

March 2007

2006 Annual Ocean and Bay Water Quality Report



HEALTH CARE AGENCY
ENVIRONMENTAL HEALTH

2006 Annual Ocean and Bay Water Quality Report

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ACKNOWLEDGMENTS

The *2006 Annual Ocean and Bay Water Quality Report* would not have been possible without the assistance of many people. The staff of County of Orange Health Care Agency (HCA), Environmental Health's Ocean Water Protection Program wishes to acknowledge the support of the following:

- County of Orange Board of Supervisors, with special thanks to former Supervisor Thomas W. Wilson and Fifth District Staff, and former Supervisor James W. Silva and Second District Staff
- County of Orange Executive Office, County Executive Officer Thomas Mauk and Deputy County Executive Officer for Government and Public Services William D. Mahoney
- County of Orange Health Care Agency, Director Juliette A. Poulson, R.N., M.N.
- County of Orange Health Care Agency, Regulatory Health Services, Deputy Agency Director Mike Spurgeon
- County of Orange Health Care Agency Public Health Services, Deputy Agency Director/Health Officer Eric G. Handler, M.D., M.P.H., F.A.A.P.
- County of Orange Health Care Agency, Environmental Health, Director Richard Sanchez, R.E.H.S., M.P.H.
- County of Orange Health Care Agency, Quality Management, Desktop Publishing
- County of Orange Health Care Agency, Public Health Laboratory
- U.S. Environmental Protection Agency, Headquarters, Washington, D.C.
- U.S. Environmental Protection Agency, Region 9
- State of California Department of Health Services
- State of California Water Resources Control Board
- Orange County Sanitation District
- South Orange County Wastewater Authority

SPECIAL THANKS

The staff of HCA Environmental Health's Ocean Water Protection Program would like to thank the Marine Safety and Lifeguard Divisions of the cities of Seal Beach, Huntington Beach, Newport Beach, Laguna Beach and San Clemente; U.S. Ocean Safety Lifeguards; Monarch Beach Lifeguards; County of Orange Resources and Development Management Department/Harbors, Beaches and Parks staff; and the State Department of Parks and Recreation staff for their continued assistance.

We would also like to thank the following for providing photographs for this report: staff from the cities of Newport Beach, Garden Grove, Dana Point and San Clemente; Randy Seton of the Newport Beach Coastal/Bay Water Quality Citizens Advisory Committee; Irvine Ranch Water District staff; and HCA Environmental Health staff.

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Newport Beach Peninsula



EXECUTIVE SUMMARY

The *2006 Annual Ocean and Bay Water Quality Report* provides an analysis of bacteriological water quality data for the 112 miles of Orange County's ocean and bay waters for the years 2000 – 2006, and incorporates sewage spill and related ocean and bay water closure data from 1987 – 2006. This sixth annual report also describes year-to-year variability and trends in bacteriological water quality for Orange County's ocean and bay waters.

Major findings of the *2006 Annual Ocean and Bay Water Quality Report* are:

Sewage Spills and Closures

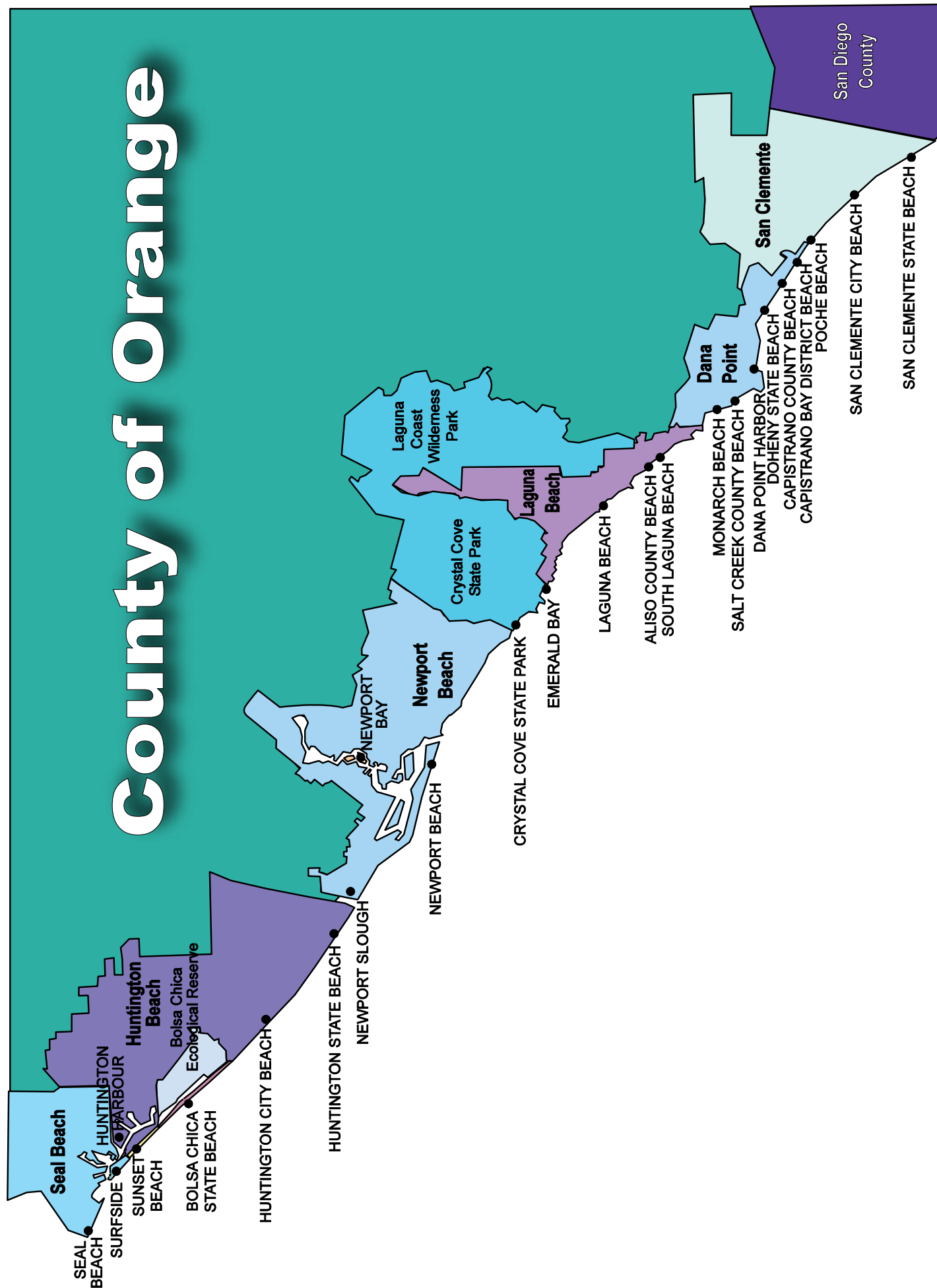
- The number of sewage spills reported to the Ocean Water Protection Program decreased for four consecutive years from 2002 – 2006. This represents the first four-year decrease since 1987.
- There were a total of 185 private property owner sewage spills in 2006 which accounted for 54% of the total number of sewage spills reported for the year.
- In 2006, private property owner sewage spills continued to be responsible for a significant percentage (63%) of ocean and bay water closures. This represents the highest percentage of ocean and bay water closures due to private property owner sewage spills on record for the eight year period from 1999 – 2006.
- The total number of ocean and bay water closures due to sewage spills in 2006 was the lowest (24) for the seven year period from 2000 – 2006.
- In 2006, the total number of Beach Mile Days of ocean and bay closures due to sewage spills was 15.3 which was significantly reduced from the rain-impacted high of 74.5 Beach Mile Days seen in 2005.
- From 1999 – 2006, sewage system pipeline blockages caused the majority (62%) of the ocean and bay water closures. The infiltration of roots and deposition of grease were the major types of blockages (59%) that caused the ocean and bay water closures.

Postings

- The total number of Beach Mile Days posted due to standards violations during the 2006 Assembly Bill (AB) 411 period (April to October) was the lowest recorded for an AB 411 period since 2000.
- From 2000 – 2006, violations of the enterococcus single sample standard accounted for a majority (63.9%) of the ocean and bay water postings during the AB 411 period.
- In 2006, the number of ocean and bay Beach Mile Days posted due to AB 411 violations represented a small percentage of the total number of Beach Mile Days available for recreational water use for the AB 411 period (0.7%) and calendar year (1.4%).
- Doheny State Beach had the highest number of Beach Mile Days posted due to AB 411 standards violations from 2000 – 2006 for the AB 411 period and calendar year.



County of Orange





THE OCEAN WATER PROTECTION PROGRAM

As part of the County of Orange Health Care Agency (HCA), Environmental Health's Ocean Water Protection Program is responsible for protecting the public from exposure to ocean and bay waters that may be contaminated with sewage or may cause illness along Orange County's 42 miles of open ocean coastline and 70 miles of harbor and bay frontage. Ocean and bay waters used for body-contact recreational activities such as swimming, surfing and diving must meet specific bacteriological standards to be considered safe for such purposes.

Over the past 40 years, the Health Care Agency and two local sanitation agencies (Orange County Sanitation District and South Orange County Wastewater Authority) have been cooperatively testing the coastal waters in Orange County for bacteria that indicate the possible presence of disease-causing organisms. The sanitation agencies and HCA program staff participate in the weekly collection of water samples at approximately 150 ocean, bay and drainage locations throughout coastal Orange County. Each year, the sanitation agencies and HCA routinely collect over 13,300 water samples and perform approximately 40,000 analyses for the required three indicator bacteria (i.e., total coliform, fecal coliform and enterococcus). HCA and the Orange County Sanitation District collect and analyze over 5,000 samples per year each, and the South Orange County Wastewater Authority collects and analyzes over 3,300 samples per year.

HCA Ocean Water Protection Program staff review the bacteriological water sample results daily and issue ocean and bay water closures, postings and health advisories under the requirements stipulated by the

California Health and Safety Code and Title 17 of the California Code of Regulations. When the results of testing indicate that one or more of the AB 411 Ocean Water-Contact Sports Standards have been exceeded, the public is notified (i.e., signs are posted at the beach, hotline and web page are updated), and the sampling frequency and locations may increase until the sample results meet established standards and/or the source of the problem is eliminated. In addition, the Ocean Water Protection Program staff respond on a 24-hour basis to investigate reports of sewage or other contamination incidents affecting Orange County's ocean and bay waters.

The Ocean Water Protection Program staff maintain an Ocean and Bay Water Posting and Closure Hotline and Web Page.

Ocean and Bay Water Closure & Posting Hotline: (714) 433-6400

The Ocean and Bay Water Closure & Posting Web Page: www.ocbeachinfo.com

The following is a listing of some the reports and data located on the web page in the "Downloads, Reports & Data" section:

- Annual Ocean and Bay Water Quality Reports (2001, 2002, 2003, 2004, 2005 and 2006);
- Historical Bacteriological Data (1986 – present); and
- Sewage Spill Closure Logs (1999 – present).



Newport Beach

Ocean Water-Contact Sports Standards – Assembly Bill 411

In 1998, AB 411 (Wayne) was chaptered into law and added Sections 115880-115915 to the California Health and Safety Code. The law authorized the creation of bacteriological ocean water quality standards that are considered protective of public health (California Code of Regulations Sections 7956-7962).

The standards are informally called “AB 411 standards” and include the following:

- Required testing of the waters adjacent to all ocean and bay public beaches for total coliforms, fecal coliforms and enterococci bacteria that may indicate the presence of possible disease-causing bacteria, viruses or protozoa.
- Required maintenance and updates of the Ocean and Bay Posting and Closure Hotline.
- Established single sample standards for total coliforms, fecal coliforms and enterococci bacteria which 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 Coliform to Total Coliform ratio: >1,000 total coliforms if ratio exceeds 0.1.
- Established 30-day geometric mean standards (of five weekly samples) for total coliforms, fecal coliforms and enterococci bacteria which 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.
- When any waters adjacent to a public beach fail to meet any of the standards described above, the local health officer shall post signs on the beach to restrict access to the affected waters.
- Weekly testing is required from April 1 to October 31 if the following applies:
 - The beach is visited by more than 50,000 people annually.
 - The beach is located in an area adjacent to a storm drain that flows in the summer.
- In the case of a known release of sewage into ocean or bay waters adjacent to a public beach, the local health officer is required to:
 - Immediately close the affected ocean or bay waters until the source of the sewage is eliminated.
 - Collect bacterial samples from the affected waters.
 - Continue the closure until testing results of water samples meet the established standards.



Newport Beach

Disease-Causing Microorganisms

Contaminated runoff and untreated sewage released into ocean and bay waters may result in swimmer exposure to pathogenic bacteria, viruses or protozoa. These disease-causing microorganisms may be present at or near the sites where discharges enter the water.

The following table lists the types of microorganisms and the diseases (or symptoms) they may cause.

PATHOGENIC AGENT	DISEASE
Bacteria	
<i>Escherichia coli (E. coli)</i>	<i>Gastroenteritis</i>
<i>Salmonella (not typhi)</i>	<i>Gastroenteritis, usually with fever; less commonly septicemia (generalized infection - organisms multiply in the bloodstream)</i>
<i>Some strains of Shigella</i>	<i>Gastroenteritis, usually with fever</i>
Protozoa (Intestinal Parasites)	
<i>Cryptosporidium</i>	<i>Diarrhea - Cryptosporidiosis</i>
<i>Giardia lamblia</i>	<i>Diarrhea - Giardiasis</i>
Viruses	
<i>Rotavirus</i>	<i>Gastroenteritis</i>
<i>Enteroviruses</i>	<i>Respiratory infection, rash, fever, meningitis</i>
<i>Norwalk and Norwalk-like viruses</i>	<i>Gastroenteritis</i>
<i>Adenovirus</i>	<i>Respiratory infection and gastroenteritis</i>
<i>Hepatitis A (outbreaks associated with eating shellfish from sewage-contaminated water)</i>	<i>Infectious hepatitis (liver malfunction)</i>

The levels of bacteria, viruses and protozoa typically decrease in ocean and bay waters over time due to the following reasons:

- Die off due to sun (ultraviolet exposure), salt water or age
- Predation by other organisms
- Dispersion and 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 normally occur 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. Since there is no ideal indicator group, testing is done for more than one indicator. 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 water-contact associated gastroenteritis. The methods most commonly used to detect fecal indicator bacteria in water include:

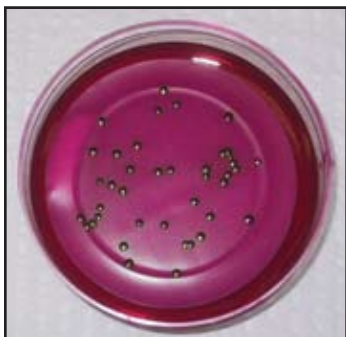
- Membrane Filtration (MF)
- Multiple-Tube Fermentation (MTF)
- Colilert®
- Enterolert®

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. Each method has its advantages and disadvantages. Most of the limitations depend on factors such as the other types of constituents in the water and density of bacteria present, and all require at least an 18-hour incubation period. The following is a brief summary of these methods. Detailed descriptions for these methods are available in the latest edition of *Standard Methods for the Examination of Water and Wastewater*.

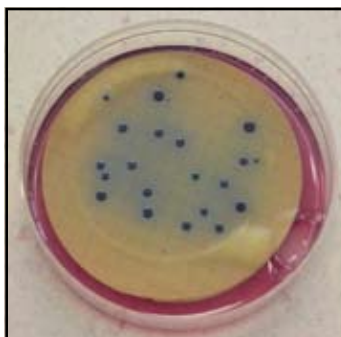
Membrane Filtration (MF)

The membrane filtration method involves filtering water through a porous membrane to concentrate or trap bacteria from the water sample on the filter surface. The membrane filter is placed onto a culture medium designed to encourage the growth of the target indicator. The filter is incubated for 22–24 hours to allow the bacterial cells to multiply into visible colonies. Theoretically, each bacterial cell (or clump of cells) produces a single colony on the membrane. The colonies are viewed under a 10X magnifying lens and distinguished from non-target bacteria based on the type, size and color of the colonies.

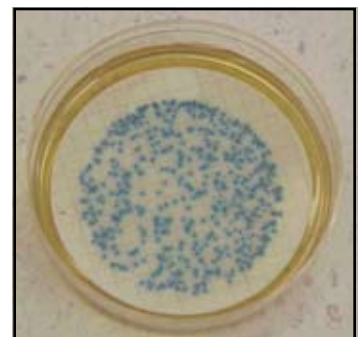
Target bacteria are indicated by pigment production resulting from bacterial enzymatic reactions to specific substrates. The number of colonies present in 100 milliliters of water, also known as “Colony Forming Units” (CFU), is counted and the concentration of organisms in the original sample is calculated. The County of Orange Health Care Agency/Public Health Laboratory, the South Orange County Wastewater Authority Laboratory and the Orange County Sanitation District Laboratory use the MF method for the analyses of total coliforms, fecal coliforms and enterococci in ocean and bay waters.



Total Coliform Colonies



Fecal Coliform Colonies



Enterococcus Colonies

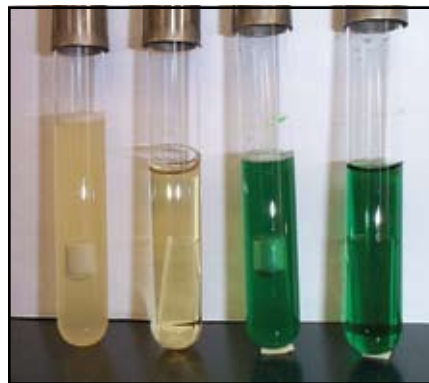
Multiple-Tube Fermentation (MTF)

The multiple-tube fermentation technique is based on the ability of coliform bacteria to produce turbidity and gas in specific liquid media after incubation for 24–48 hours. Because there is a presumptive and confirmation step required by this technique, results may take up to 96 hours for completion. Multiple dilutions of the water sample are pipetted into test tubes containing

culture media. Bacterial growth results in turbidity and production of gas. A “Most Probable Number” (MPN) of bacteria value present in 100 milliliters of water is determined based on the combination of tubes that are positive for the confirmatory test. MTF can be used to test for total coliforms, fecal coliforms and *E. coli*.



Multiple-Tube Fermentation Set-Ups



Test Tubes with/without Turbidity and Gas Formation

Colilert®

The Colilert® technique is a defined substrate analysis which detects the production of enzymes specific to total coliform and *E. coli*. Coliform bacteria enzymes break down specific chemical substrates to produce a yellow color. If total coliforms are present, the testing medium turns yellow. If *E. coli* are present, the yellow

wells will fluoresce blue under an ultraviolet light. A statistical estimation of their numbers is determined by using a multi-well tray and is reported as the “Most Probable Number” (MPN) of bacteria present in 100 milliliters of water. Test results are available in either 18 or 24 hours depending on the formulation used.



Total Coliform Colilert® Tray



E. coli Colilert® or Enterolert® Tray

Enterolert®

The Enterolert® technique is another type of defined substrate test that is similar to the Colilert® technique. The test detects the presence of an enzyme produced by enterococci. A positive reaction is determined by

checking the tray for fluorescence. Results are reported as the “Most Probable Number” (MPN) of bacteria present in 100 milliliters of water and test results are available in 24 hours.

Closure and Warning Signs

The yellow closure sign is posted when a sewage spill affects ocean or bay waters adjacent to a public beach. This sign is also available in Spanish.



The warning sign with the red and black border is posted when a violation of the AB 411 Ocean Water-Contact Sports Standards occurs.

The warning sign with the yellow and black border is permanently posted near storm drains, creeks and rivers to advise the public of the risks associated with possible contamination from urban runoff.



Beach Mile Days

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

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:

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

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 Beach Mile Days for Orange County are:

$$(365 \text{ days}) \times (42 \text{ miles coastal}) = 15,330 \text{ Available Beach Mile Days}$$

$$(365 \text{ days}) \times (70 \text{ miles bays}) = 25,550 \text{ Available Beach Mile Days}$$

$$(365 \text{ days}) \times (112 \text{ miles total}) = 40,880 \text{ Available Beach Mile Days}$$

Using BMDs as a measurement of ocean and bay water availability is more meaningful 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 State of California 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.



San Clemente City Beach

OCEAN AND BAY WATER CLOSURES DUE TO SEWAGE SPILLS

When a known release of sewage is reported to the Ocean Water Protection Program, the ocean or bay water areas that may be affected by the sewage discharge are immediately closed to body-contact recreational activities. The closure area is based on many factors including type of sewage (e.g., untreated, secondary treated, etc.), volume of spill, location of spill, ocean currents and tides, historical sewage spills in the area, and other pertinent information. After the initial closure area is established, the appropriate agencies are notified, the area is posted with closure signs, a press release is issued, the Ocean and Bay Water Closure and Posting Hotline and Web Page are updated with the beach closure information, and daily bacterial sampling of the affected area is initiated.

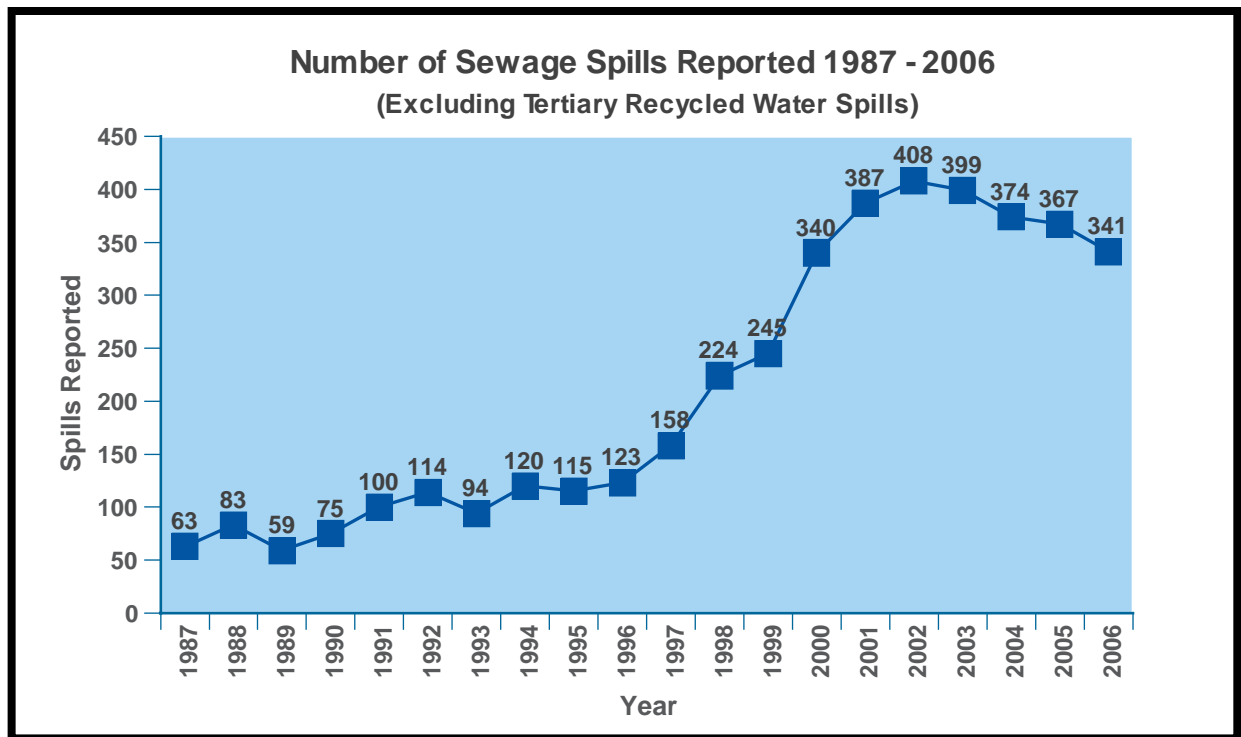
The closed ocean or bay water area will be reopened or reduced in size when the contamination source has been eliminated and after two daily consecutive sampling results indicate the affected area meets the AB 411 Ocean Water-Contact Sports Standards.

The Ocean and Bay Water Closure and Posting Hotline at (714) 433-6400 and the Ocean and Bay Water Closure and Posting Web Page at www.ocbeachinfo.com are updated as needed with closure status information. Detailed information regarding closure events from 1999 – present may be downloaded from the Ocean and Bay Water Closure Logs available on the web page.



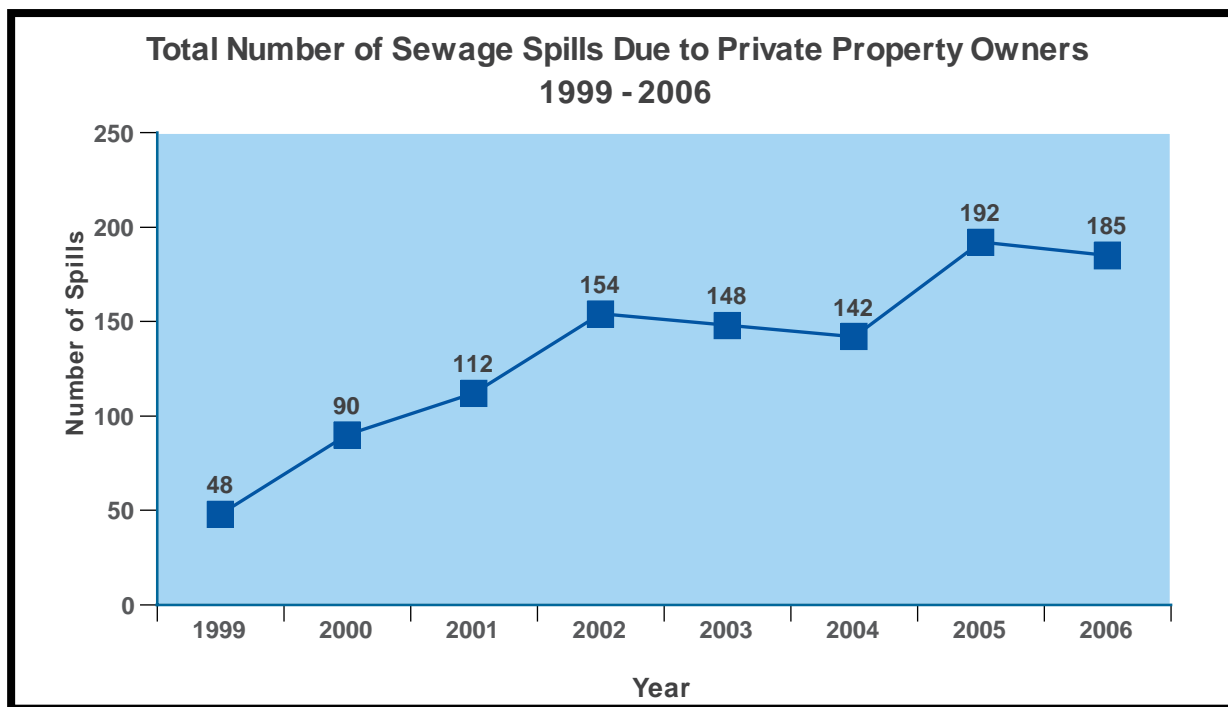
Sewage Spills 1987 – 2006

The number of sewage spills reported to the Ocean Water Protection Program staff by sanitation districts, cities that operate sewage collection systems and private property owners from 1987 – 2006 is detailed in the following graph. The number of sewage spills reported declined for four consecutive years from 2002 – 2006.

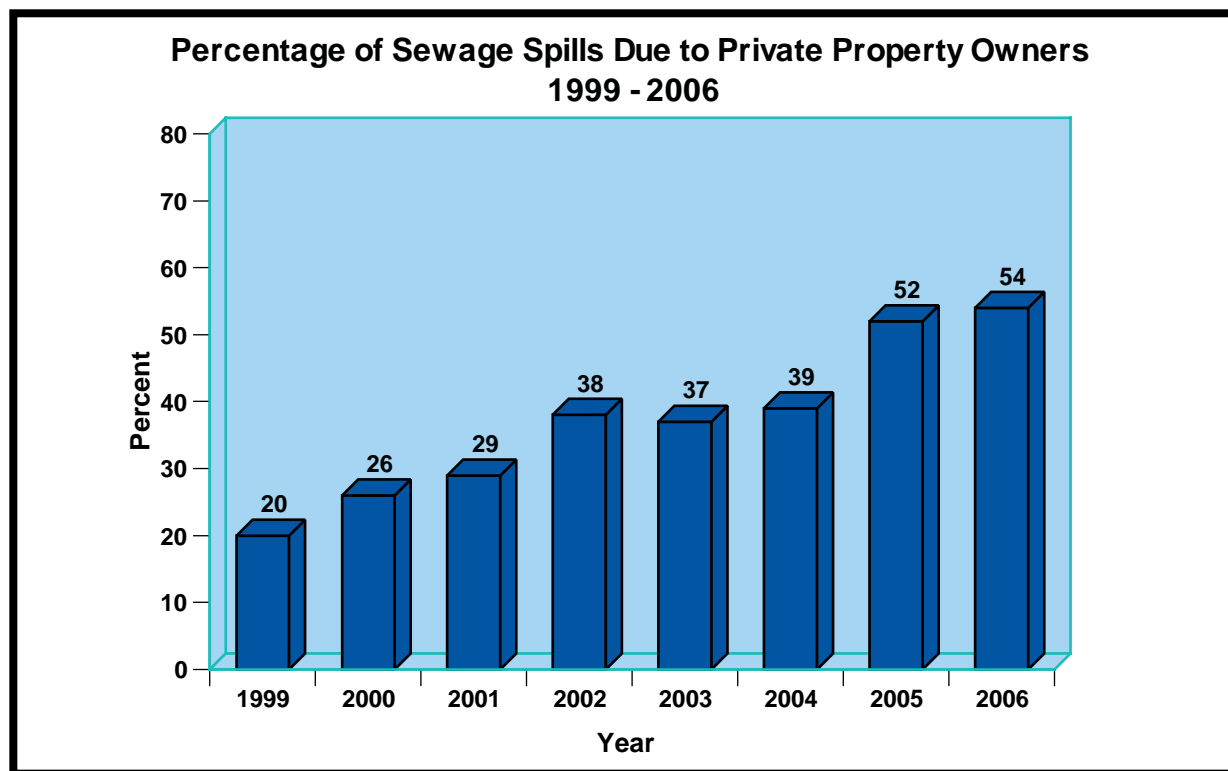


Sewage Spills 1999 – 2006

The total number of sewage spills due to private property owners (e.g., apartment/condominium complexes, restaurants, vessel pump stations, etc.) from 1999 – 2006 is summarized in the following graph.

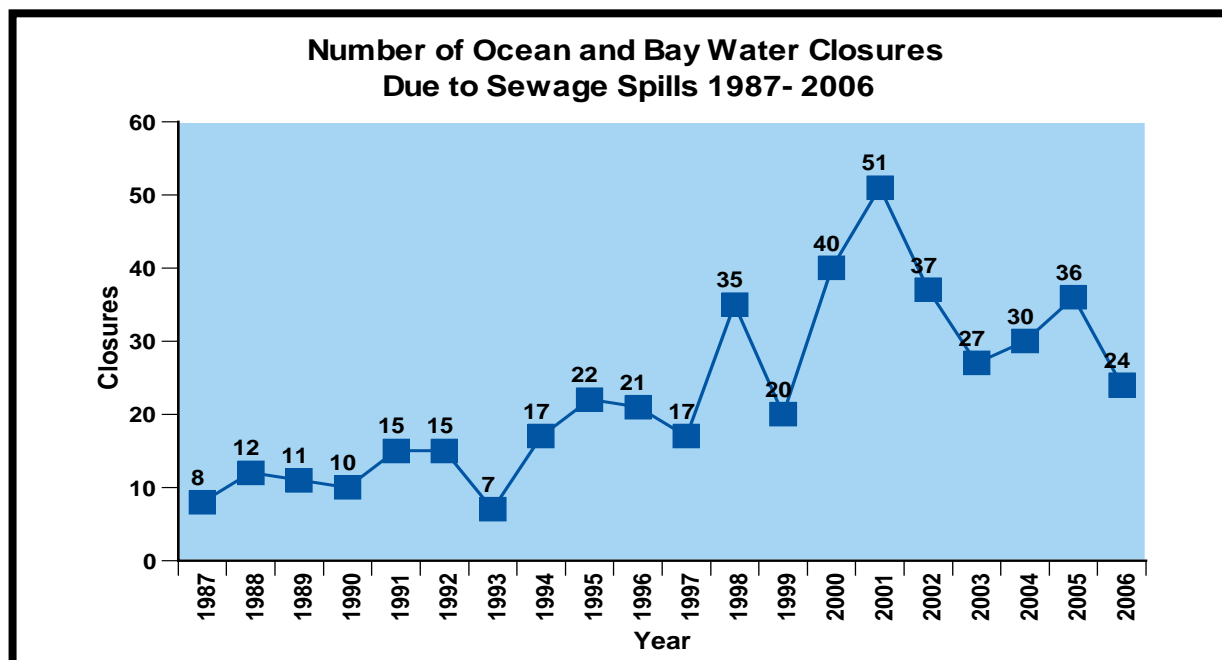


The following chart depicts the percentage of sewage spills that were due to private property owners from 1999 – 2006. In 2005 and 2006, private property owners were responsible for more than half (52% and 54% respectively) of the sewage spills reported.

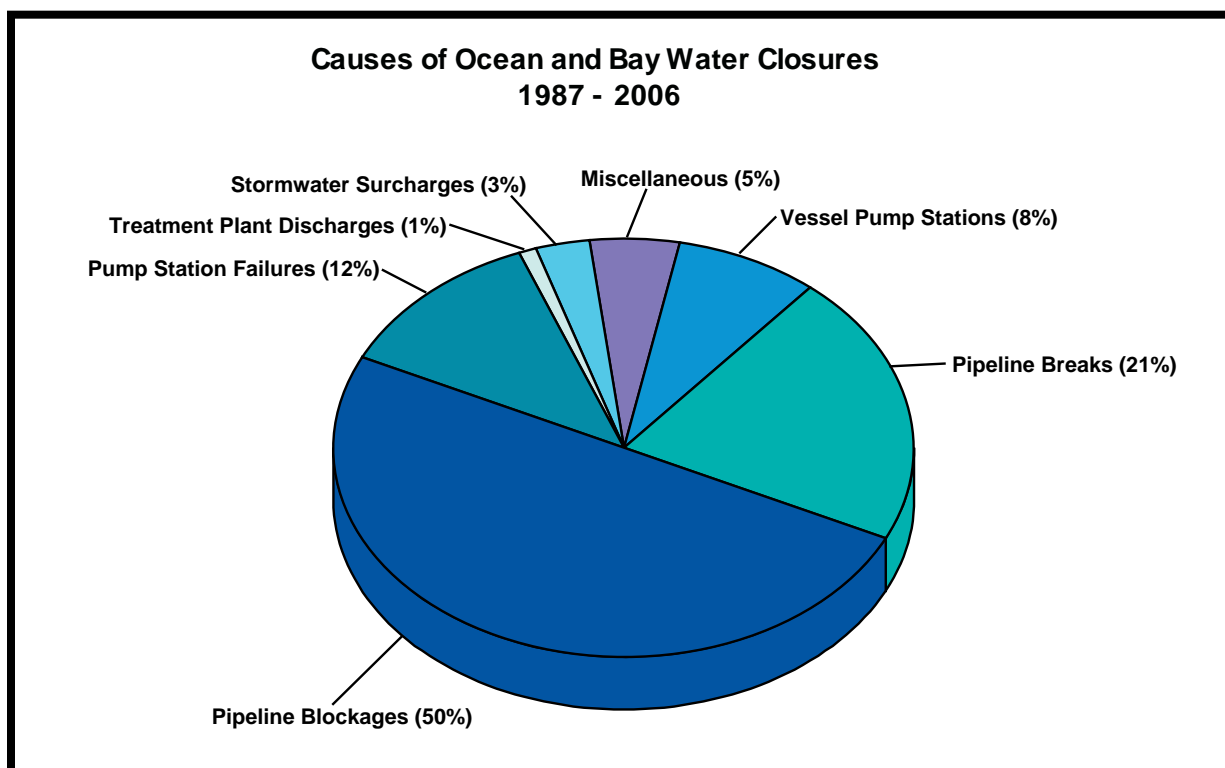


Sewage Spill Caused Ocean and Bay Water Closures 1987 – 2006

The number of ocean and bay water closures in Orange County due to sewage spills from 1987 – 2006 is summarized in the following graph. In 2006, the number of sewage spill related ocean and bay closures represents the lowest number of closures for the seven-year period from 2000 – 2006.

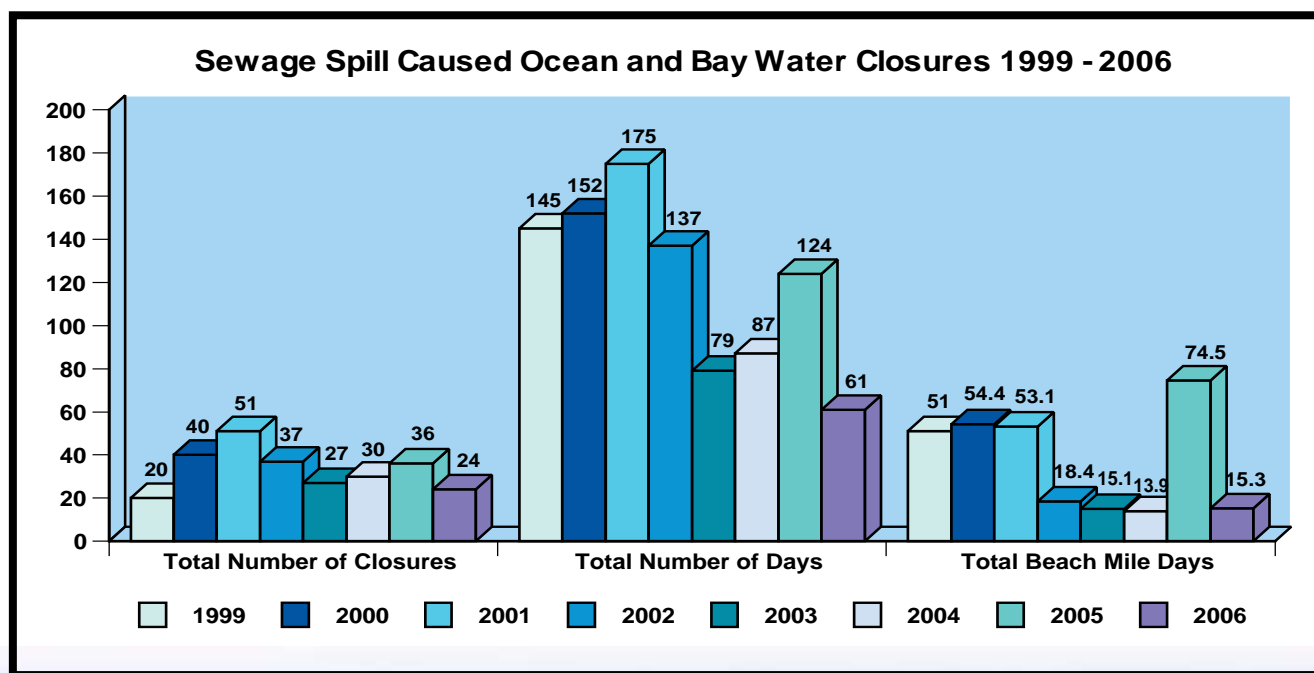


Sewage spills caused by pipeline blockages were responsible for half (50%) of the ocean and bay water closures in Orange County from 1987 – 2006, as the following chart illustrates.



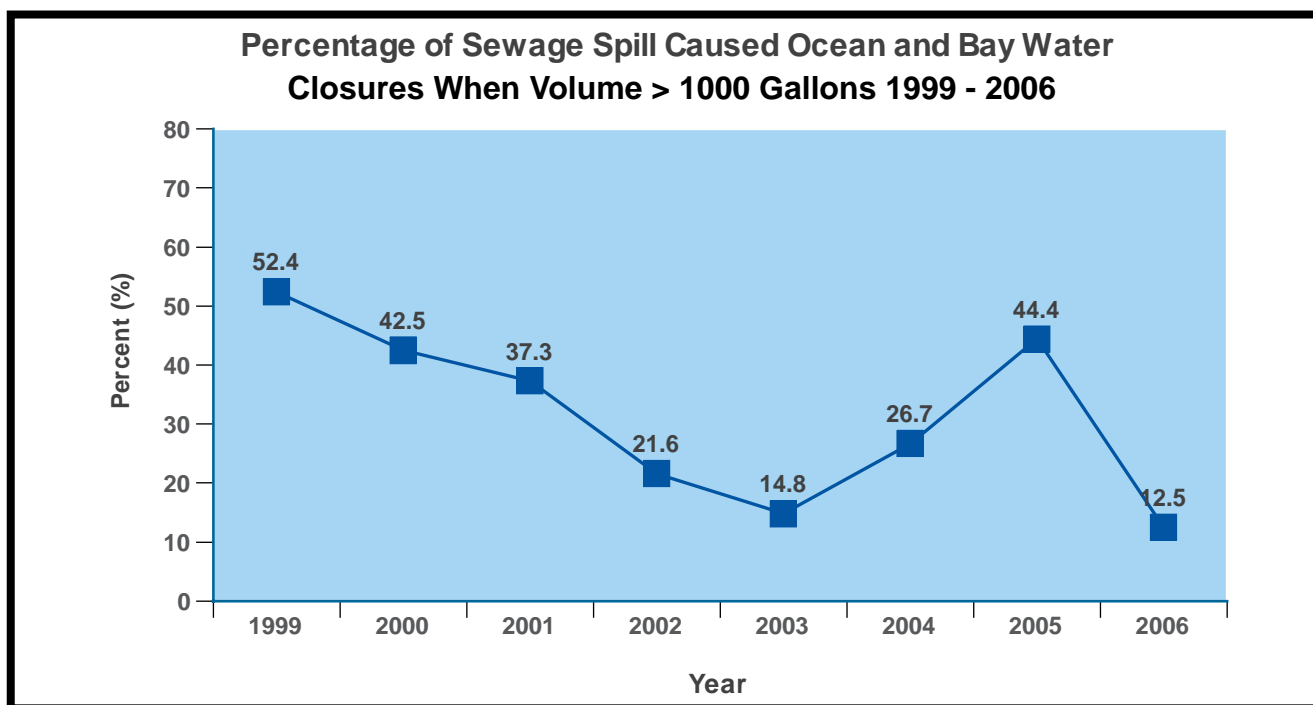
Sewage Spill Caused Ocean and Bay Water Closures 1999 – 2006

The following chart depicts the total number of sewage spill caused ocean and bay water closures, total number of closure days and total number of Beach Mile Days of closure in Orange County from 1999 – 2006. For 2006, the total number of closures (24) and the total number of closure days (61) represent the lowest totals for the seven-year period from 2000 – 2006.

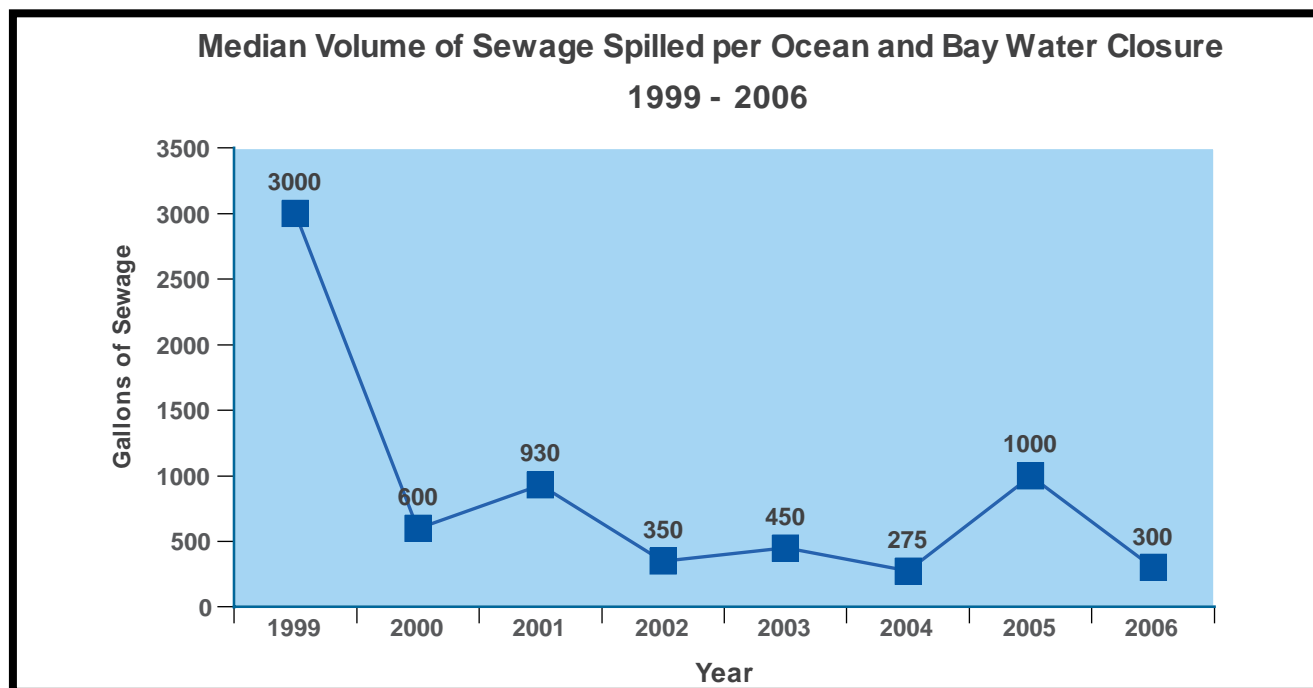


Sewage Spill Caused Ocean and Bay Water Closures 1999 – 2006—continued

The following graph depicts the percentage of sewage spill caused ocean and bay water closures from 1999 – 2006 when the known discharged volume of sewage spilled was greater than 1,000 gallons into ocean or bay waters. In 2006, 12.5% of the ocean and bay water closures were due to sewage spills when the volume of sewage discharged was greater than 1,000 gallons which was significantly reduced from the rain-impacted previous year.

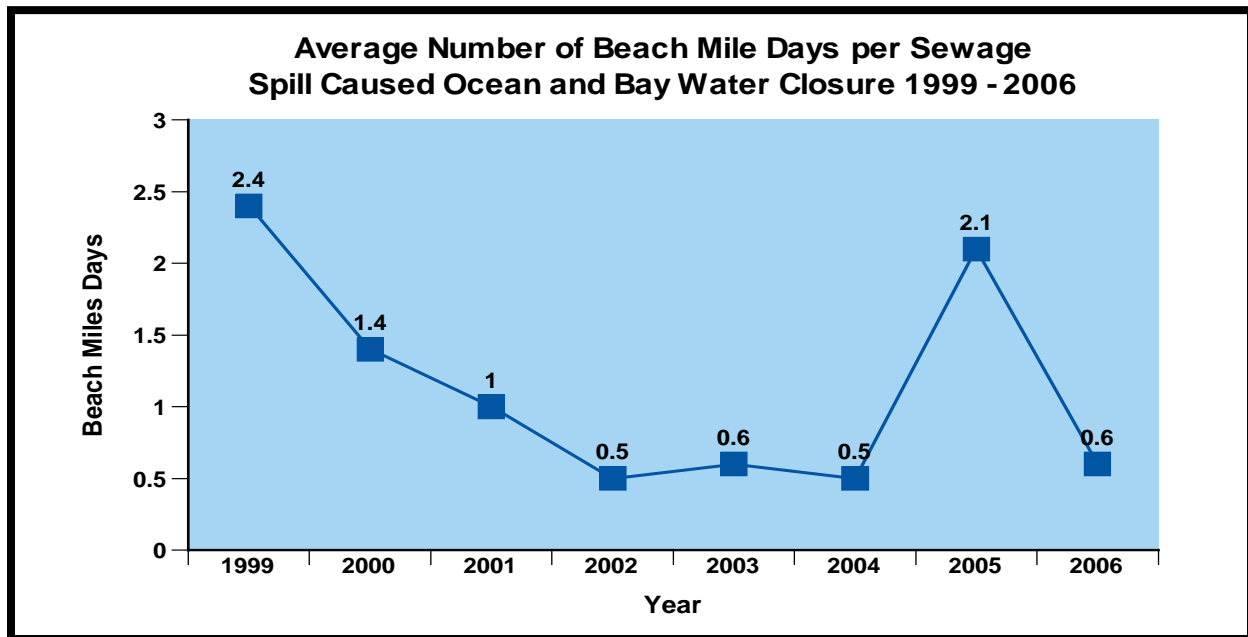


The following graph illustrates the median volume of sewage spilled per sewage spill closure incident from 1999 – 2006 for sewage spills when the volume was known. In 2006, the median volume of sewage discharged significantly decreased from the rain-impacted previous year.



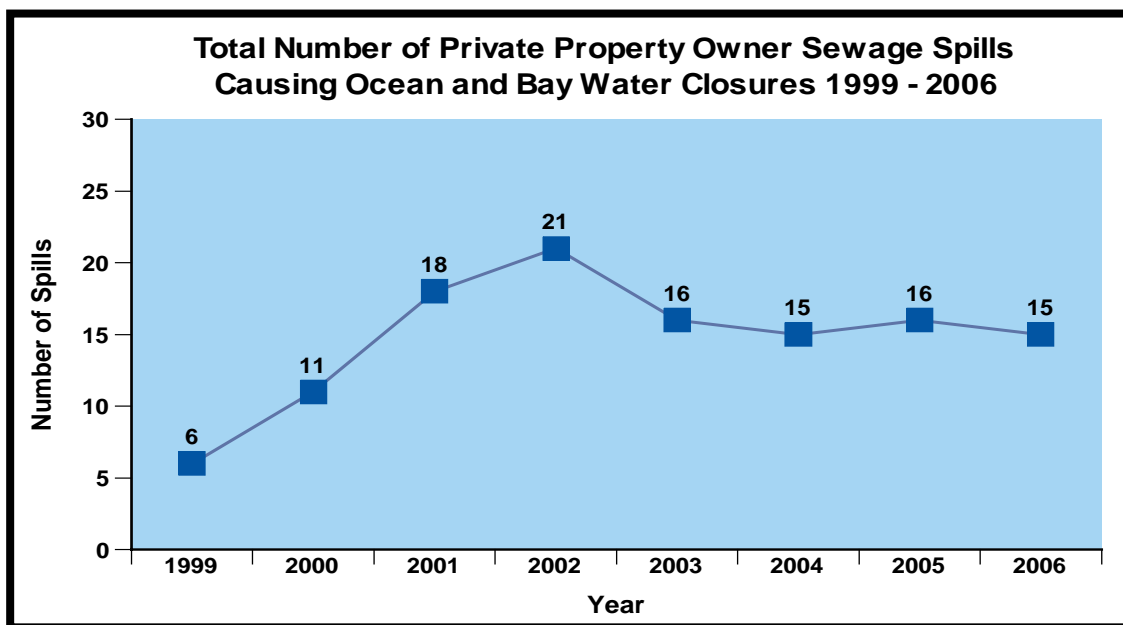
Sewage Spill Caused Ocean and Bay Water Closures 1999 – 2006—continued

The average number of Beach Mile Days per sewage spill caused ocean and bay water closure incident from 1999 – 2006 is shown in the following graph. The average number of Beach Mile Days per sewage spill closure incident decreased significantly in 2006 from the rain-impacted 2005 level.

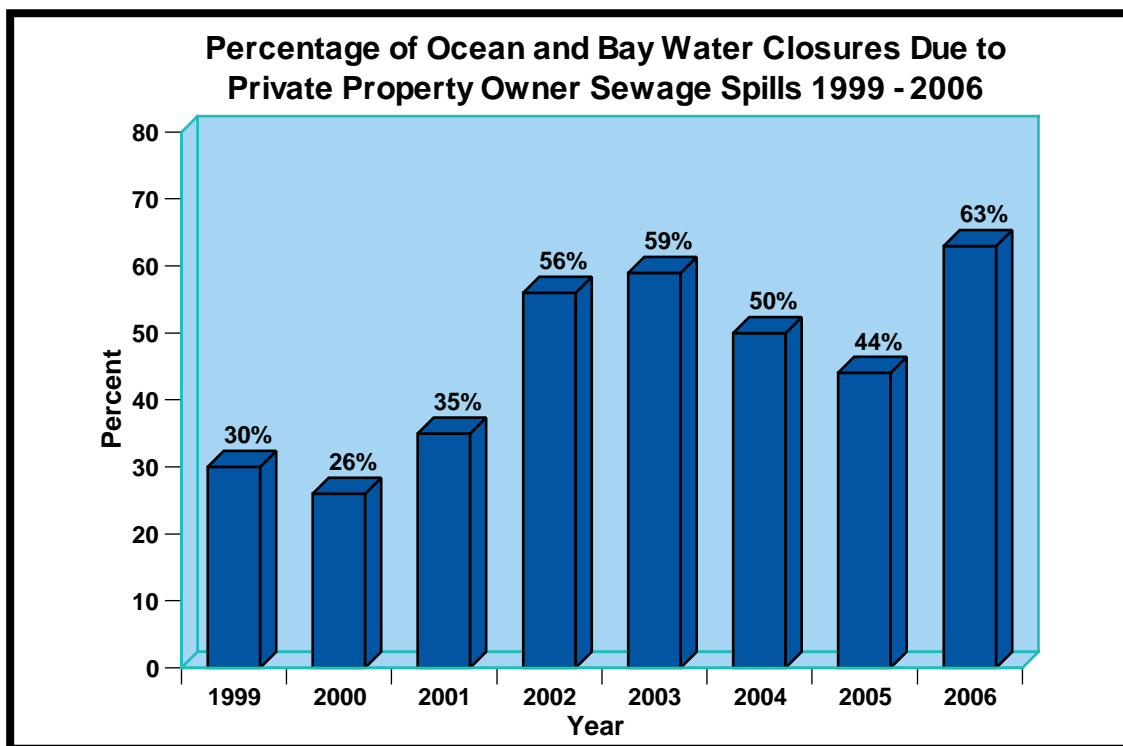


Sewage Spill Caused Ocean and Bay Water Closures 1999 – 2006—continued

The number of ocean and bay water closures that resulted from private property owner sewage spills (e.g., apartment/condominium complexes, restaurants, vessel pump stations, etc.) from 1999 – 2006 is shown in the following graph. In 2006, private property owners were responsible for 15 of the 24 ocean and bay water closures, and the total number of private property owner sewage spill closures has remained virtually unchanged from 2003 – 2006.

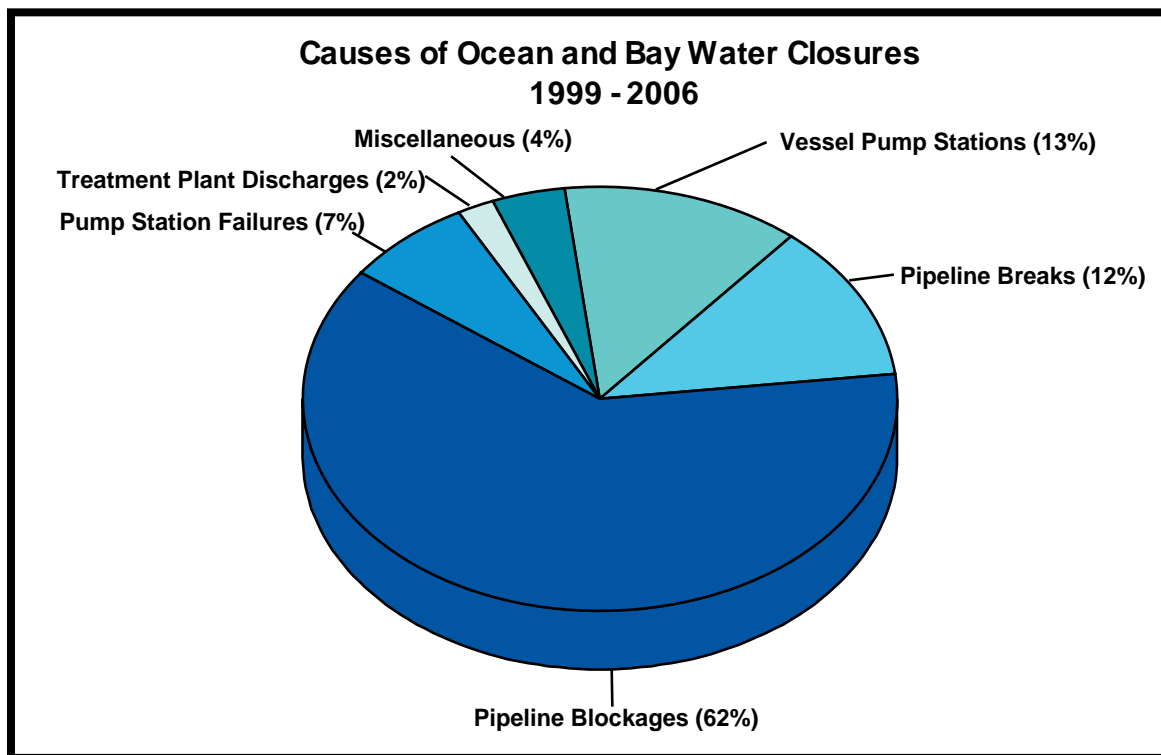


The percentage of ocean and bay water closures that were due to private property owner sewage spills from 1999 – 2006 is shown in the following chart. In 2006, private property owners were responsible for 63% of all ocean and bay water closures representing the highest percentage of ocean and bay water closures due to private property owner sewage spills since 1999.

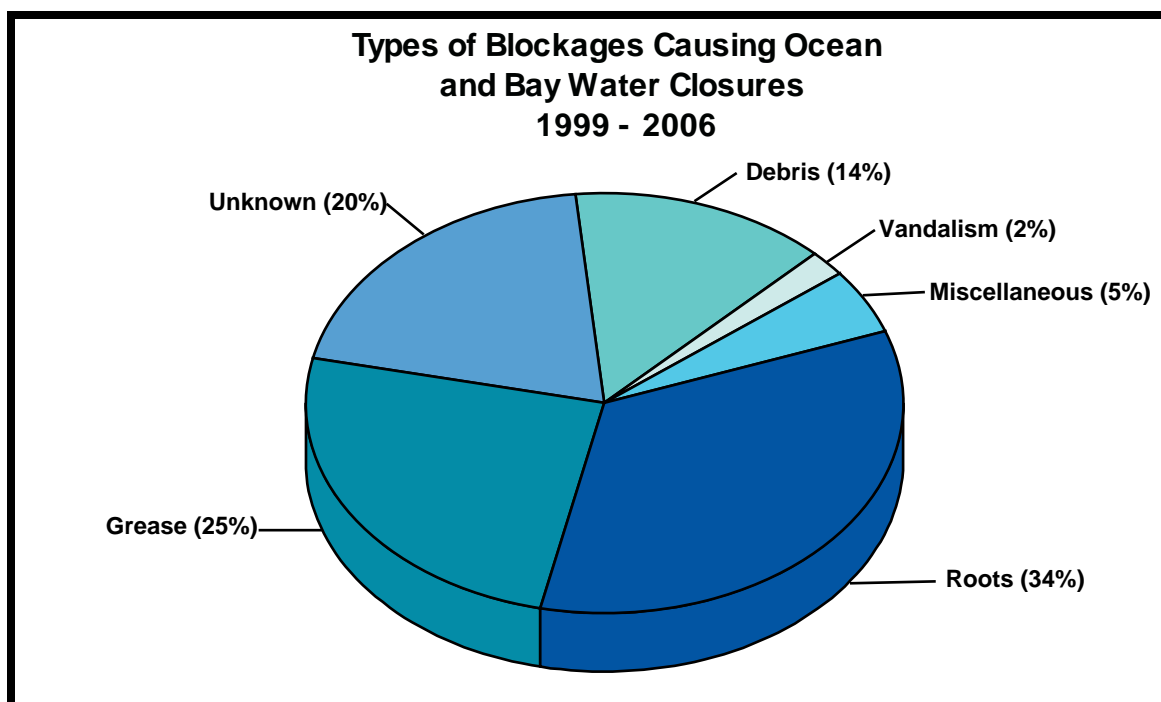


Sewage Spill Caused Ocean and Bay Water Closures 1999 – 2006—continued

The following chart illustrates that sewage pipeline blockages caused the majority (62%) of the ocean and bay water closures in Orange County from 1999 – 2006.

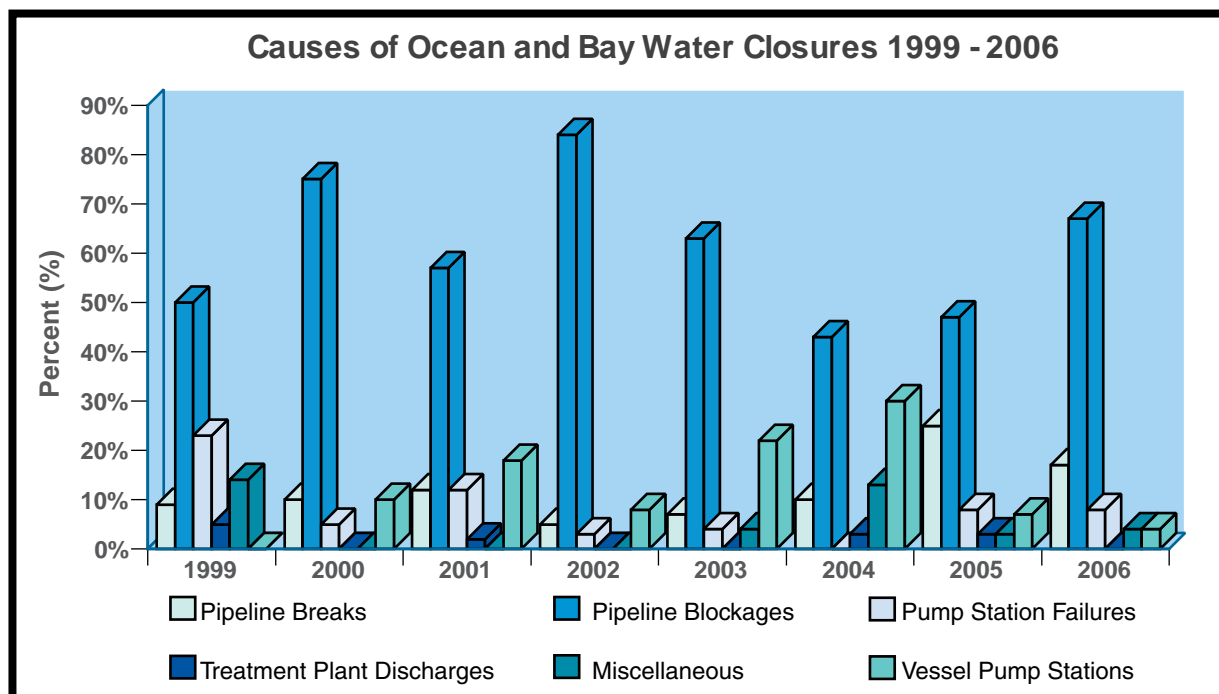


The infiltration of roots and deposition of grease into sewer pipes accounted for the majority (59%) of the pipeline blockages that resulted in ocean and bay water closures in Orange County from 1999 – 2006, as the following chart illustrates.

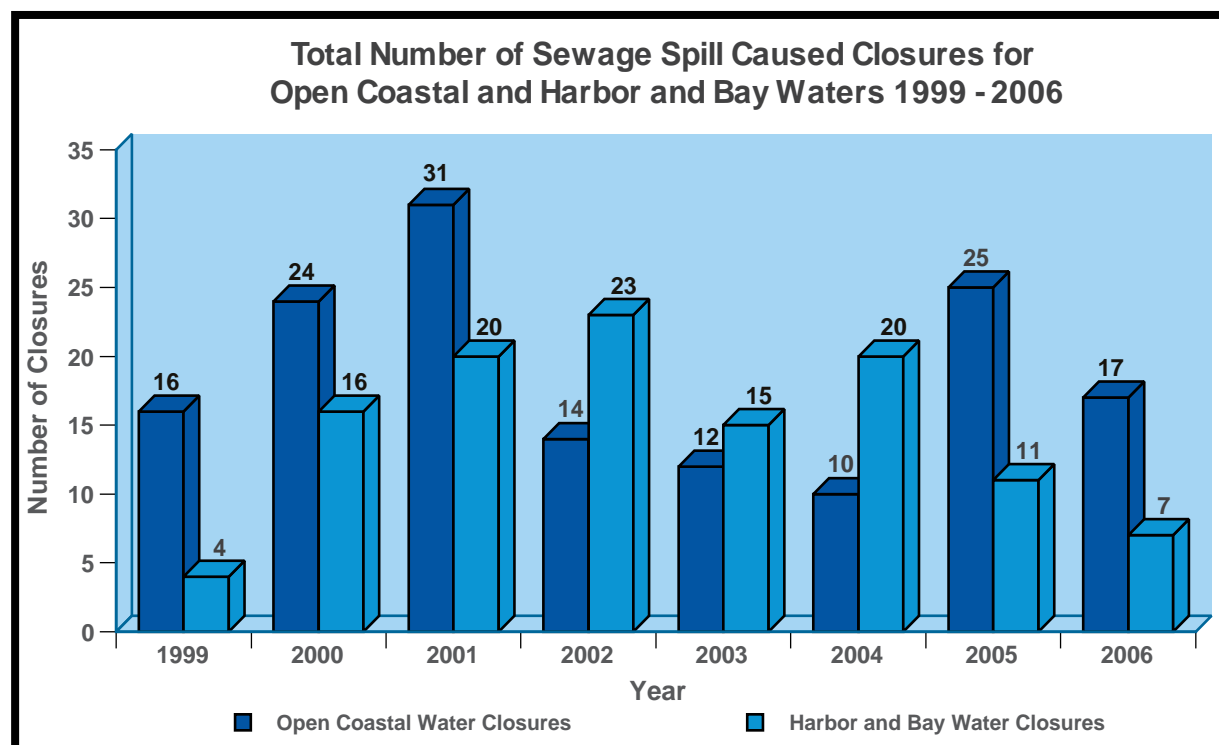


Sewage Spill Caused Ocean and Bay Water Closures 1999 – 2006—continued

The following chart illustrates that, from 1999 – 2006, the major percentage of sewage spill caused ocean and bay water closures were caused by pipeline blockages.



The following chart compares the total number of open coastal water closures to the total number of harbor and bay closures in Orange County due to sewage spills from 1999 – 2006.



OCEAN AND BAY RAIN ADVISORIES 2000 – 2006

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) to ocean and bay waters.

The levels of bacteria can rise significantly in ocean and bay waters close to discharging storm drains and outlets of creeks, rivers and streams during and after rainstorms. To ensure that public health and safety is protected, the Ocean Water Protection Program staff advises against the use of ocean or bay waters where there may be contamination due to storm runoff. The elevated bacterial levels in the coastal ocean waters may continue for a period of at least three days depending on the intensity of the rain and

the volume of runoff. Swimmers should avoid Orange County coastal waters during and after rainstorms and beach users should avoid contact with any runoff on the beach during dry or wet weather conditions.

A Rain Advisory Press Release is issued during or after a rainstorm event of greater than or equal to two-tenths of an inch ($\geq 0.20''$), unless multiple events occur during the 72-hour window of the previous rainstorm. In those cases, the existing rain advisory continues for an additional 72 hours. The Ocean and Bay Water Closure and Posting Hotline and Web Page are updated with the rain advisory information.

The dates listed below are the periods that an ocean and bay water rain advisory was in effect for Orange County during 2000 – 2006.

YEAR 2000 (55 Total Rain Advisory Days)

January 25 – February 2
February 10 – February 16
February 17 – February 27
February 28 – March 13
April 17 – April 23
September 23 – September 25
October 11 – October 15
October 27 – November 2

YEAR 2001 (74 Total Rain Advisory Days)

January 8 – January 16
January 24 – January 31
February 10 – February 16
February 20 – March 13
April 7 – April 13
April 21 – April 24
November 12 – November 16
November 24 – November 27
November 29 – December 6
December 14 – December 18
December 21 – December 25
December 30 – December 31

YEAR 2002 (44 Total Rain Advisory Days)

January 1 – January 3
January 28 – February 1
February 17 – February 21
March 7 – March 11
March 18 – March 21
March 23 – March 27
November 8 – November 13
November 30 – December 3
December 16 – December 31

YEAR 2003 (54 Total Rain Advisory Days)

January 1 – January 2
January 8 – January 12
February 11 – February 17
February 25 – March 2
March 15 – March 19
April 14 – April 18
May 3 – May 7
July 30 – August 3
November 1 – November 7
November 13 – November 19
December 8 – December 11
December 15 – December 18
December 25 – December 28

Ocean and Bay Rain Advisories 2000 – 2006—continued

YEAR 2004 (65 Total Rain Advisory Days)

January 2 – January 6
February 3 – February 6
February 18 – March 6
April 2 – April 5
April 17 – April 20
October 17 – October 24
October 26 – November 1
November 8 – November 12
November 21 – November 25
November 27 – December 1
December 5 – December 12
December 28 – December 31

YEAR 2006 (75 Total Rain Advisory Days)

January 1 – January 6
February 18 – February 23
February 27 – March 24
April 14 – April 18
April 23 – April 26
May 22 – May 25
October 14 – October 17
December 10 – December 14
December 17 – December 21
December 22 – December 25
December 27 – December 31

YEAR 2005 (73 Total Rain Advisory Days)

January 1 – January 18
January 28 – January 31
February 11 – February 28
March 5 – March 8
March 19 – March 26
April 22 – May 1
May 6 – May 10
September 20 – September 24
October 17 – October 21
November 10 – November 14
December 31



OCEAN AND BAY WATER POSTINGS DUE TO BACTERIOLOGICAL WATER QUALITY STANDARDS VIOLATIONS

Upon implementation of the AB 411 Ocean Water-Contact Sports Standards in July of 1999, the Ocean Water Protection Program began posting the required health warning signs at public beaches where the ocean or bay waters failed to meet the bacteriological standards.

Bacteriological water samples are collected each week at approximately 150 ocean, bay and drainage locations throughout Orange County. The Ocean Water Protection Program receives the results of 650-750 bacteriological ocean and bay water analyses each week. The results are reviewed daily to determine compliance with the seven standards.

When a bacteriological water sample fails to meet any of the AB 411 Ocean Water-Contact Sports Standards the following occurs:

- Warning signs are posted at the affected ocean or bay areas indicating that the waters have exceeded health standards.
- The information regarding the posted areas is updated on the Ocean and Bay Water Closure and Posting Hotline at (714) 433-6400 and Web Page at www.ocbeachinfo.com.
- 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.

Because ocean or bay waters which violate the AB 411 Ocean Water-Contact Sports Standards may cause illness to users, the County of Orange Health Care Agency recommends staying out of the water at all beach areas that are posted with the health warning sign shown below.



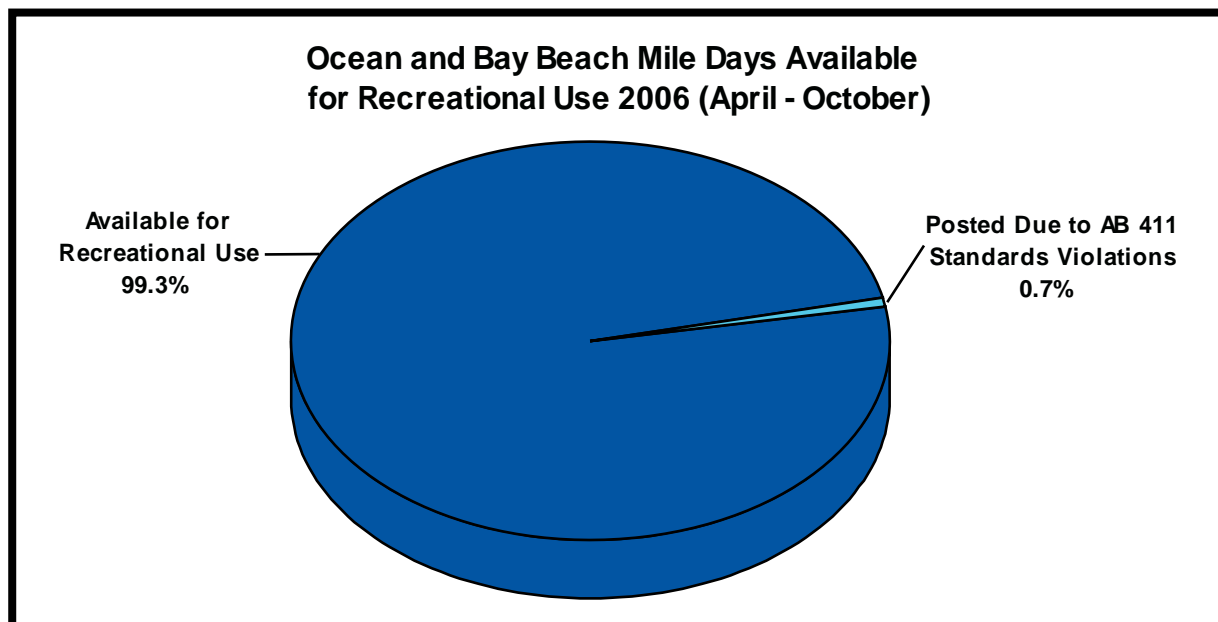
AB 411 Period Postings for all Orange County Ocean and Bay Water Areas 2000 – 2006 (April – October)

As required by the California Health and Safety Code Section 115910, violations of the AB 411 Ocean Water-Contact Sports Standards between April 1 and October 31 must be reported to the State of California Water Resources Control Board by all California coastal counties on a monthly basis. The information provided in this section is the Orange County data reported to the 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.

The total number of postings, total number of days posted, and total number of Beach Mile Days posted due to violations of AB 411 standards between April 1 and October 31 for all Orange County beach areas are shown in the following table.

Year	Postings	Days	Beach Mile Days
2000	199	2,123	362.8
2001	208	2,454	282.4
2002	308	2,456	366.0
2003	160	1,732	247.5
2004	141	1,877	196.8
2005	102	1,512	197.6
2006	183	1,381	177.4

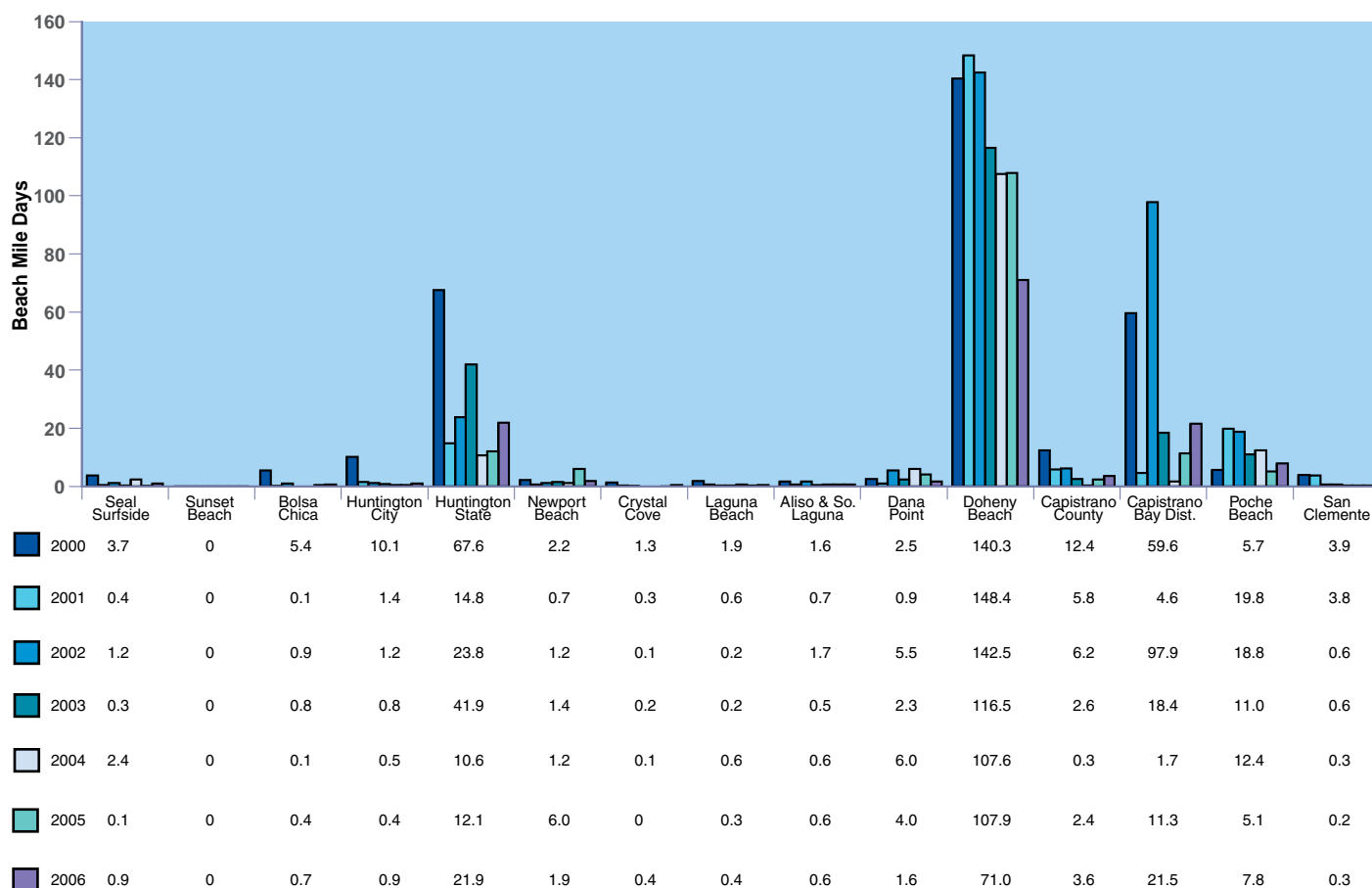
For 2006, the total number of Beach Mile Days posted due to AB 411 standards violations between April 1 and October 31 represents a small percentage (0.7%) of the total number of Beach Mile Days available for recreational water use during this period, as the following chart indicates.



AB 411 Period Postings for Orange County Coastal Ocean Water Areas 2000 – 2006 (April – October)

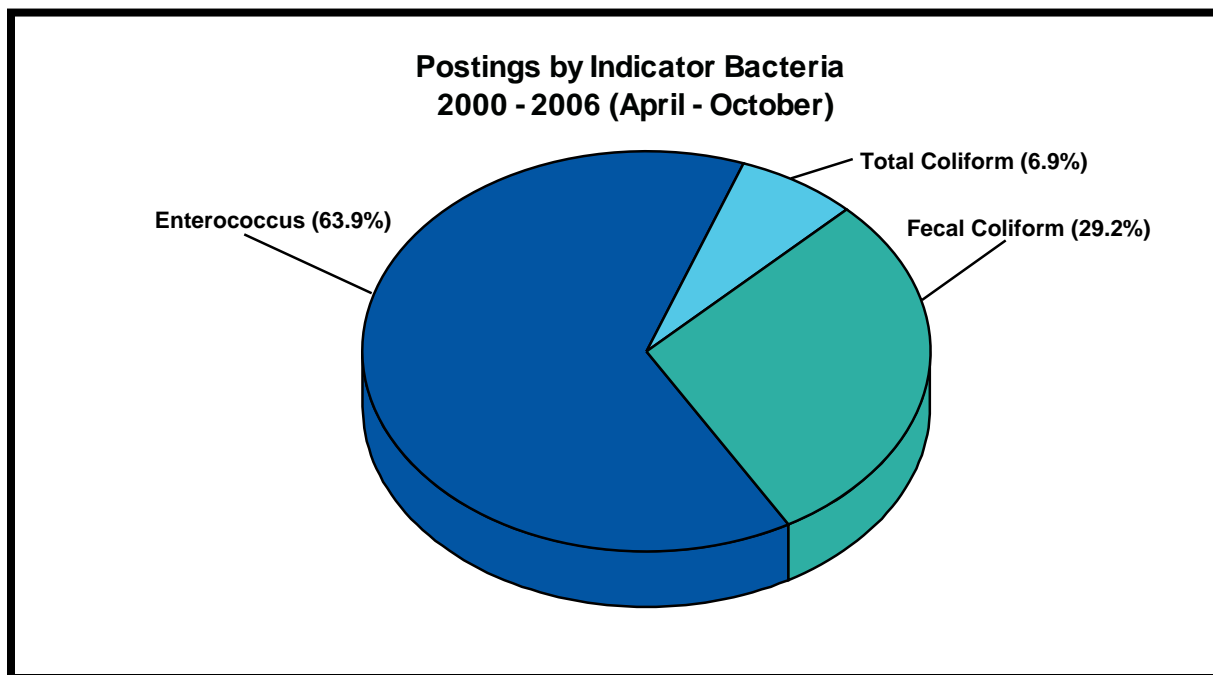
The total number of Beach Mile Days posted due to AB 411 standards violations between April 1 and October 31 at each Orange County coastal ocean water area from 2000 – 2006 is depicted in the following graph. From 2000 – 2006, Doheny State Beach had the highest number of Beach Mile Days posted due to AB 411 standards violations.

**Total Number of Beach Mile Days Posted
for Coastal Ocean Water Areas 2000 - 2006 (April - October)**

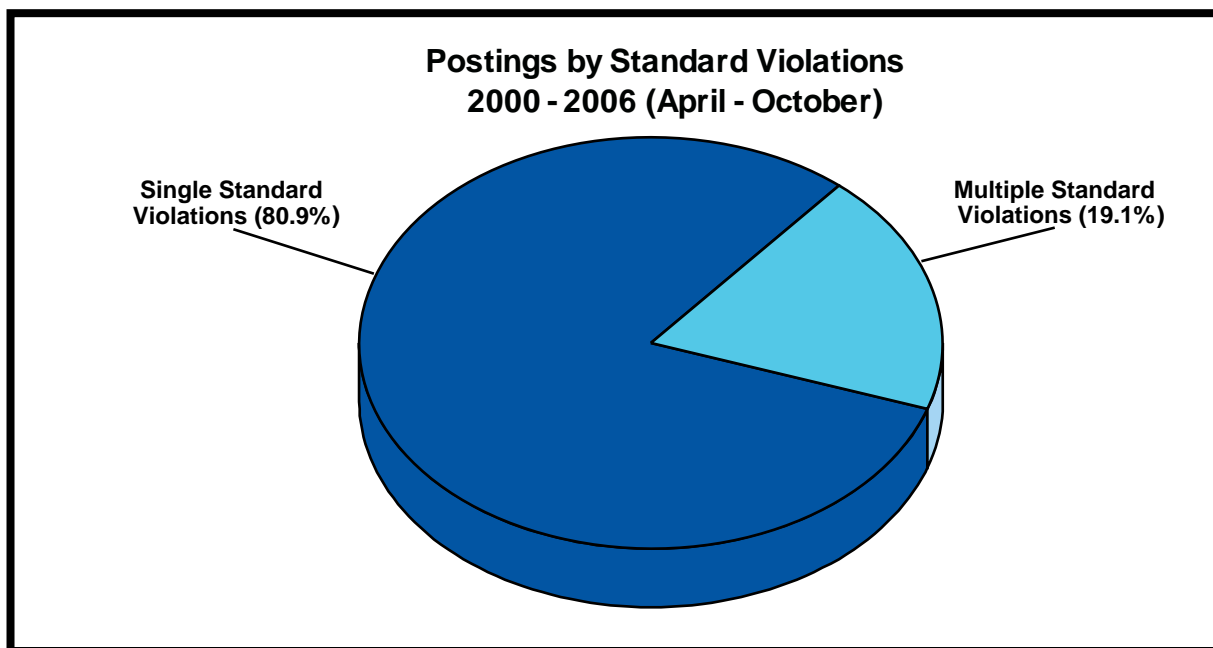


AB 411 Period Postings for all Orange County Ocean and Bay Water Areas by Indicator Bacteria 2000 – 2006 (April – October)

Violations of the single sample enterococcus standard accounted for the majority (63.9%) of the ocean and bay water postings that occurred in Orange County between April 1 and October 31 for 2000 – 2006, as the following chart indicates.



Violations of a single sample standard accounted for the majority (80.9%) of the ocean and bay water postings that occurred in Orange County between April 1 and October 31 for 2000 – 2006. Multiple standard violations (e.g., a combination of total coliforms and fecal coliforms, total coliforms and enterococci, fecal coliforms and enterococci, or all three) accounted for 19.1% of the postings.



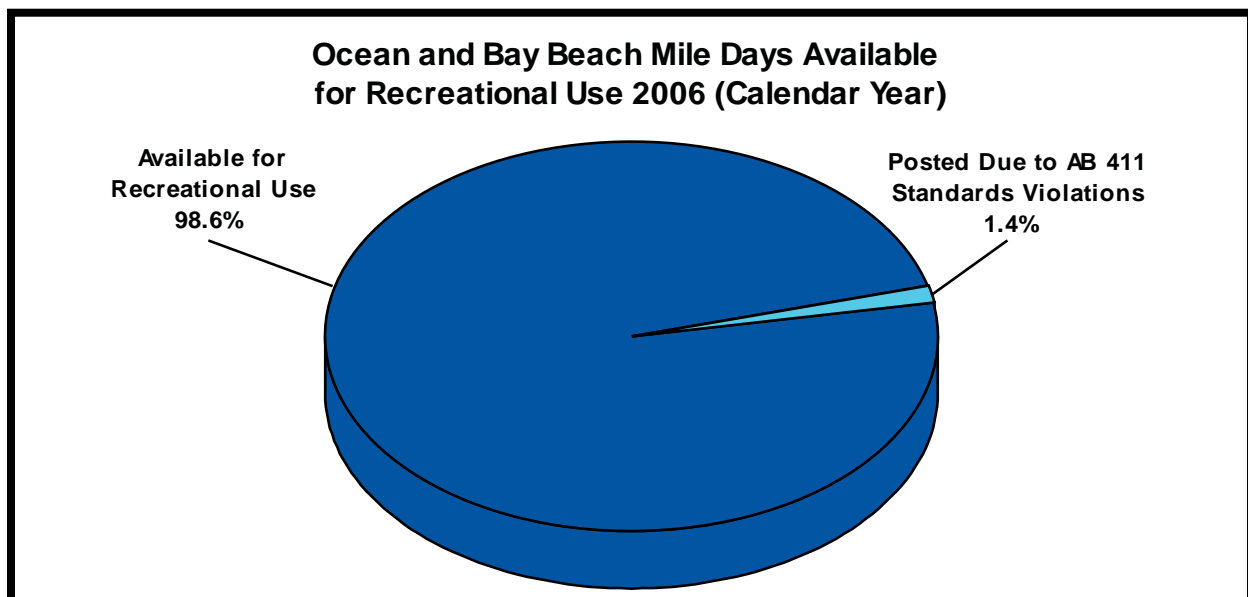
Calendar Year Postings for all Orange County Ocean and Bay Water Areas 2000 – 2006

Due to year round recreational water use, Orange County implements the AB 411 Ocean Water-Contact Sports Standards from January 1 – December 31. Violations are reported to the State of California Water Resources Control Board monthly with the exception of violations occurring when a rain advisory is in effect. The information provided in this section is the Orange County data reported to the 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.

The total number of postings, total number of days posted, and total number of Beach Mile Days posted due to violations of AB 411 standards between January 1 and December 31 for all Orange County beach areas are shown in the table below.

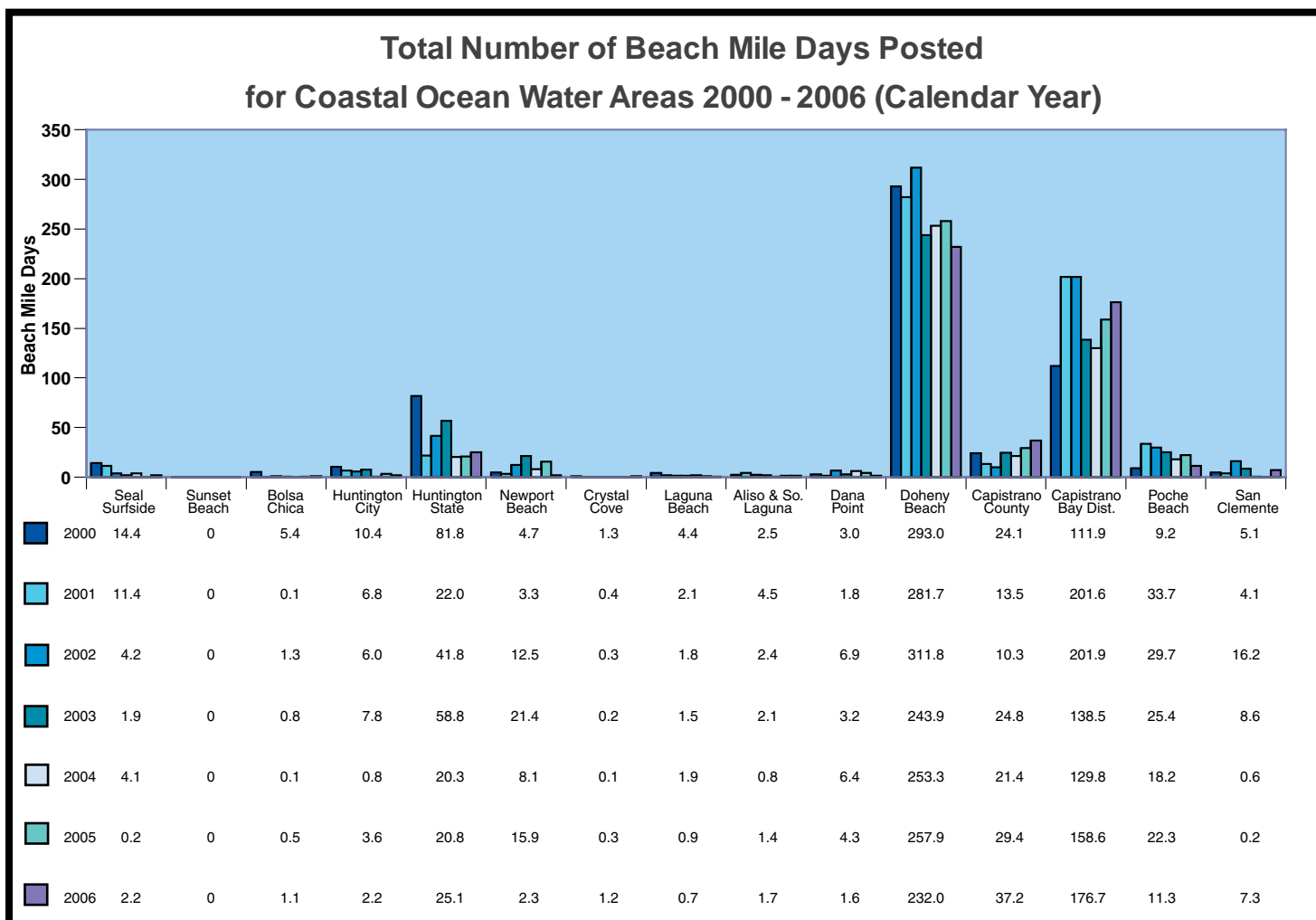
Year	Postings	Days	Beach Mile Days
2000	289	3,839	675.1
2001	321	4,563	716.8
2002	309	4,611	768.6
2003	309	3,875	644.4
2004	216	3,333	562.3
2005	203	2,938	600.7
2006	246	2,722	587.1

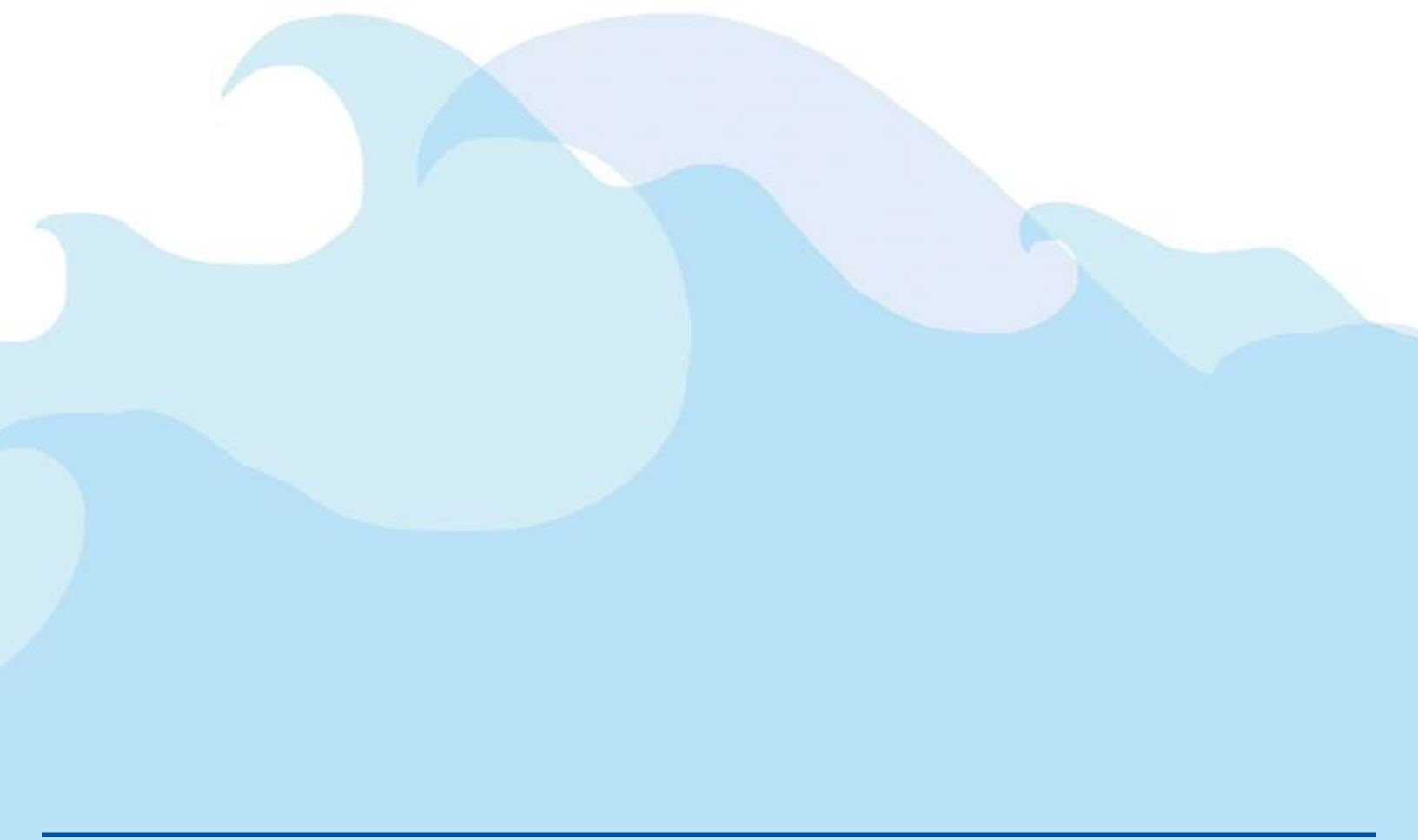
For 2006, the total number of Beach Mile Days posted due to AB 411 standards violations between January 1 and December 31 represents a small percentage (1.4%) of the total number of Beach Mile Days available for recreational water use during this period, as the following chart indicates.



Calendar Year Postings for Orange County Coastal Ocean Water Areas 2000 – 2006

The total number of Beach Mile Days posted due to AB 411 standards violations for the calendar year at each Orange County coastal ocean water area from 2000 – 2006 is depicted in the following graph. From 2000 – 2006, Doheny State Beach had the highest number of Beach Mile Days posted due to AB 411 standards violations.





Appendix 1



APPENDIX 1

Postings by Ocean and Bay Water Areas 2000 – 2006

The following tables provide sample collection information for each Orange County ocean and bay water area, and indicate the total number of postings, total number of days posted, and the total number of Beach Mile Days posted due to AB 411 standards violations between April 1 and October 31 and for the calendar year (dry weather data only) for 2000 – 2006.

• SEAL BEACH / SURFSIDE

Sampling Agency:	HCA Environmental Health
Sampling Frequency:	1 sample per week
Sampling Stations:	5
Sampling Locations:	1st Street, 8th Street, South of Pier, 14th Street, Sea Way
Beach Miles:	2 miles of coastal beach
Available AB 411 BMDs:	428 BMDs
Available Yearly BMDs:	730 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	6	47	3.7
2001	3	6	0.4
2002	5	22	1.2
2003	3	5	0.3
2004	3	18	2.4
2005	1	2	0.1
2006	8	15	0.9

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	8	109	14.4
2001	10	57	11.4
2002	11	74	4.2
2003	13	29	1.9
2004	8	47	4.1
2005	2	4	0.2
2006	9	17	2.2



Appendix 1 – continued

• SUNSET BEACH

Sampling Agency: HCA Environmental Health
Sampling Frequency: 1 sample per week
Sampling Station: 1
Sampling Location: Broadway
Beach Miles: 1 mile of coastal beach
Available AB 411 BMDs: 214 BMDs
Available Yearly BMDs: 365 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	0	0	0
2001	0	0	0
2002	0	0	0
2003	0	0	0
2004	0	0	0
2005	0	0	0
2006	0	0	0

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	0	0	0
2001	0	0	0
2002	0	0	0
2003	0	0	0
2004	0	0	0
2005	0	0	0
2006	0	0	0



Sunset County Beach

Appendix 1 - continued

• BOLSA CHICA STATE BEACH

Sampling Agency: Orange County Sanitation District
Sampling Frequency: 5 samples per week
Sampling Stations: 2
Sampling Locations: Bolsa Chica Reserve, Bolsa Chica Beach
Beach Miles: 2.8 miles of coastal beach
Available AB 411 BMDs: 599.2 BMDs
Available Yearly BMDs: 1,022 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	6	12	5.4
2001	1	1	0.1
2002	7	11	0.9
2003	8	14	0.8
2004	1	1	0.1
2005	4	7	0.4
2006	7	13	0.7

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	6	12	5.4
2001	1	1	0.1
2002	10	16	1.3
2003	8	14	0.8
2004	1	1	0.1
2005	5	8	0.5
2006	10	19	1.1



Bolsa Chica State Beach, Huntington Beach

Appendix 1 - continued

• HUNTINGTON HARBOUR

Sampling Agency: HCA Environmental Health
 Sampling Frequency: 1 sample per week
 Sampling Stations: 14
 Sampling Locations: Sunset Aquatic Marina, Mother's Beach, Trinidad Lane Beach, Sea Gate, Humboldt Beach, Davenport Beach, Clubhouse Marina, Harbour Channel, 11th Street Beach, Admiralty Drive, Anderson Street Marina, Anaheim Bay Gas Dock, Coral Cay Beach, Bolsa Bay
 Beach Miles: 31.1 miles of harbor frontage
 Available AB 411 BMDs: 6,655.4 BMDs
 Available Yearly BMDs: 11,351.5 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	16	100	4.7
2001	34	182	18.0
2002	24	134	7.3
2003	15	73	4.0
2004	8	31	1.2
2005	15	68	3.5
2006	21	110	6.1

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	27	196	8.7
2001	56	492	24.1
2002	43	394	21.3
2003	35	270	15.6
2004	20	200	10.8
2005	25	150	8.1
2006	29	332	18.6



Appendix 1 - continued

• HUNTINGTON CITY BEACH

Sampling Agency: Orange County Sanitation District
Sampling Frequency: 5 samples per week
Sampling Stations: 4
Sampling Locations: Bluffs, 17th Street, Jack's Snack Bar, Beach Blvd.
Beach Miles: 3.5 miles of coastal beach
Available AB 411 BMDs: 749 BMDs
Available Yearly BMDs: 1,277.5 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	6	10	10.1
2001	10	16	1.4
2002	7	14	1.2
2003	7	12	0.8
2004	4	8	0.5
2005	3	7	0.4
2006	4	6	0.9

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	9	16	10.4
2001	14	24	6.8
2002	21	33	6.0
2003	21	36	7.8
2004	9	13	0.8
2005	11	19	3.6
2006	14	24	2.2



Appendix 1 - continued

• HUNTINGTON STATE BEACH

Sampling Agency: Orange County Sanitation District
Sampling Frequency: 5 samples per week
Sampling Stations: 5
Sampling Locations: Beach Blvd., Newland Street, Magnolia Street, Brookhurst Street, Santa Ana River Mouth Beach
Beach Miles: 2.5 miles of coastal beach
Available AB 411 BMDs: 535 BMDs
Available Yearly BMDs: 912.5 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	28	223	67.6
2001	29	70	14.8
2002	31	89	23.8
2003	21	72	41.9
2004	23	55	10.6
2005	14	55	12.1
2006	34	92	21.9

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	36	255	81.8
2001	38	119	22.0
2002	42	158	41.8
2003	38	122	56.8
2004	33	90	20.3
2005	32	101	20.8
2006	37	109	25.1



Huntington State Beach, Huntington Beach

Appendix 1 - continued

• NEWPORT SLOUGH

Sampling Agency: HCA Environmental Health
Sampling Frequency: 1 sample per week
Sampling Stations: 2
Sampling Locations: Lancaster Street Beach at 61st Street, Lancaster Street Beach at Canal Street
Beach Miles: 0.1 miles of channel beach
Available AB 411 BMDs: 21.4 BMDs
Available Yearly BMDs: 36.5 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	N/A	N/A	N/A
2001	6	324	3.5
2002	5	181	2.1
2003	6	111	1.4
2004	3	96	1.1
2005	2	15	0.2
2006	10	61	0.7

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	N/A	N/A	N/A
2001	9	381	5.1
2002	13	339	3.9
2003	14	308	3.5
2004	4	98	1.1
2005	8	57	0.6
2006	12	134	1.5



Newport Slough, Newport Beach

Appendix 1 - continued

• NEWPORT BAY

Sampling Agency:	HCA Environmental Health
Sampling Frequency:	1 sample per week
Sampling Stations:	31
Sampling Locations:	Newport Dunes Beach (East, Middle, West and North), Vaughn's Launch, Ski Zone, North Star Beach, Bayshore Beach, De Anza Launch Ramp, 43rd Street Beach, 38th Street Beach, 33rd Street Channel, Newport Blvd. Bridge Marina, Lido Isle Yacht Club Beach, Via Genoa Beach, Rhine Channel, 19th Street Beach, 15th Street Beach, 10th Street Beach, Alvarado/Bay Isle Beach, "N" Street Beach, Garnet Avenue Beach, Ruby Avenue Beach, Sapphire Avenue Beach, Grand Canal, Abalone Avenue Beach, Park Avenue Beach, Onyx Avenue Beach, Promontory Point Channel, Bayside Drive Beach, Rocky Point Beach
Beach Miles:	39.5 miles of bay front
Available AB 411 BMDs:	8,453 BMDs
Available Yearly BMDs:	14,417.5 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	56	929	32.0
2001	68	931	39.0
2002	43	905	35.6
2003	40	730	32.3
2004	31	768	31.5
2005	21	719	28.8
2006	30	492	26.7

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	75	1,483	64.0
2001	94	1,663	67.7
2002	61	1,514	58.4
2003	74	1,409	57.6
2004	39	1,366	54.4
2005	41	1,193	49.0
2006	38	822	44.3



Newport Dunes, Newport Bay, Newport Beach

Appendix 1 - continued

• NEWPORT BEACH

Sampling Agency: Orange County Sanitation District, HCA Environmental Health
 Sampling Frequency: 1 or 5 samples per week (agency dependent)
 Sampling Stations: 8
 Sampling Locations: Orange Street, 52nd/53rd Street, 38th Street, 15th/16th Street, Balboa Pier, The Wedge, Corona Del Mar State Beach, Little Corona
 Beach Miles: 7 miles of coastal beach
 Available AB 411 BMDs: 1,498 BMDs
 Available Yearly BMDs: 2,555 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	8	18	2.2
2001	8	13	0.7
2002	10	17	1.2
2003	14	23	1.4
2004	12	18	1.2
2005	6	21	6.0
2006	6	10	1.9

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	15	33	4.7
2001	23	49	3.3
2002	22	64	12.5
2003	31	74	21.4
2004	28	38	8.1
2005	21	42	15.9
2006	10	17	2.3



"The Wedge," Newport Beach

Appendix 1 - continued

• CRYSTAL COVE STATE PARK

Sampling Agency: HCA Environmental Health, Orange County Sanitation District
 Sampling Frequency: 1 or 5 samples per week (agency dependent)
 Sampling Stations: 4
 Sampling Locations: Pelican Point Beach, Crystal Cove State Beach, Muddy Creek Beach, El Moro Beach
 Beach Miles: 3.2 miles of coastal beach
 Available AB 411 BMDs: 684.8 BMDs
 Available Yearly BMDs: 1,168 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	9	21	1.3
2001	3	5	0.3
2002	1	1	0.1
2003	1	4	0.2
2004	1	2	0.1
2005	0	0	0
2006	1	2	0.4

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	9	21	1.3
2001	4	7	0.4
2002	3	6	0.3
2003	1	4	0.2
2004	1	2	0.1
2005	2	5	0.3
2006	3	11	1.2



Crystal Cove State Beach

Appendix 1 - continued

• LAGUNA BEACH

Sampling Agency: HCA Environmental Health, South Orange County Wastewater Authority
 Sampling Frequency: 1 or 2 samples per week (agency dependent)
 Sampling Stations: 7
 Sampling Locations: Emerald Bay, Crescent Bay, Laguna Main Beach, Hotel Laguna, Bluebird Canyon, Victoria Beach, Blue Lagoon
 Beach Miles: 4.4 miles of coastal beach
 Available AB 411 BMDs: 941.6 BMDs
 Available Yearly BMDs: 1,606 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	15	34	1.9
2001	5	10	0.6
2002	3	4	0.2
2003	2	4	0.2
2004	4	7	0.6
2005	3	6	0.3
2006	4	7	0.4

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	26	65	4.4
2001	14	35	2.1
2002	8	31	1.8
2003	9	26	1.5
2004	11	24	1.9
2005	10	13	0.9
2006	7	10	0.7



Main Beach, Laguna Beach

Appendix 1 - continued

• ALISO COUNTY BEACH & SOUTH LAGUNA BEACH

Sampling Agency: South Orange County Wastewater Authority
 Sampling Frequency: 2 samples per week
 Sampling Stations: 10
 Sampling Locations: Goff Island Beach, Treasure Island Beach, Aliso-North, Aliso-Middle, Aliso-South, Camel Point, Table Rock, Laguna Lido, 9th Street/1000 Steps Beach, Three Arch Bay
 Beach Miles: 2 miles of coastal beach
 Available AB 411 BMDs: 428 BMDs
 Available Yearly BMDs: 730 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	12	22	1.6
2001	4	5	0.7
2002	4	9	1.7
2003	5	9	0.5
2004	4	6	0.6
2005	6	11	0.6
2006	7	11	0.6

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	20	37	2.5
2001	10	22	4.5
2002	7	14	2.4
2003	11	21	2.1
2004	6	8	0.8
2005	9	24	1.4
2006	12	18	1.7



Table Rock Beach, Aliso County Beach, Laguna Beach

Appendix 1 - continued

• DANA POINT

Sampling Agency: HCA Environmental Health, South Orange County Wastewater Authority
 Sampling Frequency: 1 or 2 samples per week (agency and season dependent)
 Sampling Stations: 4
 Sampling Locations: Monarch Beach, Salt Creek County Beach, Dana Strands, Ocean Institute Beach
 Beach Miles: 3 miles of coastal beach
 Available AB 411 BMDs: 642 BMDs
 Available Yearly BMDs: 1,095 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	4	42	2.5
2001	7	13	0.9
2002	10	95	5.5
2003	6	39	2.3
2004	13	108	6.0
2005	5	63	4.0
2006	8	23	1.6

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	8	53	3.0
2001	12	31	1.8
2002	11	119	6.9
2003	12	53	3.2
2004	13	113	6.4
2005	6	68	4.3
2006	9	24	1.6



Monarch Beach and Salt Creek County Beach, Dana Point

Appendix 1 - continued

• DANA POINT HARBOR

Sampling Agency:	HCA Environmental Health, South Orange County Wastewater Authority
Sampling Frequency:	1 or 2 samples per week (agency and season dependent)
Sampling Stations:	12
Sampling Locations:	Fuel Dock, Baby Beach (West End, Buoy Line, Swim Area and East End), Pier, Pilgrim Dock, Youth Dock, Harbor Entrance, Guest Dock, Harbor Patrol Dock, M Dock
Beach Miles:	3.3 miles of harbor frontage
Available AB 411 BMDs:	706.2 BMDs
Available Yearly BMDs:	1,204.5 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	10	206	7.9
2001	8	420	20.0
2002	9	410	19.2
2003	8	298	12.3
2004	9	362	18.6
2005	6	322	14.3
2006	14	264	10.4

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	12	697	31.2
2001	13	740	32.9
2002	11	719	35.3
2003	9	635	30.8
2004	11	580	30.1
2005	8	601	26.7
2006	16	461	20.1



Dana Point Harbor, Dana Point

Appendix 1 - continued

• DOHENY STATE BEACH

Sampling Agency:	South Orange County Wastewater Authority, HCA Environmental Health
Sampling Frequency:	1 or 2 samples per week (agency and season dependent)
Sampling Stations:	8
Sampling Locations:	North Beach, 250' North of San Juan Creek, San Juan Creek/Ocean Interface, 250' South of San Juan Creek, 1000' South of Outfall, 2000' South of Outfall, 3000' South of Outfall, 4000' South of Outfall
Beach Miles:	1.1 miles of coastal beach
Available AB 411 BMDs:	235.4 BMDs
Available Yearly BMDs:	401.5 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	9	165	140.3
2001	5	191	148.4
2002	7	216	142.5
2003	6	207	116.5
2004	12	226	107.6
2005	3	123	107.9
2006	11	130	71.0

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	11	319	293.0
2001	6	368	281.7
2002	7	367	311.8
2003	6	358	243.9
2004	12	334	253.3
2005	4	266	257.9
2006	11	280	232.0



Doheny State Beach, Dana Point

Appendix 1 - continued

• CAPISTRANO COUNTY BEACH

Sampling Agency: South Orange County Wastewater Authority, HCA Environmental Health
Sampling Frequency: 1 or 2 per week (season dependent)
Sampling Stations: 1
Sampling Locations: Capistrano County Beach
Beach Miles: 0.25 miles of coastal beach
Available AB 411 BMDs: 53.5 BMDs
Available Yearly BMDs: 91.25 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	4	128	12.4
2001	5	98	5.8
2002	7	104	6.2
2003	2	11	2.6
2004	1	2	0.3
2005	4	12	2.4
2006	4	15	3.6

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	6	248	24.1
2001	7	238	13.5
2002	8	242	10.3
2003	2	100	24.8
2004	3	94	21.4
2005	6	120	29.4
2006	6	151	37.2



Capistrano County Beach, Dana Point

Appendix 1 - continued

• CAPISTRANO BAY DISTRICT BEACH

Sampling Agency: South Orange County Wastewater Authority, HCA Environmental Health
 Sampling Frequency: 1 or 2 samples per week (season dependent)
 Sampling Stations: 2
 Sampling Locations: 7500' South of Outfall, 10,000' South of Outfall
 Beach Miles: 1.6 miles of coastal beach
 Available AB 411 BMDs: 342.4 BMDs
 Available Yearly BMDs: 584 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	2	53	59.6
2001	5	31	4.6
2002	6	77	97.9
2003	5	25	18.4
2004	3	4	1.7
2005	2	9	11.3
2006	6	20	21.5

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	7	107	111.9
2001	7	131	201.6
2002	10	181	201.9
2003	5	100	138.5
2004	5	84	129.8
2005	4	103	158.6
2006	7	117	176.7



Capistrano Bay District Beach, Dana Point

Appendix 1 - continued

• POCHE BEACH

Sampling Agency: South Orange County Wastewater Authority, HCA Environmental Health
Sampling Frequency: 1 or 2 samples per week (season dependent)
Sampling Stations: 1
Sampling Locations: Poche Beach
Beach Miles: 0.2 miles of coastal beach
Available AB 411 BMDs: 42.8 BMDs
Available Yearly BMDs: 73 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	3	104	5.7
2001	3	145	19.8
2002	4	153	18.8
2003	7	88	11.0
2004	7	160	12.4
2005	5	68	5.1
2006	4	104	7.8

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	5	163	9.2
2001	3	298	33.7
2002	6	222	29.7
2003	8	171	25.4
2004	8	221	18.2
2005	7	160	22.3
2006	6	157	11.3



Appendix 1 - continued

• SAN CLEMENTE CITY & STATE BEACH

Sampling Agency: South Orange County Wastewater Authority, HCA Environmental Health
 Sampling Frequency: 1 or 2 samples per week (agency and season dependent)
 Sampling Stations: 5
 Sampling Locations: North Beach, 450 Feet North of Pier, Trafalgar Street ("T" Street), Avenida Calafia, Avenida de Las Palmeras
 Beach Miles: 3.2 miles of coastal beach
 Available AB 411 BMDs: 684.8 BMDs
 Available Yearly BMDs: 1168 BMDs

AB 411 PERIOD (APRIL – OCTOBER)			
Year	Postings	Days	Beach Mile Days
2000	5	13	3.9
2001	4	13	3.8
2002	6	10	0.6
2003	4	7	0.6
2004	2	5	0.3
2005	2	4	0.2
2006	4	6	0.3

CALENDAR YEAR			
Year	Postings	Days	Beach Mile Days
2000	9	25	5.1
2001	5	17	4.1
2002	14	147	16.2
2003	12	145	8.6
2004	4	10	0.6
2005	2	4	0.2
2006	10	19	7.3



Appendix 2



APPENDIX 2

Unauthorized Discharges of Waste and Ocean and Bay Water Closures 1987 – 2006

The following chart, arranged by year, details the total number of unauthorized discharges of waste reported to the Health Care Agency as well as the total number of ocean and bay water closures for 1987 – 2006. For the total number of unauthorized discharges of waste reported, the chart categorizes waste discharges by sewage type and by waste discharge causes for

each year. For the total number of ocean and bay water closures, the chart categorizes by waste type and closure causes. In addition, the total number of Beach Mile Days for ocean and bay water closures from sewage spills and from miscellaneous causes is shown for 1999 – 2006.



Number of Unauthorized Discharges of Waste / Ocean and Bay Water Closures in Orange County 1987 – 2006

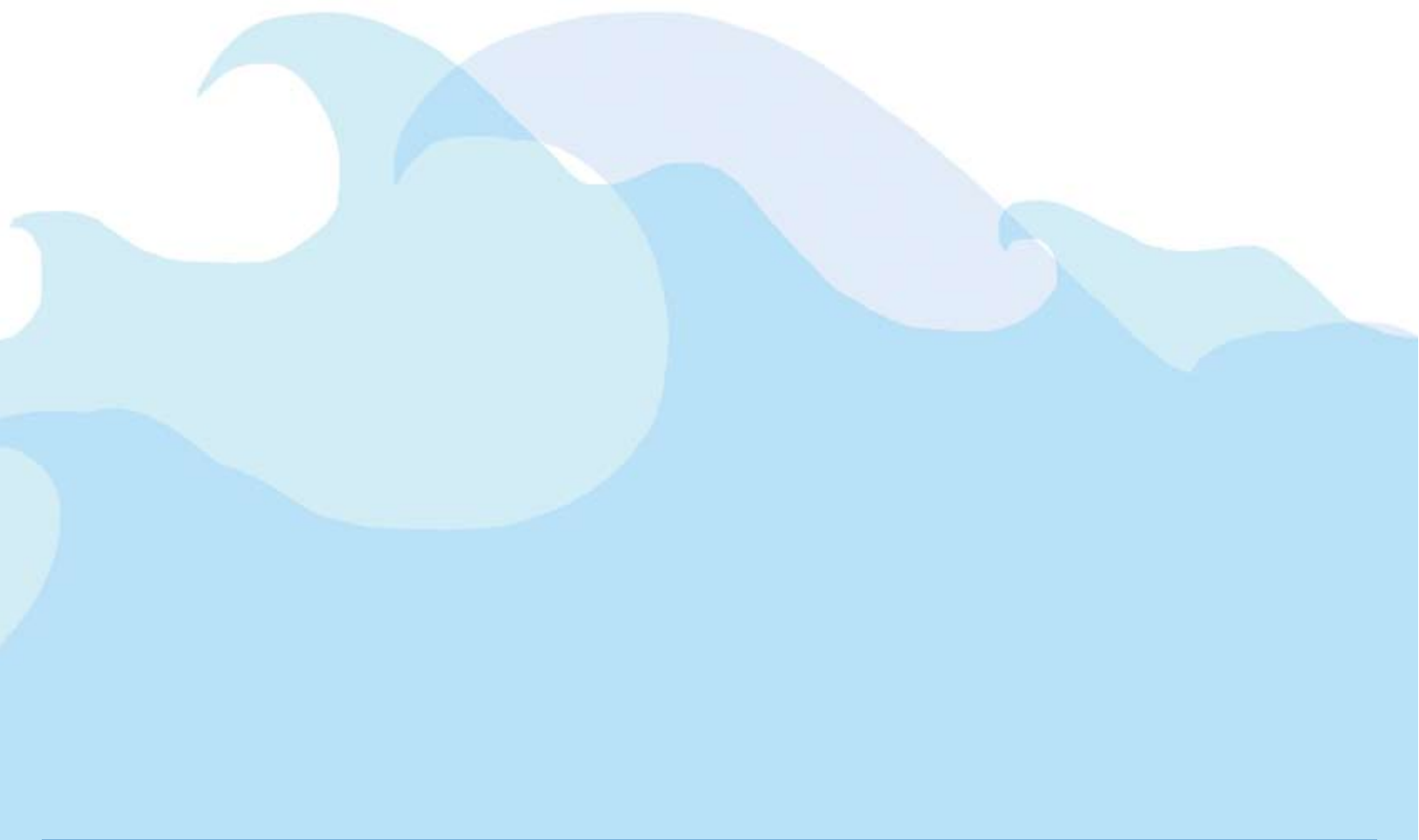
1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006

WASTE DISCHARGES

Total Number of Discharges	63	83	58	70	96	108	91	112	111	117	142	205	236	331	378	404	392	362	358	480	454
By Waste Type																					
Raw Sewage	60	83	58	70	96	108	91	112	111	117	142	205	236	331	378	404	392	362	358	333	
Primary Treated Effluent	0	0	1	0	0	0	1	1	0	1	1	0	0	1	0	0	0	2	0	0	
Secondary Treated Effluent	0	0	0	3	3	5	0	2	3	1	10	12	2	6	9	3	6	10	9	7	
Tertiary Treated Effluent	0	0	0	1	1	4	3	5	5	47	68	28	31	37	25	114	135	122	112	113	
Miscellaneous	3	0	0	2	1	1	2	5	1	4	5	7	7	2	0	1	1	0	1	1	
Waste Discharge Causes																					
Pipeline Breaks	16	12	13	25	11	17	21	18	20	57	61	60	38	51	60	92	133	114	128	113	
Pipeline Blockages	26	42	32	34	72	86	61	89	72	65	118	139	210	288	308	409	358	329	289	277	
Pump Station Failures	14	26	13	12	12	6	9	9	8	24	15	16	14	8	15	11	17	12	7	15	
Treatment Plant Discharges	0	1	0	2	2	3	0	2	3	1	1	2	0	0	4	2	4	9	4	6	
Stormwater Surcharges	0	0	0	0	0	1	2	0	10	0	4	14	0	1	0	3	6	2	7	3	
Vessel Pump Station Failures	0	0	0	0	0	0	1	0	0	1	0	0	0	4	9	3	6	9	4	1	
Miscellaneous	7	2	1	3	4	5	3	7	7	22	27	21	14	25	16	2	10	21	41	39	

OCEAN AND BAY WATER CLOSURES

Total Number of Closures	8	12	11	10	15	15	7	17	22	21	17	35	22	40	51	38	27	30	36	24	
By Waste Type																					
Raw Sewage	8	12	11	10	14	13	7	13	21	20	16	30	19	38	49	37	27	29	35	23	
Primary Treated Effluent	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	
Secondary Treated Effluent	0	0	0	0	0	2	0	0	0	0	0	1	1	2	2	0	0	0	1	0	
Tertiary Treated Effluent	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	
Miscellaneous	0	0	0	0	1	0	0	2	1	1	0	2	2	0	0	1	0	0	0	1	
Ocean and Bay Water Closure Causes																					
Pipeline Breaks	2	2	5	3	2	5	2	7	6	2	4	18	2	4	6	2	2	3	9	4	
Pipeline Blockages	3	3	1	5	9	7	2	8	10	8	8	4	11	30	29	31	17	13	18	16	
Pump Station Failures	3	6	5	1	3	1	1	0	3	7	4	3	5	2	6	1	1	0	2	2	
Treatment Plant Discharges	0	1	0	0	0	0	0	2	0	0	0	0	1	0	1	0	0	1	1	0	
Stormwater Surcharges	0	0	0	0	0	1	1	0	2	1	1	5	0	0	0	0	0	0	1	0	
Vessel Pump Station Failures	0	0	0	0	0	0	1	0	0	1	0	0	0	4	9	3	6	9	4	1	
Miscellaneous	0	0	0	1	1	1	0	0	1	2	0	5	3	0	0	0	1	4	1	1	
Beach Mile Days of Closures																					
Due to Sewage Spills	~	~	~	~	~	~	~	~	~	~	~	~	~	51.0	54.4	53.1	15.1	13.9	74.5	15.3	
Due to Miscellaneous Causes	~	~	~	~	~	~	~	~	~	~	~	~	~	105.1	0.0	0.0	0.0	0.0	0.0	0.0	







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