



San Diego County 2005 Beach Closure & Advisory Report



Windansea Beach in La Jolla, City of San Diego

Beach water quality contamination events and days posted
for beaches within San Diego County, California, USA.

Prepared by the County of San Diego
Department of Environmental Health
Land & Water Quality Division
Ocean & Bay Recreational Water Program

San Diego County 2005 Beach Closure & Advisory Report

County of San Diego Department of Environmental Health Ocean & Bay Recreational Water Program

- Mark McPherson, Chief of Land & Water Quality Division
- Clay Clifton, Environmental Health Specialist II
- Frank Lupena, Environmental Health Technician

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Photographs courtesy of Peter Neubauer and Frank Lupena unless noted otherwise.

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Figure 1: Plume from Tijuana Estuary flowing south to Border Field State Park and Playas De Tijuana in Baja California, Mexico. Photo: Ocean Imaging, Inc.

THE OCEAN & BAY RECREATIONAL WATER PROGRAM

As part of the County of San Diego Department of Environmental Health (DEH), the Ocean & Bay Recreational Water Program is responsible for the protection of public health along the County's 52 miles of ocean and bay recreational waters. (52 of the 154 total shoreline miles {73 ocean and 81 bay} are considered recreational shoreline). Ocean and bay waters used for full body-contact recreational activities such as swimming, surfing and diving must meet specific bacteriological standards to be considered safe for such purposes. Every day the Ocean & Bay Recreational Water Program staff reviews the latest bacteriological water sample results from six different laboratories, receives reports of sewage releases, and other information needed to determine the safety of water contact at beaches within San Diego County. The California Health and Safety Code and Title 17 of the California Code of Regulations require the local health officer (the DEH Ocean & Bay Recreational Water Program) to make public notifications as soon as it has information that indicates contamination of ocean or bay recreational waters and a possible increased health risk to users. Sources of ocean and bay water contamination can include sewage releases, sewage contaminated runoff, urban runoff in both dry and wet weather, and unknown sources when results from beach water quality monitoring indicate levels of fecal indicator bacteria that violate state standards. DEH will issue a water contact Closure or Advisory (signs are posted at the beach, hotline and Web page are updated) until additional sampling results indicate bacterial levels are within state standards and/or the source of contamination is eliminated.

The following is a listing of the reports and data located on the DEH web page in "Documents and Information":

- Annual Ocean and Bay Water Quality Reports (2001, 2002, 2003 and 2004)
- Ocean Illness Survey report and form
- Impacts of Rainstorms on Water Quality at Beaches Adjacent to Lagoons

The Ocean & Bay Recreational Water Program staff maintain a daily Beach & Bay Water quality Report Hotline and Web Page.

Beach & Bay Water Quality Report **Hotline: 619-338-2073**

The Beach & Bay Water quality Report **Web Page:**
www.earth911.org or link by going to
www.sdcounty.ca.gov/deh "Beach & Bay Water Quality"



Figure 1: Surfer at a beach in San Diego County

Beach Mile Days



Figure 2: Pacific Beach near the Crystal Pier, looking north. Photo: City of San Diego

The term “Beach Mile Days” is used to represent the measurement of the number of days and the distance of ocean or bay shoreline waters that are closed due to a sewage spill or under advisory for a violation of the AB 411 Ocean Water-Contact Sports Standards.

Using BMDs is a more meaningful measurement of ocean and bay water impairment than using the number of incidences or the number of days since BMDs take into account both the amount of beach and the length of time of a closure or posting. The California State Water Resources Control Board and all California coastal counties use BMDs for reporting closures and postings which provides a standardized measure allowing comparison of different areas (beach to beach or county to county) or assessing trends over time.

Beach Mile Days (BMDs) are calculated by multiplying the number of days of a closure or posting by the number of miles of beach closed or posted:

$$(\text{Number of Days}) \times (\text{Miles of beach closed or posted}) = \text{Beach Mile Days}$$

For example, if a sewage spill resulted in the closure of $\frac{1}{2}$ mile of beach for 7 days then:

$$(7 \text{ days}) \times (0.5 \text{ mile}) = 3.5 \text{ Beach Mile Days of closure}$$

The total number of available ocean and bay recreational Beach Mile Days for San Diego County are:

$$\begin{aligned} (365 \text{ days}) \times (49.2 \text{ miles ocean}) &= 17,958 \text{ Available Beach Mile Days} \\ (365 \text{ days}) \times (3 \text{ miles bay}) &= 1,095 \text{ Available Beach Mile Days} \\ \hline (365 \text{ days}) \times (52.2 \text{ miles total}) &= 19,053 \text{ Available Beach Mile Days.} \end{aligned}$$

EXECUTIVE SUMMARY

The 2005 Beach Closure and Advisory Report provides an analysis of beach water quality advisories and closures for the 52 miles of recreational ocean and bay waters in San Diego County for the years 2000 through 2005.

Major findings of the San Diego County 2005 Beach Closure & Advisory Report:

Closures due to Sewage Contamination

- Despite a 14% decrease in the number of closure events due to sewage contamination [36 in 2005 from 42 in 2004], the total number of closure Beach Mile Days increased to 263 in 2005 from 225 in 2004. This represents the third consecutive year of increase and a 183% increase in the total number of closure Beach Mile Days since 2000. Analysis of closure data since 2000 indicates several trends in beach closures in San Diego County:
 1. Sewage spills to recreational waters that coincide with stormwater runoff following rainfall have significantly greater closure Beach Mile Days (BMDs) than those issued during dry or less rainy weather. This is due to the longer duration (often 7 days or more) of these events while awaiting bacterial levels to drop within state standards to remove signs, and the greater distances posted because of the extent to which sewage contamination is carried by stormwater flows from lagoon mouths, rivers, etc. The 2004 and 2005 yearly beach closure reports list the closures issued during the rainy season of 2004/ 2005, the third heaviest rainfall season since records began in 1850.
 2. The biggest contributors to closure BMDs are the closures issued for south county beaches due to sewage-contaminated runoff from the Tijuana River. These closures are often for several miles of beach shoreline (compared to several hundred yards for other closures) and can last from a few days to over two weeks at a time. Closures related to the Tijuana River are also a function of rainfall frequency and intensity, which cause river flows to enter the U.S. and the Tijuana Estuary.
 3. When closure events related to the Tijuana River are excluded, the number of closure events caused by sewage spills (SSOs) has decreased since 2001. [Down 43% from 39 in 2001 to 22 in 2005].



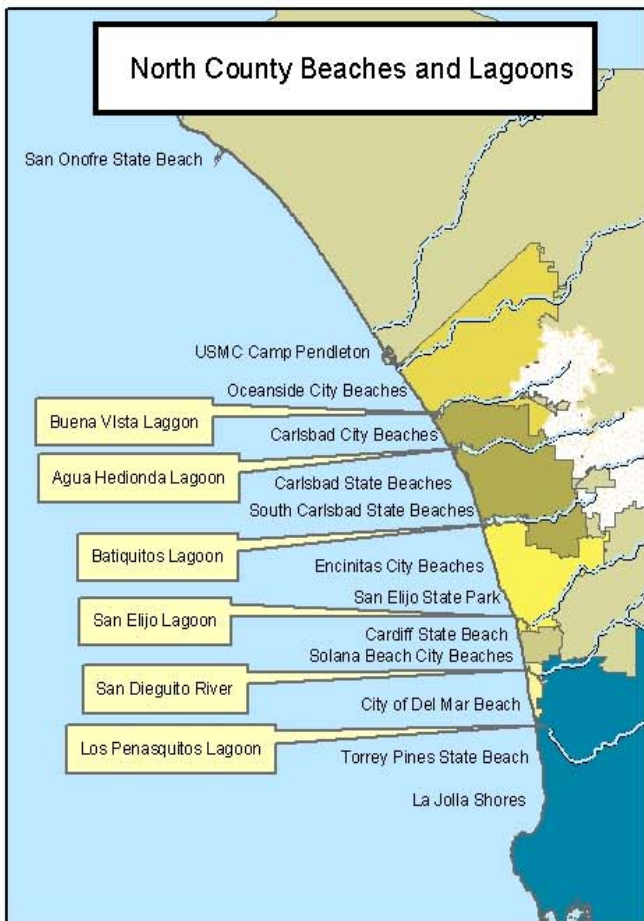
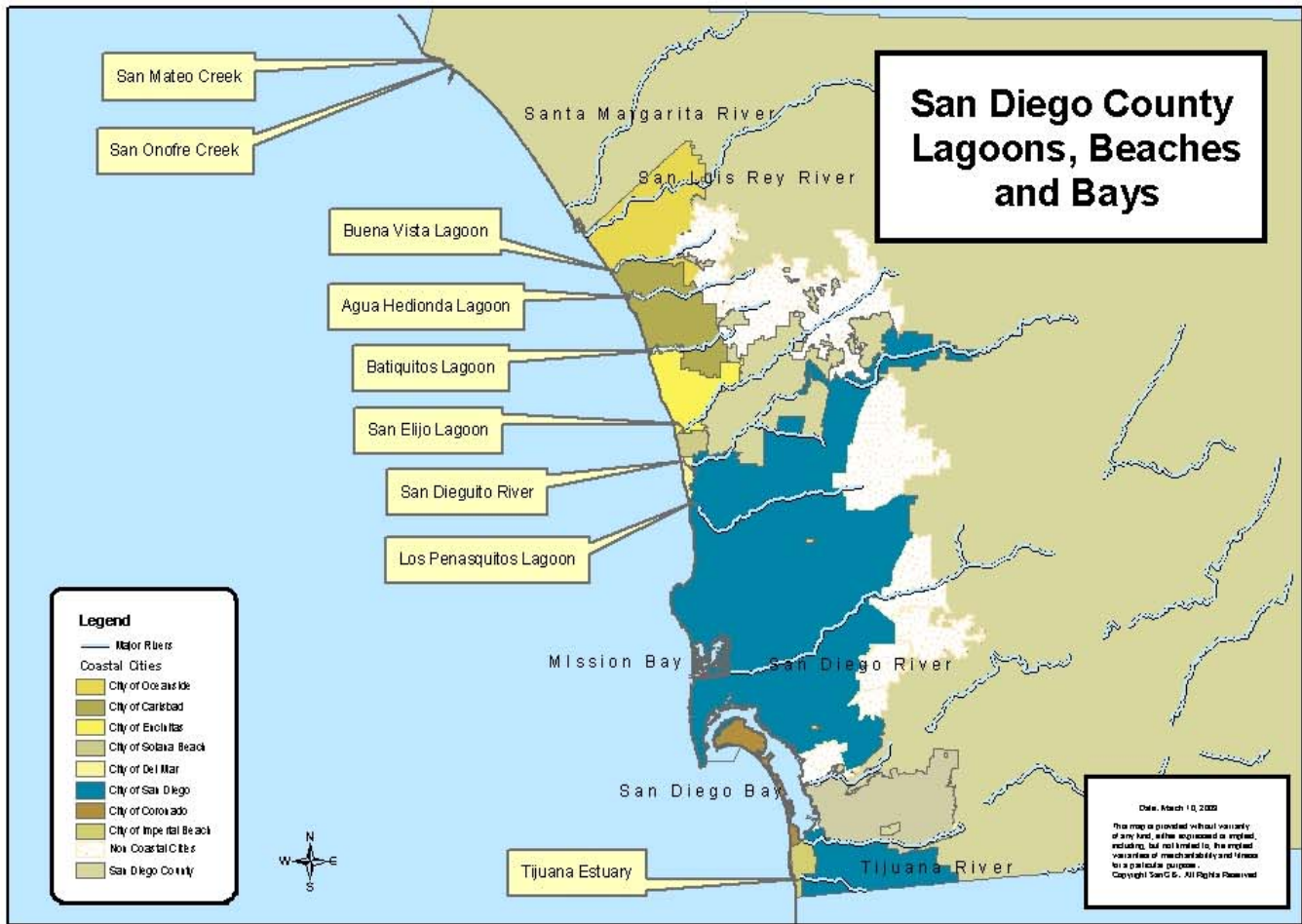
Figure 3: Batiquitos Lagoon outlet ("Ponto") at South Carlsbad State Beach

Advisories due to bacterial exceedances in monitoring (unknown source of contamination)

- The number of advisory BMDs due to bacterial exceedances in monitoring during the AB 411 period (April 1 – October 31) increased to 41 in 2005 from 30 in 2004. This increase can be attributed to one unusual event, #125, which added 11.5 BMDs during a three day advisory at south county beaches. This represents the second year of increase, but a 51% decrease in advisory Beach Mile Days since 2000.
- The number of days signs were posted due to bacterial exceedances during the AB 411 period decreased 12% from 505 in 2004 to 446 in 2005. Despite the rainy winter and spring, only a handful of locations (San Luis Rey River outlet, San Mateo Creek outlet, and Leisure Lagoon storm drain outlet) seemed to suffer lasting impacts from urban runoff after April 1. The decrease in days posted during the AB411 period is primarily attributable to fewer advisories posted at Mission Bay and San Diego Bay monitoring locations. The 446 advisory days posted due to bacterial exceedances during the AB 411 period for 2005 represents a 57% reduction for the same time period from 2000.
- The location with the most advisory days posted due to bacterial exceedances for the AB 411 period in 2005 was the San Luis Rey River outlet at the south jetty in Oceanside (117 days). In previous years this distinction belonged to:
 - 2004 - P.B. Point in Pacific Beach (121 days)
 - 2003 - P.B. Point in Pacific Beach (80 days)
 - 2002 - Shelter Island shoreline park in San Diego Bay (210 days)
 - 2001 - P.B. Point in Pacific Beach (129 days)
 - 2000 - P.B. Point in Pacific Beach (141 days)



Figure 4: The inside cove at PB Point during summer months with kelp accumulation



OCEAN AND BAY WATER QUALITY AND PUBLIC HEALTH

Disease-causing microorganisms

Polluted runoff and untreated sewage may contain pathogenic bacteria, viruses or protozoa. When polluted runoff or sewage is released into ocean or bay waters these disease-causing organisms may be present near the sites where polluted discharges enter the water, or farther away depending upon ocean currents. Swimming, surfing or other exposure to contaminated waters increases the risk of illness from pathogens found in contaminated water.

The following table lists some of the pathogens found in sewage-contaminated water and possibly in runoff, and the diseases (or symptoms) they cause.

Table 1: Disease- causing microorganisms

Pathogenic Agent	Disease
Bacteria	
<i>Escherichia coli</i> (<i>E. coli</i>)	Gastroenteritis
<i>Salmonella</i> (not typhi)	Gastroenteritis, usually with fever; less commonly septicemia
<i>Shigella</i>	Gastroenteritis, usually with fever
Protozoa (intestinal parasites)	
<i>Cryptosporidium</i>	Diarrhea – Cryptosporidiosis
<i>Giardia lamblia</i>	Diarrhea – Giardiasis
Viruses	
Rotavirus	Gastroenteritis
Enteroviruses	Respiratory infection, rash, fever; meningitis
Norwalk and Norwalk-like viruses	Gastroenteritis
Adenovirus	Respiratory infection and gastroenteritis

The levels of bacteria, viruses and protozoa decrease in recreational waters over time by the following processes:

- Die off due to sun (ultraviolet exposure), salt water or age.
- Predation by other organisms
- Dilution

Indicator bacteria testing methods

The detection and enumeration of disease-causing organisms (pathogens) identified with waterborne illness is difficult, time-consuming and costly. Thus, most water quality laboratories test for fecal indicator bacteria (i.e., total coliforms, fecal coliforms and enterococci) as a means to ascertain the likelihood that human pathogens may be present in recreational waters. Fecal indicator bacteria are found in the intestines of all warm-blooded animals, are excreted in high numbers in feces, but can also be found in soil and decaying vegetation. Total coliforms are a broad group of organisms that include fecal coliform bacteria as well as *E. coli*. The enterococci group has been determined to be a good indicator of swimming associated gastroenteritis. The methods most commonly used to detect fecal indicator bacteria in ocean waters include:

- **Membrane Filtration (MF)**: This test method produces results in 24 hours. The City of San Diego, Environmental Monitoring and Technical Services Division and the Encina Wastewater Authority use the MF method for the analyses of total coliforms, fecal coliforms and enterococci in ocean waters.
- **Multiple-tube Fermentation (MTF)**: This test method produces results from 24 to 96 hours. The City of Oceanside Water Utilities Laboratory uses the MTF method for the analyses of total coliforms and fecal coliforms in ocean waters. The San Elijo Water Reclamation Facility uses the MTF method for the analyses of total coliforms, fecal coliforms and enterococci in ocean waters.
- **Colilert 18 ®**: This test method produces results in 18 hours. The County of San Diego, Public Health Laboratory uses the Colilert 18 method for the analyses of total coliforms and *E. coli*. Special investigative samples by the City of San Diego are processed using the Colilert 18 technique.
- **Enterolert®**: This test method produces results in 24 hours. The County of San Diego Public Health Laboratory and City of Oceanside Water Utilities Laboratory use the Enterolert® technique for the analyses of enterococci bacteria in ocean waters.

All of the methods are culture based, which means that the indicator bacteria present in water must be allowed to grow in order to be detected. Differences between the methods include how the bacteria are detected and counted, how soon the results become known, and cost. Detailed descriptions for these methods are available in the latest edition of *Standard Methods for the Examination of Water and Wastewater*.



Samples are collected in ankle to knee-deep water, 4 - 6 inches below the surface

Figure 5: Beach water sample collection.

Locations and frequency of bacterial monitoring, and California ocean water-contact sports standards

Over the past 20 years, the County of San Diego Department of Environmental Health and local sanitation agencies (City of San Diego, San Elijo Water Reclamation Facility, Encina Wastewater Authority, and the City of Oceanside) have been conducting bacterial monitoring of the coastal waters in San Diego County for the protection of public health and for regulatory permit requirements.

In 1997, Assembly Bill 411 amended the California Health and Safety Code (Sections 115880-115915) to require the standardization of bacterial monitoring of water quality at public beaches in California and public notification by the local health agency when results indicate bacterial levels exceed (violate) state standards [see next page]. To fulfill these requirements (called "AB 411") the DEH Ocean & Bay Recreational Water Program collects beach water samples from 60 locations per week between April and October. Several high use beaches next to flowing storm drains or lagoons are sampled twice a week during this time. Between November and March, DEH collects samples at 13 popular surfing beaches every week. In addition to the samples collected by DEH, the county's five dischargers of treated wastewater effluent collect beach water samples as part of their discharge permit requirements. The Cities of Oceanside and Coronado also collect beach water samples voluntarily. The results from all of these monitoring efforts are shared with DEH. The total number of beach water samples collected in San Diego County is over 104 per week between April and October, and over 50 per week between November and March.

The chart below and graph on page nine show the distribution of the weekly beach water quality monitoring in San Diego County between April and October. The numbers shown are the number of routine samples collected per week. Follow-up sampling by DEH can add an additional five to fifteen samples per week.

For a detailed map of sampling locations at San Diego County beaches, go to www.earth911.org and select 'Beach Water Quality' for San Diego County.

Table 2: Number of weekly sampling stations between April 1 and October 31, 2005

San Onofre. <i>State Beach that includes San Mateo Creek outlet</i>	1	
Camp Pendleton. <i>USMC beaches that include San Onofre Creek outlet and Camp Del Mar</i>	2	
Oceanside. <i>From Harbor Beach south to St. Malo. Includes Buccaneer Beach</i>	12	<i>includes one station sampled 2x week</i>
Carlsbad. <i>Includes Buena Vista Lagoon outlet, municipal beach, and Carlsbad State beaches</i>	10	
Encinitas. <i>From Leucadia south through Cardiff State Beach. Includes Moonlight Beach.</i>	10	<i>includes two stations sampled 2x week</i>
Solana Beach. <i>Includes Tide Beach Park, Fletcher Cove, and Seascape Beach Park</i>	4	<i>includes one station sampled 2x week</i>
Del Mar. <i>From San Dieguito River Beach south through Anderson Canyon</i>	3	<i>includes one station sampled 2x week</i>
San Diego, Mission Bay. <i>Includes 18 swimming, sailing and PWC areas</i>	18	
San Diego, ocean coast. <i>From Torrey Pines State Beach south through Sunset Cliffs Park. Includes La Jolla, Windansea, Pacific Beach, Mission Beach, and Ocean Beach</i>	20	<i>includes two stations sampled 2x week</i>
San Diego Bay. <i>Includes seven locations on San Diego Bay</i>	7	
Coronado. <i>Includes Coronado municipal beach and Silver Strand State Beach</i>	9	<i>includes four stations sampled 2x week</i>
Imperial Beach. <i>From Camp Surf south through End of Seacoast Drive</i>	4	
BF, TJSNWRs. <i>Border Field State Park and Tijuana Slough National Wildlife Refuge Shoreline</i>	4	
Total	104	

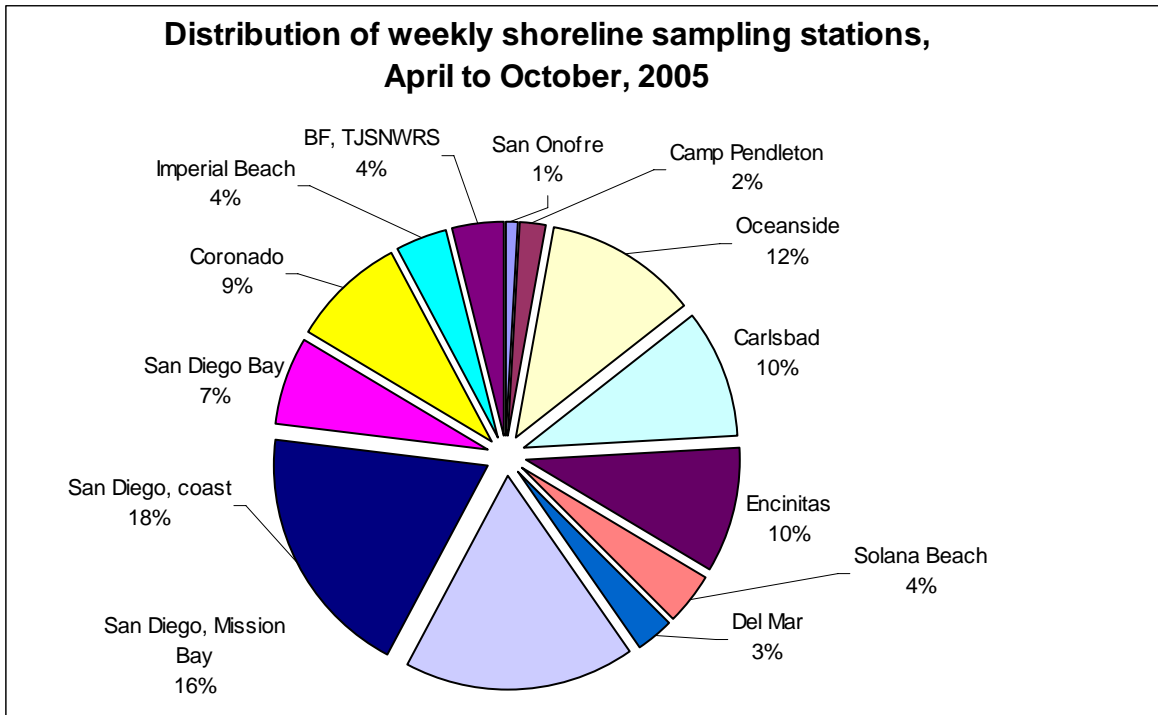


Figure 6: Weekly sampling at San Diego County Beaches (April - October).

Sampling is conducted by the following agencies: County of San Diego Department of Environmental Health (DEH), City of Oceanside, Encina Wastewater Authority, San Elijo Water Reclamation Facility, City of San Diego, and the City of Coronado.

The California Department of Health Services established the following bacterial standards for ocean water contact in the California Code of Regulations, Title 17 (Sections 7956-7962) to implement AB 411. These are often referred to as the “AB 411 Standards”. These standards and the other requirements of AB 411 became effective in July 1999.

Single sample standards for total coliforms, fecal coliforms and enterococci bacteria shall not exceed:

- Total Coliforms: 10,000 organisms per 100 milliliter sample.
- Fecal Coliforms: 400 organisms per 100 milliliter sample.
- Enterococci: 104 organisms per 100 milliliter sample.
- Fecal: Total ratio: >1,000 total coliforms if ratio exceeds 0.1.

30-day geometric mean standards (of five weekly samples) for total coliforms, fecal coliforms and enterococci bacteria shall not exceed:

- Total Coliforms: 1,000 organisms per 100 milliliter sample.
- Fecal Coliforms: 200 organisms per 100 milliliter sample.
- Enterococci: 35 organisms per 100 milliliter sample.

Sources of the indicator bacteria used to test for fecal contamination of beach water quality include:

Environment: soils, decaying vegetation

Storm water/ urban runoff: sources vary

Animal wastes: birds, dogs, cats, seals

Humans: sewage, kids with diapers, shedding from body

OCEAN AND BAY WATER QUALITY ADVISORIES DUE TO STANDARDS VIOLATIONS

When a bacteriological water sample from a beach next to a coastal outlet (storm drain, river, lagoon mouth, etc.) fails to meet the AB 411 Single Sample Standards (see page 9), the following occurs:

- Warning signs are posted at the affected ocean or bay waters indicating that bacterial levels have exceeded health standards.
- All the information regarding the posted areas is updated on the DEH Beach and Bay Hotline (619-338-2073) and www.earth911.org web page.
- Additional bacteriological water samples are collected at the posted areas and the results are evaluated daily to determine if the areas posted with warning signs should be increased, reduced, shifted or removed.



The DEH Ocean & Bay Recreational Water Program recommends avoiding water contact at areas posted with the warning sign shown above.

Advisories for San Diego County beaches 2000 - 2005 (April - October)

The information provided in this section is the data reported to the California State Water Resources Control Board beginning with the year 2000, the first calendar year that the AB 411 Ocean Water-Contact Sports Standards were in place. Comparisons for days posted under advisory are limited to the April to October time period due to changes in monitoring frequencies at some locations between November and March since 2000.

The following charts and graphs depict the total number of advisory Beach Mile Days due to exceedances of standards [Figure 8], the total number of routine samples collected and the number of those samples causing advisories (exceedances) [Figure 9], and the total days posted [Figure 10] between April 1 and October 31 each year.

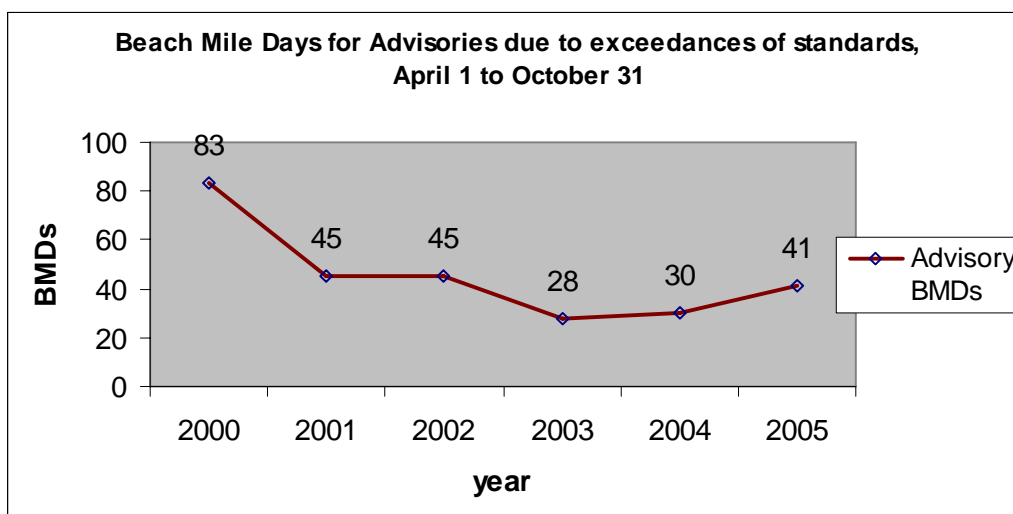


Figure 7: Advisory beach mile days due to bacterial exceedances

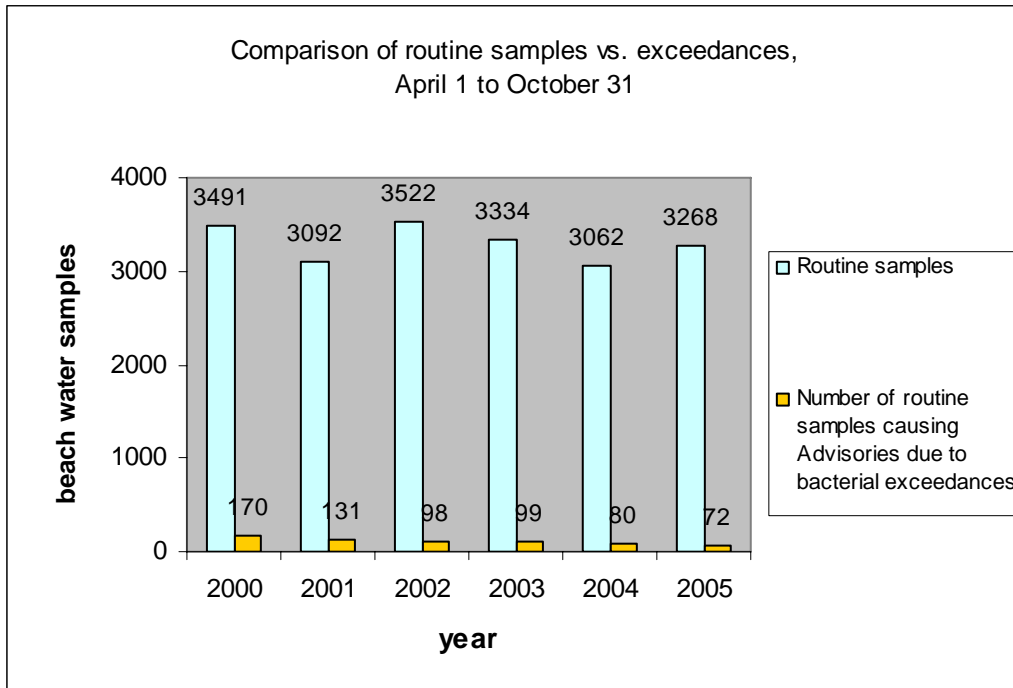
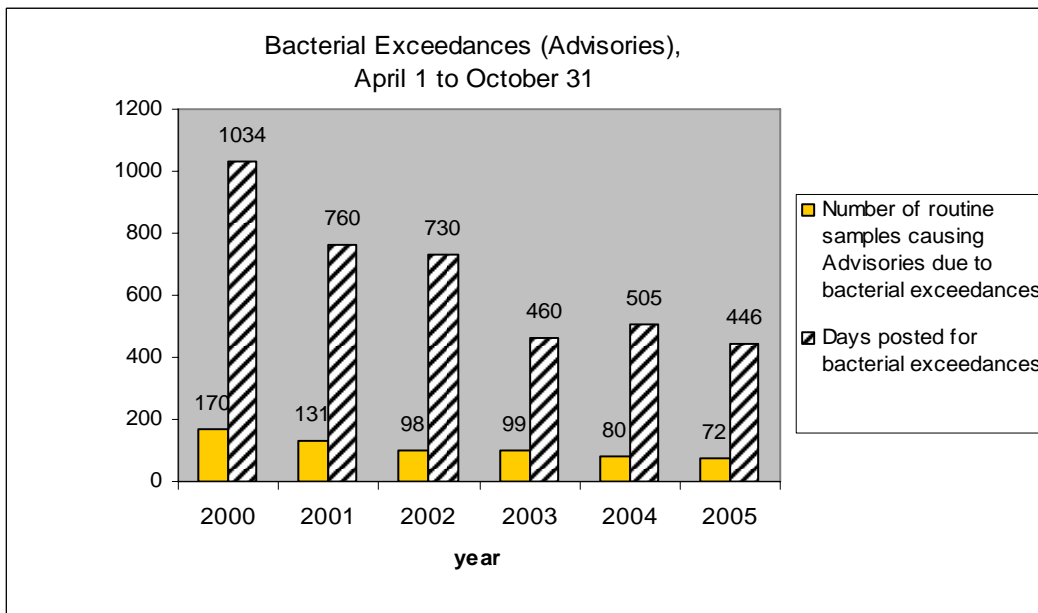


Figure 8: Number of routine samples and exceedances



These graphs do not include chronic advisory days (Children's Pool). See page 13.

Figure 9: Advisory events (exceedances) and days posted

Overall, water quality at most beaches in San Diego County is very good during dry weather. Weekly bacterial monitoring data is sent to Heal The Bay (HTB), which provides a water quality grade for each location based upon the last four weeks of monitoring data. In its 2004-2005 Annual Beach Report Card, HTB assigned 78% of monitored locations in San Diego County with a grade of 'A' or 'B' for year-round dry weather water quality. The annual, summer, and weekly grades can be viewed at www.healthebay.org. For most locations, the annual [dry weather] grade assigned by HTB agrees with the assessment by DEH of health risk from water contact. The weekly report card provides beach goers with the recent trend in water quality at a beach, but does not provide the current status assigned by DEH. For the current status, check the DEH Beach and Bay Water Quality Report Hotline (619-338-2073) or web page (www.earth911.org 'beach water quality').

Advisory days posted by coastal jurisdiction 2000 – 2005 (April – October)

The number of days posted under advisory due to bacterial exceedances for each coastal jurisdiction is shown below.

Table 3: Days posted for bacterial exceedances (Advisories) between April 1 and October 31

	2000	2001	2002	2003	2004	2005
San Onofre	1	13	4	11	0	59
Camp Pendleton	0	0	0	0	0	0
Oceanside	15	8	26	32	53	120
Carlsbad	5	4	1	4	2	4
Encinitas	69	22	5	22	16	19
Solana Beach	0	5	2	7	2	3
Del Mar	3	0	5	2	11	15
San Diego, Mission Bay	581	346	279	124	190	60
<i>Mission Bay Epi study</i>				70		
San Diego, ocean coast	229	177	76	124	168	132
San Diego Bay	77	166	319	50	61	29
Coronado	8	5	4	2	0	1
Imperial Beach	7	6	0	5	0	3
BF, TJSNWRS	39	8	9	7	2	1
	1034	760	730	460	505	446

For a detailed map of sampling locations at San Diego County beaches, go to www.earth911.org and select 'Beach Water Quality' for San Diego County.

Changes in sampling procedures by DEH: In April 2001, DEH moved its routine sample collection point at locations with outlets (storm drains, rivers, or lagoons) to 25 yards downcoast from the mixing zone, except in Mission Bay due to inadequate signage at drain outlets there. This change was made to conform to the State's and other agencies recommendations. This change in the routine sample collection procedure was applied to Mission Bay locations in June 2003.



Figure 10: Dry weather flow from San Luis Rey River outlet in Oceanside

Beaches under a chronic advisory or closure

Analysis of water quality advisory and closure data in the *2005 Beach Closure and Advisory Report* does not include locations posted or closed under a chronic status (i.e., Children's Pool, and the Tijuana Slough and Border Field State Park shorelines) because normal protocols to remove signs are not followed at these locations. Although sample results at chronic locations may occasionally be within state standards, the presence of known, on-going sources of contamination require these beaches to remain under a water quality advisory or closure status to protect public health.



Figure 11: Children's Pool in La Jolla, San Diego

OCEAN AND BAY WATER CLOSURES DUE TO SEWAGE SPILLS

Whenever a sewage release is reported to the DEH that may impact water quality at a recreational beach, staff immediately issues a water contact closure for the affected ocean or bay beach. The closure area is based on many factors, including type of sewage (e.g., untreated, secondary treated, sewage sludge), volume of discharge, location of spill, ocean currents and tides, historical sewage spills in the area, and any other pertinent information. After a water contact closure is issued:

- Closure signs posted at the affected ocean or bay shoreline indicating sewage contamination has occurred.
- A press release is sent to the media and appropriate agencies are notified.
- Closure areas are listed on the DEH Beach and Bay Hotline (619-338-2073) and www.earth911.org.
- Bacterial sampling of the affected shoreline is initiated. Closed recreational beaches will be reopened or reduced in size when the contamination source has been eliminated and after two daily consecutive sampling results indicate the water quality meets the AB 411 Single Sample Standards (see page 9).



The DEH Ocean & Bay Recreational Water Program strongly recommends avoiding water contact within the closure area and where closure signs are posted.



A 100 gallon /minute spill through a sewer manhole. Overflows are typically caused by blockages (grease, tree roots, debris) or rain infiltration of sewer lines. Spills often flow into the street and then into storm drains, which transport flows directly to the ocean or into rivers or creeks, which flow to the ocean. The storm drain system is not connected to the sewer system in San Diego County.

Figure 12: Sanitary sewer overflow (SSO)

Closures due to sewage spills 2000 – 2005 (calendar year)

The following charts and graphs depict the total number of closure events and known volume of sewage spilled to recreational waters in San Diego County from 2000 to 2005 [Table 4], and total number of closure Beach Mile Days (BMDs) [Table 6]. Although the impact of closures as measured by BMDs was greater in 2005 than in 2004, the number of closure events decreased from 2004, reflecting the trend in fewer closures due to sewage spills (SSOs) in San Diego County since 2001. [Figure 14, Table 5] Likewise, in 2005 the volume of sewage spills from SSOs impacting recreational waters was the lowest in the six year period as shown in Table 4.

Table 6 on page 17, Closure Beach Mile Days due to sewage contamination, shows the extent of loss of recreational beach use by the county as a whole and by coastal jurisdiction for every year since 2000. In 2005, the total number of closure BMDs increased for the second consecutive year. Closures that occurred during the very rainy winter of 2004/ 2005 resulted in a higher number of Beach Mile Days due to the greater area closed and longer duration of those events while awaiting bacterial levels to drop within state standards.

The yearly contribution by the Tijuana River to the total number of closure BMDs is shown in Table 7 and Figure 15 [page 18]. It is noteworthy that the closures caused by the Tijuana River account for 70% or more of closure BMDs for every year except 2002. Closures caused by sewage-contaminated runoff from the Tijuana River are seasonal because the river flow is diverted to the U.S. International Boundary & Water Commission (IBWC) treatment plant during low flow conditions (flows less than 15 million gallons per day). Therefore, years with lower amounts of rainfall tend to have fewer beach closures at south county beaches.

Table 4: Beach closures and gallons spilled

	2000	2001	2002	2003	2004	2005
Beach closure events	44	50	35	39	42	36
Volume (gal) of sewage spilled to recreational waters (does not include Tijuana River flows)	36,673,012	1,952,453	11,704,314	2,066,355	7,359,373	575,928

Figure 13: Graph of beach closure events

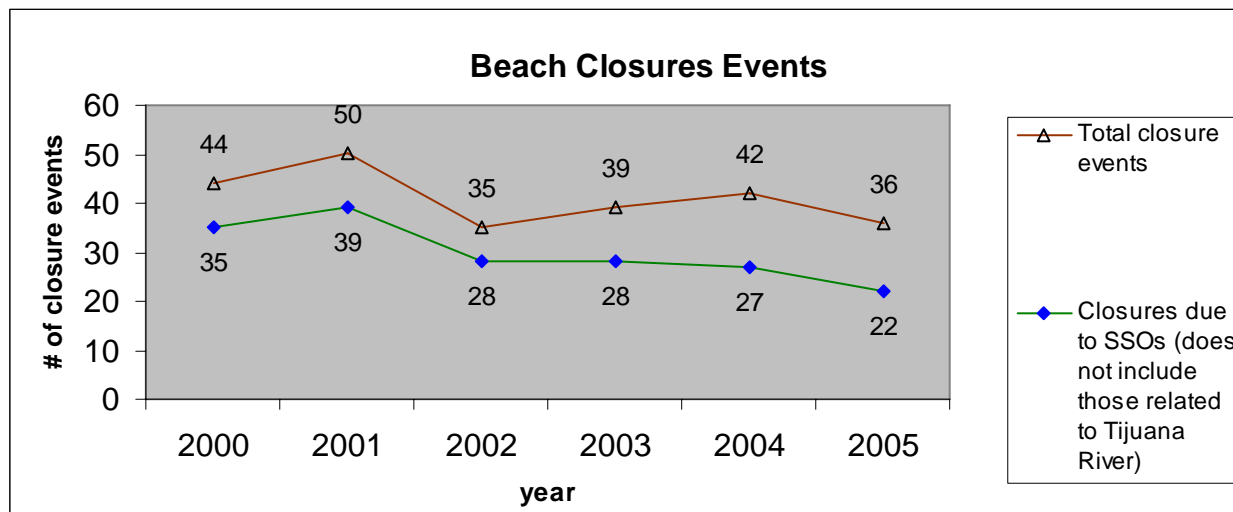


Table 5: Closure events caused by sewage spills

Closure events caused by sewer spills (SSOs). This table does not include closures caused by sewage-contaminated runoff from the Tijuana River. Not all spills originated in the same jurisdiction where the beach closure occurred.

coastal jurisdiction	2000	2001	2002	2003	2004	2005
San Onofre State Beach (includes MCB Camp Pendleton)	2	1	0	2	0	1
Oceanside (Harbor Beach, Oceanside pier, and Buccaneer Beach)	1	0	1	1	2	1
Carlsbad (Carlsbad State and South Carlsbad State Beaches and Aqua Hedionda Lagoon)	5	4	4	2	3	5
Encinitas (Leucadia/ Grandview, Stone Steps, Moonlight, Swami's, San Elijo State Park and Cardiff State Beach)	2	4	2	6	5	4
Solana Beach (Tide Beach, Fletcher Cove, Seascape Park)	1	1	0	0	1	0
Del Mar (San Dieguito River Beach to Andersen Canyon)	1	1	2	2	0	0
City of San Diego , coastal beaches (Torrey Pines State Beach, La Jolla, Pacific Beach, Mission Beach, Ocean Beach, and Sunset Cliffs) and Mission Bay	17	21	11	11	10	6
San Diego Bay (can include Coronado, San Diego, and Chula Vista jurisdictions)	5	7	6	3	3	2
Coronado (includes Silver Strand State Beach)	0	0	0	0	0	0
Imperial Beach	0	0	1	1	3	3
Border Field State Park and TJSNWRS (non-chronic closures)	1	0	1	0	0	0
Yearly event totals	35	39	28	28	27	22

By removing the closure events related to sewage-contaminated runoff from the Tijuana River (closures in Coronado and Imperial Beach) in Table 5, a decreasing trend in closures caused by sewage spills can be observed in San Diego County since 2001. The lower number of closures caused by sewage spills in recent years can be attributed to better maintenance of sewer lines and better containment of spills by some municipal wastewater agencies.

Table 6: Beach Mile Days (BMDs) due to sewage contamination

Closure BMDs in San Diego County. Extent of closure measured by length of shoreline and number of days closed to water contact.							
coastal jurisdiction	available BMDs [beach miles x 365 days]	2000	2001	2002	2003	2004	2005
		San Onofre State Beach (includes MCB Camp Pendleton)	4.3 x 365 = 1569	1.3	0.5	0.0	1.0
Oceanside (Harbor Beach, Oceanside pier, and Buccaneer Beach)	3.7 x 365 = 1351	1.2	0.0	1.2	0.3	3.0	1.7
Carlsbad (Carlsbad State and South Carlsbad State Beaches and Aqua Hedionda Lagoon)	6.5 x 365 = 2372	1.3	3.5	1.8	4.7	1.0	18.0
Encinitas (Leucadia/ Grandview, Stone Steps, Moonlight, Swami's, San Elijo State Park and Cardiff State Beach)	5.9 x 365 = 2153	0.4	2.1	4.9	4.8	10.5	13.2
Solana Beach (Tide Beach, Fletcher Cove, Seascape Park)	1.3 x 365 = 475	0.1	0.1	0.0	0.0	1.5	0.0
Del Mar (San Dieguito River Beach to Andersen Canyon)	2.2 x 365 = 803	0.3	0.2	0.9	0.6	0.0	0.0
City of San Diego , coastal beaches (Torrey Pines State Beach, La Jolla, Pacific Beach, Mission Beach, Ocean Beach, and Sunset Cliffs)	17.9 x 365 = 6533	8.3	5.9	4.1	11.3	31.0	7.0
City of San Diego , Mission Bay	2.0 x 365 = 730	0.3	20.3	8.0	11.0	12.0	11.5
San Diego Bay (can include Coronado, San Diego, and Chula Vista jurisdictions)	1.0 x 365 = 365	1.6	1.5	3.7	1.0	5.5	0.3
Coronado (and Silver Strand State Beach) Includes closures due to sewage contamination from Tijuana R.	3.7 x 365 = 1351	18.2	93.4	0.0	81.3	79.5	102.4
Imperial Beach Includes closures due to sewage contamination from Tijuana R.	1.4 x 365 = 511	32.0	76.9	22.0	72.0	81.0	106.3
Border Field State Park and TJSNWRS (non-chronic closures)	2.3 x 365 = 839	27.6	0.0	8.9	0.0	0.0	0
Yearly total BMDs	52.2 x 365 = 19053	93	204	56	188	225	263
+							
Border Field State Park and TJSNWRS BMDs (chronic closures)		98.5	163	141	136	200	162

Chronic closures: See page 13.

Table 7: Contribution by Tijuana River to closure Beach Mile Days

Beach Mile Days for Closures due to sewage contamination						
year	2000	2001	2002	2003	2004	2005
Total Closure BMDs	93	204	56	188	225	263
Closure BMDs, NOT including those due to Tijuana River	15	34	31	35	67	54
% contribution by the Tijuana River to BMD Closures	84	83	45	81	70	79

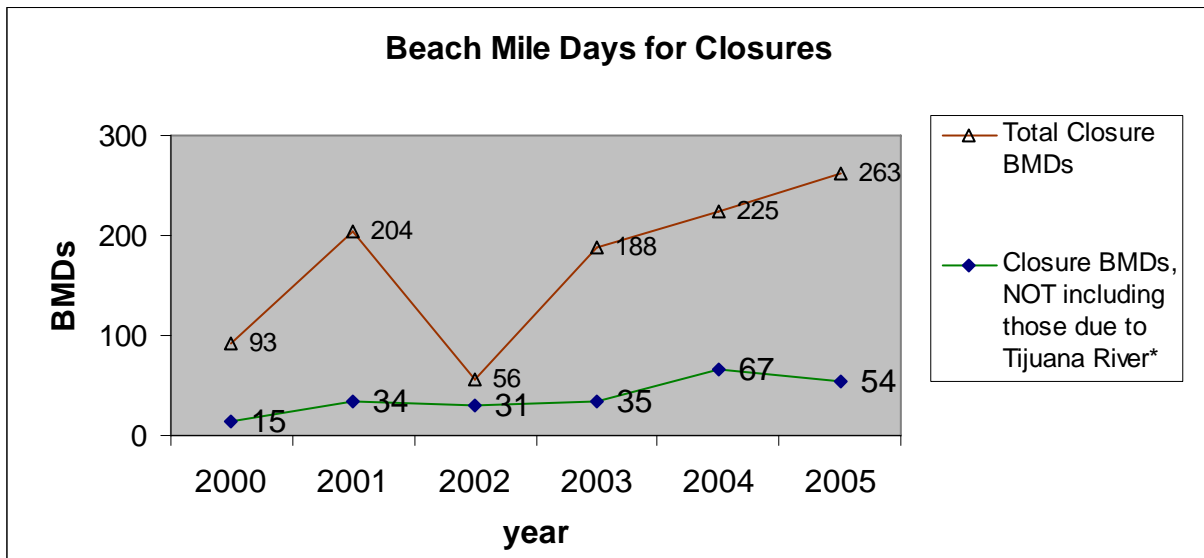


Figure 14: Graph of contribution of Tijuana River to closure Beach Mile Days



To the south is the Tijuana Slough National Wildlife Refuge Shoreline. This area typically re-opens in early summer every year until the next significant rain the following winter.

Figure 15: Water contact closure sign at the south end of Seacoast Dr.

OCEAN AND BAY GENERAL ADVISORIES 2000 - 2005

During and after a significant rainstorm event, storm drains, creeks and rivers carry floodwaters and urban runoff (which may include fertilizers, road oils, litter and large amounts of bacteria from a variety of sources such as animal waste and decomposing vegetation) directly to ocean and bay waters.

The levels of bacteria can rise significantly in ocean and bay waters, especially near storm drains, creeks, rivers and lagoon outlets that discharge urban runoff during and after rainstorms. To ensure that public health is protected, the DEH Ocean & Bay Recreational Water Program staff issue a General Advisory to avoid all ocean or bay water contact for 72 hours (three days) after a significant rain (greater or equal to 0.20"). Elevated bacterial levels in the coastal ocean waters may continue for a period of three days depending on the intensity of the rain and the volume of runoff.



The General Advisory issued by the Ocean & Bay Recreational Water Program consists of a press release to the media, and listing on the Beach & Bay Water Quality Report Hotline (619) 338-2073 and the www.earth911.org web page. Temporary advisory signs are not posted for General Advisories.

Permanent sign

The following is a list of significant coastal outlets in San Diego County based upon volume or quality of flow during wet weather, or year round flow to ocean waters. Locations with low flow diversions (LFD) to sewer treatment plants or other treatment are noted. Many of these outlets are posted with the permanent health risk warning signs shown above, or older versions of this sign.

Camp Pendleton and San Onofre State Beach: San Mateo Creek outlet, San Onofre Creek outlet, and Santa Margarita River outlet

Oceanside: San Luis Rey River outlet, Wisconsin Street storm drain, and Loma Alta Creek outlet (LFD)

Carlsbad: Buena Vista Lagoon outlet, Carlsbad Village Drive storm drain, Pine Ave storm drain, Aqua Hedionda Lagoon outlet (north – Tamarack; south- Warm Water Jetty), Encina Creek outlet, Batiquitos Lagoon outlet

Encinitas: Cottonwood Creek outlet /Moonlight Beach (UV treatment), San Elijo Lagoon outlet

Solana Beach: storm drains at Fletcher Cove (LFD) and Seascape Beach Park

Del Mar: San Dieguito River Beach, 15th Street storm drain, storm drain between 12th and 15th Street, Sea Orbit Lane storm drain, and Andersen Canyon storm drain

City of San Diego coastal beaches: Los Peñasquitos Lagoon outlet, Torrey Pines Golf Course drainage at Black's, Scripps Institute of Oceanography permitted discharge on south side of Scripps pier, storm drains at El Paseo Grande, Vallecitos, Avenida Del La Playa (LFD), La Jolla Cove (LFD), Coast Bl gazebo, north Nicholson Pt/ Hospitals, Ravina/ Horseshoes (LFD), Bonair (LFD), Playa Del Norte, P.B. Point, Tourmaline (LFD), Law

Street, San Diego River outlet / Dog Beach, storm drains at Narragansett Ave, Pescadero Ave, Point Loma Ave, Osprey Street, Hill Street, Monaco Street, and Ladera Street.

City of San Diego Mission Bay beaches: Tecolote Creek outlet (LFD), Tecolote Shores (LFD), Leisure Lagoon, Cuddahy Creek outlet, Visitor's Center storm drain (LFD), De Anza Cove storm drains (LFD), Rose Creek outlet (LFD), north Crown Point (LFD), south Crown Point (LFD), La Cima (LFD), Santa Clara Cove (LFD), Santa Barbara Cove (LFD), Bonita Cove, and Balboa Court (LFD).

San Diego Bay beaches: Lawrence Street, Spanish Landing, Bayside Park, and Tidelands Park.

City of Coronado: storm drain at north beach (LFD)

Tijuana Slough National Wildlife Refuge Shoreline: Tijuana River outlet (LFD)



Figure 16: Plume from the San Diego River outlet following heavy rains in January 2005. Photo: Ocean Imaging, Inc.

The dates that DEH issued a General Advisory for San Diego County ocean and bay waters due to contamination by urban runoff following rain during 2000 – 2004 are listed below.

YEAR 2000 (38 Total General Advisory Days)

January 25 – January 28, February 11 – February 29
March 5 – March 9, April 18 – April 23
October 27 – November 1,
November 11 – November 14

YEAR 2001 (49 Total General Advisory Days)

January 9 – January 15, January 26 – January 29
February 13 – February 17
February 24 – March 2, March 6 – March 9
March 10 – March 12, April 7 – April 13
November 13 – 16, November 25 – 28
November 29 – December 6,
December 10 – 13, December 21 – 24

YEAR 2002 (35 Total General Advisory Days)

January 28 – February 1
March 8 – 11, March 18 - 21
March 24 – 27
April 24 – 29, September 6 – 10
November 8 – November 12
December 17 – 24, December 29 – 31

YEAR 2003 (32 Total General Advisory Days)

February 11 – February 18
February 25 – March 2

March 16 – 20, April 14 – 18
May 3 – 6, November 1 – 4
November 12 – 15, December 26 – 29

YEAR 2004 (48 Total General Advisory Days)

January 3 – 6, February 3 – 6
February 19 – 29, March 2 – 5
April 2 – 5, April 17 – 20
October 17 – 23, October 27 – 30
November 9 – 10, November 21 – 24
November 28 – December 1
December 5 – 9, December 28 – 31

YEAR 2005 (47 Total General Advisory Days)

December 28, 2004 – January 14
January 28 – 31
February 11 – 15, February 18 – 26
March 5 – 8, March 19 – 26
April 28 – May 1
October 16 – 20
December 31



Figure 17: Wet weather flow at 15th St. storm drain outlet in Del Mar