REPORT TO THE LEGISLATURE

REGULATION OF WASTES GENERATED BY OCEANGOING VESSELS IN CALIFORNIA

Pursuant to Public Resources Code section 72425

DECEMBER 2010

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Linda S. Adams, Secretary

STATE WATER RESOURCES CONTROL BOARD
P.O. Box 100 Sacramento, CA 95812
(916) 341-5250
Homepage: http://www.waterboards.ca.gov

Charles Hoppin, Chair
Frances Spivy-Weber, Vice-Chair
Arthur Baggett, Member
Tam Doduc, Member
Dwight P. Russell

Thomas Howard, Executive Director

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Background:

By the year 2000, the management and handling of the various forms of wastes generated by cruise ships had increasingly become a public concern due to the large number of cruise ships calling on California ports. Consequently, the Legislature enacted Division 37 of the Public Resources Code (PRC) section 72300 et seq., for the purpose of gathering information regarding cruise ships' waste management practices and evaluating their potential impacts on California's environment. The law required the California Environmental Protection Agency (Cal/EPA) to convene a multi-agency Task Force to carry out this responsibility and to utilize the information gathered by the Task Force to prepare a report to the Legislature by June 1, 2003. The report was submitted to the Legislature in August 2003 with recommendations related to water quality protection.

Based on the Task Force recommendations, the Legislature enacted a series of new laws in 2003 and 2004 to regulate various discharges of wastes to state marine waters from cruise ships. The laws are summarized as follows:

- Chapter 488, Statutes of 2003 (Assembly Bill 121), Simitian:
  Prohibited the release of oily bilge water and sewage sludge from cruise ships into the marine waters of the state and marine sanctuaries. The law required the State Water Resources Control Board (State Water Board), if it determined necessary, to apply to the appropriate federal agencies to provide the state the authority to issue the prohibition on sewage sludge.

- Chapter 494, Statutes of 2003 (Assembly Bill 906), Nakano:
  Prohibited owners/operators of cruise ships from releasing hazardous waste or other waste (i.e., wastes from photo-developing, dry cleaning, or medical wastes) into state marine waters and marine sanctuaries.

- Chapter 710, Statutes of 2004 (Assembly Bill 2093), Nakano:
  Prohibited cruise ships from releasing graywater into the state's marine waters.

- Chapter 764, Statutes of 2004 (Assembly Bill 2672), Simitian:
  Prohibited cruise ships, until January 1, 2010, from discharging sewage into the marine waters of the state, upon federal approval of the State Water Board's application or if the State Water Board determines that federal approval is not required.

In October 2005, the Legislature enacted the "California Clean Coast Act of 2005," Senate Bill 771 (Chapter 588, Statutes of 2005). The Clean Coast Act amended PRC sections 72400-72442, consolidated all the cruise ship laws, and extended those laws to oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity for graywater and sewage. The Clean Coast Act became effective on January 1, 2006.

The Clean Coast Act defines an oceangoing vessel as a private, commercial, government, or military vessel of 300 gross registered tons or more calling on California ports or places. The law requires the State Water Board to submit a report to the Legislature on data collected by the State Lands Commission (SLC) on oceangoing

vessels that visited California ports in 2006. Specifically, PRC section 72425 requires: (1) the master, owner, operator, agent, or person in charge of an oceangoing ship who has operated in the marine waters of the state in 2006 to provide information relating to ports of call, graywater and blackwater discharge, and holding tank capacities; (2) the SLC to submit the information to the State Water Board on or before February 1, 2007; and (3) the State Water Board to submit the report to the Legislature by October 1, 2007.

The State Water Board is submitting this report to the Legislature in accordance with the requirements of the Clean Coast Act. This report provides the background for regulation of large passenger vessels or cruise ships and how those regulations were extended to other large oceangoing vessels. It also includes a discussion of the following:

- The State Water Board's application to the U.S. Environmental Protection Agency (U.S. EPA) for prohibition of sewage discharge in state marine waters.
- The State Water Board's request to the National Oceanic and Atmospheric Administration (NOAA) to implement similar prohibitions in the national marine sanctuaries in California.
- The vessel survey data collected by SLC.
- The significance of these data as they relate to water quality impacts.
- The State Water Board's conclusions and recommendations for regulation of vessels based on review and analysis of the SLC data and other relevant information.
- A brief summary of the decision of the U.S. District Court for the Northern District of California vacating the federal regulation excluding discharges incidental to normal vessel operations from the Clean Water Act (CWA).

Conclusions:

In accordance with the Clean Coast Act, SLC collected information on oceangoing vessels in 2006 and submitted it to the State Water Board on February 1, 2007. The State Water Board's review of the data and other related information revealed the following:

- Of the 2,053 vessels that operated in California in 2006, only 1,400 vessels (68 percent) responded and sent the required information to SLC.
- Of the 1,400 respondents, 1,148 vessels (82 percent) did not have any holding tank capacity for graywater, and 826 vessels (59 percent) did not have any holding tank capacity for sewage.
- Because the prohibition to discharge sewage and graywater under the Clean Coast Act applies to oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity, a large number of vessels continue to be allowed to discharge sewage and graywater when entering California's marine waters.
- The oceangoing vessel industry operates with the understanding that the prohibition to discharge sewage and graywater does not apply if the oceangoing

vessels have no holding tank capacity or when their holding tank capacity is exceeded.

- The fact that a large number of oceangoing vessels will be able to discharge graywater and treated/untreated sewage poses a threat to the quality of California's marine waters.
- In addition to sewage discharges, discharges of graywater are also a concern because of the potential presence of human pathogens. Pathogens pose a serious threat to recreational and shellfish harvesting beneficial uses of California's marine waters.
- Research conducted on the incidence of human illnesses caused by microbial pathogens in marine waters has found that viruses are extremely abundant in marine systems and are more likely to survive sewage treatment processes than are bacteria. Therefore, the introduction of sewage (treated or untreated) by oceangoing vessels and smaller recreational vessels could introduce various kinds of pathogens, including bacteria and viruses that pose a threat to public health and the marine environment.
- Continued discharge of graywater and treated or untreated sewage into marine waters could cause more water bodies along the California coast to be listed as impaired due to microbial pollution under CWA Section 303(d).
- In addition to the large oceangoing vessels that do not have holding tank capacities, large numbers of small recreational vessels can also contribute to additional microbial pollution if they do not properly use marine sanitation devices (MSD) or properly store and dispose of their sewage.
- Marina surveys conducted by the State Water Board, the Department of Boating and Waterways, and Tetra Tech Inc. for the California Coastal Commission indicated that 280 of 320 coastal marinas and ports do not have sufficient pump out facilities to accommodate the existing numbers of recreational vessels.

Recommendations:

Based on the State Water Board's evaluation of the oceangoing vessel data from SLC and other related information, the Clean Coast Act, as currently written, appears to not be protective of the state's marine waters. Thus, the State Water Board recommends that the Legislature amend the Clean Coast Act as follows:

- Remove the exception to discharge prohibitions. To protect the quality of California's marine waters, discharge prohibitions should apply to all types of oceangoing vessels, not just cruise ships and large oceangoing vessels that have sufficient holding tank capacities.

- Require that all oceangoing vessels design sewage and graywater holding tank capacities compatible with their crew size and historical average number of days in arrival ports.

- Provide a funding mechanism for building adequate pump out facilities at all California's major ports. Ports that are planning major expansions and receive most of the vessel traffic, such as the Ports of Los Angeles/Long Beach and Oakland, should be prioritized.

- Require marinas within California's marine waters to also build pump out facilities to accommodate the needs of all of the State's numerous recreational boats.

- Prohibit the discharge of sewage and graywater from small recreational vessels, with a time schedule to allow marinas within California's marine waters to build sufficient pump out facilities.

INTRODUCTION

By 2000, the management and handling of the various forms of wastes generated by cruise ships had increasingly become a public concern due to the large number of cruise ships calling on California ports. Consequently, the Legislature enacted Division 37 of the PRC section 72300 et seq. for the purpose of gathering information regarding cruise ships' waste management practices and evaluating their potential impacts on California's environment. The law required the California Environmental Protection Agency (Cal/EPA) to convene a multi-agency Task Force to carry out this responsibility and to utilize the information gathered by the Task Force to prepare a report to the Legislature by June 1, 2003. Cal/EPA submitted the report to the Legislature in August 2003 with the following recommendations related to water quality protection:

(1) Amend the federal CWA to allow California to establish a statewide discharge prohibition zone for sewage discharges from cruise ships only;
(2) Graywater should be required to meet the same standards required of marine sanitation device effluent or discharge should be withheld while in state waters;
(3) Wastewater discharges should be prohibited in California's National Marine Sanctuaries; and
(4) Prohibit the discharge of any waste, food, or otherwise macerated waste into any marine sanctuary within California coastal waters.

Based on the Task Force recommendations, the Legislature enacted a series of new laws in 2003 and 2004 to regulate various discharges of wastes to state marine waters from cruise ships. The laws are summarized as follows:

- Chapter 488, Statutes of 2003 (AB 121, Simitian):
  Required the State Water Board, if it determined necessary, to apply to the appropriate federal agencies to authorize the state to prohibit the release of sewage sludge from cruise ships into the marine waters of the state and marine sanctuaries. The new law prohibited the discharge of any sewage sludge (if federal authorization is granted) or oily bilgewater from a cruise ship into the marine waters of the state or into a marine sanctuary. It also required the owner or operator of a cruise ship that releases sewage sludge or oily bilgewater into California waters to notify the State Water Board within 24 hours of that release. Each violation of the law is subject to a civil penalty of not more than $25,000.

- Chapter 494, Statutes of 2003 (AB 906, Nakano):
  Prohibited owners/operators of cruise ships from releasing hazardous waste or other waste (i.e., wastes from photo-developing, dry cleaning, or medical wastes) into state marine waters and marine sanctuaries; required the owner or operator of a cruise ship to immediately, but no later than 24 hours, notify the State Water Board of a release of hazardous waste or other waste into the marine waters of the state or into a marine sanctuary; and also required the State Water Board to request appropriate federal agencies to prohibit the release of waste by cruise ships in marine sanctuaries and to request, if necessary, approval of the state's prohibition of the release of waste in these areas. It also imposed a civil penalty

not to exceed $25,000 on any person who violates the prohibition.

- Chapter 710, Statutes of 2004 (AB 2093, Nakano):
  Prohibited a cruise ship from releasing graywater into the state's marine waters; required that a person discharging graywater into the state's marine waters immediately notify the State Water Board of the discharge; and imposed a civil penalty not to exceed $25,000 on any person who violates the prohibition.

- Chapter 764, Statutes of 2004 (AB 2672, Simitian):
  Prohibited cruise ships, until January 1, 2010, from discharging sewage into the marine waters of the state, upon federal approval of the State Water Board's application or if the State Water Board determines that federal approval is not required; required that a person discharging sewage into the state's marine waters immediately notify the State Water Board; imposed a civil penalty on any person who violates the prohibition, for an amount not to exceed $25,000; and provided that the Legislature intends to request the Congress to amend CWA to provide California with authority similar to that granted to the State of Alaska to regulate sewage discharge from cruise ships into the state's marine waters.

In October 2005, the Legislature enacted the "California Clean Coast Act of 2005," Chapter 588, Statutes of 2005 (SB 771, Simitian). The California Clean Coast Act amended sections 72400-72442 of PRC, consolidated all the cruise ship laws, and extended those laws to oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity for graywater and sewage. The California Clean Coast Act became effective on January 1, 2006 and provides the following:

- Prohibits the release of hazardous waste, other waste, and oily bilgewater from cruise ships and oceangoing vessels into the marine waters of the state and marine sanctuaries;
- Prohibits the release of sewage sludge from cruise ships and oceangoing vessels into marine waters of the state and marine sanctuaries; and prohibits the release of sewage from cruise ships and oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity into the marine waters of the state[1];
- Prohibits the release of graywater from cruise ships and oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity into the marine waters of the state.
- Directs the State Water Board, if deemed necessary, to obtain permission from U.S. EPA to prohibit sewage sludge releases from cruise ships and oceangoing vessels and sewage discharges from cruise ships and oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity in state waters;
- Directs the State Water Board to request the appropriate federal agencies to issue similar prohibitions in the four National Marine Sanctuaries in California;
- Requires the master, owner, operator, agent, or person in charge of an oceangoing ship who has operated in the marine waters of the state in 2006 to

[1] These prohibitions do not go into effect, however, until approved by U.S. EPA.

provide certain information relating to ports of call, graywater and blackwater discharge, and holding tank capacities to SLC upon the vessel's departure from its first port or place of call in California beginning in 2006; requires SLC to submit the information to the State Water Board on or before February 1, 2007; and

- Requires the State Water Board to submit the information to the Legislature on or before October 1, 2007.

IMPLEMENTATION OF LARGE OCEANGOING VESSEL LAWS

Federal law generally preempts the states from regulating sewage discharges from vessels, with some exceptions. Under CWA section 312, a state or local authority that has determined that some or all state waters require greater environmental protection may submit an application to the Administrator of U.S. EPA to prohibit these discharges. The Administrator must approve the application before a prohibition can go into effect.

Section 72440 (a) of PRC offered the State Water Board two options: (1) if the State Water Board determines that an application under CWA section 312 is not necessary, it may proceed to enforce the discharge prohibition of sewage sludge from cruise ships and oceangoing vessels and the discharge prohibition of sewage from cruise ships and oceangoing vessels that have sufficient holding tank capacity into the marine waters of the state, or (2) if the State Water Board determines that an application is necessary, it is directed to apply to U.S. EPA for this authority under CWA section 312(f). The State Water Board reviewed its options and determined that it was indeed necessary to prepare an application and has submitted such application to U.S. EPA. On April 5, 2006, the State Water Board submitted an application request to U.S. EPA under CWA Section 312(f)(4)(A) requesting U.S. EPA to prohibit the discharge of sewage sludge from cruise ships and oceangoing vessels and sewage from cruise ships and oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity. U.S. EPA's decision on the State Water Board's application/request is pending.

Sections 72440 (b) and 72440.1 of the PRC also directed the State Water Board to request the appropriate federal agencies, as determined by the Board, to prohibit the release of sewage sludge, oily bilgewater, hazardous waste, and other waste by cruise ships and oceangoing vessels, in all of the waters that are in the Channel Islands, Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries, that are not in the state waters.

On January 31, 2007, the State Water Board submitted a letter to the Administrator of NOAA requesting NOAA to issue discharge prohibitions to the four National Marine Sanctuaries in California. Specifically, the State Water Board requested NOAA to prohibit discharges of hazardous waste, other wastes (photography laboratory chemicals, dry cleaning chemicals, or medical wastes), sewage sludge, and oily bilgewater from cruise ships and oceangoing vessels that weigh 300 gross tons or more and have sufficient holding tank capacity, within the protected waters of Cordell Bank, Gulf of the Farallones, Monterey Bay, and Channel Islands National Marine Sanctuaries. Since the Clean coast Act of 2005 also prohibits the release of graywater and sewage from cruise ships and oceangoing vessels that weigh 300 gross tons or

more and have sufficient holding tank capacity into marine waters of the state, the State Water Board's request to NOAA also included a prohibition of sewage and graywater discharges from those vessels into the four National Marine Sanctuaries in California. NOAA's response on this request is also pending.

OCEANGOING VESSEL SURVEY

When the California Clean Coast Act was enacted, the only available data were the 2004 information provided by SLC which stated that commercial vessel traffic totaled 6,825 visits to California's ports, and that the total number of port visits had been steadily increasing through the last decade. This traffic was far in excess of visits made by cruise ships, which averaged 600 visits per year. Furthermore, because it was not known how many types of oceangoing vessels were routinely visiting California ports or what their capacity was for storing sewage or graywater while operating within state marine waters or the four National Marine Sanctuaries in California, the California Clean Coast Act directed SLC to conduct a one-time survey to collect this and other information and have it forwarded to the State Water Board by February 1, 2007. The California Clean Coast Act required the State Water Board to submit a report on the information to the Legislature by October 1, 2007.

Section 72425 (a) of PRC required that any oceangoing vessel operating in the marine waters of the state during 2006 provide the following information:

- Vessel information such as name, International Maritime Organization (IMO) number, or official number if an IMO number has not been assigned, vessel type, owner or operator, gross tonnage, keel laid date, port of registry, and typical or required number of crew.
- Size and capacity of any graywater holding tanks, as measured in metric tons, and the ability of the vessel to store graywater while in California waters.
- Number, size, and nature of marine sanitation devices on the vessel.
- Connections to ensure transfer of sewage and graywater pumpout facilities.
- Expected number of calls, in days, in California ports during 2006.
- Name, title, and signature of the master, owner, operator, or person in charge, or responsible officer attesting to the accuracy of the information provided.

SLC developed a survey form to collect all the required information and submitted the information to the State Water Board on February 1, 2007 in electronic and hard copies. The following is a summary of the data SLC collected in 2006.

Statewide Totals and Vessel Types

According to SLC's data, the types of vessels that operated in California in 2006 included auto carriers, bulk carriers, container vessels, general, tank, unmanned barges, passenger, and other. This information is tabulated in Table 1 and graphically shown in Figure 1.

Table 1 shows that the total number of vessel visits in California commercial ports was 11,029 in 2006. The total number of individual vessels was 2,053. From the 2,053

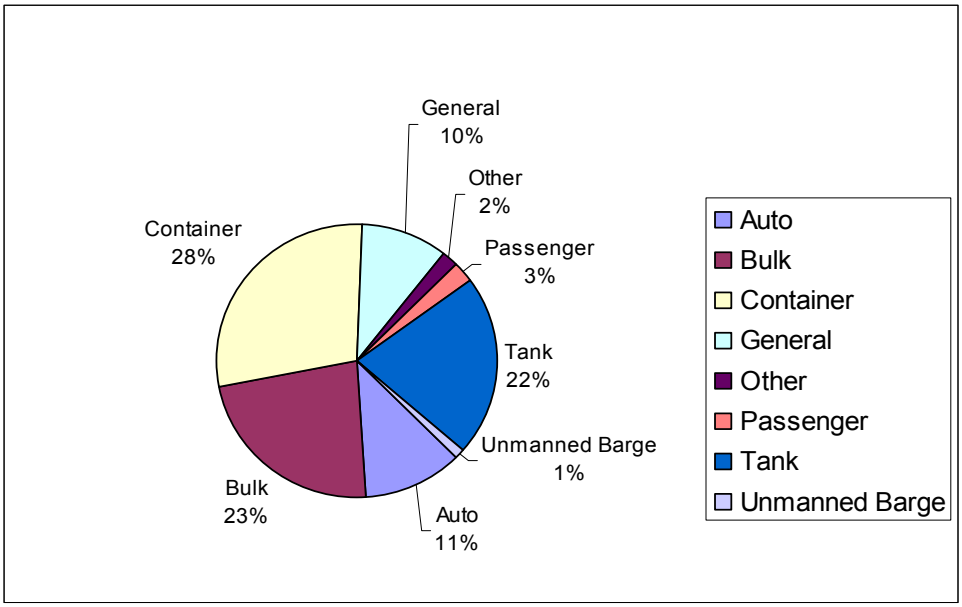
individual vessels, 52 were cruise ships, which accounted for 750 port visits; therefore, 2,001 were oceangoing vessels which accounted for 10,279 (11,029-750) port visits in 2006. Out of the 2,001 oceangoing vessels that operated in California in 2006, only 1,400 (70 percent) submitted completed forms.

Table 1. Types of Vessels Arriving at California Ports in 2006

Vessel Type	Total Number of Vessels	Total Calls in 2006	Average Number of Calls Per Vessel	% of Statewide Total Vessels	% of Statewide Total Calls
Auto	234	1040	4.44	11	9
Bulk	475	929	1.95	23	8
Container	583	4,707	8.08	28	43
General	205	712	3.47	10	7
Other	40	134	3.35	2	1
Passenger	52	750	14.4	3	7
Tank	444	2,024	4.56	22	18
Unmanned Barge	20	733	36.7	1	7
Totals	2,053	11,029		100%	100%

The majority of oceangoing vessels operating in California are container vessels (28 percent), followed by bulk (23 percent), tank vessels (22 percent), auto (11 percent) and general (10 percent); at the bottom of the list are passenger or cruise ships (3 percent), other types (2 percent) and unmanned barges (1 percent). See Figure 1 below.

Figure 1. Percentage of Vessel Types Operating in California in 2006



The data identified 15 port zones as shown in Figure 2. These port zones include Humboldt Bay, Richmond, Carquinez (which includes Conoco Phillips Rodeo), Sacramento, Stockton, Oakland (which includes Alameda), Redwood City, San Francisco, Monterey, Carpinteria, Port Hueneme, El Segundo, Los Angeles-Long Beach (LA-LB) complex (which includes Wilmington), Avalon/Catalina, and San Diego. There are also four other port zones - Moss Landing, Morro Bay, Santa Barbara, and Camp Pendleton - for which no vessel data was collected.

Figure 2. Map of California Port Zones

Statewide, container vessels dominate vessel calls by number of port calls as shown in Figure 3 and in Figure 4 by percentages (43 percent on average in 2006), followed by tank vessels (18.4 percent), auto (9.4 percent), and bulk carriers (8.4 percent). Passenger vessels and general cargo carriers each account for roughly seven percent of vessel traffic, and unmanned barges and other vessels make up the remaining traffic to California ports each year.

Figure 3. Number of Port Calls by Vessel Type in 2006

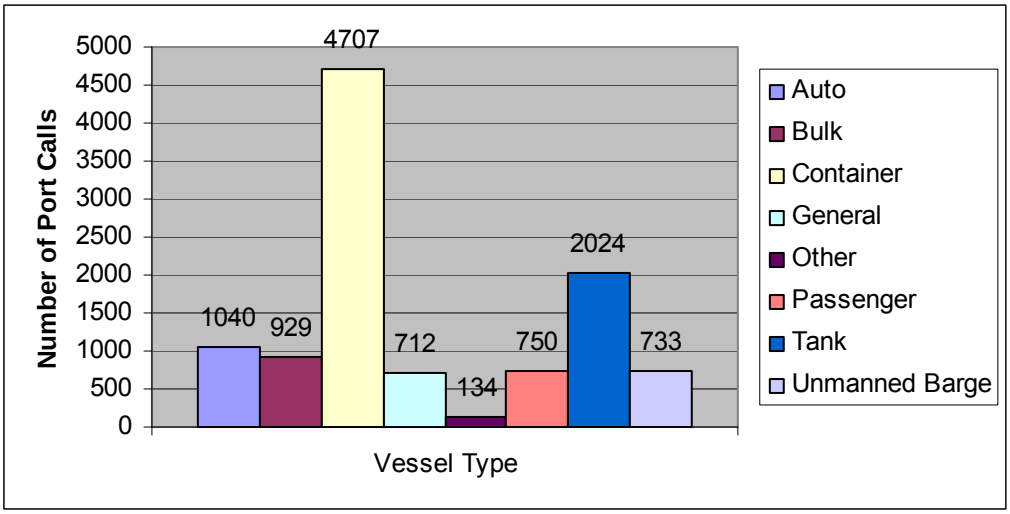
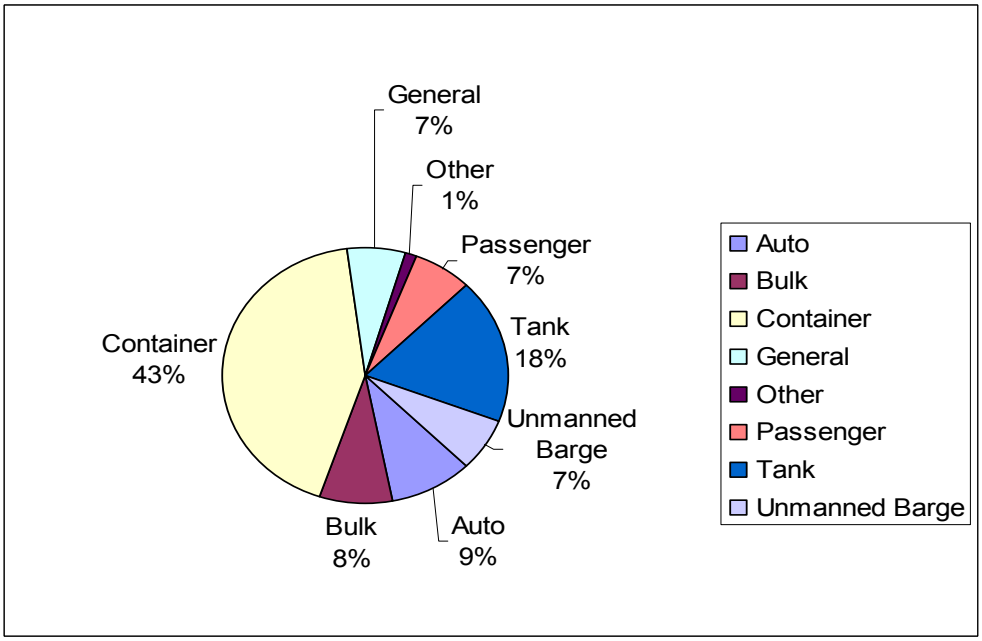


Figure 4. Percentage of Port Calls by Vessel Type in 2006



It is important to note that data collected by SLC do not include inland freshwater ports such as those in the Port of Stockton (http://www.portofstockton.com/) and Port of Sacramento (http://www.portofsacramento.com/f_overview.html). Following the continued growth in commercial vessel traffic at all major commercial ports in California and due to the lack of space for expansion in Oakland, the Port of Oakland is negotiating with the Port of Sacramento to operate and expand its facilities in

Sacramento. This will result in greatly increased commercial ship traffic in Sacramento, and, in order to accommodate the Post-Panamax vessels, the 40-mile ship channel extending from the Sacramento Delta to West Sacramento will be widened and deepened (e.g., http://www.portofoakland.com/pdf/real_reso_03.pdf). The remainder of the approximately 80-mile route through San Pablo Bay and through the Carquinez Strait may also require further ship channel dredging and other modifications to accommodate these larger vessels.

In 2006, the LA-LB and Oakland Ports received the majority of container vessels (2,872 and 1,807 visits respectively). LA-LB also received the majority of tank vessels (860 visits), bulk carriers (532 visits), passenger vessels (420 visits) auto carriers (376 visits), unmanned barges (250 visits), and other types of vessels (50 visits) as shown in Table 2.

Table 2. Number of Port Visits Based on Vessel Type

Ports of Call (Arrival Port)	Auto	Bulk	Container	General	Other	Passenger	Tank	Unmanned Barge	Total
Avalon/Catalina	0	0	0	0	0	69	0	0	69
Carpinteria	0	0	0	0	0	0	0	1	1
Carquinez	172	86	0	12	23	1	442	165	901
Conoco-Phillips/Rodeo	0	0	0	0	0	0	0	1	1
El Segundo	0	0	0	0	0	0	208	39	247
Port Hueneme	190	0	0	168	2	0	10	2	372
Humboldt	0	0	0	8	3	0	0	25	36
LA-LB	376	532	2,872	275	50	420	860	250	5,635
Wilmington, California	0	0	0	0	0	0	1	0	1
Monterey	0	0	0	0	0	2	0	0	2
Oakland	25	13	1,807	50	4	0	0	1	1,900
Alameda	0	0	0	1	0	0	0	0	1
Redwood	0	52	0	2	0	0	0	0	54
Richmond	71	34	0	35	25	0	371	204	740
Sacramento	0	15	0	16	0	0	3	1	35
San Diego	206	21	24	88	22	178	9	26	574
San Francisco	0	66	4	34	5	80	84	18	291
Stockton	0	110	0	23	0	0	36	0	169
Totals	**1,040**	**929**	**4,707**	**712**	**134**	**750**	**2,024**	**733**	**11,029**

Table 3 below shows that oceangoing vessels' country of origin consisted of 46 different countries including the United States, and five vessels whose country of origin is unknown. Of the 1,433 vessels (33 of which were cruise ships) that submitted the survey forms, the majority of the vessels came from Panama (373), Liberia (147), the United States (101), and Bahamas (95).

Table 3. Number of Vessels Based on Type and Country of Origin

Country of Origin	Vessel Type								
	Auto	Bulk	Container	General	Other	Passenger	Tank	Unmanned Barge	**Total**
Antigua/Barbuda	0	2	24	6	0	0	0	0	**32**
Bahamas	8	19	6	26	0	12	24	0	**95**
Belgium	0	0	0	0	0	0	4	0	**4**
Bermuda	0	0	4	0	0	3	1	0	**8**
Canada	0	0	0	0	1	0	0	0	**1**
Cayman Islands	0	1	0	5	0	0	4	0	**10**
Chile	2	0	0	0	0	0	0	0	**2**
China	2	5	22	1	0	0	3	0	**33**
Croatia	0	1	0	0	0	0	0	0	**1**
Cyprus	0	4	21	1	0	0	7	0	**33**
Denmark	0	0	19	3	0	0	7	0	**29**
Ecuador	0	0	0	0	0	0	2	0	**2**
France	0	0	0	0	0	1	1	0	**2**
Germany	0	0	43	0	0	0	2	0	**45**
Gibraltar	0	0	0	2	0	0	0	0	**2**
Greece	0	8	9	0	0	0	16	0	**33**
Hong Kong	1	44	19	10	0	0	4	0	**78**
India	0	0	0	0	0	0	3	0	**3**
Isle of Man	0	2	1	0	0	0	15	0	**18**
Israel	0	0	5	0	0	0	0	0	**5**
Italy	1	1	5	0	0	0	4	0	**11**
Japan	7	2	5	0	0	2	0	0	**16**
Korea	2	15	3	0	0	0	1	0	**21**
Kuwait	0	0	0	0	0	0	1	0	**1**
Latvia	0	0	0	0	0	0	1	0	**1**
Liberia	10	18	76	10	2	0	31	0	**147**
Luxembourg	0	0	0	0	0	0	1	0	**1**
Malaysia	1	2	1	0	0	0	2	0	**6**
Malta	2	15	1	0	0	0	5	0	**23**
Marshall Islands	0	6	17	8	0	2	30	0	**63**
Mozambique	0	0	1	0	0	0	0	0	**1**
Myanmar	0	1	0	1	0	0	0	0	**2**
Netherlands	0	0	3	1	2	9	0	0	**15**
North Korea	0	1	0	0	0	0	0	0	**1**
Norway	21	3	0	14	0	0	13	0	**51**
Panama	91	114	95	19	1	1	52	0	**373**
Philippines	3	5	0	3	0	0	2	0	**13**
Singapore	11	7	31	14	0	0	12	0	**75**
St. Vincent	0	2	0	1	0	0	0	0	**3**
Sweden	6	0	0	0	0	0	1	0	**7**
Switzerland	0	1	1	2	0	0	0	0	**4**
Thailand	0	1	0	2	0	0	0	0	**3**
Turkey	0	4	0	0	0	0	0	0	**4**
United Kingdom	3	1	31	2	2	2	2	0	**43**
United States	7	0	29	4	12	1	33	15	**101**
Unknown	0	3	0	0	1	0	1	0	**5**
Vanuatu	2	2	0	1	1	0	0	0	**6**
Totals	**180**	**290**	**472**	**136**	**22**	**33**	**285**	**15**	**1,433**

Holding Tank Capacity

According to the California Clean Coast Act, the sewage and graywater prohibition applies to oceangoing vessels that have sufficient holding tank capacity when operating in marine waters of the state. If the vessels do not have sufficient holding tank capacity then they are exempt from the prohibition and can discharge when in marine waters of the state. According to the California Clean Coast Act, sufficient holding tank capacity means a holding tank of sufficient capacity to contain sewage or graywater while the oceangoing ship is within marine waters of the state. For example, if a crew member produces 10 gallons per day, a vessel with 10 crew members would need a holding tank of 100 gallons to stay in California waters a maximum of one day and be considered having sufficient holding tank capacity. However, if the same vessel decides to stay for more than a day, the 100-gallon tank capacity would no longer be sufficient, the prohibition would no longer apply, thus, it would be allowed to discharge.

Holding Capacity for Graywater

SLC data showed that out of the 1,400 oceangoing vessels that operated in California in 2006, 1,152 did not have any holding tank capacity for graywater, while 248 had some capacity (Table 4), ranging from 0.2 metric ton (MT) for a Liberian auto carrier with a crew of 22 to 1,688 MT for a French tank vessel with a crew of 23.

Table 4. Range of Graywater Capacity

Total Records: 1,400 Oceangoing Vessels	
Graywater Capacity (Metric Tons)	
Total with a value ≤ 0 (no capacity)	1,152
Total with a value >0 - 500	242
Total with a value 501 - 1000	5
Total with a value 1001 - 1500	0
Total with a value >1500	1

These numbers show that 82 percent (Figure 5) of oceangoing vessels that operate in California do not have holding tank capacity for graywater and are not prohibited from discharging graywater into marine waters of the state.

Figure 5. Vessels' Graywater Capacity in Percentages

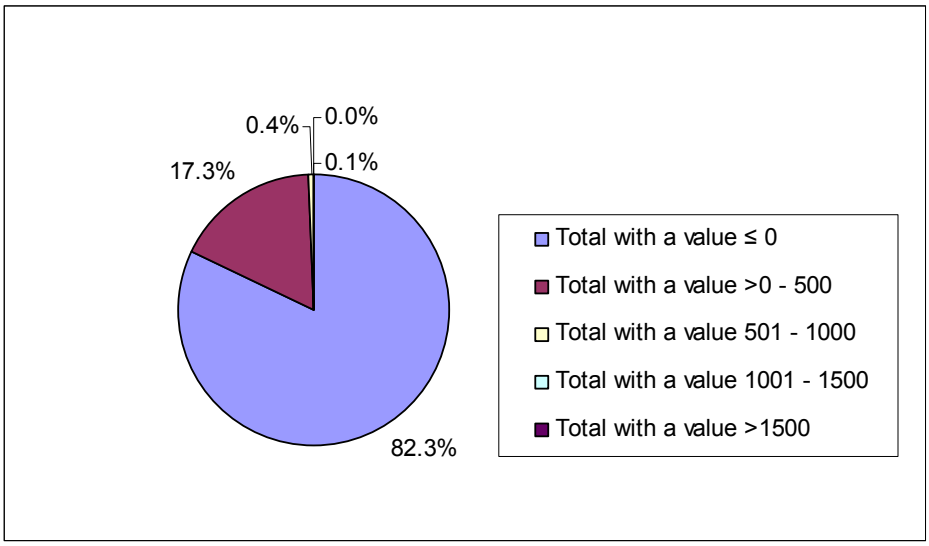


Table 5 breaks down the types of vessels that do not have any graywater holding capacity.

Table 5. Number and Type of Vessels With/Without Graywater Capacity

Type of Vessel	# of Vessels with Capacity	# of Vessels without Capacity
Auto	27	154
Bulk	27	263
Container	101	370
General	29	107
Other	8	14
Tank	56	229
Unmanned Barge	0	15
Totals	**248**	**1,152**

Holding Capacity for Blackwater (Sewage)

SLC's data showed that out of the 1,400 oceangoing vessels that responded to the survey and operated in California in 2006, 823 did not have any holding tank capacity for blackwater, while 577 had some capacity (Table 6), ranging from 0.2 MT for the same Liberian auto carrier with a crew of 22 to 1,705 MT for a Panamanian auto carrier vessel with a crew of 20.

Table 6. Range of Sewage Capacity

Total Records: 1,400 Oceangoing Vessels	
Sewage Capacity (Metric Tons)	
Total with a value ≤ 0	823
Total with a value >0 - 500	566
Total with a value 501 - 1000	7
Total with a value 1001 - 1500	1
Total with a value >1500	3

These numbers show that 59 percent (Figure 6) of oceangoing vessels that operate in California are not prohibited from discharging sewage into marine waters of the state.

Figure 6. Vessels' Sewage Capacity in Percentages

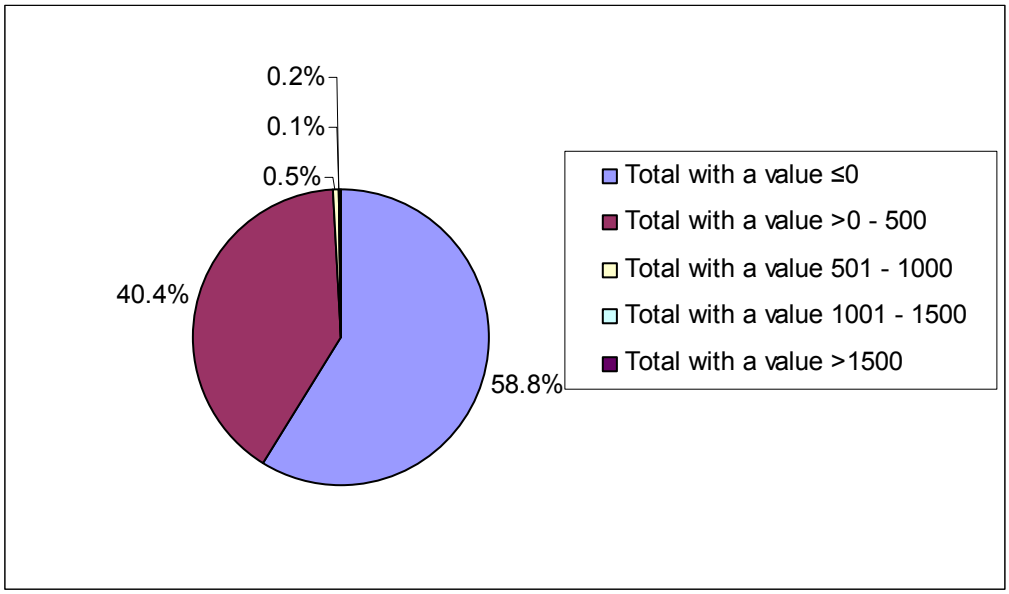


Table 7 breaks down the types of vessels that do not have any sewage holding capacity.

Table 7. Number and Type of Vessels With/Without Sewage Capacity

Type of Vessel	# of Vessels with Capacity	# of Vessels without Capacity
Auto	100	81
Bulk	63	227
Container	224	247
General	48	88
Other	11	11
Tank	131	154
Unmanned Barge	0	15
Totals	**577**	**823**

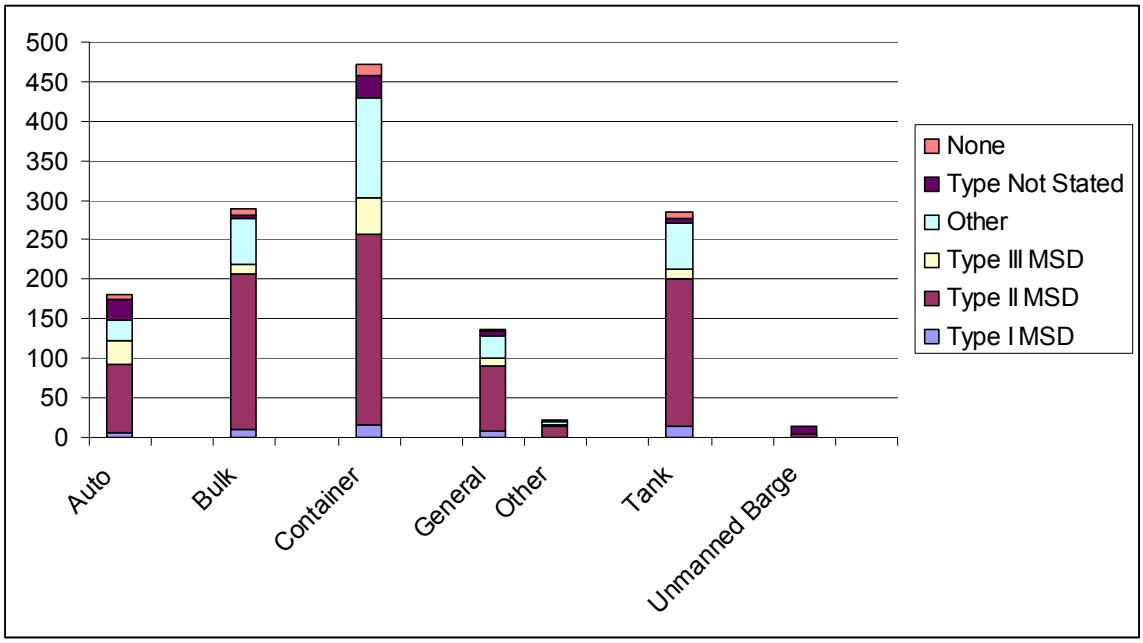
Vessels with Marine Sanitation Devices

U.S. EPA set standards for the performance of vessel MSDs in 1976 pursuant to CWA section 312. MSDs are divided into Types I, II, and III. Furthermore, CWA section 312 mandates the use of MSDs on all vessels with installed toilets. Type I and Type II MSDs (for vessels less than 65 feet and those equal to or greater than 65 feet, respectively) disinfect and treat sewage to reduce bacteria and solids. According to CWA, treated sewage from Type I and Type II MSDs may be discharged at any location except within designated no-discharge zones. Type III MSDs are holding tanks that provide minimal sewage treatment and can be installed on vessels of any size. In addition, it is illegal to discharge the contents of Type III MSDs in any United States territorial waters within three nautical miles of shore (CWA Title 33, Chapter 26: Clean Vessels, section 5602 states: "The discharge of untreated sewage by vessels is prohibited under Federal Law in all areas within the navigable waters of the United States"). Type III MSDs may be emptied only at designated onshore pumpout and dump facilities or beyond three nautical miles from shore (Using Your Head to Help Protect Our Aquatic Resources, EPA 842-F-00-002, April 2001). However, according to the Clean Coast Act definition of sewage (PRC section 72410 (q)), discharges from Type I and Type II MSDs are also prohibited from oceangoing vessels that have sufficient holding tank capacity while in marine waters of the state. Review of SLC data shows, as shown in Table 8 and graphically represented in Figure 7 by type of vessels, that the majority of the 1,400 oceangoing vessels that operated in California in 2006 and reported data had a Type II MSD (813), followed by other category (301), then Type III (110), and Type I (56). There were 120 vessels that did not state what type of MSD they had or indicated that they had none. These vessels were mostly container and auto carrier ships, which are the types of vessels that make the most visits into California.

Table 8. Type of Marine Sanitation Device by Type of Vessel

Type of MSD	Auto	Bulk	Container	General	Other	Tank	Unmanned Barge	**Totals**
Type I	6	10	16	8	1	15	0	**56**
Type II	87	197	242	83	14	186	4	**813**
Type III	30	12	46	10	1	11	0	**110**
Other	26	58	125	28	4	60	0	**301**
Not Stated	26	5	28	5	2	5	11	**82**
None	5	8	15	2	0	8	0	**38**
TOTALS	**180**	**290**	**472**	**136**	**22**	**285**	**15**	**1,400**

Figure 7. Graph of Marine Sanitation Devices by Type of Vessel



SIGNIFICANCE OF DATA

Based on the data collected, it appears that 82 percent or 1,152 vessels operating in California would not be prohibited from discharging graywater into marine waters of the state. In addition, some of the 248 vessels that have some graywater capacity may also be allowed to discharge if their stay in California results in exceedance of their existing holding tank capacity. With respect to sewage (treated or untreated), the data show that 59 percent or 823 vessels do not have any capacity to hold untreated sewage and, therefore, per the Clean Coast Act, would not be prohibited from discharging in marine waters of the state. The remaining 577 vessels that have some capacity to store sewage would be prohibited from discharging until their capacity is exceeded. In fact, that is how certain vessel companies understand the law. That is, once their capacity is exceeded, they can discharge treated effluent and still be in compliance. For example, Conoco-Phillips stated to the State Water Board in writing how it would operate six vessels in California to be in compliance with the Clean Coast Act: "I expect that our E Class vessels (Adventure, Discovery, Enterprise, and Resolution) will retain treated sewage in the holding tank while in California Waters and discharge once outside California Waters. If the vessel does have an extended stay in CA waters and fills up its existing blackwater holding tank capacity, I expect that they will legally discharge this treated effluent to the waters of California. I expect our 188 Class vessels (California and Alaska) will continue to discharge treated sewage to the waters of California in accordance with the regulations as there is no holding tank capacity for this stream currently on board. I expect that all of our vessels will continue to discharge graywater into the waters of the California in accordance with the regulations because there is no holding tank capacity for this stream currently on board." In fact, one of these vessels (the Resolution) had an unexpected longer stay at the Port of Long Beach and

discharged a total of 6,000 gallons of treated sewage as reported by their Chief Engineer on July 16, 2007.

Water Quality Concerns from Graywater Discharges

The fact that a large number of vessels are able to discharge graywater and treated/untreated sewage poses a great threat to the quality of California's marine waters.

In 2001, Charles P. Gerba, L.M. Casanova, and Martin Karpiscak, a team of researchers who are noted academic experts in onsite wastewater treatment systems and wastewater recycling published a paper titled "Chemical and Microbial Composition of Household Graywater" in the Journal of Environmental Science & Health. Their findings are cause for concern. Though their study focused on analyzing a range of pollutants in domestic graywater within households on land, they defined graywater in a manner identical to the functional distinction that prevails between graywater and blackwater on vessels of all sizes - i.e., graywater was defined as the liquid waste stream not flushed through the toilet, thus including sinks, laundry facilities, kitchen wastes, shower-pans, etc. Among their conclusions was the following statement: "This study suggests that the overall microbial, chemical, and physical quality of untreated household graywater lies somewhere between raw wastewater and secondary effluent." They found that total and fecal coliform, fecal streptococci, and Pseudomonas aeruginosa were present in graywater. The analysis of graywater conducted by Gerba et al. indicates that graywater from households located onshore - as well as the same waste streams on watercraft and larger vessels – is of concern.

In addition, as previously mentioned, U.S. EPA set standards for the performance of MSDs pursuant to CWA section 312. Type II MSD performance standard is based on fecal coliform and solids removal; however, both U.S. EPA and the State Water Board have subsequently determined that *Enterococcus* is a more effective indicator of the presence of sewage-related pollution in the marine environment. U.S. EPA has stated that current federal MSD regulations are outdated and should be revised because of more recent advances in treatment technologies, and because there is evidence that MSD treatment effectiveness diminishes as these devices age. Moreover, researchers such as Sarah E. Henrickson, Thomas Wong, Paul Allen, Tim Ford, and Paul R. Epstein from Harvard Medical School reported in a 2001 research review titled "Marine Swimming-Related Illness: Implications for Monitoring and Environmental Policy" that enteric viruses survive longer in marine waters than bacteria (thus, limiting the protectiveness of using *Enterococcus* as a public health surveillance indicator), and that conventional wastewater treatment technologies are less effective in inactivating viruses than in reducing indicator bacterial counts in treated wastewater effluent.

Therefore, discharges of graywater should be of concern, because the discharge of potential human pathogens poses a serious threat for humans in terms of protecting recreational/water-contact and shellfish harvesting beneficial uses, especially when it appears that 82 percent of all vessels coming to California already would be discharging graywater into marine waters of the state.

Water Quality Concerns from Pathogen Sources

As previously mentioned, research has been conducted regarding the incidence of microbial-pathogen caused human illnesses in marine waters (in which viral pathogens survive longer than the bacterial "indicators" used to monitor the relative efficacy of wastewater treatment) by Henrickson et al. (*Environmental Health Perspectives* Volume 109, Number 7, July 2001**)**. The Abstract of this research states:

> *"There is increasing evidence that environmental degradation may be contributing to an increase in marine-related diseases across a wide range of taxonomic groups. This includes a growing number of reports of both recreational and occupational users of marine waters developing gastrointestinal, respiratory, dermatologic, and ear, nose, and throat infections. The duration and type of exposure, concentration of pathogens, and host immunity determine the risk of infection. Public health authorities may not be able to accurately predict the risk of waterborne disease from marine waters due to the limitations of conventional monitoring, as well as erroneous perceptions of pathogen life span in marine systems. Pathogens undetectable by conventional methods may remain viable in marine waters, and both plankton and marine sediments may serve as reservoirs for pathogenic organisms, which can emerge to become infective when conditions are favorable. In this paper we address the environmental factors that may contribute to illness, the types of associated economic costs, the issues of water quality monitoring and the policy implications raised by the apparent rise in incidence of marine water-related illnesses*."

This research also suggests that viruses are extremely abundant in marine systems. Because the etiologic agent is not identified in a high proportion of gastrointestinal infections, viruses may be a chief cause of swimming-associated diseases. Several strains of morbilliviruses have been associated with illness and death in marine mammals. The potential for human illness is evident; only 20 copies of poliovirus or echovirus are required for infection to occur. Viruses survive longer in sea water than do bacteria; they are also more likely to survive sewage treatment processes than are bacteria. Seyfried, Patricia L. et al. (Impact of sewage treatment plants on surface waters, Canadian Journal of Public Health 75:25-31 (1984)) found that, after sewage treatment, 40 percent of the chlorinated effluent samples contained viruses. In addition, enteroviruses were detected in over 40 percent of waters deemed safe for recreational use by fecal coliform standards. Although consumption of raw seafood is often implicated in cases of hepatitis A and Norwalk virus gastroenteritis, infection with these viruses from direct exposure to fecally-contaminated water may also be possible. If what these studies suggest is true, then the introduction of sewage (treated or untreated) as well as graywater by oceangoing vessels and smaller recreational vessels could very well introduce various kinds of pathogens including bacteria and viruses that pose a threat to public health and the marine environment.

California's estuaries, deltas, and coastal areas provide habitat for fisheries and shellfish beds, including commercially-licensed facilities. A variety of waterborne pathogens can contaminate shellfish beds, thus, impairing one or more designated beneficial uses of state waters (as specified in the Regional Water Board's Water Quality Control Plans, including the statewide California Ocean Plan).

There is increasing evidence that enteric viruses, and particularly noroviruses (http://www.cdc.gov/nceh/vsp/cruiselines/norovirus_summary_doc.htm), are a significant cause of gastrointestinal illness associated with human shellfish consumption. Information from the California Department of Public Health indicates that enterovirus outbreaks have occurred in commercially-harvested shellfish beds during recent years in areas of coastal California (G. Langlois, Marine Biotoxin Program, personal communication, 2007).

Norovirus outbreaks on cruise ships are relatively common, as is the case in onshore locations, and for much the same reasons. Norovirus can be transmitted via contaminated food or water, as well as due to interpersonal contact and contact with contaminated inanimate objects ("fomites") such as doorknobs, railings, etc.

Because of the frequency of disease outbreaks on cruise ships, the federal Centers for Disease Control and Prevention (CDC) inaugurated the Vessel Sanitation Program during the 1970s (http://www.cdc.gov/nceh/vsp/desc/aboutvsp.htm). Year-to-date norovirus outbreaks logged by CDC as of August 2007 totaled 11 of 18 total episodes (http://www.cdc.gov/nceh/vsp/surv/GIlist.htm#2007)

A recent article by Le Guyader, Francoise S. et al. [(June 2006) http://www.cdc.gov/ncidod/eid/vol12no06/05-1519.htm)] identifying a mechanism by which norovirus is selectively absorbed into oyster tissue is of note in this regard. The authors, a joint team of French and United States scientific researchers, assess the current situation as follows:

> *"Twelve years ago, the question, "Should shellfish be purified before public consumption?" was asked in Lancet (1). Since then, new evidence of gastroenteritis outbreaks linked to shellfish consumption, even depurated shellfish, has been published, and raw or cooked oysters are the predominant bivalve mollusks involved (2–5). Regulations for Escherichia coli counts in shellfish-growing waters (United States) or shellfish meat (European Community) have failed to protect consumers because most shellfish-associated gastroenteritis outbreaks have a viral origin (4). Enteric viruses are different from enteric bacteria in terms of resistance to sewage treatment, persistence under unfavorable conditions such as occur in sea water, and transmission into the environment (6–8). Shellfish mollusks cultivated in coastal areas close to human activities can be contaminated by human sewage, which can spread >100 types of viruses (9). Viruses persist in shellfish for an extended period and can adversely affect public health; despite improvements, depuration does not eliminate viral particles (2, 10–14).*

"Noroviruses are the most frequent cause of diarrhea outbreaks in all age groups (8,15). These viruses, which are commonly associated with foodborne and waterborne outbreaks, are resistant to sewage treatment and are present in high concentrations during the epidemic season (3, 7,15). They are the primary pathogens associated with shellfishborne outbreaks worldwide (3,4). Oysters are rapidly contaminated, as shown by outbreaks linked to accidental input, and viruses then persist for up to several weeks (2,13,16…)"

CWA Section 303(d) Listings/Beach Closures and Need for Pump Out Facilities

The negative economic impact of degraded public marine natural resources on the California ocean economy has been substantial. Primary examples are repeated episodes of beach closings by public health authorities due to the detection of human pathogens, whether due to reported sewage spills reaching recreational waters and/or repeated incidences of exceedances of bacterial standards from other/unknown source(s). Closures are mandatory when public health authorities have knowledge of a specific release of untreated sewage, and discretionary with respect to unknown sources of microbial indicators. A "beach warning" may be posted when there has been an exceedance of a bacterial standard, but there is no known source of human sewage: the warning alerts the public of the risk of illness associated with water contact. In 2002, 70 percent of the sources of contamination resulting in beach postings and closures in California were "unknown." Some as-yet undetermined proportion of this microbial pathogen contamination of California's marine waters may be due to vessel graywater and sewage releases.

It should also be noted that active bacteriological surveillance of coastal beaches by local public health agencies under the auspices of the Clean Beaches Program is confined to California's main urban areas, i.e., coastal southern California and the San Francisco Bay region, so the magnitude and frequency of these events is unknown along more than half of California's coastal areas. Due to the federal CWA's longstanding preemption of the states with respect to regulating aspects of sewage discharges from vessels, the State Water Board's ability to protect the important beneficial use of water-contact recreation along many miles of public beaches has been significantly impaired.

It is also worth noting that the CWA section 303(d) listing of impaired water bodies includes areas of California's coastal waters. Water bodies are frequently placed on the list due to water quality impairments such as excessive nutrients, pathogens, and other water quality problems associated with excessive organic wastes entering surface water bodies, whether from anthropogenic or other sources. The State Water Board has determined that more than 75 percent of California water bodies listed as impaired under CWA section 303(d) are affected by nonpoint source (NPS) pollution. Waste streams associated with recreational watercraft and marinas are specifically targeted by U.S. EPA and the State Water Board's NPS Program.

The 2006 CWA 303(d) list for nonpoint source and unknown source of microbial pollution of coastal areas includes the following 69 areas listed by Regional Water Boards:

North Coast Water Board:

Campbell Cove
Clam Beach
Doran Regional Park
Luffenholtz Beach
Moonstone County Park
Salmon Creek Park
Trinidad State Beach

San Francisco Bay Water Board:

Aquatic Park Beach
Candlestick Point
Chicken Ranch Beach
China Camp Beach
Crissy Field Beach
Golden Hinde Beach
Hearts Desire Beach
Lawsons Landing
McNears Beach
Millerton Point
Pacific Ocean at Baker Beach
Pacific Ocean at Bolinas Beach
Pacific Ocean at Fitzgerald Marine Reserve
Pacific Ocean at Muir Beach
Linda Mar and San Pedro Beaches
Pacific Ocean at Pilar Point Beach
Pacific Ocean at Rockaway Beach
Pacific Ocean at Venice Beach

Central Coast Water Board:

Pacific Ocean at Capitola Beach
Pacific Ocean at Goleta Beach
Pacific Ocean at Haskells Beach
Pacific Ocean at Leadbetter Beach
Pacific Ocean at Pismo Beach
Pacific Ocean at Rio del Mar
Pacific Ocean at Stillwater Cove Beach
Pacific Ocean at Arroyo Burro Beach
Pacific Ocean at Carpinteria State Beach
Pacific Ocean at East Beach
Pacific Ocean at Gaviota Beach
Pacific Ocean at Hammonds Beach
Pacific Ocean at Hope Ranch Beach
Pacific Ocean at Jalama Beach
Pacific Ocean at Ocean Beach
Pacific Ocean at Point Rincon
Pacific Ocean at Refugio Beach

Los Angeles Water Board:

Avalon Beach
Channel Islands Harbor Beach
Hobie Beach (Channel Islands Harbor)
Long Beach City Beach
Ormond Beach
Peninsula Beach
Rincon Beach
San Buenaventura Beach

Santa Ana Water Board:

Huntington Beach State Park

San Diego Water Board:

Mission Bay Shoreline, Pacific Ocean Shoreline, Aliso HSA
Pacific Ocean Shoreline, Buena Vista Creek HA (Carlsbad City and State Beaches)
Pacific Ocean Shoreline, Dana Point HSA (Aliso, Salt Creek, and Monach Beaches)
Pacific Ocean Shoreline, Escondido Creek HA (San Elijo lagoon outlet)
Pacific Ocean Shoreline, Laguna Beach HSA (Main Laguna and Laguna Beaches)

Pacific Ocean Shoreline, Loma Alta HA (Loma Alta Creek mouth)
Pacific Ocean Shoreline, Lower San Juan HSA (North Beach and Capistrano Beach)
Pacific Ocean Shoreline, San Clemente HA (Poche, Ole Hanson, and San Clemente Beaches)
Pacific Ocean Shoreline, San Diego HU (San Diego River mouth aka Dog Beach)
Pacific Ocean Shoreline, San Dieguito HU (San Dieguito Lagoon mouth and Solana Beach)
Pacific Ocean Shoreline, San Joaquin Hills HSA (Cameo Cove)
Pacific Ocean Shoreline, San Luis Rey HU (San Luis Rey River mouth)
Pacific Ocean Shoreline, San Marcos HA (Moonlight State Beach)
Pacific Ocean Shoreline, Scripps HA (Childrens Pool Beach)
Pacific Ocean Shoreline, Tijuana HU
San Diego Bay Shoreline, G-Street Pier
San Diego Bay Shoreline, Shelter Island Shoreline Park

Continued discharge of graywater and treated or untreated sewage into marine waters of the state by oceangoing vessels can contribute to having these water bodies listed as impaired due to microbial pollution. In addition to the large oceangoing vessels that do not have holding tank capacities, small recreational vessels also can contribute to this environmental pollution especially due to their sheer number. The Department of Boating and Waterways' (DBW) Web site (http://www.dbw.ca.gov/VesselReg/06PWC.asp) shows that the number of registered vessels (excluding private water crafts) totaled 731,495 in 2006. Furthermore, marina surveys conducted by DBW for the San Francisco Bay and Los Angeles Water Boards found that the majority of recreational vessels do not have a Type I or Type II MSD as summarized in Table 9 below. This means that these vessels may have either a Type III MSD or none at all, thus, requiring pump out facilities.

Table 9. Number of Recreational Vessels Requiring Pump Out Facilities

Name of Harbor	Number of Slips	Number of Vessels Without Type I or Type II MSD	Vessels Prohibited from Discharging
Long Beach	4,413	3,567	81%
Marina del Rey	4,923	4,317	88%
Redondo Beach	1,455	1,298	89%
Port of Los Angeles	3,955	2,906	73%
Channel Islands Harbor	2,902	2,883	99%
Ventura Harbor	1,634	1,441	88%
San Francisco Bay Marinas and Harbors[1]	20,543	15,389	75%
Total	**39,825**	**31,801**	**80%**

[1]Of the 99 Marinas and Harbors in San Francisco, two did not respond to this survey.

Based on the information in Table 9, it can be estimated that 80 percent of all boats in California would need sewage facilities and, therefore, would be prohibited from discharging (CWA Title 33, Chapter 26: Clean Vessels, section 5602). However, this can only be ensured if there are adequate pump out facilities to handle these many recreational vessels. DBW recommends one pumpout station for every 300 vessels that are 26 feet or greater. However, the State Water Board's surveys of marinas (including coastal marinas) and Tetra Tech's "September 2005 Status of

Implementation of Marinas and Recreational Boating Management Measures in California Report" found that 280 of 320 coastal marinas and ports did not have sufficient pump out facilities. These surveys show the need to provide adequate funding for pumpout facilities for the transfer and disposal of sewage from MSDs in order to accommodate the growing needs of recreational boaters in California and protect the quality of the waters of the state. Boat ownership is projected to increase by 13,337 to 23,092 or 1.4 to 2.5 percent annually through 2020 (DBW, 2002). If recreational boaters do not properly use MSDs or properly store and dispose of their sewage because there are no adequate pump out facilities, they can significantly impair beneficial uses throughout the state. According to DBW, "a weekend boater flushing untreated sewage into the water produces the same bacterial pollution as that of 10,000 people whose sewage passes through a treatment plant (Kevin Atkinson, May 1, 2001)." Due to the high numbers of boaters and the fact that recreational use of boaters and water contact recreation occur simultaneously, the cumulative impact of sewage discharges from recreational boating is significant.

LAWSUIT REGARDING INCIDENTAL DISCHARGES FROM VESSELS

On June 21, 2007, U.S. EPA filed a notice in the Federal Register providing the public with early notification that EPA is in the process of developing National Pollutant Discharge Elimination System (NPDES) permits under CWA for the discharge of pollutants incidental to the normal operation of vessels and is seeking comment and relevant information from the public on this matter. Beginning development of NPDES permitting is necessary in light of a lawsuit in the U.S. District Court for the Northern District of California in which the Court found that a U.S. EPA regulation, which excludes certain discharges incidental to the normal operation of vessels from NPDES permitting, exceeded the Agency's statutory authority. The Court issued a final order in September 2006 that vacates (revokes) the regulatory exclusion for discharges incidental to the normal operation of vessels effective September 30, 2008. As of that date, those discharges incidental to the normal operation of vessels previously excluded from NPDES permitting by the regulation became prohibited unless the discharge is covered under an NPDES permit.

The decision potentially implicates all vessels, both commercial and recreational, that have discharges incidental to their normal operation (e.g., deck runoff, graywater, etc). U.S. EPA is appealing this decision to the U.S. Court of Appeals for the Ninth Circuit. In response, the State Water Board has provided comments to Association of State and Interstate Water Pollution Control Administrators which was compiling comments from all the states. The State Water Board stated that if additional federal resources are provided for the permitting effort, California would prefer to fold the large vessel discharge permits (300 gross tons or greater) into our already existing NPDES program, and believes this could be best accomplished by issuance of general permits. State law (PRC section 72400 et seq.) gives explicit authority to the State Water Board to enforce a ban on the discharge of oily bilgewater, hazardous waste, medical waste, dry cleaning waste, photographic film developing waste, and graywater from large commercial vessels into the state's marine waters.

If adequate federal funding were made available, the state would prefer regulating recreational and other small vessels under the NPS program. Marinas, however, may be issued permits under the state's existing NPDES program authority.

For recreational and other small vessels, if coverage under an NPDES permit is required, the state would prefer that U.S. EPA manage an NPDES permit for these classes of vessels. The state simply would not have the resources to address NPDES permitting for over 700,000 recreational and small vessels.

CONCLUSIONS

In accordance with the Clean Coast Act of 2005, SLC collected information on oceangoing vessels in 2006 and submitted it to the State Water Board on February 1, 2007. The State Water Board's review of the data revealed that out of 2,053 vessels, 70 percent sent information to SLC, 82 percent of respondents did not have any holding tank capacity for graywater, and 59 percent of respondents did not have any holding tank capacity for sewage. Since the sewage and graywater prohibition applies only to vessels that weigh 300 gross tons or more and have sufficient holding tank capacity, a large number of vessels would not be prohibited from discharging sewage and graywater when entering marine waters of the state and could impair the quality of the state's marine waters.

RECOMMENDATIONS

Based on the State Water Board's evaluation of the oceangoing vessel data from SLC, the Clean Coast Act as currently written appears to be not protective of the state's marine waters. Thus, the State Water Board recommends that the Legislature amend the Clean Coast Act as follows:

- Remove the exception to the discharge prohibitions. To protect the quality of California's marine waters, discharge prohibitions should apply to all types of oceangoing vessels, not just cruise ships and large oceangoing vessels that have sufficient holding tank capacities.
- Require that all oceangoing vessels design sewage and graywater holding tank capacities compatible with their crew size and historical average number of days in arrival ports.
- Provide a funding mechanism for building adequate pump out facilities at all of California's major ports, starting with the ports that are planning major expansions and receive the majority of vessel traffic, such as the Ports of Los Angeles/Long Beach and Oakland.
- Require marinas within California's marine waters to also build pump out facilities to accommodate the needs of all recreational boats, whose number continues to grow year after year.
- Apply sewage and graywater discharge prohibitions to small recreational vessels until marinas within California's marine waters have sufficient pump out facilities.