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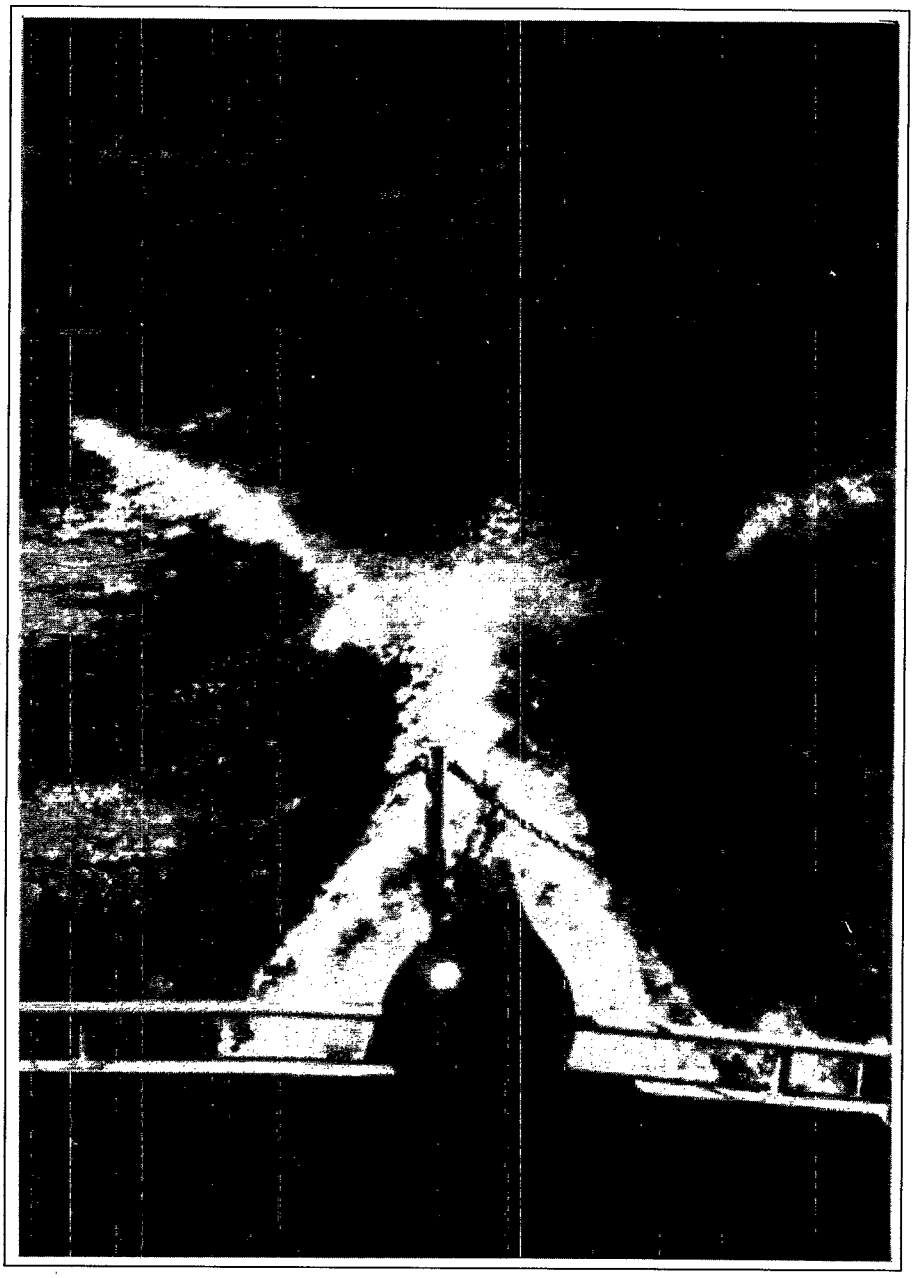
Report to Congress On Ocean Dumping 1987 - 1990



Administration of Title I Of The Marine Protection, Research, And Sanctuaries Act of 1972, As Amended (P.L. 92-532) For Years 1987 - 1990

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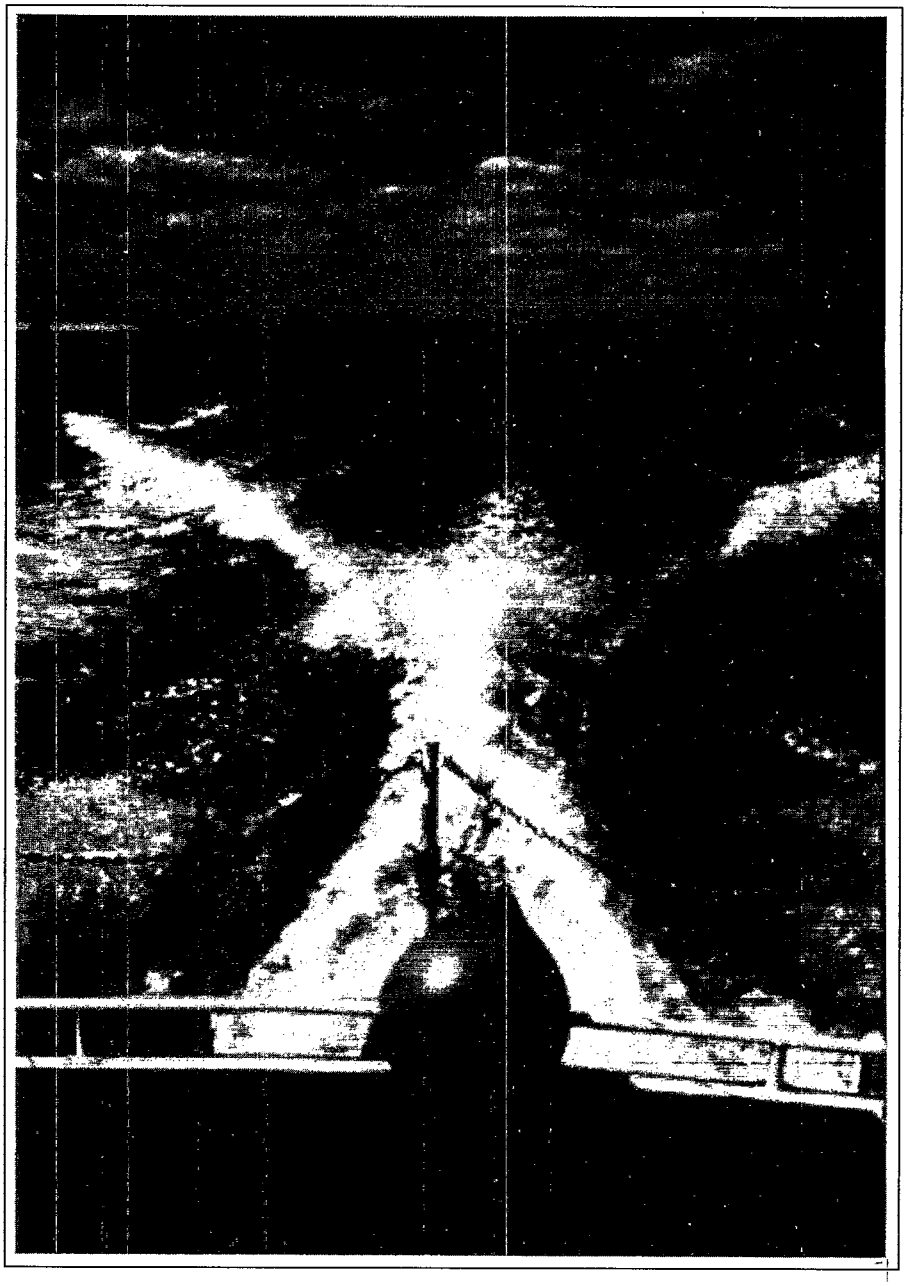

Administration of Title I Of The Marine Protection, Research, And Sanctuaries Act of 1972, As Amended (P.L. 92-532) For Years 1987 - 1990

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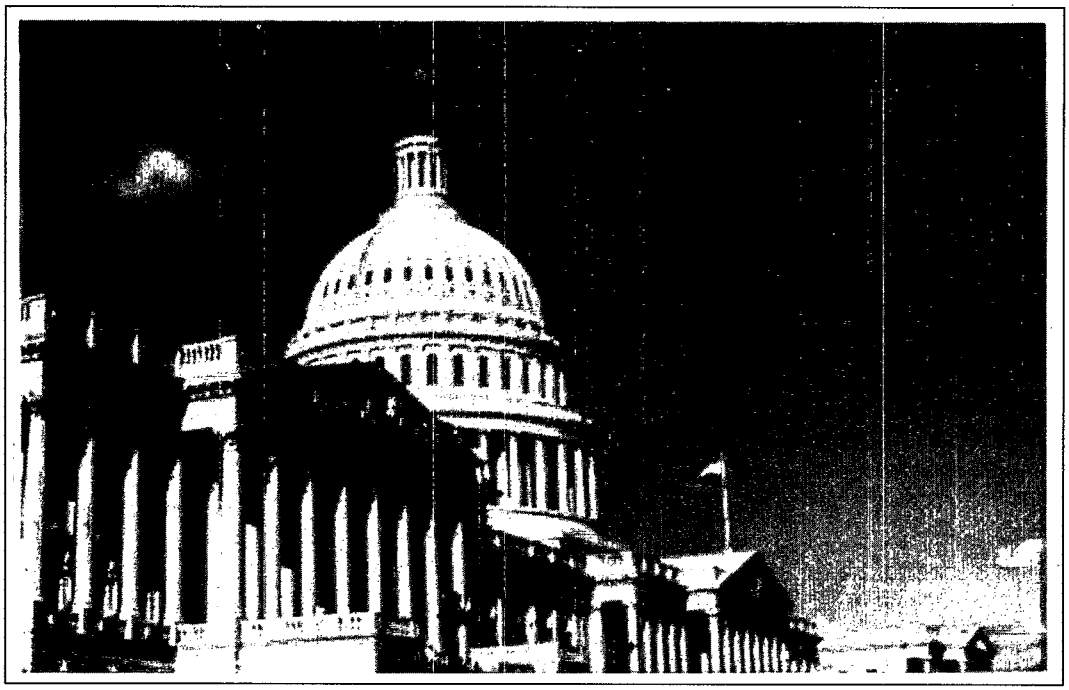
Executive Summary



About This Report

This Report to Congress, covering Calendar Year 1987 through Fiscal Year 1990, summarizes the Environmental Protection Agency's (EPA) activities in carrying out its responsibilities under Title I of the Marine Protection, Research, and Sanctuaries Act (MPRSA) and its 1988 amendment, the Ocean Dumping Ban Act (ODBA). ODBA makes the ocean dumping of industrial waste and municipal sewage sludge unlawful after December 31, 1991.

EPA's Office of Water (OW) in conjunction with EPA Regional Offices have responsibilities under MPRSA to regulate and monitor ocean disposal of municipal sewage sludge, industrial waste, and dredged materials as well as incineration-at-sea. In addition to administering MPRSA and ODBA, OW:

- Continued its participation in the work of the London Dumping Convention (LDC), the international agreement that addresses the dumping of wastes into the marine environment;
- Continued monitoring and public education activities aboard the Ocean Survey Vessel PETER W. ANDERSON; and
- Collaborated in programs with other organizations involved in marine protection.

Highlights of Progress

Significant activities during this reporting period include the following:

ODBA. Congress passed the Ocean Dumping Ban Act and the President signed it into law in November 1988. During this reporting period, EPA has made major progress in administering ODBA.

Dredged Material Disposal Sites. EPA has successfully delegated responsibility for the designation of disposal

sites to its Regional Offices. In concert with the Corps of Engineers (COE), EPA is also developing revised regulations and national guidance for use by EPA's Regional Offices and the COE's District Offices.

Incineration-At-Sea Program. EPA has suspended the incineration-at-sea of industrial wastes.

More specifically, the following progress was made during this reporting period:

Ocean Dumping Ban Act

In September 1988, dumping of industrial wastes into the ocean was stopped.

EPA and the States of New York and New Jersey successfully negotiated enforcement agreements with the nine sewerage authorities in those two states to end ocean dumping of sewage sludge in August 1989. EPA, at the same time, issued permits to control dumping activities during the phase-out period. As required by ODBA, the enforcement agreements include schedules for implementing interim and final land-based alternatives to ocean dumping, reporting requirements for monitoring implementation progress, and provisions for payment of ocean dumping fees and penalties.

EPA continued to provide technical assistance to the sewerage authorities impacted by ODBA. EPA organized a roundtable discussion in November 1989 that brought together municipal sewerage officials to discuss implementation of land-based sludge management alternatives. A second meeting pursuing beneficial uses of sewage sludge was conducted in September 1990. Another is being considered for Fiscal Year 1992.

EPA, the National Oceanic and Atmospheric Administration (NOAA), and the United States Coast Guard (USCG) held a workshop in March 1989 in Ocean City, New Jersey, to discuss updating the existing monitoring plan for the 106-Mile Sewage Sludge Site and to develop a strategy for future research, monitoring, and surveillance. In addition to government officials, scientists, fishermen, policy experts, and representatives of environmental interest groups were in attendance. Their findings and recommendations were published in the Proceedings of the Ocean Dumping Workshop 106-Mile Site (EPA, 1989h).

EPA, NOAA, and the USCG developed a joint strategy for research, monitoring, and surveillance of the remaining dumping activities under ODBA and, to define the role each will play in this effort, signed a Memorandum of Understanding (MOU) in April 1990. Research, monitoring, and surveillance activities have been implemented at the 106-mile site under this MOU and a joint research, monitoring and surveillance plan was published in December 1990 (EPA 1990d).

USCG installed an Ocean Dumping Surveillance System (ODSS), known as "the black box," aboard all sludge barges as a deterrent to illegal dumping.

In response to ODBA's requirements, EPA submitted the following Reports to Congress in 1989 and 1990:

- *Progress in Stopping Ocean Dumping Report to Congress (EPA, 1989d)*
- *Surveillance and Enforcement of Sewage-Sludge Dumping Report to Congress (EPA, 1989g)*
- *Ocean Disposal Monitoring Programs in Response to the Ocean Dumping Ban Act Report to Congress (EPA, 1990a)*
- *Sludge Recycling Alternatives Report to Congress (EPA, 1990c)*

Dredged Material Disposal

In December 1986, EPA delegated responsibility for designating disposal sites for dredged material, fish wastes, and woodburning to its Regional offices to enhance local coordination and accelerate decision-making. During the period

covered by this report, 34 dredged material sites received final designation and 10 were dedesignated.

EPA is currently developing regulations and national guidance for use by EPA Regional offices and COE District offices. These offices are currently developing MOUs to cover dredged material disposal activities in their areas. Specifically, the following regulations and guidance are being developed:

Regulations. Because scientific advances have increased understanding of the marine environment, EPA is currently revising the ocean dumping regulations. The revisions governing ocean dumping of dredged material will incorporate program and technical experience and improve clarity and organization.

The Testing Manual. A revised draft of the document entitled "Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual" (formerly entitled "Ecological Evaluation of Proposed Discharge of Dredged Material Into Ocean Waters") was released for public comment in April 1990. The criteria for ocean disposal of dredged material are established in the ocean dumping regulations, which, among other things, utilize bioassay and bioaccumulation testing in determining the acceptability of material for ocean disposal. The testing manual provides technical guidance on the testing procedures to be utilized and how to interpret the results of the tests conducted.

Other Guidance. EPA and COE are developing three other documents to provide state-of-the-art guidance on technical issues for managing ocean disposal sites for dredged materials. These other documents include:

- A comprehensive, national management strategy for all dredged material disposal that comes under the authorities of MPRSA and the Clean Water Act;
- A document which describes the regulatory requirements and technical rationale for site designation, monitoring, and management; and
- A third document which describes permitting regulations and procedures.

Incineration-at-Sea

EPA suspended the incineration-at-sea program in February 1988. The last incineration site was dedesignated on February 19, 1991. No other sites are designated for incineration-at-sea.

Enforcement

In July 1988, EPA issued administrative complaints against all nine municipal sewage sludge dumpers for violating sludge disposal conditions. Various other administrative complaints were also lodged in 1989 and 1990 against individual sewage sludge dumpers for matters involving sludge spills and permit violations. In addition to its sewage sludge enforcement activities, EPA issued an administrative complaint in 1988 against a port authority and its dredging contractor for improper disposal of dredged material.

For the Future

In the future, EPA's ocean dumping program will focus on three primary areas:

- Sewage Sludge Disposal, Site Monitoring, and Phase-Out Activities;
- Dredged Material Disposal, Site Designation and Monitoring; and
- Enforcement of MPRSA and ODBA Laws and Regulations.

Sewage Sludge Disposal, Site Monitoring, and Phase-Out Activities. EPA will continue close oversight of the sewage sludge dumpers to ensure that they meet conditions of their permits, enforcement

agreements, and phase-out schedules. Technical assistance will be a key element in efforts to help them implement alternative disposal options. Monitoring surveys at the 106-Mile Site will be conducted to determine potential nearfield and farfield effects of sewage sludge to see if modifications to the specified dumping rates or other permit conditions are needed.

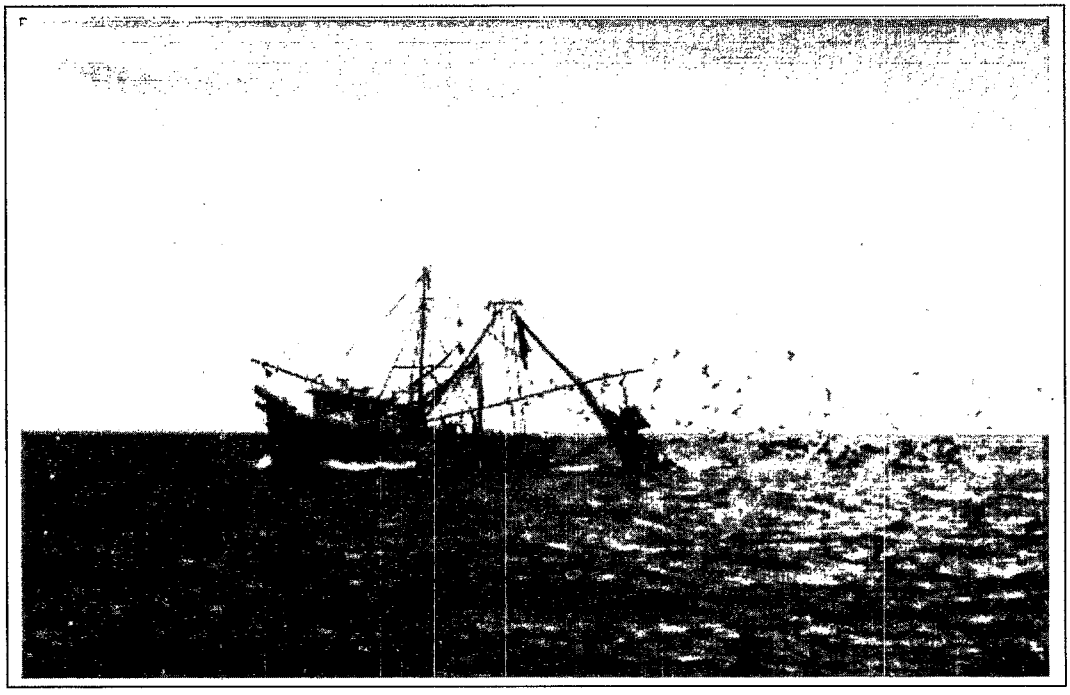
Dredged Material Disposal, Site Designation and Monitoring. In response to increasing public concern about the potential health and ecological risks posed by contaminated sediments, EPA will increase oversight of dredged material disposal operations. EPA intends to propose revised ocean dumping regulations for dredged material in 1991 and will begin implementing the revised testing manual. The revision will contain state-of-the-practice testing procedures and technical guidance for determining the acceptability of dredged material for ocean disposal and is likely to be more stringent than earlier procedures.

Enforcement of MPRSA. EPA is acting to improve its MPRSA enforcement capabilities by developing a comprehensive enforcement strategy and action plan for the MPRSA. This strategy and action plan will be aimed at improving the enforcement program by:

- Improving the enforceability of permit terms and conditions;
- Enhancing interagency enforcement cooperation; developing public education tools to enhance compliance;
- Implementing an enforcement training program for EPA Regions and other interested agencies; and
- Improving detection and identification of violations.

Another area that EPA will address is development of long-term management strategies (LTMS) for entire estuarine and coastal systems. EPA and the Corps of Engineers held a major conference on LTMS in late January 1991.

Chapter 1. Introduction



About This Report

This report summarizes the U.S. Environmental Protection Agency's (EPA) progress from 1987 to 1990 in meeting the requirements of Title I, Marine Protection, Research, and Sanctuaries Act (MPRSA), commonly known as the Ocean Dumping Act, and its amendment, the Ocean Dumping Ban Act (ODBA). (See Exhibits 1 and 2.)

Data on the status of site designations, volumes of municipal sewage sludge dumped, and numbers of surveys conducted are also provided.

The report is organized as follows:

Chapter 1 - Introduction

Overview of MPRSA's requirements and EPA's and other Federal agencies' responsibilities under MPRSA.

Chapter 2 - London Dumping Convention

The purpose of the London Dumping Convention and its relationship to MPRSA; summary of the results of Consultative Meetings.

Chapter 3 - Ocean Disposal of Dredged Material

EPA's managing and monitoring activities for ocean disposal of dredged material; the status of dredged material site designations for each EPA coastal region.

Chapter 4 - Ocean Disposal of Municipal Sewage Sludge

Current status of sewage sludge disposal activities, focusing on EPA's responsibilities for implementing the Ocean Dumping Ban Act.

Chapter 5 - Ocean Disposal of Industrial Wastes and Other Materials

Current status of ocean disposal of industrial wastes and materials such as wood and fish waste; a summary of EPA's incineration-at-sea program.

Chapter 6 - Monitoring Activities Conducted Aboard

Exhibit 1

Major Legislative Provisions Under MPRSA

Statute Section	Purpose
Section 101	Prohibits, unless authorized by permit, (1) the transportation of material from the U.S. for the purpose of ocean dumping, (2) the transportation of material from any location for the purpose of ocean dumping by U.S. flagged or registered vessels, and (3) the dumping of material from a location outside the U.S. into the U.S. Territorial Seas or into the Contiguous Zone if such dumping would affect the territorial sea.
Section 102	Authorizes EPA to designate sites for disposal of material, and to issue permits for dumping of nondredged materials into ocean waters if the materials will not "unreasonably degrade or endanger" public health or the marine environment. Directs EPA to establish criteria to assure that marine waters are protected and to allow for the review of permit applications.
Section 103	Authorizes Corps of Engineers to issue permits, subject to EPA review, for dumping dredged materials into ocean waters, applying EPA's environmental criteria to ensure action will not unreasonably degrade or endanger human health or the marine environment. EPA has final authority to determine whether a permit is in compliance with its Section 102 criteria. Directs COE to utilize EPA designated sites, to the extent possible, in selecting dumping locations.
Section 104	Specifies conditions to be included in permits issued under the Act.
Section 107	Authorizes EPA and Corps of Engineers to obtain the assistance of other agencies, and instructs the Coast Guard to conduct surveillance to prevent unlawful dumping.

Exhibit 2

MPRSA Changes Pursuant to ODBA

The Ocean Dumping Ban Act (ODBA) of 1988 added new requirements to the Marine Protection Research, and Sanctuaries Act (MPRSA) as follows:

Section 104 B	Requirement
(a)(1)(i)	No person shall dump into ocean waters, or transport for the purpose of dumping into ocean waters, sewage sludge or industrial waste unless such person enters into a compliance or enforcement agreement and has obtained a permit under Section 102 which authorizes such transportation and dumping.
(a)(1)(ii)	After 12/31/91, it shall be unlawful for any person to dump into ocean waters, or to transport for the purposes of dumping into ocean waters, sewage sludge or industrial waste.
(a)(2)	No permits shall be issued which authorize a person to dump into ocean waters, or to transport for the purposes of dumping into ocean waters, sewage sludge or industrial waste, unless that person was authorized by a permit issued under Section 102 or by a court order to dump sewage sludge or industrial waste on 9/1/88.
(b)(1)	Any person who dumps into ocean waters, or transports for the purpose of dumping into ocean waters, sewage sludge or industrial waste, shall be liable for a fee equal to $100/dry ton from the date of enactment and before 1/1/90; $150/dry ton on or after 1/1/90 and before 1/1/91; $200/dry ton on or after 1/1/91 and before 1/1/92.
(d)(1)	Establishes civil penalties for missing the 12/31/91 dumping termination dates; penalties shall be $600/dry ton in 1992; penalties paid after 1992 escalate yearly and are calculated as the sum of the penalty/dry ton from the preceding year, plus ten percent of such amount, plus an additional one percent of such amount for each year beyond 12/31/91.
Other ODBA Requirements include environmental monitoring in the vicinity of the 106-Mile Site and preparation of Reports to Congress on monitoring and progress being made in stopping ocean dumping.	

The OSV PETER W. ANDERSON

Recent monitoring activities conducted aboard EPA's ocean survey vessel, the OSV PETER W. ANDERSON.

Chapter 7 - EPA's Marine Protection Programs and Policy

EPA's progress in implementing its marine protection programs.

Regulatory Background

Between 1972 to 1988, MPRSA regulated the transportation to and dumping of materials into the ocean. However, in November 1988, Congress amended MPRSA by passing the Ocean Dumping Ban Act (ODBA) that phases out the dumping of municipal sewage sludge and industrial waste. (See Exhibits 1 and 2.)

Under ODBA, transporting for the purpose of dumping municipal sewage sludge or industrial wastes into the ocean became illegal as of August 14, 1989, unless the dumper held an EPA permit. In addition, ODBA required the dumpers to enter into a compliance or enforcement agreement that includes schedules to phase out their dumping activities by December 31, 1991. After that date, ocean dumping will be unlawful. Any dumping that occurs after 1991 will result in financial penalties which increase over time. Because sewage sludge dumpers are located in EPA's Region II, the development of permit terms and schedules for dumping phase-out have primarily been the responsibility of the Region with Headquarters assistance and support.

When MPRSA was passed in 1972, it was the first law to regulate dumping into the ocean of materials that could adversely affect human health, the marine environment, or the economic potential of the ocean. Its authority covers the Territorial Sea, which extends from mean low water on the shore out to 3 nautical miles (nmi), the Contiguous Zone (3 to 12 nmi), and the open ocean (beyond 12 nmi), and regulates dumping of all types of material, including dredged materials, sewage sludge, industrial wastes, solid wastes, incinerator residues, and low-level radioactive wastes. MPRSA further prohibits dumping of high-level radioactive wastes; biological, chemical, or radiological warfare materials. In November 1988, the MPRSA was amended to add medical wastes to the list of prohibited materials.

EPA's Office of Marine and Estuarine Protection (OMEP) within the Office of Water implements MPRSA by carrying out permitting and site designation activities:

Permits

Dumping at designated sites requires a permit, and EPA and COE share the permitting authority. The COE is responsible, subject to EPA review, for permitting disposal of dredged material. EPA is responsible for permitting dumping of all other types of materials. MPRSA prohibits EPA from issuing permits for the dumping of low-level radioactive waste, unless authorized by a joint resolution of Congress. High level radioactive waste disposal is absolutely prohibited.

MPRSA specifies that permits may be issued upon a determination that "... dumping will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." [Sections 102(a) and 103(a)].

EPA and COE evaluate requests for permits to determine compliance with the Ocean Dumping Regulations (40 CFR Parts 220-229). In addition, MPRSA requires public notice and an opportunity for a public hearing prior to issuing a permit. EPA does not issue permits for ocean disposal of wastes if a technically feasible disposal alternative with less overall environmental impact is available. EPA and the

COE periodically review the permits they have issued and revoke, suspend, or modify them as necessary.

EPA issues five types of permits: General, Special, Emergency, Interim, and Research.

General Permits

General permits issued by EPA cover burial at sea, transportation and sinking of target vessels by the United States Navy, and transportation and disposal of scrap vessels under certain specified conditions.

Special Permits

Special permits are issued to dump materials that satisfy the criteria stated in the Ocean Dumping Regulations (40 CFR Part 227). These criteria require consideration of the environmental effect of the dumping operation; the need for ocean dumping; alternatives to ocean dumping; and the effect of the dumping on esthetic, recreational, and economic uses of the ocean. Special permits are effective for a maximum of three years.

Emergency Permits

Emergency permits are issued to dump materials that pose an imminent risk to human health and for which there is no other feasible alternative. The last emergency permit was issued in 1984.

Interim Permits

Interim permits are issued for dumping of materials when all the requirements for a special permit are not met, or for which only an interim ocean disposal site has been designated. Ocean Dumping Regulations (40 CFR Part 220) list specific requirements. Interim permits expire after a maximum of one year. The only current use of interim permits is to control burning at the Woodburning Site of wood debris collected from the New York Harbor area. EPA continues to evaluate this activity. Woodburning activities are described further in Chapter 5, Ocean Disposal of Industrial Wastes and Other Materials.

Research Permits

Research permits have been issued in the past for dumping industrial waste into the ocean as part of a research project; however, Section 1003 of the ODBA repeals the MPRSA provision governing these permits.

Site Designation

MPRSA authorizes the EPA to recommend sites where ocean dumping may be permitted and, when necessary to protect critical areas, to designate sites where certain materials may not be dumped. This authority includes designation of sites for all types of materials. In issuing permits for dredged material disposal, the MPRSA directs the United States Army Corps of Engineers (COE) to use the EPA-designated sites to the extent feasible.

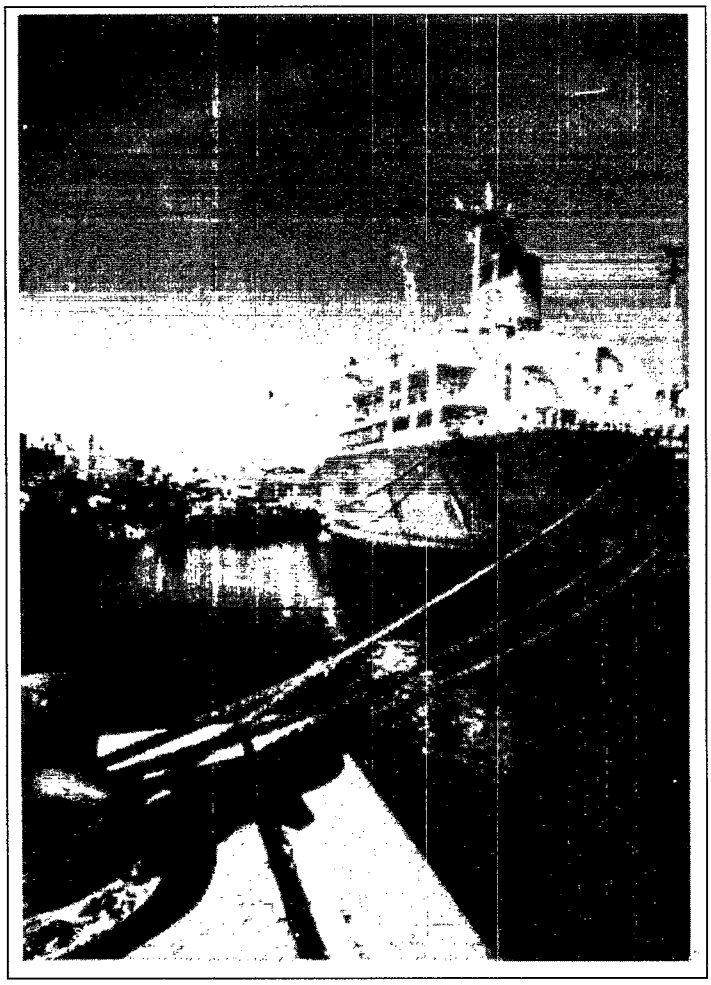
Surveillance

The United States Coast Guard (USCG) has responsibility for surveillance to prevent unlawful ocean dumping, and EPA has responsibility for assessing penalties for violations. The 1988 amendments to amended Section 105(a) of MPRSA increased the maximum allowable penalty to $125,000 for violations of the prohibition against dumping of medical waste.

Other Provisions

Title II of MPRSA requires that the National Oceanic and Atmospheric Administration (NOAA) and EPA conduct a comprehensive and continuing program of research and monitoring to determine the effects of the dumping of materials into ocean waters. Title III gives NOAA the authority to establish marine sanctuaries.

Chapter 2. London Dumping Convention



Background

MPRSA is the domestic legislation for implementing the provisions of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, generally known as the London Dumping Convention (LDC). LDC is the only global agreement concerned solely with the dumping of wastes into the marine environment. It requires its member nations, known as the Contracting Parties, to establish national systems to control the dumping at sea of wastes and other matter. The Convention was negotiated in London in November 1972, and came into force on August 30, 1975, following the required 15 ratifications or accessions. Exhibit 3 lists the LDC's 64 Contracting Parties.

The United States is represented at the LDC by a delegation appointed by the Department of State, consisting of a delegation head and advisors on particular topics. U.S. policy positions are developed by an interagency working group under Department of State leadership. MPRSA was amended in 1974 and 1980 to implement the requirements of the LDC.

Three annexes describe the technical factors to be considered when the Contracting Parties make decisions about permits.

- *The "Black List"*. Annex I establishes a "black list" of substances whose dumping is prohibited unless they are present only as trace contaminants or would be rapidly rendered harmless in the marine environment. These substances are mercury, cadmium, and their compounds; organohalogen compounds such as DDT and polychlorinated biphenyls (PCB); persistent plastics; and crude oil and petroleum byproducts. Dumping of high-level radioactive wastes and chemical and biological warfare agents is prohibited.
- *The "Grey List"*. Annex II contains a category of substances known as the "grey list," which

Exhibit 3
Contracting Parties to the London Dumping Convetion

Afghanistan	Libyan Arab Jamahiriya
Argentina	Malta
Australia	Mexico
Belgium	Monaco
Brazil	Morocco
Byelorussia SSR	Nauru
Canada	The Netherlands
Cape Verde	New Zealand
Chile	Nigeria
China	Norway
Costa Rica	Oman
Cuba	Panama
Denmark	Papua New Guinea
Dominican Republic	Philippines
Federal Republic of Germany	Poland
Finland	Portugal
France	Seychelles
Gabon	Solomon Islands
German Democratic Republic	South Africa
Greece	Spain
Guatemala	St. Lucia
Haiti	Surinam
Honduras	Sweden
Hungary	Switzerland
Iceland	Tunisia
Ireland	Ukrainian SSR
Italy	United Arab Emirates
Ivory Coast	USSR
Japan	United Kingdom
Jordan	United States of America
Kenya	Yugoslavia
Kiribati	Zaire

require special permits to regulate their dumping. They include arsenic, lead, copper, zinc, and their compounds; cyanides; fluorides; organosilicon compounds; pesticides not covered in Annex I; low-level radioactive wastes; and containers and other bulky wastes that could present serious obstacles to fishing or navigation.

- *Other Substances*. The dumping of substances not listed in Annexes I and II requires a general permit. Annex III sets forth factors to consider regarding material characteristics and composition, method of disposal, and dumping site characteristics before a permit may be issued.

The LDC requires that each Contracting Party take appropriate steps to ensure that the measures required to implement the Convention apply to any ships and aircraft flying its flag and to any vessels or aircraft loading materials in its territory for dumping in the ocean. Periodic meetings and participation by appropriate international technical bodies are designed to keep the LDC up-to-date and realistic in meeting the needs for controlling ocean pollution resulting from dumping.

Consultative Meetings

Consultative Meetings, generally held at yearly intervals, perform the work of the Convention. Past activities include the development of procedures for settling disputes; regulations, and recommended technical guidelines for control of incineration-at-sea; the International Atomic Energy Agency (IAEA) definition of high-level radioactive waste prohibited from sea disposal and recommendations for disposal of other radioactive wastes at sea; and interim guidelines for implementing Paragraphs 8 and 9 of Annex I. These paragraphs refer to the "rapidly rendered harmless" and "trace contaminants" provisions.

When necessary, the Convention establishes *ad hoc* advisory groups to work on specific subjects. These include the Working Group on Incineration-at-sea, the Group of Legal Experts, the Working Group on the Annexes to the Convention, and the Intergovernmental Panel of Experts on Radioactive Waste Disposal at Sea

(IGPRAD). The Scientific Group on Dumping (SGD), a permanent subsidiary body, provides expert evaluation of technical and scientific issues. The SGD typically meets six months before LDC Consultative Meetings.

Two Consultative Meetings were held during this reporting period: the Eleventh (LDC 11) and the Twelfth (LDC 12).

LDC 11

LDC 11 was held October 3-7, 1988. The major subjects discussed were (1) the progress of the IGPRAD, (2) the future status of incineration-at-sea of noxious liquid wastes, (3) the progress in reviewing the structure of the Annexes to the Convention, and (4) guidelines for the removal and disposal of offshore platforms and structures.

IGPRAD, which was established at LDC 10, met twice before LDC 11. It evaluated the results of a questionnaire circulated to all Contracting Parties and established two working groups to consider legal, political, social, economic, technical, and scientific issues related to low-level radioactive waste disposal at sea. Reports on these issues were reviewed at the second panel meeting, and a timetable for resolving the scientific and technical issues was established.

The IAEA was asked to examine the parallels between the regulatory approaches and environmental assessments for the dumping at sea of both radioactive and nonradioactive wastes. The Agency submitted a work plan for this study to the Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) to be completed by 1993.

In addition, LDC 11 addressed the question of whether incineration-at-sea of liquid noxious wastes should be banned globally. The countries of the Oslo Convention (which include the nations of Belgium, Denmark, Finland, France, the Federal Republic of Germany, Iceland, Ireland, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland) plan to prohibit incineration-at-sea of noxious liquid wastes in the Northeastern Atlantic Ocean, including the North Sea, by the end of 1994, and some Contracting Parties feel that this prohibition should be global. The parties agreed that the Secretariat should conduct a study on the availability of safer, more environmentally acceptable land-based alternatives and, based on the study's findings, would reconsider the plan at the 1992 Consultative Meeting.

The *ad hoc* group examining alternative structures for the Annexes reported to LDC 11 on the provisions presently being considered. They include overall approaches to waste management and hazard assessment. The group will consider additional alternatives before it presents a final recommendation to a future Consultative Meeting.

The Maritime Safety Committee (MSC) of the International Convention for the Prevention of Pollution from Ships (MARPOL) developed guidelines in April 1988 to remove offshore platforms and structures from the seas. These had been forwarded to the Secretariat so that Contracting Parties could ensure consistency with LDC purposes. At LDC 11, the Contracting Parties agreed that the MSC guidelines were acceptable as far as matters of platform removal from an existing location were concerned. However, if there is the possibility of ocean disposal of a platform after its physical removal, both legal and technical issues need to be addressed under the LDC. The SGD was asked to evaluate the technical guidelines for ocean disposal of platforms and structures, and the Group of Legal Experts was asked to consider the legal questions and report back at LDC 12.

LDC 12

LDC 12 was held October 31 - November 3, 1989. As requested at LDC 11, the guidelines for disposing of offshore platforms and facilities were evaluated by the SGD. The meeting accepted the work group's conclusion that existing Annex III guidelines are sufficient to address the environmental aspects of disposal of platforms and structures; however, they did not resolve the question of whether abandonment of platforms, onsite toppling of platforms, or placement of platforms as artificial reefs should be considered as dumping. The attendees decided to obtain further information from the Contracting Parties and have the results referred to the *ad hoc* Group of Legal Experts for continued evaluation.

Of the proposed two amendments to the Annexes, one passed and one was defeated. The passed amendment to Annex III called for Contracting Parties, when issuing permits, to consider whether adequate scientific information is available to assess impacts to human health and marine life. The amendment to delete organosilicon compounds from the list of substances in Annex II (the "grey list") failed, despite conclusions from a scientific work group on the annexes that the compounds will have no adverse effects on the marine environment.

The meeting discussed the transport of hazardous wastes across national boundaries in light of results from the Basel Convention (officially known as the Conference of Plenipotentiaries on the Global Convention of the Control of Transboundary Movements of Hazardous Wastes, held March 20-22, 1989, in Basel, Switzerland). Members were asked to submit comments on documents about the issue to the *ad hoc* Group of Legal Experts at LDC 13.

Finally, the Contracting Parties established a strategic planning work group to guide future LDC activity. Some of the major issues include considering the expansion of the LDC to address land-based sources of marine pollution, defining the LDC's role in overall waste management, and identifying cooperative enforcement mechanisms. A preliminary report will be submitted at LDC 13, and a revised report and recommendations will be presented at LDC 14.

Chapter 3. Ocean Disposal of Dredged Material

Management of Dredged Materials: The Process

Over 90 percent of the total volume of material the U.S. dumps in the ocean consists of sediment dredged from harbors and channels (EPA, 1989a). Permits for ocean disposal of dredged material are issued by the Corps of Engineers (COE) after an EPA review for compliance with the ocean dumping regulations. Dredged material is dumped at sites designated by EPA. EPA and the COE share responsibility for monitoring to ensure that permit conditions are met and that the marine environment is protected.

New Regulations

Because scientific advances have increased understanding of the marine environment, EPA is currently revising the ocean dumping regulations. The revisions governing ocean dumping of dredged material will reflect the verdict in NWF v. Costle, 629 F.2d 118 (D.C. Cir., 1980), incorporate program and technical experience, and improve clarity and organization. EPA anticipates proposing the revised regulations in late 1991. EPA will also reorganize and correct technical and typographical errors in the list of ocean dumping sites printed in the ocean dumping regulations. This improvement would facilitate easy identification of designated sites and eliminate those sites that are expired or unneeded. EPA anticipates publishing this proposal in the Fall of 1991.

Guidance Documents

EPA and COE are developing four documents jointly to provide state-of-the-art guidance on technical issues for managing ocean disposal of dredged materials. Their descriptions follow:

(1) *Evaluation of Dredged Material Proposed for Ocean Disposal — Testing Manual.* A revised draft of the dredged material testing manual was released for public comment in April 1990 (EPA/COE

1990). The criteria for determining the acceptability of material for ocean disposal of dredged material are established in the ocean dumping regulations, which, among other things, require bioassay and bioaccumulation testing. The regulations include the use of:

- Water quality criteria;
- Results of acute bioassay tests; and
- Bioaccumulation testing.

The testing manual provides technical guidance on the testing procedures to be utilized and how to interpret the results of the tests. EPA and the COE intend to publish the final draft document as an interim manual in 1991. It will undergo further review and revision at the time the ocean dumping regulations are revised.

The revised testing manual will utilize a tiered testing approach which is comprised of four levels of increasing investigative intensity. This will generate the technical information necessary to evaluate compliance with the ocean dumping criteria. The four tiers used in the manual are as follows:

Tier 1. Use of Existing Information. Review existing sources of information to (1) identify contaminants of concern, (2) determine if the available data show that the regulatory testing criteria are met (i.e., water quality criteria, acute toxicity, bioaccumulation), and (3) determine if additional testing in higher tiers is needed.

Tier 2. Use of Chemistry Data. Evaluate chemistry data to determine potential for water column and deposited sediment impacts; determine the need for additional water column testing by applying a mathematical dispersion model; and calculate the maximum potential bioaccumulation of organic contaminants in marine organisms.

Tier 3. Use of Acute Toxicity and Bioaccumulation Tests. Conduct acute toxicity tests to determine the toxicity of the dissolved and suspended contaminants to organisms in the water column (after initial mixing); and conduct bioassays to determine toxicity and bioaccumulation potential of the dredged material to benthic marine organisms.

Tier 4. Use of Long-Term Toxicity and Bioaccumulation Tests. Conduct case-specific water column and benthic tests to determine long-term effects on marine organism survival and reproduction or bioaccumulation.

The objective of the tiered approach is to eliminate unnecessary testing and thereby make cost-effective decisions. For example, if a dredged material has an obvious detrimental environmental impact, information collected in Tiers 1 and 2 may be sufficient to determine that dredged materials are not acceptable for ocean disposal. If there is inadequate information about a dredged material and its potential for impact is not clear, then more extensive testing should be conducted under Tier 3. Not all dredged materials may need to be evaluated through all four tiers. It is necessary only to proceed through the tiers until enough information is collected to determine whether disposal of the material will comply with the ocean dumping regulations.

The revised manual presents improvements in chemical methods and refined laboratory procedures for water column and sediment toxicity tests, including the use of more sensitive marine organisms for testing. EPA and the COE believe it will be more effective in assessing the potential impacts of ocean disposal of dredged material than the first manual issued in 1977. The Agency is also in the process of developing additional technical procedures which may be used to evaluate proposed ocean disposal of dredged material. At present, only acute toxicity tests are available for use, and the Agency is in the process of developing chronic toxicity tests to better evaluate the potential for sub-lethal

effects. In addition, the Agency is developing pollutant-specific sediment quality criteria which may prove to be useful in evaluating dredged material. Once these new procedures are sufficiently developed to be available for use in a regulatory program, the Agency will update and revise the dredged material testing manual to appropriately utilize the chronic toxicity tests and the sediment quality criteria.

(2) *Dredged Material Disposal: National Management Strategy Document.* This document, currently in preparation, will present a comprehensive, national management strategy for all dredged material disposal that comes under the authorities of MPRSA and the Clean Water Act. Its objective is to allow decisions about disposal of a dredged material to be made so that one environment (e.g., an estuary) is not adversely affected for the sake of protecting another (e.g., the ocean).

(3) *Site Designation, Monitoring, and Management Document for Ocean Disposal of Dredged Material.* This document, currently in preparation and expected to be completed in 1991, will describe the regulatory requirements and technical rationale for site designation, monitoring, and management. EPA is adopting a tiered approach for all monitoring plans for ocean dumping at designated sites. The document is intended for use by personnel at EPA Regional offices and COE District offices. It contains technical guidance about:

- How to evaluate the need for site designation;
- How to select sites;
- How to develop plans for sampling and analysis;
- How to monitor a site; and
- How to use monitoring results to evaluate and decide site management options.

(4) *Dredged Material Ocean Dumping Permit/Project Review Manual.* This document, currently being prepared by EPA and the COE, describes permitting regulations and procedures. It is intended for EPA Regional and COE District staff and permit applicants.

Site Designation Criteria

The goal in designating sites and issuing permits is to match the type of material dumped with the appropriate site, to minimize adverse environmental impacts, and ensure that disposing the material does not interfere with other uses of the marine environment. The choice of sites for ocean disposal is based on criteria listed in the ocean dumping regulations. These include criteria for locating areas to reduce the potential for effects of disposal on marine resources, commercial or recreational navigation, and the environment. Specific criteria to be applied to a designation include, but are not limited to, identifying where the site is located, the feasibility of monitoring or surveillance, possibility of interference with legitimate uses of the ocean, and the effects of current and previous dumping, including cumulative effects.

Designation Process

The following is a brief overview of the site designation process for dredged material:

- The COE requests a site designation from EPA;
- EPA conducts a thorough environmental review, then prepares a draft environmental impact statement (EIS);
- EPA issues the draft EIS for review by the public and appropriate local, state, and Federal agencies;
- EPA publishes in the *Federal Register* its proposed regulation to establish an ocean disposal site; and
- After incorporating all applicable comments

into a final EIS, EPA publishes a final regulation in the *Federal Register* to designate the site.

Performing scientific analyses and environmental assessments necessary to designate a site can take several years. If sites are not available for disposal of dredged materials, widening, deepening, and maintenance dredging projects can be delayed. EPA and the COE, therefore, set priorities, deciding which sites should be designated before others, in an attempt to minimize adverse impacts on local economies.

Site Lists

In the regulations for ocean dumping, sites are separated into two categories: interim and approved. The interim category, containing those identified as historically-used sites, may be used pending completion of baseline or trend assessment surveys and designation. The approved category are sites approved for use based on the results of environmental review. Where necessary, the site designation can limit use to material from one project or permit, restrict particle size, or set specific time limits.

Site Designation Status

Currently 110 dredged material disposal sites are designated under MPRSA. As of December 31, 1990, 52 sites are designated as final sites, 18 are proposed for final designation, and 40 still have interim site status. Exhibit 4 shows the status of all sites for ocean dumping of dredged material.

During 1987-1990, 34 dredged material sites received final designation and 10 were dedesignated. Exhibits 5A and B through 11A and B show the dredged material disposal sites under the authority of EPA Regions I, II, III, IV, VI, IX, and X. Each exhibit contains a table, indicating the site name and its current designation and status, and a map, showing the location of each site. Site designation and status are listed as interim, final, or currently subject to proposed final rule-making to designate or dedesignate the site.

EPA and Corps of Engineers MOUs

On December 23, 1986, EPA Headquarters delegated responsibility to its Regional offices for the designation of ocean dumping sites for dredged material, for fish waste requiring a permit, and for woodburning in Region II. As a result, site designation has been accelerated, and local coordination has been enhanced. To identify tasks within the process and thereby avoid duplication of effort, EPA and COE signed a National Memorandum of Understanding (MOU) in July 1987. EPA Regional offices and local COE District offices are currently developing individual MOUs. The local MOUs provide a mechanism to complete the designations for the remaining interim sites and to establish regional site management and monitoring plans. At the end of this reporting period, five of the seven EPA coastal Regional offices and their counterpart COE District offices have signed MOUs.

Site Monitoring

During this reporting period, EPA conducted surveys at 27 of the 110 dump sites. Monitoring information is used to verify that permit conditions are met and to determine if the conditions set by the permit are sufficient to prevent adverse impacts. For specific regional dredged material disposal sites, see Exhibits 5A and B through 11A and B. Monitoring dumpsites used by multiple permittees is especially important in determining whether the cumulative impacts are acceptable. (See Exhibit 12).

Enforcement

During this initial dredging under Phase 1 of the Oakland project, EPA and the Corps of Engineers investigated allegations that the dredger was excavating sediment outside the Federal Channel in an area that was not

authorized for dredging. On June 1, 1988, EPA Region IX issued administrative penalty complaints for violation of the MPRSA Section 103 permit against the Port of Oakland and Great Lakes Dredge and Dock Company for the amounts of $272,000 and $215,000, respectively. A hearing before an Administrative Law Judge was held during March and April of 1989; the post-trial brief was submitted in September 1989; and the rebuttal brief was submitted in December 1989. The administrative Law Judge has not yet issued his ruling in the case.

Exhibit 4

Summary of U.S. Dredged Material Sites as of September 30, 1990

Number of Sites					
Region	*Final Designation Completed*	*Final Designation Proposed*	*Remaining Interim Designation*	*Dedesignated*	*TOTAL*
I	1	0	4	0	5
II	14	0	0	0	14
III	1	0	0	0	1
IV	14	3*	11	0	28
VI	19	0	8	0	27
IX	6	3**	5	0	14
X	12	1	7	1	21
TOTAL SITES	67	7	35	1	110

During the 1987-FY1990 reporting period, Region IV dedesignated 10 sites, all located off the coast of Florida: two sites at Cedar Keys; one site each in St. Lucie Inlet, Largo Sound, Anclote, Pithlachascotee, Withlacoochee, and Horseshoe Cove, St. Augustine, and Ponce de Leon Inlet.

* One site proposed for dedesignation (Key West), Two sites proposed for designation (Canaveral and Pascagoula)

** One site proposed for designation (LA4 Point Loma), Two sites proposed for dedesignation (LA2 Long Beach and LA5 San Diego (100 fathom))

Exhibit 5A
Region I Dredged Material Disposal Sites
as of September 30, 1990

Site Designation and Status	
Portland, ME	Designated on a final basis
Cape Arundel, ME	Interim site
Massachusetts Bay, MA	Interim site [Formerly the Marblehead Site]
Newburyport, MA	Interim site
Boston, MA	Interim site

Exhibit 5B
Location of Region I Dredged Material
Disposal Sites

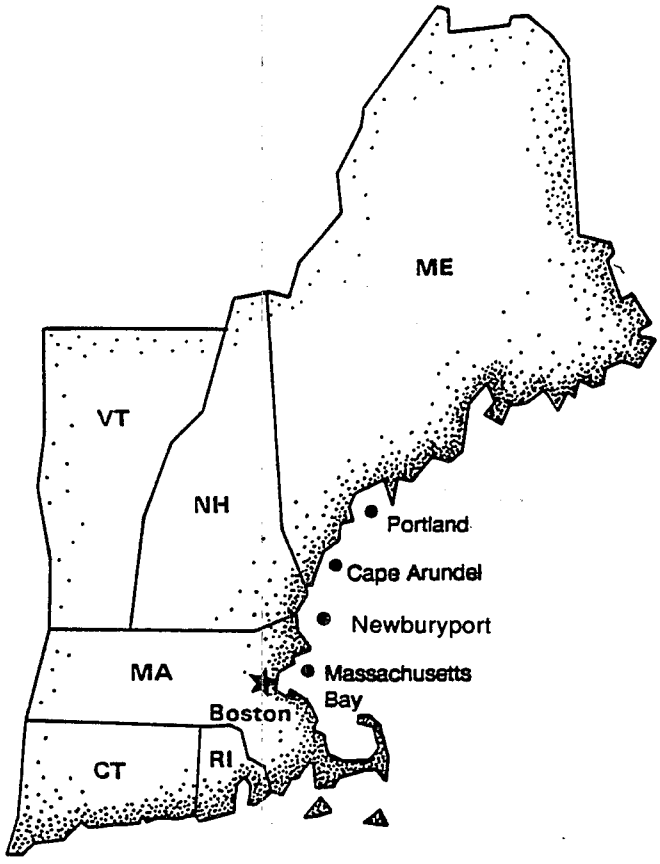
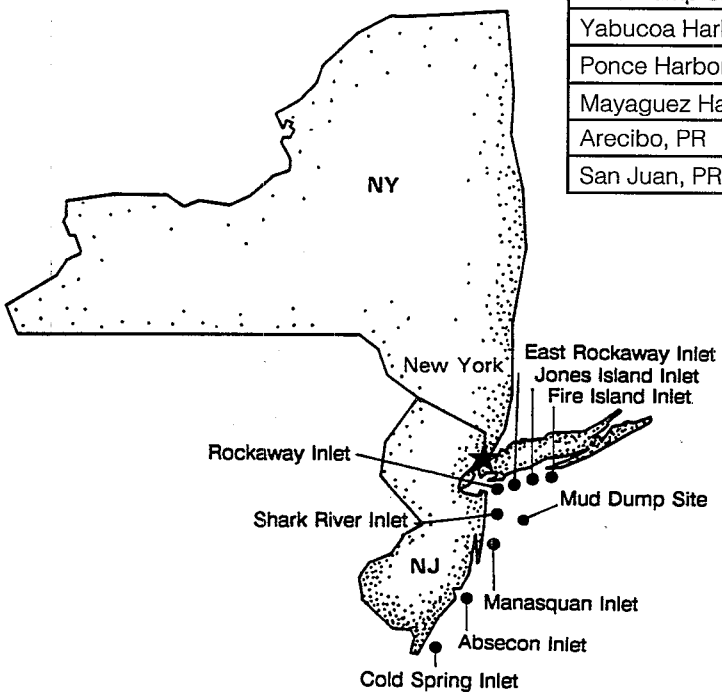


Exhibit 6A
Region II Dredged Material Disposal Sites
as of September 30, 1990

Site Designation and Status	
Fire Island Inlet, NY	Designated on a final basis
Jones Island Inlet, NY	Designated on a final basis
East Rockaway Inlet, NY	Designated on a final basis
Rockaway Inlet, NY	Designated on a final basis
Shark River Inlet, NY	Designated on a final basis
Manasquan Inlet, NY	Designated on a final basis
Absecon Inlet, NJ	Designated on a final basis
Cold Spring Inlet, NJ	Designated on a final basis
Mud Dump Site, NY	Designated on a final basis
Yabucoa Harbor, PR	Designated on a final basis
Ponce Harbor, PR	Designated on a final basis
Mayaguez Harbor, PR	Designated on a final basis
Arecibo, PR	Designated on a final basis
San Juan, PR	Designated on a final basis

Exhibit 6B
Location of Region II Dredged
Material Disposal Sites



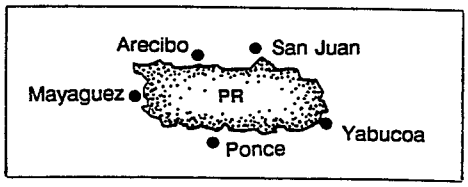


Exhibit 7A
Region III Dredged Material Disposal Sites
as of September 30, 1990

Site Designation and Status	
Dam Neck, VA	Designated on a final basis

Exhibit 7B
Location of Regon III Dredged Material
Disposal Sites

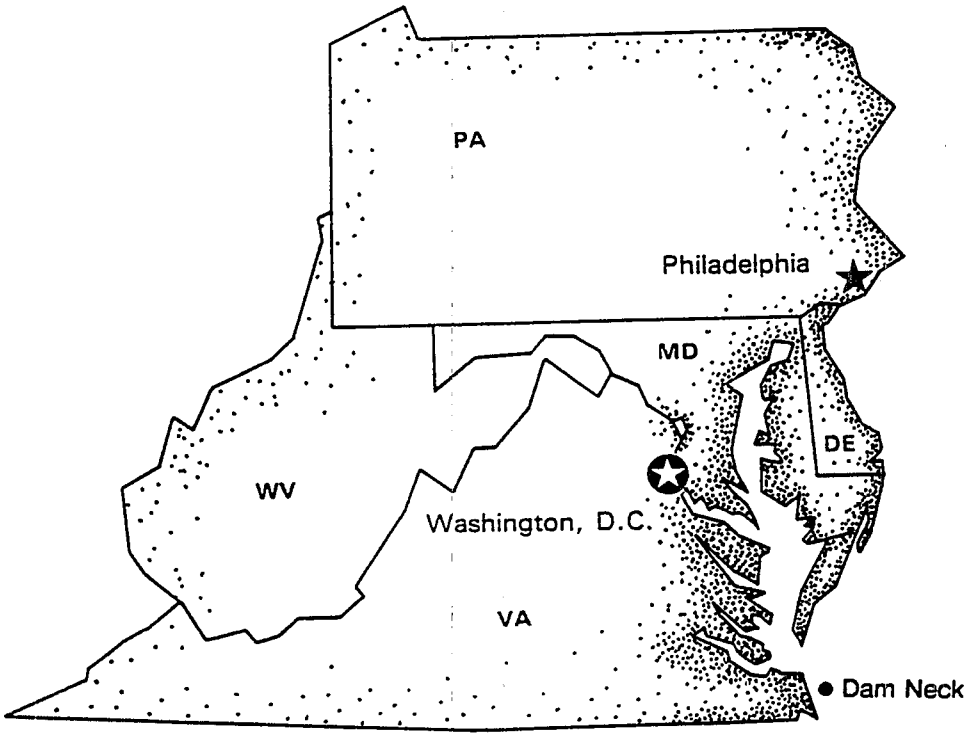


Exhibit 8A

Region IV Dredged Material Disposal Sites as of September 30, 1990

Site Designation and Status	
Morehead City, NC	Designated on a final basis
Wilmington, NC	Designated on a final basis
Georgetown, SC	Designated on a final basis
Charleston, SC	Designated on a final basis
Charleston Harbor Deepening Project, SC	Designated on a final basis
Port Royal (North), SC	Interim site
Port Royal (South), SC	Interim site
Savannah, GA	Designated on a final basis
Brunswick, GA	Designated on a final basis
Fernandina Beach, FL	Designated on a final basis
Jacksonville, FL	Designated on a final basis
Canaveral Harbor, FL	Subject to proposed rulemaking to designate on a final basis
Fort Pierce Harbor, FL	Interim site
Palm Beach Harbor (East), FL	Interim site
Palm Beach Harbor (West), FL	Interim site
Port Everglades, FL	Interim site
Miami Beach, FL	Interim sites
Key West, FL	Subject to proposed rulemaking to dedesignate
Charlotte Harbor, FL	Interim site
Tampa Site 4, FL	Final designation expired; considered for redesignation in a pending EIS
Port St. Joe (North), FL	Interim site
Port St. Joe (South), FL	Interim site
Panama City, FL	Interim site
Pensacola, FL (Offshore Site)	Designated on a final basis
Pensacola, FL (Nearshore Site)	Designated on a final basis
Mobile, AL	Designated on a final basis
Pascagoula, MS	Subject to proposed rulemaking to designate on a final basis
Gulfport, MS (East)	Designated on a final basis
Gulfport, MS (West)	Designated on a final basis

Exhibit 8B

Location of Region IV Dredged Material Disposal Sites

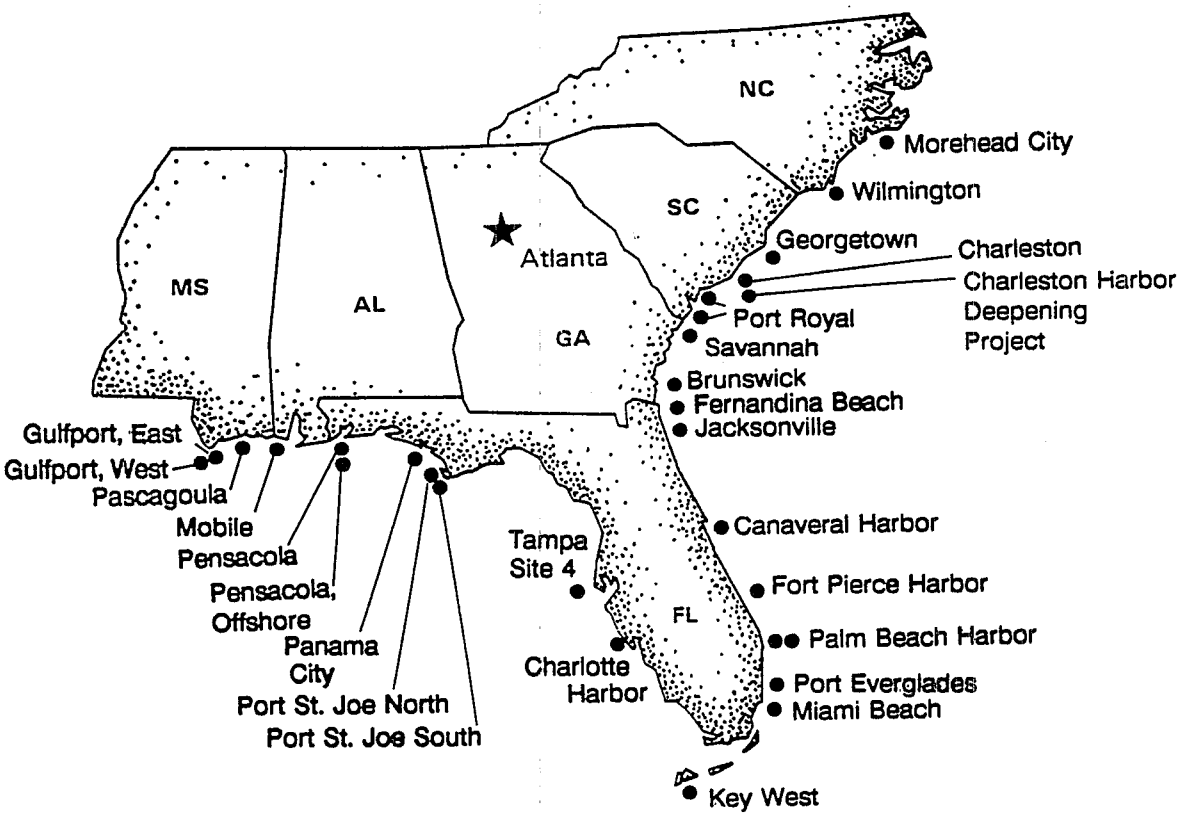


Exhibit 9A

Region VI Dredged Material Disposal Sites as of September 30, 1990

Site Designation and Status	
Mississippi River (Gulf Outlet, LA)	Designated on a final basis
Mississippi River (South Pass, LA)	Interim site
Mississippi River (Southwest Pass, LA)	Designated on a final basis
Empire, LA	Interim site
Tiger Pass, LA (Venice)	Interim site
Barataria Bay, LA	Designated on a final basis
Bayou Lafourche, LA	Interim site
Houma Navigation Canal, LA	Designated on a final basis
Atchafalaya, LA	Interim site
Freshwater Bayou, LA	Interim site
Mermentau River Area A, LA	Interim site
Mermentau River Area B, LA	Interim site
Calcasieu River and Pass, Area 1, LA	Designated on a final basis
Calcasieu River and Pass, Area 2, LA	Designated on a final basis
Calcasieu River and Pass, Area 3, LA	Designated on a final basis
Sabine-Neches Site 1, TX	Designated on a final basis
Sabine-Neches Site 2, TX	Designated on a final basis
Sabine-Neches Site 3, TX	Designated on a final basis
Sabine-Neches Site 4, TX	Designated on a final basis
Galveston, TX	Designated on a final basis
Freeport Harbor, TX (45-ft Project New Work)	Designated on a final basis
Freeport Harbor, TX (45-ft Project Maintenance)	Designated on a final basis
Corpus Christi Ship Channel, TX	Designated on a final basis
Port Aransas, TX (Homeport)	Designated on a final basis
Matagorda Ship Channel, TX	Designated on a final basis
Port Mansfield Channel, TX	Designated on a final basis
Brazos Island Harbor, TX	Designated on a final basis

Exhibit 9B
Location of Region VI Dredged Material Disposal Sites

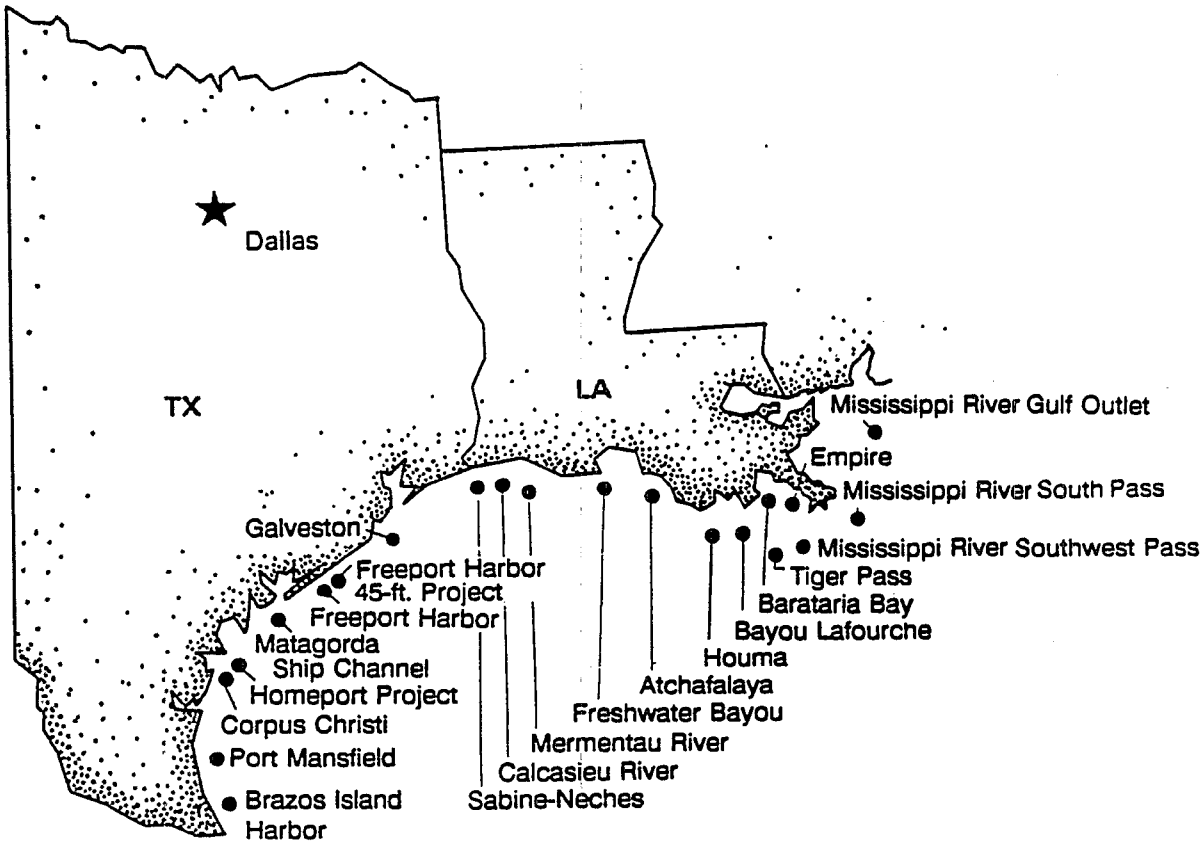


Exhibit 10A

Region IX Dredged Material Disposal Sites as of September 30, 1990

Site Designation and Status	
Crescent City, CA	Interim site
Humboldt Entrance Channel (SF-3), CA	Interim designation expired [EPA anticipates future rulemaking to designate a replacement site.]
Noyo River, CA	Interim site
San Francisco Channel Bar, CA	Designated on a final basis
Port Hueneme, CA	Interim site
LA 2, CA (Long Beach)	Interim designation expired; subject to proposed rulemaking to designate on a final basis
Newport Beach, CA	Interim site
LA 4, CA (Point Loma)	Interim designation expired; subject to proposed rulemaking to dedesignate
LA 5, CA (San Diego 100-Fathom Site)	Interim designation expired; subject to proposed rulemaking to designate on a final basis
Nawiliwili, HI	Designated on a final basis
Port Allen, HI	Designated on a final basis
South Oahu, HI	Designated on a final basis
Kahului, HI	Designated on a final basis
Hilo, HI	Designated on a final basis
Guam-Apra Harbor	Interim site

Exhibit 10B
Location of Region IX Dredged Material Disposal Sites

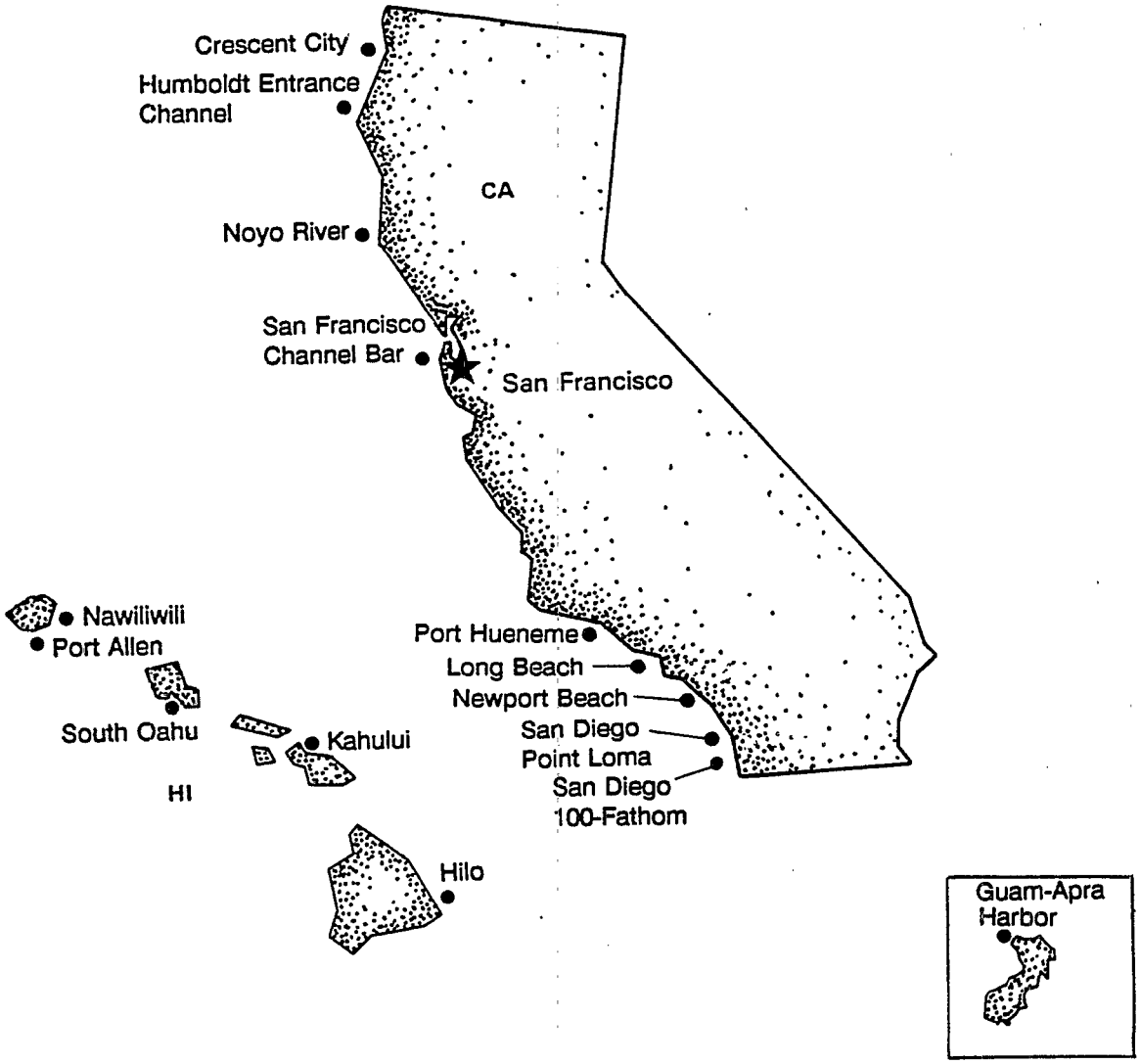
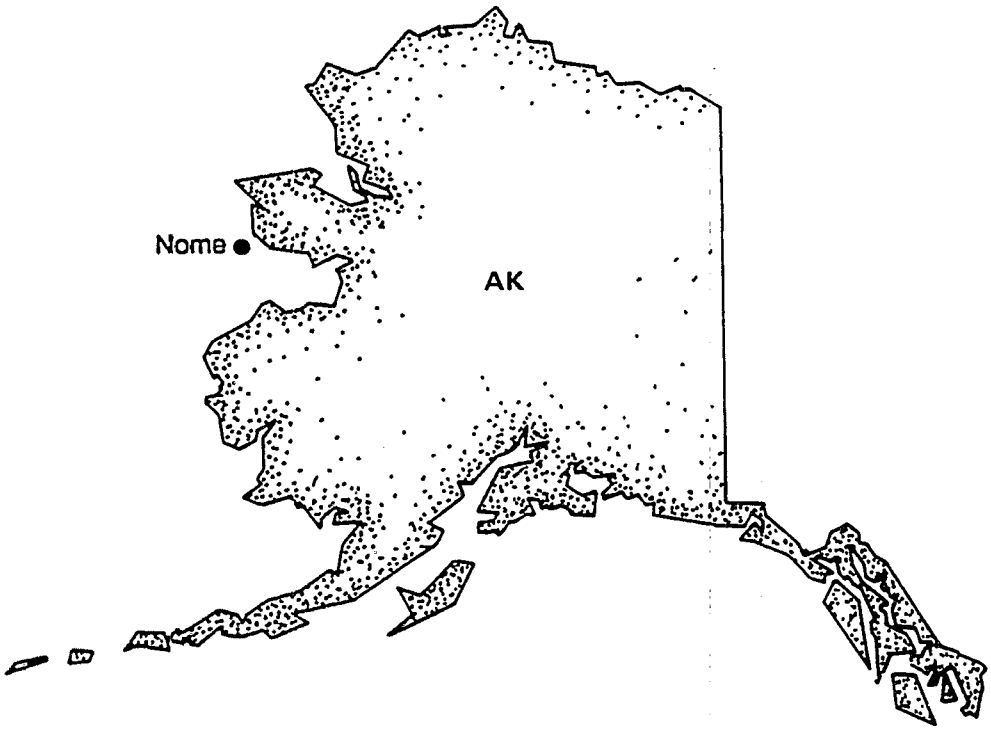


Exhibit 11A

Region X Dredged Material Dispoal Sites as of September 30, 1990

Site Designation and Status	
Nome, AK (East Site)	Designated on a final basis
Nome, AK (West Site)	Designated on a final basis
Grays Harbor, WA (Southwest Navigation Site)	Designated on a final basis
Grays Harbor, WA (Eight Mile Site)	Designated on a final basis
Willapa Bay, WA	Interim site
Mouth of the Columbia River (Site A)	Designated on a final basis
Mouth of the Columbia River (Site B)	Designated on a final basis
Mouth of the Columbia River (Site E)	Designated on a final basis
Mouth of the Columbia River (Site F)	Designated on a final basis
Tillamook Bay, OR	Interim site
Yaquina Bay, OR	Interim site
Siuslaw River Entrance, OR	Interim site
Umpqua River Entrance, OR	Interim site
Coos Bay (Site E), OR	Designated on a final basis
Coos Bay (Site F), OR	Designated on a final basis
Coos Bay (Site H), OR	Designated on a final basis
Coquille River Entrance, OR	Designated on a final basis
Port Orford, OR	Interim site
Rogue River Entrance, OR	Interim site
Chetco River Entrance, OR	Subject to proposed rulemaking to designate on a final basis

Exhibit 11B
Location of Region X Dredged Material Disposal Sites



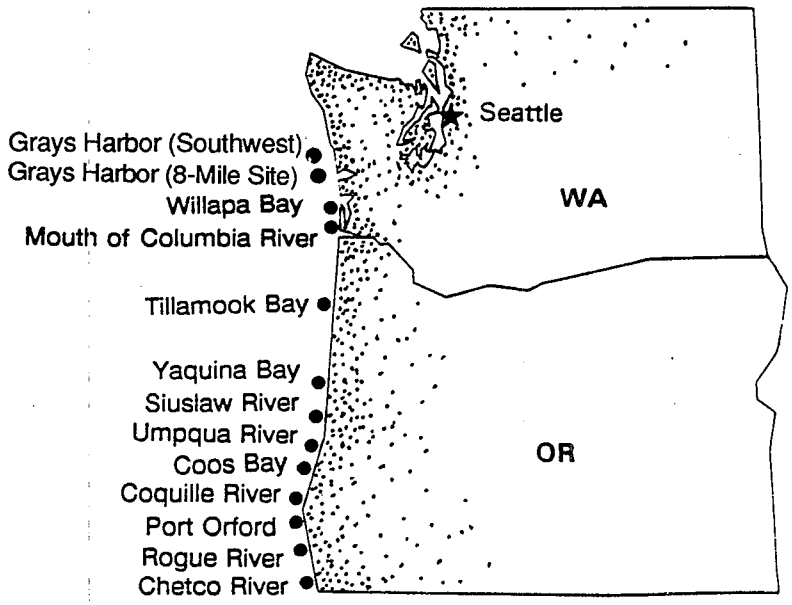


Exhibit 12

Summary of EPA's Monitoring Activities at Dredged Material Disposal Sites

			Number of Surveys			
Region	*Number of Sites*	*Number of Sites Visited*[a]	*1987*	*1988*	*1989*	*1990*
I	3	1	0	0	1	3
II	14	1[b]	0	0	1	0
III	1	2[c]	3	4	4	0
IV	29	14	16	14	6	5
VI	28	1	0	1	0	0
IX	15	1	0	0	1	3
X	20	7	0	3	4[d]	4

a Number of sites in Region visited between 1987-FY1990.

b Single Region II site listed was a survey to the candidate sites for the alternate Mud Dump.

c Second Region III site listed was a survey to a candidate site off Norfolk, VA.

d Two sites not included in this tally were interim sites in December 1989 (see Exhibit 4, p. 17). These sites now have Section 404 status, and thus are no longer regulated under MPRSA. They are not shown on Exhibit 10B, p.26.

Chapter 4. Ocean Disposal of Municipal Sewage Sludge

Overview of Sludge Disposal Activities

In 1987, over 8.4 million wet tons of sludge were dumped in the ocean: 47 percent at the former 12-Mile Sewage Sludge Dump Site (12-Mile Site) and 53 percent at the 106-Mile Deepwater Municipal Sludge Dump Site (DMSDS or 106-Mile Site). The former 12-Mile Site, located in the New York Bight Apex, 12 nautical miles from Sandy Hook, New Jersey, was used for disposal of municipal sewage sludge from 1924-1987. Exhibit 13 shows the location of the 12-Mile Site and the 106-Mile Deepwater Municipal Sludge Dump Site. Exhibit 14 lists the nine sewerage authorities ocean dumping sewage sludge and the quantities each dumped from 1987 through 1990. Exhibit 15 shows the volumes of sewage sludge and other wastes dumped in U.S. waters from 1973 to 1989.

The 106-Mile Site, located approximately 120 nautical miles southeast of Ambrose Light, New York, and 115 nautical miles from Atlantic City, New Jersey, was designated in 1984 (see Exhibit 13). Subsequently, in April 1985, EPA denied requests from the dumpers, for re-designation of the 12-mile site. Thereafter, the Agency and the sludge dumpers negotiated a phase-out of dumping at the 12-Mile Site. Sewage sludge dumping began at the 106-Mile Site in March 1986 and use of the 12-Mile Site was phased out in December 1987.

Although the number of municipal sewage sludge dumpers has decreased since the passage of MPRSA, the volume of sludge dumped increased annually from 1973 to 1988, primarily due to the upgrading of wastewater treatment plants and an increase in service area population (see Exhibit 14).

Dedesignation of Ocean Dumping Sites

During the reporting period 1987 through 1990, EPA has taken action to dedesignate

or remove expired, unneeded, or terminated sites. This dedesignation activity, as specified in the *Federal Register* 55 FR 3688, resulted in three former sewage sludge sites being removed from the list. Two of the sewage sludge sites were in the New York Bight and one was off the coast of Delaware and Maryland. Appendix A lists the sites dedesignated during this reporting period.

Resolution of NY/NJ Dumping Case

In August 1989, EPA successfully completed negotiations for judicial consent decrees and enforcement agreements with nine New York and New Jersey municipal sewerage authorities as required by ODBA. The municipal authorities have developed schedules for phasing out their ocean dumping, which EPA and the two states have accepted. This concluded nine years of ocean dumping by these communities under a court order, without EPA permits.

The history of the New York/New Jersey communities' ocean dumping predates EPA's existence by almost 50 years. Highlights are as follows:

In 1924, New York City began dumping its municipal sewage sludge 12 nmi outside New York Harbor, now known as the 12-Mile Site. During the next five decades, numerous communities in the New York/New Jersey area dumped their sewage sludge at this site until, at one point, 200 communities were using the site.

From 1973 until 1981, EPA issued MPRSA permits for dumping at the 12-Mile Site, first under an interim, then a final site designation. The permits expired in December 1981. At that time, only nine municipal sewerage authorities held permits which EPA declined to renew. The dumpers sued EPA over its refusal to renew the permits and won court orders to continue dumping. As a result, from December 31, 1981, through August 14, 1989, the nine NY/NJ communities continued to dump their sewage sludge at the 12-Mile Site and, after 1987, at the 106-Mile Site, under court orders.

EPA was negotiating new permits with the nine municipal sewerage authorities under MPRSA, including assessment of land-based sludge management alternatives, when ODBA became law, and negotiations shifted to meet its requirements. These were satisfactorily completed August 14, 1989.

According to their enforcement agreements, the New York/New Jersey sewerage authorities will adhere to the following schedules:

- The six New Jersey authorities stopped ocean disposal by March 17, 1991, in accordance with state law.
- The Nassau County Department of Public Works and the Westchester County Department of Environmental Facilities plan to stop ocean disposal by December 31, 1991.
- The New York City Department of Environmental Protection plans to phase-out ocean disposal by June 30, 1992, with initial phase-out of 20 percent by December 31, 1991. The phase-out date for New York City reflects the amount of construction needed for dewatering facilities.

As required by ODBA, the schedules contain key milestone dates for implementing alternatives to ocean dumping. These include interim disposal measures as necessary, reporting requirements for monitoring implementation progress, and provisions for payment of ocean dumping fees and penalties. In addition, the sewerage authorities agreed to pay stipulated penalties for violations of their agreements.

EPA Technical Transfer Efforts

EPA is providing technical transfer opportunities to assist the New York and

Exhibit 13

Locations of the 12-Mile Site and the 106-Mile Deepwater Municipal Sludge Dump Site

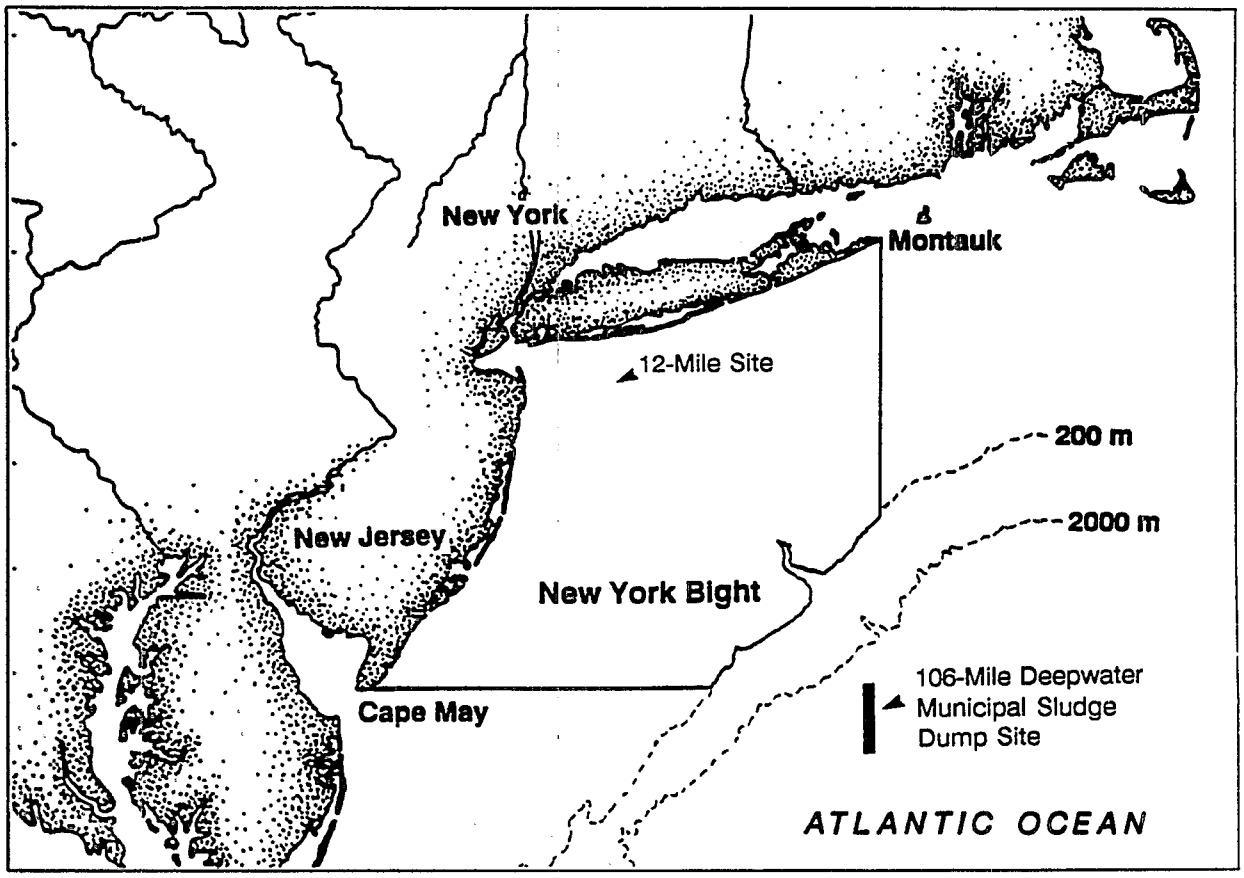


Exhibit 14

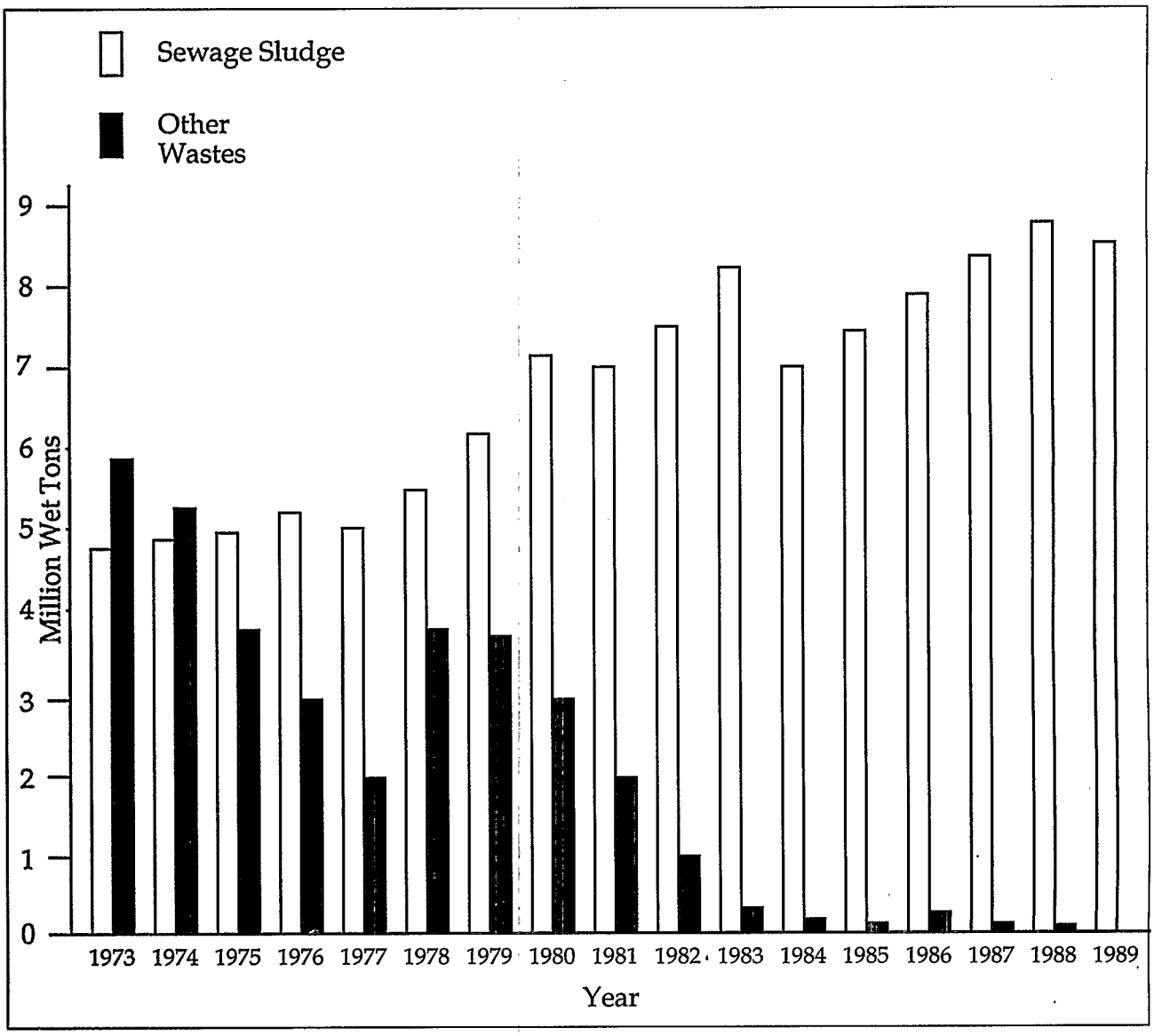
Sewage Sludge Dumped 1987 - FY 1990

Quantities in Thousand Wet Tons					
Sewerage Authorities	***1987***[a] *12-Mile Site*	***1987***[a] *106-Mile Site*	***1988*** *106-Mile Site*	***1989*** *106-Mile Site*	***FY1990*** *106-Mile Site*
Bergen County Utilities Authority, NJ	424	183	423	299	294
Joint Meeting of Essex and Union Counties, NJ	190	76	308	226	248
Linden Roselle Sewerage Authority, NJ	70	24	74	48	90
Middlesex County Utilities Authority, NJ	809	174	997	1005	1300
Nassau County Department of Public Works, NY	0	811	873	897	917
New York City Department of Environmental Protection, NY	1913	1947	4041	3952	4600
Passaic Valley Sewerage Commissioners, NJ	503	709	1355	1622	1840
Rahway Valley Sewerage Authority, NJ	69	29	129	130	139
Westchester County Department of Environmental Facilities, NY	0	494	544	490	480
TOTALS	**3978**	**4447**	**8744**	**8669**	**9908**

a Sludge disposal at the 12-Mile Site ended on December 31, 1987.

Exhibit 15

Volumes of Sewage Sludge and Other Wastes Dumped in U.S. Waters 1973 - 1989



For the purpose of this graphic, "Other Wastes" refers to industrial waste, fish waste, construction debris, and wood. Dumping of industrial waste ceased in 1988.

New Jersey sewerage authorities affected by ODBA. In November 1989, EPA hosted a two-day roundtable meeting on implementing land-based alternatives. Officials from sewerage authorities that had already made the transition from ocean to land disposal shared their experiences with those from New York and New Jersey. The proceedings of this meeting are included in the EPA Sludge Recycling Alternatives Report to Congress (EPA, 1989d).

In September 1990, EPA hosted a second meeting to assist the New York and New Jersey sewage authorities. The two major themes for the meeting were removing barriers to beneficial use projects (e.g., understanding perceived risks, and improving communication with the public) and implementing beneficial use projects (e.g., selecting a beneficial use technology, and developing markets for sludge products). The conference was designed to provide information for sewerage authorities, environmental groups, financial institutions, consulting engineers, and other interested parties. At the conclusion of the meeting, considerable interest was shown in holding a third meeting in late 1991 to provide a status report on the land-based sludge management plans. The meeting, "Pursuing Beneficial Users of Sludge", was designed to promote the beneficial use of municipal sewage sludge.

Reports to Congress

EPA released its first annual report, Progress in Stopping Ocean Dumping (EPA, 1989e), in December 1989. It describes the progress the sewerage authorities have made in selecting interim and long-term land-based sludge-management alternatives. In 1990, EPA also published the following Reports to Congress, as required by ODBA:

- Surveillance and Enforcement of Sewage Sludge Dumping (EPA, 1989f);
- Ocean Disposal Monitoring Programs in Response to the Ocean Dumping Ban Act (EPA, 1990a-c); and
- Sludge Recycling Alternatives (EPA, 1989d).

Site Monitoring and Management

Since dumping began at the 106-Mile Site, EPA has implemented a monitoring plan (EPA, 1988g). The plan addressed compliance with disposal requirements and the fate and effects of sludge dumped at the 106-Mile Site. EPA's monitoring plan considers the characteristics of both the dump site and the sludge to predict possible impacts of the sludge.

Ocean Dumping Workshop

In March 1989, EPA, the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Coast Guard (USCG) held a workshop to address public concerns about dumping sewage sludge at the 106-Mile Site. In addition to government officials, scientists, fishermen, policy experts, representatives of the sludge dumpers, and representatives of environmental interest groups discussed changes needed to the existing monitoring plans and the development of a strategy for future research, monitoring, and surveillance. EPA published the results of that workshop in Proceedings of the Ocean Dumping Workshop, 106-Mile Site (EPA, 1989c).

EPA, NOAA, and USCG Joint Strategy

Using the workshop's results, EPA, NOAA, and the USCG are currently implementing a joint strategy for monitoring effects of municipal sludge disposal at the 106-Mile Site. The three agencies signed a Memorandum of Understanding (MOU) in April 1990 defining the roles of each and completed a joint revised monitoring, research, and surveillance plan in December 1990 (EPA 1990b) that supersedes all previous plans. The new plan uses the same set of baseline data

developed by EPA's existing plan and builds upon monitoring data already collected.

The areas of potential impacts were based upon the following considerations from the ocean dumping regulations:

- Impingement of sludge onto shorelines;
- Movement of sludge into marine sanctuaries, shellfishery, or fishery areas;
- Effects of sludge on commercial fisheries;
- Accumulation of sludge constituents in biota;
- Progressive changes in water quality because of sludge;
- Progressive changes in sediment composition because of sludge;
- Impacts on endangered species as a result of the sludge; and
- Progressive changes in pelagic, demersal, or benthic biological communities as a result of the sludge.

The plan contains a four-tiered strategy to monitor sludge disposal at the 106-Mile Site. Information on the potential impacts in the site and in the vicinity of the site was collected as follows:

Tier 1. Sludge characteristics and disposal operations

Tier 2. Nearfield fate and short-term effects

Tier 3. Farfield fate

Tier 4. Long-term effects

Monitoring activities have centered on Tiers 1, 2, and 3. Studies of long-term effects (Tier 4) have only recently been conducted, and rely upon evaluations of the results from the other tiers to combine sludge fate data with effects studies.

Under Tier 1 activities, EPA studied sludge characteristics from each of the dumpers to determine chemical composition and toxicity. This information, combined with Tier 2 data, was used to determine acceptable dumping rates.

In Tier 2, EPA studied the short-term behavior of the sludge plumes, nearfield transport, and short-term effects of the sludge in the site and its immediate vicinity. This information was used to determine how sludge plumes dispersed and moved through the waters of and near the site. These data were combined with Tier 1 data to set appropriate limits on dumping rates to meet ocean dumping criteria.

Tier 3 includes studying the direction and rate of transport of sludge dumped at the site, the areal extent of sludge concentrations outside the site, and the physical and chemical fate of the sludge. This information was and is being used to develop additional Tier 3 and Tier 4 studies. Tier 3 activities include water sampling, the use of current meters, satellite-tracked drifters, and satellite imagery. The satellite-tracked drifters deployed at the site have all shown trajectories that do not move onto the Continental Shelf, but eventually enter the Gulf Stream and move toward the Northeast. (See Exhibit 16.)

A stationary current meter and meteorological station buoy, which transmit real-time current and meteorological data by satellite to EPA, have been placed near the site. This information is used to monitor currents, sea states, and weather conditions.

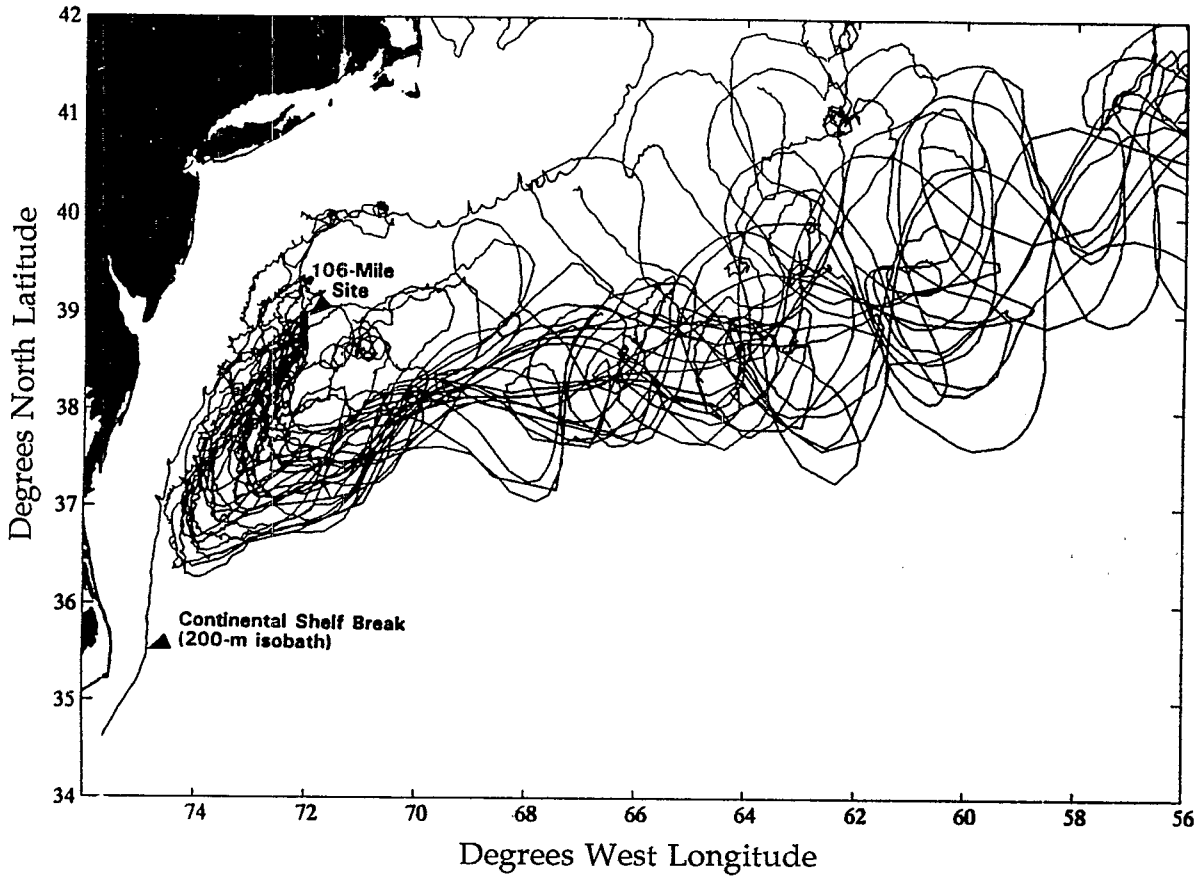
In 1990, based on Tier 3 data, sediment traps were deployed near the site to collect particles falling to the sea floor. This data will provide evidence of the potential for sludge to reach the sea floor in various locations around the site.

Discharge Rates

When EPA moved sludge disposal operations from the 12-Mile Site to the 106-Mile Site, the discharge rates of 15,500 gallons per minute (gpm) established for the 12-Mile Site remained in effect until the scientific basis for

Exhibit 16

Buoy Trajectories of 29 Satellite-Tracked Buoys Released in the 106-Mile Site
(October 1989 to August 1990)



new ones could be established. Since 1986, when sewerage authorities first began using the DMSDS, EPA has conducted semi-annual surveys at the site to determine the fate and effect of the sludge being dumped. In addition to field observations of sludge plume behavior, analyses of the waste have been performed on sludge samples collected both at the site and at the individual treatment plants. EPA has used this data to reduce discharge rates to meet the requirements of the ocean dumping regulations. As a result, discharge rates were reduced from 15,500 gpm to rates ranging from 145 gpm to 8,719 gpm, depending upon particular characteristics of the sludge being dumped. In addition, as a condition of the permits, the permittees are required to submit sludge characterization data monthly, quarterly, and semi-annually. Based on EPA's evaluation of this data, EPA then may revise the discharge rates on a quarterly basis.

Surveillance and Enforcement Activities

Under MPRSA, enforcement of permit conditions is a joint responsibility of EPA and the Coast Guard, with the Coast Guard responsible for surveillance.

Permit Terms

To ensure that authorized ocean dumping of sewage sludge is performed properly, the new special ocean dumping permits require that each vessel (1) be accompanied by an EPA-approved, independent ship rider; (2) be equipped with an Ocean Dumping Surveillance System (ODSS) unit; and (3) comply with the conditions of EPA's Sludge Manifest and Tracking System program.

ODSS

The ODSS is an electronic surveillance system that has been developed, installed, and operated by the U.S. Coast Guard. It is designed to identify the location of each of the 13 EPA-authorized ocean dumping vessels. ODSS also relays information about when and where the barges are dumping the sludge to assure that dumping occurs in the designated 106-Mile Site. ODSS comprises three main components: (1) the electronics package ("black box") that is installed on all 13 vessels; (2) the transducers or pressure sensors that measure changes in vessel draft; and (3) the base station located at Governors Island, New York, and the relay station located at Sandy Hook, New Jersey.

The ODSS can provide real-time (near-instantaneous) coverage up to 20 nmi from the base station and 60 nmi from the relay station. When the vessels are outside communications range, the black box stores data on the vessel's location and dump status.

SMTS Program

To further enhance tracking and monitoring of sewage sludge, EPA developed and implemented the Sludge Manifest and Tracking System (SMTS) program. Its purpose is to prevent illegal dumping of sewage sludge in the harbor, rivers, and estuarine areas of New York and New Jersey. The SMTS program also protects against the surreptitious loading of toxic or banned substances along with the sewage sludge, and is designed to prevent or mitigate accidental sludge spills.

The SMTS program is described in detail in the EPA Surveillance and Enforcement of Sewage-Sludge Dumping Report to Congress (EPA, 1989f).

Enforcement Actions

EPA inspectors and shipriders are required to notify the agency and/or the Coast Guard of permit violations so that EPA can initiate enforcement activities under MPRSA regulations. In July 1988, EPA issued administrative complaints against all nine ocean dumping sewerage authorities and their waste transporters for violating sludge disposal conditions from January to April 1988. Violations included discharging sludge too quickly,

failing to comply with approved vessel tracking procedures during discharge, and filing incomplete reports.

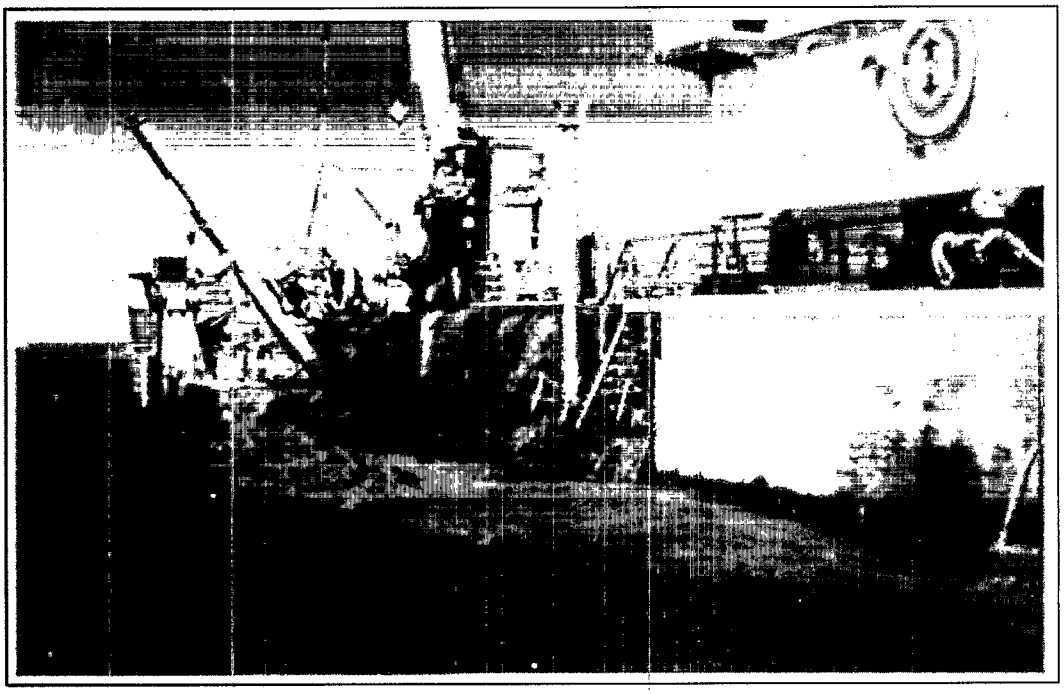
New York City Department of Environmental Protection (NYCDEP), Nassau County Department of Public Works (NCDPW), National Seatrade, Inc., and the A&S Transportation Company have settled with EPA for a combined total of $107,000. The other authorities and waste transporters have agreed to settle, but these actions have yet to be completed.

Based upon reports from EPA-approved inspectors, other administrative complaints have been issued for sludge spills and other permit violations. A complaint against NYCDEP was issued in September 1989 and another against Westchester County Department of Environmental Facilities (WCDEF) in January 1990. Both authorities have responded to the complaints, but final settlements have yet to be reached. Following the last complaint against NYCDEP, the sewerage authority installed a videocamera system at its Wards Island dock to improve monitoring of vessels transferring sewage sludge. NYCDEP has also improved the efficiency of the high-level alarm sensors on its sludge barges.

During monitoring activities at the 106-Mile Site, members of the scientific party aboard EPA's ocean survey vessel, the OSV PETER W. ANDERSON, twice observed floatables in the sludge plume behind the barge Seatrader I, once during September 1988 and again in October 1989. During the first sighting, the barge was transporting sewage sludge from the Long Beach Wastewater Treatment Plant and NCDPW. Based upon this sighting and plant inspections, EPA issued an administrative complaint in December 1988. The City of Long Beach stopped ocean disposal of sewage sludge in 1989.

During the second floatables sighting, the Seatrader I was transporting sewage sludge from Joint Meeting of Essex and Union Counties (JMEUC), Middlesex County Utilities Authority (MCUA), and NCDPW. Based on this sighting, EPA issued an administrative complaint in November 1989. EPA also issued an enforcement letter in November 1989 requiring the three authorities to establish a means for screening each bargeload (prior to loading) of sewage sludge for floatables. The waste transporter and the authorities have responded to the complaint, but final settlements have yet to be reached.

Chapter 5. Ocean Disposal of Industrial Wastes and Other Materials



Industrial Wastes

As a result of the passage of ODBA, dumping of industrial wastes into the ocean has stopped. In September 1988, the last dumper ceased activities. In February 1990, EPA eliminated 21 expired or unneeded ocean dumping sites. These sites had originally been designated for industrial waste, sewage sludge, or similar types of material. Also in February 1990, EPA proposed to dedesignate the Gulf of Mexico Ocean Incineration Site and the Region II Acid Waste Site. A final rule should be in place in 1991.

As shown in Exhibit 15, under MPRSA, between 1973 and 1986, the amount of industrial waste dumped into the ocean decreased steadily. In 1987-1988, 82,000 wet tons of acid waste were dumped at the Acid Waste Site. In 1987, 28,000 wet tons were dumped at the Deepwater Industrial Waste Site.

The last dumper of industrial waste ceased disposal operations in September 1988. Since ODBA prohibits new dumpers from commencing disposal of industrial waste, the ocean dumping of industrial waste has effectively ended.

During the period covered by this report, EPA has taken action to eliminate expired or unneeded ocean dumping sites. This action has included removing 15 sites originally designated for industrial wastes and similar types of material, as well as the proposed dedesignation of a site previously used for acid waste disposal. Final action on that proposed dedesignation took place in February 1991. The dedesignation of these sites is consistent with the dumping prohibitions established by ODBA. Appendix A lists the location of these sites.

Since ODBA prohibits issuing new permits and no permits now exist, EPA has effectively ended ocean disposal of industrial waste.

Burning of Wood and Dumping of Construction Debris

EPA plans to phase out the Woodburning Site in the New York Bight by December 31, 1991, because of the availability of land-based alternatives.

To date, EPA has issued permits for the burning of driftwood, wood pilings, and other wood debris removed from New York Harbor at this site. Quantities burned annually during this reporting period were 1987, 35,000 tons; 1988, 32,000 tons; 1989, 25,000 tons; and 1990, 12,000.

EPA is currently considering the future status of the Cellar Dirt Site, also in the New York Bight, where construction debris has been dumped. The last permit to use this site expired in November 1989.

Incineration-at-Sea

During the first part of this reporting period, EPA worked on research and operating programs needed to support development of the new regulations for ocean incineration that were proposed in 1985 [50 FR 8222 (Feb. 28, 1985)]. However, in February 1988, EPA suspended work on the program for incineration-at-sea of liquid hazardous waste. By banning ocean dumping of industrial waste, ODBA effectively eliminated incineration-at-sea as well.

Many of the methodologies and processes developed for the operational and research programs were never used during at-sea burns because of the program suspension. However, benefits were derived from the efforts. Research contributed to the development of over 50 state-of-the-art methods for ocean sampling and chemical analyses that can be applied to other marine and estuarine investigations, such as detecting oil or chemical spills and siting of sewage treatment plant outfalls.

Research conducted under the incineration-at-sea program was based on a strategy that focused on the development of an updated environmental risk assessment of ocean incineration of liquid organohalogen wastes. The three major study areas and reports that EPA prepared for each are as follows:

- Development of methods for sampling, analyzing, and determining toxicity in marine organisms from incinerator emissions (EPA, 1985b; EPA, 1989a);
- Development of methods for monitoring ocean incineration operations (EPA, 1987d-g); and
- Determination of potential impacts of ocean incineration activities (EPA, 1985b; EPA, 1989a).

Additional work included development of a comprehensive operating program (EPA, 1987a) that addressed the site-designation process (EPA, 1987b), permits for ocean incineration (EPA, 1987c; EPA, 1988a), and management of specified areas or sites where incineration could take place without endangering human health or the environment (EPA, 1986).

The report, Ocean Incineration Research Program: Background and Status (EPA, 1989h), gives the status of the work performed. It summarizes the development of the operating program and the progress made in EPA's research strategy.

Site Designation

EPA conducted several baseline and site designation surveys at potential and existing incineration sites (EPA, 1987h,i; EPA, 1988b-f) in this reporting period.

In February 1990, the Agency proposed to dedesignate the Gulf Incineration Site in the Gulf of Mexico. This site, which is south of Galveston, Texas, was last used in 1982. This action was completed in

February 1991. This site was designated in 1976, redesignated in 1982, and last used in 1982. No other sites are designated for incineration-at-sea.

Law Suits

EPA won verdicts in two law suits during this reporting period involving applicants for permits for incineration-at-sea.

The first, filed by Waste Management International (WMI) in 1986, challenged EPA's denial of a research permit to incinerate hazardous waste at sea to Chemical Waste Management (CWM), a WMI subsidiary. EPA argued that regulations governing ocean incineration should be in place before permits were issued, a position the court upheld (669 F. Supp. 536).

The second, filed by Seaburn, Inc., followed EPA's 1988 suspension of work on the incineration-at-sea program. As a consequence of the suspension, the incineration-at-sea regulations were not completed, nor were permit applications reviewed. The company challenged such an indefinite suspension. EPA argued that ODBA, which became law during this suit, prohibited issuing new permits for the incineration of industrial waste at sea. Seaburn argued that ODBA covered only direct dumping of industrial wastes, not residues from incineration; the court, in April 1989, upheld EPA's interpretation (712 F. Supp. 218).

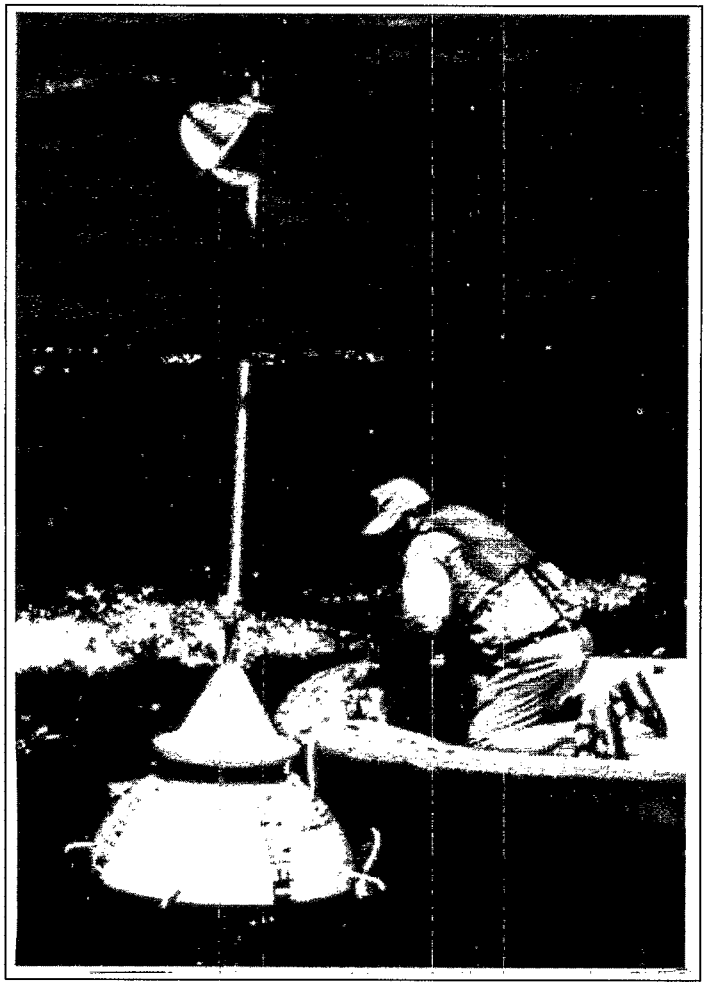
Fish Wastes

MPRSA does not require a permit for dumping unadulterated fish wastes unless it occurs in harbors, other protected or enclosed coastal waters, or any location where the Administrator finds that the dumping could endanger human health, the environment, or ecological systems.

Region I permits offshore disposal of seafood wastes at four sites in Cape Cod Bay. Region II is also investigating possible designation of a site for fish wastes near Mayaguez, Puerto Rico. Offshore disposal of fish wastes also occurs in Regions III and IV. Region IV has asked fish waste dumpers in the Region to perform environmental monitoring of their waste sites, and some baseline work has been performed at sites at Cape Canaveral and St. Augustine, Florida.

Between 1987 and 1990, Region IX issued permits under Section 102 of MPRSA to Star-Kist Samoa, Inc., and Samoa Packing Company, Inc., for the disposal of fish cannery wastes. The volumes disposed at this site during this reporting period were as follows: 26 million gallons in 1987; 10 million gallons in 1988; 11 million gallons in 1989; and 13 million gallons between January 1, 1990, and September 30, 1990. EPA designated the American Samoa Fish Cannery Waste Site in February 1990. The permits and site designation went into effect for three years on July 31, 1990.

Chapter 6. Monitoring Activities Conducted Aboard The OSV PETER W. ANDERSON



About the OSV PETER W. ANDERSON

The Ocean Survey Vessel (OSV) PETER W. ANDERSON is EPA's primary survey vessel for ocean monitoring and site designation field studies. Surveys aboard the ANDERSON are performed as part of EPA's overall strategy to determine appropriate locations for disposal of ocean-dumped materials and to monitor those materials once disposed into the ocean environment. Information collected on surveys is used in Environmental Impact Statements (EIS), to modify permit conditions, or to support decisions to designate or expand designated disposal locations, such as determining the location of a second disposal site for dredged sediments from Galveston Harbor, Texas.

Specifications and Equipment

The ANDERSON is equipped with three fully operational laboratories: a wet laboratory for biological sample processing, a chemistry laboratory, and a microbiology laboratory. The ship also has a computer survey center where data management and survey overview operations are conducted. The ANDERSON is staffed by an operating crew of 15 and a scientific crew of up to 15. The operating crew (Captain, mates, engineers, and deck personnel) is supplied by MAR, Inc., of Ft. Lauderdale, Florida, under contract to the Oceans and Coastal Protection Division of the Office of Wetlands, Oceans, and Watersheds. The ANDERSON's scientific crew is comprised of a Chief Scientist, who is responsible for the mission, and scientific staff made up of personnel from EPA Headquarters or Regional offices, personnel from other Federal agencies, EPA contractors, or university personnel.

On-board survey equipment includes over-the-side sampling gear with shallow- and deep-water sampling capabilities, laboratory analytical equipment, an underwater videocamera system with taping capabilities, and a side-scan sonar system. The ANDERSON has on-board equipment to obtain samples from the water column; air-sea

interface; seafloor sediments; or surface, midwater, or bottom-dwelling organisms. Samples of dredged material, sewage sludge, or air can be collected aboard the ANDERSON.

Since January 1987, significant new equipment has been added to the ANDERSON. Included are a navigation radar and plotter system; a data recorder and chart digitizer; a new salinometer for the chemistry laboratory; a new, automatic conductivity-temperature-depth-dissolved oxygen (CTD/DO) system, which electronically obtains conductivity, temperature, depth, and dissolved oxygen readouts and transmits the data to the ship's computers; 1000 ft of side-scan sonar cable; a winch for the underwater videocamera system; a reverse osmosis desalinator; two personal computers for the computer survey center; International Marine Satellite (INMARSAT) capability to substantially improve ship-to-shore communications; and a Rigid Inflatable Boat to assist in diver operations and sample collections.

Mission Highlights

The ANDERSON is fully utilized, maintaining a full schedule throughout the year. In addition to those scientific surveys which collect data, other surveys are geared toward public outreach, marine environmental education, equipment demonstrations, and contract missions with the U.S. Navy and Coast Guard. Destinations for scientific surveys have included dredged material disposal sites, the 106-Mile Site, potential sites for incineration-at-sea, estuaries and other marine environments studied under EPA's Near Coastal Waters Program and National Estuary Program, and various United States harbors to investigate marine debris. After each trip, the mission Chief Scientist prepares and submits a report to the appropriate offices within EPA.

Exhibit 17 shows the locations of the scientific surveys and the EPA Regional offices responsible for them. The baseline surveys included studies for new dredged material disposal sites (DMDS) at Wilmington, North Carolina, and Charleston, South Carolina. These surveys involved collection of bottom sediments to accurately describe the character of the seafloor. Monitoring data collection surveys included missions to an existing DMDS near Norfolk/Dam Neck, Virginia, to assess the quality of sediments removed from the approaches to Chesapeake Bay and deposited at the site. In addition, diver-serviced sediment traps were employed at the Norfolk/Dam Neck DMDS to determine the character and volume of the sediments that may have been resuspended at the site by underwater currents and wave action.

In 1987, the ANDERSON conducted 41 missions during 221 sea days. Of these, 33 missions were scientific surveys, such as baseline and monitoring data collection surveys, and surveys for equipment deployment, testing, calibration, and recovery. The remaining eight missions were activities such as demonstration cruises for student groups, and two contract missions for the Navy.

In 1988, 42 missions were conducted during 231 sea days. Of these, 31 missions were scientific surveys (see Exhibit 17) and the remaining 11 missions were other activities. Highlights of the year included surveys to the 106-Mile Site to deploy and recover deepwater current meter arrays, and efforts to track the plume of the sludge as it left the disposal barge; detailed videocamera mapping of potential dredged material disposal sites at Charlotte Harbor/Fort Myers, Florida; and studies in New York and Boston Harbors of floatable materials, such as plastic trash and medical wastes that often wash ashore on beaches, causing visual, esthetic, and public health concerns.

One particularly interesting development during 1988

was the testing and use of a sediment perturbation device developed with the University of Georgia. This instrumentation, which perturbates the sediment and provides real-time analysis of fine sediments for trace metals, was used to map sediment composition at dredged material disposal sites in Fort Myers/Charlotte Harbor, Tampa, Pensacola, and Cape Canaveral, Florida; Mobile, Alabama; and Charleston, South Carolina.

Another accomplishment during 1988 was the final monitoring survey at the Tampa Harbor, Florida, Dredged Material Disposal Site. Disposal of dredged material from this project to widen and deepen the existing shipping channel to accommodate deeper draft phosphate ore freighters took place from May 1984 through October 1985, when the project was completed. Approximately 4 million cubic yards of material were deposited at the site, creating a substantial flat-topped mound. After disposal operations were finished, monitoring surveys showed heavy colonization of the mound by red and brown algae, sponges, tunicates, sea urchins, and arrow crabs. In addition, a diverse assembly of fish, including angelfish, grouper, jacks, snapper, and wrasses, was found in the habitat provided by the boulders of dredged material on the mound. The dredged material provided ample surfaces for colonization by numerous sessile organisms, as well as considerable habitat and protective cover for teleosts (bony fishes) and motile invertebrates.

In 1989, 40 missions were conducted during 197 sea days. Of these, 29 were scientific surveys (see Exhibit 17) and 11 were other activities that included an educational survey for students of the University of Rhode Island, a demonstration survey in support of the National Estuary Program, and one contract mission for the Navy.

The scientific surveys conducted during 1989 included two trips to the 106-Mile Site to monitor ocean dumping of sewage sludge. With the aid of the ANDERSON, new data about the prevalence of floatable marine debris were collected during EPA's Harbor Studies Program. Harbor study surveys were conducted with the ANDERSON in New York, Boston, Philadelphia, Baltimore, Norfolk, and Miami. Additional studies were conducted in Houston, Seattle, Tacoma, San Francisco, and Oakland using contract vessels. The data are being used to characterize and determine the sources of floatable debris in the U.S. This data was used in the development of a Report to Congress (EPA, 1990d) and is further described in EPA, 1990e.

Other highlights of 1989 included side scan sonar surveys of dredged material disposal sites in Regions I, II, III, and IV, and support of the Coast Guard's cleanup operations after an oil spill in the Delaware River in June 1989.

In 1990, 37 missions were conducted during 203 sea days. Of these, 24 missions were scientific surveys (see Exhibit 17) and the remaining 13 missions involved other activities. These activities included public outreach programs in Washington, DC, Annapolis, Maryland, Boston, Massachusetts, as well as the Earth Day celebrations cited below. In addition, the ANDERSON participated in demonstration surveys for three school and university groups during 1990. Highlights for the year for scientific surveys included dredged material disposal site investigations at Cape Arundel and Casco Bay, Maine, Pensacola and Ft. Pierce, Florida, and Charleston, South Carolina.

The major highlight for the year were the ANDERSON's activities in support of Earth Day 1990. The ship participated in public open houses in Norfolk, Virginia, Jacksonville, Florida, Philadelphia, Pennsylvania, and Annapolis, Maryland. Over 4000

Exhibit 17

Surveys Conducted by the OSV PETER W. ANDERSON, 1987 - FY 1990

Site	Number of Surveys			
	1987	1988	1989	FY 1990
Region I				
Cape Arundel Disposal Site, ME		1		1
Massachusetts Bay Disposal Site, MA		1	1	
Narragansett Bay, RI	1	2	1	
Rhode Island Sound, RI	1	1		
Providence River, RI		1		
Boston Harbor, MA		1a	1	1a
Massachusetts Bay, MA			1	1
Buzzards Bay, MA	2			
Georges Bank			4	2
Casco Bay, ME				1
Region II				
106-Mile Site	1	1	2	1
Mud Dump/Alternate Mud Dump Site, NY Bight	2	2	1	
106-Mile Deepwater Industrial Waste Disposal Site	1			
Long Island Sound, NY	1	1	1	
New York Harbor, NY	1	1a	2a	
Continental Shelf Edge	1			
Cape May, NJ	3	4	4	
Region III				
Dam Neck Ocean Disposal Site, VA	1	1		
Ocean City, MD	1			
Bethany Beach, DE	1			
Delaware Inlet, DE			1	
Philadelphia, PA			1a	
Baltimore, MD			2a	1a
Norfolk, VA				1a
Chesapeake Bay, MD				1a
NJ/DE/MD/VA Near Coastal Waters				4
Delaware Bay, DE				1

Exhibit 17 -- continued

Surveys Conducted by the OSV PETER W. ANDERSON, 1987 - FY 1990

Site	Number of Surveys			
	1987	1988	1989	FY 1990
Region IV				
Fort Pierce, FL				1
Wilmington, NC	1			
Charleston, SC	1	1		3
Fernandina Beach, FL	1		2	
Canaveral, FL		2	2	1
Charlotte Harbor, FL	1	2	2	
Tampa, FL	4	3		
Pensacola, FL	2	2		1
Mobile, AL		1		
Pascagoula, MS	2			
Fort Meyers, FL	1	1		
Boca Raton, FL		1		
Miami, FL			1a	1a
Straights of Florida	1a			
Southeast Atlantic Coast	1a			
Savannah, GA				1a
Region VI				
Galveston, TX		1		
Gulf Incineration Site	1a			
Coastal Louisiana				1
TOTAL SURVEYS	33	31	29	24
Other Activities	*8*	*11*	*11*	*13*
TOTAL MISSIONS	**41**	**42**	**40**	**37**

a These surveys were conducted by EPA Headquarters

persons toured the vessel during those four port calls, and considerable interest was expressed by the visitors on how they could assist in environmental protection efforts. In addition, the Office of Water produced a commemorative poster for Earth Day that was given to all visitors to the ANDERSON.

Management Decisions

EPA uses data and information collected during OSV ANDERSON surveys as a basis for making environmental management decisions. The following are examples of decisions made during this reporting period, and the role the ANDERSON played in making them.

- EPA studies aboard the ANDERSON led directly to the designation of the Tampa, Florida, dredged material disposal site. In addition, data collected on the ANDERSON after the dumping operations showed conclusively that the dredged material was contained within the designated site.
- Surveys using the ANDERSON gathered direct evidence of the need for a second dredged material disposal site offshore of Norfolk, Virginia.
- Videocamera data gathered on the ANDERSON identified an appropriate location for the Boca Raton, Florida, dredged material disposal site. This site was chosen to avoid impacting two inshore coral reefs.
- Data collected aboard the ANDERSON in 1988 were used to select a second site for disposal of dredged sediments from Galveston Harbor, Texas.
- Data collected during ANDERSON surveys to the 106-Mile Site have provided considerable insight into dispersal patterns of dumped sludge. This information was used to determine appropriate disposal rates for the sewage sludge and to establish permit conditions for the sewerage authorities. Observations made during these surveys resulted in enforcement actions against dumpers for permit violations.
- Information gathered using the ANDERSON near sewage effluents in Massachusetts Bay demonstrated where outfall contaminants accumulated, how the Bay currents directed the effluent depositions, and an appropriate location to place a new sewage outfall pipe.
- Data on the prevalence of marine debris, collected with the aid of the ANDERSON as part of EPA's Harbor Studies Program, led EPA to focus on the release of plastic pellets into the marine environment, and to further investigate combined sewer overflows (CSO) and sewers as sources of marine debris; in addition, substantial insight into the origin of much of the marine debris, medical waste, and floatables found in estuarine, coastal, and offshore waters has been gathered with the use of the ANDERSON.
- Winter flounder collection studies conducted by the ANDERSON at Georges Bank have provided a baseline of data on uncontaminated fish tissues for comparison with tissues of flounder caught in inshore areas. These studies provide significant information about safe levels for consumption of winter flounder.
- Data collected using the ANDERSON, during Near Coastal Waters

surveys in the Mid-Atlantic Bight, have been used to establish NPDES permit limitations for nutrients and bacterial loadings for Ocean City, Maryland, and Bethany Beach, Delaware.

- During the June 1989 oil spill in the Delaware Bay, the ANDERSON responded quickly to the Coast Guard's request for assistance and was used to determine the extent and location of the spilled oil.
- The location of a dredged material dumpsite in Charleston, SC, was changed to protect newly-found live-bottom communities.

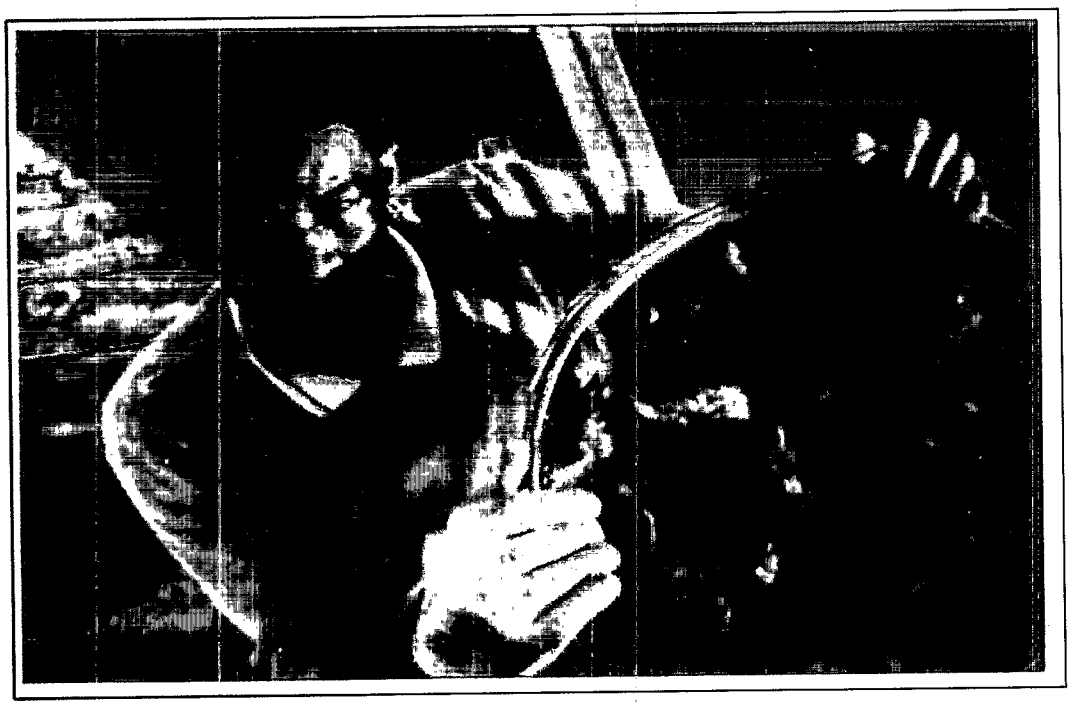
Public Education Activities

Each year, the ANDERSON holds a number of public open houses. During this reporting period, environmental education events were held in Boston, Massachusetts, for Region I; New York City for Region II; in Annapolis, Maryland, for Region III; and in Washington, DC, for Headquarters operations. The open houses are popular with both the ANDERSON's crew and the public because they give the crew a chance to explain the ship's mission. They also provide visitors with a rare view of the complex and involved equipment and operations of the vessel.

The ANDERSON participated in the initiation of a public-private liaison with WJLA, Channel 7, in Washington, DC, to develop the first of two proposed videotapes on the theme of pollution prevention, and how the public can assist in that effort. The first videotape, approximately 8 minutes in length, is addressed to school children from 9 to 17 years of age, and has been completed.

As was mentioned earlier, the ANDERSON also participated in several major events during the Earth Day 1990 celebrations. During public open houses for outreach events in Norfolk, Virginia, Jacksonville, Florida, Philadelphia, Pennsylvania, and Annapolis, Maryland, many visitors toured the ship, including the Mayors of Norfolk and Jacksonville, and the Governor of the State of Florida.

Chapter 7. EPA's Marine Protection Programs and Policy



In conjunction with activities under MPRSA, EPA's activities include implementation of a number of programs and policies that focus on protection of the nation's estuaries, coastal waters, and oceans. The following are some of the activities that relate to MPRSA:

EPA's National Coastal and Marine Policy

EPA's National Coastal and Marine Policy (NCMP), which EPA developed and published in 1989, states that EPA, with the help of other Federal agencies, the States, localities and the general public, will protect, restore, and maintain the nation's coastal and marine waters to protect human health and sustain living resources.

EPA's NCMP specifies five goals:

Goal 1: Recover full recreational use of shores, beaches, and water by reducing sources of bacterial and other contamination, plastics, floatables, and debris;

Goal 2: Restore the Nation's shellfisheries and saltwater fisheries and protect marine mammals and living resources by controlling pollution and causes of habitat degradation and loss;

Goal 3: Minimize use of coastal and marine waters for waste disposal by strictly limiting ocean dumping, tightening controls on land-based sources, and establishing aggressive programs to reduce the amount of waste generated by our society;

Goal 4: Increase understanding of the effects of pollution on complex coastal and marine ecosystems by expanding scientific research and monitoring programs and developing new technology;

Goal 5: Provide leadership by the United States to protect the world's oceans by aggressively promoting international efforts to stop pollution and protect critical marine habitats and living resources.

The National Estuary Program

Congress established the National Estuary Program (NEP) precisely to address the goals of the NCMP. Under the Clean Water Act, the program shows how estuaries (and other ecosystems) can be protected and their living resources enhanced through comprehensive, action-oriented management that:

- Identifies the probable causes of major environmental problems in estuaries of national significance;
- Promotes and sustains long-term state and local commitment to solving problems;
- Generates meaningful public involvement and participation;
- Focuses existing regulatory, institutional, and financial resources to act on identified problems; and
- Encourages innovative management approaches.

Seventeen estuaries are participating in the National Estuary Program.

Marine Debris Activities

The presence in the marine environment of floating debris from anthropogenic sources has resulted in considerable public attention and concern. Marine debris is harmful to fish and wildlife through ingestion and entanglement, poses a risk to human health, and is economically and aesthetically damaging to beach communities. Sources contributing to this problem can include land-based facilities for handling solid waste; beach use; Combined Sewer Overflows (CSOs); domestic and industrial wastewater and stormwater systems; urban runoff; and commercial, recreational, and military vessels.

In response to domestic and international concerns about floatable debris, EPA conducted a series of studies in eleven major coastal cities to characterize this debris and its sources. EPA is developing a national marine debris program strategy which will focus on source identification and control, public education and pollution prevention. EPA has collected and quantified debris exiting several CSO's and storm sewers, and is working with the plastics industry and the public to control the release of debris to the waters of the U.S. This national strategy should be available in late 1991 for public review.

Near Coastal Waters Program

In 1986, at the request of the EPA Administrator, the Office of Water began a long-range Strategic Planning Initiative to address the problems of increasing degradation of the nation's near coastal waters (NCWs). The pressures exerted on the nearshore waters from growing populations, nonpoint source runoff, industrial and municipal discharges, and assorted waste disposal activities are increasing and must be evaluated and addressed.

The Near Coastal Waters Program is part of a long-range initiative by the Agency to restore and protect the water quality and natural resources of the nation's coastal areas. The Office of Water is working with other Federal agencies, coastal states, and EPA Regional personnel to design and implement a wide range of activities to achieve this goal. The NCW Program was initiated as part of EPA's first strategic planning process in 1986 with the intention of improving the Agency's management of near coastal water environmental quality and identifying ways to improve coordination with other federal, state, and local offices with responsibilities for coastal programs.

The major activities at present are the Pilot Project Program, the Near Coastal Waters Assessment, Technology Transfer activities, and Coordination Strategies.

(1) Pilot Project Program. NCW pilot projects are joint EPA-State efforts that

address environmental problems in selected near coastal waters. Their purpose is to demonstrate innovative management actions that can be applied in other areas of the country. Some pilot projects include a Decision Making Information System for Delaware's Inland Bays, Oregon Coastal Resource Action Plan, and Perdido Bay Cooperative Management Project.

(2) Near Coastal Waters Assessment. The goal of the Near Coastal Waters Assessment Project is to identify near coastal waters needing management attention. To do this, EPA is working with other Federal and state agencies. Current activities include Federal-State information exchanges, Regional Near Coastal Assessment Reports, Classifications of estuaries accordingly to their relative susceptibility to nutrient and toxic pollutants, and a Federal Data Base Inventory.

(3) Technology Transfer Activities. Together with other programs in the Office of Water, the NCW Program has established a network of Federal, regional, and state water quality experts, scientists, public interest representatives, and industry representatives to provide a forum for information exchange. Some of the products that have resulted from these activities are "The National Estuary Program Primer", "Saving Bays and Estuaries: A Handbook of Tactics", and "Financing Marine and Estuarine Programs: A Guide to Resources".

(4) Coordination Strategies. The authority to control pollutants and conduct research in near coastal waters may be located within several different Headquarters and Regional program offices. In order to coordinate Agency activities and to assure consideration of the special needs of sensitive near coastal waters, the NCW Program is working with those offices to incorporate more protective actions in the Agency's guidance and policy documents.

Gulf of Mexico Program

In 1988, EPA Regions IV and VI initiated the Gulf of Mexico Program. Its major purpose is to develop a comprehensive strategy to protect and enhance the environmental quality of the Gulf of Mexico. It was created as an intergovernmental response to signs of increasing environmental degradation that are becoming pervasive throughout the Gulf system. Over 16 Federal and 19 State agencies are currently working together on the program.

During its first year, the Gulf of Mexico Program was able to identify key issues and begin building consensus on the issues that need to be addressed to protect the Gulf's long-term health and productivity. Nine issue-specific subcommittees have been created to address these problems. They include (1) habitat degradation, (2) toxic substances and pesticides, (3) nutrient enrichment, (4) marine debris, (5) freshwater inflow, (6) public health, (7) coastal and shoreline erosion, (8) information and data transfer, and (9) public education and outreach.

Mid-Atlantic Bight Initiative

The Mid-Atlantic Bight Initiative is a joint program of EPA Regions I, II, III, and IV to address coastal water pollution problems in the Mid-Atlantic Bight. Two goals of the initiative are to better define coastal problems and to reorient existing EPA and State programs to more effectively address common problems. A step in this process was the Mid-Atlantic Bight Ocean and Near Coastal Waters Monitoring Workshop. It was held in October 1988 to (1) open communication among the agencies involved in monitoring; (2) provide a forum to discuss toxics, public health, and eutrophication monitoring; and (3) promote a systems approach to monitoring the Bight. EPA Region III also is conducting regional workshops in each State in the region. The first workshop was held in

January 1990 in Ocean City, Maryland, and the second workshop in April 1990 in Dover, Delaware. The workshop participants, who represented State, Federal, and local environmental agencies and groups, showed great interest in developing cooperative plans to address common coastal problems.

New York Bight Restoration Plan

The United States-Japan Fishery Agreement Approval Act of 1987 directs EPA, in consultation with NOAA and other Federal, State, and interstate agencies, to prepare a New York Bight Restoration Plan (NYBRP). In a related effort, EPA designated the New York-New Jersey Harbor as an estuary of national concern, and convened a management conference to prepare a Comprehensive Conservation and Management Plan (under Section 320 of the Water Quality Act) for the Harbor. The NYBRP is being prepared by a work group established as part of the management conference. The first phase of this planning effort should be completed and submitted to Congress in 1991. It includes the following:

- A review of the current state of knowledge concerning use impairments and adverse ecosystem impacts, including floatables, toxics, pathogens, nutrients, and habitat loss in the New York Bight;
- An in-depth look at one adverse impact, the prevalence of shell disease in crustaceans of the New York Bight;
- An assessment of the input and fate of pollutants in the Bight; and
- An extensive public outreach effort to determine the public's view on pollution inputs and fates.

The next phase of the NYBRP should be completed in mid-1992.

Radiation Programs

Under the MPRSA, the ocean dumping of high level radioactive waste is prohibited, and the dumping of low-level radioactive waste (LLRW) requires a joint resolution of Congress before a permit can be used. The U.S. is not currently disposing radioactive wastes in the ocean. EPA's Office of Radiation Programs (ORP) carried out the following activities during this reporting period:

ORP established and managed an interagency technical subcommittee to review criteria and technical support documents for use in potential regulations to address any ocean disposal of LLRW.

ORP participated in a U.S. Geological Survey (USGS) high-resolution bathymetric mapping survey off the Atlantic Coast in the Exclusive Economic Zone. The Geological, Long-Ranged Inclined Asdic (GLORIA) side scan sonar system successfully obtained baseline data applicable to evaluating ocean sites for any future disposal of LLRW. The USGS published the GLORIA data in atlas format in 1989.

ORP also continued its participation in NOAA's National Status and Trends monitoring program. NOAA provided ORP with samples of sediment, benthic fish, and bivalves for radionuclide analysis. ORP's Eastern Environmental Radiation Facility analyzed samples collected in 1987. ORP obtained radioanalytical support from the Department of Energy for analysis of samples collected in 1988 and prepared a report of the radioanalytical data in 1989.

ORP initiated a bilateral United States/Soviet project to measure concentrations of radionuclides transported to the Black Sea from the Dnieper River as a result of the Chernobyl reactor explosion. This data will assist in assessing generic impacts caused by any ocean disposal of LLRW.

Appendix A: Sites Dedesignated During the Years 1987 - FY 1990

Appendix A

Sites Dedesignated During the Years 1987 - FY 1990

Site	***Region***
Proposed for Dedesignation	
Acid Wastes Sites in the New York Bight	II
Gulf of Mexico Ocean Incineration Site	VI
Key West Dredged Material Dumpsite (FL)	IV
LA4 Dredged Material Dumpsite (San Diego/Point Loma)	IX
Dedesignated and/or Removed From Listing	
Dredged Material Sites	
St. Augustine (FL)	IV
St. Lucie Inlet (FL)	IV
Ponce de Leon Inlet (FL)	IV
Largo Sound (FL)	IV
Anclote (FL)	IV
Pithlachascotee (FL)	IV
Withlacoochee (FL)	IV
Cedar Key Site 1 (FL)	IV
Cedar Key Site 2 (FL)	IV
Horseshoe Cove (FL)	IV
Industrial Waste Sites	
Industrial Wastes (2 sites)	I
Wrecks	II
Acid Wastes	III
Industrial Wastes Site	IV
Industrial Wastes Site (2 sites)	VI
Industrial Wastes Site (PR)	II
Sewage Sludge Site (12 Mile)	II
Alternate Sewage Sludge Site	II
Sewage Sludge Site	III
Herbicide Orange Incineration Site (Johnston Island)	HQ
Kwajalein Island	IX
San Nicholas Basin	IX
Gulf of Mexico Platform Jacket Site	VI
THUMS, Drilling Muds and Cuttings	IX
106 Mile Industrial Wastes Site	II
Fish Cannery Wastes Site (American Samoa)	IX

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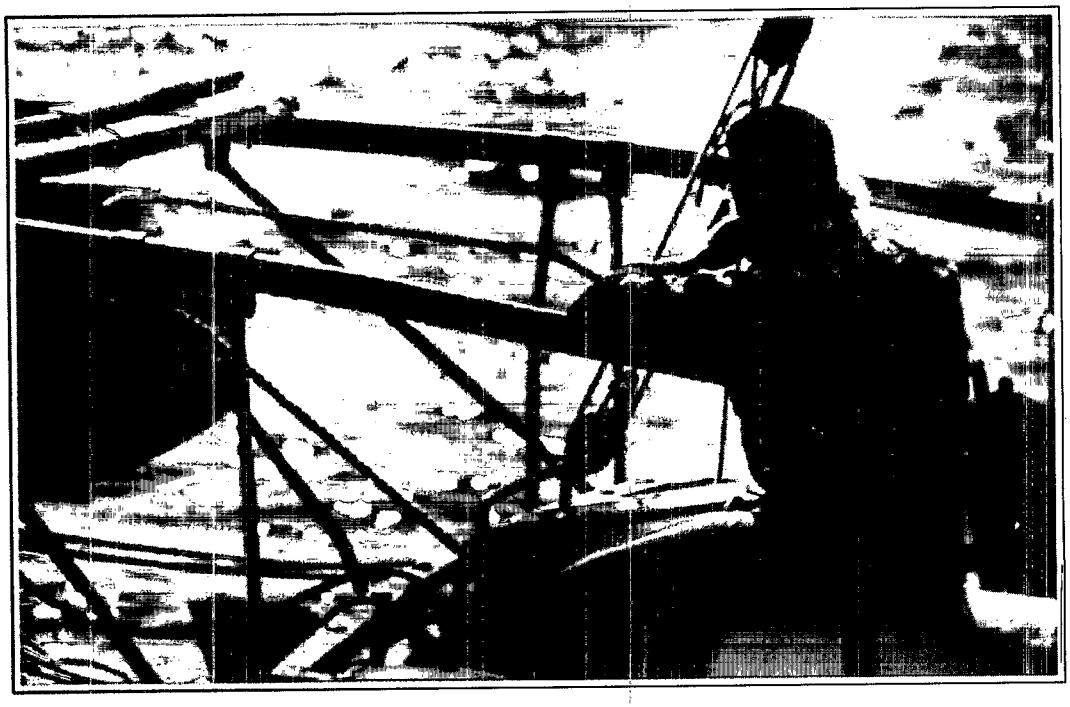
This issue of EPA's Ocean Dumping Report to Congress is dedicated to the memory of

Thaddeus Allen Wastler
1928 — 1990



Al Wastler joined the Environmental Protection Agency in 1970, when it was created. He helped set the Agency's course by drafting the first regulations and criteria for MPRSA upon an effects-based approach. He was the guiding force behind the 1976 Easton, Maryland, Workshop that established environmental thresholds by which to estimate dumping's impact on the marine environment. The current regulations and criteria, which he also drafted, are based on the findings of that Workshop.

He was the Agency's lead technical liaison with the London Dumping Convention from the time that the United States became a party to it and played an active role in its work. He was Chairman of the Scientific Group on Dumping for four terms, the maximum allowed.

Al Wastler was born in Pensacola, Florida, earned a BS in Chemistry at Duke University and an MS in Chemical Engineering at the Georgia Institute of Technology. He also did advanced work in Physical Oceanography at The Johns Hopkins University. When Al moved to Washington in 1967, he was an officer in the Public Health Service.

An authority on tidal influences and the carbon cycle as contributors to eutrophication, Al maintained a consistent interest in cyclical phenomena in ocean and estuarine processes. Among his publications is the book, "Spectral Analysis-Application in Water Pollution Control."

Al Wastler was a gentleman and scholar, and will be sadly missed by the people who work on ocean and coastal zone issues.