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## **Channel Islands National Marine Sanctuary**

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## **Draft Management Plan/ Draft Environmental Impact Statement**

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### **SUPPLEMENTAL**

### **Draft Environmental Impact Statement**



**March 2008**

**U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Ocean Service  
National Marine Sanctuary Program**

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(bottom, left to right) Robert Schwemmer, Robert Schwemmer, Rebecca Young



MAR 13 2008

Dear Reviewer:

In accordance with provisions of the National Environmental Policy Act of 1969 (NEPA), we enclose for your review the National Oceanic and Atmospheric Administration, National Ocean Service Supplemental Draft Environmental Impact Statement (SDEIS) for the Channel Islands National Marine Sanctuary (CINMS or Sanctuary). Designated in 1980, the CINMS consists of an area of more than 1,100 square nautical miles (NM) off the southern coast of California. The CINMS hosts a rich and diverse range of marine life and habitats, unique and productive oceanographic processes and ecosystems, and culturally significant resources.

This SDEIS has been prepared pursuant to NEPA to assess the environmental impacts associated with NOAA developing revised CINMS regulations under the National Marine Sanctuaries Act, as part of the CINMS management plan review process. NOAA is proposing to revise the CINMS discharge regulation to prohibit the following discharges from within or into the Sanctuary: 1) sewage from vessels 300 GRT or more, including cruise ships and oceangoing ships; 2) graywater from cruise ships; and 3) graywater from oceangoing ships with sufficient holding tank capacity to hold graywater while within the Sanctuary. NOAA will also propose definitions for "graywater", "oceangoing ship" and "cruise ship".

The proposed regulatory changes modify the currently pending proposed regulatory changes published on May 15, 2006 with the draft management plan and draft environmental impact statement. The proposed rule publishes the proposed regulatory modifications, and announces the availability of the SDEIS, which is also available online at <http://www.channelislands.noaa.gov/>.

Written comments on the SDEIS must be received by May 30<sup>th</sup>, 2008. Written comments should be submitted to Chris Mobley, CINMS Superintendent, NOAA National Marine Sanctuary Program, 113 Harbor Way, Suite 150, Santa Barbara, California, 93109. Electronic comments may be submitted via email to [cinms.mgtplan@noaa.gov](mailto:cinms.mgtplan@noaa.gov), or on the Federal e-Rulemaking Portal at [www.regulations.gov](http://www.regulations.gov) under docket number "NOAA-NOS-2007-0846".

Sincerely,

Rodney F. Weiher  
NOAA NEPA Coordinator

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## **ABOUT THIS DOCUMENT**

This Supplemental Draft Environmental Impact Statement (SDEIS) provides information to supplement and where indicated to replace information contained in the May 2006 Channel Islands National Marine Sanctuary (CINMS or Sanctuary) Draft Environmental Impact Statement (DEIS). This SDEIS presents and analyzes revisions of the DEIS proposed action that are designed to protect Sanctuary water quality and resources from the potentially harmful effects of sewage and graywater discharges from large vessels. The DEIS did not adequately address these potential effects nor means to address them.

The DEIS is Volume II of a two-volume set that resulted from the Sanctuary's extensive management plan review process. It evaluates the potential environmental impacts of the Sanctuary's proposed actions, *i.e.*, the proposed revisions of and additions to the original CINMS regulations promulgated in the early 1980s. Volume I, the Draft Management Plan (DMP), contains information about the Sanctuary's environment and resources, staffing and administration, priority management issues and actions proposed to address them over the next five years, and performance measures. The DMP and DEIS also provide general background information on the National Marine Sanctuary Program (NMSP) and CINMS. The National Oceanic and Atmospheric Administration (NOAA) is the lead agency for this proposed project.

This SDEIS has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), 42 U.S.C. 4321 *et seq.*, and its implementing regulations, 40 CFR Parts 1500–1508. The Notice of Intent (NOI) to prepare this SDEIS is available at 72 FR 40775.

Comments or questions on this document should be directed to:

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**EXECUTIVE SUMMARY  
SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT  
FOR THE  
CHANNEL ISLANDS NATIONAL MARINE SANCTUARY  
MANAGEMENT PLAN/REGULATIONS UPDATE**

The National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) and the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500–1508) require an agency to prepare an environmental impact statement (EIS) for federal actions that may have a significant effect on the quality of the human environment. This supplemental draft EIS (SDEIS) evaluates the potential environmental impacts associated with the revised proposed discharge and deposit regulation for the Channel Islands National Marine Sanctuary (CINMS or Sanctuary), offshore southern California. The National Oceanic and Atmospheric Administration (NOAA) is the lead agency for this proposed project. This SDEIS has been prepared in accordance with NEPA and CEQ regulations.

***Background***

This SDEIS provides information to supplement and, where indicated, to replace information contained in the draft EIS (DEIS) for the review of the CINMS management plan. The DEIS is Volume II of a two-volume set that resulted from the Sanctuary’s management plan review process. Volume I, the draft management plan (DMP), contains information about the Sanctuary’s environment and resources, staffing and administration, priority management issues and actions proposed to address them over the next five years, and performance measures. Volume II evaluates the potential environmental impacts of the Sanctuary’s proposed revisions and additions to its regulations.

The DEIS includes three alternatives consisting of NOAA’s proposed action, alternative “1,” and a no-action alternative. With regard to vessel discharges, NOAA’s proposed action would clarify that a type I or II marine sanitation device (MSD) is required of all vessels for discharge of treated sewage within the Sanctuary, and proposes that graywater discharge from all vessels be excepted from the discharge prohibition. DEIS alternative 1 also proposes a graywater exception from the prohibition for all vessels, but would prohibit discharge into the Sanctuary of treated or untreated sewage from large vessels (300 gross registered tons or more). The DEIS no-action alternative would retain the status quo regulation on discharge, which is ambiguous with regard to graywater and imprecise with regard to the type of MSD required for vessel sewage discharge within the Sanctuary.

After receiving comments on the DEIS, NOAA determined that the original range of alternatives needed to be modified to better address potential impacts of sewage and graywater discharges from large vessels. Thus, this SDEIS modifies the range of regulatory changes under consideration and discusses the potential environmental consequences of a revised discharge regulation. The proposed revisions to the discharge regulation are now incorporated into the original proposed action and constitute NOAA’s “revised proposed action.” NOAA is not taking final action with this SDEIS, but rather is analyzing and putting forth for public review and comment a revision to its discharge regulation proposed in the DEIS. Final CINMS regulations

will be issued after NOAA has released the Final Management Plan/Final EIS. Per NEPA, these final regulations could fall anywhere within the range of alternatives described in the DEIS and modified by this SDEIS.

During the DMP/DEIS public review period (May 15 through July 21, 2006) NOAA received a wide range of comments, including substantial public and agency comments about changes proposed for Sanctuary regulation of sewage and graywater discharges from large vessels. (Herein “large vessel” refers to a vessel 300 gross registered tons, or GRT, or more). Comments included a request that NOAA adopt the discharge regulation under DEIS alternative 1, which would prohibit any sewage discharges from large vessels, whether treated or untreated. Comments also included a request that NOAA prohibit cruise ship discharges in Sanctuary waters. In addition, there were suggestions that NOAA implement recommendations contained in the Sanctuary Advisory Council’s water quality needs assessment (Polgar *et al.* 2005), which includes a recommendation that NOAA prohibit cruise ship discharges in Sanctuary waters. In addition, comments indicated that NOAA’s proposed exception for graywater discharges is inconsistent with the California Clean Coast Act, which prohibits graywater discharges from vessels 300 GRT or more within state waters. The types of comments described above, which were the only types of comments received on the issues of graywater and sewage discharge from large vessels, were submitted by four agencies (Channel Islands National Park, California Resources Agency, California State Water Resources Control Board, and California Coastal Commission), three non-governmental organizations (Bluewater Network, Santa Barbara Channelkeeper, and Environmental Defense Center), the Sanctuary Advisory Council and its Conservation Working Group.

In May 2006 NOAA submitted its Coastal Zone Management Act consistency determination to the California Coastal Commission (Commission), in compliance with federal consistency regulations (15 CFR 930). In July 2006 the Commission conditionally concurred with NOAA’s determination that the proposed revised Sanctuary management plan and regulations are consistent to the maximum extent practicable with the enforceable policies of the California Coastal Management Program. The Commission voted to concur with the consistency determination on the condition that NOAA revise the proposed discharge and deposit regulation to prohibit vessels of 300 gross registered tons or more from discharging sewage or graywater into the waters of the Sanctuary. Also, the California State Water Resources Control Board requested that NOAA prohibit graywater and sewage discharges, among others, from cruise ships and other oceangoing vessels in California national marine sanctuaries.

After reviewing the comments received, considering the Commission’s action, and further analyzing the vessel discharge issues raised, NOAA decided to revise its proposed action with regard to prohibition of sewage and graywater discharges from large vessels. This SDEIS evaluates the revised proposed action and provides the public with an opportunity for review and comment on this specific issue.

### ***Purpose and Need***

The purpose and need for the entire proposed action is summarized briefly here and described in full in the DEIS. The purpose and need for revisions to the proposed action's discharge regulation are described below. NOAA developed the proposed action as part of the CINMS management plan review. The original CINMS management plan was completed in 1983, and until now NOAA had not formally reviewed or revised it. Per amendments to the National Marine Sanctuaries Act (NMSA), the National Marine Sanctuary Program (NMSP) is to review each national marine sanctuary's management plan in five-year intervals and to revise the management plan and regulations as necessary to fulfill the purposes and policies of the NMSA (16 U.S.C. 1434(e)). In addition to the legal requirement for management plan review, significant advances in science and technology, as well as innovations in marine resource management techniques, have rendered the original 1983 CINMS management plan and its corresponding EIS significantly outdated and in need of review. Furthermore, new threats to Sanctuary resources have emerged that require new approaches to CINMS resource management. The proposed regulatory changes analyzed in the DEIS address several priority resource management issues and were developed to facilitate improved "on the ground" Sanctuary management of such issues. Furthermore, the changes presented in the proposed action are needed to meet the goals and mission of the NMSP (15 CFR 922.2(b)).

The primary purpose of the revisions to the proposed action is to prevent potentially harmful effects of large-vessel sewage and graywater discharges on Sanctuary resources and qualities. To meet this purpose, the revised proposed regulation seeks to maximize protection of Sanctuary water quality from large-vessel sewage and graywater discharges. Furthermore, with the revised proposed action NOAA seeks to maintain the Sanctuary's nationally significant esthetic and recreational qualities, and to manage activities affecting the Sanctuary in a manner that complements existing regulatory authorities, as envisioned by the NMSA (16 U.S.C. 1431). This revised proposed action would make the Sanctuary regulations in state waters (0 to 3 nautical miles or nmi) consistent with the standards of the California Clean Coast Act, and apply those same regulatory standards in federal waters of the Sanctuary (3 nmi to outer Sanctuary boundary).

The underlying need for revisions to the proposed action described in this SDEIS is to protect Sanctuary water quality and resources from large vessel discharge impacts, specifically with regard to sewage and graywater. NOAA prefers to take a regulatory approach that would maintain water quality and resource protection while still allowing for continued large vessel use of and transit through Sanctuary waters.

The Santa Barbara Channel, in which part of the Sanctuary is located, is a major thoroughfare for oceangoing ships traveling between domestic and international ports along the Pacific coast of North America, and for large vessels traveling between ports in North America and Asia. The CINMS is located about 70 miles northwest of the Port of Los Angeles/Long Beach, the busiest container port in North America. Traffic to and from these ports bring nearly 7,000 transits per year through the Santa Barbara Channel shipping lanes (McKenna 2007), which traverse the northeast corner of the Sanctuary. Although future trends are uncertain, cruise ship visitation to the Sanctuary has been light in recent years and limited to use of the shipping lanes for transiting

through CINMS. Eight cruise ships have called on Santa Barbara Harbor over the past five years (from 2002 to May 2007), each having traversed the Sanctuary using the shipping lanes (Santa Barbara Waterfront Department 2007, personal communication with B. Slagle).

While transiting through the shipping lanes within the Sanctuary, vessel operators share the responsibility to protect this resource, including its water quality. Complying with international and federal law prohibiting the discharge of untreated sewage in nearshore coastal waters is one way to help protect Sanctuary water quality. However, the public has raised concerns, shared by NOAA, about whether existing laws offer sufficient long-term protection to the unique and special Sanctuary resources.

Vessel sewage discharges are more concentrated than domestic land-based sewage. They may introduce disease-causing microorganisms (pathogens), such as bacteria, protozoans, and viruses, into the marine environment (EPA 2007a). They may also contain high concentrations of nutrients that can lead to eutrophication (the process that can cause oxygen-depleted “dead zones” in aquatic environments). NOAA is concerned about possible impacts from large volumes of sewage discharges in the Sanctuary, whether treated or not, from large vessels. Such sewage discharges, in large volume, could also introduce an unpleasant esthetic impact to the Sanctuary (diminishing Sanctuary resources and its ecological, conservation, esthetic, recreational and other qualities).

The revised regulation would also address additional concerns NOAA has about failure of conventional marine sanitation devices (MSDs) on large vessels to adequately treat sewage waste streams, and lack of monitoring of those waste streams. Large vessels may have either Type II MSDs that treat sewage, or Type III MSDs that hold sewage until it can be legally pumped out or discharged. In 2006, approximately 75% of the large oceangoing ships that called on California ports were using a Type II MSD. While these devices are designed to lower fecal coliform bacteria counts (to a standard of 200 fecal coliform per 100 ml of sample) and reduce total suspended solids (to a standard of 150 milligrams per liter), studies in Alaska of cruise ship waste water discharges have shown high rates of failure in the ability of conventional MSDs to meet legal discharge standards (Alaska Department of Environmental Conservation 2004a). Furthermore, monitoring and testing of MSD discharges (outside of Alaska) is not legally required of large vessel operators, so reductions in treatment effectiveness may go undetected. In addition, while treatment reduces the concentration of active pathogens, the discharge still increases ambient concentrations of nitrogenous wastes and other chemicals that can affect primary production (phytoplankton) and other components of the Sanctuary food web.

NOAA is also concerned about the potential impacts of graywater discharges from large vessels in the Sanctuary. The proposed definition of “graywater” would read as follows: “Graywater means galley, bath, or shower water.” Graywater can contain a variety of substances including (but not limited to) detergents, oil and grease, pesticides and food wastes (Eley 2000). Very little research has been done on the impacts of graywater on the marine environment, but many of the chemicals commonly found in graywater are known to be toxic (Casanova *et al.* 2001). These chemicals have been implicated in the occurrence of cancerous growths in bottom-dwelling fish (Mix 1986). Furthermore, studies of graywater discharges from large cruise ships in Alaska (prior to strict state effluent standards for cruise ship graywater discharges) found very high

levels of fecal coliform in large cruise ship graywater (well exceeding the federal standards for fecal coliform from Type II MSDs). These same studies also found high mean total suspended solids in some graywater sources (exceeding the federal standards for total suspended solids from Type II MSDs). These results led the Alaska Department of Environmental Conservation (2001) to conclude that "...graywater is similar to blackwater in number of fecal coliform bacteria and total suspended solids, and that graywater should be treated prior to discharge." Graywater is by far the largest source of liquid waste on a cruise ship (Sweeting and Wayne 2003).

### ***Scope of this Supplemental EIS***

The proposed revisions described herein affect two of the exceptions to the prohibition on discharging or depositing material or other matter into the Sanctuary: the exception for treated sewage and the exception for biodegradable matter including graywater. Proposed revisions would result in substantive changes regarding sewage and graywater, and would also result in minor, non-substantive changes in wording and organization regarding deck wash down and vessel engine cooling water.

In this SDEIS, NOAA is not proposing to revise any other section of the DEIS proposed action, including other clauses of the discharge prohibition. As noted above, NOAA will publish the final CINMS regulations after reviewing all comments on the DMP, DEIS, currently pending proposed rule, SDEIS and the supplemental proposed rule. NOAA's final decision could fall anywhere within the range of alternatives described in the DEIS (proposed action, alternative 1, no-action alternative), and modified by this SDEIS.

### ***Description of the Revised Proposed Action***

The revised regulation would amend the exception to the prohibition on discharging or depositing sewage from within or into the Sanctuary. The revised exception would apply exclusively to small vessels (less than 300 GRT) that generate sewage effluent treated by an operable Type I or II marine sanitation device. Thus, the revised regulation would prohibit discharge within or into the Sanctuary of all sewage (treated or untreated) from vessels 300 GRT or more.

The revised regulation would also amend the exception to the prohibition on discharging or depositing graywater from within or into the Sanctuary. The revised regulation would provide that the exception for graywater is only applicable to small vessels (less than 300 GRT), and to oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary. Thus, the revised regulation would prohibit graywater discharge from within or into the Sanctuary from vessels 300 GRT or more, including from cruise ships, and from oceangoing ships with sufficient holding tank capacity to hold graywater while within the Sanctuary. NOAA's May 2006 proposed rule (71 FR 29096) referred to the definition of graywater codified by Section 312 of the Federal Water Pollution Control Act (FWPCA), as amended (33 U.S.C. 1321 *et seq.*); however, NOAA is providing the definition of graywater in the CINMS regulations so that Sanctuary users do not have to refer to the FWPCA for this definition. The definition of "graywater" would read as follows: "Graywater means galley, bath, or shower

water.” Section 312 of the FWPCA remains the basis for NOAA's definition of graywater. In a manner consistent with the California Clean Coast Act, “oceangoing ship” is proposed to be defined as a private, commercial, government, or military vessel of 300 gross registered tons or more, not including “cruise ships.” Also for consistency, NOAA is proposing application of the proposed Monterey Bay National Marine Sanctuary definition of “cruise ship” (71 FR 59050-59066), which would read as follows: “cruise ship means a vessel with 250 or more passenger berths for hire.” The graywater discharge exception for oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary is proposed because many oceangoing ships are designed without the ability to retain graywater, and, as such, must discharge graywater directly as it is produced. If graywater is retained in an MSD and, consequently, mixed with any sewage, it is considered blackwater.

### ***Summary of Impacts***

Revisions to the treated sewage discharge exception are expected to have:

- beneficial impacts on the Sanctuary’s physical, biological, esthetic, and recreational resources;
- less than significant adverse socioeconomic impacts to operators of large vessels; and
- no adverse socioeconomic impacts to other Sanctuary users.

Large vessels using the shipping lanes within the Santa Barbara Channel would only be required to hold sewage on board for a distance of 18 nmi (less than one hour at 25 knots) when transiting northwest across the CINMS, and for 37 nmi (approximately one-and-a-half hours at 25 knots) when traveling southeast. Additionally, a portion of the southeast-bound shipping lane that transits through the Sanctuary also passes through state waters, where large-vessel sewage discharge is already prohibited pursuant to the California Clean Coast Act.

Revisions to the graywater discharge exception are expected to have:

- cumulative beneficial impacts on the Sanctuary’s physical, biological, esthetic, and recreational resources;
- less than significant adverse socioeconomic impacts on operators of large vessels; and
- no adverse socioeconomic impacts on other Sanctuary users.

Potential socioeconomic impacts to large vessel operators are reduced given (1) the limited time these vessels spend transiting the Sanctuary, and (2) the proposed exception to the graywater discharge prohibition for oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary.

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## 1.0 INTRODUCTION

This SDEIS provides information to supplement and, where indicated, to replace information contained in the DEIS for the review of the CINMS management plan. The DEIS is Volume II of a two-volume set<sup>1</sup> that resulted from the Sanctuary's management plan review process. Volume I, the DMP, contains information about the Sanctuary's environment and resources, staffing and administration, priority management issues and actions proposed to address them over the next five years, and performance measures. Volume II evaluates the potential environmental impacts of the Sanctuary's proposed revisions and additions to its regulations. NOAA is the lead agency for this proposed project.

The DEIS included three alternatives consisting of NOAA's proposed action, alternative "1," and a no-action alternative. With regard to vessel discharges, NOAA's proposed action would clarify that a type I or II marine sanitation device (MSD) is required of all vessels for discharge of treated sewage within the Sanctuary, and proposes that graywater discharge from all vessels be excepted from the discharge prohibition. DEIS alternative 1 also proposes a graywater exception from the prohibition for all vessels, but would prohibit discharge into the Sanctuary of treated or untreated sewage from large vessels (300 gross registered tons or more). The DEIS no-action alternative would retain the status quo regulation on discharge, which is ambiguous with regard to graywater and imprecise with regard to the type of MSD required for vessel sewage discharge within the Sanctuary.

After receiving comments on the DEIS, NOAA determined that this range of alternatives needed to be modified to better address potential impacts of sewage and graywater discharges from large vessels. Thus, the SDEIS modifies the range of regulatory changes under consideration and discusses the potential environmental consequences of a revised discharge regulation. The proposed revisions to the discharge regulation are now incorporated into the original proposed action and constitute NOAA's "revised proposed action." NOAA is not taking final action with this SDEIS, but rather is analyzing and putting forth for public review and comment a revision to its discharge regulation proposed in the DEIS. Final CINMS regulations will be issued after NOAA has released the Final Management Plan/Final EIS. Per NEPA, these final regulations could fall anywhere within the range of alternatives described in the DEIS and modified by the SDEIS.

During the DMP/DEIS public review period (May 15 through July 21, 2006) NOAA received a wide range of comments, including substantial public and agency comments about changes proposed for Sanctuary regulation of sewage<sup>2</sup> and graywater discharges from large vessels.<sup>3</sup>

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<sup>1</sup> U.S. Department of Commerce. National Oceanic and Atmospheric Administration. National Marine Sanctuary Program. 2006. Channel Islands National Marine Sanctuary Draft Management Plan / Draft Environmental Impact Statement. Silver Spring, MD. Available online at: <http://www.channelislands.noaa.gov/manplan/overview.html>.

<sup>2</sup> Sewage means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes (40 CFR 140(a)).

<sup>3</sup> "Large vessel" is used herein to mean any vessel of 300 gross registered tons (GRT) or more. 300 GRT is an established state and federal size class threshold for vessel discharge regulation purposes. This includes oceangoing ships and cruise ships. "Oceangoing ship" means a private, commercial, government, or military vessel of 300 gross

Comments included a request that NOAA adopt the discharge regulation under alternative 1, which would prohibit any sewage discharges from large vessels, whether treated or untreated. Comments also included a request that NOAA prohibit cruise ship discharges in Sanctuary waters. In addition, there were suggestions that NOAA implement recommendations contained in the water quality needs assessment developed by a working group of the Sanctuary Advisory Council<sup>4</sup> (Polgar *et al.* 2005), which provides a comprehensive evaluation of water quality threats and provides a broad range of management advice. This assessment includes a recommendation that NOAA prohibit cruise ship discharges in Sanctuary waters. In addition, comments from state agencies and a suite of environmental non-governmental organizations indicated that NOAA's proposed exception for graywater discharges is inconsistent with the California Clean Coast Act,<sup>5</sup> which prohibits graywater discharges from vessels 300 gross registered tons or more within state waters. The comments received on this issue were submitted by the Channel Islands National Park, state agencies (California Resources Agency, the State Water Resources Control Board, and California Coastal Commission), three non-governmental organizations (Bluewater Network, Environmental Defense Center, and Santa Barbara Channelkeeper), and the Sanctuary Advisory Council and its Conservation Working Group. The types of comments described above were the only types of comments received on the issues of graywater and sewage discharge from large vessels.

In May 2006 NOAA submitted its Coastal Zone Management Act consistency determination to the California Coastal Commission (Commission), in compliance with federal consistency regulations (15 CFR 930). In July 2006 the Commission conditionally concurred with NOAA's determination that the proposed revised Sanctuary management plan and regulations are consistent to the maximum extent practicable with the enforceable policies of the California Coastal Management Program. The Commission voted to concur with the consistency determination on the condition that NOAA revise the proposed discharge and deposit regulation to prohibit vessels of 300 gross registered tons or more from discharging sewage or graywater into the waters of the Sanctuary. Also, the California State Water Resources Control Board requested that NOAA prohibit graywater and sewage discharges, among others, from cruise ships and other oceangoing vessels in California national marine sanctuaries.

After reviewing the comments received, considering the Commission's action, and further analyzing the vessel discharge issues raised, NOAA decided to revise its proposed action with regard to prohibition of sewage and graywater discharges from large vessels. This SDEIS evaluates the revised proposed action and provides the public with an additional opportunity for review and comment on this specific issue. This SDEIS has been prepared in accordance with

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registered tons or more, not including cruise ships. "Cruise ship" means a vessel with 250 or more passenger berths for hire.

<sup>4</sup> The Sanctuary Advisory Council is a 21 voting member body that brings together community members, and representatives of various government agencies to advise the Sanctuary Superintendent and NOAA on CINMS management. With its expertise and diverse representation, the Advisory Council offers advice on resource management issues, and ensures that the Sanctuary Superintendent has a wide range of viewpoints upon which to base management decisions. More information about the Advisory Council is available at: <http://www.channelislands.noaa.gov/sac/main.html>.

<sup>5</sup> The California Clean Coast Act took effect on January 1, 2006. See California Public Resources Code Sec 72420-72422.

the National Environmental Policy Act of 1969, as amended (NEPA), 42 U.S.C. 4321 *et seq.*, and its implementing regulations, 40 CFR Parts 1500–1508.<sup>6</sup>

## 1.1 PROJECT BACKGROUND

The CINMS consists of an area off the southern coast of California that begins at the Mean High Water Line of and extends seaward to a distance of approximately six nautical miles (nmi) from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (the Islands). The four northern Islands, Anacapa, Santa Cruz, Santa Rosa, and San Miguel, are in waters approximately 20 statute miles south of the Santa Barbara and Ventura County coast. Santa Barbara Island is approximately 50 statute miles southwest of the shoreline of Los Angeles and 30 statute miles west of the westernmost part of Santa Catalina Island. The CINMS is also at the northwestern end of a much larger area referred to as the Southern California Bight (SCB). The SCB is formed by a transition in the California coastline wherein the north-south trending coast begins to trend east-west. Figure 1.1-1 shows the regional location of the CINMS.

The CINMS is one of thirteen national marine sanctuaries that NOAA's National Marine Sanctuary Program (NMSP) administers. The mission of the NMSP "is to identify, designate and manage areas of the marine environment of special national, and in some cases international, significance due to their conservation, recreational, ecological, historical, research, educational, or esthetic qualities" (15 CFR 922.2(a)). The purpose of a national marine sanctuary is to protect resources and their conservation, recreational, ecological, historical, research, educational, or esthetic values through comprehensive long-term management. NOAA manages sanctuaries by working with the public to protect sanctuaries while allowing compatible recreational and commercial activities.

The Channel Islands area is a national treasure with a rich cultural history and unique environment. The Sanctuary's cultural values stem largely from its rich array of maritime heritage resources (*e.g.*, shipwrecks, aircraft wrecks, material associated with wharves, piers and landings, prehistoric archaeological sites and their associated artifacts, and paleontological remains). The Sanctuary also contains a wealth of Chumash Native American artifacts dating back 13,000 years. (The oldest human remains yet discovered in North America were found on Santa Rosa Island.) Adjacent to the Channel Islands land mass is located a spectacular, unique, nationally significant marine environment, including kelp forests, surfgrass and eelgrass beds, intertidal, nearshore subtidal, deep-water benthic, and pelagic habitats. This marine environment supports rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical, research, educational, and esthetic values. Two bioregions come together in and around the Sanctuary resulting in a unique and highly diverse array of marine life including cold water species at the southern end of their range and warm water species at the northern end of their range. Hundreds of species of plants and fish, thousands of invertebrate species, more than 27 species of cetaceans (whales and dolphins), five species of pinnipeds (seals and sea lions), four sea turtle species, and more than 60 species of birds may be found in the Sanctuary. Included among these are several endangered species, including blue,

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<sup>6</sup> The Notice of Intent (NOI) to prepare this SDEIS is available at 72 FR 40775.

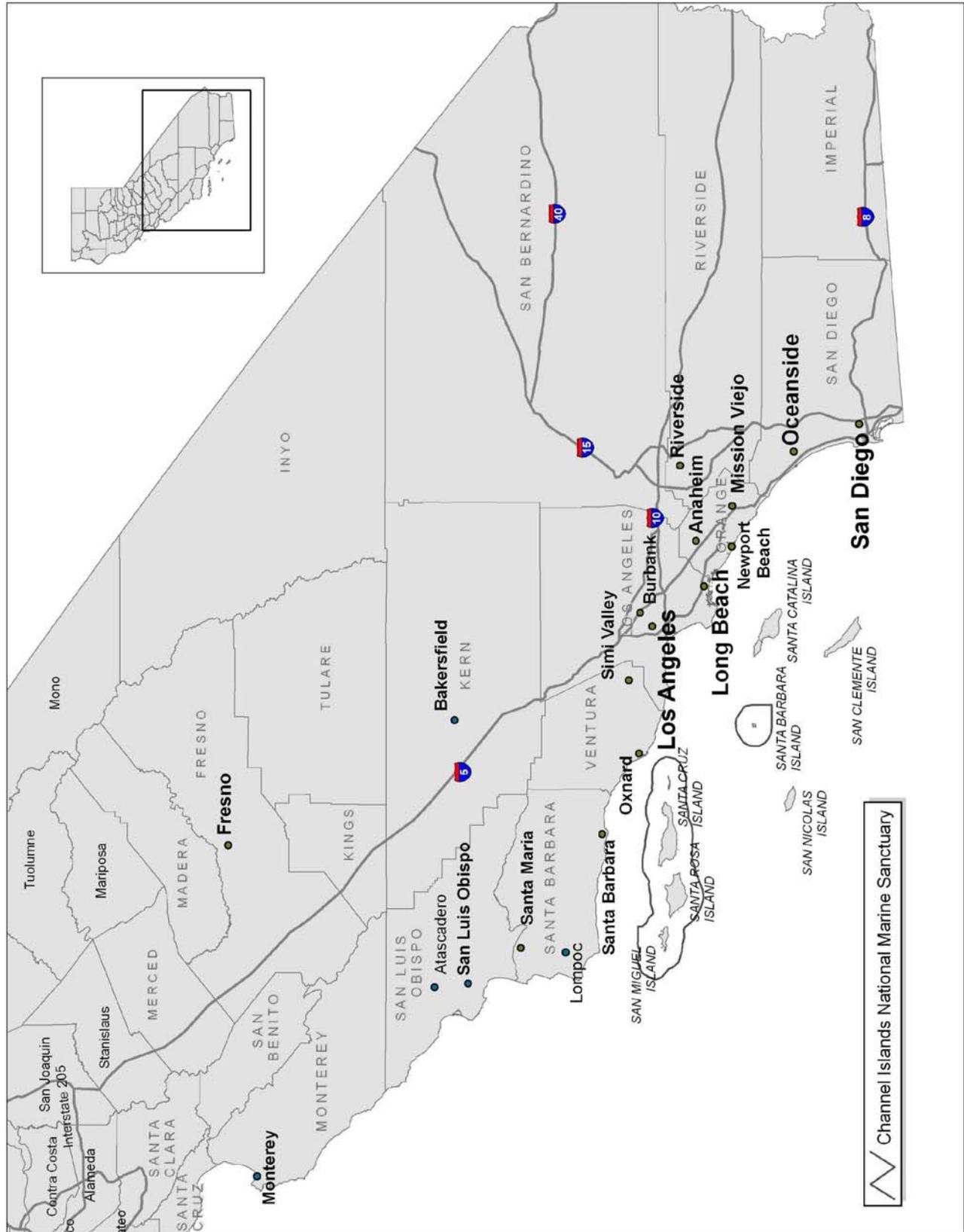


Figure 1.1-1. Regional location of the CINMS.

humpback and sei whales, southern sea otters, white abalone, leatherback sea turtles, California brown pelicans, and California least terns.

The ecological and cultural values of the Channel Islands and surrounding waters are recognized by several special designations. In 1980, the United States not only designated the Sanctuary, but also designated Anacapa, San Miguel, Santa Barbara, Santa Cruz, and Santa Rosa islands (and the rocks, islets, submerged lands, and waters within one nmi of each island) as the Channel Islands National Park. In addition, the United Nations Educational, Scientific and Cultural Organization's (UNESCO) Man and the Biosphere Program designated the Sanctuary as a Biosphere Reserve in 1986. In 1991, in recognition of the need to protect Sanctuary resources and qualities from the potential damage from ship traffic, the International Maritime Organization designated an area to be avoided, or ATBA, around the Sanctuary for all cargo vessels, including tankers, bulk carriers, and barges, in order to avoid pollution risks within the CINMS. The State of California recognizes portions of the state waters surrounding the Channel Islands as "Areas of Special Biological Significance/State Water Quality Protection Areas."

The uniqueness of the Sanctuary region and its proximity to several major ports and harbors along the mainland coast make it a popular destination for numerous recreational and commercial activities. Sportfishing, diving, snorkeling, whale watching, pleasure boating, kayaking, surfing, and sightseeing are all popular pastimes within the Sanctuary, which is often referred to as "the Galapagos of North America." Other human uses that occur adjacent to and in the Sanctuary are oil and gas activities, shipping, Departments of Defense and Homeland Security activities, scientific research, and education.

## **1.2 PURPOSE AND NEED**

The purpose and need for the entire proposed action is summarized briefly here and described in full in DEIS sec. 1.3. The purpose and need for revisions to the proposed action's discharge regulation are described below in sections 1.2.1 and 1.2.2. NOAA developed the proposed action as part of the CINMS management plan review. The original CINMS management plan was completed in 1983, and until now NOAA had not formally reviewed or revised it. Per amendments to the NMSA, the NMSP is to review each national marine sanctuary's management plan in five-year intervals and to revise the management plan and regulations as necessary to fulfill the purposes and policies of the NMSA (16 U.S.C. 1434(e)). In addition to the legal requirement for management plan review, significant advances in science and technology, as well as innovations in marine resource management techniques, have rendered the original 1983 CINMS management plan and its corresponding EIS significantly outdated and in need of review. Furthermore, new threats to Sanctuary resources have emerged that require new approaches to CINMS resource management. The proposed regulatory changes analyzed in the DEIS address several priority resource management issues and were developed to facilitate improved "on the ground" Sanctuary management of such issues. Furthermore, the changes presented in the proposed action are needed to meet the goals and mission of the NMSP (15 CFR 922.2(b)).

The purpose and need described below applies only to the revised proposed action for which this SDEIS is being prepared.

### 1.2.1 Purpose of this Action

The primary purpose of the revisions to the proposed action is to prevent potentially harmful effects of large-vessel sewage and graywater discharges on Sanctuary resources and qualities. To meet this purpose, the revised proposed regulation seeks to maximize protection of Sanctuary water quality from large-vessel sewage and graywater discharges. Furthermore, NOAA seeks to maintain the Sanctuary's nationally significant esthetic and recreational qualities, and to manage activities affecting the Sanctuary in a manner that complements existing regulatory authorities, as envisioned by the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1431 *et seq.*). As noted above, the purpose and need for the proposed action in its entirety is described in full in DEIS sec. 1.3.

This revised proposed action also intends to:

- *Revise existing Sanctuary regulations in state waters (0 to 3 nmi) to standards consistent with those in the California Clean Coast Act.* The California Clean Coast Act prohibits graywater discharges, and upon EPA approval would also prohibit sewage discharges, from cruise ships and oceangoing ships 300 GRT or more in state waters of the Sanctuary. For clarity and ease of enforceability, NOAA believes the revised Sanctuary regulations should be consistent with state discharge regulations.
- *Apply the same regulatory standards in federal waters (3 nmi to outer Sanctuary boundary) of the Sanctuary.* NOAA believes that the state standards for large vessel discharge should also apply to the federal waters of the Sanctuary. The intent of the state standards is to protect and enhance the quality of the marine waters of the state and marine sanctuaries, and to protect public health and the environment. Given the resources found within the Sanctuary, described in 1.1 above, the Sanctuary warrants this enhanced protection. However, given the fact that large vessel traffic in the Sanctuary transits a significant portion of the Sanctuary in federal waters, enhanced protection of Sanctuary resources is not likely to be achieved unless the discharge prohibition also includes federal waters of the Sanctuary.

### 1.2.2 Need for this Action

The underlying need for revisions to the proposed action described in this SDEIS is to protect Sanctuary water quality and resources from large vessel discharge impacts, specifically with regard to sewage and graywater.<sup>7</sup> NOAA prefers to take a regulatory approach that will maintain water quality and resource protection while still allowing for continued large vessel use of and transit through Sanctuary waters.

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<sup>7</sup> Sanctuary regulations already prohibit the discharge or deposit of other potentially harmful waste streams that can be associated with large vessels, including garbage, trash, plastics, fuel, oil, waste from laundry facilities, hazardous waste, medical waste, and sewage sludge. Refer to 14 CFR 922.71(2).

The Santa Barbara Channel, which cuts through the Sanctuary, is a major thoroughfare for oceangoing ships traveling between domestic and international ports along the Pacific coast of North America, and for large vessels traveling between ports in North America and Asia. The Sanctuary is located about 70 miles northwest of the Port of Los Angeles/Long Beach (LA/Long Beach), which is the busiest container port in North America, and the Santa Barbara Channel shipping lanes that traverse the northeast corner of the Sanctuary are a major traffic route for this trade. In 2006, an estimated 6,980 vessels (including container ships and other large vessels) going to or coming from the ports of LA/Long Beach transited the Santa Barbara Channel and CINMS (McKenna 2007). Cruise ships are another important part of large vessel traffic transiting the Santa Barbara Channel. While cruise ships have on occasion been observed within the Sanctuary, but outside the shipping lanes, the vast majority of observations were of cruise ships transiting through and utilizing the shipping lanes.

Whether transiting through the shipping lanes or seeking the Channel Islands as a destination, all vessel operators who use the Sanctuary share the responsibility to protect this resource, including its water quality. Complying with international and federal law prohibiting the discharge of untreated sewage in nearshore coastal waters is one way to help protect Sanctuary water quality. However, the public has raised concerns, shared by NOAA, about whether existing laws offer sufficient long-term protection to the unique and special Sanctuary resources.

Vessel sewage discharges are more concentrated than domestic land-based sewage. They may introduce disease-causing microorganisms (pathogens), such as bacteria, protozoans, and viruses, into the marine environment (EPA 2007a). They may also contain high concentrations of nutrients that can lead to eutrophication (the process that can cause oxygen-depleted “dead zones” in aquatic environments). NOAA is concerned about possible impacts from large volumes of sewage discharges in the Sanctuary, whether treated or not, from large vessels. Such sewage discharges, in large volume, could also introduce an unpleasant esthetic impact to the Sanctuary (diminishing Sanctuary resources and its ecological, conservation, esthetic, recreational and other qualities).

The revised regulation would also address additional concerns NOAA has about failure of conventional marine sanitation devices (MSDs) on large vessels to adequately treat sewage waste streams, and lack of monitoring of those waste streams. NOAA’s assessment of data collected by California pursuant to California Senate Bill 771<sup>8</sup> indicates that as of 2006, approximately 75% of the large oceangoing ships that called on California ports were using a Type II MSD. While these devices are designed to lower fecal coliform bacteria counts (to a standard of 200 fecal coliform per 100 milliliters of sample) and reduce total suspended solids (to a standard of 150 milligrams per liter), studies in Alaska of cruise ship waste water discharges have shown high rates of failure in the ability of conventional MSDs to meet legal discharge standards

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<sup>8</sup> For California, pursuant to the Public Resources Code Section 72425(c) as amended by Senate Bill 771 (Clean Coast Act of 2005), the California State Lands Commission (SLC), in consultation with the maritime industry, prepared a survey on large oceangoing ships (300 gross tons or more) operating in California marine waters during 2006. The survey is herein referred to as the “2006 SB 771 survey.” The SLC provided the 2006 SB 771 survey data to the State Water Resources Control Board on January 31, 2007, who in turn provided the survey data to CINMS staff for use in preparation of this SDEIS. This data set relies on submission of accurate data from ship owners and captains.

(Alaska Department of Environmental Conservation 2004a). While the performance of Alaskan cruise ship waste water treatment systems has since improved (Alaska Department of Environmental Conservation 2006), as legal discharge standards have been made more stringent<sup>9</sup> and visiting cruise ships have upgraded treatment systems accordingly, similar legal requirements are not in place in California and, as such, it cannot be expected that all large vessels transiting the Sanctuary will have treatment systems on par with cruise ships operating in Alaska. Furthermore, monitoring and testing of MSD discharges (outside of Alaska) is not legally required of large vessel operators, so reductions in treatment effectiveness may go undetected. In addition, while treatment reduces the concentration of active pathogens, the discharge still increases ambient concentrations of nitrogenous wastes and other chemicals that can affect primary production (phytoplankton) and other components of the Sanctuary food web.

NOAA is also concerned about the potential impacts of graywater discharges from large vessels in the Sanctuary. The proposed definition of “graywater” would read as follows: “Graywater means galley, bath, or shower water.” Graywater can contain a variety of substances including (but not limited to) detergents, oil and grease, pesticides and food wastes (Eley 2000). Very little research has been done on the impacts of graywater on the marine environment, but many of the chemicals commonly found in graywater are known to be toxic (Casanova *et al.* 2001). These chemicals have been implicated in the occurrence of cancerous growths in bottom-dwelling fish (Mix 1986). Graywater is by far the largest source of liquid waste on a cruise ship (Sweeting and Wayne 2003).

SDEIS section 3.0 describes large vessel traffic and the potential effects of large-vessel sewage and graywater discharges in more detail.

### 1.3 SCOPE OF THIS SUPPLEMENTAL DEIS

The proposed revisions described herein affect two of the exceptions to the prohibition on discharging or depositing material or other matter into the Sanctuary: the exception for treated sewage and the exception for biodegradable matter including graywater. Proposed revisions would result in substantive changes regarding sewage and graywater, and would also result in minor, non-substantive changes in wording and organization regarding deck wash down and vessel engine cooling water. Revisions of the proposed action described in this SDEIS would in effect prohibit the following discharges from within or into the Sanctuary: 1) sewage from vessels 300 GRT or more, including cruise ships and oceangoing ships; 2) graywater from cruise ships; and 3) graywater from oceangoing ships with sufficient holding tank capacity to hold graywater<sup>10</sup> while within the Sanctuary.

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<sup>9</sup> Federal law: “Title XIV--Certain Alaskan Cruise Ship Operations” of the Miscellaneous Appropriations Bill (H.R. 5666) passed on December 21, 2000 in the Consolidated Appropriations Act of 2001 (P.L. 106-554). The law applies to large commercial passenger vessels only, defined as those vessels having more than 500 passengers, and sets effluent standards for blackwater. Implementing regulations for this law are located at 33 CFR 159.301-159.321. Alaska state law: State Of Alaska, Title 46. Water, Air, Energy, and Environmental Conservation, Chapter 46.03, Environmental Conservation, Article 07: Commercial Passenger Vessel Environmental Compliance Program.

<sup>10</sup> Many oceangoing ships are designed without the ability to retain graywater, and, as such, must discharge graywater directly as it is produced. See also SDEIS section 3.2.2.

In this SDEIS, NOAA is not proposing to revise any other section of the DEIS proposed action, including other clauses of the discharge prohibition. As noted above, NOAA will publish the final CINMS regulations after reviewing all comments on the DMP, DEIS, currently pending proposed rule, SDEIS and the supplemental proposed rule. Per NEPA, NOAA's final decision could fall anywhere within the range of alternatives described in the DEIS, and modified by this SDEIS.

#### **1.4 PUBLIC COMMENT PROCESS**

Public comment is an important part of developing an EIS, and an important part of the broader management plan review process. This section is intended to augment DEIS sec. 1.6 by explaining how public involvement relates to the SDEIS. NOAA developed this SDEIS based in part on substantial public and agency comments received on the DEIS. NOAA will ensure availability of the SDEIS to solicit public comments on this document. This SDEIS will have a 45-day minimum public review period, per CEQ regulations (40 CFR 1506.10). For the DEIS NOAA compiled a mailing list consisting of persons and agencies potentially interested in or affected by the proposed action, and of those who requested a copy of the DEIS. NOAA has identified additional persons, agencies, and organizations potentially interested in or affected by the revised proposed action. NOAA will distribute the SDEIS to all members of the mailing list, which includes the mailing list provided in DEIS Appendix F and SDEIS Appendix A.

DEIS section 1.6.4 describes the public comment management process for the DEIS. Because of the additional steps necessary to facilitate, analyze, and respond to public comments on the SDEIS before developing a Final EIS, the following information is designed to replace DEIS section 1.6.4. Figure 1.4-1 of this SDEIS provides a revised CINMS Management Plan Review process flow chart that reflects the additional steps associated with the SDEIS, and is designed to replace the upper portion of Figure 1.6-1 in DEIS section 1.6.4.

During the DEIS public comment period, NOAA received comments from federal, state, and local agencies and officials; organizations; and interested individuals. Comments (oral and written) on both the DEIS and SDEIS, and corresponding responses will be included in the Final EIS. NOAA will issue the Final EIS, a 30-day mandatory waiting period will occur, and then NOAA may issue its record of decision (ROD) and final rule. After 45 days of continuous Congressional session NOAA will then publish a notice in the federal register to indicate that the final rule is effective.

#### **1.5 ORGANIZATION OF THIS SUPPLEMENTAL DEIS**

This section (1.0; Introduction) provides a background discussion of NOAA's revised proposed action, its purpose and need, scope, and associated public comment process.

Section 2.0 (Description of the Revised Proposed Action) describes revisions to the proposed action as it was described in the DEIS.

Section 3.0 (Affected Environment) describes the project background and the existing conditions in the surrounding area to provide a baseline for assessing environmental impacts that may occur

as a result of the revisions of the proposed action. It provides a description of large vessel traffic, large vessel discharges, and the regulatory setting for these. It describes information on these topics that was not described adequately in the DEIS, and, where possible, includes more recent information.

Section 4.0 (Environmental Consequences of Alternatives) includes an evaluation of potential impacts to the physical and biological environment, historical resources, and human uses, including socioeconomic impacts that may occur as a result of implementing the revised proposed action.

Section 5.0 (References) contains references used in the preparation of this SDEIS.

Appendices to support the analyses in the SDEIS consist of the following:

- Appendix A – Mailing List
- Appendix B – List of Preparers
- Appendix C – Persons and Agencies Contacted
- Appendix D – Acronyms and Abbreviations

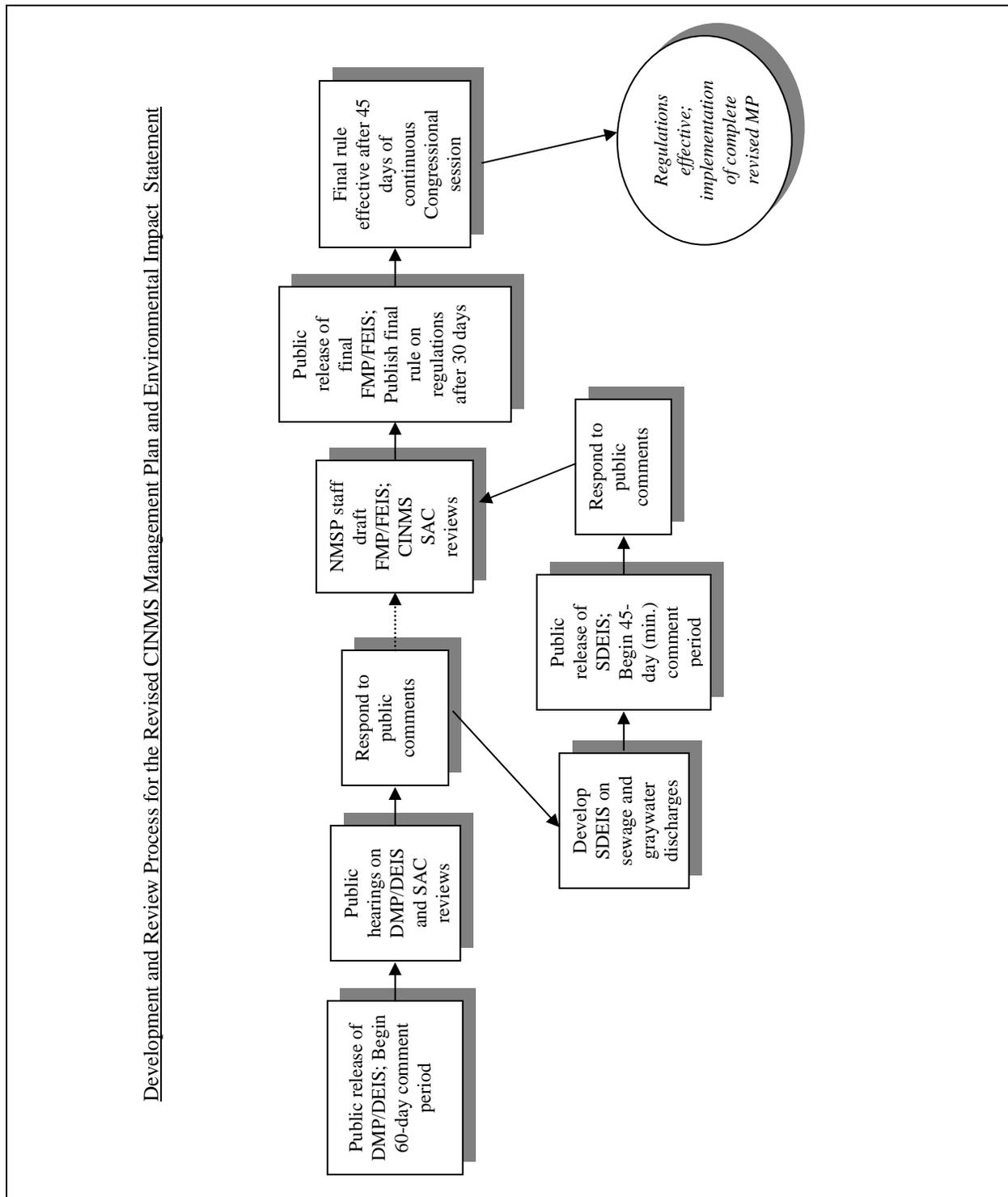


Figure 1.4-1. Development and Review Process for the Revised CINMS Management Plan and Environmental Impact Statement.

## 2.0 DESCRIPTION OF THE REVISED PROPOSED ACTION

### *Introduction*

This section describes revisions to the proposed action under consideration as part of the CINMS management plan review. The entire proposed action includes sixteen categories of changes proposed for Sanctuary regulations, along with changes proposed for the Sanctuary's Designation Document. The description of the entire proposed action is provided in DEIS section 2.1. The revisions of the proposed action described herein replace information about two of the exceptions to the prohibition on discharging or depositing material or other matter into the Sanctuary described in DEIS sec. 2.1.4: the exception for treated sewage and the exception for biodegradable matter including graywater.

During the DMP/DEIS public review period (May 15 through July 21, 2006) NOAA received a wide range of comments, including substantial public and agency comments about changes proposed for Sanctuary regulation of sewage and graywater discharges from large vessels. The DEIS provided three regulatory alternatives: NOAA's proposed action, alternative "1," and a no-action alternative. Comments included a request that NOAA adopt the discharge regulation under alternative "1," which would prohibit any sewage discharges from large vessels, whether treated or untreated. Comments also included a request that NOAA prohibit cruise ship discharges in Sanctuary waters. In addition, there were suggestions that NOAA implement recommendations contained in the water quality needs assessment developed by a working group of the Sanctuary Advisory Council (Polgar *et al.* 2005), which provides a comprehensive evaluation of water quality threats and provides a broad range of management advice. This assessment includes a recommendation that the Sanctuary prohibit cruise ship discharges in Sanctuary waters. In addition, comments from state agencies and environmental non-governmental organizations indicated that NOAA's proposed exception for graywater discharges is inconsistent with the California Clean Coast Act, which prohibits graywater discharges from vessels 300 gross registered tons or more within state waters. After reviewing the comments received, considering the California Coastal Commission's federal consistency review (explained in sec. 1.0), and further analyzing the vessel discharge issues raised, NOAA developed a revised proposed action.

Revisions to the proposed action described in this SDEIS would in effect prohibit the following discharges from within or into the Sanctuary:

- 1) sewage from vessels 300 GRT or more, including cruise ships<sup>11</sup> and oceangoing ships;<sup>12</sup>
- 2) graywater from cruise ships; and
- 3) graywater from oceangoing ships with sufficient holding tank capacity to hold graywater<sup>13</sup> while within the Sanctuary.

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<sup>11</sup> For a definition of "cruise ship" please see footnote 3.

<sup>12</sup> For a definition of "oceangoing ship" please see footnote 3.

The proposed revisions described herein affect two of the exceptions to the prohibition on discharging or depositing material or other matter into the Sanctuary: the exception for treated sewage and the exception for biodegradable matter including graywater. Proposed revisions would result in substantive changes regarding sewage and graywater, and would also result in minor, non-substantive changes in wording and organization regarding deck wash down and vessel engine cooling water. In this SDEIS, NOAA is not proposing to revise any other section of the DEIS proposed action, including other clauses of the discharge prohibition. Therefore, the environmental consequences of all other regulatory changes described in the DEIS and proposed rule remain as described in DEIS section 4. NOAA will publish the final CINMS regulations after reviewing all comments on the DMP, DEIS, currently pending proposed rule, SDEIS and the supplemental proposed rule. Per NEPA, NOAA's final decision could fall anywhere within the range of alternatives described in the DEIS, and modified by this SDEIS.

This SDEIS has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), 42 U.S.C. 4321 *et seq.*, and its implementing regulations, 40 CFR Parts 1500–1508. This SDEIS presents, to the decision maker and the public, information required to understand the potential environmental consequences (discussed in section 4) of the revisions to the proposed action.

## **2.1 REVISED PROPOSED ACTION**

The following text describes the revised proposed action, which includes the suite of regulatory changes designed to address public comments regarding Sanctuary regulation of graywater and sewage discharges. The exact regulatory language is available in the proposed rule that accompanies NOAA's revised proposed action. NOAA will make the proposed rule available at <http://channelislands.noaa.gov> (click on "Management Plan") upon its publication in the Federal Register.

### **2.1.1 Revised Prohibition on Discharging or Depositing – Sewage**

This revised regulation would amend the exception to the prohibition on discharging or depositing sewage from within or into the Sanctuary. The revised exception would apply exclusively to small vessels (less than 300 GRT) that generate sewage effluent treated by an operable Type I or II marine sanitation device. Consequently, large vessels would not be allowed to discharge sewage whether treated or untreated.

### **2.1.2 Revised Prohibition on Discharging or Depositing – Graywater**

This revised regulation would amend the exception to the prohibition on discharging or depositing graywater from within or into the Sanctuary. The revised regulation would provide that the exception for graywater is only applicable to small vessels (less than 300

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<sup>13</sup> Many oceangoing ships are designed without the ability to retain graywater, and, as such, must discharge graywater directly as it is produced. See also SDEIS section 3.2.2.

GRT), and to oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary. Therefore, this prohibition would apply to oceangoing ships with sufficient holding tank capacity to hold graywater while within the Sanctuary and cruise ships. The graywater discharge exception for oceangoing ships that do not have sufficient holding tank capacity to hold graywater while within the Sanctuary is proposed because many oceangoing ships are designed without the ability to retain graywater, particularly those constructed prior to 1990 (personal communication, S. Young, U.S. Coast Guard), and, as such, discharge graywater directly as it is produced. If graywater is retained in an MSD and, consequently, mixed with any sewage, it is considered blackwater.

### **2.1.3 Definitions**

The following terms are proposed to be defined:

Oceangoing ship means a private, commercial, government, or military vessel of 300 gross registered tons or more, not including cruise ships. This is consistent with the California Clean Coast Act definition.

Graywater means galley, bath, or shower water. (Section 312 of the FWPCA remains the basis for NOAA's definition of graywater.)

Cruise ship means a vessel with 250 or more passenger berths for hire. This is consistent with the proposed Monterey Bay National Marine Sanctuary definition of "cruise ship" (71 FR 59050-59066).

## 3.0 AFFECTED ENVIRONMENT

### *Introduction*

This section provides information that replaces portions of section 3.0 of the DEIS (Affected Environment), in particular section 3.5.3.1 (Vessel Traffic) and 3.5.3.3 (Regulatory Setting) for vessel traffic and harbors. More specifically, section 3.1 below replaces the general information on *Vessel Traffic* (DEIS pp.3-58, 3-59), section 3.2 replaces the information on *Vessel Discharge* (DEIS pp.3-67, 3-68), and section 3.3 replaces regulatory setting information for *Other Vessel Discharges* (DEIS p. 3-71). Thus, this section of the SDEIS includes a description of large vessel<sup>14</sup> traffic, large vessel discharges, and the associated regulatory setting. It describes additional information on these topics that was not contained in the DEIS, including more recent information.

The subsections included in this section are:

- 3.1 Large Vessel Traffic
  - 3.1.1 Large Vessel Traffic Patterns and Trends
  - 3.1.2 Cruise Ships
- 3.2 Large Vessel Discharges
  - 3.2.1 Sewage and Sewage Treatment
  - 3.2.2 Graywater
- 3.3 Regulatory Setting
  - 3.3.1 Large Vessel Traffic
  - 3.3.2 Large Vessel Discharge
    - 3.3.2.1 Sewage Discharge
    - 3.3.2.2 Graywater Discharge

### 3.1 VESSEL TRAFFIC

The northeast portion of CINMS contains two shipping lanes that serve an increasing amount of domestic and international large vessel traffic for which the Santa Barbara Channel is a major thoroughfare. This section explains the large vessel traffic patterns and trends in the Santa Barbara Channel, including additional information about cruise ships.

#### 3.1.1 Large Vessel Traffic Patterns and Trends

Large vessel traffic patterns in the Santa Barbara Channel are primarily determined by national and international guidelines and regulations. These guidelines and regulations include an International Maritime Organization (IMO) approved Vessel Traffic Separation Scheme (TSS), and IMO approved Areas to Be Avoided (ATBA). According to the U.S. Coast Guard (2004), “The objective of a TSS is to improve the safety of navigation in converging areas, dense traffic areas, or where restricted sea room limits freedom of vessel movement.” Rule 10 of the 1972 Convention on the International Regulations for Prevention of Collisions at Sea (COLRegs)

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<sup>14</sup> For definitions of “large vessel,” “oceangoing ship,” and “cruise ship” please see footnote 3.

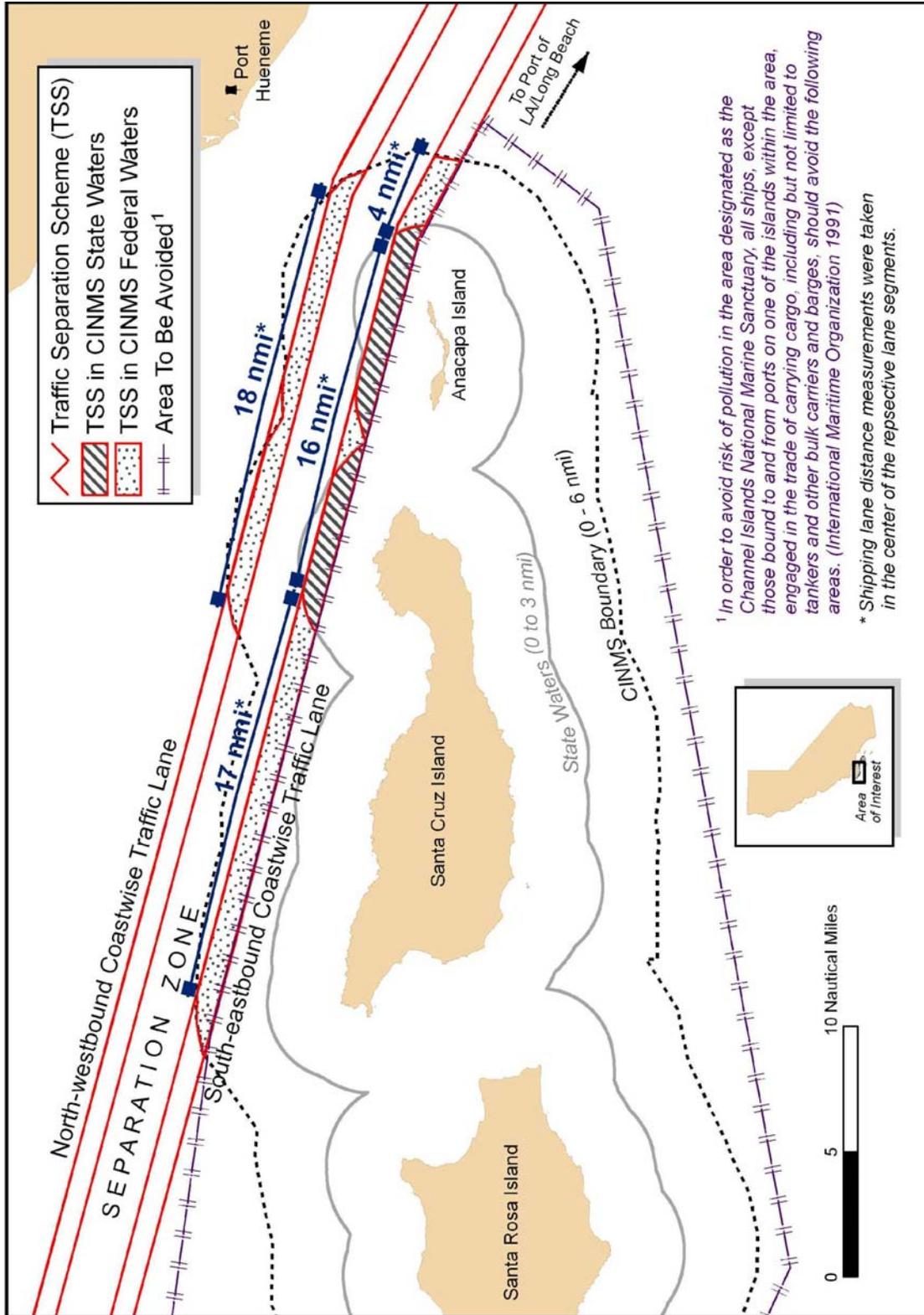


Figure 3.1-1. Santa Barbara Channel Traffic Separation Scheme, Channel Islands National Marine Sanctuary, and Area to Be Avoided.

makes the procedures respecting TSSs compulsory (USCG 2004). While vessels must adhere to the procedures regarding TSSs, such as crossing them at right angles, vessels are not required to use any designated TSS, though failure to use one would be a major factor for determining liability in the event of a collision. Similarly, vessels are not prohibited from entering an ATBA, but as in the TSS designation, failure to comply with an ATBA would be a major factor for determining liability in the event of a vessel accident.

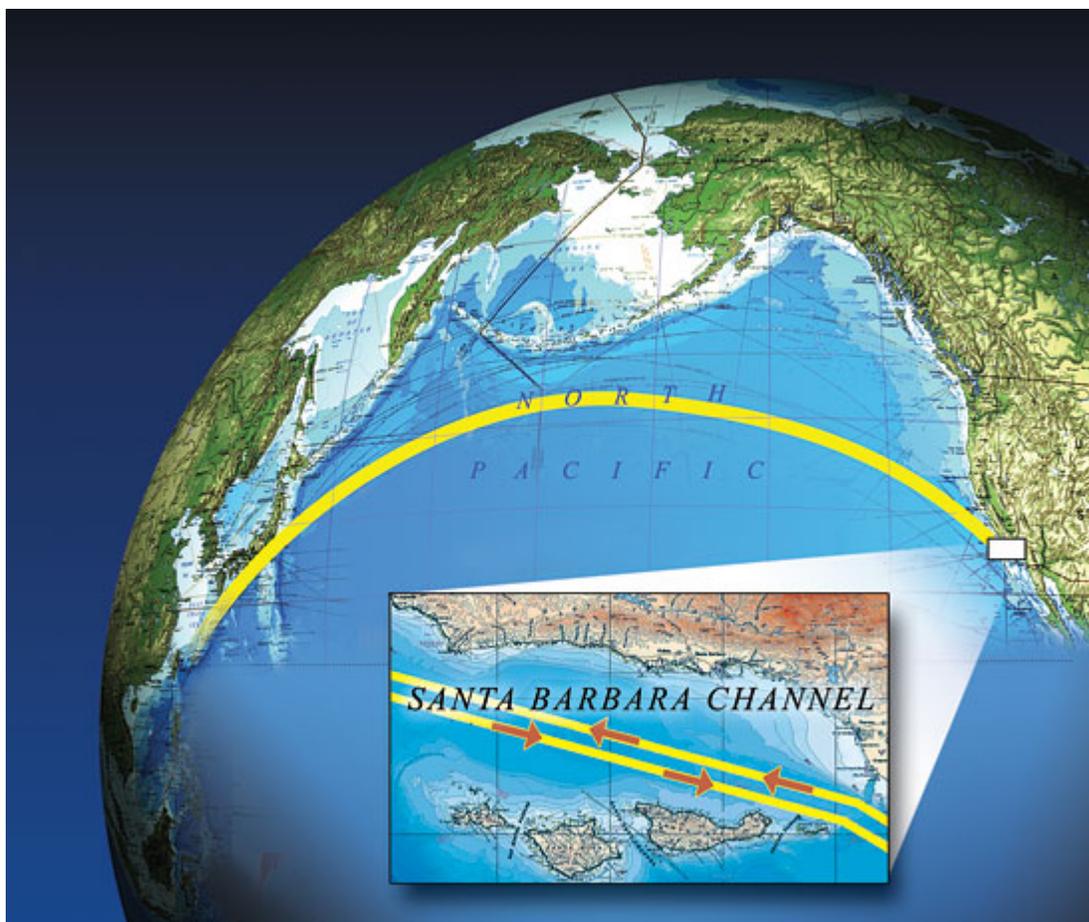
While transiting the Santa Barbara Channel large vessel traffic is encouraged to use the Santa Barbara Channel TSS (Figure 3.1-1), both lanes of which traverse a small portion (approximately 4%) of the Sanctuary. The Santa Barbara Channel TSS is described at 33 CFR 167.450-167.452, and includes northwest, and southeast-bound lanes, with a separation zone between the lanes. The distance through Sanctuary waters that vessels transit when in the northwest-bound lane is approximately 18 nmi, while in the southeast-bound lane it is approximately 37 nmi. The average container ship that travels at 25 knots would spend less than one hour in Sanctuary waters when using the northwest-bound lane, and approximately one-and-a-half hours when using the southeast-bound lane.

Oceangoing ships in the Santa Barbara Channel are also encouraged to follow guidance for the ATBA around the CINMS (see Figure 3.1-1). CINMS is one of only two internationally accepted ATBAs on the Eastern Pacific; the other is within and adjacent to the Olympic Coast National Marine Sanctuary of Washington State. The IMO's description of the CINMS ATBA is as follows:

In order to avoid risk of pollution in the area designated as the Channel Islands National Marine Sanctuary, all ships, except those bound to and from ports on one of the islands within the area, engaged in the trade of carrying cargo, including but not limited to tankers and other bulk carriers and barges, should avoid the following areas....[see Figure 3.1-1] (IMO 1991)

The Santa Barbara Channel, which cuts through the Sanctuary, is a major thoroughfare for oceangoing ships traveling between domestic and international ports along the Pacific coast of North America, and for large vessels traveling between ports in North America and Asia (see Figure 3.1-2). Vessels calling at California ports identify the following last ports of call prior to arriving in California: nearly 40 percent identify a Far Eastern port such as Japan, China, or Korea; 20 percent identify a North American port such as Canada or Mexico; and 13 percent identify a South American port (California State Lands Commission 2001).

The Sanctuary is located about 70 miles northwest of the Port of Los Angeles/Long Beach (LA/Long Beach), which is the busiest container port in North America. The containerized trade at LA/Long Beach grew 150 percent from 1995 to 2006 (Port of Long Beach 2007), and the Santa Barbara Channel is a main thoroughfare for this trade. Any forecasted increases in activity at the Port of LA/Long Beach are significant for CINMS because approximately 75 percent of the departing vessel traffic from LA/Long Beach leaves northbound and 65 percent of arriving vessel traffic comes southbound, passing through the Santa Barbara Channel.



**Figure 3.1-2. Santa Barbara Channel Shipping Traffic**

Source: Color map converted to grayscale and used by permission, Channel Crossings Press (www.channelcrossings.com).

For the year 2006, an estimated 6,980 vessels (including container ships and other large vessels) going to or coming from the ports of LA/Long Beach transited the Santa Barbara Channel and CINMS, with approximately 3,500 inbound to LA/Long Beach and 3,480 outbound (McKenna 2007). These “transit” numbers include multiple trips by the same vessel.

The expansion of the global economy has resulted in a substantial increase in oceangoing ship traffic in the Santa Barbara Channel, and consequently in the Sanctuary. The average growth rate in container traffic at the Port of LA/Long Beach was 9.9% per year over the years 1990-2003. According to the *Port of Long Beach Master Plan*, the Los Angeles Port Authority plans to expand capacity of the harbor, which will increase both the number and size of the vessels that use the Santa Barbara Channel (Port of Long Beach 2003). The Los Angeles Port Authority plans to increase capacity by 100 percent by the year 2020. During the same time frame the size of the commercial vessels that use the Santa Barbara Channel is expected to increase with the 4,000 to 4,999 twenty-foot equivalent units (TEU)<sup>15</sup> class, currently the most common size class, being supplemented by vessels as large as 10,000 to 12,000 TEU that are currently under

<sup>15</sup> A TEU is a measure of containerized cargo capacity equal to one standard 20 ft (length) × 8 ft (width) × 8 ft 6 in (height) container.

construction (Mercator Transport Group 2005). The bulk of these larger vessels are expected to make their first port call at the Port of LA/Long Beach. This is because the Port of Oakland, the other large vessel port in California, will not be able to accommodate them due to the shallowness of San Francisco Bay. The expected tonnage carried by commercial vessels is also expected to increase from 75 million tons in 1980 to 202 million tons by the year 2020 (Temple *et al.* 1988; USACE 1984). With anticipated high import growth and expansion of the Panama Canal, the Port of LA/Long Beach forecasts that port calls by container vessels in 2020 could be nearly double that experienced in 2004, going from 3,224 to 6,292 (Mercator Transport Group 2005).

Port Hueneme, the deep-water international port closest to the Sanctuary region, also generates vessel traffic. In 2006, 410 cargo vessels, typically carrying automobiles or bananas, docked at Port Hueneme (Oxnard Harbor District 2007). Approximately 158 supply vessel trips are made each year to regional oil and gas facilities (Oxnard Harbor District 2002).

Because of the CINMS ATBA, oil tankers voluntarily reroute to the outer Santa Barbara Channel. This reduces the number of oil tankers in the Santa Barbara Channel to insignificant levels. Data from the California Department of Fish and Game's Office of Spill Prevention and Response (OSPR) suggest that routing this vessel traffic 50 miles offshore significantly reduces the chance of oil impacting the coast. Since 1992, oil company members of the Western States Petroleum Association (WSPA) have operated under the terms of a voluntary non-binding agreement to route all tankers carrying crude oil from Alaska to California ports at least 50 miles offshore. Subsequent to this agreement, WSPA interviewed members for a tanker movement study and found that almost 90 percent of tankers were at least 25 miles off the coast and nearly 50 percent were at least 50 miles offshore. This voluntary agreement does not apply to other carriers of hazardous materials. (California Resources Agency 1997.)

NOAA's assessment of data collected by California pursuant to California Senate Bill 771<sup>16</sup> indicates that ships calling on California ports in 2006 (excluding cruise ships) had crew sizes averaging approximately 20 people, and ranging from five to fifty people. The number of people on board a vessel is directly related to the amount of sewage and graywater generated.

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<sup>16</sup> For California, pursuant to the Public Resources Code Section 72425(c) as amended by Senate Bill 771 (Clean Coast Act of 2005), the California State Lands Commission (SLC), in consultation with the maritime industry, prepared a survey on large oceangoing ships (300 gross tons or more) operating in California marine waters during 2006, herein referred to as the "2006 SB 771 survey." SLC provided the 2006 SB 771 survey data to the State Water Resources Control Board (State Water Board) on January 31, 2007. Based on this survey, the State Water Board must submit a report to the Legislature by October 2007. This survey targeted all large vessels calling on ports across California. However, in the absence of similar data specific to large vessels in the Santa Barbara Channel TSS, and because vessels in this TSS are likely either en route to or coming from California ports, the NMSP has treated this survey data as representative of large vessels transiting the Sanctuary. This data set relies on submission of accurate data from ship owners and captains. The Clean Coast Act is explained further in sections 3.3.2.1 and 3.3.2.2 of this document.

### 3.1.2 Cruise Ships

At this time, cruise ships occasionally transit through the waters of the Sanctuary using the TSS, but are not known to stop in the Sanctuary. The Sanctuary Aerial Monitoring and Spatial Analysis Program (SAMSAP) surveys (which are not conducted at night, in foul weather, or when a pilot or aircraft is not available), have observed only two cruise ships since such flights began in 1997, and those two vessels were traveling within the TSS. These observations demonstrate that cruise ships do use the TSS, but may not be representative of the total number of cruise ships using the TSS because of the limitations on flight time. Direct observation by staff with the Channel Islands National Park indicates that more than 12 years ago cruise ship operation within the Sanctuary (and outside the TSS) did occasionally take place (Channel Islands National Park 2006, personal communication with J. Fitzgerald), but such operation has not been noted since. Thus, while cruise ships have stopped in the Sanctuary in the past (and the cruise line industry could do so again in the future), they are not presently known to stop in the Sanctuary.

Cruise ships occasionally visit the City of Santa Barbara while transiting between destinations to the north and south of the city and in doing so are likely to spend time in the Santa Barbara Channel TSS. Between 2002 and May 7, 2007 Santa Barbara received eight cruise ship visits from six different cruise ships (Santa Barbara Waterfront Department 2007, personal communication with B. Slagle). According to data that these ships provided to the City's Waterfront Department, they ranged in size from 16,927 to 116,000 GRT, and carried between 296 and 3,700 people ("total passenger/crew") on board. A summary of the itineraries for each of the eight cruise ship visits from 2002 to May 7, 2007 is provided in Table 3.1.

Trip	Port Coming From	Port Going To
Reposition to Vancouver	San Diego	Monterey
Round trip	Monterey	Los Angeles
Initial U.S. Trip to SF	Los Angeles	Monterey
Reposition to Hawaii	Monterey	Catalina
Seattle to San Diego	San Francisco	Los Angeles
Seattle to San Diego	San Francisco	Los Angeles
Vancouver to Los Angeles	San Francisco	Los Angeles
Los Angeles to Vancouver	Los Angeles	San Francisco

**Table 3.1. Summary of itineraries for cruise ships visiting Santa Barbara between 2002 and May 7, 2007.** (Santa Barbara Waterfront Department 2007, personal communication with B. Slagle.)

According to the Cruise Line Industry Association, Inc. (CLIA), the cruise industry is the fastest growing segment of the travel industry, with 2,100% growth since 1970 (CLIA 2007), and an average annual passenger growth rate of 8.2% per year since 1980 (CLIA 2006b). By the end of

2007 about 100 new cruise ships will have been introduced since 2000 (CLIA 2007). The worldwide cruise ship fleet includes more than 230 ships, with vessel capacities of 3,000 passengers and crew not uncommon (U.S. EPA 2006a). A consistent increase in the size of cruise ships has occurred over the past three decades. The largest vessel currently in service is Royal Caribbean's *Freedom of the Seas* (3,634 passengers). However, the same cruise line has ordered two 5,400 passenger-capacity cruise ships as part of its "Genesis Project," with vessel deliveries expected in 2009 and 2010 (Royal Caribbean Cruises 2007). Although most of the largest vessels are destined for operation in the Caribbean, the general trend in the industry is toward increased vessel size. The cruise industry is building its capacity based on its growth potential and untapped markets (CLIA 2007). This overall growth trend in the industry could yield increased cruise ship traffic through the Santa Barbara Channel, and consequently the Sanctuary.

### **3.2 LARGE VESSEL DISCHARGES**

#### **3.2.1 Sewage and Sewage Treatment**

Sewage (also referred to as blackwater) means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes. Sewage from vessels is generally more concentrated than sewage from land-based sources, as it is diluted with less water when flushed (three quarts versus three to five gallons).

Vessel sewage discharges may introduce disease-causing microorganisms (pathogens), such as bacteria, protozoans, and viruses, into the marine environment (EPA 2007a). Untreated or under treated sewage from vessels can cause bacterial and viral contamination in commercial and recreational shellfish beds, posing risks to public health (Herz and Davis 2002). High concentrations of nutrients in sewage, namely nitrogen and phosphorous, can lead to eutrophication, the process by which an aquatic environment becomes rich in dissolved nutrients, causing excessive growth and decomposition of oxygen-depleting plant life, and resulting in injury or death to other organisms. In addition, marine sanitation device (MSD) treatment and deodorant chemicals such as chlorine, ammonia, and formaldehyde can present a threat to marine organisms (California Department of Boating and Waterways 2007). The environmental effects of dumping raw or under-treated sewage in smaller, closed ecosystems such as lakes are better understood than the effects on large-scale ocean processes, which remain poorly characterized. (Davenport and Davenport 2006).

##### **3.2.1.1 Marine Sanitation Devices**

The Federal Water Pollution Control Act, also informally called the Clean Water Act or CWA (33 U.S.C. 1251 *et seq.*), requires that any vessel with installed toilet facilities must also have an operable MSD. Three general types of MSDs are available and in use. Type I and II MSDs treat the wastewater and discharge it post-treatment.

Type I MSDs rely on maceration and disinfection for treatment of the waste prior to its discharge into the water, and are only legal in vessels under 65 feet in length. Effluent from Type I MSDs may not have a fecal coliform count greater than 1,000 per 100 milliliters, nor visible floating

solids. Type II MSDs provide an advanced form of the same type of treatment used by Type I devices, and discharge wastes with lower fecal coliform counts and reduced suspended solids. Effluent from Type II MSDs may not have a fecal coliform count greater than 200 per 100 milliliters, nor suspended solids greater than 150 milligrams per liter. Type II MSDs are legal in any size class of vessel, and there are a variety of different types (U.S. EPA 2006b.). NOAA's assessment of data collected by California pursuant to California Senate Bill 771 indicates that as of 2006, approximately 75% of the large oceangoing ships that called on California ports were using a Type II MSD.

There are three basic varieties of MSD treatment systems: biological, macerator/chlorinator, and advanced. MSDs with biological systems clarify wastewater by allowing solids to settle, then use aeration to encourage biological growth that feeds on the organic waste. These biological systems use either chlorine or ultraviolet light for disinfecting the final discharge. MSDs with macerator/chlorinator systems dilute the wastewater about 10:1 with ambient seawater, then a macerator pump breaks up any solids. An electrochemical cell generates chlorine from seawater, which is used for final disinfection. MSDs with advanced treatment systems treat the wastewater using a biological process followed by ultrafiltration or reverse osmosis filtration. The advanced treatment systems then use either chlorine or ultraviolet radiation to kill bacteria. (Alaska Department of Environmental Conservation 2002.)

U.S. Coast Guard standards for MSDs that are currently in effect have not changed since 1976. As would be expected, treatment technology has advanced since that time and MSDs are available that outperform these standards (Types IA and II). A House bill was under review in 2002 (H.R. 3673) that would raise the standard for Type I MSDs to 100 times stricter than at present. This bill stalled in committee in 2003, so the new standard was never put in place.

Type III MSDs, commonly called holding tanks, flush sewage from the marine head into a tank that may contain deodorizers and other chemicals, predominantly chlorine. The contents of the holding tank are stored until they can be properly disposed of at a shore-side pump-out facility, or discharged offshore in a legal area. Storing wastewater in holding tanks can increase fecal coliform counts, and total suspended solids (Alaska Department of Environmental Conservation 2001, 2004a). Type III MSDs can be equipped with a discharge option, usually called a Y-valve, which directs the sewage into either the holding tank or directly overboard. Based on NOAA's assessment of SB 771 survey data Type III MSDs are the type of system present in approximately 10% of large oceangoing ships that called on California ports in 2006.

Sewage holding tank capacities for large vessels are highly variable, and data on these capacities has only recently begun to be collected. The State Water Board staff's preliminary review of the 2006 SB 771 survey data found that 47% of large oceangoing ships report having sufficient holding tank capacity to hold blackwater while within marine waters of the state (State Water Resources Control Board 2006, personal communication with R. Jauregui). This data set relies on submission of accurate data from ship owners and captains.

Much of the research on wastewater discharge from large vessels has focused on the dilution effect of moving vessels. Loehr *et al.* (2006) review the available literature and conclude that for a cruise ship traveling at six knots, the dilution effect is so large that there is no chance its

effluent could exceed water quality standards. Although stationary discharges have a much greater chance of impact since the dilution effect is dramatically lower, researchers found that for stationary large cruise ships the dilution effect remained high enough to avoid exceeding water quality standards. However, it was suggested that smaller ships would risk exceeding those standards due to their lower specific dilution factor. It is important to note that many of the dilution studies reviewed in Loehr *et al.* (2006) only considered effluent from properly functioning MSDs, which is not necessarily the condition of MSDs on all or most vessels. Voluntary samples taken in 2000 at the inception of the Alaska Cruise Ship Initiative revealed that the effluent from large (250 or more passengers) passenger vessel MSDs was often in excess of federal standards for fecal coliform and other pollutants (Alaska Department of Environmental Conservation 2001). These findings led to the establishment of a monitoring program that, following the passage of more stringent federal and state laws regulating cruise ship wastewater discharge in Alaska, saw significant improvement in the MSD discharges subsequently measured (Alaska Department of Environmental Conservation 2004a). In the absence of a monitoring program, it is difficult to say whether the MSDs on board vessels operating in California waters are operating as effectively as intended. Consequently, for large vessels in California waters the dilution effect may not necessarily yield the results described above.

The chemicals and deodorants often used in MSDs, including chlorine, ammonia, or formaldehyde, have the potential to impact water quality. Such treatment chemicals are often not measured under typical “water quality” monitoring programs. When chlorine mixes with seawater bromides, the resultant compounds are referred to as chlorine-produced oxidants, or CPO’s. This is the analog to Total Residual Chlorine, or TRC, which is used in freshwater systems. Acute CPO toxicity values are available for a range of saltwater invertebrate and vertebrate species, and are especially low for larval forms (EPA 1985). Long-term toxic limits are even lower for all tested species. Due to these low tolerances to CPO, NOAA is concerned about the chlorine concentrations that are often observed in discharges from cruise ship sewage treatment systems and cruise ship untreated graywater (EPA 2007b).

### 3.2.1.2 Cruise Ships

#### *Duration within the Sanctuary and Discharge Volume*

Given that cruise ships travel at between 15 to 20 knots, they should only be in Sanctuary waters for approximately one hour when transiting north in the TSS, and approximately two to two-and-a-half hours when transiting south in the TSS. Cruise ships typically have sufficient storage capacity for blackwater (sewage) to allow vessel operations for between one to two days, although there is significant variation among vessels (Pruitt 2004). The installation of advanced wastewater treatment systems reduces the holding capacity by varying degrees, as these systems normally occupy space formerly used for holding.

Estimates of blackwater production from large cruise ships range from a low of 5-7 gallons per person per day to a high of 17 gallons per person per day (EPA 2006c, d, e, f). The volume of treated blackwater generated and discharged varies considerably from ship to ship and region to region. Much of the variation depends on the treatment process.

Cruise ships can produce and discharge extensive sewage wastes on par with some small cities, yet they are not subject to the same environmental regulations and monitoring requirements that land based facilities are required to comply with, such as obtaining discharge permits, meeting numerous permit conditions, and monitoring effluent discharges (NOAA 2003c). California is pursuing authority to prohibit discharges of sewage and sewage sludge from all large passenger vessels and oceangoing ships within state waters (water located within three miles of the California coastline). This prohibition, however, would not afford protection to Sanctuary waters outside of California state water boundaries. (See section 3.3 for more on sewage discharge regulations.)

**Discharge Violations and Agreements**

There is a history of cruise ships violating discharge regulations and agreements, and exceeding discharge standards (Alaska Department of Environmental Conservation 2006; GAO 2000). Although since 2000 (GAO 2000) an updated listing of cruise ship discharge violations involving sewage does not appear to be published or available from regulators or other agencies, a review of available news stories provides limited information on some such incidents in Table 3.2 below.

<b>Various Cruise Ship Discharge Violations Involving Sewage</b> (not a comprehensive listing)			
<b>Date</b>	<b>Vessel name, Cruise Line</b>	<b>Location</b>	<b>Type of violation</b>
November 2006	<i>Mercury</i> , Celebrity Cruises	Puget Sound, Washington	Untreated wastewater
May 2003	<i>Norwegian Sun</i> , Norwegian Cruise Line	Strait of Juan de Fuca, Washington	Sewage discharge
October 2002	<i>Crystal Harmony</i> , Crystal Cruises	Monterey, California	Sewage, bilge, and graywater discharge
August 2002	<i>Ryndam</i> , Holland America Line	Juneau Harbor, Alaska	Sewage discharge
May 2001	<i>Norwegian Sky</i> , Norwegian Cruise Line	Alexander Archipelago, Alaska	Sewage discharge
February 1995	<i>Star Odyssey</i> , Norwegian Cruise Line	Southwest Pass, Louisiana	Oil and sewage spill
March 1993	<i>Seaward</i> , Norwegian Caribbean Cruise Line	Georgetown, Grand Cayman Island	Sewage
March 1992	<i>Seaward</i> , Norwegian Caribbean Cruise Line	Georgetown, Grand Cayman Island	Sewage

**Table 3.2. Various cruise ship discharge violations involving sewage.** Sources: GAO 2000 and [www.cruisejunkie.com/envirofines.html](http://www.cruisejunkie.com/envirofines.html).

At the same time, certain, but not all, cruise line companies have agreed to voluntary pollution reduction measures. Because these measures are voluntary they are not required, not enforced, and compliance with them (or lack thereof) is not monitored or verified. Voluntary measures

include using equipment that treats the oily bilge water above regulatory requirements to five parts per million, or ppm (NOAA 2003a, 2003b, 2003c). Some cruise lines have even adopted a “no discharge in marine protected areas” policy whereby they agree to hold all discharges until they are outside marine protected area boundaries.

Additionally, Cruise Lines International Association, Inc. (CLIA) members agree that ships regularly traveling outside of coastal states’ territorial waters will not discharge blackwater (sewage) within four miles of shore. When outside four miles of shore, they agree not to discharge unless the vessel is underway at six knots or more. They also agree to pass all blackwater through a MSD (certified according to U.S. or international law) prior to discharge. Those vessels using an Advanced Wastewater Purification System are not obliged to follow this voluntary agreement. This organization does not include all cruise ship operators so these agreements are not universally followed. (CLIA 2006a) More information about CLIA is available at [www.cruising.org](http://www.cruising.org).

Within the Monterey Bay National Marine Sanctuary (MBNMS), three cruise lines voluntarily adopted a no-discharge policy. In October 2002, however, the cruise ship *Crystal Harmony* visited Monterey and discharged treated wastewater, graywater and processed bilge water into the Sanctuary, breaking the voluntary no-discharge agreement the cruise line had made with the City of Monterey and the MBNMS. Subsequently, in 2004, prompted by this incident, the State of California passed legislation to limit the water and air pollution generated by cruise ships in California waters (AB 471, AB 2093, and AB 2672) (See SDEIS sec. 3.3.2.1 and 3.3.2.2 below for more information on state laws).

### ***Alaska Cruise Ship Sewage Discharge Data***

As referred to above, in 2000 the Alaska Cruise Ship Initiative collected wastewater samples voluntarily provided by 21 large passenger vessels. The goal of this sampling effort was to characterize wastewater quality and determine if hazardous substances were discharged to receiving water through wastewater systems (Alaska Department of Environmental Conservation 2004a). Results of this sampling effort indicated that treated wastewater discharged from MSDs was often in excess of federal standards for fecal coliform and other pollutants (Alaska Department of Environmental Conservation 2004a). According to the Alaska Department of Environmental Conservation (2001), “The results of analyses of treated blackwater clearly demonstrated that generally MSDs do not meet the federal standards for TSS [or total suspended solids] and fecal coliform.”

The samples collected from large cruise ships (250 passengers or more) in 2000 yielded the following results:

- There was no evidence of hazardous wastes being mixed with overboard discharges;
- Seven metals (chromium, copper, lead, mercury, zinc, silver and nickel) were present in levels above Alaska’s water quality standards for aquatic life;
- One blackwater sample out of 70 met both the fecal coliform and total suspended solids standards;

- Approximately 57% of the fecal coliform samples exceeded the federal Type II MSD standard of 200 fecal coliform per 100 milliliter of sample;
- 68% of the samples for total suspended solids exceeded the federal Type II MSD standard of 150 milligrams per liter of sample (Alaska Department of Environmental Conservation 2001).

According to the Alaska Department of Environmental Conservation (2002), “The 2000 large ship data shows that none of the conventional biological treatment systems were functioning properly.”

Whereas Alaska’s 2000 sampling program focused on characterizing wastewater quality, the purpose of subsequent sampling has shifted to assessing compliance with recent federal (P.L. 106-554)<sup>17</sup> and state (AS 46.03.460 – 46.03.490)<sup>18</sup> legislation aimed at improving the quality of cruise ship wastewater discharged offshore from Alaska. In essence, these laws and implementing regulations combined provide strict standards for both sewage and graywater discharges from cruise ships in Alaskan waters (and sewage in federal waters of the Inside Passage), and require sampling and testing to demonstrate that ships are meeting the requirements. Although the Alaska Department of Environmental Conservation (2004a) determined that 2001-2002 samples were less representative of large cruise ship wastewater discharges than samples taken in 2003 and beyond (due largely to differences in sampling methods), there is a dramatic decrease in fecal coliform and total suspended solids between large cruise ship samples taken prior to the new legislation, and large cruise ship samples taken after it, as demonstrated in Tables 3.3 and 3.4.

		<b>Pollutants in Large Cruise Ship Treated Wastewater Samples by Year</b>			
	<b>CWA MSD Requirement</b>	2000	2001	2002	2003
fecal coliform/100 ml	<b>200</b>	18,213	2*	5	1
TSS in mg/l	<b>150</b>	407.0	0.7*	0.1	0.0

**Table 3.3. Mean fecal coliform and median total suspended solids from large cruise ship (250 passengers or more) treated blackwater samples in Alaska.** Adapted from tables in Alaska Department of Environmental Conservation (2004a). \*Denotes that samples were mixed graywater and blackwater, which is considered blackwater.

<sup>17</sup> “Title XIV--Certain Alaskan Cruise Ship Operations” of the Miscellaneous Appropriations Bill (H.R. 5666) passed on December 21, 2000 in the Consolidated Appropriations Act of 2001 (P.L. 106-554). The law applies to large commercial passenger vessels only, defined as those vessels having more than 500 passengers, and sets effluent standards for blackwater. A helpful summary of Title XIV is on the U.S. EPA website at [http://www.epa.gov/owow/oceans/cruise\\_ships/sewage\\_gray.html](http://www.epa.gov/owow/oceans/cruise_ships/sewage_gray.html) (last accessed June 1, 2007). Title XIV implementing regulations took effect in July 2001 (33 CFR 159.301-159.321).

<sup>18</sup> See: State Of Alaska, Title 46. Water, Air, Energy, and Environmental Conservation, Chapter 46.03, Environmental Conservation, Article 07: Commercial Passenger Vessel Environmental Compliance Program. This state legislation became effective on July 1, 2001, and its implementing regulations (18 AAC 69) took effect on November 15, 2002.

	CWA MSD Requirement	Pollutants in Large Cruise Ship Treated Wastewater Samples by Year	
		2004 <sup>†</sup>	2005 <sup>‡</sup>
fecal coliform/100 ml	200	1	0
TSS in mg/l	150	2	0

**Table 3.4. Median fecal coliform and median total suspended solids from large cruise ship (250 passengers or more) wastewater (graywater and blackwater not distinguished) samples in Alaska.** <sup>†</sup>Adapted from Table 1 in Alaska Department of Environmental Conservation (2004b). <sup>‡</sup>Adapted from Table 1 in Alaska Department of Environmental Conservation (2005a). Note: 2006 data were not available as of the date of development of this SDEIS.

Since the passage of the new federal and Alaska laws, most large cruise ships discharging in Alaska waters have installed advanced treatment systems, dramatically improving the quality of effluent discharged. In 2001, 21 of 24 large cruise ships stopped discharging blackwater in Alaska water, and two of the three ships that continued to discharge blackwater in Alaska waters had advanced wastewater treatment systems. This explains the dramatic decrease in fecal coliform levels seen between 2000 and 2001 (Table 3.3). The only large ships discharging blackwater in Alaska in 2002 and 2003 also had advanced wastewater treatment systems. The percentage of large cruise ships operating in Alaska with advanced treatment systems went from 8% in 2001, to 28% in 2002, and 56% in 2003. (Alaska Department of Environmental Conservation 2004a.)

The Alaska sampling program also samples for and analyzes other wastewater parameters for large cruise ships, as well as for small cruise ships (50 to 249 passengers). The Alaska Cruise Ship Initiative determined that even with the dilution factor, a stationary blackwater and/or graywater discharge from a large cruise ship prior to passage of Alaska cruise ship law would not have met Alaska Water Quality Standards for free chlorine, fecal coliform, or copper in the receiving water. However, due to the dilution factor, Alaska Water Quality Standards would have been met in the receiving water for all measured parameters except fecal coliform, by large cruise ships discharging while underway. For small cruise ships in Alaska sampled between 2001 and 2003, all of which use traditional treatment, the quality of effluent remained relatively consistent. Vessels discharging underway in Alaska are required to travel at a minimum of six knots. (Alaska Department of Conservation 2004a.)

On January 1, 2004 small cruise ships were required to comply with the wastewater discharge standards in Alaska for blackwater, graywater, and other wastewater: no more than 200 fecal coliform per 100 milliliter sample, and no more than 150 milligrams total suspended solids per liter of sample. In 2004 and 2005 most small cruise ships sought alternative terms and conditions (allowed under Alaska state law), as they were not able to meet the standard wastewater discharge terms and conditions, and because the advanced treatment systems present

on large cruise ships were not yet commercially available for small ships. (Alaska Department of Environmental Conservation 2005b.)

In the absence of a vessel discharge monitoring program like that for cruise ships operating in Alaska, there is no comprehensive data available indicating the makeup of blackwater discharged by large cruise ships (or oceangoing ships) in California. The results of cruise ship blackwater samples taken in Alaska indicate that blackwater from vessels without advanced treatment systems and not subject to mandatory monitoring, inspection, and reporting, may contain levels of fecal coliform and total suspended solids that exceed federal standards for MSDs, as well as a variety of other pollutants. The advanced treatment systems used by large cruise ships that discharge blackwater in Alaska are not required to be used by large vessels under any federal law.

### 3.2.2 Graywater

The proposed CINMS definition of “graywater” to be added to the National Marine Sanctuary Program regulations at 15 CFR Part 922.71 would read as follows: “Graywater means galley, bath, or shower water.”<sup>19</sup> Graywater can contain a variety of substances including (but not limited to) detergents, oil and grease, pesticides, and food wastes (Eley 2000). More than one million gallons of graywater are produced on a typical seven to ten-day cruise ship voyage, making it by far the largest source of liquid waste on a cruise ship (Sweeting and Wayne 2003). As a general rule, large cruise ships generate 180 liters (50 gallons) of graywater per person per day. The average large cruise ship with 2,500 passengers and crew onboard produces 211,200 gallons of wastewater per day, and 90 – 95% of this wastewater is graywater (Alaska Department of Environmental Conservation 2004a). The average small cruise ship with 100 passengers and crew onboard produces 2,500 gallons of wastewater per day (Alaska Department of Environmental Conservation 2004a). The volume of graywater generated and discharged varies considerably from ship to ship and region to region. Much of the variation depends on the treatment process.

Similar to sewage, graywater holding tank capacities for large vessels are highly variable, and data on these capacities have only recently begun to be collected. Cruise ships typically have sufficient storage capacity for graywater to allow vessel operations for between one to two days, although there is significant variation among vessels (Pruitt 2004). The installation of advanced wastewater treatment systems reduces the holding capacity by varying degrees, as these systems normally occupy space formerly used for holding. The State Water Board staff’s preliminary review of the 2006 SB 771 survey data found that as little as 20% of large oceangoing ships have sufficient holding tank capacity to hold graywater while within marine waters of the state (State Water Resources Control Board 2006, personal communication with R. Jauregui). This data set relies on submission of accurate data from ship owners and captains. Furthermore, many oceangoing ships were designed without the ability to retain graywater, particularly those constructed prior to the early 1990s (personal communication, S. Young, U.S. Coast Guard).

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<sup>19</sup> This definition is based on section 312 of the CWA (33 U.S.C. 1322). While other discharges, such as those from laundry facilities, are not included in this graywater definition, they would be prohibited by the Sanctuary discharge regulation.

While many of these older ships, particularly those calling on U.S. ports, have since been modified to allow graywater retention, some must still discharge graywater directly as it is produced (personal communication, S. Young, U.S. Coast Guard).

Cruise Lines International Association, Inc. (CLIA) members agree that ships traveling regularly on itineraries beyond the territorial waters of coastal states: will only discharge graywater while underway and proceeding at a speed of not less than six knots; will not discharge graywater in port; will not discharge graywater within four nmi from shore (or such other distance as agreed to with authorities having jurisdiction or provided for by local law except in an emergency, or where geographically limited). Member lines have further agreed that the discharge of graywater will comply with all applicable laws and regulations, and, for vessels whose itineraries are fully within U.S. territorial waters, discharge will comply fully with U.S. and individual state legislation and regulations. (CLIA 2006a) This organization does not include all cruise ship operators so these rules are not universally followed or enforced. More information about CLIA is available at [www.cruising.org](http://www.cruising.org).

Graywater is usually not treated. Some vessels mix graywater with blackwater where it gets treated in the blackwater treatment system or advanced treatment system. Some vessel operators add chlorine to their graywater collecting tanks to achieve some level of bacteria reduction. Although chlorine is effective for disinfecting, excessive chlorine residual may be toxic to marine life (Alaska Department of Environmental Conservation 2002).

Very little research has been done on the impacts of graywater on the marine environment, but many of the chemicals commonly found in graywater are known to be toxic (Casanova *et al.* 2001). These chemicals have been implicated in the occurrence of cancerous growths in bottom-dwelling fish (Mix 1986). The high nutrient levels found in graywater, particularly nitrogen and phosphorus, can contribute to eutrophication processes where algal growth is rapidly stimulated. This increase in algal growth can significantly decrease oxygen levels, impacting the use of coastal waters for recreational and commercial fishing (Schmidt and Long 2000).

Because neither federal nor state laws require monitoring of graywater effluents from large vessels operating in California waters, there is no comprehensive data available indicating the makeup of graywater discharged by large vessels in California. Furthermore, unlike sewage effluents, graywater effluents are not subject to federal standards for bacteria and other pollutants. However, as described in more detail under 3.2.1.1 and 3.2.1.2 above, in 2000 the State of Alaska began collecting wastewater samples from cruise ships operating in Alaskan waters. In the absence of similar monitoring in California waters, the results of the 2000 large cruise ship voluntary graywater sampling in Alaska may provide insight into the makeup of graywater effluents from cruise ships not previously subject to such monitoring, and not required to meet any water quality standards for graywater effluent.

The samples collected from large cruise ships (250 passengers or more) in 2000 yielded the following results:

- No evidence of hazardous wastes being mixed with overboard discharges;

- Seven metals (chromium, copper, lead, mercury, zinc, silver and nickel) present in levels above Alaska’s water quality standards for aquatic life;
- 78% of graywater samples contained fecal coliform levels exceeding the federal standard for Type II MSDs of 200 fecal coliform per 100 milliliters of sample;
- 14% of graywater samples exceeded 10,000,000 fecal coliform per 100 milliliters;
- 40% of graywater samples exceeded the federal standard for Type II MSDs of 150 milligrams per liter of total suspended solids (Alaska Department of Environmental Conservation 2001).

Based on these results, the Alaska Department of Environmental Conservation (2001) concluded:

Graywater is not expected to contain pollutant levels as high as blackwater. The results indicated that graywater being discharged was not benign... graywater is similar to blackwater in number of fecal coliform bacteria and total suspended solids, and that graywater should be treated prior to discharge.

Alaska’s sampling results for fecal coliform and total suspended solids from large cruise ships between 2000 and 2003 are summarized in Table 3.5.

	Pollutants in Large Cruise Ship Graywater Samples by Year, and Source					
	2000			2001		
	A&L	G	M	A&L	G	M
Fecal coliform/100 ml	6 – 104	13,750	118,052 - 1,163,188	30 – 651,460	402* – 784,072	38,933 – 649,994
TSS in mg/l	39.0 – 455.0	223.5	92.0 – 250.0	22.0 – 66.0	266.0 – 383.0	76.5 – 151.3
	2002			2003		
	A&L	G	M	graywater		
Fecal coliform/100 ml	47,357	6,279	38,603	7		
TSS in mg/l	130.5	1,320.0	190.0	0.0		
A&L = accommodations and laundry; G = galley; M = mixed graywater						

**Table 3.5. Mean fecal coliform and median total suspended solids from large cruise ship (250 passengers or more) samples taken in Alaska.** Adapted from tables in Alaska Department of Environmental Conservation (2004a). \*Some samples were not analyzed.

Table 3.5 shows ranges for mean and median values where there were multiple sets of samples, each with its own mean or median values, for graywater from accommodations and laundry, galley, and mixed sources. Between 2000 and 2002 graywater samples sets consisted of accommodations and laundry (separate and/or combined), galley samples from double bottom tanks and/or from collecting tanks, and mixed graywater samples from double bottom tanks and from collecting tanks. Between 2000 and 2002 the Alaska sampling data for large cruise ships

indicates very high levels of fecal coliform in graywater (well exceeding federal standards for fecal coliform from Type II MSDs of 200 fecal coliform per 100 milliliter sample), and high mean total suspended solids from at least one graywater source per year (exceeding the federal standards for total suspended solids from Type II MSDs of 150 milligrams per liter). The drastic reduction in fecal coliform and total suspended solids between the 2000-2002 graywater samples and the 2003 graywater sample is due to two factors. First, in 2003 graywater discharged by large cruise ships in Alaska waters became subject to Alaska's effluent standards. Second, in 2003 only one ship discharged graywater in Alaska and this ship treated its graywater using an advanced wastewater treatment system. (Alaska Department of Environmental Conservation 2004a.)

Alaska sampled small cruise ship (50 to 249 passengers) graywater discharges beginning in 2001. These samples had mean fecal coliform values of 103 (2001), 222 (2002; data skewed by one unusually high sample), and 48 (2003). They had median total suspended solids values of 49.6 (2001), 54.1 (2002), and 55.6 (2003).

Table 3.6 below presents a presence/absence listing of a range of pollutants found in cruise ship graywater as monitored in Alaska. Measurements were taken during the years of the inception of the sampling program (2001-2002) and during a more recent sampling year (2005). Sampling for these pollutants continues on an annual basis, although results for graywater sampling are not always reported separately from blackwater. For the table below, only those samples identified as being solely graywater are included, which precludes the 2005 measurements from the large vessel class. For more information about the pollutant levels and analysis see Alaska Department of Environmental Conservation (2004a, 2005a, 2005b).

Since more stringent regulation of cruise ship wastewater discharges in Alaska there have been positive results with respect to monitored pollutants. Of twenty-nine cruise ships with 500 or more overnight passengers that visited Alaska in 2005, twenty discharged into state waters and were subject to unannounced sampling requirements pursuant to federal and state law (see footnotes 17 and 18). For many of the pollutants identified in Table 3.6, acceptable limit standards do not exist, so it is difficult to say whether the levels identified in Alaskan vessel waste streams have the potential to cause harm. The levels of ammonia and dissolved metals like copper, nickel and zinc have been identified as being of most concern (Alaska Department of Environmental Conservation 2004a). A report by the Alaska Department of Environmental Conservation (2006) summarizes the more recent sampling results as follows:

Advanced wastewater treatment systems continue to be effective at removing bacteria and suspended solids. Chlorine concentrations of large ships effluent has declined from past seasons to below detection levels. Some large ships wastewater discharges have ammonia, dissolved copper, dissolved nickel and dissolved zinc results that exceed Alaska water quality standards. Most of these standards will be met quickly in the receiving water because the effluent is dispersed and should not pose a risk to the environment.

In the absence of a vessel discharge monitoring program like that for cruise ships operating in Alaska, there is no comprehensive data available indicating the makeup of graywater discharged

by large vessels in California. However, initial monitoring results of cruise ship graywater discharges in Alaska indicate that graywater from vessels not accustomed to monitoring may contain levels of fecal coliform that exceed federal standards for MSDs, along with a variety of pollutants.

Pollutant	Samples from Two Size Classes of Passenger Carrying Vessels		
	50 – 249 passengers		250 or more passengers
	2002	2005	2001
3&4-Methylphenol		✓	
2-chlorophenol		✓	
Acetone	✓		
Antimony	✓		
Arsenic	✓	✓	
Benzoic acid	✓	✓	
Bis (2-ethylhexyl) phthalate			✓*
Bromoform	✓		✓*
Butylbenzyl phthalate			✓
Chloroform	✓	✓	✓*
Chromium		✓	✓
Copper	✓	✓	✓*
Diethyl phthalate	✓		✓
Lead		✓	✓*
Nickel		✓*	✓*
Phenol		✓	
Selenium	✓	✓	✓*
Zinc	✓	✓*	✓*

\*Denotes that the pollutant was found in all sample sets.

**Table 3.6. Summary of pollutants found in Alaska Department of Environmental Conservation passenger vessel wastewater sample data.**  
Data from Alaska Department of Environmental Conservation (2002, 2005a,b).

In a draft report, EPA (2007b) summarizes the available data on graywater discharge by stating:

Pathogen indicator data from untreated graywater consistently exceed the NRWQC [or National Recommended Water Quality Criteria] for marine water bathing and shellfish harvesting waters.... Over 66% of EPA samples for enterococci exceeded the 35 MPN/100 mL standard for marine water bathing. Over 80 percent of ACSI/ADEC samples for fecal coliform exceeded the 43 MPN/100 mL standard for harvesting shellfish. Given the consistent exceedance of the NRWQC for bacteria,

untreated graywater may cause, have the potential to cause, or contribute to non-attainment of water quality standards in a given receiving water.

### **3.3 APPLICABLE LAWS, REGULATIONS, AND VOLUNTARY AGREEMENTS**

This section describes international, federal, and state laws and regulations governing vessel traffic, sewage and graywater discharges, which are applicable to large vessels transiting in or near the Sanctuary. It also describes industry agreements, and agreements between industry captains and the Santa Barbara Waterfront Department regarding cruise ship vessel discharges.

#### **3.3.1 Vessel Traffic**

Vessel traffic is regulated through a framework of overlapping international treaties and standards, national laws/regulations, and local, port, or area-specific rules. In general, the purpose of such regulations is to prevent vessel collisions, groundings, and other accidents; allow for safe operations at port facilities; provide for the security of the United States; protect the environment; promote safety; and allow enforcement of other applicable laws. The laws, regulations, and rules that apply to a vessel are mainly a function of the vessel's location, flag of registry, and intended port of call, but also depend on the vessel type, size, purpose, and nature of work.

The following are summaries of key regulations that apply to general traffic through the study area.

##### ***Automatic Identification System (AIS) - 33 CFR 164.46***

According to federal regulations the following vessels must have a properly installed, operational, type approved AIS as of the date specified:

- Self-propelled vessels of 65 feet (20 m) or more in length, other than passenger and fishing vessels, in commercial service and on an international voyage, not later than December 31, 2004.
- Tankers, regardless of tonnage, not later than the first safety survey for safety equipment on or after July 1, 2003.
- Vessels, other than passenger vessels or tankers, of 50,000 GRT or more, not later than July 1, 2004.
- Vessels, other than passenger vessels or tankers, of 300 GRT or more but less than 50,000 GT, not later than the first safety survey for safety equipment on or after July 1, 2004, but no later than December 31, 2004.
- Towing vessels of 26 feet (8 m) or more in length and more than 600 horsepower, in commercial service.

### *Offshore Traffic Separation Schemes - 33 CFR Part 167*

U.S. Coast Guard regulations address traffic separation schemes as follows (in summary).

- Establish offshore traffic separation schemes (TSS) and precautionary areas.
- Require that mariners in these areas follow Rule 10 of the International Regulations for Preventing Collisions at Sea when operating in or near a TSS. Rule 10 dictates that mariners crossing a lane do so at right angles to the lane and that mariners joining a lane do so at small angles to the direction of traffic flow.
- Warn mariners to stay out of the separation zone between lanes (except fishing vessels, which may operate in a separation zone).
- Recommend use of a lane by a vessel, although actions for crossing or joining and the restrictions on operating in the separation zone are all mandatory.

As a large percentage of the vessels transiting through the Santa Barbara Channel TSS lanes are foreign-flagged and only engaged in transfer of goods, there are limits as to the ability to regulate them under the “innocent passage” component of the United Nations Convention on the Law of the Sea (UNCLOS). Allowance is given to restrict how the ships can be used in U.S. waters, but no regulation can be passed that applies to the design, construction, manning or equipment of the ships. There are provisions in the UNCLOS that allow for regulation of foreign-flagged ships if needed for:

- the safety of navigation and the regulation of maritime traffic;
- the protection of navigational aids and facilities and other facilities or installations;
- the protection of cables and pipelines;
- the conservation of the living resources of the sea;
- the prevention of infringement of the fisheries laws and regulations of the coastal state;
- the preservation of the environment of the coastal state and the prevention, reduction and control of pollution thereof;
- marine scientific research and hydrographic surveys;
- the prevention of infringement of the customs, fiscal, immigration or sanitary laws and regulations of the coastal state.

#### **3.3.2 Vessel Discharge**

Sewage, graywater, and other vessel discharges are also regulated through a framework of overlapping international treaties and standards, national laws and regulations, and local and area-specific rules. In general, the purpose of such rules and regulations is to protect water quality. The key regulations described below apply to sewage and graywater discharges from large vessels in the study area, the only types of discharges relevant to the revised proposed action. A host of other international, national, state and local rules and regulations also apply to other types of vessel discharges. For additional information on rules and regulations pertaining to all types of vessel discharges and deposits please refer to DEIS section 3.5.3.3 information on *Ballast Water Exchange and Other Management* (DEIS pp. 3-70, 3-71), and section 5.2 of the DEIS (pp.5-4 to 5-9).

### 3.3.2.1 Sewage Discharge

#### *International Law*

Although the U.S. did not ratify the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex IV, which addresses the disposal of sewage, these regulations do impact the majority of the large vessels which transit through the Study Area: approximately 87% are foreign flagged (Santa Barbara Air Pollution Control District 2007). Revisions to Annex IV, effective as of August 2005, state that the discharge of sewage into the sea is prohibited, except when a ship has in operation an approved sewage treatment system or is discharging comminuted and disinfected sewage using an approved system at a distance of more than three nautical miles from the nearest land; or is discharging sewage which is not comminuted or disinfected at a distance of more than 12 nautical miles from the nearest land. This regulation applies to newly constructed ships engaged in international voyages, of 400 GRT and above, or which are certified to carry more than 15 persons. Existing ships will be required to comply with the provisions of the revised Annex IV five years after the date of its entry into force (meaning August 2010).

#### *Federal Law*

Section 312 of the CWA (33 U.S.C. 1322), requires federal performance standards for MSDs in order to prevent the discharge of untreated or inadequately treated sewage into or upon the navigable waters from new vessels and existing vessels, except vessels not equipped with installed toilet facilities. The applicable MSD standards and regulations are codified in the CFR. 40 CFR Part 140 describes the U.S. Environmental Protection Agency's standards for discharges from MSDs, and 33 CFR Part 159 describes the U.S. Coast Guard's MSD requirements. In addition, 46 CFR 184.704 on shipping also states that, "A vessel with installed toilet facilities must have a marine sanitation device that complies with 33 CFR Part 159."

The purpose of the U.S. Coast Guard MSD regulations is to govern the design and construction of MSDs, and procedures for certifying that MSDs meet EPA MSD regulations and standards to eliminate the discharge of untreated sewage from vessels into the waters of the U.S., including the territorial sea (33 CFR 159.1). For purposes of the U.S. Coast Guard MSD regulations, territorial sea means, "the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of 3 miles," (33 CFR 159.3). Collectively, CWA Sec. 312 and its implementing regulations: require all vessels with toilet facilities to have operable MSDs; allow discharges from operable Type I and II MSDs within three miles offshore; and allow discharges from Type III MSDs outside three miles offshore, or at land based pump-out facilities. Vessels 65 feet and under may use a Type I, II or III MSD, while vessels over 65 feet in length must have a Type II or Type III MSD (33 CFR 159.7). 33 CFR 159.3 provides the following definitions for the three types of MSDs:

- Type I marine sanitation device means a device that, under the test conditions described in Sec. 159.123 and 159.125, produces an effluent having a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids.
- Type II marine sanitation device means a device that, under the test conditions described in Sec. 159.126 and 159.126a, produces an effluent having a fecal coliform bacteria count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter.
- Type III marine sanitation device means a device that is designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage.

Existing CINMS regulations prohibit discharging or depositing any material or other matter, with an exception for biodegradable effluents incidental to vessel use of the Sanctuary generated by marine sanitation devices (among other exceptions). The intent of this regulation is to prohibit the discharge of untreated sewage into the Sanctuary (see DEIS p. 2-6). Proposed revisions to the CINMS sewage discharge regulation are discussed in the DEIS, and in sections 2 and 4 of this SDEIS.

In general, the U.S. Coast Guard has primary responsibility for ensuring that vessels comply with Section 312 of the CWA. For example, the Coast Guard conducts quarterly inspections of all cruise ships operating in U.S. waters. Those inspections are usually scheduled in advance and performed in port. The Coast Guard may also use aircraft to detect illegal pollution discharges from vessels.

### *State Law*

The California Clean Coast Act (California Public Resources Code sec. 72420 – 72422) is intended to prohibit releases of sewage and sewage sludge into marine waters of the state (including state waters within a national marine sanctuary) from both large passenger vessels (cruise ships) and oceangoing ships with sufficient holding tank capacity. Sec. 72410 indicates that, “‘Sewage’ has the meaning set forth in Section 775.5 of the Harbors and Navigation Code, including material that has been collected or treated through a marine sanitation device as that term is used in Section 312 of the CWA (33 U.S.C. Sec. 1322) or material that is a byproduct of sewage treatment.” Sec. 72410 also defines “large passenger vessel,” “oceangoing ship,” and “sufficient holding tank capacity,” among other terms. The application of the sewage and graywater discharge regulations only to those oceangoing ships with sufficient holding tank capacity is unavoidable due to the “innocent passage” clause in UNCLOS Article 21, and given that approximately 87% of the oceangoing ships transiting the California coastline are foreign-flagged (Santa Barbara Air Pollution Control District 2007).

Pursuant to section 1322(f) of the CWA, the State of California submitted an application to the U.S. EPA to prohibit sewage and sewage sludge discharges from large passenger vessels and oceangoing ships within state waters. While California is awaiting approval of this application the California Clean Coast Act prohibitions on the release of sewage and sewage sludge discharges from large passenger vessels and oceangoing ships with sufficient holding tank capacity are not in effect.

The California Clean Coast Act also states that the State Water Resources Control Board shall request the appropriate federal agencies to prohibit the release of sewage sludge (with exceptions for certain emergencies and vessels under innocent passage), by large passenger vessels and oceangoing ships in all of the waters (*i.e.*, state and federal) that are in the Channel Islands, Cordell Bank, Gulf of the Farallones, and Monterey Bay national marine sanctuaries (Sec. 72440 (b)).

California Harbors and Navigation Code sec. 775-786 is intended to ensure that vessels with installed toilets (except foreign and domestic vessels engaged in interstate or foreign commerce) comply with federal standards for marine sanitation devices. This code requires that use of marine sanitation devices be in conformance with the CWA (33 U.S.C. 1321 *et seq.*). The code also indicates that California vessel owners should not be subject to any local or state regulation as to the type of marine sanitation devices installed on their vessels.

The California Ocean Plan's Water Quality Control Plan (SWRCB 2005) states that waste (defined as including a discharger's total discharge, of whatever origin, *i.e.*, gross, not net, discharge) shall not be discharged to areas designated as being of special biological significance. Areas of special biological significance (ASBS) are designated by the State Water Board as

...ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of state water quality protection areas [SWQPA]. (SWRCB 2005)

The California Ocean Plan also states that discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas (SWRCB 2005). This plan sets water quality objectives for ocean waters, along with limits or levels for bacterial, physical, and chemical characteristics. The entire plan applies to point source discharges to the ocean, and the plan's water quality objectives and stipulations regarding SWQPA's (among other components) apply to nonpoint source waste discharges. State waters around the Sanctuary include two SWQPA's: the San Miguel, Santa Rosa, and Santa Cruz Islands SWQPA, and the Santa Barbara and Anacapa Islands SWQPA.

### ***Voluntary Agreements***

As previously noted, certain, but not all, cruise line companies have agreed to voluntary pollution reduction measures, including measures pertaining to sewage. Because these measures are voluntary they are not required, not enforced, and compliance with them (or lack thereof) is not monitored or verified.

CLIA members agree not to discharge blackwater within four miles of shore (for ships that travel regularly on itineraries beyond the territorial waters of coastal states; CLIA 2006a). When outside four miles of shore, they agree not to discharge blackwater unless the vessel is underway at six knots or more. They also agree to pass all blackwater through a certified MSD prior to discharge. Those vessels using an Advanced Wastewater Purification System are not obliged to follow this voluntary agreement. Since CLIA does not include all cruise ship operators these

agreements are not universally followed. More information about the CLIA is available at [www.cruising.org](http://www.cruising.org).

The City of Santa Barbara Waterfront Department requires cruise ships visiting Santa Barbara to sign a Captain's Declaration stating that no discharge of treated sewage or any conventional sewage, along with other specified pollutants, shall occur within twelve nautical miles from the City of Santa Barbara. The declaration also states that should any such discharge occur the captain will notify the Santa Barbara Harbor Patrol within 24 hours, and provide specified details about the discharge. (Santa Barbara Waterfront Department 2007, personal communication with B. Slagle.)

### **3.3.2.2 Graywater Discharge**

#### ***International Law***

There are no international regulations regarding graywater, nor are there any known to be under consideration at this time.

#### ***Federal Law***

The CWA and its implementing regulations, and other broadly applicable federal regulations regarding vessel discharges, neither explicitly prohibit nor explicitly allow graywater discharges from vessels. The CWA provides that the Secretary of Defense shall require the use of a marine pollution control device on board a vessel of the Armed Forces in any case in which it is determined that the use of such a device is reasonable and practicable (33 U.S.C. 1322(n)). In summary, the CWA indicates that a marine pollution control device is any equipment or management practice on board a vessel of the Armed Forces that is designed to receive, retain, treat, control, or discharge a discharge incidental to the normal operation of a vessel (including graywater).

Although, the National Marine Sanctuaries Act implementing regulations (15 CFR Part 922) explicitly address graywater discharges (as defined by section 312 of the CWA), within a subset of national marine sanctuaries, the original CINMS regulations did not. In this SDEIS, the NMSP is proposing that the CINMS prohibition on discharge and deposit include an explicit exception for graywater discharges, in the context of water and other biodegradable effluents, that would only apply to vessels less than 300 GRT, and oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary. The NMSP is also proposing to add the following definition to the National Marine Sanctuary Program regulations at 15 CFR Part 922.71: "Graywater means galley, bath, or shower water." This addition is merely a technical change since the definition is identical to the graywater definition in the currently pending proposed rule, which refers to graywater as defined in the CWA. The new definition of graywater incorporates the definition found in the CWA in order to facilitate understanding of the rule by Sanctuary users.

### *State Law*

The California Clean Coast Act (California Public Resources Code sec. 72420 – 72422) prohibits graywater discharges into marine waters of the state from: large passenger vessels and oceangoing ships with sufficient holding tank capacity. Sec. 72410 indicates that “Graywater” means drainage from dishwasher, shower, laundry, bath, and washbasin drains, but does not include drainage from toilets, urinals, hospitals, or cargo spaces.” This section also defines “large passenger vessel,” “oceangoing ship,” and “sufficient holding tank capacity,” among other terms. This act also requires both regulated classes of vessel to notify the State Water Resources Control Board of any releases of graywater into the marine waters of the state (including state waters within a national marine sanctuary), and to provide to the California State Lands Commission a list of specified vessel data and information for all vessels operating in waters of the state in 2006.

### *Voluntary Agreements*

As noted previously, certain, but not all, cruise line companies have agreed to voluntary pollution reduction measures, including measures pertaining to graywater. Because these measures are voluntary they are not required, not enforced, and compliance with them (or lack thereof) is not monitored or verified.

CLIA members agree not to discharge graywater within four miles of shore (for ships that travel regularly on itineraries beyond the territorial waters of coastal states; CLIA 2006a). When outside four miles of shore, they agree not to discharge graywater unless the vessel is underway at six knots or more. Exceptions for graywater discharge are provided, allowing for “emergency or geographical limitation,” which is not well defined (CLIA 2006a). Since CLIA does not include all cruise ship operators these agreements are not universally followed.

The City of Santa Barbara Waterfront Department requires cruise ships visiting Santa Barbara to sign a Captain’s Declaration stating that no discharge of graywater (TSG) effluent or any conventional graywater, along with other specified pollutants, shall occur within twelve nautical miles from the City of Santa Barbara. The declaration also states that should any such discharge occur the captain will notify the Santa Barbara Harbor Patrol within 24 hours, and provide specified details about the discharge. (Santa Barbara Waterfront Department 2007, personal communication with B. Slagle)

## 4.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

### *Introduction*

This section evaluates the potential environmental consequences of revisions to the Sanctuary discharge regulation, which NOAA originally described in the DEIS proposed action. Current conditions described in section 3.0 of this document provide a baseline for analysis of the revised proposed discharge regulation. This section also describes the NEPA requirements for considering environmental consequences of federal actions, explains the scope of the analysis contained herein, and summarizes the anticipated impacts of the revised proposed discharge regulation. As described in detail below, portions of this section of the SDEIS are intended to replace specific portions of the DEIS.

### NEPA Requirements

NEPA requires consideration of environmental impacts of major federal actions significantly affecting the quality of the human environment (42 U.S.C. 4332 (c)). To determine whether an impact is significant, CEQ regulations require the consideration of context and intensity of potential impacts (40 CFR 1508.27). Context normally refers to the setting, *e.g.*, local or regional, and intensity refers to the severity of the impact. Impacts can either be direct or indirect, and short-term or long-term. Direct impacts are those caused by implementing the proposed activities and that occur at the same time and place as the proposed activities. Indirect impacts are those caused by implementing the proposed activities, but the impacts occur later in time or are farther removed in distance from those activities.

Types of impacts include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), esthetic, historic, cultural, economic, social, and health impacts (40 CFR 1508.8). Applicable impacts considered herein include: physical (water quality) and biological (living marine resources) ecological impacts, along with esthetic (water clarity), historic (shipwrecks and submerged artifacts), and socioeconomic (economic and other effects on Sanctuary users) impacts. For purposes of this SDEIS, the applicable impacts are organized into two categories: 1) impacts on physical, biological, esthetic, and historical resources; and 2) socioeconomic impacts.

### Scope of Analysis

The proposed regulation revisions described herein affect two of the exceptions to the prohibition on discharging or depositing material or other matter into the Sanctuary identified in the DEIS: the exception for treated sewage (clause (B)) and the exception for biodegradable matter including graywater (clause (C)). Proposed revisions would result in substantive changes regarding sewage and graywater, and would also result in minor, non-substantive changes in wording and organization regarding deck wash down and vessel engine cooling water. The revisions would in effect prohibit the following discharges from within or into the Sanctuary: 1) sewage from vessels 300 GRT or more, including cruise ships<sup>20</sup> and oceangoing ships;<sup>21</sup> 2)

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<sup>20</sup> For a definition of “cruise ship” please see footnote 3.

graywater from cruise ships; and 3) graywater from oceangoing ships with sufficient holding tank capacity to hold graywater while within the Sanctuary. As stated in section 1, herein the vessel descriptor “large” refers to vessels 300 GRT or more, and the vessel descriptor “small” refers to vessels less than 300 GRT.

In this SDEIS, NOAA is not proposing to revise any other section of the DEIS proposed action, including other clauses of the discharge prohibition. Therefore, the environmental consequences of clauses (A), (D), (E), and (F) of the exceptions to the discharge regulation, remain as described in DEIS section 4. Final CINMS regulations will be issued after NOAA has released the Final Management Plan/Final EIS. Per NEPA, these final regulations could fall anywhere within the range of alternatives described in the DEIS, and modified by the SDEIS.

### Summary of Impacts

In summary, revisions to the treated sewage discharge exception are expected to have:

- cumulative beneficial impacts on the Sanctuary’s physical, biological, esthetic, and recreational resources;
- less than significant adverse socioeconomic impacts to operators of large vessels; and
- no adverse socioeconomic impacts to other Sanctuary users.

Revisions to the graywater discharge exception are expected to have:

- cumulative beneficial impacts on the Sanctuary’s physical, biological, esthetic, and recreational resources;
- less than significant adverse socioeconomic impacts on operators of large vessels; and
- no adverse socioeconomic impacts on other Sanctuary users.

Potential impacts to large vessel operators are reduced given (1) the limited time these vessels spend transiting the Sanctuary, and (2) the proposed exception to the graywater discharge prohibition for oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary.

## **4.1 IMPACTS FROM REVISIONS TO THE PROPOSED ACTION**

### **4.1.1 Revised Prohibition on Discharging or Depositing – Sewage**

This revised regulation would amend the exception to the prohibition on discharging or depositing sewage from within or into the Sanctuary by providing that the exception would apply exclusively to small vessels (less than 300 GRT) that generate sewage effluent treated by an operable Type I or II marine sanitation device.

This revised prohibition is similar to Prohibition 3 described under alternative 1 in the DEIS, with the exception of several non-substantive wording changes. In addition, when combined

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<sup>21</sup> For a definition of “oceangoing ship” please see footnote 3.

with new information on oceangoing ship discharge practices, it would result in a slightly different suite of impacts than those previously described in the DEIS. Consequently, section 4.1.1, 4.1.1.1, and 4.1.1.2 of this SDEIS replace section 4.1.3.3 of the DEIS.

#### **4.1.1.1 Impacts on Physical, Biological, Esthetic, and Historical Resources**

Overall, this revised prohibition would have a direct long-term beneficial impact on physical, biological, and esthetic resources because it would prohibit cruise ships and oceangoing ships from discharging sewage (treated and untreated) in the Sanctuary.

As described in SDEIS section 3, vessel sewage discharge is more concentrated than domestic land-based sewage, may introduce disease-causing microorganisms (pathogens), such as bacteria, protozoans, and viruses, into the marine environment (EPA 2007a), and may contain high concentrations of nutrients that can lead to eutrophication (the process that can cause oxygen-depleted “dead zones” in aquatic environments). Such sewage discharges, in large volume, could also introduce an unpleasant esthetic impact to the Sanctuary (diminishing Sanctuary resources and its and its ecological, conservation, esthetic, recreational and other qualities). Although large vessels may have type II marine sanitation devices (MSDs) designed to treat sewage (by reducing fecal coliform bacteria and total suspended solids), studies in Alaska of cruise ship waste water discharges have shown high rates of failure in the ability of conventional MSDs to meet legal discharge standards (Alaska Department of Environmental Conservation 2004a). Cruise ships can produce and discharge sewage wastes on par with small cities, yet they are not subject to the same strict environmental regulations and monitoring requirements that land based facilities are required to comply with, such as obtaining discharge permits, meeting numerous permit conditions, and monitoring discharges (NOAA 2003c). This revised regulation would prohibit sewage discharges from large vessels, thereby yielding a beneficial impact to the Sanctuary’s physical, biological and esthetic resources.

Prohibiting large volumes of sewage (treated and untreated) from being discharged in the Sanctuary will avoid potential negative impacts on the Sanctuary’s esthetic qualities, which could affect Sanctuary users (*e.g.*, paddle sports, and commercial and recreational boating, fishing, and diving).

NOAA does not anticipate any measurable impacts on historical resources to result from this revised prohibition. Any potential impacts on historical resources would likely be indirect and beneficial (stemming from benefits to water quality), but less than significant.

#### **4.1.1.2 Socioeconomic Impacts**

Less than significant adverse impacts to operators of affected large vessels (cruise ships and oceangoing ships) are expected from this prohibition because: 1) the presence of cruise ships inside CINMS is not common; 2) the presence of oceangoing ships inside CINMS is limited to the brief duration that these vessels pass through the section of the vessel traffic separation scheme (TSS) that partially overlaps the eastern edge of the Sanctuary); 3) MARPOL and the CWA prohibit these vessels from discharging untreated sewage in state waters (from 0 to 3 nmi from shore); and 4) moving beyond the outer Sanctuary boundary before discharging is not

expected to be infeasible for these large vessels, nor is it expected to yield additional costs. Because large vessels are typically in the Sanctuary only as a function of transiting through the TSS, they would already be spending the fuel and time necessary to get across the Sanctuary and would simply be required to hold their sewage until they are outside the Sanctuary boundary. The TSS is described in detail in section 3 of this SDEIS. This regulation would have no adverse impact on other human uses of the CINMS.

In addition, prohibiting large volumes of sewage (treated and untreated) from being discharged in the Sanctuary may have beneficial esthetic impacts on certain Sanctuary users. For example, boating, paddle sports, fishing, and diving would benefit from not encountering large volume sewage wastewater plumes in the Sanctuary. Furthermore, Sanctuary users who encounter such a sewage wastewater plume may decide to relocate for their activities, thereby demonstrating displacement effects.

#### **4.1.2 Revised Prohibition on Discharging or Depositing – Graywater**

This revised regulation would amend the exception to the prohibition on discharging graywater from within or into the Sanctuary by providing that the exception for graywater is only applicable for small vessels (less than 300 GRT), and for oceangoing ships without sufficient holding tank capacity to hold graywater<sup>22</sup> while within the Sanctuary. Therefore, this prohibition would apply to oceangoing ships with sufficient holding tank capacity to hold graywater while in the Sanctuary, and all other vessels 300 GRT or more. The DEIS did not address the impacts of making an explicit exception for graywater, so the information contained in this section is entirely new information and is not intended to replace any portion of the DEIS.

##### **4.1.2.1 Impacts on Physical, Biological, Esthetic and Historical Resources**

The proposed CINMS definition of “graywater” to be added to the National Marine Sanctuary Program regulations at 15 CFR Part 922.71 would read as follows: “Graywater means galley, bath, or shower water.” Graywater can contain a variety of substances including (but not limited to) detergents, oil and grease, pesticides, and food wastes (Eley 2000). Although little research has been done on graywater impacts on the marine environment, many of the chemicals that have been found in graywater are known to be toxic (Casanova *et al.* 2001). Unlike sewage effluents, graywater effluents are not subject to federal standards for bacteria and other pollutants; however, graywater sampling of cruise ships in Alaska prior to the implementation of Alaska state graywater discharge standards indicated that sampled graywater was similar to sewage in terms of bacteria and total suspended solids (Alaska Department of Environmental Conservation 2001). Graywater is by far the largest source of liquid waste on a cruise ship (Sweeting and Wayne 2003). (Additional background on graywater is provided in SDEIS section 3.)

NOAA considers the prohibition of graywater discharges from large cruise ships and from oceangoing ships with sufficient holding tank capacity to hold graywater while within the

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<sup>22</sup> Many oceangoing ships are designed without the ability to retain graywater, and, as such, must discharge graywater directly as it is produced. See also SDEIS section 3.2.2.

Sanctuary to be a prudent approach to the potential impacts of single point pollution in the Sanctuary. By reducing the potential for introducing pollutants (as mentioned above) into the Sanctuary, prohibiting graywater discharges from large vessels is expected to have a beneficial impact on physical and biological resources. Prohibiting such graywater discharges is anticipated to have a less than significant impact (*i.e.*, none to no measurable impact) on historical resources.

To the extent that large-vessel graywater discharges could be visible, such discharges could have a potential adverse impact on Sanctuary esthetic qualities. Therefore, the prohibition of large-vessel graywater discharges may have a beneficial effect on esthetic qualities of the Sanctuary.

Graywater discharge from small vessels, and from oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary, is anticipated to have a less than significant adverse impact on the Sanctuary's physical, biological, and esthetic resources. Due to the much lower number of people on oceangoing ships (as noted in section 3.1.1, on average oceangoing ships carry crews of approximately 20 people, but may range from five to fifty people), graywater from these vessels is far less in quantity as compared to that from cruise ships, and is not expected to contain the larger volume of possible harmful chemicals that can be found in cruise ship graywater (NOAA 2003c). Should data become available suggesting that excepted graywater discharges within the Sanctuary pose an unacceptable risk to Sanctuary resources and qualities, NOAA may in the future consider further regulating or otherwise addressing graywater discharges. Providing an exception for such graywater discharges is anticipated to have a less than significant impact (*i.e.*, none to no measurable impact) on historical resources.

#### **4.1.2.2 Socioeconomic Impacts**

Less than significant adverse socioeconomic impacts are expected to result from the prohibition on graywater discharges from large vessels because: 1) the presence of cruise ships inside CINMS is not common; 2) the presence of oceangoing ships inside CINMS is limited to the brief duration that these vessels pass through the section of the vessel traffic separation scheme (TSS) that partially overlaps the eastern edge of the Sanctuary; 3) cruise ships and oceangoing ships with sufficient holding tank capacity are already prohibited from discharging graywater in waters of the state, which make up about 43% of the distance across the southeast-bound TSS lane; 4) moving beyond the outer Sanctuary boundary before discharging is not expected to be infeasible for large vessels, nor is it expected to yield additional costs (large vessels are typically in the Sanctuary only as a function of transiting through the TSS, so they would already be spending the fuel and time necessary to get across the Sanctuary and would simply be required to hold their graywater until they are outside the Sanctuary boundary); and 5) oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary would be excepted from the prohibition. Given that cruise ships travel at between 15 to 20 knots, cruise ships should only be in Sanctuary waters for approximately one hour when using the northwest-bound TSS lane, and approximately two to two-and-a-half hours when using the southeast-bound lane. Cruise ships typically have sufficient storage capacity for graywater to allow vessel operations for between one to two days, although there is significant variation among vessels (Pruitt 2004). The average container ship that travels at 25 knots would spend less than one hour in Sanctuary

waters when using the northwest-bound lane, and approximately one-and-a-half hours when using the southeast-bound lane. The TSS is described in detail in section 3 of this SDEIS.

In addition, prohibiting large volumes of graywater from being discharged in the Sanctuary may have beneficial esthetic impacts on certain Sanctuary users. For example, boating, paddle sports, fishing, and diving would benefit from not encountering large volume graywater discharges in the Sanctuary.

The prohibition on graywater discharge from large vessels would have no adverse socioeconomic impact on other human uses of the CINMS.

Because the proposed revised prohibition on graywater discharge would not apply to small vessels, and oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary, there would be no adverse socioeconomic affect on these vessel operators.

## **4.2 OTHER REQUIRED EIS SECTIONS**

### **4.2.1 Irreversible and Irrecoverable Commitment of Resources**

NEPA requires that an EIS analyze any irreversible or irretrievable commitments of resources<sup>23</sup> which would be involved in the proposed action should it be implemented. No irreversible or irretrievable commitment of Sanctuary resources would occur with the implementation of the revised proposed regulations. The primary focus of these regulations is to maximize protection of Sanctuary water quality from the largest sources of single point sewage and graywater discharges, while minimizing the socioeconomic impacts of the Sanctuary's discharge regulations on oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary. Prohibiting sewage and graywater discharges from large vessels (except from oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary) would provide long-term beneficial impacts to the Sanctuary and its resources.

### **4.2.2 Relationship Between Short-Term Costs and Maintenance and Enhancement of Long-Term Productivity**

NEPA also requires that an EIS consider the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. The short-term costs of taking the revised proposed action would be minor when compared to the long-term net benefits to Sanctuary resources and users resulting from balancing improved resource protection with reduced socioeconomic burdens on operators of oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary.

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<sup>23</sup> An irreversible or irretrievable commitment of resources is an action that results in either permanent or long-term loss of resources (*e.g.*, filling in a wetland for building construction).

### **4.2.3 Unavoidable Significant Adverse Impacts**

NEPA also requires that an EIS describe any significant unavoidable impacts for which either no mitigation or only partial mitigation is feasible. (Mitigation is the reduction or elimination of the severity of an impact.) No unavoidable significant adverse impacts were identified for the revised proposed regulations. These revisions would instead be expected to have net long-term beneficial impacts on Sanctuary resources and qualities. Consequently, mitigation measures are not necessary for this analysis.

### **4.2.4 Environmental Justice**

Environmental justice is defined by the U.S. EPA as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

The revised proposed regulations would have no negative effect on the natural or physical environment or health that would affect minority or low-income populations or children when compared to the general population. The CINMS is an uninhabited region. In addition, the project would not increase the risk or rate of environmental hazard exposure by a minority or low-income population. Finally, the revised proposed regulations would have no to less than significant adverse impacts on human uses of the Sanctuary. Therefore, no impacts would occur for any issue related to environmental justice.

## **4.3 CUMULATIVE IMPACTS**

CEQ regulations require assessment of the cumulative impacts of a proposed action (40 CFR Parts 1500-1508). A cumulative impact is an “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over time. The cumulative impacts of the full proposed action may differ slightly as a result of the revisions proposed in this SDEIS. Cumulative impacts that may result from the revisions to the proposed action are discussed in section 4.3 below.

The text below is intended to explain any differences between cumulative impacts originally expected as a result of the proposed action (DEIS section 4.6), and expected with the revised discharge regulation presented in this SDEIS. The following text identifies:

- potential single action cumulative impacts from the revised discharge regulation;
- potential multiple action cumulative impacts from the revised discharge regulation combined with other actions that overlap it in terms of scope, and/or impact zone.

Cumulative impacts of the prohibition on large vessel discharge of sewage and graywater, even when considered in combination with the exception for small vessels and oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary, are

anticipated to remain beneficial for physical, biological, and esthetic resources of the Sanctuary. By prohibiting cruise ships and oceangoing ships from discharging sewage (treated and untreated) into the Sanctuary, the revised regulation is expected to reduce the volume of potentially harmful bacteria, viruses and nutrients associated with vessel sewage waste, thus contributing to the long-term protection of overall Sanctuary water quality and the health of Sanctuary marine life. The prohibition would also provide a long-term reduction of the chance for unpleasant esthetic impacts. Similarly, by prohibiting large volumes of graywater discharge into the Sanctuary from cruise ships, and graywater from oceangoing ships with sufficient holding tank capacity to hold graywater while within the Sanctuary, the revised regulation is expected to reduce the input of detergents, oil and grease, food wastes, bacteria and potentially harmful chemicals associated with graywater (Eley 2000, Casanova *et al.* 2001, Alaska Department of Environmental Conservation 2001), thus contributing to the long-term protection of overall Sanctuary water quality and the health of Sanctuary marine life.

Although prohibiting the discharge of sewage and graywater from large vessels (except oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary) may result in some impacts (see 4.1.1.2 and 4.1.2.2 above), the single action effects are not expected to accumulate over time. Moving beyond the outer Sanctuary boundary before discharging is not expected to be infeasible for large vessels, nor is it expected to yield additional costs. This is true in both single use incidences and cumulatively. Large vessels are typically in the Sanctuary only as a function of transiting through the TSS so they would already be spending the fuel and time necessary to get across the Sanctuary and would simply be required to hold their sewage and graywater until they are outside the Sanctuary boundary. Holding these wastes for the few hours they are transiting across the Sanctuary is well within the capabilities of cruise ships, and there is an exception for oceangoing ships that cannot hold their graywater during the time it takes to transit the Sanctuary.

Additive cumulative impacts upon large cruise ships and oceangoing ships may occur as a result of the full suite of actions contained in the revised proposed action, which would prohibit such vessels from approaching within one nmi of shore, discharging sewage or graywater (except from oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary), and discharging food wastes within the Sanctuary. However, the additive cumulative impacts resulting from the revised proposed action are expected to be less than significant since such large vessels are typically in the Sanctuary only as a function of transiting through the TSS. The TSS does not approach within one nmi of shore, and it is neither infeasible nor impractical for such vessels to refrain from discharging food wastes, sewage, or graywater until they are outside the Sanctuary.

Since cumulative impacts may also result from the revised proposed action coupled with other actions that have the potential to impact the same resources, below is an updated discussion of several other known actions that are closely related to the revised proposed prohibitions as they pertain to large vessels. The bullets below replace those contained in the DEIS cumulative impacts section 4.6, entitled "California Legislation on Large Passenger Vessels," and "Port of Long Beach Expansion." The bullet below on marine reserves and conservation areas replaces the marine reserves and conservation areas portion of the DEIS sec. 4.6 bullet entitled, "Federal Marine Reserves and Conservation Areas and CINMS Boundary Expansion." In addition, below

NOAA provides a description of the cumulative effects of the revised proposed action coupled with the Joint Management Plan Review of the other three California national marine sanctuaries. The DEIS did not discuss the cumulative effects of the proposed action and the Joint Management Plan Review, and NOAA has concluded that it is prudent to include this discussion given the revisions to the proposed action. The revisions to the proposed action do not change any of the remainder of the cumulative effects described in DEIS section 4.6, and as such they remain as described therein.

- **California Clean Coast Act.** The California Clean Coast Act (California Public Resources Code sec. 72420 – 72422) went into effect on January 1, 2006, and is described in more detail in sec. 3 of this SDEIS. It is intended to prohibit releases of graywater, sewage, and sewage sludge into marine waters of the state (including waters within a national marine sanctuary) from both large passenger vessels (cruise ships) and oceangoing ships with sufficient holding tank capacity. Pursuant to section 1322(f) of the CWA, the State of California submitted an application to the U.S. EPA to prohibit sewage and sewage sludge discharges from large passenger vessels and oceangoing ships within state waters. While California is awaiting approval of this application the California Clean Coast Act prohibitions on the release of sewage and sewage sludge discharges from large passenger vessels and ocean ships with sufficient holding tank capacity are not in effect. This act also states that the State Water Resources Control Board shall request the appropriate federal agencies to prohibit the release of sewage sludge (with exceptions for certain emergencies and vessels under innocent passage), by large passenger vessels and oceangoing ships in all of the waters that are in the Channel Islands, Cordell Bank, Gulf of the Farallones, and Monterey Bay national marine sanctuaries. This act also requires both regulated classes of vessels to notify the State Water Resources Control Board of any releases of graywater into the marine waters of the state (including state waters within a national marine sanctuary), and to provide to the California State Lands Commission a list of specified vessel data and information for all vessels operating in waters of the state in 2006.

Additive cumulative impacts upon large cruise ships and oceangoing ships are not expected to occur as a result of this state action coupled with the revised prohibitions, nor coupled with the full revised proposed action. Large vessels in the vicinity of the Channel Islands are customarily in the area to use the TSS. No part of the TSS near the Channel Islands is in state waters but not Sanctuary waters. Therefore, all impacts likely to occur in this area as a result of any future state prohibitions on discharges of sewage or sewage sludge would already have occurred in Sanctuary waters as a result of Sanctuary regulations. Regarding graywater prohibitions, the portion of Sanctuary waters in which state law already prohibits graywater discharges from large cruise ships and oceangoing ships, and through which these ships are likely to travel (the southeast-bound TSS lane) is 16 nmi long. The Sanctuary regulation would only add an additional 21 nmi to that distance through which these ships could not discharge graywater.

- **Port of Long Beach Expansion.** According to the *Port of Long Beach Master Plan* (2003), the Los Angeles Port Authority plans to increase capacity by 100 percent by the year 2020. This will increase both the number and size of the vessels that use the Santa

Barbara Channel. Because large vessel traffic tends to adhere to the voluntary TSS established in the Santa Barbara Channel, and since neither of the associated shipping lanes lies within one nmi of Islands shores, no cumulative impact on large vessel traffic is expected to result from the proposed action's nearshore vessel approach regulation coupled with the Port of Long Beach Expansion. As ship traffic increases with the Port of Long Beach expansion, the revised proposed discharge regulation would apply to this growing number of ships using the Santa Barbara Channel TSS. However, as stated above, it is neither infeasible nor impractical for such vessels (regardless of the number of vessels) to refrain from discharging food wastes, sewage, or graywater until they are outside the Sanctuary. Although prohibiting the discharge of sewage and graywater from an increasing number of large vessels (except from oceangoing ships without sufficient holding tank capacity to hold graywater while within the Sanctuary) may result in some impacts (see 4.1.1.2 and 4.1.2.2 above), the single action effects are not expected to accumulate over time. Consequently, no cumulative impact on large vessel traffic is expected to result from the revised proposed action's discharge regulation coupled with the Port of Long Beach Expansion. Despite the projected future increase in the number of ships using the Santa Barbara Channel TSS, the single action beneficial impact to Sanctuary resources expected to occur would remain single in nature, and would not accumulate over time. However, as ship traffic increases over time, the revised proposed discharge regulation would be preventing an increasing number of potential sewage and graywater discharges that otherwise could have resulted in negative cumulative environmental impacts.

- **Federal Marine Reserves and Conservation Areas.** Since publication of the DMP/DEIS, NOAA established marine reserves and conservation areas in federal waters of the Sanctuary (July 2007). This action is anticipated to have beneficial effects on the Sanctuary's physical, biological, and esthetic resources, as is the revised proposed action. Therefore, cumulative effects of federal marine reserves combined with the revised proposed action are also anticipated to be beneficial for Sanctuary resources. Since the revised proposed action would not impact fishing or other extractive uses impacted by implementation of the federal marine reserves and conservation areas, the cumulative socioeconomic effects of the marine reserves and conservation areas combined with the revised proposed regulatory changes would not be considered significant.
- **Joint Management Plan Review.** In 2007, the Monterey Bay National Marine Sanctuary (MBNMS), Cordell Bank National Marine Sanctuary (CBNMS), and Gulf of the Farallones National Marine Sanctuary (GFNMS), all located off the central California coast, released a draft joint management plan for public review and comment. Like the CINMS draft management plan, this joint plan contained proposed updates to each relevant national marine sanctuary's regulations and non-regulatory programs. NOAA is considering updates to MBNMS, CBNMS, and GFNMS regulations that would limit discharges from large vessels (cruise ships, and vessels greater than 300 GRT) in these sanctuaries. The pending regulations include a prohibition on cruise ship waste discharges (71 FR 194). Additionally, NOAA intends to release a supplemental proposed rule and SDEIS that would propose, in effect, a prohibition on treated sewage discharge from large vessels ( $\geq 300$  GRT) within these three national marine sanctuaries, as well as

a prohibition on large-vessel graywater discharge within the MBNMS. These proposed discharge prohibitions would provide an exception for large vessels that lack sufficient holding tank capacity to retain treated sewage within any of the three sanctuaries, or that cannot retain graywater while within the MBNMS.

NOAA's proposed regulation changes regarding large-vessel sewage and graywater discharges at CINMS, taken in combination with NOAA's regulatory proposals for the central California national marine sanctuaries, would produce a cumulative beneficial effect on the biological, physical and esthetic resources found at each of these sites. The nature of these cumulative beneficial effects expected would be the same as those described in sections 4.1.1.1 and 4.1.2.1 of this document.

Because much of the same shipping traffic and cruise ships that pass through the CINMS may also transit shipping lanes that run through the MBNMS and GFNMS, or call upon ports within or adjacent to these sanctuaries, it is relevant to consider the possible cumulative socioeconomic effects of the collective actions being considered by NOAA for all four California national marine sanctuary sites. NOAA expects that the shipping and cruise line industries will experience less than significant adverse socioeconomic effects from these combined proposed regulatory actions because of the exceptions to be provided. In particular, adverse socioeconomic impacts are avoided because of the exceptions provided for large vessels that cannot retain treated sewage within the much larger (than CINMS) area composed of the three contiguous central California sanctuaries. Furthermore, because the MBNMS contains within its boundaries the longest extent of shipping lanes, relative to other California sanctuaries, adverse socioeconomic impacts are reduced, as with CINMS, because of the proposed exception for graywater discharge from large vessels lacking the ability to retain graywater while within CINMS and MBNMS.

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## APPENDIX A

### MAILING LIST

The following officials, agencies and organizations will receive this Supplemental Draft Environmental Impact Statement (SDEIS). Most of these recipients were on the mailing list for the Draft EIS (May 2006), while new recipients have been added who are affiliated with the shipping industry, port operations, and the cruise line industry. In addition to this mailing list, a longer list of individuals and organizations on the CINMS management plan review mailing list, and over 1000 individuals on the CINMS public interest email list will be notified and informed about the document and how to obtain it. The SDEIS may also be obtained by download from <https://channelislands.noaa.gov> (click on “Management Plan”) or by mail in hard copy format by contacting:

Management Plan Coordinator, CINMS  
113 Harbor Way, Suite 150, Santa Barbara, California, 93109  
or by email at [mp.request@noaa.gov](mailto:mp.request@noaa.gov)  
or by fax to (805) 568-1582.

#### *Elected Officials*

##### United States Senate

- The Honorable Barbara Boxer
- The Honorable Diane Feinstein

##### United States House of Representatives

- The Honorable Lois Capps
- The Honorable Elton Gallegly

##### United States Senate and House Committees

- Chair, Senate Committee on Commerce, Science, and Transportation
- Vice Chair, Senate Committee on Commerce, Science, and Transportation
- Chair, House Committee on Natural Resources

#### *Federal Agencies and Councils*

Department of Energy, Director, Office of Environmental Policy and Guidance

##### Department of Transportation

- Assistant Secretary for Governmental Affairs
- Maritime Administrator, Federal Maritime Administration
- Associate Administrator, Federal Aviation Administration, Office of Commercial Space Transportation

Department of the Interior

- Director, Office of Environmental Policy and Compliance
- U.S. Fish and Wildlife Service, Regional Director, Pacific Region
- Minerals Management Service, Regional Manager, Pacific OCS Region
- National Park Service, Director, Pacific West Region
- National Park Service, Superintendent, Channel Islands National Park
- Los Padres National Forest

Department of State, Deputy Assistant Secretary for Oceans and Fisheries

Department of Defense

- Assistant Deputy Under Secretary for Defense for Environment
- Deputy Assistant Secretary of the Navy (Environment)
- Deputy Assistant Secretary of the Air Force (Environment, Safety and Occupational Health)

National Aeronautics and Space Administration

- Director, Environmental Management Division
- Director, Ames Research Center

United States Coast Guard

- Commander, 11th Coast Guard District
- Chief, Law Enforcement Division, 11th Coast Guard District
- Living Marine Resources Officer, Law Enforcement Division, 11th Coast Guard District
- Staff Attorney, Environmental Law Branch, Legal Division, Maintenance and Logistics Command Pacific
- Commander, Coast Guard Sector Los Angeles-Long Beach
- Commanding Officer, Coast Guard Station Channel Islands
- Commanding Officer, Marine Safety Detachment Santa Barbara

United States Army Corps of Engineers, District Commander, Los Angeles District

United States Federal Maritime Commission, Secretary

National Oceanic and Atmospheric Administration

- Deputy Assistant Administrator, NOAA National Marine Fisheries Service
- NOAA Fisheries Southwest Region, Regional Administrator
- Assistant Administrator, NOAA National Environmental Satellite, Data, and Information Service
- NOAA Coastal Services Center
- National Environmental Satellite, Data, and Information Service (NESDIS), Polar Operational Satellite Program

Pacific Fishery Management Council

- Executive Director and Chair

United States Environmental Protection Agency

- Director, Office of Federal Activities
- Region IX, Federal Activities Branch, Communities and Ecosystem Division
- Director, Office of Ocean, Wetlands, and Watersheds

***Tribal Government***

- Tribal Chairman, Santa Ynez Band of Chumash Indians
- Tribal Environmental Manager, Santa Ynez Band of Chumash Indians

***State Agencies, Commissions, Committees and Boards:***

- Governor, State of California
- Secretary of Resources, California Resources Agency
- State Historic Preservation Officer, California State Historical Resources Commission
- Director, California Department of Fish and Game
- Chair and Members, Harbor Safety Committee, Los Angeles/Long Beach Harbor
- Executive Director, California Fish and Game Commission
- Director, California Department of Parks and Recreation
- Director, California Department of Water Resources
- Executive Officer, California State Lands Commission
- Director, California Department of Boating and Waterways
- Chairman, California Boating and Waterways Commission
- Director, California Department of Conservation
- Executive Director, California Coastal Commission
- Secretary, California Environmental Protection Agency
- Chair and Executive Officer, California State Water Resources Control Board
- Beach Erosion Authority for Clean Oceans and Nourishment (BEACON)
- Chair, California State Assembly Committee on Natural Resources
- Program Manager, Wastewater Discharge Program, Division of Water, Alaska Department of Environmental Conservation

***Local Government:***

County Government:

- Santa Barbara County, Board of Supervisors
- Santa Barbara County Water Agency
- Santa Barbara County Planning and Development, Director
- San Luis Obispo County Planning Department
- Ventura County Board of Supervisors
- Ventura County Executive Officer
- Ventura County Harbor Department, Director

- Ventura County Library
- Ventura County Planning Division, Supervisor of Regional Programs

Municipal Entities:

- Goleta Sanitary District
- Mayor, City of Morro Bay CA
- Montecito Sanitary District
- Morro Bay Harbor, Director
- Port of Hueneme/Oxnard Harbor District, Executive Director
- Port San Luis Harbor District
- Santa Barbara City, Wastewater System Manager
- Santa Barbara City Creeks Division, Parks and Recreation Department
- San Buenaventura City, Economic Development Director
- Santa Barbara, Mayor of
- Santa Barbara Harbor, Harbor Operations Manager
- Santa Barbara Public Library, Reference Department
- Santa Barbara Waterfront Department, Director
- Ventura Port District, General Manager
- Ventura Harbor, Harbor Master

*Sanctuary Advisory Council Representatives as of January 2008*

Aschemeyer, Capt. Manfred H.K. (Manny)

Bacon, Capt. David – Wave Walker Charters, Santa Barbara CA

Baird, Brian – California Resources Agency

Black, Dianne – Santa Barbara County

Boone, Amy – California Resources Agency

Baker, Lauri – Hotel Sales and Marketing, Santa Barbara

Broitman, Bernardo – National Center for Ecological Analysis and Synthesis

Bull, Ann – Minerals Management Service

Cabugos, Paulette – Chumash Maritime Association

Carey, Barbara – California Coastal Commission, Ventura CA

Dunn, W. Scott - Adventours Outdoor Excursions

Fien, Ronald – U.S. Coast Guard

Galipeau, Russell – Channel Islands National Park

Gibbs, Michelle – Santa Barbara County

Greene, Carolyn – Channel Islands Naturalists Corps

Grifman, Phyllis – Sea Grant, University of Southern California

Helms, Greg – The Ocean Conservancy

Hudson, Steve – California Coastal Commission, Ventura CA

Kett, Eric – Sea Zen Marine Consulting (former) and Ranch Property Manager, Santa Barbara County, CA

Krieger, Lyn – Ventura County Harbor Department

Krop, Linda – Environmental Defense Center

Manson, Marilyn – Ventura County Harbor Department

Marshall, Jim – Commercial Fisherman, Santa Barbara CA  
McCrea, Merit – SeaHawk Sportfishing Charters (former) and UC Santa Barbara  
Moe, Andrea – Island Packers, Inc.  
Neuman, Melissa – National Marine Fisheries Service  
Pagaling, Reggie– Santa Ynez Band of Chumash Indians  
Petras, Elizabeth – National Marine Fisheries Service  
Piltz, Fred – Minerals Management Service  
Powell, Dan – Oceanographer, Santa Barbara Applied Research  
Schobel, Walter – U.S. Air Force  
Schwartz, Steven – U.S. Navy  
Spicer, William – Western Gate Publishing  
Steele, Bruce – Commercial Urchin Fisherman, Santa Barbara CA  
Ugoretz, John – California Department of Fish and Game  
Vojkovich, Marija – California Department of Fish and Game  
Warner, Robert – University of California, Department of Ecology, Evolution, and Marine Biology  
Young, Scott – U.S. Coast Guard

***Sanctuary Advisory Council Working Groups (active as of 2007)***

Sanctuary Education Team  
Conservation Working Group  
Chumash Community Working Group  
Commercial Fishing Working Group  
Recreational Fishing Working Group

***Other Private Organizations and Businesses***

Bluewater Network  
California Association of Harbor Masters and Port Captains  
California Coastal Protection Network  
California League of Conservation Voters, Headquarters and Santa Barbara  
Chumash Maritime Association  
Cruise Lines International Association  
League of Women Voters, Santa Barbara  
Marine Exchange of Southern California  
Natural Resources Defense Council  
North West Cruise Ship Association  
Ocean Futures Society  
Pacific Merchant Shipping Association  
Santa Barbara ChannelKeeper  
The Ocean Conservancy

## APPENDIX B

### LIST OF PREPARERS

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Years of Experience: 6

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M.A., 1999, Environmental Policy, Monterey Institute of International Studies

Years of Experience: 7

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Ph.D., 2007, Ecological Physiology/Invertebrate Zoology, University of California Santa Barbara

Years of Experience: 8

MacWilliams, Sarah. Management Plan Specialist, NOAA Channel Islands National Marine Sanctuary

B.A., 1997, Environmental, Population, and Organismic Biology, University of Colorado, Boulder

B.A., 1997, Cultural Anthropology, University of Colorado, Boulder

Master of Marine Affairs, 2002, Marine Resource Management, and Policy, University of Washington, School of Marine Affairs

Years of Experience: 9

Mobley, Chris. Superintendent, NOAA Channel Islands National Marine Sanctuary

B.A., 1984, Biology, Dartmouth College

M.S., 1987, Oceanography, University of Washington

M.B.A., 1999, Sonoma State University

Years of Experience: 19

Murray, Michael. Management Plan Coordinator, NOAA Channel Islands National Marine Sanctuary

B.S., 1988, Business Administration, California University Long Beach

M.S., 1997, Environmental Studies (Policy and Planning), California State University Fullerton

Years of Experience: 12

Scalliet, Helene. Program Specialist, NOAA National Marine Sanctuary Program  
B.S., 2001, Aquatic Biology, University of California, Santa Barbara  
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Years of Experience: 4

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B.S., 2000, Environmental Science, Rutgers University  
M.S., 2006 Marine Science, University of California, Santa Barbara  
Years of Experience: 5

## APPENDIX C

### PERSONS AND AGENCIES CONTACTED

#### California Coastal Commission

Peter Douglas, Executive Director  
Mark Delaplaine, Federal Consistency Supervisor  
Cassidy Teufel, Coastal Program Analyst

#### California State Lands Commission

Nicole Dobroski, Environmental Scientist

#### California State Water Resources Control Board

Dominic Gregorio, Senior Environmental Scientist,  
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Phillip Isorena, Senior Water Resource Control Engineer,  
Chief, NPDES Unit, Regulatory Section, Division of Water Quality

Renan Jauregui, Water Resource Control Engineer,  
NPDES Unit, Regulatory Section, Division of Water Quality

Kim Ward, Environmental Scientist,  
Ocean Standards Unit, Stormwater Section, Division of Water Quality

#### City of Santa Barbara

Brian Slagle, Administration/Administrative Analyst, Waterfront Department

#### City of Oxnard

William Berg, Director of Marketing

#### Department of the Interior

National Park Service  
Jack Fitzgerald, Chief Ranger, Channel Islands National Park

#### Marine Exchange of Southern California

Captain Manfred H.K. (Manny) Aschemeyer, Executive Director  
Captain Dick McKenna, Deputy Executive Director

#### U.S. Coast Guard

CWO3 Michael S. Young, Sr. Marine Inspector, Lead Marine Investigator,  
Marine Safety Detachment, Santa Barbara, California

U.S. Environmental Protection Agency

Ginette Chapman, Office of Regional Counsel, Region IX

Allan Ota, Ocean Disposal Coordinator, Ocean Dumping Program, Region IX

## APPENDIX D

### ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AFB	Air Force Base
AIS	automatic identification system
ASBS	Area of Special Biological Significance
ATBA	area to be avoided
CAA	Clean Air Act
CCA	California Clean Coast Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CINMS	Channel Islands National Marine Sanctuary
CINP	Channel Islands National Park
CLIA	Cruise Line Industry Association, Inc.
COLREGS	Convention on International Regulations for Prevention of Collisions at Sea
CSLC	California State Lands Commission
CWA	Clean Water Act ( <i>also known as Federal Water Pollution Control Act</i> )
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
DMP	Draft Management Plan
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement ( <i>NEPA</i> )
ESA	Endangered Species Act ( <i>Federal</i> )
FWPCA	Federal Water Pollution Control Act ( <i>also known as Clean Water Act</i> )
GAO	Government Accounting Office
GIS	geographic information system
GRT	gross registered tons
IMO	International Maritime Organization
MARPOL	International Convention for the Prevention of Pollution from Ships
MBNMS	Monterey Bay National Marine Sanctuary
MHR	Maritime Heritage Resource

MSD	marine sanitation device
N	North
NCCOS	National Centers for Coastal Ocean Science
NEPA	National Environmental Policy Act ( <i>Federal; 1969</i> )
nmi	nautical mile(s)
NMSA	National Marine Sanctuaries Act
NMSP	National Marine Sanctuary Program
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System ( <i>CWA</i> )
NPS	nonpoint source
NRC	Natural Research Council
OPA	Oil Pollution Act of 1990
OSPR	Office of Oil Spill Prevention and Response
PCB	polychlorinated biphenyl
PISCO	Partnership for Interdisciplinary Study of Coastal Oceans
P.L.	public law
PTSA	Port and Tanker Safety Act
PVA	Public Vessel Act
PWSA	Ports and Waterways Safety Act
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SAC	Sanctuary Advisory Council
SAMSAP	Sanctuary Aerial Monitoring and Spatial Analysis Program
Sanctuary	Channel Islands National Marine Sanctuary
SBCAPCD	Santa Barbara County Air Pollution Control District
SCAB	South Coast Air Basin
SCB	Southern California Bight
SCCWRP	Southern California Coastal Water Research Project
SCR	submerged cultural resource
SDEIS	Supplemental Draft Environmental Impact Statement
SEIS	Supplemental Environmental Impact Statement
SLC	(California) State Lands Commission
SST	sea surface temperature
SWQPA	State Water Quality Protection Area
SWRCB	State Water Resources Control Board ( <i>California</i> )
TEU	twenty-foot equivalent units
TSG	treated sewage or graywater
TSS	Traffic Separation Scheme

UNCLOS	United Nations Convention on the Law of the Sea
U.S.C.	United States Code
USCG	U.S. Coast Guard
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
W	West
WDR	Waste Discharge Requirement
WSPA	Western States Petroleum Association



