BEACH REPORT CARD

Heal the Bay's

2014-2015 Annual Beach Report Card

Heal the Bay

Heal the Bay is a nonprofit environmental organization making Southern California coastal waters and watersheds, including Santa Monica Bay, safe, healthy and clean. We use science, education, community action and advocacy to pursue our mission.

The Beach Report Card program is funded by grants from

SIMA SURF INDUSTRY MANUFACTURERS ASSOCIATION

GROUSBECK FAMILY FOUNDATION

BEACH REPORT CARD

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While Santa Monica Bay has shown overall improvements in water quality, much of this is due to drought-limited storm drain runoff, the Bay's greatest source of pollution.

Executive Summary

Beaches in the U.S. accommodate nearly two billion beach visits each year[1] and provide enormous economic benefits to their communities. Beach visitors contribute to an estimated $90 billion coastal tourism economy[2] yet recreating at polluted beaches can also result in significant economic loss. A study conducted in Los Angeles County and Orange County concluded that the regional public health cost of gastrointestinal illnesses caused by recreating in polluted ocean waters was between $21 million and $51 million each year[3].

Beach water quality monitoring data helps to ensure the health protection of the millions of beachgoers who recreate in U.S. coastal waters. Heal the Bay's Beach Report Card was first published in 1991 for Los Angeles County and has grown to include analysis of beach water quality for the entire west coast of the United States. Beachgoers throughout Washington, Oregon, and California can find easy to understand water quality grades for their local beaches updated each week at beachreportcard.org. The A-to-F grades assigned to each location represent the risk of adverse health effects to beachgoers based upon water quality. The better the grade a beach receives, the lower the risk of contracting an illness from water recreation at that location.

Storm drain runoff is the greatest source of pollution to local beaches, flowing untreated to the coast and potentially contaminated with motor oil, animal waste, pesticides, yard waste, trash, and other pollutants.

The Beach Report Card (BRC) is based on the routine monitoring of beaches conducted by local health agencies and dischargers.

Water samples are analyzed for bacteria that indicate pollution from numerous sources, including fecal waste. The better the grade a beach receives, the lower the risk of illness to ocean users.

This 2014-2015 Annual Beach Report Card is a summary of the past year's water quality at more than 600 beach monitoring locations along the West Coast for three distinct periods:

- Summer dry weather (the months covered under Assembly Bill 411 [AB 411] in California) April through October 2014
- Winter dry weather – November 2014 through March 2015
- Year-round wet weather conditions – April 2014 through March 2015.

In addition to summarizing ocean water quality, this report includes a brief review of the number of sewage spills[1] that impacted beach recreational waters over the past year. The information derived from these analyses is used to develop recommendations for cleaning up problem locations to make them safer for beach users.

West Coast Beach Water Quality Overview

The Pacific Northwest had excellent water quality last summer. Over 90% of the 161 monitoring locations received an A grade. All 11 of Oregon's frequently sampled monitoring locations received A grades during summer dry weather. As for Washington State, 91% of their 150 monitored locations received A grades. Oregon and Washington monitor beach water quality at most locations from Memorial Day through Labor Day only.

Beaches in California had excellent water quality overall this past year, with 421 of 443 (95%) locations receiving A or B grades during the summer dry weather period (Figure 1-1). Statewide wet weather water quality was slightly high this year with 64% A or B grades, besting the five-year average by 62%.

Over the past few years, rainfall levels in California (and especially in Southern California) were well below average. For example, precipitation levels in Los Angeles were about 32% lower than the 5- and 10- year averages (Figure 1-4). During years with less rain there is less overall runoff, which is the main source of pollutants, such as bacteria, to coastal waters. Beach water quality grades may be higher in a given year due to less runoff, yet the resulting improved water quality should not provide a false sense of long-term beach water quality improvement.

For more information please see *Drought and Climate Change - Part 2* and *Beach Water Quality* in Part 4 under Beach News. A list of all grades can be found in Appendix B.

1 http://water.epa.gov/type/oceb/beaches/basicinfo.cfm 2 National Ocean Economics Program, State of the U.S. Ocean and Coastal Economies, Center for the Blue Economy at the Monterey Institute of International Studies (2014) 3 Given, S. et al, Regional Public Health Cost Estimates of Contaminated Coastal Waters: A Case Study of Gastroenteritis at Southern California Beaches, 40 Environ. Sci. Technol. 4851 (2006)

FIGURE 1-1: CALIFORNIA GRADES

CALIFORNIA - OVERALL (2014-2015)

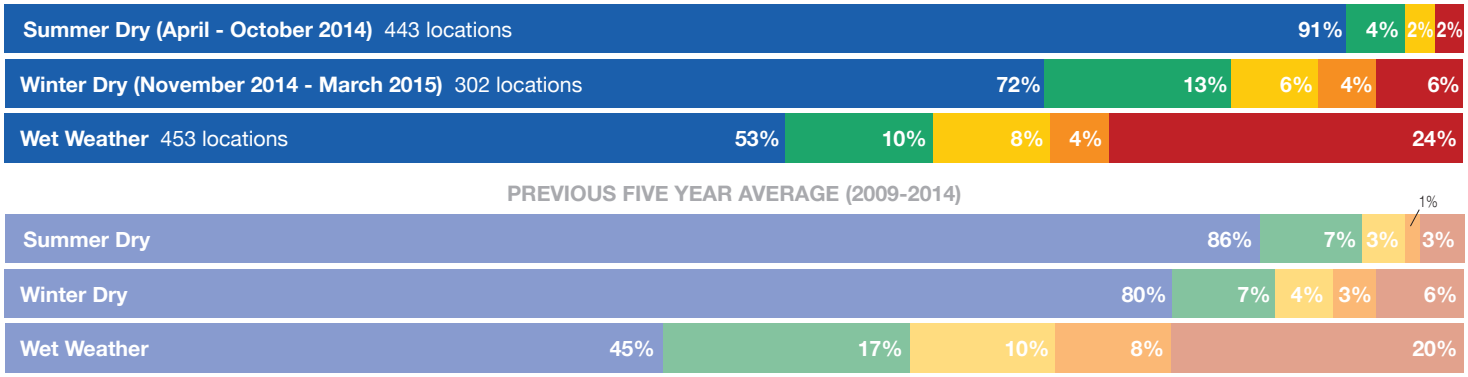


FIGURE 1-2: NORTHERN CALIFORNIA GRADES

Combined grades for Santa Cruz, San Mateo, Alameda, San Francisco, Contra Costa, Marin, Sonoma, Mendocino, Humboldt, and Del Norte Counties

NORTHERN CALIFORNIA (2014-2015)

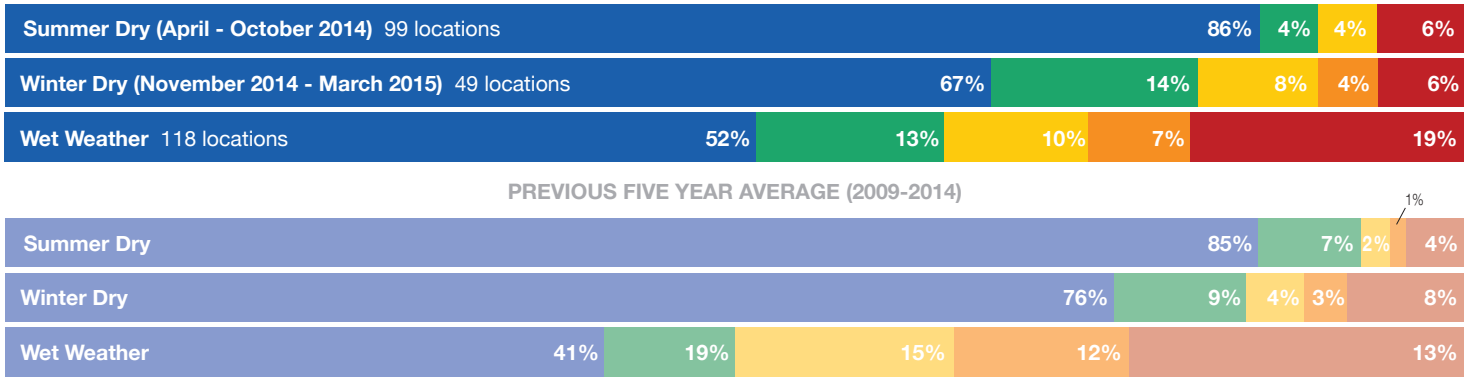
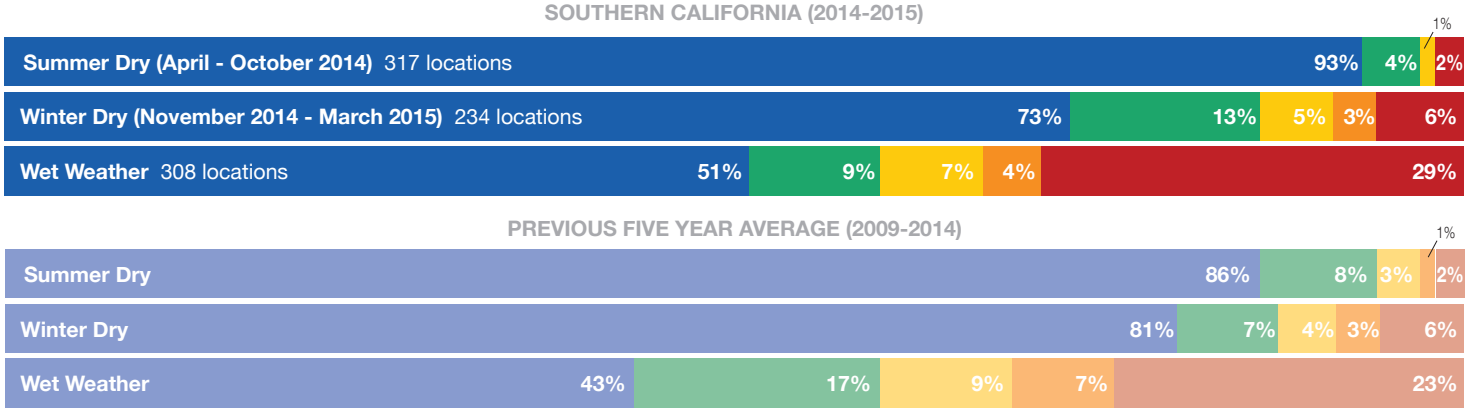


FIGURE 1-3: SOUTHERN CALIFORNIA GRADES

Combined grades for Santa Barbara, Ventura, Los Angeles, Orange and San Diego Counties

SOUTHERN CALIFORNIA (2014-2015)



Key: A B C D F

California Overview

California's overall water quality during the summer dry time period this past year was excellent with 95% A or B grades, which was slightly above the five-year average (Figure 1-1). There were 22 monitoring locations that received fair to poor water quality marks (C-F grades) for the same time period. During winter dry weather, most California beaches still had very good water quality, with 256 of 302 (85%) locations monitored through the winter receiving A or B grades. However, this was slightly lower than last year's 92%. Lower grades during the winter dry weather time period include: 17 C grades (6%), 11 D grades (4%) and 18 F grades (6%).

Summer dry weather grades in the San Francisco Bay area (Marin County through San Mateo County) were also excellent with 98% (41 of 42) of ocean-side locations receiving A or B grades. The bayside's water quality for the same time-period was very good, though lower than the previous two years, with 84% (21 of 25) of the monitored locations receiving A or B grades. As for winter dry weather water quality, 23 of the 26 (88%) ocean-side locations received A or B grades, while the bay-side remained on par with the previous two years with only 54% (7 of 13) A or B grades.

Southern California had excellent summer dry weather water quality with 97% A or B grades (Figure 1-3). This was the fourth year in a row of very low rainfall in Southern California and as a result its beaches experienced less urban runoff, which likely led to the improvement of overall grades. For more information please see *Drought and Climate Change and Beach Water Quality* in Part 4 under Beach News.

Unfortunately for surfers and divers when it did rain (wet weather) beach water quality plummeted, with only 63% of California's monitoring locations receiving very good-to-excellent grades (A or B). In particular, 24% of the beaches monitored earned F grades (Figure 1-3).

This marked seasonal difference in water quality is why Heal the Bay and California's public health agencies continue to recommend that no one swim in recreational waters during, and for at **least** three days after a significant (>0.1 inch) rainstorm.

California Honor Roll Beaches

A select few (19) monitoring locations in California exhibited excellent water quality (A+ grades) during all three time periods in this report and have been appointed to Heal the Bay's Honor Roll this year. A list of Honor Roll recipients can be found in Appendix A.

California Beach Bummers

The monitoring locations with the poorest dry weather water quality in California this past year populate our list of "Beach Bummers." (Figure 1-7). The list includes:

1. Cowell Beach at the wharf

For the second year in a row, Cowell Beach claims the infamous No. 1 Beach Bummer spot. For the last six years, Cowell Beach has been ranked either No.1 or No.2 on the Beach Bummer list. Once again, nearly 90% of samples during the summer dry period exceeded at least one state bacterial standard at this location. To address these persistent water quality issues, experts from the City of Santa Cruz, Santa Cruz County, and various NGOs formed the Cowell Beach Working Group with the common goal of identifying and eliminating sources of poor water quality at Cowell Beach. Recent work includes the replacement of corroded sewer pipes that may have been impacting the beach, repairing private sewage pipes that had been

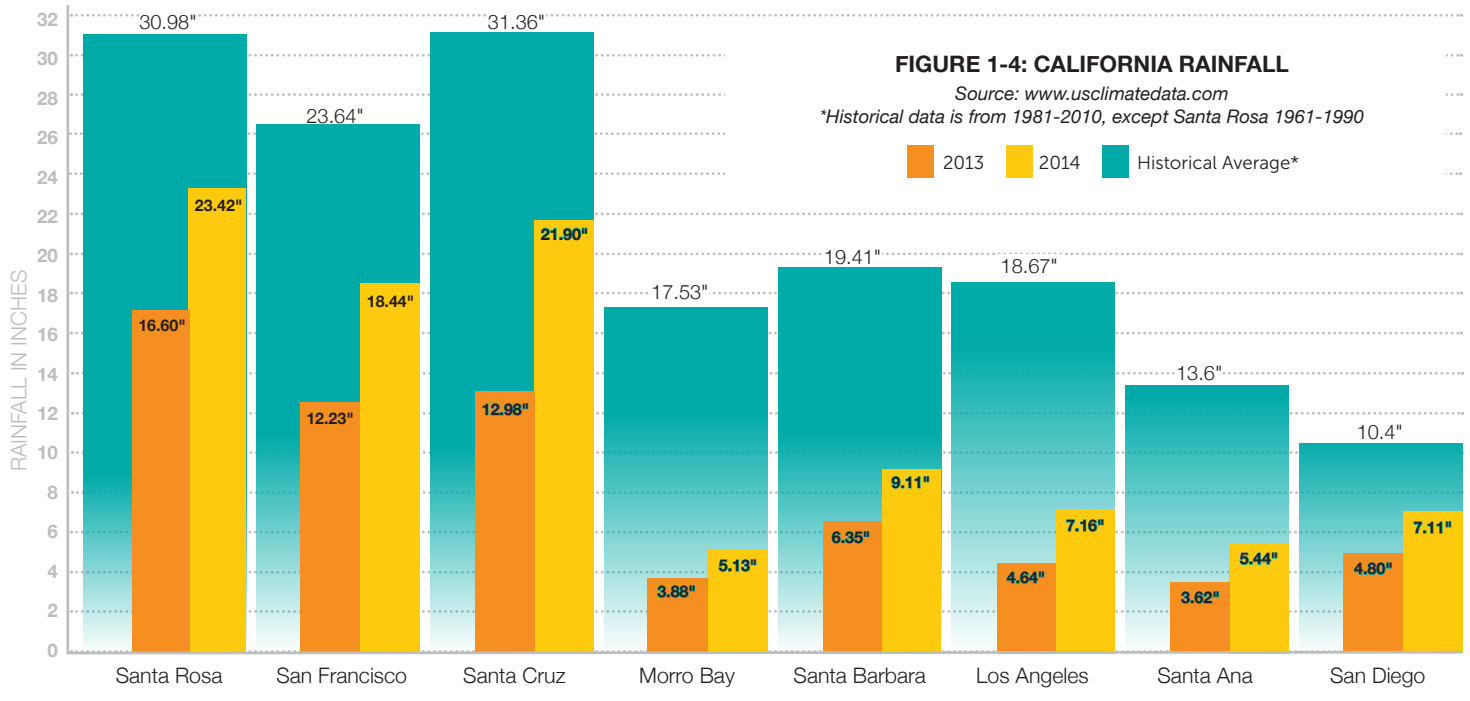


FIGURE 1-4: CALIFORNIA RAINFALL

Source: www.usclimatedata.com

**Historical data is from 1981-2010, except Santa Rosa 1961-1990*

Cowell Beach, Santa Cruz

Mother's Beach, Marina del Rey

FIGURE 1-7

TOP TEN BEACH BUMMERS

	BEACH/COUNTY	GRADE
1.	**Cowell Beach at the Wharf** Santa Cruz County	
2.	**Mother's Beach, Marina del Rey** Los Angeles County	
3.	**Clam Beach County Park,** Humboldt County	
4.	**Marina Lagoon,** **Aquatic and Lakeshore Park** San Mateo County	
5.	**Misison Bay, Visitor's Center** **projection of Clairmont Drive** San Diego County	
6.	**Santa Monica Municipal Pier** Los Angeles County	
7.	**Candlestick Point, Sunnydale Cove** San Francisco County	
8.	**Stillwater Cove** Monterey County	
9.	**Cabrillo Beach, Inner (harborside)** Los Angeles County	
10.	**Huntington State Beach,** **projection of Brookhurst Street** Orange County	

FIGURE 1-5: COWELL BEACH – GRADES 2009-2015

	2009-2010			2010-2011			2011-2012			2012-2013			2013-2014			2014-2015		
	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather
at Stairs	A	A	B	A+	A+	B	A	A+	A	A	A	B	A	A	A+	A+	A	B
Lifeguard Tower 1	F	F	B	D	D	B	F	A	C	F	B	C	A	A+	C	F	B	C
at Wharf	F	N/A	N/A	F	N/A	N/A	F	N/A	N/A	F	N/A	N/A	F	N/A	A+	F	F	C

FIGURE 1-6: MOTHER'S BEACH, MARINA DEL REY – GRADES 2009-2015

	2009-2010			2010-2011			2011-2012			2012-2013			2013-2014			2014-2015		
	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather
Playground Area	C	F	F	A	B	F	A	D	F	B	F	F	A	F	F	F	F	F
Lifeground Tower	A	F	F	A	A	F	A	B	F	A	F	F	B	F	F	F	F	F
Between Tower/ Boat Dock	B	D	B	A	A	F	A	B	F	A	F	F	F	F	F	F	F	F

discharging sewage, and investigating the structural integrity and functionality of all nearby sewer mains and lines. Furthermore, two pipes that discharge into the sand at Cowell Beach have been redesigned to better divert all summer runoff to a wastewater treatment plant. Hopefully this will help prevent future bacteria from reaching the water at Cowell.

2. Mother's Beach, Marina del Rey

With another year of extremely poor water quality, Mother's Beach, in Marina del Rey, moved up the Beach Bummer list from 3rd place to 2nd. It appears that the installed circulation devices are not doing enough to improve water quality at Mother's Beach. As with most enclosed waterbodies throughout the state, poor water quality is exacerbated by poor water circulation. Three of the top five Beach Bummers are located with enclosed waterbodies.

3. Clam Beach County Park, near Strawberry Creek

With over 80% (26) of the 32 dry weather samples collected during the summer dry period exceeding at least one state bacterial standard, Clam Beach County Park made the Beach Bummer List for the second year in a row, moving up three places from last year to the No. 3 spot. Potential bacterial sources include onsite sewage treatment systems, wildlife and domestic animals, and Strawberry Creek.

4. Marina Lagoon, Aquatic Park and Lakeshore Park

For the third year in a row, these two locations in San Mateo's enclosed Marina Lagoon (Aquatic Park and Lakeshore Park) earned a spot on the Beach Bummer list. As with most enclosed waterbodies throughout the state, poor water quality is exacerbated by poor water circulation. Three of the top five Beach Bummers are located with enclosed waterbodies.

5. Mission Bay Park Visitor's Center

It has been five-years since a beach location from Mission Bay landed on the Beach Bummer List. Back in 2010, it was Vacation Isle North Cove Beach located on a center island in the middle of Mission Bay. This year it's Mission Bay Park Visitor's Center, located on the eastern shores of Mission Bay, that makes the top five on the Beach Bummer list. As has been written by local boosters, Mission Bay Park Visitor's Center has "a small cove, good for swimming [that] is a short distance south of the visitor center." Unfortunately, from a public health perspective, this past summer at Mission Bay was not the time nor place for bay-goers to have gone swimming.

6.Santa Monica Pier

The Santa Monica Pier has a long history of chronic beach pollution and unfortunately continues to stay on the Beach Bummer list at No. 6 this year. As has been well documented in past reports, a number of best management practices have been implemented over time to address the poor water quality. Following past efforts to keep the beach water around Santa Monica Pier safe for swimming, the City was approved for a Clean Beaches Initiative (CBI) grant to build a regional, multi-benefit project that will capture the wet weather runoff from the sub-watershed that drains to the Santa Monica Pier storm drain. The runoff will be stored in a tank to supply water to the nearby Santa Monica Urban Runoff Recycling Facility (SMURRF) with an overflow to the sanitary sewer system. This project will ensure that both dry weather runoff (SMURRF) and wet weather runoff (CBI project) are kept out of Santa Monica Bay.

7. Candlestick Point, Sunnydale Cove

For the previous two years, the Candlestick Point area has had a shoreline monitoring location on the Top 10 Beach Bummer list—Windsurfer Circle (2013—Ranked 9th; 2014—Ranked 10th). The trend continued this year for Candlestick Point, with Sunnydale Cove joining the Bummer list at #7. While no definitive sources of fecal pollution have been identified within the area, the local monitoring agency should conduct a source identification study to determine what is causing the poor water quality.

8. Stillwater Cove

For the second year in a row, Stillwater Cove water quality remained problematic this past year. It earns the No. 8 spot on this year's Beach Bummer list. While no definitive sources of fecal pollution have been identified within the area, the local monitoring agency should conduct a source identification study to determine what is causing the poor water quality for two consecutive years. Sources of fecal pollution could be from the runoff draining an adjacent golf course, decomposing kelp, Pebble Beach Club operations or fishing activities. Depending upon the source, this location may make an ideal candidate for a Clean Beach Initiative project. Another issue that may be compounding the fecal problem at this beach is the lack of tidal circulation, as has been noted by many visitors "water that seems almost motionless".

9. Cabrillo Beach (harborside)

For 12 straight years, Cabrillo Beach harborside has made the Top 10 Beach Bummer list. This year was no different with a #9 spot on the list. Simply stated, "Beach Goers Should Not Swim at this Beach." Despite extensive water quality improvement projects, poor water quality continues to plague this beach. After more than $20 million has been invested in improving water quality at Cabrillo's enclosed beach, the beach is still violating water quality regulations. The City of Los Angeles continues to try to improve water quality at this site, yet it remains to be seen if they can successfully resolve the problem. One solution, which may appear dramatic, may be to eliminate swimming at this beach as a matter of protecting public health. Of note, six of the top 10 Beach Bummers are all located within enclosed areas.

10. Huntington State Beach, projection of Brookhurst St

This is the first time a Huntington State Beach location has made the Beach Bummer list, barely breaking the list at the #10 position. Not since the summer beach closures in 1999 and 2000, has there been any signs of water quality problems for this stretch of beach during the peak beach going season. A reason for this location making the list this year was the sample location being moved closer to the potential sources of pollution.

Huntington Beach makes its first appearance on the Beach Bummer Top Ten list when the monitoring location near Brookhurst Street reported poor grades throughout the year.

California Coastal Counties

Heal the Bay presents beach report card grades for all coastal counties in California from San Diego in the south to Del Norte in the north. Below is a brief summary of each county's monitoring program over the past year, water quality grades, the number of sewage spills to reach a receiving water body, and the number of beach closures due to sewage spills. These same beach locations are graded weekly throughout the year, and can be accessed at www.healthebay.org.

San Diego County

Table 2-1: San Diego County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	67	93%	27	93%	53	75%	66	94%	42	95%	29	63%
B	2	3%	1	3%	6	8%	3	4%	0	0%	6	12%
C	2	3%	0	0%	1	1%	1	2%	1	2%	3	7%
D	0	0%	1	3%	3	4%	0	0%	0	0%	2	5%
F	1	1%	0	0%	8	11%	0	0%	1	2%	6	14%
	72		29		71		70		44		46	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

There are five agencies within San Diego County that provided monitoring information for Heal the Bay's Beach Report Card:

- The City of Oceanside
- The City of San Diego
- Encina Wastewater Authority
- San Elijo Joint Powers Authority
- The County of San Diego Department of Environmental Health (DEH)

Samples were collected throughout the year along open coastal and bay beaches. Some sites are near flowing storm drains, creeks or rivers. Drainage outlet samples were generally collected at the wave wash (where runoff and ocean water mix) or 25 yards away from a flowing storm drain, creek or river.

Beach water quality during summer dry weather at the 72 monitoring locations in San Diego County was excellent with 93% (67) of the monitoring locations receivng an A grade. The County's water quality during winter dry weather was also excellent with 27 of 29 (93%) monitoring locations receiving A grades. Unfortunately, the number of beach locations regularly sampled during non-summer dry weather ocean monitoring continues to decrease. There is a 60% drop in the number of locations monitored during the winter dry months compared to summer.

Table 2-1 compares San Diego County's water quality grades for this past year to the five-year average. San Diego continues to meet the average during dry weather. However, the percentage of wet weather A or B grades (82%) was up 15 percentage points from the previous year and easily outshined the county's five-year average (by 87%) and this year's statewide average (by 10%).

A complete list of grades for San Diego County's beach monitoring locations can be found in Appendix B1 on page 31.

Sewage Spill Summary[2]

In San Diego County, sewage spills are generally separated into two categories, 1) those caused by the Tijuana River, and 2) all others. This year the Tijuana River resulted in 15 separate closure events with different distances—the international border fence all the way up to Imperial Beach—and durations—a couple of days to a month.

As for the "others," there were eight beach closures due to sewage spills. Overall, there were approximately 149 reported total sewage spills from April 2014 through March 2015, of which 17 reached a surface waterbody, prompting 8 health warnings/closures. Of the 17 sewage spills that reached a surface waterbody, one was a "major" sewage spill—more than 10,000 gallons, and one was a "minor" spill—more than 1,000 gallons but less than 10,000 gallons. In total, about 20,675 gallons sewage reached a surface waterbody (dry or wet) from these spills.

For additional water quality information:
County of San Diego Department of Environmental Health
www.sdbeachinfo.com

[2] All California Sewage Summary data came from the California State Water Resource Control Board and or the respective Health Departments.

Orange County

Table 2-2: Orange County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	96	95%	69	73%	41	40%	93	92%	69	82%	40	46%
B	4	4%	14	15%	9	9%	5	5%	6	7%	15	17%
C	1	1%	5	5%	10	30%	2	2%	3	3%	8	10%
D	0	0%	3	3%	5	5%	1	1%	2	2%	7	8%
F	0	0%	3	3%	37	36%	1	1%	4	5%	16	19%
	101		94		102		102		83		86	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

There are three agencies within Orange County that provide monitoring information to Heal the Bay's Beach Report Card:

- Orange County Environmental Health
- South Orange County Wastewater Authority
- Orange County Sanitation District (OCSD)

Samples were collected throughout the year along open coastal, harbor, and bay beaches, as well as near flowing storm drains, creeks and rivers. Samples were generally not collected at point zero (at drainage outlet) but instead at a distance from the potential pollution source.

Orange County grades for summer dry weather this past year were excellent – 96 of 101 locations (95%) scored A grades – with only one location scoring below a B grade: Dana Point Harbor Baby Beach, buoy line (C grade). During winter dry weather, 88% of the monitored beaches (94 locations) received A or B grades, with 11 locations earning C or lower grades: Seal Beach projection of 1st Street, Huntington State Beach projection of Brookhurst Street, and Doheny State Beach north of San Juan Creek.

Wet weather water quality this past year in Orange County dipped to a new low with only 49% of the monitored locations receiving an A or B grade. Beach grades during wet weather season were notably lower than the county's five-year average of 63% A or B grades for wet weather. In fact, they were almost as many F grades (376) as there were A grades (41) confronting surfers and divers who braved the waters during wet weather this year.

A complete list of grades for Orange County's beach monitoring locations can be found in Appendix B1 on page 33.

Sewage Spill Summary

In Orange County, there were approximately 93 total spills from April 2014 through March 2015, with 41 reaching a surface waterbody that prompted 8 health warnings/closures. Of the 41 spills that reached a surface waterbody, two were "major" sewage spills—more than 10,000 gallons, and 11 were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. Overall, the approximate sewage volume spilled into a surface waterbody (dry or wet) was 79,830 gallons.

For additional water quality information:
County of Orange Environmental Health Division
www.ocbeachinfo.com

Los Angeles County

Table 2-3: Los Angeles County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	77	87%	55	66%	27	29%	63	69%	59	68%	24	28%
B	6	7%	11	13%	12	13%	14	15%	8	10%	14	16%
C	1	1%	4	5%	9	10%	7	7%	5	6%	7	8%
D	1	1%	3	4%	3	3%	2	2%	4	5%	8	9%
F	4	4%	10	12%	41	45%	6	7%	10	11%	33	39%
	89		83		92		91		86		85	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

There are five agencies within the County of Los Angeles that contributed monitoring data to Heal the Bay's Beach Report Card:

- City of Los Angeles' Environmental Monitoring Division (EMD) at the Hyperion Sewage Treatment Plant provided daily or weekly beach data for 33 locations
- The Los Angeles County Department of Public Health Environmental Health program monitored 29 locations on a weekly basis
- Los Angeles County Sanitation District monitored eight locations weekly
- City of Long Beach, Environmental Health Division, monitored 15 (down from 25 historically) locations on a weekly basis
- The City of Redondo Beach monitored seven locations in the South Bay

Los Angeles County outlet beaches (those adjacent to a storm drain or creek) are monitored directly at the outfall, where the discharge meets the ocean. Heal the Bay believes that monitoring closest to a potential pollution source or outlet (point zero) gives the most accurate picture of water quality at these types of beaches and is also the most protective of public health.

Summer dry weather water quality in Los Angeles was excellent with 94% A or B grades, up 4% from last year's 90%. This year's winter dry water quality was also very good with 79% A or B grades (meeting the five-year average). Wet weather water quality continues to be an area of concern statewide. Wet weather grades in Los Angeles are no exception, with only 42% A or B grades. This is lower than last year's 50%, and continues the downward wet weather beach grade trend started last year. Los Angeles County's percentage of wet weather A or B grades (62%) continues to be consistently lower than the statewide average of A or B grades.

Once again, Los Angeles County is host to three of the 10 beaches on the statewide Beach Bummer list this year: Cabrillo Beach harborside (No. 9), Santa Monica Municipal Pier (No. 6), and Marina del Rey Mother's Beach (No. 2).

Long Beach

During dry weather, the City of Long Beach continues to show improved beach water quality. This past year, summer dry weather A grades were a perfect 100% (15 sites), besting the five-year average by

16% (71% A or B grades). Winter dry weather grades also maintained near perfection as well, with 100% of locations earning A or B grades – 13 As and 2 Bs. See Figure 2-1. However, no other geographic location presented such a stark dichotomy between dry weather and wet weather grades than in Long Beach. Whereas 100% of the monitored locations received A grades in summer dry weather, the opposite was true for wet weather, with 100% of them receiving F grades. Not one monitored location was safe for swimming when there was a storm event. The location of Long Beach, situated between two of the largest rivers (Los Angeles and San Gabriel River) in Los Angeles County, likely contributes greatly to these problematic wet weather grades.

A complete list of grades for Los Angeles County's beach monitoring locations can be found in Appendix B1 on page 35.

Sewage Spill Summary

In Los Angeles County, there were approximately 430 total spills from April 2014 through March 2015, with 116 reaching a surface waterbody that prompted 5 health warnings (one ocean and four non-ocean water). Though a beach closure may not be issued for every spill, the volume spilled can still impact receiving waterbodies (creeks, rivers, streams, sloughs, and bays), and affect ocean water quality at a later time. Of the 116 spills that reached a surface waterbody, two were "major" sewage spills—more than 10,000 gallons, and 27 were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. Overall, the approximate sewage volume spilled into a surface waterbody (dry or wet) was 143,185 gallons.

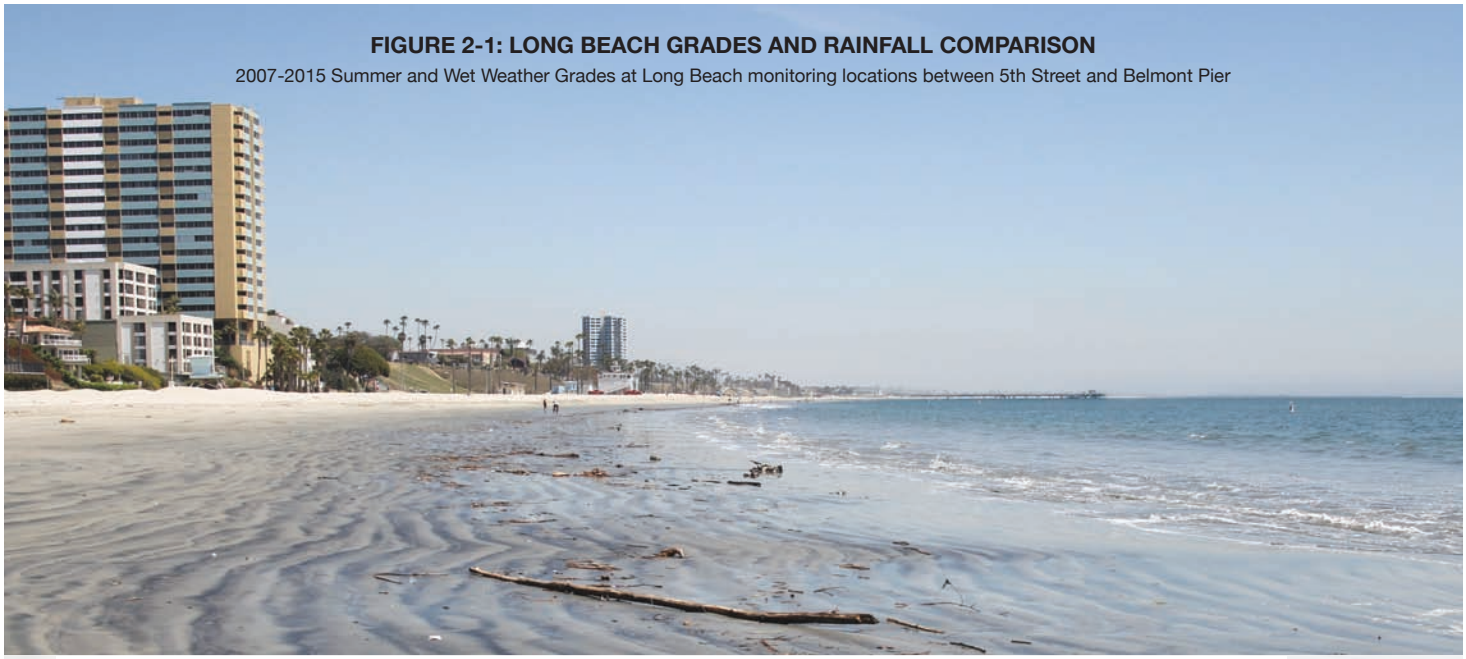
For additional water quality information:

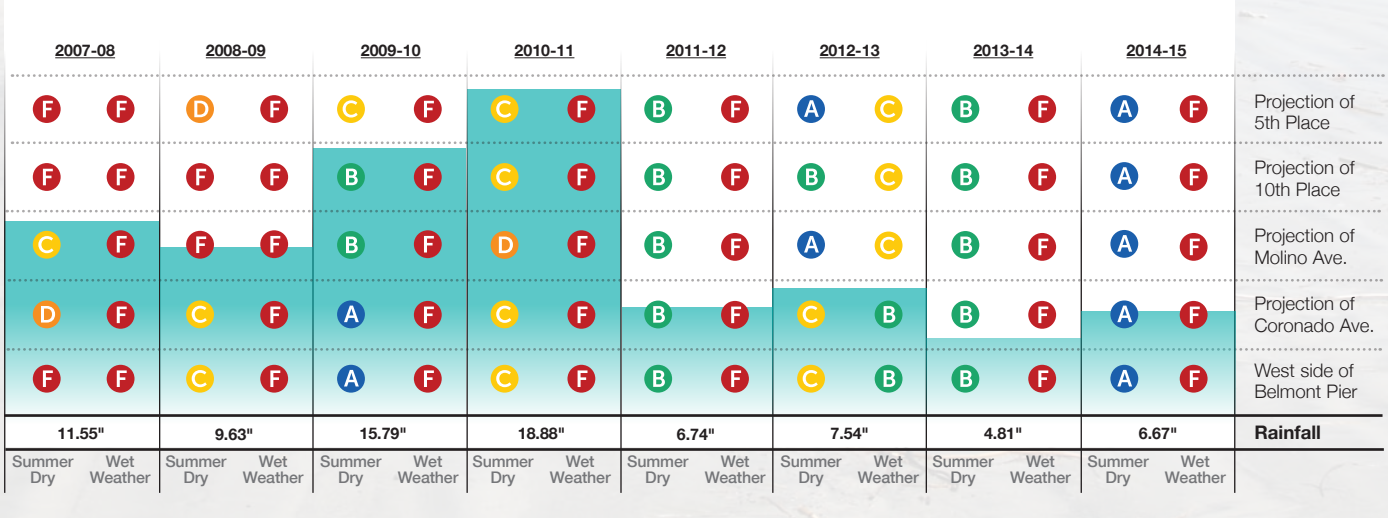
County of Los Angeles Department of Public Health Environmental Health
http://publichealth.lacounty.gov/eh

City of Long Beach
www.longbeach.gov/health/eh/water/water_samples.asp

FIGURE 2-1: LONG BEACH GRADES AND RAINFALL COMPARISON

2007-2015 Summer and Wet Weather Grades at Long Beach monitoring locations between 5th Street and Belmont Pier





Ventura County

Table 2-4: Ventura County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	39	100%	11	92%	23	85%	40	100%	17	100%	11	57%
B	0	0%	0	0%	1	4%	0	0%	0	0%	5	26%
C	0	0%	0	0%	1	4%	0	0%	0	0%	1	5%
D	0	0%	0	0%	1	4%	0	0%	0	0%	1	5%
F	0	0%	1	8%	1	4%	0	0%	0	0%	1	5%
	39		12		27		40		17		19	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The County of Ventura Environmental Health Division monitored 39 locations weekly from April through October 2014 (only 12 locations were monitored year-round, eight less than last year, due to county beach program funding cuts), year-round monitored beaches range from Rincon (south of Rincon Creek near the Santa Barbara County line) to the southern end of Ormond Beach. Samples were generally not collected at point zero (at the drainage outlet), but at a distance from the potential pollution source.

Once again, summer dry water quality grades were excellent this past year, with 100% of locations receiving A grades. Winter dry were also excellent with 92% receiving an A. The only location that failed during the winter dry period was Channel Islands Harbor-Beach Park.

As for wet weather, 89% of the 27 monitored locations in Ventura County received an A or B grade. Three locations received a C or lower grade: Channel Islands Harbor-Hobie Beach (C), Channel Islands Harbor-Beach Park (F), and Ormond Beach-J Street Drain (D). This year Ventura County bested its five-year average during winter dry and wet weather and beat the statewide average for all three time periods.

A complete list of grades for Ventura County's beach monitoring locations can be found in Appendix B1 on page 38.

Sewage Spill Summary

There was one reported sewage spill on October 30th that led to the closure of a private beach along Solimar Beach. Beyond this one closure, there were no other reported sewage spills that led to beach closures, yet there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In Ventura County, there were approximately 33 total spills from April 2014 through March 2015, with six reaching a surface waterbody resulting in 4 health warnings (one beach and three non-beach). Of these 18 spills, there was one "major" sewage spill—more than 10,000 gallons, and one "minor" spill—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 21,245 gallons.

For additional water quality information:
Ventura County's Environmental Health Division
www.ventura.org

Santa Barbara County

Table 2-5: Santa Barbara County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	16	100%	9	56%	13	81%	13	87%	12	80%	5	35%
B	0	0%	4	25%	1	6%	2	15%	2	20%	4	25%
C	0	0%	2	13%	1	6%	0	0%	0	0%	3	23%
D	0	0%	1	6%	0	0%	0	0%	0	0%	1	5%
F	0	0%	0	0%	1	6%	0	0%	0	0%	2	12%
	16		16		16		15		14		15	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The County of Santa Barbara Environmental Health Agency monitored 16 locations on a weekly basis year-round, from as far upcoast as Guadalupe Dunes to the furthest downcoast location at Carpinteria State Beach. Samples were generally not collected at point zero (at the drainage outlet), but at a distance from the potential pollution source.

For the another year in a row, Santa Barbara displayed excellent water quality grades, with 100% A grades during summer dry weather. Regrettably, the same could not be said for winter dry weather. Unlike last year's 94% A or B grades, this year's mark of 81% was very good, however slightly disappointing. As for wet weather water quality, 88% of the monitored locations received an A or B grade. Only two locations in the County received fair to poor marks for wet weather: East Beach at Mission Creek (F) and Sands at Coal Oil Point (C). The wet weather grades bested the five-year county average by 27% and the statewide average by 25%.

A complete list of grades for the county can be found in Appendix B1 on page 39.

Sewage Spill Summary

While there were no reported sewage spills in Santa Barbara County that led to beach closures this past year, there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In Santa Barbara County, there were approximately 59 total spills from April 2014 through March 2015, with six reaching a surface waterbody that generated two non-beach related health warnings. Of these six spills, there were no (0) "major" sewage spills—more than 10,000 gallons, and two "minor" spills—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 13,500 gallons.

For additional water quality information:
Santa Barbara County's Environmental Health Agency
www.sbcphd.org

San Luis Obispo County

Table 2-6: San Luis Obispo County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	17	89%	13	68%	16	84%	17	91%	17	95%	13	69%
B	2	11%	2	11%	3	16%	1	5%	1	5%	3	15%
C	0	0%	2	11%	0	0%	1	3%	0	0%	1	5%
D	0	0%	1	5%	0	0%	0	0%	0	0%	1	5%
F	0	0%	1	5%	0	0%	0	0%	0	0%	1	4%
	19		19		19		19		18		19	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The County of San Luis Obispo Environmental Health Services monitored 19 locations year round from Pico Avenue in San Simeon downcoast to Pismo State Beach (at the end of Strand Way). Samples were generally not collected at point zero (at the drainage outlet), but at a distance from potential pollution sources.

Summer dry weather water quality grades in San Luis Obispo County were excellent this past year with 100% A or B grades—17 As and 2 Bs. This was one of the best years on record for water quality in San Luis Obispo. Compared to last year's 94% A grades, water quality during winter dry weather this year was unfortunately lower, with only 68% receiving A grades. Four locations received fair to poor marks: Olde Port Beach-Hanford Beach (D), Avila Beach @ San Juan St. (C), Avila Beach @ San Luis St. (F), and Sewers at Silver Shoals Dr. (C). Surprisingly, wet weather grades were excellent with 100% A or B grades this year showing a marked improvement over last year's 95% and bested the five-year county average by 13% (83% A or B grades) and 38% above the statewide average (62% A or B grades).

A complete list of grades for San Luis Obispo County's beach monitoring locations can be found in Appendix B1 on page 39.

Sewage Spill Summary

While there were no reported sewage spills in San Luis Obispo County that led to beach closures this past year, there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In San Luis Obispo County, there were approximately 31 total spills from April 2014 through March 2015, with nine reaching a surface waterbody that generated one non-beach related health warning. Of these nine spills, there were no (0) "major" sewage spills—more than 10,000 gallons, and one "minor" spill—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 3,900 gallons.

For additional water quality information:
San Luis Obispo County
Environmental Health Department
www.slocounty.ca.gov/health/publichealth/ehs/beach.htm

Monterey County

Table 2-7: Monterey County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	5	63%	n/a		n/a		5	63%	n/a		n/a	
B	1	13%	n/a		n/a		1	13%	n/a		n/a	
C	1	13%	n/a		n/a		1	13%	n/a		n/a	
D	1	13%	n/a		n/a		1	13%	n/a		n/a	
F	0	0%	n/a		n/a		0	0%	n/a		n/a	
	8						8					

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The County of Monterey Environmental Health Bureau monitored eight locations on a weekly basis from April through October 2014, from as far upcoast as the Monterey Beach Hotel at Roberts Lake in Seaside to a downcoast location of Carmel City Beach. Samples were generally not collected at point zero (at the drainage outlet), but at a distance from the potential pollution source.

Monterey County's summer dry weather grades this year were similar to the previous two years, with 75% of the monitored locations receiving A or B grades. Two of eight locations did not receive a grade of B or higher: the Monterey Municipal Pier (C) and Stillwater Cove (D). Monterey County beaches were not monitored frequently enough during the winter dry and wet weather periods to receive a grade for those time periods. Stillwater Cove once again joined the Beach Bummer list, moving down two spots to No. 7. Urban runoff to the beach area from an adjacent golf course may be contributing to Stillwater Cove's poor water quality grades, potentially making this beach an ideal candidate for a stormwater diversion and/or mitigation project. A complete list of grades for Monterey County's beach monitoring locations can be found in Appendix B1 on page 40.

Sewage Spill Summary

There was one reported sewage spill in Monterey County that led to beach closure this past year. This closure event took place on October 29, 2014 near Fisherman's Wharf #1, along the Monterey Bay Coastal Trail. There were no other reported sewage spills that led to beach closures, yet there were a number of spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In Monterey County, there were approximately 85 total spills from April 2014 through March 2015, with 18 reaching a surface waterbody that prompted 2 health warnings (one beach and one non-beach). Of these 18 spills, there were no (0) "major" sewage spills—more than 10,000 gallons, and three "minor" spills—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 12,500 gallons.

For additional water quality information:
Monterey County Environmental Health Bureau
www.mtyhd.org/index.php/beach-water-quality

Santa Cruz County

Table 2-8: Santa Cruz County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	10	77%	8	62%	2	15%	10	71%	10	91%	4	31%
B	0	0%	2	15%	3	23%	1	7%	1	9%	3	23%
C	1	8%	1	8%	5	38%	1	7%	0	0%	3	25%
D	0	0%	0	0%	1	8%	0	0%	0	0%	1	10%
F	2	15%	2	15%	2	15%	2	14%	0	0%	1	11%
	13		13		13		14		11		12	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The County of Santa Cruz Environmental Health Services monitored 13 shoreline locations frequently enough (at least weekly) to be included in this report, spanning the area from Natural Bridges State Beach downcoast to Rio del Mar Beach.

Summer dry weather grades were generally very good, with 10 of 13 (77%) monitored locations receiving an A grade in 2014. Two locations failed during the peak beach going season time period, and were both located at Cowell Beach – Lifeguard Tower #1 and west of the Wharf. Winter dry grades were very good as well, with 10 of 13 (77%) receiving A or B grades, which was lower than last year's 92%.

As for Santa Cruz County's wet weather grades, the improvements made last year in water quality were lost this year. The yo-yo effect of 25% (2013) to 85% (2014) to 38% (2015) A or B grades during the wet weather season can most likely be attributed to the variability in rainfall amounts from year-to-year. Rainfall this last year (18.6") was wetter than the previous year, and almost met the County's five-year average of 19.4". This year's wet weather grades were lower than the five-year county average and the state average.

A complete list of grades for Santa Cruz County's beach monitoring locations can be found in Appendix B1 on page 40.

Sewage Spill Summary

While there were no reported sewage spills in Santa Cruz County that led to beach closures this past year, there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In Santa Cruz County, there were approximately 34 total spills from April 2014 through March 2015, with nine reaching a surface waterbody. Of these nine spills, one was a "major" sewage spill — more than 10,000 gallons, and one was a "minor" spill — more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 23,670 gallons.

For additional water quality information:
Santa Cruz County's
Department of Environmental Health Services
http://gis.co.santa-cruz.ca.us/PublicWaterQuality

San Mateo County

Table 2-9: San Mateo County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	17	81%	15	71%	7	30%	17	80%	13	81%	8	42%
B	2	10%	2	10%	5	22%	1	5%	2	13%	3	16%
C	0	0%	2	10%	2	9%	1	5%	0	0%	1	5%
D	0	0%	1	5%	3	13%	1	5%	0	0%	3	16%
F	2	10%	1	5%	6	26%	1	5%	1	6%	4	21%
	21		21		23		21		16		19	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The County of San Mateo Environmental Health Department monitored 21 ocean and bayside locations on a weekly basis year round, from as far upcoast as Sharp Park Beach to a downcoast location at Gazos Creek. (See Figure 2-2 on page 17 for combined grades of the Bay Area).

San Mateo County's summer dry grades were excellent, with 91% of the 21 locations receiving an A or B grade. The Aquatic Park and Lakeshore Park in Marina Lagoon were the only two monitored locations that received F grades for this period. Winter dry weather grades were very good, with 81% receiving A or B grades. Much like the rest of the state during wet weather, water quality plummeted, with 12 of 23 locations (52%) receiving A or B grades. This was down 12 percentage points from last year (64%). This is the third year in a row that San Mateo's Marina Lagoon (Aquatic Park and Lakeshore Park) has made the Beach Bummer list coming in at No. 4.

A complete list of grades for San Mateo County's beach monitoring locations can be found in Appendix B1 on page 40.

Sewage Spill Summary

There were 11 reported sewage spills in San Mateo County that led to beach closures this past year. Overall, there were approximately 203 total spills from April 2014 through March 2015, with 56 reaching a surface waterbody, and prompted 20 health warnings—11 of which were beach closures—in San Mateo County. Of these 56 spills, 13 were "major" sewage spills—more than 10,000 gallons, and 21 were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 1.78 million gallons.

For additional water quality information:
San Mateo County
http://smchealth.org/environ/beaches

San Francisco County

Table 2-10: San Francisco County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	10	71%	9	64%	2	12%	11	85%	10	67%	6	40%
B	1	7%	3	21%	5	29%	1	8%	1	7%	3	20%
C	2	14%	1	7%	1	6%	1	8%	1	7%	2	13%
D	0	0%	1	7%	0	0%	0	0%	1	7%	2	13%
F	1	7%	0	0%	9	53%	0	0%	2	13%	2	13%
	14		14		17		13		15		14	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The County of San Francisco, in partnership with the San Francisco Public Utilities Commission, maintained its weekly monitoring program for ocean and bay shoreline locations this past year. Fourteen locations were monitored on a weekly basis year-round.

Like last year, this year San Francisco County earned good water quality grades during summer dry weather with 79% of locations receiving A or B grades. Only one location failed during the summer peak beach going season, which was Candlestick Point at Sunnydale Cove. Winter dry weather grades surprisingly fared better than the summer dry grades, with 85% receiving A or B grades. This was 15 percentage points higher than last year's 71%.

Wet weather grades dipped 23% from last year with only 41% of the monitored locations receiving A or B grades. While Windsurfer Circle at Candlestick Point was able to get off the Beach Bummer list after two straight years, Candlestick Point unfortunately added another location to the Bummer list called Sunnydale Cove (No. 7).

A complete list of grades for San Francisco County's beach monitoring locations can be found in Appendix B1 on page 41.

Background Information from the San Francisco Public Utilities Commission

The City and County of San Francisco have a unique stormwater infrastructure that occurs in no other California coastal county – a combined sewer and storm drain system (CSS). This system provides graduated levels of treatment to San Francisco's stormwater flows. All street runoff during dry weather receives full secondary treatment. All storm flow receives at least the wet weather equivalent of primary treatment and most flow receives full secondary treatment before being discharged through a designated outfall.

However, during heavy rain events, the CSS can occasionally discharge combined treated urban runoff and sewage wastewater, which is typically comprised of 94% treated stormwater and 6% primary treated sanitary flow. In an effort to reduce the number of combined sewer discharges (CSDs), San Francisco built a system of underground storage, transport and treatment boxes to handle major rain events. CSDs are legally, quantitatively and qualitatively distinct from raw sewage spills that occur in communities with separate sewers.

Because of the CSS, San Francisco's ocean shoreline has no flowing storm drains in dry weather throughout the year, and therefore is not subject to AB 411 monitoring requirements. However, the city does have a year-round program that monitors beaches each week. Although most of San Francisco is served by the CSS, there are some areas of federally owned land and areas operated by the Port of San Francisco that have separate storm drains.

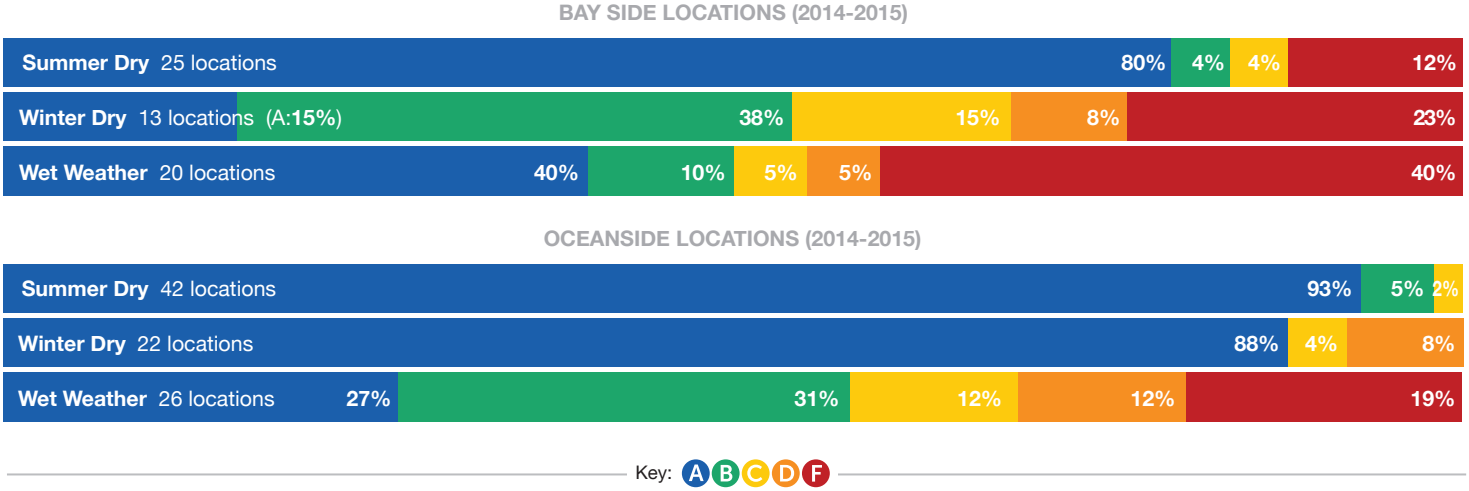
Combined Sewer Discharge Summary

This past year, San Francisco had seven CSDs, all occurring during rainfall events, which led to a total of 26 beach closures. Five of the seven CSDs took place in December 2014.

For additional water quality information:
San Francisco Public Utilities Commission http://beaches.sfwater.org

FIGURE 2-2: SAN FRANCISCO BAY AREA – BAY SIDE VS. OCEANSIDE GRADES

Combined grades for San Francisco, Marin, Alameda, Contra Costa and San Mateo Counties



East Bay: Contra Costa & Alameda Counties

Table 2-11: East Bay Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	10	100%	n/a		7	70%	8	80%	n/a		5	50%
B	0	0%	n/a		0	0%	2	20%	n/a		2	20%
C	0	0%	n/a		1	10%	0	0%	n/a		2	20%
D	0	0%	n/a		1	10%	0	0%	n/a		1	10%
F	0	0%	n/a		1	10%	0	0%	n/a		0	0%
	10				10		10				10	

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The East Bay Regional Park District consistently monitored 10 shoreline locations again this year, including two in Contra Costa County and eight in Alameda County. Samples were collected weekly during the summer dry weather time period and about twice a month throughout the winter – not frequently enough for most locations to receive a winter dry weather grade in this report.

Water quality grades for East Bay beaches were excellent during summer dry weather and on par with last year, with all 10 locations receiving A grades. As for wet weather water quality, 7 locations earned A grades. The locations that did not receive an A grade this wet season were: Alameda's Crown Beach at Crab Cove (D) and Bird Sanctuary (F), and Contra Costa's Keller Beach-South (C).

A complete list of grades for Contra Costa and Alameda counties beach monitoring locations can be found in Appendix B1 on pages 41-42.

Sewage Spill Summary

There was one precautionary beach closure for Keller Beach (Contra Costa) from December 12 through the 24th—see below for further explanation on the December spill. Beyond this one precautionary closure, there were no other reported sewage spills in Contra Costa or Alameda County that led to beach closures, yet there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean.

In Alameda County, there were approximately 212 total spills from April 2014 through March 2015, with 32 reaching a surface waterbody, which prompted 20 non-beach related health warnings. Of these 32 spills, three were "major" sewage spills—more than 10,000 gallons, and nine were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 88,800 gallons.

In Contra Costa County, there were approximately 224 total spills from April 2014 through March 2015, with 39 reaching a surface waterbody, which prompted 7 non-beach related health warnings. Of these 39 spills, nine were "major" sewage spills—more than 10,000 gallons, and seven were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. During a rain event on December 11, 2014, there were five different sewage spill locations that spewed 2.7 million gallons into San Francisco Bay. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 2.95 million gallons.

For additional information:
East Bay Regional Park District
www.ebparks.org

Marin County

Table 2-12: Marin County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	22	100%	n/a		n/a		23	97%	n/a		n/a	
B	0	0%	n/a		n/a		1	3%	n/a		n/a	
C	0	0%	n/a		n/a		0	0%	n/a		n/a	
D	0	0%	n/a		n/a		0	0%	n/a		n/a	
F	0	0%	n/a		n/a		0	0%	n/a		n/a	
	22						24					

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

Marin County's water quality monitoring program gathered data during the summer from 22 bayside and oceanside monitoring locations. Ocean locations included Dillon Beach, Bolinas Beach (Wharf Road), Stinson Beach, Muir Beach, Rodeo Beach and Baker Beach. Bayside locations include Baker Beach, Schoonmaker Beach, China Camp, and McNears Beach. These locations were monitored on a weekly basis from April through October 2014. There was insufficient or no monitoring during the winter dry months and wet weather.

During the summer dry weather season, water quality grades were excellent in Marin County this year, with all 22 monitored locations receiving A grades. (See Figure 2-2 on page 17 for combined grades of the Bay Area). A complete list of grades for Marin County's beach monitoring locations can be found in Appendix B1 on page 42

Sewage Spill Summary

There was one reported sewage spill in Marin County that led to a beach closure this past year. This closure took place October 15, 2014 in Richardson Bay near the City of Sausalito, with about 1,000 gallons reaching the water. Unfortunately, there were a number of other sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that prompted 22 non-beach related health warnings. In total, there were approximately 173 total spills from April 2014 through March 2015, with 36 reaching a surface waterbody. Of these 36 spills, one was a "major" sewage spill—more than 10,000 gallons, and 13 were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 56,000 gallons.

For additional water quality information:
Marin County's Department of Environmental Health
www.marincounty.org/ehs

Sonoma County

Table 2-13: Sonoma County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	7	100%	n/a		n/a		6	100%	n/a		n/a	
B	0	0%	n/a		n/a		0	0%	n/a		n/a	
C	0	0%	n/a		n/a		0	0%	n/a		n/a	
D	0	0%	n/a		n/a		0	0%	n/a		n/a	
F	0	0%	n/a		n/a		0	0%	n/a		n/a	
	7						6					

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The Sonoma County Environmental Health Department monitored seven (7) locations from Gualala Regional Park Beach to Doran Regional Park Beach on a weekly basis from April through October 2014. Because there was not enough monitoring data collected during the winter dry or wet weather periods to generate a grade, no grades are provided for these timeframes. Sonoma County once again earned excellent summer dry weather water quality grades this year with all A grades, and equaled the five-year county average (97% A or B grades).

A complete list of grades for Sonoma County's beach monitoring locations can be found in Appendix B1 on page 42.

Sewage Spill Summary

While there were no reported sewage spills in Sonoma County that led to beach closures this past year, there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In Sonoma County, there were approximately 50 total spills from April 2014 through March 2015, with 28 reaching a surface waterbody and 17 of those prompting health warnings. Of the 28 spills that reached a waterbody, 10 were "major" sewage spills—more than 10,000 gallons, and 7 were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 908,000 gallons.

For additional water quality information:
Sonoma County's Department of Environmental Health
www.sonoma-county.org/health/services/ocean.asp

Mendocino County

Table 2-14: Mendocino County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	4	67%	n/a		n/a		4	100%	n/a		n/a	
B	1	17%	n/a		n/a		0	0%	n/a		n/a	
C	1	17%	n/a		n/a		0	0%	n/a		n/a	
D	0	0%	n/a		n/a		0	0%	n/a		n/a	
F	0	0%	n/a		n/a		0	0%	n/a		n/a	
	6						4					

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The Mendocino County Environmental Health Department monitored six (6) locations from Mackerricher State Park at Virgin Creek to Van Damme State Park Beach at the Little River on a weekly basis from April through October 2014. Because there was either no or not enough monitoring data collected during the winter dry or wet weather periods to generate a grade, no grades are provided for these timeframes.

Water quality at the six monitoring locations in Mendocino County during the summer dry weather period was very good with 84% receiving A or B grades. Hare Creek (C) was the only location to receive a grade lower than a B. A complete list of grades for Mendocino County's beach monitoring locations can be found in Appendix B1 on page 43.

Sewage Spill Summary

While there were no reported sewage spills in Mendocino County that led to beach closures this past year, there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In Mendocino County, there were approximately 14 total spills from April 2014 through March 2015, with three reaching a surface waterbody. Of these three spills, only one was "minor" spill—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 6,017 gallons.

For additional water quality information:
www.co.mendocino.ca.us/hhsa/chs/eh/index.htm

Humboldt County

Table 2-15: Humboldt County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	4	80%	n/a		n/a		4	80%	n/a		n/a	
B	0	0%	n/a		n/a		1	20%	n/a		n/a	
C	0	0%	n/a		n/a		0	0%	n/a		n/a	
D	0	0%	n/a		n/a		0	0%	n/a		n/a	
F	1	20%	n/a		n/a		0	0%	n/a		n/a	
	5				5		5					

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

The Humboldt County Environmental Health Department monitored five (5) locations from Trinidad State Beach near Mill Creek to Mad River on a weekly basis from April through October 2014. Because there was not enough monitoring data collected during the winter dry or wet weather periods to generate a grade, no grades are provided for these timeframes.

Humboldt County earned very good to excellent water quality grades this past year, with four of the five monitored locations receiving A grades. Once again, the county's only poor water quality grade was at Clam Beach County Park near Strawberry Creek (D grade), which moved up three spots on the Beach Bummer list to earn the No. 3 spot. This is Clam Beach's second year in a row on the Beach Bummer list. Potential bacteria sources include onsite sewage treatment systems, wildlife, domestic animals, and vegetation.

A complete list of grades for Humboldt County's beach monitoring locations can be found in Appendix B1 on page 43.

Sewage Spill Summary

While there were no reported sewage spills in Humboldt County that led to beach closures this past year, there were a number of sewage spills that reached receiving waterbodies (creeks, rivers, streams, sloughs, and bays) that can discharge into the ocean. In Humboldt County, there were approximately 47 total spills from April 2014 through March 2015, with 20 reaching a surface waterbody. Of these 20 spills, three were "major" sewage spills—more than 10,000 gallons, and five were "minor" spills—more than 1,000 gallons but less than 10,000 gallons. The approximate sewage volume spilled into a surface waterbody (dry or wet) was 195,000 gallons.

For additional water quality information:
Humboldt County's Department of Health & Human Services
www.co.humboldt.ca.us/health/envhealth/beachinfo

Del Norte County

Table 2-16: Del Norte County Grades

	2014-2015						5-Year Average (2009-2014)					
	Summer Dry*		Winter Dry		Wet Weather		Summer Dry*		Winter Dry		Wet Weather	
	#	%	#	%	#	%	#	%	#	%	#	%
A	1	100%	1	100%	1	100%	n/a		n/a		n/a	
B	0	0%	0	0%	0	0%	n/a		n/a		n/a	
C	0	0%	0	0%	0	0%	n/a		n/a		n/a	
D	0	0%	0	0%	0	0%	n/a		n/a		n/a	
F	0	0%	0	0%	0	0%	n/a		n/a		n/a	
	1		1		1							

*State AB411 monitoring April thru October. Percentages may not add up to 100 due to rounding.

Once again, the beach at Battery Point Lighthouse in Crescent City earned A grades for all three time periods this past year. There are no other locations in Del Norte County sampled frequently enough (at least weekly) to receive grades in this report.

For additional water quality information:
County of Del Norte Environmental Health Division
www.co.del-norte.ca.us/departments/community-development-department/environmental-health-division

Oregon and Washington

2014-2015 Beach Report Card: Oregon

Oregon's Department of Human Services and Department of Environmental Quality collectively monitored 42 locations throughout the state from Memorial Day 2014 through Labor Day 2014. However, only 11 ocean water sampling sites were sampled frequently enough—at least 75% of the monitoring period—to receive a grade in this report. In addition, unlike California, which uses three indicator bacteria for it monitoring programs, Oregon monitors water quality using only the indicator bacteria Enterococcus. Oregon's program is funded entirely from the federal Beaches Environmental Assessment and Coastal Health Act (BEACH Act). See Federal BEACH Act Funding under Beach News on page 25.

During the peak beach going season, Oregon's consistently monitored beach locations earned excellent dry and wet weather grades this past year with all 11 sites earning A grades.

Oregon's sampling methodology can be found on page 48. Heal the Bay looks forward to working with Oregon agencies to increase beach monitoring frequency, as well as the number of sampling locations covered by the Beach Report Card.

Sewage Spills

There were no reported sewage spills in Oregon that led to beach closures this past year.

For additional water quality information:
Oregon Health Authority http://public.health.oregon.gov/HealthyEnvironments/Recreation/BeachWaterQuality/Pages/index.aspx

2014-2015 Beach Report Card: Washington State

Washington's BEACH program is a state-administered and locally implemented program. There were a total of 50+ beaches with 150 sample locations regularly monitored during the dry weather portion of the year—typically each beach has three monitoring locations. The total number of sample locations slightly decreased in the wet weather to 141. Washington State has one of the most robust beach monitoring programs in the country based on the number of sample sites per mile of beach.

Approximately 80% of the program is funded under the federal BEACH Act, with the remaining 20% funded by the United States Environmental Protection Agency's (USEPA) National Estuary Program's Pathogen Prevention, Reduction and Control Grant. The program is designed to monitor Washington's popular marine swimming locations for fecal contamination, as well as inform the public when an increased risk of illness is identified. The Makah Tribe also contributes beach monitoring to the state program through separate BEACH Program Tribal funding. Like Oregon, Washington monitors only Enterococcus bacteria, which differs from California's three indicator bacteria monitoring protocol. Washington's grading methodology can be found on page 48.

Water quality during the dry weather portion of the summer season in the state was excellent. Over 90% of the monitored locations (137 sites) had A grades, and scored slightly lower than the previous summer (95% A or B grades). Only nine of the 150 monitoring locations (6%) received fair to poor water quality grades during summer dry weather throughout the state (five C grades, two D grades and two F grades). This is a marked improvement of 50% less than fair-to-poor grades than last summer. For the second year in a row, two of the four beach areas with the poorest dry weather grades last summer were found at: Island County's Freeland County Park in Holmes Harbor (two F grades and one D grade), and Whatcom County's Little Squalicum Park (one D, one C, and one A). Wet weather water quality in Washington this year was very good, with 83% of the locations receiving A or B grades.

A complete list of grades for Washington State's beach monitoring locations can be found in Appendix B2 on page 44.

Sewage Spill Summary

This past year, Washington experienced 11 sewage spills that resulted in health warnings—10 of which were beach closures and one freshwater closure. Two of the 11 sewage spills were known as a combined sewer overflow (CSO). Both CSOs resulted in multiple beach advisories, with each lasting a total of seven days. The volume of one of the CSOs was estimated to be seven million gallons.

Combined Sewer Overflows

Combined sewer and stormwater (CSS) systems are located in older communities throughout the Puget Sound. CSSs carry both wastewater and stormwater to a treatment plant, and when heavy rains fill the pipes, excess stormwater and sewage flow directly into local waterbodies. These Combined Sewer Overflows (CSOs) are a concern for beach managers because untreated wastewater and stormwater may discharge near swimming beaches and pose risks to public health. In particular, CSO discharges in King County and in Clallam County outlet near BEACH Program-monitored swimming beaches. King County provides a real-time map notifying the public about CSO discharges at www.kingcounty.gov/environment/wastewater/CSOstatus/Overview.aspx.

In Clallam County, Port Angeles Harbor is lined with CSSs managed by the city and regulated by the Department of Ecology. Sail and Paddle Park Beach and Hollywood Beach are located in Port Angeles Harbor. Over the past few years, steps have been taken to reduce the volume of CSOs discharged to the Harbor.

Information and photos generously provided by the Washington Department of Health and Department of Ecology. For additional water quality information: www.ecy.wa.gov/programs/eap/beach/index.html
Current beach closure and advisory information can be found at: http://ecologywa.blogspot.com/search/label/Fecal%20matters

Inner Cabrillo Beach in San Pedro is the prime example of poor water quality caused by the poor circulation of an enclosed waterbody. In contrast, outer Cabrillo Beach (ocean side, 400 feet away) received A/A+ grades throughout the year.

2014-2015 Beach News

Analysis by Beach Type

Predictive Modeling

Drought and Climate Change and Beach Water Quality (II)

Federal BEACH Act Funding

California's Beach Program Funding and Minimum Statewide Monitoring Requirements

Municipal Stormwater Permits (Municipal Separate Storm Sewer System (MS4) permits)

Investigating the Efficacy of Best Management Practices (BMPs) in Los Angeles

Malibu Civic Center-update

Storm drain runoff is the greatest source of pollution to local beaches, flowing untreated to the coast and potentially contaminated with motor oil, animal waste, pesticides, yard waste, trash, and other pollutants.

Health officials recommend that beach users never swim in any coastal waters within 100 yards on either side of a flowing storm drain or creek for at least three days following a significant rain event. However, beachgoers should consider taking a more precautionary, conservative approach based on a study conducted by Heal the Bay and UCLA entitled Los Angeles County and Orange County Beach Water Quality: A Re-evaluation of the 3-Day Rule. This study suggests avoiding beach water contact for at least five days after a rainfall may be more protective of public health. Heal the Bay continues to encourage the California Department of Public Health (CDPH) to validate these findings by conducting a broader statewide assessment.

FIGURE 4-1: GRADES FOR POPULAR ENCLOSED BEACHES 2014-2015

Baby Beach, Dana Point	Summer Dry	Winter Dry	Wet Weather
West end	A	A	A
Buoy line	A	C	A
Swim area	A	D	B
East end	B	B	F
Mother's Beach, Marina del Rey			
Playground area	F	F	F
Lifeguard tower	F	F	F
Between tower/boat dock	F	F	F
Inner Cabrillo Beach, San Pedro			
Harborside at restrooms	D	B	F
Harborside at boat launch	B	A	F

Analysis by Beach Type

California's beach grades were analyzed to determine differences in water quality based on beach type. Beaches were divided into three categories: open ocean beaches, beaches adjacent to a creek, river, or storm drain (natural or concrete) and beaches located within enclosed water bodies.

The grades were analyzed for all three time periods: summer dry season (April through October), winter dry weather (November through March) and year-round wet weather conditions. Figure 4-2 illustrates the grades by percent during each time period.

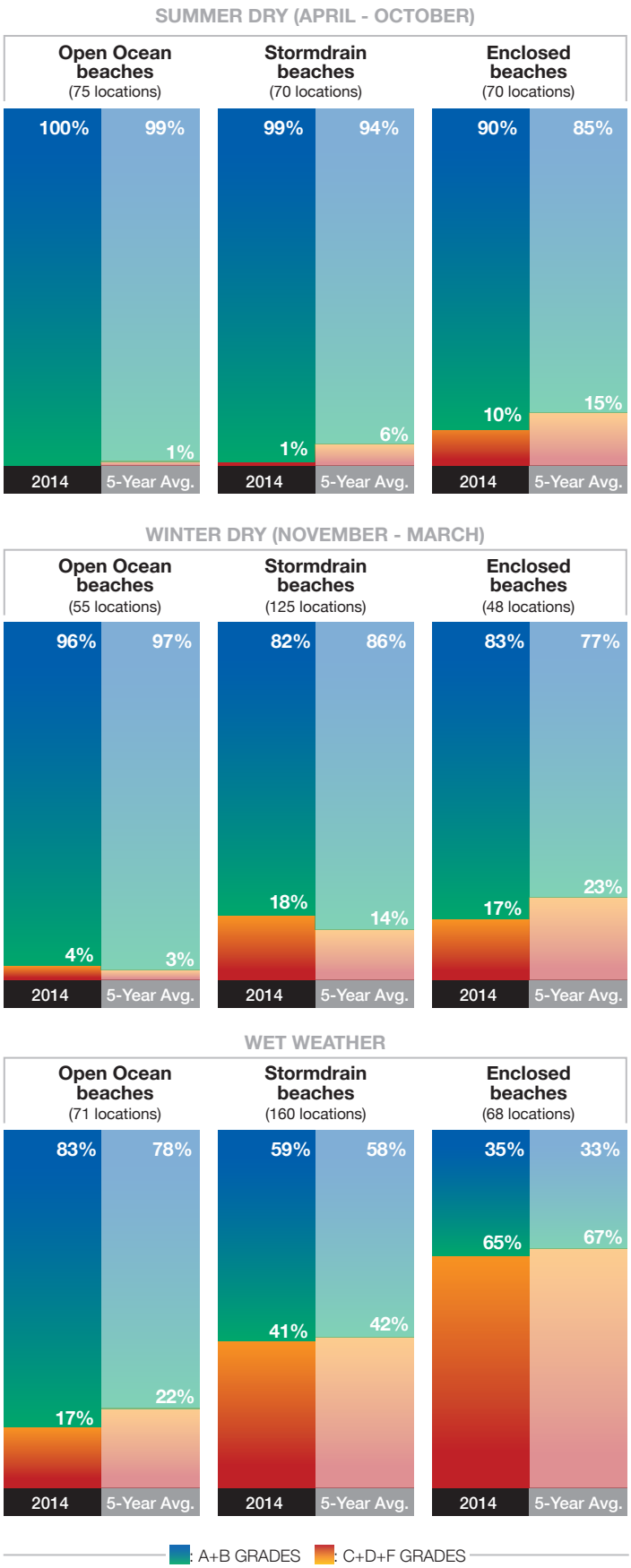
Open Ocean Beaches

In general, open ocean beaches with no known pollution sources exhibit excellent summer dry weather beach water grades. Once again, this past year was no exception, as all open ocean beaches earned A grades for the summer dry weather time period equalling the five-year average (100% A grades). Winter dry weather grades at open ocean beaches were also excellent with 96% A or B grades, which is on par with the five-year average (97% A or B grades). As for wet weather grades, this year 83% A and B grades was a slight bump compared to last year's 77%, and bested the five-year average by five percentage points (78% A or B grades).

Storm Drain Impacted Beaches

For another year, storm drain impacted beaches earned excellent summer dry weather grades with 99% A or B grades—this was slightly higher than last year's mark of 97% and bested the five-year average by five percentage points. Unfortunately, winter dry weather grades at

FIGURE 4-2: GOOD / POOR GRADES BY TIME PERIOD & BEACH TYPE



storm drain beaches slipped 12 percent from last year's 94% to 82% A or B grades. In addition, this year's percentage mark did not best the five-year average of 86%. Wet weather grades continued the decline seen last year, by further dropping another 10 percentage points to 59%.

Historically, Los Angeles County has been one of the only counties in the state (along with Humboldt County, San Francisco County and portions of San Diego and Santa Cruz counties) to modify its monitoring program to collect samples directly in front of flowing storm drains and creeks. This change in Los Angeles County was a result of the Santa Monica Bay Beach Bacteria TMDL requirements and associated implementation plans designed to restore water quality and protect public health and aquatic life. Happily for beachgoers, starting in April of 2015 all monitoring agencies participating in the California Beach Program will be required to sample at point-zero. This is a major step in achieving monitoring consistency from county to county, and meeting the intent of AB411—that all swimmers, waders, divers, and surfers have a fundamental 'right to know' about the quality of the water.

Enclosed Beaches

Despite the summer dry weather grades at enclosed beaches reaching a high of 90% A or B grades this year, swimming at these beaches can be problematic primarily due to poor beach water circulation.

Winter dry weather grades continue to hold steady with 83% A or B grades compared to last year's 84%, and besting the five-year average of 77%. There is no worse place to swim by beach type than at an enclosed beach in the wet weather. Wet weather grades continue to be extremely poor at enclosed beaches this past year, with only 35% A or B grades. Note: three of the top five worst beach bummers in California are enclosed beaches.

This comparison clearly demonstrates that water quality at open ocean beaches is superior to water quality at enclosed and storm drain impacted beaches. In essence, a swimmer has a nearly 100% chance of finding excellent water quality at an open ocean beach with no known pollution source during dry weather.

The results also demonstrate that most of California's open ocean beaches are very clean during dry weather.

Predictive Beach Modeling

Predictive models, or beach water quality forecasting tools, can inform early public notification of poor water quality much faster than the current methods, which can take 18-24 hours to process results. The existing system leads to beach advisories and closures being issued too late to protect public health, due to the one-day delay between sample collection and obtaining results. Even the use of more rapid detection methods have a 4-6 hour lag-time before beachgoers can be notified of current beach water conditions.

This summer (2015), Heal the Bay and Stanford University will be implementing a pilot program at three beaches in Southern California based on the findings from our 2014 predictive beach water quality

modeling study. We will be testing the ability of the model to accurately predict whether a beach should be posted with a warning notice or not. For example, the results from the initial study found that predictive models can capture on average 50% of water quality notifications/postings, as compared to 25% by the current methods. The results from this pilot program are anticipated to be available by the winter of 2015. Implementation of successful predictive models by beach managers could lead to more advanced and timely water quality information for California beachgoers, and as a protective public health tool.

Drought and Climate Change and Beach Water Quality-PART II

Californians live in a constant cycle of long dry periods followed by shorter periods of wet weather. California is currently in the fourth year of a drought. As such, rainfall and snow-pack levels in California (and especially in Southern California) over the past few years have been well below average. The confluence of both low precipitation levels and decreased or no snow pack has forced California residents to move beyond voluntary reductions in water use to mandatory ones. On May 5, 2015, the State Water Resources Control Board adopted emergency regulations requiring an immediate 25 percent reduction in overall potable urban water use statewide in accordance with an executive order issued by Gov. Jerry Brown.

Climate change is predicted to change natural climate patterns. Models developed by researchers at UCLA suggest that by the year 2050 the Los Angeles mountain areas are projected to have 30-40% less snowfall. (Neelin, J. David, Baird Langenbrunner, Joyce E. Meyerson, Alex Hall, Neil Berg, 2013: California Winter Precipitation Change under Global Warming in the Coupled Model Intercomparison Project Phase 5 Ensemble. J. Climate, 26, 6238–6256). In addition, the study also states that the Los Angeles area will experience increased precipitation in the winter months This could lead to increased flooding and heavy runoff to the ocean, potentially flushing more polluted water down to the beach.

Great water quality at local beaches is still largely a function of weather, and less of actual behavior change or municipal action. During drier weather conditions, beach water quality may be higher in a given year due to reductions in surface flows (rivers, creeks, or streams) reaching the ocean water. With less runoff reaching the ocean water, the likelihood of pollutants, such as bacteria, being transported downstream from their sources is greatly reduced. However, with any significant rainstorm or extended storm season, the beach water quality quickly degrades during a rain event and for a number of days after the event.

Implementing green infrastructure can help to improve water quality at our beaches, decrease neighborhood flooding, and maximize local water supplies by infiltrating water into the ground when it falls. For more information see *Integrated Water* on page 28 under Recommendations for the Coming Year.

Federal BEACH Act Funding

Since 2012, and again this year—FY 2016, the EPA's BEACH Act grant program, a key initiative for protecting public health at our nation's beaches, has been excluded from the President's proposed budget. The roughly $10 million of annual federal funding allows states to develop and implement water quality monitoring and notification programs. The EPA's stance is that after 10 years of funding, many non-federal agencies now have the ability to run their beach programs without federal support. This is extremely concerning for two reasons: many state beach programs are run completely on federal funds (such as Oregon) and states are only legally required to implement beach programs when federal funding is provided. Routine beach water monitoring is essential for identifying polluted waters and notifying the more than 90 million beachgoers who visit our nation's beaches annually.

If not for the Senate Appropriations Committee's continued support of the program, then the Beach Program would likely have been eliminated three years ago. As has been stated earlier in this report, with a beach tourism and recreational economy valued at close to $90 billion, investing $10 million a year national to insure that coastal resource continues to produce a utility and maintain functionality makes fiscal and public health sense. As the budget discussions for 2016 fiscal budget are currently in progress, and it remains to be seen if there will be a BEACH Program to report on in the next Annual Report.

California's Beach Program Funding and Minimum statewide monitoring requirements

Since 2012, the State Water Resources Control Board (SWRCB) now administers the California Beach Program. The California Beach Program is the implementing tool for the state requirement that ocean or bay water at swimming beaches be routinely tested for Fecal Indicator Bacteria (FIB), so long as State Funds are available. Historically, the Beach Program was managed by the California Department of Public Health (CDPH). However, CDPH had little power to enforce or incentive to modify water quality monitoring programs throughout the State. With no mechanism to raise funds for the program—the State funding for the Beach Program had been stagnant since its inception in 1998, CDPH had no programmatic guidance to provide contracting monitoring agencies. As such, numerous inconsistencies among beach monitoring programs continued making it impossible for beachgoers to know if it was safe to swim. Inconsistencies among County agencies throughout the State included: 1) where samples were collected relative to the potential pollution source, 2) the frequency of monitoring, and 3) the public notification protocols used to notify the public and when to notify.

With the management shift to SWRCB, they can now direct discharger permit fees (up to $1.8 million annually) towards California's Beach Program. This is a key element—an ability to raise funds—in ensuring that beach monitoring continues in California. The true funding

amount needed to sustain a model monitoring program in California is $1.8 million. This funding amount was approved last year for this year's monitoring. The full $1.8 million funding for California's Beach Program will need to be approved on an annual basis, therefore, it is not guaranteed in perpetuity. With the ability to raise funds, the State had a mechanism to now guide, and enforce, criteria for monitoring programs in order to be eligible for funds.

Heal the Bay's recommended criteria for funding eligibility include:

- Beach water samples should be taken directly from areas of highest expected bacteria levels (outfalls of stormdrains, creeks, and rivers - "point zero") and highest recreational use.
- Monitoring agencies must continue to monitor at least 80% of the locations monitored prior to the 2008 state budget cuts.
- Sampling frequency should increase with beach use and/or public health risk.
- Public notification of water quality should occur immediately after sampling results are available.
- Monitoring agencies and dischargers should be required to work together to streamline and enhance coastal monitoring for year-round public health protection.
- Chronically polluted or high-risk beaches with continuous bacteria exceedances should be permanently posted.
- High risk beaches (high beach use and close proximity to a potential pollution source) should be sampled three to five times per week.

Happily for beachgoers, starting in April of 2015 all monitoring agencies participating in the California Beach Program will be required to sample at point-zero. This is a major step in achieving monitoring consistency from county to county, and meeting the intent of AB411--all swimmers, waders, divers, and surfers have a fundamental 'right to know' about the quality of the water.

Municipal Separate Storm Sewer System (MS4) permits

Managing stormwater effectively is critical for water quality as it is the biggest source of pollution to our coastlines. This is especially true in areas of dense urbanization, such as Southern California. Los Angeles County and City of Long Beach MS4 Permits' include, combined, over 30 TMDLs, several of which include bacteria pollution. Both Permits include innovative watershed approaches to managing stormwater pollution – extensive effort has been occurring over the past three years to develop these Watershed Management Programs. Submission and approval of several programs have already occurred. Over the course of the next year, the remainder of the programs will be submitted to and review by the Los Angeles Regional Water Quality Control Board. Environmental stakeholders, including Heal the Bay, have been actively participating in the implementation of these programs since the adoption of both MS4 Permits. These Watershed Management Programs will set the stage for water quality improvement projects for many years to come, and it is critical that the plans are technically sound.

Investigating the Efficacy of Best Management Practices (BMPs) in Los Angeles

Heal the Bay recently completed supplemental environmental project (SEP) for the City of Los Angeles Bureau of Sanitation. The SEP analyzed beach water quality at 15 monitoring locations in Los Angeles County, to determine which Best Management Practices (BMP) have been most effective (based on statistical analyses) at reducing bacteria levels in the beach water. The 15 locations were categorized according to beach type (i.e., open, enclosed, pier, runoff (creek or storm drain) impacted) and BMP type (e.g., low flow diversions or circulation). The majority of the BMPs analyzed in this study were diversions (10 of the 15 sites; Table 1). Two BMPs were pier improvements, one consisted of septic system improvements, one was a circulation BMP, and one was a treatment facility.

Similar to the 2010 study by Dorsey, we found that low-flow diversions were successful at improving water quality, as seen in reductions in concentrations of fecal indictor bacteria and reductions in regulatory exceedances post-BMP implementation. We also saw that water quality at some sites was further improved when examining only the "core" months of the AB411 period (June, July, August, and September). Peak beach going season is usually defined by the "core" months. For most beach managers, this is the time period with the greatest number of beach users. As such, any structural BMP implemented needs to function effectively during this time period.

While other BMPs, such as septic system removal, netting around piers, or circulation improvement, were evaluated for this study, given their small sample size we could not make any general conclusions about their performance. However, the report did evaluate them on their own merit and make conclusions about site-specific BMP performance.

Future studies for beach managers to consider with regards to beach water quality and FIB issues ought to include evaluating year-

The ocean at Santa Monica Munipical Pier (shown in background) is once again on Heal the Bay's Top Ten Beach Bummers list. Water quality at adjoining beaches, such as the one near the Pico/Kemper outlet (shown in foreground) has also shown a marked deterioration over the past year.

FIGURE 4-3: SANTA MONICA – GRADES 2010-2015

	2010-2011			2011-2012			2012-2013			2013-2014			2014-2015		
	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather	Summer Dry	Winter Dry	Wet Weather
Montana Avenue drain	A	A+	F	A+	A+	F	A	A	C	A	A	D	A	A	F
Wilshire Blvd. drain	A	F	F	B	A	F	A	A	C	A	C	F	B	F	F
Santa Monica Pier	A	C	F	A	D	F	B	F	F	D	F	F	F	F	F
Pico/Kenter storm drain	A	F	F	A	D	F	A	D	F	A	A	F	A	C	F
Strand Street, in front of the restrooms	A	A+	D	A	A+	C	A+	A+	C	A+	B	B	A	B	C
Ocean Park Beach at Ashland Avenue drain	A	A	D	A	A	D	A	A	F	A	A	D	A	B	F

round low-flow diversions; identifying the relationship between flow volume and rainfall; runoff plume size, direction, and duration; and opportunities to expand coastal BMPs beyond structural to include green and non-structural BMPs.

The study results can be used to help guide those public agencies responsible for maintaining beach water quality in selecting the most appropriate and effective BMPs to ensure that FIB pollution at beaches is mitigated or eliminated.

Malibu Civic Center – update

The Los Angeles Regional Water Quality Control Board previously found that wastewater from commercial and residential septic systems in the Malibu Civic Center area is a major source of bacteria, pathogens, and nutrients to Malibu Creek and Lagoon and adjacent coastal waters, including the world famous Malibu Surfrider Beach. In 2009, the Regional Board adopted a Septic Prohibition to phase out septic system discharges in the Civic Center area for commercial and residential properties. To fulfill the Septic Prohibition, the City of Malibu is planning on constructing a 550,000 gallons per day centralized wastewater treatment facility – the City recently obtained all necessary regulatory obligations needed to construct the centralized wastewater treatment facility. Obtaining all necessary permits is a big step for the wastewater treatment facility to reach fruition. Heal the Bay will continue to track this issue closely and advocate for Malibu to maintain the current construction schedule for the project.

El Capitan State Beach received some of the highest water qualoty grades during the past year and made the Beach Report Card's Honor Roll. How the massive oil spill at neighboring Refugio in May 2015 will affect long term water quality remains to be seen.

Recommendations for the Coming Year

Integrated Water

State Water Resources Control Board's Bacterial Objectives

Advocate full funding for California's Beach Program

Advocate federal funding for Beaches Program

Integrated Water

With Californians facing an uncertain water future, now is the time to rediscover the importance of using water wisely. The days of using water only once—as is the case for wastewater, or not using it all—as is the case for stormwater, before disposing of it into the ocean are gone. As Steve Lopez once wrote about plastic bags in 2007 that is equally applicable to our historic behavior towards water, it is "...an indictment of our slovenly, junk-food, single-use, throwaway society."

In Los Angeles, we import nearly 90% of our water supply, which is no longer practical or sustainable. In fact, it is a dangerous position to continue to maintain. Strangely enough, each day we let roughly 10 million gallons of urban runoff flow through our rivers, creeks, streams and stormdrains. Not only are we allowing this resource to drain away, we pollute it with contaminants that make the water undrinkable and unhealthy prior to discharging it to the ocean. It's why many of our beaches, rivers and creeks remain chronically polluted. This pollution along our shorelines is terrible, but the waste of water in a time of extreme drought is equally maddening. Continuing with our wasteful water ways, we discharge a minimum of 20 million gallons per day of highly treated wastewater into the Los Angeles River from the Donald

Tillman Treatment Plant. We need to change this type of behavior and quickly. Instead, our region needs to be smarter about maximizing the water that we already have and the water that we receive from rain.

Heal the Bay is actively engaged in determining L.A.'s water future. Here is what we believe the region needs to start doing today to sustain our water needs in the future:

- Modifying our landscaping is a good first step in fighting drought. For example, irrigation for landscaping still accounts for more than 50% of urban water use.
- Capturing runoff, cleaning it, and using it to augment regional water supplies. For example, after a 1" storm as much as 10 billion gallons of water is wasted flowing into the sea from urban runoff.
- Increasing our use of reclaimed water to offset potable water demand and replenish our regional groundwater basins. Each day the Hyperion Treatment Plant discharges more than 250 million gallons of wastewater into Santa Monica Bay, and Tillman Treatment Plant discharges more than 50 million gallons of highly treated wastewater into the LA River.
- Teach water literacy! We should not be waiting for kids to go to college before we teach them a water resource class. Water, like reading and writing, needs to be taught in primary school.

How to get there: It will take significant resolve and funding, but watershed management plans that prioritize green infrastructure, multi-benefit stormwater capture projects, increasing greywater usage, and infiltrating recycled water and must be embraced. "Showers to flowers" must become part of our lexicon. Investing in these efforts will require a public finance portfolio that includes bonds, special districts, and user fees. Water is what makes this planet special, incredible, and without it then what?

State Water Resources Control Board's Bacterial Objectives

Last summer, the State Water Resources Control Board (SWRCB) embarked on a process to amend the bacterial objectives in the California Ocean Plan and Inland Surface Water, Enclosed Bays and Estuaries Plan. The goal is to develop a statewide program to "protect recreational users" from the effects of swimming in water bodies with pathogens.

However, Heal the Bay is deeply concerned about this process due to a number of proposed modifications "designed to protect swimmer health." For example, one recommendation is to modify water quality monitoring programs to sample for only one Fecal Indicator Bacteria (FIB). Currently, the state generally requires bacterial monitoring for three FIB, and uses seven health criteria to protect swimmer health. By only requiring one FIB to be monitored, the SWRCB is effectively removing five health criteria from the regulations. This SWRCB recommendation is premised on the idea that this modification would be consistent with the federal standards. Unfortunately for swimmers of both fresh and salt waters, the federal water quality monitoring standards are weaker than California.

Even more disconcerting is that the SWRCB proposes ten additional elements in their objectives with ramifications to swimmer health. The SWRCB will be releasing a draft staff report in the Summer 2015, with the expectation that this process will be completed and new objectives adopted by the Spring 2016. Heal the Bay will continue to review and provide recommendations in an effort to ensure their proposal is protective of human health.

Advocate full funding for California's Beach Program

While the full $1.8 million was approved for FY 2013-2014, this funding is not guaranteed each year and needs to be approved annually. If full funding is not approved in a given year, it would seriously affect the number and frequency of beaches monitored, especially throughout the winter months. Monitoring reduction not only produces inconsistencies in beach data but most importantly, has the potential to increase public health risks for the millions of year-round beachgoers in California. Heal the Bay and other local agencies will continue to advocate for the full Beach Program funding amount, while encouraging the State Board to prioritize the development of a year-round model monitoring program and grant eligibility criteria.

Advocate Federal Funding for Beaches Program

Once again, the President's budget proposed to eliminate funding (approximately $10 million/annually) for EPA's BEACH Act grant program (after providing states with funding for more than 10 years). This program is crucial for protecting the public health of beachgoers across all coastal and Great Lakes bordering states. Many state beach programs run solely on federal funds, with states mandated to implement beach monitoring programs only when federal funding is provided. With more than 90 million annual beachgoers nationwide, the loss of this funding results directly in public health protection being seriously jeopardized. The federal Beach Program provides approximately $500,000/annually to California, which is critical in maintaining the state's current level of coastal monitoring. Heal the Bay will continue to advocate for this federal funding, so the health of millions of beachgoers can continue to be protected throughout the country.

2014-2015 Honor Roll

California's year-round monitored beaches with excellent water quality all year.

San Luis Obispo County
San Simeon, at Pico Avenue
Morro Bay City Beach, projection of Atascadero

Santa Barbara County
El Capitan State Beach

Ventura County
Oil Pier Beach, south of drain
Solimar Beach, south
Surfer's Point at Seaside
Surfer's Knoll

Los Angeles County
Bluff Cove, Palos Verdes Estates
Abalone Cove Shoreline Park
Portuguese Bend Cove, Rancho Palos Verdes

Orange County
Balboa Beach, The Wedge
Treasure Island Beach
Laguna Lido Apartments
Dana Point Harbor Guest Dock

San Diego County
Encinitas, San Elijo State Park
Cardiff State Beach, Charthouse parking
Ocean Beach, Ocean Pier
Point Loma, Lighthouse
Coronado, Silver Strand

2014-2015 Beach Bummers

2012	2013	2014	2015
Avalon, Catalina Island LOS ANGELES COUNTY	**Avalon, Catalina Island** LOS ANGELES COUNTY	**Cowell Beach** SANTA CRUZ COUNTY	**Cowell Beach** SANTA CRUZ COUNTY
Cowell Beach SANTA CRUZ COUNTY	**Cowell Beach** SANTA CRUZ COUNTY	**Marina Lagoon** SAN MATEO COUNTY	**Mother's Beach, MDR** LOS ANGELES COUNTY
Marie Canyon, Malibu LOS ANGELES COUNTY	**Poche Beach** ORANGE COUNTY	**Mother's Beach, MDR** LOS ANGELES COUNTY	**Clam Beach County Park** HUMBOLDT COUNTY
Surfrider Beach, Malibu LOS ANGELES COUNTY	**Cabrillo Beach, harborside** LOS ANGELES COUNTY	**Cabrillo Beach, harborside** LOS ANGELES COUNTY	**Aquatic Park** SAN MATEO COUNTY
Solstice Canyon, Malibu LOS ANGELES COUNTY	**Malibu Pier,** LOS ANGELES COUNTY	**Stillwater Cove** MONTEREY COUNTY	**Mission Bay** SAN DIEGO COUNTY
Cabrillo Beach, harborside LOS ANGELES COUNTY	**Marina Lagoon** SAN MATEO COUNTY	**Clam Beach County Park** HUMBOLDT COUNTY	**Santa Monica Municipal Pier** LOS ANGELES COUNTY
Doheny Beach ORANGE COUNTY	**Doheny State Beach** ORANGE COUNTY	**Santa Monica Pier** LOS ANGELES COUNTY	**Candlestick Point** SAN FRANCISCO COUNTY
Poche Beach ORANGE COUNTY	**Redondo Beach Pier** LOS ANGELES COUNTY	**Pillar Point Harbor** SAN MATEO COUNTY	**Stillwater Cove** MONTEREY COUNTY
Escondido Beach, Malibu LOS ANGELES COUNTY	**Windsurfer Circle** SAN FRANCISCO COUNTY	**Capitola Beach** SANTA CRUZ COUNTY	**Cabrillo Beach, harborside** LOS ANGELES COUNTY
Topanga State Beach LOS ANGELES COUNTY	**Tijuana River Mouth** SAN DIEGO COUNTY	**Windsurfer Circle** SAN FRANCISCO COUNTY	**Huntington Beach @ Brookhurst** ORANGE COUNTY

2014-2015 Grades by County for California

San Diego County

		County "Beach Bummer" names appear in **bold**.		
		Summer Dry (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
Oceanside	Projection of Tyson Street	A+	A	A+
	Projection of Forster Street	A+	A	A+
	500' N. of Loma Alta Creek outlet	A+	A	A+
	Projection of Cassidy Street	A+	A	B
	St. Malo Beach, downcoast from St. Malo Road	A+	A	B
Carlsbad	Projection of Tamarack Avenue	A+		A+
	warm water jetty	A+		A+
	Projection of Cerezo Drive	A+		A+
	Projection of Palomar Airport Road	A+		A+
	Encina Creek outlet	A+		A+
	Projection of Ponto Drive	A+		A+
	Projection of Poinsettia Lane	A+		A+
	Batiquitos Lagoon outlet	A+		A+
Encinitas	Moonlight Beach, Cottonwood Creek outlet	A	B	F
	Swami's Beach, Seacliff Park	A		D
	San Elijo State Park, Pipes surf break	A+		A+
	San Elijo State Park, north end of State Park stairs	A+	A+	A+
	San Elijo State Park, projection Liverpool Drive	A+	A	A+
Cardiff State Beach	San Elijo Lagoon outlet	A+	A	A+
	Charthouse parking, slighty south of Kilkeny	A+	A+	A+
	Las Olas, 100 yards south of Charthouse	A	A+	A+
	Seaside State Park	A+	A	A+
Solana Beach	Tide Beach Park, projection Solana Vista Drive	A+	A+	A
	Fletcher Cove, projection Lomas Santa Fe Drive	A+	A+	B
	Seascape Surf Beach Park	A+		F
Del Mar	San Dieguito River Beach	A	A	A+
	Projection of 15th Street	A+		A
Torrey Pines	Los Penasquitos Lagoon outlet	A	A+	A+
La Jolla Shores	Projection of Ave De La Playa	A		A+
La Jolla	La Jolla Cove	A		A+
	South Casa Beach	A		A+
	Ravina, south of Nicholson Point	A		A+
Windansea Beach	Projection of Playa Del Norte	A		A+
Pacific Beach	Pacific Beach Point, downcoast of Linda Way	A+	A	B
	Tourmaline Surf Park, projection of Tourmaline Street	A+	A	B

SAN DIEGO COUNTY		County "Beach Bummer" names appear in **bold**. **Summer Dry** (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
Mission Beach	Belmont Park	A	A+	A+
Mission Bay	Bonita Cove, east cove	A		A+
	Bahia Point, northside, apex of Gleason Road	A		A+
	Fanuel Park, projection of Fanuel Street	A		A+
	Crown Point Shores	A		A+
	Wildlife Refuge near fence, projection of Lamont Street	A		D
	Campland, west of Rose Creek	A		A+
	DeAnza Cove, mid cove	A		A+
	Visitor's Center, projection of Clairemont Drive	**F**		**A+**
	Comfort Station north of Leisure Lagoon	**C**		**A+**
	Leisure Lagoon, swim area	A		A+
	Tecolote Playground, watercraft area	A		A+
	Tecolote Shores, swim area	A		A+
	Vacation Isle Ski Beach	A+		A+
	Vacation Isle North Cove Beach	**C**		**A+**
Ocean Beach	River outlet, Dog Beach	A	D	F
	Stub Jetty	A	A+	A
	Ocean Beach Pier, northside at Newport Avenue	A+	A+	A
	Ocean Pier, projection of Narragansett Avenue	A+	A+	A+
	Projection of Bermuda Avenue	A	B	A
Sunset Cliffs	Projection of Ladera Street	A	A+	A+
Point Loma	Point Loma Treatment Plant	A	A	A+
	Point Loma Lighthouse	A+	A+	A+
San Diego Bay	Shelter Island, Shoreline Beach Park	B		A+
	Spanish Landing Park beach	A		A+
	Bayside Park, projection of J Street	B		
	Glorietta Bay Park at boat launch	A		
	Tidelands Park, projection of Mullinix Drive	A		
Coronado	Projection of Ave del Sol	A		A+
	Silver Strand	A+	A+	A+
Imperial Beach	Projection of Carnation Avenue	A	A	B
	Imperial Beach Pier	A	A	F
	Projection of Cortez Avenue		A	F
	South end of Seacoast Drive	A	A+	C
Tijuana Slough NWRS	3/4 mi. N of TJ River	A	A+	D
	Tijuana Rivermouth	A	A	F
Border Field State Park	Projection of Monument Road	A	B	F
	Border Fence, northside	A	B	F

Orange County

County "Beach Bummer" names appear in **bold**.

		Summer Dry (April-Oct)	Winter Dry (Nov-Mar)	Wet Weather Year-Round
Seal Beach	Projection of 1st Street	A	D	F
	Projection of 8th Street	A	A	B
	Seal Beach Pier, 100 yards south of pier	A	B	C
	Projection of 14th Street	A	A	A
Surfside Beach	Projection of Sea Way	A+	A+	A
Sunset Beach	Projection of Broadway	A	A+	A
Bolsa Chica Beach	Across from the Reserve Flood Gates	A+	A	A
Bolsa Chica Reserve	Downcoast end of the State Beach	A	B	F
Huntington City Beach	Bluffs	A	B	A
	Projection of 17th Street	A+	A	A+
	Jack's Snack Bar at Huntington Street	A	A	A
	Projection of Beach Blvd.	A	A	A
Huntington State Beach	Projection of Newland Street, SCE Plant	A	A	A
	Projection of Magnolia Street	A	A	B
	Projection of Brookhurst Street	**C**	**F**	**F**
	Santa Ana River Mouth	A	A	F
Newport Beach	Projection of Orange Street	A	A+	F
	Projection of 52nd/53rd Street	A	A+	A
	Projection of 38th Street	A	A+	A+
Balboa Beach	Projection of 15th/16th Street	A	A	A+
	Pier	A	A	A
	The Wedge	A+	A+	A+
Huntington Harbor	Mothers Beach, County	A	A	F
	Trinidad Lane Beach	A+	A+	C
	Seagate Lagoon	A	A	B
	Humboldt Beach	A	A+	C
	Davenport Beach	A	A+	D
	Coral Cay Beach	A+	A	F
	11th Street Beach	A	A	C
Newport Bay	Newport Dunes, North	A	A	F
	Newport Dunes, East	A	A	F
	Newport Dunes, Middle	A	B	F
	Newport Dunes, West	A	B	F
	Bayshore Beach	A	A+	F
	Via Genoa Beach	A+	A	F
	Lido Yacht Club Beach	A+	A	F
	Garnet Avenue Beach	B	C	F
	Sapphire Avenue Beach	A	A	F
	Abalone Avenue Beach	A	A+	D
	Park Avenue Beach	A+	A+	F

ORANGE COUNTY		County "Beach Bummer" names appear in **bold**. **Summer Dry** (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
Newport Bay	Onyx Avenue Beach	A	A	F
	Ruby Avenue Beach	A	B	F
	Grand Canal	A	A+	F
	43rd Street Beach	A	C	F
	38th Street Beach	A	B	F
	19th Street Beach		A	F
	15th Street Beach	A+	A+	F
	10th Street Beach	A+	B	F
	Alvarado/ Bay Isle Beach	A+	B	F
	N Street Beach	A+	A	D
	Harbor Patrol Beach at Bayside Drive	A	A	F
	Rocky Point Beach	A+	A	C
Corona del Mar	Corona Del Mar, CSDOC	A	A+	C
	Little Corona Beach	B		C
Pelican Point		A		A+
Crystal Cove State Park	Crystal Cove, CSDOC	A	A+	A
	Crystal Cove, weekly	A	A+	C
	Muddy Creek	A+		A+
	El Moro Beach	A+		A+
Laguna Beach	Emerald Bay	A+		A+
	Crescent Bay Beach	A	A	A+
	Laguna Main Beach	A		A+
	Laguna Hotel	A	A	C
	Projection of Bluebird Canyon	A+	A	B
	Victoria Beach	A	A	A+
	Blue Lagoon	A+	A	A+
	Goff Island Beach	A+	A+	A
	Treasure Island Beach	A+	A+	A+
	North Aliso County Beach	A+	A+	A
	Aliso Creek, outlet	A	B	F
	Aliso Creek, 1000' south	A+	A	B
	Camel Point	A+	A	A+
	Table Rock	A+	A+	A
	Laguna Lido Apt.	A+	A+	A+
	9th Street 1000 Steps Beach	A	A+	A+
	Three Arch Bay	A	A	A
Dana Point	Monarch Beach, North	B	A	B
	Salt Creek Beach	A	A	A
	Dana Strands Beach, AWMA	A+	A+	A
	Marine Science Institute Beach, SERRA	A	A+	A+
	Doheny State Beach, North Beach	A	F	F

ORANGE COUNTY		County "Beach Bummer" names appear in **bold**. **Summer Dry** (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
	Doheny State Beach, Mid Beach north of San Juan Creek	A	F	F
	Doheny State Beach, San Juan Creek Interface	A+	D	F
	Doheny State Beach, Last Campground	A	C	F
	2000' south of SERRA Outfall	A	C	F
	3000' south of SERRA Outfall, pedestrian bridge	A	A	F
	4000' south of SERRA Outfall, end of the park	A	A	F
	Capistrano County Beach	A	A	B
	Projection of Camino Estrella	A	B	A
	South Capistrano Bay Comm. Beach	A	B	B
San Clemente	Poche Beach	A	A	F
	North beach at Avenida Pico, 20000' South Outfall	A+	B	C
	Pier Lifeguard Building north	A	A	A
	Trafalgar Canyon	A		A
	Avenida Calafia	A+	A+	D
	Avenida Las Palmeras	A	A	D
Dana Point Harbor	Baby Beach, West End	A	A	A
	Baby Beach, Buoy Line	A	C	A+
	Baby Beach, Swim Area	A	D	B
	Baby Beach, East End	B	B	F
	Guest Dock	A+	A+	A+
	Youth Dock	A		A+

Los Angeles County

Malibu	Leo Carrillo Beach at Arroyo Sequit Creek mouth	A+	A+	B
	Nicholas Beach at San Nicholas Canyon Creek mouth	A+	A	A+
	Encinal Canyon at El Matador State Beach	A	A	A+
	Broad Beach at Trancas Creek mouth	A	A	A+
	Zuma Beach at Zuma Creek mouth	A+	A	A
	Walnut Creek outlet	A+	A	B
	Unnamed Creek, projection of Zumirez Dr., Little Dume	A	D	A
	Paradise Cove Pier at Ramirez Canyon Creek mouth	A+	C	C
	Escondido Creek, just east of Escondido State Beach	A	A	B
	Latigo Canyon Creek mouth,	A	C	C
	Solstice Canyon at Dan Blocker County Beach	A	B	B
	Unnamed Creek, adj. to public stairway, 24822 Malibu Rd	A	A	B
	Puerco State Beach at creek mouth,	A+	A	D
	Marie Canyon storm drain at Puerco Beach, 24572 Malibu Rd	B	B	F
	Malibu Point	A	A	F
	Surfrider Beach, breach point	A	F	F
	Malibu Pier, 50 yards east	A	F	F

LOS ANGELES COUNTY		County "Beach Bummer" names appear in **bold**.		
		Summer Dry (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
Malibu (con't)	Carbon Beach at Sweetwater Canyon	A+	C	C
	Las Flores State Beach at Las Flores Creek	A+	A	A
	Big Rock Beach at 19948 PCH stairs	A	A	A
	Pena Creek at Las Tunas County Beach	A	A+	C
Topanga State Beach	Topanga Canyon Creek mouth	A	F	F
Will Rogers State Beach	Santa Ynez drain at Sunset Blvd.		A	F
	17200 PCH, 1/4 m. east of Sunset drain	A	A	C
	Bel Air Bay Club drain near fence	B	A	F
	Pulga Canyon storm drain	A	A	F
	Temescal Canyon drain	A	A	A+
	Santa Monica Canyon drain	A	D	F
Santa Monica Beach	Montana Avenue drain	A	A	F
	Wilshire Blvd. drain	B	F	F
	Santa Monica Municipal Pier	**F**	**F**	**F**
	Pico/Kenter storm drain	A	C	F
	Strand Street, in front of the restrooms	A	B	C
	Ocean Park Beach at Ashland Avenue drain	A	B	F
Venice City Beach	Rose Avenue storm drain	A	A+	F
	Brooks Avenue drain	A	A	D
	Windward Avenue drain	A	F	B
	Venice Fishing Pier, 50 yards south	A+	B	C
	Topsail Street	A	A	F
Marina del Rey	**Mothers' Beach, Playground area**	**F**	**F**	**F**
	Mothers' Beach, lifeguard tower	**F**	**F**	**F**
	Mothers' Beach, between Tower and Boat dock	**F**	**F**	**F**
Dockweiler State Beach	Ballona Creek mouth	A		F
	Culver Blvd. drain	A	B	D
	North Westchester Storm Drain	A	B	A
	World Way, south of D&W jetty	A	A	B
	Imperial Hwy drain	A	A	C
	Hyperion Treatment Plant One Mile Outfall	A	A	B
	Grand Avenue drain	A+	A	B
Manhattan Beach	40th Street	A+	A+	B
	28th Street drain	A+	A	F
	Manhattan Beach Pier drain	A+	A+	A
Hermosa City Beach	26th Street	A+	A	A+
	Hermosa Beach Pier, 50 yards south	A	A	A+
	Herondo Street storm drain, in front of the drain	A	B	F
Redondo Beach	Redondo Municipal Pier 100 yards south	B	F	F
	Sapphire Street	A	A	C
	Topaz Street, north of jetty	A	D	B

LOS ANGELES COUNTY		County "Beach Bummer" names appear in **bold**.		
		Summer Dry (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
Torrance Beach	Avenue I drain	A	A+	A
Palos Verdes Peninsula	Malaga Cove, Palos Verdes Estates, at trail outlet	A	A+	A+
	Malaga Cove, Palos Verdes Estates, at rocks	A+	A	A+
	Palos Verdes, Bluff Cove	A+	A+	A+
	Long Point, Rancho Palos Verdes	A+	A+	B
	Abalone Cove Shoreline Park	A+	A+	A+
	Portuguese Bend Cove, Rancho Palos Verdes	A+	A+	A+
San Pedro	Royal Palms State Beach	A	A	A+
	Wilder Annex	A+	A	A+
Cabrillo Beach	Ocean side	A	A+	A+
	Harborside at restrooms	**D**	**B**	**F**
	Harborside at boat launch	B	A	F
Long Beach	Projection of 5th Place	A	B	F
	Projection of 10th Place	A	A	F
	Projection of Molino Avenue	A	A	F
	Projection of Coronado Avenue	A	A	F
	Belmont Pier, westside	A	B	F
	Projection of Prospect Avenue	A+	A	F
	Projection of Granada Avenue	A+	A	F
Alamitos Bay	Alamitos Bay, 2nd Street Bridge & Bayshore	A+	A+	F
	Alamitos Bay, shore float	A+	A+	F
	Mother's Beach, Long Beach, north end	A+	A	F
	Alamitos Bay, 6th Place, on bayside	A	A	F
Long Beach	Long Beach City Beach, projection of 55th Place	A	A+	F
	Long Beach City Beach, projection of 72nd Place	A	A+	F
Colroado Lagoon	Colorado Lagoon, north	A+	A+	F
	Colorado Lagoon, south	A+	A+	F
Avalon Beach, Catalina Is.	East of the Casino Arch at the steps	A		A
	100 feet west of the Green Pleasure Pier	B		A+
	50 feet west of the Green Pleasure Pier	**C**		**A+**
	50 feet east of the Green Pleasure Pier	A		A+
	100 feet east of the Green Pleasure Pier	A		A+

Ventura County

		County "Beach Bummer" names appear in **bold**.		
		Summer Dry (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
Rincon Beach	25 yds. south of the creek mouth	A+	A	A+
	100 yds. south of the creek mouth	A+		
Mussel Shoals Beach	North of pier	A+		
Oil Piers Beach	South of drain	A+	A+	A+
Hobson County Park	Base of stairs to the beach	A+		
Faria County Park	Stairs	A	A+	A+
Mandos Cove	South of drain	A		
Solimar Beach	South, end of east gate access road	A+	A+	A+
Emma Wood State Beach	50 yards south of first drain	A	A+	A+
Surfer's Point	Seaside, end of access path via wooden gate	A+	A+	A+
Promenade Park	Figueroa Street	A+	A+	A
	Promenade Park, Redwood Apts.	A		
	Promenade Park, Holiday Inn, south of drain at California St.	A+		
San Buenaventura Beach	South of drain at Kalorama Street	A		
	South of drain at San Jon Road	A	A	B
	South of drain at Dover Lane	A+		
	South of drain at Weymouth Lane	A+		
Ventura Harbor	Marina Park, Beach at north end of playground	A+		
	Peninsula Beach, Beach area north of South Jetty	A+		
	Surfer's Knoll, Beach adjacent to parking lot	A+	A+	A+
Oxnard Beach	5th Street, south of drain	A+		A+
	Outrigger Way, south of drain	A+		A+
	Falkirk Avenue, south of drain	A+		A+
	Starfish Dr., south of drain	A+		A+
Hollywood Beach	La Crescenta Street, south of drain	A+		A+
	Los Robles Street, south of drain	A		A+
Channel Island Harbor	Hobie Beach Lakshore drain	A+	A	C
	Beach Park at south end of Victoria Avenue	A	F	F
Silverstrand	San Nicholas Avenue, south of jetty	A		A+
	Santa Paula Dr., south of drain	A+		A+
	Sawtelle Avenue, south of drain	A+		A+
Port Hueneme Beach Park	50 yds. north of the Pier	A		A+
Ormond Beach	J Street drain	A+	A+	D
	Arnold Road	A+		
Point Mugu Beach	Adjacent to parking lot entry	A+		A+
Thornhill Broome Beach	Adjacent to parking lot entry	A+		A+
Sycamore Cove Beach	50 yds. south of the creek mouth	A+		A+
County Line Beach	South of creek	A		A+
Staircase Beach	Bottom of staircase	A+		A

County "Beach Bummer" names appear in **bold**.

Santa Barbara County

		Summer Dry (April-Oct)	Winter Dry (Nov-Mar)	Wet Weather Year-Round
Guadalupe Dunes		A	A+	A+
Jalama Beach		A	A+	A+
Gaviota State Beach		A	A+	A
Refugio State Beach		A	B	A
El Capitan State Beach		A+	A+	A+
Sands	Coal Oil Point	A+	A+	C
Goleta Beach		A	C	A
Hope Ranch Beach		A	A	A+
Arroyo Burro Beach		A	B	A
Leadbetter Beach		A	C	A+
East Beach	Mission Creek	A	D	F
	Sycamore Creek	A+	A	B
Butterfly Beach		A+	B	A+
Hammond's Beach		A	B	A+
Summerland Beach		A	A	A+
Carpinteria State Beach		A+	A	A

San Luis Obispo County

San Simeon	Pico Avenue	A+	A+	A+
Cayucos State Beach	Halfway between Cayucos Creek and Pier	B	A+	B
	Downcoast of pier	A	A+	A+
	Studio Drive parking lot near Old Creek	A+	A	A+
Morro Strand State Beach	Projection of Beachcomber Drive	A+	A+	A
Morro Bay City Beach	Projection of Atascadero	A+	A+	A+
	Morro Creek, south side	A	A+	A+
	75 feet north of main parking lot	A	A	A
Hazard Canyon	Montana De Oro State Park	A	A+	A+
Olde Port Beach	Harford Beach north	A	D	A+
Avila Beach	Projection of San Juan Street	B	C	B
	Projection of San Luis Street	A	F	B
	Sewers at Silver Shoals Dr.	A	C	A
Pismo Beach	Projection of Wadsworth Street	A	A	A
	40 feet south of the pier	A	B	A+
	Projection of Ocean View	A	A	A+
	330 yards north of Pier Avenue	A	A+	A+
	Projection of Pier Avenue	A	B	A+
	571 yards south of Pier Avenue, end of Strand Way	A	A	A+

County "Beach Bummer" names appear in **bold**.

Monterey County

		Summer Dry (April-Oct)	Winter Dry (Nov-Mar)	Wet Weather Year-Round
Monterey Bay	Monterey State Beach	A		
	Monterey Municipal Beach, at the commercial wharf	**C**		
	San Carlos Beach at San Carlos Beach Park	A+		
	Lover's Point Park, projection of 16th Street	B		
	Asilomar State Beach, projection of Arena Avenue	A		
	Spanish Bay, Moss Beach, end of 17 mile drive	A+		
	Stillwater Cove, at Beach and Tennis Club	**D**		
Carmel City Beach	Projection of Ocean Avenue, west end	A		

Santa Cruz County

Santa Cruz	Natural Bridges State Beach	A	A	B
	Cowell Beach at the Stairs	A+	A	B
	Cowell Beach Lifeguard Tower 1	**F**	**B**	**C**
	Cowell Beach, west of the wharf	**F**	**F**	**C**
	Santa Cruz Main Beach at the Boardwalk	A	B	F
	Santa Cruz Main Beach at the San Lorenzo River	A	A	D
	Seabright Beach	A	A+	C
	Twin Lakes Beach	A+	A+	B
Capitola Beach	**West of jetty**	**C**	**F**	**F**
	East of jetty	A	A	C
	New Brighton Beach	A	C	C
Aptos	Seacliff State Beach	A	A+	A
	Rio Del Mar Beach	A	A	A

San Mateo County

Pacifica	Sharp Park Beach, projection of Birch Lane	A+	A	A+
	Rockaway Beach at Calera Creek	A+	A+	A
	Linda Mar Beach at San Pedro Creek	B	C	F
Montara State Beach	Martini Creek	A+	A+	A
Fitzgerald Marine Reserve	San Vicente Creek	A	A	D
Pillar Point	#8 Mavericks Beach Westpoint Avenue	A	A	D
	Harbor, end of Westpoint Avenue # 7	B	D	F
Half Moon Bay	Surfer's Beach, southend of riprap	A	A+	B
	Roosevelt Beach, south end of parking lot	A+	A+	C
	Dunes Beach	A	A+	B
	Venice Beach at Frenchman's Creek	A	A	D
	Francis Beach at the foot of the steps	A+	A	B
San Gregorio State Beach	San Gregorio Creek	A+		A+

SAN MATEO COUNTY		County "Beach Bummer" names appear in **bold**. Summer Dry (April-Oct)	Winter Dry (Nov-Mar)	Wet Weather Year-Round
Pomponio State Beach	Pomponio Creek	A	A+	B
Pescadero State Beach	Pescadero Creek	A	A	C
South Coast	Bean Hollow State Beach	A+	A	A+
	Gazos Beach at Gazos Creek	A	A+	A
San Mateo, bayside	Oyster Point	A	B	F
	Coyote Point	A	A	B
	Aquatic Park	**F**	**F**	**F**
	Lakeshore Park, behind Rec Center	**F**	**C**	**F**
	Kiteboard Beach		B	F
Alameda County				
Alameda Point	North	A		A+
	South	A		A+
Crown Beach	Crab Cove	A		D
	Bath House	A		A
	Windsurfer Corner	A		A
	Sunset Road	A+		A
	2001 Shoreline Drive	A		A+
	Bird Sanctuary	A		F
San Francisco County				
Aquatic Park Beach	Hyde Street Pier, projection of Larkin Street	A	A	B
	211 Station	B	B	A
Crissy Field Beach	East, 202.4 Station	A	A	B
	Crissy Field Beach West 202.5 station	A	A+	B
Baker Beach	East, Ocean #15 East	A	A	B
	Lobos Creek	**C**	**A**	**C**
	West, Ocean #16	A+	D	B
China Beach	End of Sea Cliff Avenue	A+	A	A
Ocean Beach	Projection of Balboa Avenue	A+	A+	F
	Projection of Lincoln Way	A+	A	F
	Projection of Sloat Blvd.	A+	A+	F
Candlestick Point	Jackrabbit Beach	A	B	F
	Windsurfer Circle	**C**	**C**	**F**
	Sunnydale Cove	**F**	**B**	**F**

County "Beach Bummer" names appear in **bold**.

Contra Costa County

		Summer Dry (April-Oct)	**Winter Dry** (Nov-Mar)	**Wet Weather** Year-Round
Keller Beach	North Beach	A		A
	South Beach	A		C

Marin County

Tomales Bay	Dillon Beach	A		
	Lawson's Landing	A		
	Miller Park	A		
	Heart's Desire	A+		
	Shell Beach	A		
	Chicken Ranch Beach at Creek	A		
Bolinas Bay	Bolinas Beach, Wharf Road	A		
	Stinson Beach, North	A		
	Stinson Beach, Central	A		
	Stinson Beach, South	A		
Muir Beach	North	A		
	Central	A		
	South	A		
Rodeo Beach	North	A+		
	Central	A+		
	South	A+		
Baker Beach	Horseshoe Cove SW	A+		
	Horseshoe Cove NW	A		
	Horseshoe Cove NE	A		
Schoonmaker Beach		A		
China Camp		A+		
McNears Beach		A+		

Sonoma County

Gualala Regional Park Beach		A+		
Black Point Beach		A+		
Stillwater Cove Regional Park Beach		A		
Goat Rock State Park Beach		A+		
Salmon Creek State Park Beac		A+		
Campbell Cove State Park Beach		A		
Doran Regional Park Beach		A+		

County "Beach Bummer" names appear in **bold**.

Mendocino County

		Summer Dry (April-Oct)	Winter Dry (Nov-Mar)	Wet Weather Year-Round
MacKerricher State Park	Virgin Creek	A		
Pudding Creek Ocean Outlet		A+		
Hare Creek		**C**		
Caspar Beach	Caspar Creek	B		
Big River	Near PCH	A+		
Van Damme State Park	Little River	A+		

Humboldt County

Trinidad State Beach	Near Mill Creek	A		
Luffenholtz Beach	Near Luffenholtz Creek	A		
Moonstone County Park	Little River State Beach	A		
Clam Beach County Park	**Near Strawberry Creek**	**F**		
Mad River Mouth	North	A		

Del Norte County

Crescent City	Battery Point Lighthouse	A	A+	A

2014-2015 Grades by County for Washington and Oregon

Clallam County, WA

		Summer Dry	Wet Weather
Hollywood Beach	east	A+	
	mid	A+	
	west	A+	
Cline Spit County Park	south	A+	A+
	mid	A+	A+
	north	A+	A+
Salt Creek Recreation Area	south	A	C
	mid	D	A+
	north	C	D
Sooes Beach	south	A+	
	mid	A+	
	north	A+	
Hobuck Beach	south	A+	A+
	mid south	A+	A+
	north	A	A+
Front Street Beach East	mid	A+	A+
	Pine Street	A+	A+
	Kal Chate St.	A+	A+
Dakwas Park Beach Neah Bay	east	A+	A+
	mid	A+	A+
	west	A	A+
Third Beach Neah Bay	west	A+	
	mid	A+	
	east	A+	

GRAYS HARBOR

Westhaven State Park South Jetty	south	A+	A+
	mid	A+	A+
	north	A+	A+
Westhaven State Park Half Moon Bay	south	A+	A+
	mid	A+	A+
	north	A	A+
Westport - The Groynes	west	A+	A+
	mid	A+	A+
	east	A+	A+

Island County, WA

		Summer Dry	Wet Weather
Freeland County Park Holmes Harbor	east	F	D
	mid	F	A+
	west	D	A+
Oak Harbor Lagoon	south east	A	A+
	north west	A+	A+
	mid	A+	A+

Jefferson County, WA

Irondale Beach Park	south	A+	D
	mid	A+	D
	north	A+	A
Fort Worden State Park	south	A+	A+
	mid	A+	C
	north	A+	A+

King County, WA

Dash Point State Park	mid	A	A+
	west	A	A+
	east	A	A+
Redondo County Park	south	A	A+
	mid	A	A+
	north	A+	A+

Kitsap County, WA

Pomeroy Park Manchester Beach	south	A+	A
	mid	A+	D
	north	B	D
Evergreen Park	south	A+	A+
	mid	A+	A+
	north	A+	A+
Lions Park	south	A+	A+
	mid	A	A+
	north	A+	A+

KITSAP COUNTY		Summer Dry	Wet Weather
Illahee State Park	south	A+	A+
	mid	A	A+
	north	A+	A+
Joel Pritchard Park	mid	A+	A+
	west	A+	A+
	east	A+	A+
Eagle Harbor Waterfront Park	mid	A	F
	west	A+	F
	east	A+	F
Silverdale County Park	west	A+	A+
	mid	A+	A+
	east	A+	A+
Scenic Beach State Park	west	A+	A+
	mid	A+	A+
	east	A+	A+
Fay Bainbridge State Park	south	A	A+
	mid	A+	A+
	north	A+	A+
Indianola Dock	east	A+	A+
	mid	B	A+
	west	A+	A+
Arness County Park	south	A+	F
	mid	A+	F
	north	A+	F

Mason County, WA

Walker County Park	west	A+	A+
	mid	A+	A+
	east	A+	A+
Potlatch State Park	south	A	B
	mid	A+	A+
	north	A+	A+
Twanoh State Park	west of point	C	A+
	west of dock	B	A
	point	C	F
Allyn Waterfront Park	south	A	B
	mid	A	A+
	north	A	A+

Pierce County, WA

		Summer Dry	Wet Weather
Sunnyside Beach Park	south	A+	A+
	mid	A+	A+
	north	A+	A+
Chambers Creek (dist. from creek mouth)	0.3 miles	A	A+
	1 mile	A+	A+
	1.5 miles	A+	A+
Titlow Park	south	A+	A+
	mid	A+	A+
	north	A+	A+
Ruston Way	south	A+	A+
	mid	A	A+
	north	B	A+
Fox Island	west	A+	A+
	enclosed	A+	A+
	mid	A+	A+
Browns Point Lighthouse Park	south	A	A+
		A	A+
	east	A	A+
Owens Beach Point Defiance Park	south	A	A+
	mid	A+	A+
	north	A+	A+
Dash Point County Park	east	A+	A+
	east of pier	A+	A+
	west of pier	A	A+
Purdy Sandspit Co. Park	west	A+	A+
	mid	A+	A+
	east	A+	A+

Skagit County, WA

Bayview State Park	south	A	F
	mid	A	F
	north	A	F

Snohomish County, WA

		Summer Dry	Wet Weather
Marina Beach Edmonds (No Dogs)	south	A+	A+
	mid	A	D
	north	A+	A+
Edmonds Underwater Park	south	A	A+
	mid	A	A+
	north	A+	A+
Picnic Point County Park	south	A	A+
	mid	A+	C
	north	A+	F
Mukilteo Lighthouse Park	south	A+	C
	mid	A+	A+
	north	A	F
Howarth Park	south	A+	A+
	mid	A	A+
	north	A+	F
Kayak Point County Park	south	A	A+
	mid	A+	A+
	north	A+	A+

Thurston County, WA

Burfoot County Park	south	A	B
	mid	A	B
	north	C	B

Whatcom County, WA

Larrabee State Park Wildcat Cove	south	A+	A+
	west	A	F
	mid	A	F
Little Squalicum Park	east	D	A+
	at creek outlet	C	A+
	far west of pier	A	A+

Clatsop County, OR

		Summer Dry	Wet Weather
Tolovana State Park Beach	50m so. of Chisana Creek	A+	A+
	@ Chisana Creek	A+	A+
	50m no. of Chisana Creek	A+	A+
Cannon Beach	proj of Gower Ave.	A+	A+
	Ecola Crk mouth (2nd Ave)	A+	A+
Seaside Beach	U Avenue	A+	A+
	Broadway turn around	A	A+
	12th Avenue	A	A+

Tillamook County

Short Sand Beach (Oswald St. Park)	@ Short Sand Creek	A+	A+
	middle	A+	A+
	north end	A+	A+

Indices

Glossary

ARRA ..... American Recovery and Reinvestment Act
BAV ..... Beach Action Value
BEACH Act ..... National Beach Guidance and Performance Criteria for Recreational Waters
BMP ..... best management practices
BRC ..... Beach Report Card
CDPH ..... California Department of Public Health
CBI ..... Clean Beach Initiative
CDO ..... Cease and Desist Order
CSS ..... combined sewer and storm drain system
CSD ..... combined sewer discharges
CSO ..... combined sewer overflows
CWA ..... Clean Water Act
DEH ..... Division of Environmental Health
DPH ..... Department of Public Health
E. coli ..... Escherichia coli
EMD ..... Environmental Monitoring Division (L.A.)
EPA ..... Environmental Protection Agency
FIB ..... fecal indicator bacteria
GI illness ..... Gastrointestinal Illness
LFD ..... Low Flow Diversion
LID ..... Low Impact Development
MOU ..... Memorandum of Understanding
MS4 ..... Municipal Separate Storm Sewer System
NOV ..... Notice of Violation
NGO ..... Non-Government Agency
NSE ..... Natural Source Exclusion
OWTS ..... Onsite Wastewater Treatment System
point zero ..... location where outfall meets the ocean
QMRA ..... Quantitative Microbial Risk Assessment
Regional Board ..... Regional Water Quality Control Board
SEP ..... Supplemental Environmental Projects (L.A.)
SIPP ..... Source Identification Protocol Project
SCCWRP ..... Southern California Coastal Water Resources Project
SMURRF ..... Santa Monica Urban Runoff Recycling Facility
SPF ..... Sun Protection Factor
State Board ..... State Water Resources Control Board
SSO ..... Sanitary Sewer Overflows
TMDL ..... Total Maximum Daily Load
UCLA ..... University of California, Los Angeles
UCB ..... University of California, Berkeley
USEPA ..... United States Environmental Protection Agency
wave wash ..... monitored location where runoff meets surf

Significant Bills and Acts

ARRA - Federal (2009)

American Recovery and Reinvestment Act. Stimulus package, from which $18 billion is allocated for relief and investment in environment, public health and 'green' alternatives.

AB 411 - California (1997)

Beach Bathing Water Quality Standards. Requires all waters along California's coast to meet certain minimum standards. Coastal waters will be tested weekly during the period of April through October.

AB 538 - California (1999)

Requires the state board to develop source investigation protocols for use in conducting source investigations of storm drains that produce exceedances of specified bacteriological standards.

BEACH Act - Federal (2000)

Beaches Environmental Assessment and Coastal Health Act. Amends the Clean Water Act and authorizes the EPA to award grants to reduce the risk of illness to users of the nation's recreational waters.

CBI - California (2001)

California's Clean Beach Initiative. Grant program provides funding for projects that will improve California's coastal water quality and swimmers' safety. Funding priority is given to projects that reduce bacterial contamination on busy California beaches.

Clean Water Act- Federal (1972)

Establishes the basic structure for regulating discharges of pollutants into the waters of the United States.

Proposition O (Prop O) - Los Angeles (2004)

Authorized the City of Los Angeles to issue a series of general obligation bonds for up to $500 million for projects to protect public health by cleaning up pollution, including bacteria and trash, in the city's watercourses, beaches and the ocean, in order to meet Federal Clean Water Act requirements.

SB 482 - California (2011)

Public Beach Contamination: Standards: Testing: Closing. Allows the State Board to direct permit fees up to $1.8 million towards California's Beach Program and requires the drafting of regulations relating to testing of waters adjacent to public beaches.

Methodology

Methodology: California

Heal the Bay's Beach Report Card grading system is endorsed by the SWRCB and the Beach Water Quality Workgroup as an effective way to communicate beach water quality to the public

Past amendments to the grading methodology have included:

- The inclusion of the geometric mean into the calculation
- A firm zero-to-100 point scale
- Greater weight for Enterococcus and the total to fecal ratio relative to total coliform and fecal coliform

The methodology retains past modifications to the report card, such as the inclusion of new indicator bacteria thresholds (namely the total-to-fecal ratio), developed by the Santa Monica Bay Restoration Commission in the 1996 health effects studies of Santa Monica Bay beachgoers. It also retains the implementation of standard deviations for each indicator bacteria threshold, which was developed by the Southern California Coastal Water Research Project and Orange County Sanitation Districts during the 1998 Southern California Bight Study. Each threshold is based on the prescribed standards set in the California Department Health Service's Beach Bathing Water Standards.

As seen in Table 6-1 the methodology uses a standard A through F grading system, and grades are based on the following formula:

$$\text{\% Grade} = \frac{\text{'TOTAL POINTS AVAILABLE'} - \text{'TOTAL POINTS LOST'}}{\text{'TOTAL POINTS AVAILABLE'}}$$

[Note: The Annual and End-of-Summer Beach Report Card methodology is modified slightly to accommodate the longer time period. For example: no greater significance is given to the most recent samples.]

Total Points Available

'Total Points Available' is derived from adding together two point components (if applicable): the Geometric Mean and the Single Sample Standard. The points for each component are listed in Table 6-2.

In order for the points in each component to become available, certain criteria must be met. (For example, the geometric mean points will be added to the 'Total Points Available' only if there are a minimum of four dry weather samples collected within the allotted time frame). Wet weather data is graded separately from dry weather data, and does not currently include a geometric mean component. Therefore, it is possible for 'Total Points Available' to be less than 100. The new grading methodology allows for a relative grade to be determined based on the actual monitoring completed.

Once the 'Total Available Points' has been determined for a specific location, then the 'Total Points Lost' can be calculated for the applicable grade components.

Total Points Lost

Separate calculations are used to quantify 'Total Points Lost' for each applicable component from the 'Total Available Points'. The following describes the two calculations.

Geometric Mean

Calculating the 'Total Points Lost' for the geometric mean component involves using the rolling 30-day geometric mean values calculated for each sample day (see Table 6-3).

Each geometric mean criterion exceeded is assigned a specific percentage of points lost. Non-exceedances are given 0%. The percentage of points lost from each of the three criteria divided by the number of sample days are multiplied by the 'Total Available Points' (any sum of percentages exceeding 100% automatically loses all 50 points available in the geometric mean component).

Single Sample Standard

Calculating the 'Total Points Lost' for the Single Sample Standard component is similar to the calculation used for deriving the points lost for the Geometric Mean. However, the Single Sample Standard component uses a gradient to calculate the 'Total Points Lost'. The gradient of percentage points lost used in calculating the number of points lost is derived from work completed by the Southern California Coastal Water Research Project and Orange County Sanitation District as part of the 1998 Southern California Coastal Bight Study (see Table 6-4).

'Percentage of points lost' is allocated depending upon the threshold exceeded by each of the four criteria. Each single sample criterion exceeded is given a 'percentage of points lost'. These amounts are presented in Table 6-4.

The 'percentage of points lost' from each of the four criteria for each sample during the time period are added together and divided by the total number of samples. Once this number is calculated (total 'percentage of points lost' divided by total number of samples), it is multiplied by the 'Total Available Points'. In the Single Sample Standard component, more points are lost as the magnitude or frequency of exceedances increases.

Points lost from the Single Sample Standard component are added to the points lost in the Geometric Mean component (if applicable) and this sum becomes 'Total Points Lost'. Once the 'Total Points Available' and the 'Total Points Lost' are calculated, a grade for a particular sample site can be determined.

Determining a Grade

$$\text{\% Grade} = \frac{\text{'TOTAL POINTS AVAILABLE'} - \text{'TOTAL POINTS LOST'}}{\text{'TOTAL POINTS AVAILABLE'}}$$

Most dry and wet weather annual grades are calculated with 100 'Total Available Points', although there is no Geometric Mean component for wet weather grading. Wet weather grades are calculated by the total 'percentage of points lost' divided by the total number of samples and then multiplied by 100. This gives the location's score for wet weather 'Total Points Lost'. This number is then subtracted from 100 to give the percentage grade.

Methodology: Oregon and Washington

The Oregon and Washington state grade methodology (using Enterococcus standards) was adapted from the seven standard California methodology (see Appendix A1).

Total Points Available

As seen in Table 6-2, the methodology uses a standard A through F grading system, and grades are based on the following formula:

$$\text{\% Grade} = \frac{\text{'TOTAL POINTS AVAILABLE'} - \text{'TOTAL POINTS LOST'}}{\text{'TOTAL POINTS AVAILABLE'}}$$

Note: The Annual and End-of-Summer Beach Report Card methodology is modified slightly to accommodate the longer time period. (For example: no greater significance is given to the most recent samples.)

Wet weather data (>=0.2 inches of rain in previous 72 hours) is graded separately from dry weather data and does not currently include a geometric mean component.

'Total Points Available' is derived from adding together two point components (if applicable): the Geometric Mean and the Single Sample Standard. The points for each component are listed in Table 6-2. In order for the points in each component to become available certain criteria must be met. Oregon and Washington Summer Beach Report Card methodology calculations only include Geometric Mean scores when four or more dry weather samples are available in determining a location's 30-day geometric mean. Therefore, it is possible for 'Total Points Available' to be less than 100. The grading methodology allows for a relative grade to be determined based on the actual monitoring completed.

Once the 'Total Available Points' has been determined for a specific location, then the 'Total Points Lost' is calculated for the applicable grade components.

Total Points Lost

Separate calculations are used to quantify 'Total Points Lost' for each applicable component from the 'Total Available Points'. The following describes the two calculations:

Geometric Mean

Calculating the 'Total Points Lost' for the Geometric Mean component involves using EPA's beach bathing indicator density of 35 for the geometric mean. If there are four or more samples included in the 30-day geometric mean calculation then the 50 points for the Geometric Mean component become available. Oregon and Washington Beach Report Card methodology calculates the percentage of geometric mean exceedance days based on the number of valid (four or more) geometric means scored during the extended time period. The percentage of geometric exceedance sample days out of valid geometric mean sample days is multiplied by the 50 available points to determine the 'Total Points Lost' for the Geometric Mean component.

Single Sample Standard

The Single Sample Standard component uses a gradient to calculate the 'Total Points Lost'. The gradient of percentage of points lost used in calculating the number of points lost is derived from the EPA's Ambient Water Quality Criteria for Bacteria and is found in Table 6-6.

'Percentage of points lost' is allocated depending upon the threshold exceeded. The penalties for threshold exceedances are presented in Table 6-7. Non-exceedances lose zero points. The 'percentage of points lost' for each sample during the time period are added together and divided by the total number of samples and multiplied by the 'Total Available Points'. More points are lost as the magnitude or frequency of exceedances increases.

Points lost from the Single Sample Standard component are added to the points lost in the Geometric Mean component (if applicable) and this sum becomes 'Total Points Lost'. Once the 'Total Points Available' and the 'Total Points Lost' are calculated a grade for a particular sample site can be determined.

Determining a Grade

$$\% \text{ Grade} = \frac{\text{'TOTAL POINTS AVAILABLE'} - \text{'TOTAL POINTS LOST'}}{\text{'TOTAL POINTS AVAILABLE'}}$$

Most dry and wet weather annual grades are calculated with 100 'Total Available Points', although there is no Geometric Mean component for wet weather grading. Wet weather grades are calculated by the total 'percentage of points lost' divided by the total number of samples and then multiplied by 100. This gives the location's score for wet weather 'Total Points Lost'. This number is then subtracted from 100 to give the percentage grade.

TABLE 6-1: GRADING SYSTEM

A	B	C	D	F
100%-90%	89%-80%	79%-70%	69%-60%	<60%

TABLE 6-2: TOTAL POINTS AVAILABLE BY COMPONENT

Geometric Mean	50 points
Single Sample Standard	50 points
Total	100 points

TABLE 6-3: CALCULATING THE TOTAL POINTS LOST FOR THE GEOMETRIC MEAN COMPONENT

Indicator Exceeded	Calif. Beach Bathing Water Standard	% of Total Available Points Lost** Due to Exceedance	Total Avail. Points
Enterococcus	35	80%	50
Fecal Coliform	200	40%	
Total Coliform	1000	20%	

** Colony forming units per 100 milliliters of ocean water*

TABLE 6-4: SINGLE SAMPLE GRADIENT THRESHOLDS IN CFU/100ML*

Indicator Bacteria	SLIGHT T – 1 SD	MODERATE T + 1 SD	HIGH > T + 1 SD	EXTREME Very High Risk
Total Coliform	6,711-9,999	**10,000**-14,900	> 14,900	N/A
Fecal Coliform	268-399	**400**-596	> 596	N/A
Enterococcus	70-103	**104**-155	> 155	N/A
Total: Fecal Ratio (when total ≥ 1,000)	10.1-13	7.1-**10**	2.1-7	< 2.1

** Colony forming units per 100 milliliters of ocean water. N/A = Not applicable*
SD = Standard Deviation. ***Bold*** *= California State Health Department standards for a single sample*

TABLE 6-5: CALCULATING THE TOTAL POINTS LOST FOR THE SINGLE SAMPLE STANDARD COMPONENT

Indicator Exceeded	SLIGHT % Points Lost	MODERATE % Points Lost	HIGH % Points Lost	EXTREME % Points Lost	Total Available Points
Total Coliform	10%	30%	40%	N/A	50
Fecal Coliform	10%	30%	40%	N/A	
Enterococcus	20%	40%	60%	N/A	
Ratio (when total > 1,000)	25%	50%	75%	100%	

TABLE 6-6: SINGLE SAMPLE GRADIENT THRESHOLDS IN CFU/100ML*

Indicator Bacteria	SLIGHT T – 1 SD	MODERATE T + 1 SD	HIGH > T + 1 S
Enterococcus	70-103	**104**-155	>155

** Colony forming units per 100 milliliters of ocean water*
SD = Standard Deviation. ***Bold*** *= California State Health Department standards for a single sample*

TABLE 6-7: CALCULATING THE TOTAL POINTS LOST FOR THE SINGLE SAMPLE STANDARD COMPONENT

Indicator Exceeded	SLIGHT % Points Lost	MODERATE % Points Lost	HIGH % Points Lost	Total Available Points
Enterococcus	25%	75%	100%	50

Frequently Asked Questions (FAQs)

Heal the Bay's Annual Beach Report Card

Heal the Bay is a nonprofit environmental organization making Southern California coastal waters and watersheds, including Santa Monica Bay, safe, healthy and clean. We use science, education, community action and advocacy to pursue our mission.

What is the Beach Report Card?

Ocean water quality testing is vital to the health of the millions of people who recreate in coastal waters. Heal the Bay's Beach Report Card (BRC) is a vital public health protection tool based on the monitoring of beaches conducted by local health agencies and dischargers.

Since the BRC was first published more than 20 years ago, beachgoers throughout California have come to rely on the annual and weekly grades to better protect their health and the health of their families. The BRC grades over 600 locations along the West Coast for summer dry weather and over 300 locations year-round on an A-to-F scale based on the risk of adverse health effects to beachgoers. Grades are based on fecal bacteria pollution concentrations in the surf zone. Water samples are analyzed for bacteria that indicate pollution from numerous sources, including fecal waste. The better the grade a beach receives, the lower the risk of illness to ocean users.

The BRC should be used like the SPF ratings in sunblock—beachgoers should determine what they are comfortable with in terms of relative risk, and then make the necessary decisions to protect their health. Heal the Bay urges coastal beachgoers to use this information before they visit beaches on the West Coast.

The Beach Report Card would not be possible without the cooperation of all of the shoreline monitoring agencies in California, Oregon and Washington.

What is the history of the BRC?

Heal the Bay's first Beach Report Card was published in 1991 and covered about 60 monitoring locations in Los Angeles County from Leo Carrillo Beach (near the Ventura County line) to Cabrillo Beach in San Pedro. At that time, beachgoers knew little about the health risks of swimming in polluted waters or the water quality at any of their favorite beaches in Los Angeles County. Beach water quality was a known public issue only when a substantial sewage spill occurred. Although beaches were routinely monitored, the data were either inaccessible or incomprehensible to the general public.

Since then, a great deal of work has been completed to reduce urban runoff pollution and sewage spills at our local beaches. Heal the Bay is proud to announce its influence on and participation in the following:

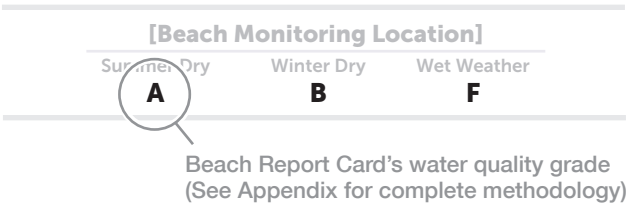
- Scientific studies such as the Santa Monica Bay Restoration Project's epidemiological study on swimmers at runoff polluted beaches and the Southern California Coastal Water Research Project (SCCWRP) led bight-wide shoreline bacteria and laboratory inter-calibration studies were completed.
- Legislation, such as the statewide beach bathing water standards and public notification bill (AB 411), and the protocol for identifying sources of fecal indicator bacteria at high-use beaches that are impacted by flowing storm drains (AB 538) that have been signed into law.
- Structural best management practices such as the Santa Monica Urban Runoff Recycling Facility (SMURRF), dry weather runoff diversions, and nearly $100 million in California's Clean Beach Initiative (CBI) projects throughout the state.
- Proposition O. The City of Los Angeles is spending over $100 million of Prop O funds to make Santa Monica Bay beaches cleaner and safer for public use.

All the while, Heal the Bay's Beach Report Card expanded it coverage from Los Angeles County to the entire western United States coastline.

What do the grades mean to the beach user?

Recreating in waters with increased bacteria concentrations has been associated with increased risks to human health. The higher the grade a beach receives, the better the water quality at that beach. The lower the grade, the greater the health risks.

Potential illnesses include stomach flu, eye/ear infections, upper respiratory infection and major skin rash (full body). The known risks of contracting illnesses associated with each threshold are based on a one-time, single day of exposure (head immersed while swimming) to polluted water. Increasing frequency of exposure or the magnitude of bacteria densities may significantly increase an ocean user's risk of contracting any one of a number of these illnesses.



How are grades calculated?

Heal the Bay's grading system takes into consideration the magnitude and frequency of exceedances above allowed bacterial levels over the course of the specified time period. Each BRC year contains three time/weather periods:

- **SUMMER DRY** = Samples taken during dry weather between April 1 and October 31
- **WINTER DRY** = Samples taken during dry weather between November 1 and March 31
- **WET WEATHER** = Samples taken during or within 72 hours of a rain event*

Water quality typically drops dramatically during and immediately after a rainstorm, but often rebounds to its previous level within a few days. For this reason, year-round wet weather data throughout California were analyzed separately in order to avoid artificially lowering a location's grade, and to provide better understanding of statewide beach water quality impacts. For complete methodology, see Appendix D.

**Heal the Bay utilizes a definition of a 'rain event' in California as precipitation greater than or equal to one tenth of an inch (>= 0.1"). Oregon and Washington criteria for a rain event is >=0.2" precipitation.*

How current are the grades?

It is important to note that the grades from the Beach Report Card represent the most current information available to the public, but they do not represent real-time water quality conditions. Currently, laboratory analyses of beach water quality samples take 18 to 24 hours to complete; then the data must be entered into a database before they are sent to Heal the Bay for a grade calculation. Faster methods are currently being developed but

presently remain too costly to implement. Heal the Bay releases grades every Friday throughout the year based on the most recent available sample data for the entire west coast. Weekly grades and more can be found at www.beachreportcard.org

What type of pollution is measured?

Runoff from creeks, rivers and storm drains are sources of pollution to California, Oregon and Washington beaches. Runoff may contain toxic heavy metals, pesticides, fertilizers, petroleum hydrocarbons, animal waste, trash and even human sewage.

The amounts of indicator bacteria present in runoff, and consequently in the surf-zone, is currently the best indication of whether or not a beach is safe for recreational water contact. The link between swimming in waters containing elevated levels of indicator bacteria and health risk was confirmed in the ground breaking 1995 epidemiological study conducted by the University of Southern California, Orange County Sanitation District, the City of Los Angeles and Heal the Bay, under the auspices of the Santa Monica Bay Restoration Project.

Indicator bacteria do not usually cause bather illness. Instead, their presence indicates the potential for water contamination with other pathogenic microorganisms such as bacteria, viruses and protozoa that do pose a health risk to humans. The BRC includes an analysis of shoreline (ankle-deep) water quality data collected by more than 25 different State, County, and City public agencies for fecal indicator bacteria.

ABOUT INDICATOR BACTERIA

The most common types of indicator bacteria include:

- **Total coliform**
- **Fecal coliform (or E. coli)**
- **Enterococcus**

Total coliform, which contains coliform of all types, originates from many sources including soil, plants, animals and humans. Fecal coliform and Enterococcus bacteria are found in the fecal matter of mammals and birds. This fecal bacteria does not necessarily come from humans, although numerous prior studies have demonstrated that there is a significant possibility of human sewage contamination in storm drain runoff at any given time.

At present, the report card contains no information on toxins or trash in the water or on the beach.

Why is storm drain pollution so significant?

Health officials and Heal the Bay recommend that beach users never swim within 100 yards on either side of a flowing storm drain, in any coastal waters during a rainstorm, and for at least three days after a storm has ended. Storm drain runoff is the greatest source of pollution to local beaches, flowing untreated to the coast and often contaminated with motor oil, animal waste, pesticides, yard waste and trash. After a rain, indicator bacteria densities often far exceed state health criteria for recreational water use.

Children often play directly in front of storm drains and in runoff-filled ponds and lagoons. Monitoring at “point zero” (the mouth of storm drains or creeks) is the best way to ensure that the health risks to all swimmers are minimized. This is one recommendation among several that Heal the Bay has made to state officials to improve water quality monitoring and better protect public health. In fact, point zero monitoring should be a criterion for receiving state beach water quality monitoring funds.

Are beaches monitored year-round?

This is the Beach Report Card’s third year of grading water quality along the entire U.S. Pacific Coastline. A total of 637 shoreline monitoring locations were analyzed from Whatcom County in Washington to San Diego County at the Mexican border. Most sample locations are selected by monitoring, health, and regulatory agencies to specifically target popular beaches or those beaches frequently affected by runoff, (or in case of the Pacific Northwest beaches: popular shell fishing beaches.

According to the EPA BEACH Act of 2000, each state having coastal recreation waters has to adopt water quality standards for bacteria in order to qualify for federal beach monitoring funding. Therefore, each state has the ability to adopt its own standards. However, Obama’s proposed budget for FY 2014 slashed funding for the entire BEACH Act monitoring program (approximately $10 million). States are only required to monitor recreational waters when federal funding is available, meaning the proposed budget cuts could ultimately relinquish states of their monitoring responsibilities.

In California, water quality samples are collected by the appropriate agency at a minimum of once a week from April through October as required under the California Beach Bathing Water Quality Standards (AB 411) and recommended by EPA’s National Beach Guidance and Performance Criteria for Recreational Waters (EPA’s BEACH program). Some agencies conduct year-round sampling, while others scale back their monitoring programs dramatically from November through March, despite the fact that many surfers and ocean swimmers are in the water year-round.

The majority of Oregon and Washington water quality monitoring occurs during the summer swimming season (Memorial Day through Labor Day). This past year 15 locations in Washington State were monitored throughout the winter months.

Why not test for viruses?

A common question asked by beachgoers is: “Because viruses are thought to cause many of the swimming-associated illnesses, why don’t health agencies monitor directly for viruses instead of indicator bacteria?” Although virus monitoring is incredibly useful in identifying sources of fecal pollution, there are a number of drawbacks to the currently available virus measurement methods. While there have been tremendous breakthroughs in the use of gene probes to analyze water samples for virus or human pathogenic bacteria but these techniques are still relatively expensive and highly technical. In addition, since human viruses are not found in high densities in ocean water and their densities are highly variable, setting standards for viruses is not currently feasible. Interference from other pollutants in runoff can make virus quantification very difficult. Also, interpretation of virus monitoring data is difficult because, unlike bacterial indicators, there are currently no data available that link health risks associated with swimming in beach water to virus densities. 

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Humboldt County Environmental Health Division
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San Francisco Baykeeper
San Francisco Public Utilities Commission
East Bay Regional Park District
San Mateo County Environmental Health Division
Santa Cruz County Environmental Health Services
Monterey County Environmental Health Bureau
San Luis Obispo County Environmental Health Services
Santa Barbara County Environmental Health Services
Ventura County Environmental Health Division
City of Los Angeles Environmental Monitoring Division
Los Angeles County Sanitation Districts
County of Los Angeles Department of Public Health Environmental Health
City of Redondo Beach
City of Long Beach Department of Health and Human Services Environmental Health Division
South Orange County Wastewater Authority
County of Orange Environmental Health
Orange County Sanitation District
San Diego County Department of Environmental Health
Wildcoast
Southern California Coastal Water Research Project
State Water Resources Control Board

The Beach Report Card's original concept and methodology were created in-part by Heal the Bay's former President, Dr. Mark Gold. This report would not be possible without his vision and unwavered dedication to improving beach water quality and strengthening public health protection.

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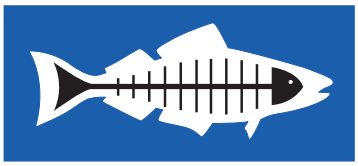

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