA's electronic reporting system for information collected under the federal BEACH Act. Information from the electronic reporting system has been supplemented by NRDC surveys of state and local officials. Beach monitoring coordinators in nearly every state cooperated with NRDC with a great deal of patience and grace and provided interesting and meaningful information for this report. NRDC is thankful for their time and their openness.

Unfortunately, the EPA's electronic data submission system continues to experience technical problems, resulting in delays in data availability and incomplete or inaccurate data. Therefore, NRDC requested 2010 beach season monitoring and closing/ advisory data directly from the states. When states provided these data, NRDC used them; otherwise, we used monitoring data downloaded from the EPA's STORET website and closing/advisory data sent to us by the EPA.

NRDC first began contacting states in January, asking them when and if their annual report would be available and if they could provide NRDC with their monitoring and/or notification data directly. NRDC sent each state a draft of their summary for review, verification, and comment. This draft contained NRDC's analysis of the notification and monitoring data as well as the narrative material for each state. In some cases a summary of monitoring data was sent separately, in addition to the preparation of the draft state summary.

A summary of contacts made with states to verify program information and monitoring and notification data is given in the table below. These dates do not include original contacts with states, state responses to program surveys, or contacts regarding NRDC's questions outside of the state summary and data review process. Note that in some cases it was difficult to determine which column to put the date for a state response, for example when a state responded to an e-mail about the monitoring data with program information or notification data corrections. In several cases, NRDC stated in their communications with states that if they did not receive responses, NRDC would assume that they were in agreement with the item under review.

Many beach managers demonstrated a great deal of patience and care in providing responses to NRDC and we thank them for making the report as complete and accurate as possible.

Table 4-4: Summary of NRDC's data and program information review process (all dates 2011)

State	Monitoring Data Source	Notification Data Source	Monitoring Data Summary Sent to State for Review	State Response to Monitoring Data Summary Received	Draft Summary with Notification and Monitoring Data Analysis, Beach by Beach Data, and Program Description Sent to State for Review	State Response to Summary
Alabama	STORET 3/6	EPA 4/8	5/23	a	4/28	4/29
Alaska	STORET 3/31	EPA 4/18	5/11, 5/22	5/23	5/14	5/25
California	STORET 3/31 state 4/6	state 4/6	5/10, 5/22 ^b	5/23, 6/8	5/6, 6/2	5/12, 5/13
Connecticut	state 2/10 and NPS	state 2/10 EPA 3/30		c	4/28	4/29
Delaware	state 5/28	EPA 4/18	d		5/30	5/30
Florida	STORET 3/31 ^c	EPA 3/30	5/10, 5/22	5/25	5/13, 6/2	
Georgia	state 2/10	EPA 4/14	5/11, 5/22		5/3, 5/11, 6/2	
Hawaii	state 2/10	EPA 4/14	5/10, 5/22		5/16	5/17, 5/24
Illinois	state 3/31	state 3/31 EPA 4/14	5/22		5/18, 6/2	
Indiana	state 2/10 NPS downloaded 4/21	EPA 3/30	5/10	5/18	5/17, 6/7	5/18
Louisiana	state 2/10	EPA 4/7	5/10	5/11, 5/15	5/14	5/16
Maine	state 4/12 STORET on 3/31	state 4/12			5/6, 5/13	5/19 ^f
Maryland	state 4/3 and STORET 3/31	EPA 3/30	5/22	5/31	5/1, 5/11, 6/3	6/3
Massachusetts	state 2/10	EPA 4/21	5/10	5/12	5/18	5/23
Michigan	state 2/10 download from website 5/30	EPA 4/14	5/10, 5/22	5/23	5/19, 5/20, 6/2	5/19, 6/2
Minnesota	state 3/31 Portage 3/25	state 4/5 EPA 4/5			5/5, 5/11	5/11, 5/11, 6/2
Mississippi	STORET 3/31	EPA 4/5			5/3	5/13
New Hampshire	state 3/2	state 3/2 EPA 3/30	5/10	5/11	5/20, 6/3	6/3, 6/7
New Jersey	STORET 3/6	state 3/1 EPA 4/14	5/7, 5/11, 5/22, 5/24	5/9, 5/24, 5/31	5/20	5/24
New York	STORET 3/31	EPA 3/30	5/10	5/13, 5/17	5/20	5/23, 5/23
North Carolina	STORET 3/6	EPA 3/30			5/1	5/4, 5/5, 5/6, 5/9
Ohio	STORET 3/6	EPA 3/30	5/10, 5/22	5/23	5/22	5/23
Oregon	STORET 3/6	EPA 4/8	5/23	5/23	5/2, 5/11	5/11

Table 4-4: Summary of NRDC's data and program information review process (all dates 2011)

State	Monitoring Data Source	Notification Data Source	Monitoring Data Summary Sent to State for Review	State Response to Monitoring Data Summary Received	Draft Summary with Notification and Monitoring Data Analysis, Beach by Beach Data, and Program Description Sent to State for Review	State Response to Summary
Pennsylvania	STORET 3/31	EPA 3/30	5/10	5/11	5/22	5/27
Rhode Island	STORET 3/31	EPA 4/21	5/10	5/11	5/30	6/2, 6/3
South Carolina	state 3/1	EPA 3/30	5/10, 5/22	5/16	5/25	5/25
Texas	state 3/31	state 3/31 EPA 3/31	5/10	5/11	5/23	5/23
Virginia	state website no Bch ID 3/10	state website 3/10 EPA 3/31	5/11, 5/22		5/25	5/25 ^a
Washington	state 2/24	state 2/24 EPA 4/5	5/10	5/11	5/1	5/10
Wisconsin	state 2/10	state 2/10 EPA 4/7			5/4, 5/11	5/6, 5/13

a Alabama had already responded to their draft state summary when they got their monitoring data summary for review.

b California and Orange County were alerted on 6/27 that many months of data were missing from NRDC's data set.

c Connecticut explicitly verified NRDC's monitoring and notification data for the beaches the state collects monitoring and notification data for in their review of the draft state summary.

d EPA and Delaware were alerted on 4/21, 5/1, 5/11, and 5/22 that Delaware's monitoring data set was incomplete. Delaware resolved this issue on 5/23. This state was not sent a monitoring data summary as all data issues were resolved during this process.

e Florida sent monitoring data on May 25th, however, by that time, NRDC had already analyzed Florida's 2010 monitoring data available through EPA's STORET website.

f Maine requested a second round of review on 6/10 but time did not permit NRDC to do so.

g The Virginia program will not review materials sent to them by NRDC as they do not validate external data or its presentation.

NOTES

1 United States Environmental Protection Agency. Ambient Water Quality Criteria for Bacteria—1986. EPA440/5-84-002. January 1986.

2 Vogel, LJ, AA Enns, AM Abdelzaher, HM Solo-Gabriele. Spatial and Temporal Variation in Indicator Microbe Sampling and its Effects on Beach Management Decisions. Poster at Beach Conference. Miami, FL. March 2011.