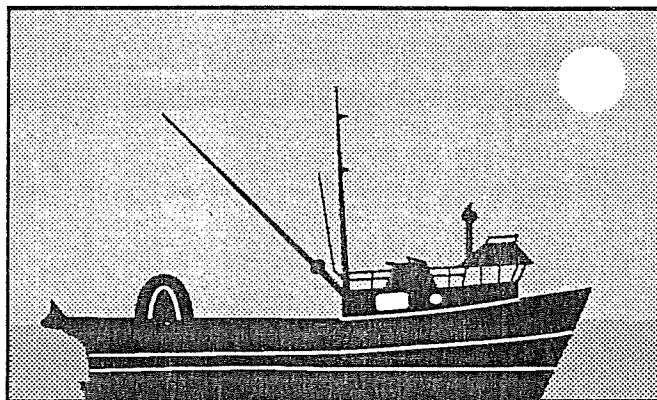

NEW BEDFORD/FAIRHAVEN MARINE PUMP-OUT FACILITIES STUDY



JUNE 1992

Prepared For:

NEW BEDFORD HARBOR DEVELOPMENT COMMISSION
AND TOWN OF FAIRHAVEN
c/o New Bedford City Planning Department
Room 211
133 Williams Street
New Bedford, Massachusetts 02740

Prepared By:



ENGINEERS, ENVIRONMENTAL CONSULTANTS & PLANNERS
A Summit Environmental Group Company



HMM ASSOCIATES, INC.

ENGINEERS ENVIRONMENTAL CONSULTANTS & PLANNERS
A Summit Environmental Group Company

HMM Ref. No. 5470-302/ENV-7802

June 30, 1992

Mr. Martin J. Manley, Executive Director
New Bedford Harbor Development Commission
Wharfinger Building - Fisherman's Wharf
New Bedford, MA 02740

RE: Final Report for the Marine Facilities Pump-Out Study

Dear Mr. Manley:

Attached are 5 copies of the Final Report for the Marine Facilities Pump-Out Study for your review and distribution to the Harbor Management Committee. Section 6.0 - Implementation Plan and Schedule was inadvertently omitted from the Final Report during reproduction and transmittal on June 22. This was not discovered until last week when we discussed review of this document with you and Jeff Osuch.

As you know, David Janek of MCZM instructed me to submit this Final Report prior to June 30, 1992 so that he would not be required to extend the contract completion date for the Marine Pump-Out Study. Mr. Janek indicated in our conversation that we were "very close to a completed product" and that a contract extension did not appear to be necessary. He also instructed me to submit the Final Invoice for payment prior to June 30, 1992 so it could be processed under the existing contract. Please note that this invoice was submitted to Mr. Rich Bohn - City of New Bedford on April 17, 1992.

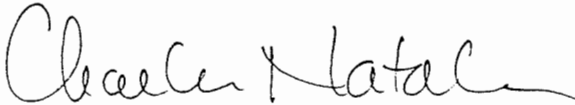
I indicated to Mr. Janek that HMM would submit the Final Report by June 30 to meet his contract requirements. I also indicated that HMM would continue to work with the Harbor Plan Executive Committee and MCZM to review and revise the Final Report subsequent to June 30 given everyone's schedule constraints. The objective of this effort is to complete a Final Report which meets the client's expectations in addressing the scope of work. Once the Final Report is completed, we will provide the Committee with 50 final copies for distribution.

To date, Tasks 3.1 through 3.12 of our scope of work have been completed for the Marine Pump-Out Facilities Study. Task 3.13 - Adoption Process must still be completed as well as final revisions to the Final Report subsequent to your review. We have tentatively scheduled a meeting with the Harbor Committee and MCZM on Tuesday, July 7, 1992 to review and discuss comments on the Final Report as well as issues related to the Harbor Management Plan.

We look forward to working with you and MCZM to complete the Marine Facilities Pump-Out Study and scope of work over the next month. Please call me if you have any questions or comments on the Final Report, or we can discuss these comments at our next meeting. I can be reached at (508)371-4212.

Sincerely,

HMM ASSOCIATES, INC.

A handwritten signature in cursive script, reading "Charles J. Natale, Jr.", written in dark ink.

Charles J. Natale, Jr., Associate
Manager of Coastal Services

CJN/jf

cc: David Janek, MCZM
Jeff Osuch, Town of Fairhaven

NEW BEDFORD AND FAIRHAVEN
MARINE PUMP-OUT FACILITIES STUDY

June 1992

Prepared for:

NEW BEDFORD HARBOR DEVELOPMENT COMMISSION
New Bedford City Planning Department
Room 211
133 Williams Street
New Bedford, Massachusetts 02740

Prepared by:

HMM ASSOCIATES, INC.
Engineers, Environmental Consultants, and Planners
196 Baker Avenue
Concord, Massachusetts 01742
(508)371-4000

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	
1.1 Purpose and Scope of Study	1-1
1.2 Study Methodology	1-4
2.0 INVENTORY OF EXISTING FACILITIES	
2.1 Inventory Purpose and Scope	2-1
2.2 Marine Pump-Out/Holding Tank Survey for Recreational Boaters	2-1
2.3 Marine Pump-Out/Holding Tank Survey for Marine Facility Operators	2-2
2.4 Methodology for Survey Distribution and Collection of Responses	2-2
2.5 Results of Inventory of Existing Facilities	2-3
2.6 Alternative Methods for Obtaining Information on Existing Facilities	2-4
2.7 Existing Marine Facilities	2-4
2.8 Marine Operational Impacts on Water Quality	2-5
2.9 Existing Sewage Pump-Out and Waste Oil Collection Services	2-9
3.0 OTHER MARINE PUMP-OUT PROGRAMS, SYSTEMS COSTS AND OPERATIONAL REGULATIONS	
3.1 Marine Pump-Out Programs in Southeastern Massachusetts	3-1
3.2 State Regulations	3-6
3.3 Federal Regulations	3-8
4.0 REVIEW OF EXISTING TECHNOLOGIES AND SYSTEM COSTS	
4.1 Single Location Fixed Pump-Out Facilities	4-1
4.2 Portable Pump-Out Facilities	4-2
4.3 Marina-Wide Facilities	4-2
4.4 Mobile Sewage Pump-Out Boats	4-3
4.5 Disposal	4-3
4.6 Cost of Systems	4-3

TABLE OF CONTENTS (Continued)

	<u>Page</u>
5.0 RECOMMENDATIONS FOR IMPLEMENTATION	
5.1 Identification of Issues	5-1
5.2 Specific Implementation Recommendations for Water Quality Protection	5-5
6.0 IMPLEMENTATION PLAN AND SCHEDULE	
6.1 Boater Education and Awareness Recommendations	6-1
6.2 Collection and Disposal of Vessel Waste Oil Recommendations	6-8
6.3 Recommendations for the Collection and Disposal of Recreational Boat Sewage	6-11
6.4 Recommendations for Collection of Boater-Generated Solid Waste into Harbor Waters	6-13

APPENDICES

- A Marine Pump-Out Holding Tank Survey Forms and Correspondence**
- B Information on Pump-Out Manufacturers**
- C Literature for Public Education and Public Awareness of Pump-Out Issues**
- D Harbor Planning Reference Material**

1.0 INTRODUCTION

1.1 Purpose and Scope of Study

The New Bedford Harbor Marine Pump-Out Facilities Study was initiated through the Buzzards Bay Project's Mini-Grant Program to evaluate the current status of marine sanitary sewage and waste oil control systems presently operating in the Harbor Planning Area (see Figure 1), and to develop recommendations on the siting, management, and operation of these facilities. This study was conducted under the auspices of the New Bedford/Fairhaven Master Plan Committee to ascertain how the proper siting and operation of marine pump-out facilities may serve to reduce water quality degradation within the Inner Harbor, specifically that attributable to the discharge of sanitary sewage and/or waste oil by marine-related uses.

The City of New Bedford and Town of Fairhaven have been concerned about the illegal or improper discharge of sanitary sewage and oil by marine vessels into the waters of the Inner Harbor. The proper management and disposal of these waste products is considered an integral part of the Buzzards Bay Comprehensive Conservation and Management Plan. These water quality management initiatives will also be incorporated into the New Bedford Comprehensive Harbor Plan. It is anticipated that implementation of these management plans, based in part on the recommendations made in this report, will assist in the reduction of marine pollution and improvement of water quality conditions in the Inner Harbor. This study is intended to serve as a first step in identifying the type and location of existing marine pump-out facilities presently operating within the Inner Harbor, prioritizing water quality impact issues associated with marine pump-out, and presenting recommendations on facilities operation and management that will further promote the awareness of commercial and recreational boating impacts on water quality conditions within the Inner Harbor.

Background information research for this study has indicated that during the last decade there has been a sharp increase in recreational boating use in the Inner Harbor. As a result, there has been a growing concern over the management and disposal of recreational boat sewage, and its potential impact to ambient water quality conditions. Fecal coliform levels, a typical indicator of water quality conditions, in the harbor has been shown to periodically rise in the summer months. This has been attributed to an increase in water temperature. However, studies have also indicated that the coliform

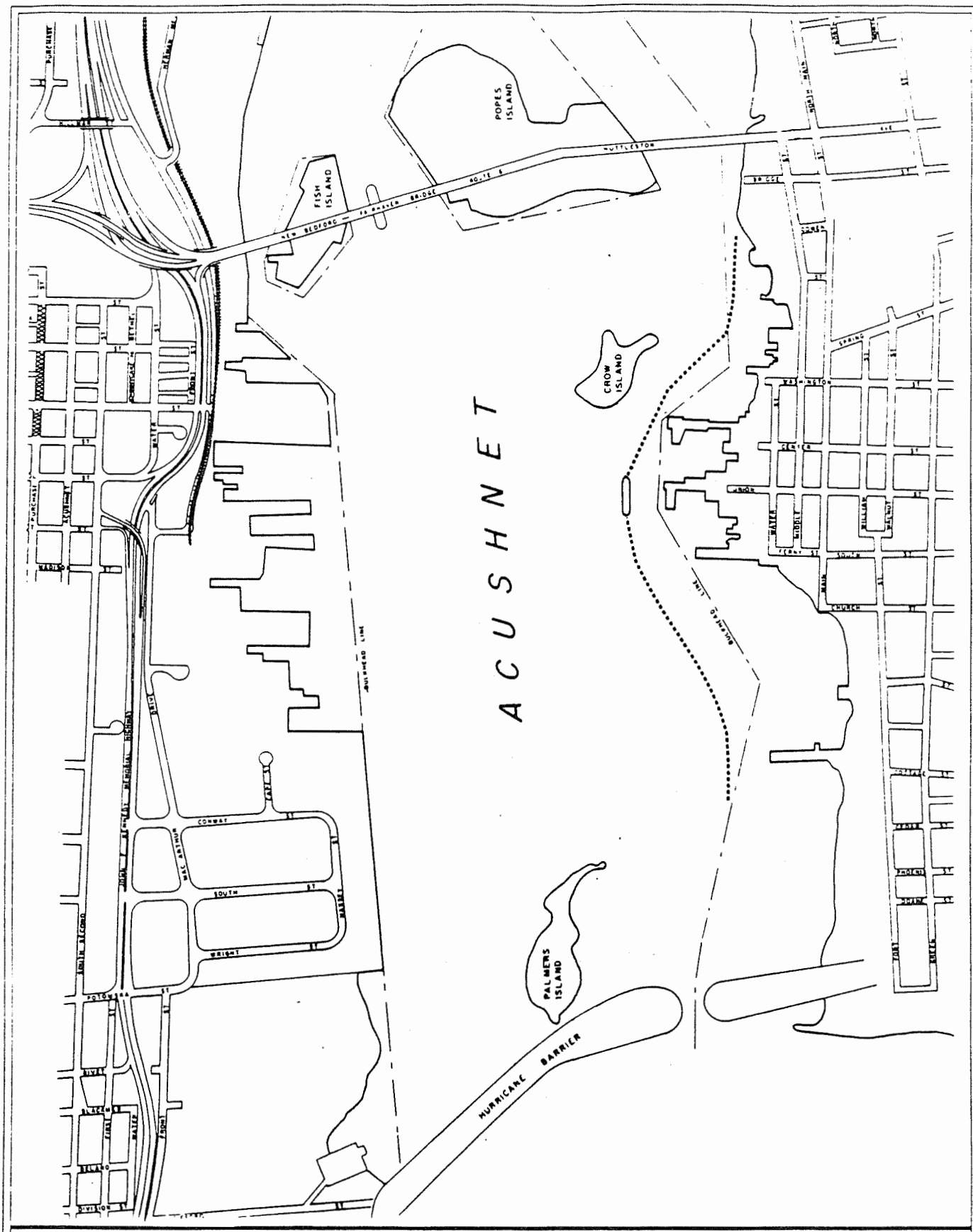


FIGURE 1
PLAN SHOWING LOCATION OF NEW BEDFORD HARBOR
MARINE PUMP-OUT FACILITIES STUDY AREA

levels have not increased significantly during the last few years.^{1*} Attempts to quantify the amount of boat sewage being generated by boats using New Bedford Harbor is difficult due to the various types of boats and seasonal use considerations. Knowing, however, that approximately 1,000 recreational boats currently use the harbor, and the reported poor flushing characteristics of the harbor due to the narrow entrance of the Hurricane Barrier, recreational boat sewage generation and disposal is an issue that must be addressed in the interest of long-term water quality protection.

The addition of the State Marina (200 slips) in 1992 and future proposals for additional marinas, such as the one proposed at Palmer's Cove (450 slips), could almost double the number of marina slips and recreational boats using the Inner Harbor into the 21st Century. This clearly indicates a need to address these issues to develop a water quality management plan for boater-generated wastes which serves to make users aware of their potential user impacts and to educate them on their role to protect water quality conditions in the Inner Harbor.

It is also well known that the over 400 commercial fishing vessels using the Inner Harbor generate waste oil from operation of vessels and equipment. Although there are existing waste oil collection facilities within the Inner Harbor, there is concern that these facilities and services are not well utilized by the fleet, and that waste oil generated from marine use is not being properly collected and disposed of while vessels are at berth. Proper waste oil collection, storage, and management practices must be identified and implemented with the fleet to ensure proper waste handling disposal, and to assist in maintaining and improving existing water quality conditions in the Inner Harbor.

Understanding that commercial fishing and recreational boating vessels are the most significant generators of marine waste products in the Inner Harbor (waste oil, sanitary sewage, and solid waste), the purpose of this study in accordance with the scope of work is to:

- o Inventory existing marine wastewater and waste oil pump-out and collection facilities presently operating within the harbor planning area.
- o Review existing technologies for the collection, storage, and disposal of marine sanitary sewage and waste oil.

* Numbers refer to End Notes at end of report.

- o Review similar marine pump-out and waste oil management programs in other Massachusetts and New England coastal communities to determine their effectiveness and applicability to this study.
- o Develop recommendations for the specific types of facilities, siting, management, and costs.
- o Develop an implementation plan and schedule to begin to realize improvements to existing facilities and construction of new facilities to assist in achieving water quality management objectives within the Inner Harbor.

1.2 Study Methodology

In order to evaluate the issue of boater-generated waste impacts on water quality within the Inner Harbor for both commercial fishing and recreational vessels, a tiered evaluation approach to identify the location, type, and operational characteristics was used as the methodology to analyze the stated purpose and objectives of this study.

The first step in this tiered process was to determine the specific type and location of marine pump-out and waste oil collection facilities operating in the harbor. HMM, in conjunction with the Harbor Management Committee, conducted an inventory survey of these facilities through a survey request mailing to existing marine operators and boaters using the harbor as well as on-site inspections at identified locations.

Once the inventory of existing facilities was completed, the second step in the tiered evaluation process was to review the capacity, operational characteristics and waste collection and disposal methods for each operating system identified. At the same time in this process, a review of existing technologies and similar programs was completed through direct communication with marine industry, equipment manufacturers, and government officials.

The third step in the tiered evaluation process was to then identify, prioritize, and evaluate the issues associated with the collection, handling, and disposal of boater-generated waste products. Once this was completed in consultation with the Harbor Management Committee, marine industry users, and the Massachusetts Office of Coastal Zone Management, recommendations were developed for the development and implementation of a waste management program. The intent of this program would be to

educate and raise the awareness level of boater impacts to water quality, implement locally enforced waste collection and management procedures, and evaluate the adequacy of existing marine service facilities to properly collect and dispose boater-generated waste products.

2.0 INVENTORY OF EXISTING FACILITIES

2.1 Inventory Purpose and Scope

To complete the first step in the tiered evaluation process for this study, HMM conducted an inventory of existing marine wastewater and waste oil pump-out and collection facilities that exist within the defined Harbor Planning Area. This inventory was conducted in conjunction with the City of New Bedford and Town of Fairhaven with funding assistance from Massachusetts Office of Coastal Zone Management. Initial surveys were completed by researching existing information at DEP, the Buzzards Bay Project (BBP), and appropriate federal and municipal agencies. Direct communication with existing commercial and recreational marine service facilities within the planning area, and with local harbormasters and the U.S. Coast Guard was also completed during these initial efforts.

HMM gathered specific information on the location and service capabilities of existing marine pump-out facilities within the Inner Harbor through direct communication with facilities operators and from information provided on survey forms that were distributed to marina and commercial marine operators and individual boaters which use the Inner Harbor area. The purpose of the marine operator/boater survey was to provide specific information on existing facilities as well as the boating public's sentiment and awareness of the issues. Two separate surveys were conducted, one survey for recreational boaters, and one survey for marine facility operators (refer to section 2.4 for list of marine facilities contacted and Appendix A for example survey forms and responses).

2.2 Marine Pump-Out/Holding Tank Survey for Recreational Boaters

The Marine Pump-Out/Holding Tank Survey for recreational boaters was developed to obtain information on the number and types of boats in the study area, and to determine the extent to which these vessels use existing pump-out facilities presently servicing boaters in the Inner Harbor. The recreational boater survey requested responses to the following information:

- 1) Name of marina facility where the boat is docked.
- 2) Type of vessel.
- 3) Docking arrangement.

- 4) Type of Marine Sanitation Device (MSD) on the vessel, if any.
- 5) Location and use of pump-out systems used by the boater, if any.
- 6) Attitude toward using marina pump-out facilities, and opinions on the merits of participating in a marine recycling program, if available at their facility.

2.3 Marine Pump-Out/Holding Tank Survey for Marine Facility Operators

The Marine Pump-Out/Holding Tank Survey for Marine Facility Operators was developed to obtain specific information on the location and types of sewage and waste oil pump-out systems, pollution control systems, and Best Management Practices currently being implemented at all of the recreational and commercial marine service facilities which provide in-water dockage space within the Inner Harbor. The survey requested responses to the following information:

- o Name of facility.
- o Type of facility (e.g., boatyard, marina, service center).
- o Type of sewage pump-out collection system, if any.
- o Method of sewage pump-out collection, storage, and disposal system, if any.
- o Type of waste oil collection, storage, and disposal system, if any.
- o Type of on-site stormwater drainage control system, if any.
- o Type of Best Management Practices presently established at the facility for waste management, if any.
- o Wet-slip capacity.
- o Type of vessel haul-out and service facilities, if any.

2.4 Methodology for Survey Distribution and Collection of Responses

Both sets of survey request forms were hand-delivered on August 30, 1991 to each marine facility operator in the Inner Harbor by representatives of the City of New Bedford, Town of Fairhaven, and New Bedford. The following marine facilities located within the Harbor Planning Area received copies of the survey request forms.

- o Fairhaven
 - Fairhaven Shipyard
 - Kelly's Shipyard
 - Coast Guard Auxiliary
 - Seaport Inn
 - Brightman's Marina
- o New Bedford
 - Bay Line Marina
 - Capt. Leroy
 - Gear Locker

The marine facility operators were requested to complete the surveys as they apply to their facility operations, and to mail them back to HMM. The facility operators were also requested to distribute the recreational boater survey to boaters using their facility during the peak Labor Day boating weekend and subsequent boating weekends up until September 30, 1991. HMM worked directly with the marine facility operators and the Harbor Management Committee to facilitate responses to the survey request forms. In order to encourage and promote participant response, HMM also completed the following efforts beyond initial mailing and follow-up communications.

- o Announcement of survey prior to delivery on a local radio station and in the local waterfront newspaper, The Barnacle.
- o Hand-delivery of survey forms to all marina operators.
- o Repeated follow-up calls to all marina operators who received survey forms.
- o Additional advertisements to promote boater response to the survey on the local radio station.
- o A second publication of entire survey form in The Barnacle.
- o A second mailing of survey forms to marina operators.

2.5 Results of Inventory of Existing Facilities

Unfortunately, response to both the marine operator and recreational boater surveys was very limited even after repeated requests with marine operators (three responses from marine operators, and zero responses from individual boat owners). This may have been due to the sensitive nature of the questions on the survey form regarding collection,

storage, and disposal of sanitary and potential hazardous wastes. The lack of response to the surveys may also reflect a general lack of interest and/or awareness in boat sewage disposal and water quality protection issues in the marine community. In evaluating the sewage pump-out programs of other southeastern Massachusetts communities, HMM became aware that there is typically a general lack of interest and/or awareness by the boating community regarding boat sewage disposal issues. Generating such interest and/or conducting such education and awareness appears to be a chronic difficulty with the boating community regionally and nationally. As later described, this issue, boater awareness and education, constitutes a major recommendation to achieve successful boater waste disposal programs.

2.6 Alternative Methods for Obtaining Information on Existing Facilities

In the alternative of lack of response from marine operators and boaters, HMM was able to obtain more specific information and accurate statistics on pump-out use and pump-out services available in the New Bedford Harbor area through a cooperative information networking approach with Massachusetts Coastal Zone Management, DEP, and municipal agencies; telephone communications with existing commercial and recreational marine facilities in New Bedford and Fairhaven; and the New Bedford and Fairhaven Harbormasters. This reliable information was also confirmed using existing information from previous harbor surveys on these issues. One such survey used is titled, "An Assessment of Marine Pump-out Facilities in Buzzards Bay" by the Coalition for Buzzards Bay and the Buzzards Bay Project (Massachusetts Office of Coastal Zone Management).

2.7 Existing Marine Facilities

The survey information and background research for this study indicates that there are approximately 1,000 recreational boats that presently either dock, moor or launch from boat ramps within the Harbor Planning Area. Approximately 350 to 400 commercial fishing boats are presently docking and operating within New Bedford Inner Harbor depending on the fishing season and time of year.² Waterfront and harbor uses vary considerably within the Inner Harbor from New Bedford to Fairhaven.

The Fairhaven side of the harbor is mainly comprised of marinas and boatyard facilities. These facilities include Fairhaven Marine, D.N. Kelly and Sons, Coast Guard Auxillary, Seaport Inn, and Brightman's Marine. Docking space for commercial fishing vessels is located at Union Wharf and Brayley's Wharf (Figure 2). There is also one boat ramp, Pease Park Boat Ramp, located north of Linberg Marine.

The New Bedford side of the harbor is more industrialized and consists of fish processing plants, the Commonwealth Gas and Electric Plant, piers for loading and unloading of commercial fishing boats, cargo, and dockage areas where approximately 350 commercial fishing boats moor. (Approximately 70 commercial fishing vessels also moor on the Fairhaven side of the harbor.)

There are only three marinas in New Bedford. They are all located on Popes Island. These are Captain Leroy's Marina, Bayline Marina, and Gear Locker. These marinas have a total estimated wet-slip capacity of 215 slips. A new 200-slip marina funded by the State Department of Environmental Management is located on Popes Island. This new marina is presently in the final stages of construction and is expected to be operational by June 1992. 2

There are also three boat launch ramps on the New Bedford side of the harbor. The boat ramps are used by both commercial and recreational boaters and can be used by up to 50 to 75 additional recreational boaters during summer weekends. One boat ramp is located at the end of Gifford Street, north of the Hurricane Barrier. Another boat ramp is located at the end of Frederick Street. The third boat ramp is the Coral Street Boat Ramp located off Rodney French Boulevard.

2.8 Operational Impacts on Marine Water Quality

After evaluating the location of recreational and commercial boating facilities in New Bedford Harbor, HMM identified two types of marine use zones, each of which has particular operational issues which should be considered and integrated into the overall waste and water quality management programs for the Inner Harbor.

The two types identified are Commercial Marine Use Zones and Recreational Marine Use Zones. Each of these zones are concentrated in certain areas within the Inner Harbor (see Figure 2). Research for this study has shown that each type of use zone has different facility requirements, waste management services, and dockage requirements. These uses also were found to generate different types of waste products to varying degrees. Thus, their potential impacts to marine water quality were different.

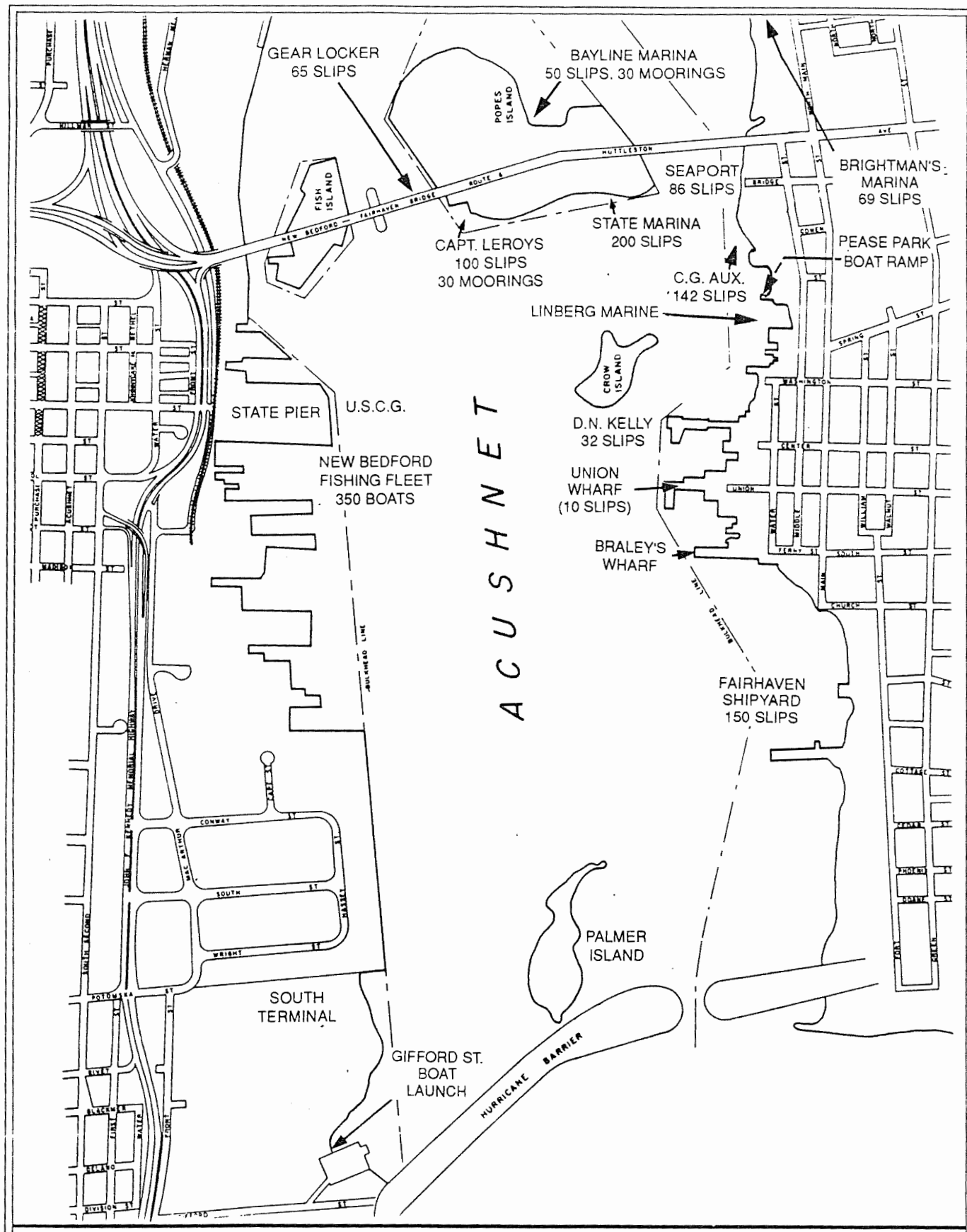


FIGURE 2
PLAN SHOWING LOCATION OF
EXISTING MARINAS AND COMMERCIAL FISHING BOATS

Additional issues of lesser importance in the commercial marine use zones are the disposal of refuse, vessel-generated boat sewage, and fuel spills. The commercial fishing fleet docks at times have small amounts of litter, generated by port-related activities while vessels are at berth. Some of this litter ends up in the water and is transported by wind and tide throughout the harbor. Vessel-generated sewage was found to be less of an issue in the commercial marine zone since commercial fishermen do not spend much time on their boats while in port or close to port compared to recreational boaters. It is reported that commercial fishing vessels typically discharge sanitary sewage waste when they are far out to sea. Finally, incidental fuel spills related to the transfer and dispensing of gasoline or engine oil from tank trucks to fishing vessels was found to be a significant operational and safety issue, but is less of a priority in terms of potential volume contribution of pollutants. The large commercial fishing vessels can have fuel tanks of up to several thousand gallons in size and the manner in which dispensing of fuel is accomplished should be further evaluated.

Recreational Marine Use Zones

The recreational marine use zones include the area around Popes Island (475 boats including the State Marina) and certain locations along the Fairhaven waterfront (465 boats). The major waste management and water quality protection issues for these recreational marine use zones are the disposal of sanitary sewage and solid waste generated from recreational boat use. These wastes are generated either at berth or upon return from offshore activities. Mariners in these areas tend to spend more time aboard their boats while at berth, and tend not to spend as much time out to sea as commercial fishing vessels. As a result, disposal of sanitary sewage and solid waste within the harbor or close to the harbor environs are the most significant water quality protection issues related to recreational boater impacts.

Disposal of engine waste oil does not appear to be as significant an issue as it is for commercial vessels due to the relatively small size of recreational boat engines and the limited number of times per year recreational boaters change their oil. However, with over 1,000 recreational boats in the harbor, this issue must also be considered in a waste management and water quality protection plan.

Finally, disposal of boater-generated solid waste and incidental fuel spills at fuel docks are other potential sources of water quality degradation that occur on a smaller scale in the Inner Harbor compared to commercial fishing vessel operations; however, it should also be considered in the waste management plan and implementation measures.

2.9 Existing Sewage Pump-Out and Waste Oil Collection Services

Listed below is a summary of existing facilities identified that presently operate within the Harbor Planning Area to reduce potential impacts to marine water quality in the harbor.

Existing Sewage Pump-Out and Waste Oil Collection Services

Commercial Marine Use Zones

1. New Bedford Seafood Coop
Oil Recycling Program
(For customers only)
2. Coast Guard Pier
Fixed Pump-Out System
3. Frank Corp
Waste Oil Collection
(Herman Melville Blvd.)

Recreational Marine Use Zones

1. Fairhaven
Mobile Pump-Out Boat
2. State Marina on Popes Island
Proposed Fixed Pump-Out System
3. Bayline Marine, D.N. Kelly's
Waste Oil Collection Programs

Marty &
Howard
don't
think
they
have a
recycling
program

Figure 3 shows the location of existing marine pump-out and waste oil collection facilities locations identified to be operating within the Harbor Planning Area.

Fairhaven Side of New Bedford Harbor

There are no fixed marine pump-out systems available to commercial and/or recreational boaters on the Fairhaven side of New Bedford Harbor. However, beginning in August of 1991, the Town of Fairhaven initiated a Fairhaven mobile sewage pump-out boat service. The pump-out boat, which was partially funded through the Buzzards Bay Project, is equipped with a 65-gallon Edson pump-out system. The boat is operated by the harbormaster and provides pump-out service to the boats within Fairhaven waters docked at marinas and moorings, including visiting vessels.

Operating costs of the sewage pump-out boat remain within the boat maintenance and fuel budget traditionally allocated to the Fairhaven harbormaster. During the pump-out boat's first season of operation, it received moderate use during the final weekends of the summer when it began operating. Next year when mariners are more aware of the vessel it is expected to be used more heavily. At present, sewage is transferred to the treatment facility by trailering the boat to the facility. This sanitary waste is then discharged directly to the Fairhaven sewage treatment plant.

Isn't
that
this
season

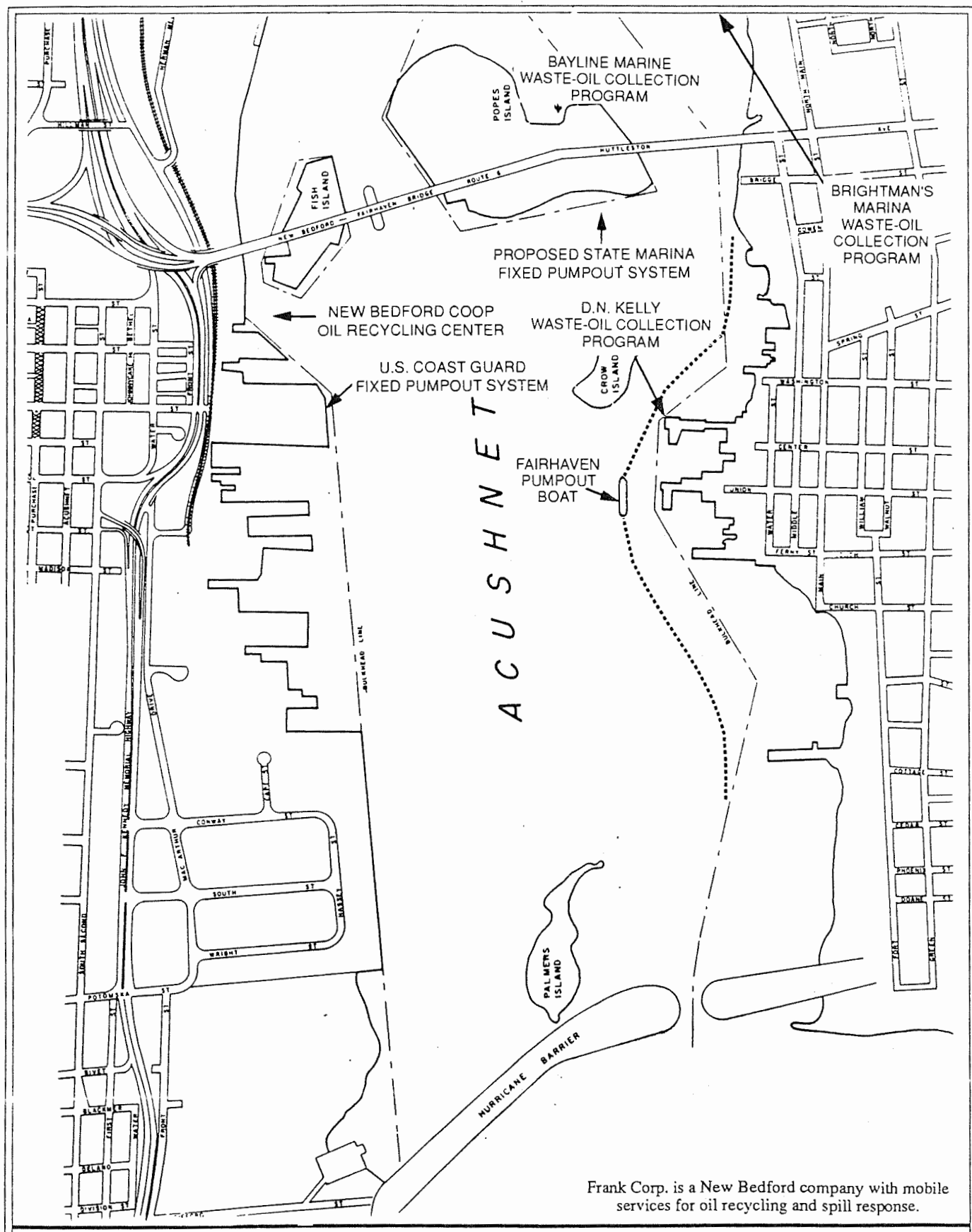


FIGURE 3
PLAN SHOWING EXISTING AND PROPOSED FACILITIES
TO MINIMIZE MARINE RELATED POLLUTION

Fairhaven has recently received another grant from the Buzzards Bay Project to construct a sanitary sewer connection pipe out to the seaward edge of Union Wharf. This connection will allow the sewage pump-out boat to discharge directly into Fairhaven's sewer system, eliminating the double-handling of waste that presently occurs. According to Pat Fowle of the Fairhaven Board of Health, the Town Sewage Treatment System can readily accommodate the current volumes of treated or untreated sanitary waste generated from the pump-out boat and expects no problems with the predicted increase in volumes of sanitary waste that will occur when the pump-out service is more fully utilized by the general boating public.⁵

One recreational marina on the Fairhaven waterfront, D.N. Kelly's, presently has a waste oil collection program. This marina has a small on-site oil storage tank to collect and store engine oil removed from recreational boat engines at this facility. It is reported that this waste oil is then removed from the storage tank and disposed of by a licensed hauler.

New Bedford Side of New Bedford Harbor

The only fixed boat pump-out system on the New Bedford side of the harbor is at the State Pier which is used primarily by the U.S. Coast Guard. Unfortunately, many of the vessel operators who were contacted indicated that the pump-out system is located in an elevated position on a fixed pier, and is therefore only available to large vessels due to tide and vessel access problems. The Fairhaven pump-out boat does not service the New Bedford side of the harbor which includes Popes Island. Presently, there is not a marine sewage pump-out system (either fixed or floating) to service mariners on the New Bedford side of the Harbor (refer to Table on next page for Boat Statistics).

The proposed State Marina on Popes Island is required as a condition of its state and federal regulatory approvals to construct and maintain a marine pump-out system. The pump-out has been installed at the new marina. The Massachusetts Department of Environmental Management, which operates the marina, has indicated that the pump-out at the State Marina is a fixed Edson pump-out system. The system is located at the seaward end of the State Marina's main dock. The sewage is initially pumped from boats to the dock, then into a 2,000 gallon underground holding tank located on the upland area in front of the existing marina building. The holding tank is then periodically pumped out into an existing sanitary sewer line connecting the marina facility to the Fairhaven municipal sewer system.

BOAT STATISTICS

<u>FAIRHAVEN</u>	<u>Slips</u>	<u>Type of Vessels</u>	<u>Pump-Out</u>	<u>Fuel Services</u>
Fairhaven Marine	150	Recreational/ Commercial Fishing	*No	Yes
D.N. Kelly	32	Recreational/ Commercial	*No	Yes
Union Wharf <i>Boat</i>	10	Commercial		
Hathaway Wharf/Norlantic Diesel	24	Commercial	No	No/Yes
Coast Guard Auxiliary	142	Recreational	*No	Yes
Seaport Inn	86	Recreational	*No	No
Brightman's Marine	55	Recreational	*No	No
Boats on Moorings	20	Recreational	*No	No
Boats Launched at Boat Ramps	<u>50</u>	per weekend day	*No	No
Total Boats in Fairhaven Section of Harbor	569			
<u>NEW BEDFORD</u>				
Capt. Leroy's (30 moorings)	75	Recreational	No	No
Bayline (30 moorings)	50	Recreational	No	No
Gear Locker	65	Recreational	No	No
Fisherman's Wharf				
Steam Ship Pier				
Coal Pocket Pier				
Homer's Pier				
Leonard's Wharf				
State Pier				
State Pier - (U.S. Coast Guard)	350	Commercial	Yes	No
(± 20% at Fairhaven)				
State Marina (proposed)	200	Recreational	Yes	No
Boats Launched at Ramps per weekend day	<u>50</u>			
Total Boats on New Bedford Side of Harbor	790			
TOTAL Boats on Both Sides of New Bedford Harbor	<u>1,359</u>			

*Didn't
Fix the map
only fixed
this*

* Fairhaven Sewage Pump-Out Boat: In August of 1991, the Town of Fairhaven initiated a mobile sewage pump-out boat service.

Information obtained from New Bedford and Fairhaven Harbormasters and confirmed using a document titled "An Assessment of Marine Pump-out Facilities in Buzzards Bay" by the Coalition for Buzzards Bay and the Buzzards Bay Project, and information from the Fairhaven Board of Health

To determine the status of MSD types at boats docked at marinas, we recommend that the Board of Health request an inventory of MSD types on vessels from each marine operator as a requirement for a new or modified Board of Health Permit.

To determine the status of MSD types, on moored vessels, the Harbormaster should require boaters to provide this information as a pre-requisite to obtaining a mooring permit. The existing boater pumpout survey form previously prepared by HMM could be used to obtain the MSD information. This should be done on an annual basis to maintain the inventory.

Disposal of Engine Waste Oil

The New Bedford Seafood Cooperative is the largest seller and recycler of engine oil in New Bedford Harbor. The Cooperative provides an engine oil recycling service only to the customers who purchase oil from them. Fishermen who need to dispose of their engine waste oil can call the Cooperative on Channel 11 and request the drop-off of 55-gallon drums at the vessel's berthing area for oil recycling. The Cooperative delivers the drums and returns to pick them up for transport back to their temporary holding facility. The collected waste oil is stored in the 55 gallon drums at the Cooperative in accordance with State and Federal hazardous waste regulations, and is periodically transported by a licensed hauler and disposed of at an approved waste oil recycling center.

Mr. Wheeler, Manager of the Cooperative's oil recycling program stated that the cooperative recycles approximately 2,500 gallons of boat oil per month. The cooperative provides 75% of the oil recycling services available with Pier Oil, Harbor Fuel, and a growing number of vendors, providing the remaining service. Mr. Wheeler estimates less than 25% of the fishing boats in New Bedford Harbor use the cooperative's service. Cost for the service is incurred in the Cooperative's pricing of their products. The Cooperative also has a 500-gallon oil storage tank at their facility to allow for small amounts of oil to be disposed of at the facility by individual boat owners. In addition the Cooperative operates a barge with an oil storage capacity of 2,400 gallons to assist vessels in emergency situations when pump-out of oil is needed.⁷

Frank Corp is another environmental service firm located in New Bedford which can provide waste oil collection and disposal services for the fishing fleet. Frank Corp specializes in waste oil collection, 24-hour emergency spill response, and other environmental services needed for fleet operation. The company has a wide range of

vacuum trailers, and vacuum trucks, as well as a floating barge, all of which can be used for cleaning oil spills or assisting in removal of waste oil from commercial fishing vessels. Kirk Franklin, Vice President of Frank Corp has expressed interest in performing these oil collection services for the commercial fishing fleet. In the past Frank Corp has pumped oil mixed with water and contaminants from the bilges of fishing vessels. It charges approximately 85 cents per gallon for this service. This price includes the costly process of treating the contaminated oil to allow for recycling or incineration of the oil. Frank Corp has not yet pumped oil from the engine blocks of commercial vessels and does not yet have a cost estimate for this service. Frank Corp has indicated that pumping used oil from engine blocks would be less costly than pumping and disposing of oil-contaminated bilge water. The possibility of using the services of Frank Corp should be explored by Harbor Regulatory Authorities having jurisdiction over the fleet to determine whether this could be another economically viable method of waste oil collection and disposal.⁸

3.0 OTHER MARINE PUMP-OUT PROGRAMS, SYSTEM COSTS, AND OPERATIONAL REGULATIONS

3.1 Marine Pump-Out Programs in Southeastern Massachusetts

As part of the research effort for the Marine Pump-Out Study, HMM contacted several of the harbor masters and marina operators in the surrounding southern New England Towns to determine the different types and extent of marine sewage pump-out programs currently in use, and if the programs are successful in these areas. Eight (8) coastal communities located in southeastern Massachusetts with extensive waterfront facilities for recreational boaters were surveyed. Most of these communities have local marine sewage disposal regulations, and provide harbor pump-out facilities available to boaters. Communities varied considerably regarding their focus of attention and participation in addressing boat sewage pump-out issues.

Listed below are three coastal communities that HMM surveyed for this study to evaluate the success (and failures) of their marine sewage pump-out programs.

o Westport Harbor - Westport, Massachusetts

The Town of Westport has a small harbor with approximately 770 boats which are concentrated around the town wharf (the "working harbor area") and 8 marinas and yacht clubs found in Westport Harbor. It is estimated that there are a total of 1,200 boats, including those of 10 feet in length or greater, in both the East Branch and West Branch of the Westport River. The Harbor contains a few transient moorings and wet-slips. On weekends during the summer it is estimated that 40 people may stay overnight on moorings and 80 people may stay overnight on slips.

Westport's Marine Sewage Disposal Regulations promulgated in April 1991 primarily focus on no direct discharge into Westport waters from Type III MSD's or Porta Potties. These regulations state that no person or vessel may discharge waste into Westport waters except those treated by Type I or Type II MSDs. Although it is difficult to actively enforce these regulations given the Town's limited resources, anyone caught discharging directly into Westport waters is fined.

None of the marinas in Westport have pump out facilities. The town has recently begun a floating mobile sewage pump-out service for no fee to the boats on moorings. In 1989 the Town of Westport was given a grant by the Buzzards Bay Project of \$5,000 to retrofit a boat to create a mobile sewage pump-out vessel. The boat, a 22 foot Aquasport with a pump-out system on board, travels from boat to boat in the harbor pumping out holding tanks of vessels on an on-call basis.

The cost for the town to provide this service is relatively low. The only significant cost for the town is the salary for the boat operator. According to the Harbormaster, sewage disposal incurs no cost since it is picked up free of charge by Ocean Arks International, Inc. of Falmouth MA. The sewage is taken to a treatment facility in Marion, MA where it is subject to Solar Aquatic technology and then discharged into marsh ecosystems which assimilate the wastewater effluent.⁹

At present, Westport has received a positive response to its new program.

o Edgartown Harbor - Edgartown, Massachusetts

Edgartown Harbor, located on Martha's Vineyard, is a popular spot for transient boaters as well as seasonal boaters, and is often quite congested during the summer months.

Edgartown's Marine Sewage Disposal Regulations designate Edgartown Harbor as a no discharge zone. The harbormaster and harbor patrol do not actively enforce these regulations. Instead they try to educate boaters about the harbor, its existing regulations and the facilities it offers. Whenever a vessel is stopped (for any reason) it is given a package containing detailed information about the harbor, including a copy of the harbor's regulations. If by chance a boater is caught discharging sewage into the harbor they are given a ticket and asked to leave the harbor immediately.

The town has a fixed sewage pump-out service at the Town Wharf, and Edgartown Marine also provides a mobile sewage pump-out service where it goes from boat to boat pumping out tanks. Both services are provided free of charge. According to the Harbormaster, Edgartown has had great success with its sewage pump-out program. Over 500 boaters a season use the harbor's pump-out facilities.

The pump-out service provided to boaters costs the town nothing. The service is provided to the town free of charge by Edgartown Marine as part of its marine management plan. Operation of the mobile pump-out boat is required as a condition by the Town as part of the Mooring Lease License issued to Edgartown Marine. The mobile pump-out operation includes the following:

- A 24-foot inboard boat - already owned by Edgartown Marine and valued at approximately \$12,000.
- An operator - a position shared by two individuals since the pump-out service is offered from 8 AM to 4 PM, seven days a week from June 15 through September 15. Salary for this position is \$8/hour or approximately \$5,400/season. In addition to sewage pump-out services, the operator also picks up regular garbage that is placed in plastic bags.
- A 55-gallon drum that serves as a sewage holding container.
- A generator with an approximate value of \$700.
- A Jebco pump with an approximate value of \$300.

The costs for yearly maintenance of the service paid for by Edgartown Marine range from \$6,000 to \$7,000 each season. These costs include operator payroll, gasoline, insurance fees, and actual boat maintenance such as painting and repairs. (By comparison, costs for operation of a mobile

pump-out service in the Town of Fairhaven are much lower than those provided by Edgartown Marine. In Fairhaven, the Harbormaster serves as the operator of the pump-out service so there is no special operator salary involved. Annual maintenance charges would be paid by the Town as part of the regular Harbormaster boat maintenance costs. Costs incurred for this type of system in Fairhaven or New Bedford could include maintenance fees for or replacement of the generator, pump and tank that make up the mobile pump-out's necessary equipment, as well as additional gasoline which would be used.)

Sewage collected by the mobile pump-out service in Edgartown goes to a container at Memorial Wharf. From there the sewage is put into the Town sewage system and treated in its septage lagoons.

The Town operates and manages the fixed system at the Town Wharf. The Town also provides free sewage treatment for this system in its septage lagoons.

Edgartown has had a great deal of success with its program.¹⁰

o Onset Harbor - Wareham, Massachusetts

Onset Harbor is a busy harbor used extensively for recreational boating. There are several marinas and moorings located in the Harbor.

Wareham's Marine Sewage Disposal Regulations are included within the Board of Health's Regulations. The Board of Health requires all marinas and yacht clubs in the town to provide sewage pump-out services. The harbor is also designated a Federal No Discharge Zone by the EPA. The Harbormaster's Department expects it to be difficult to enforce these regulations in the harbor. So rather than concentrating on enforcement, they are concentrating on educating the boaters that use the harbor about the environmental quality problems associated with sewage discharge into the harbor by recreational boaters. The Harbormaster is presently trying to

have a by-law passed that requires all boats within the harbor which have on-board Type-III MSDs to seal the release valves. This would require boaters to use the pump-out services provided in the harbor while they are in Wareham embayments (this is still a proposed by-law).

The two key points observed in this survey is that education can be more effective than enforcement, and that adoption of by-laws to address specific enforcement issues (Type III release values) can reduce the need for day-to-day monitoring.

Onset Harbor has several pump-out facilities available to boaters who use the harbor. Each existing marina and yacht club in the harbor is reported to be equipped with a fixed pump-out system. Most of the marinas charge patrons a small user fee for the service and charge transient boaters a higher fee. The Onset Town Pier also has a fixed pump-out system. Any boater may use the service free of charge at the Town Pier. According to the Harbormaster, there has been little interest or cooperation by boaters to use the pump-out services provided. Even the free service offered on the Town Pier is used infrequently. Only 10 to 15 boaters used the facility during the summer of 1991.

Again, this demonstrates that boater education and awareness of the use and availability of these facilities are critical components to an effective water quality protection program.

The cost for the Town of Wareham to provide pump-out service is relatively low, however, exact costs were not available at the time of survey. There are no significant costs to operate the pump-out system, and there is no disposal cost. Wareham has its own sewer system, so it pumps the sewage directly into the town's treatment plant.

Our survey indicated that it appears as though the Town of Wareham has not had much success with its current program. The EPA designation of Onset Harbor as a Federal "No Discharge Area" should aid in improving boater compliance with their marine water quality protection initiatives. This status is further explained below.

According to the MCZM Newsletter, Coastlines, March/April 1992:

"Wareham has become the first community on the East Coast of the United States to become a U.S. Environmental Protection Agency (EPA) designated "No Discharge Area". Local, state, and federal officials provided strong support for the designation, which is an important step toward implementation of the Buzzards Bay Comprehensive Conservation and Management Plan's recommendations. The Plan was signed by Governor Weld in September, 1991."

As a "No Discharge Area", Wareham waters are off limits for any disposal of boater-generated sanitary wastes. Boat owners are required to retrofit their current MSD system to allow each boat to store their sewage on-board or seal their head release valves while in Wareham's protected waterways. Local, state, and federal enforcement officers are all empowered to enforce the restriction and assess fines as violation penalties. Monies generated by enforcement efforts are allocated back to the enforcement program.

In addition to the designation, EPA has granted \$5,000 to the Town of Wareham to help implement the program, particularly in supporting public education.

In general, our surveys of these coastal communities indicates that they have had varied success in boater awareness and use of marine pump-out facilities, and enforcement of no discharge by-laws. The success appears to be related to the accessibility, cost, public awareness and the commitment of town officials toward the issue.¹¹

3.2 State Regulations Mandating Installation and Maintenance of Pump-Out Facilities

Massachusetts General Laws and Regulations address certain aspects of the overboard discharge of oils and sewage into lakes, rivers, tidal waters or onto tidal flats. For example, Massachusetts General Law, Chapter 91 Sections 59, 59A and 59B prohibit the discharge of petroleum and petroleum by-products into or on certain waters and flats of the Commonwealth. These laws also describe the violator's liability for property

damage resulting from discharge of petroleum products. This section of Chapter 91 also requires the State DEP to issue annual licenses to operate a marina facility in Commonwealth waters.

Section 59 states that those who pump, discharge or deposit in lake, river, or tidal waters or on flats, crude petroleum, its products, or water from containers that held such substances in a manner that would pollute or contaminate these waters would be subject to a monetary fine.

Section 59A states that those who pump, discharge or deposit the previously described products in lake, river or tidal waters or on flats in a way to cause property damage will be liable to those whose property is damaged in double the amount of sustained damages.

Section 59B describes requirements for marina operation. In order to operate, marinas are required to hold a license issued by the Division of Water Pollution Control. Issuance of state licenses is dependent upon the marina facilities provision of the following:

- o Facilities for collection, treatment and disposal of sewage including facilities for cleaning and holding tanks and disposal of such wastes in an appropriate manner as detailed in the statutes.
- o Adequate and convenient dockside toilet facilities for use by boaters.
- o Adequate and convenient trash receptacles for litter and refuse disposal.

Though the state laws are valid and enforceable, there are no regulations or state programs which presently implement the provisions of these statutory requirements.

The new Chapter 91 regulations, 310 CMR 9.39(1)(a)3a and 3b, do, however, address portions of Section 59 of the Chapter 91 Statute. The cited regulations require the mandatory installation and maintenance of adequate restrooms, refuse receptacles, and sewage pump-out facilities for any project that include a new marina, or any expansion of ten or more berths over the existing number of berths present in a previously authorized existing marina as of the effective date of the new Waterways Regulations (October 4, 1990).

3.3 Federal Regulations

Federal Regulations related to marine sewage disposal are provided under the 1972 Water Pollution Act (33 U.S.C. 1322, Section 312) and were amended in 1977 by the Clean Water Act, and again in 1987 by the Water Quality Act. Section 312 of the Clean Water Act prohibits the direct discharge of untreated sewage into State waters. All vessels 65 feet or less in length with on-board sanitary facilities are required to install a Type I, II or III MSD. All vessels larger than 65 feet in length are required, at a minimum, to install a Type II or III MSD. Section 312.K of the Act delegates the enforcement and regulatory authority enforcing the use of MSDs and regulatory compliance with the Act to the U.S. Coast Guard under Regulations 33 CFR, Ch. 1 Part 159.

Section 312(f)(3) allows a state to apply to EPA for a "No Discharge Area" designation in certain water bodies. A No Discharge Area designation prohibits the discharge of treated or untreated sewage into the designated water body. However, the state applying for the No Discharge Area must demonstrate that the protection and enhancement of the water described in the application require greater environmental protection than the existing applicable Federal water quality protection standards. The state must also prove that there is an adequate number of existing pump-out facilities in the area for the vessels' use. This includes a map showing the locations of the commercial and the recreational pump-out facilities; the general schedule of operating hours; and information indicating that the treatment of wastes from such pump-out facilities conforms with applicable Federal laws. To date, there are only four states that have received Federal EPA approval for No Discharge Areas. They include California, Florida, New Hampshire, and Massachusetts.

When a water body is designated as a No Discharge Area by the EPA, the state visa-vie the coastal municipality* becomes the primary enforcer. However, it is EPA's position that two of the most important factors in successfully implementing a no-discharge program are providing a sufficient number of accessible pump-out facilities within the particular harbor to be designated, and conducting a comprehensive public education program.

* The State of Massachusetts receives the authority to establish a No Discharge Area, however, it turns this authority over to the particular coastal municipality.

An effective enforcement program is also a necessary ingredient for successful implementation. There are three methods of enforcement provided by the Federal law:

- 1) The Secretary of the Department, under which the U.S. Coast Guard operates, shall enforce the provisions of the law;
- 2) Federal and state officials may be enlisted to enforce the law by agreement between the Coast Guard and state agency; and/or
- 3) The state may enforce the provisions of the federal law.

4.0 REVIEW OF EXISTING TECHNOLOGIES AND SYSTEM COSTS

The research on manufactured pump-out systems for this study shows that there are numerous types of pump-out systems available on the commercial market designed specifically for marina use. Each of the pump-out technologies has certain advantages and disadvantages which must be taken into account when determining the type of pump-out system appropriate for the needs of a particular marina facility. Factors which are considered include purchase cost, operational cost, compatibility with the existing marine facility, and ease of use for the boater. The basic pump-out technologies available on the market today include:

- o Fixed Pump-Out System
- o Portable Pump-Out System
- o Marina-Wide System
- o Mobile Sewage Pump-Out Boats

4.1 Single Location Fixed Pump-Out Facilities

Single location fixed pump-out systems are the most commonly used type of pump-out system in the southeast region of Massachusetts and in New England by both individual marinas and by coastal municipalities. A fixed pump-out system consists of a pump station fixed at a stationary location with conduit piping to convey the pumped sewage to an upland holding tank or town municipal sewer system. This type of pump-out system can transport sewage through a variety of mechanisms including rotary pump, diaphragm pump, and vacuum systems (refer to Appendix). Upon investigation of the different type of systems, industry data indicates that the vacuum pump mechanism is the most reliable since it does not come in direct contact with the sewage and does not require frequent pump priming. As an added feature, vacuum systems can also be retrofitted to be used for pumping oil out of commercial or recreational boat engines.

The location of a fixed pump-out system appears to be most effective if it is located at a marina gas dock or a town gas dock where boaters can conveniently pump-out their boats when they are docking to fuel their vessel or obtain other dockside services. A disadvantage of the fixed pump-out system is that boats have to navigate to the pump-out station location which appears to restrict the use of the system by certain types of boats,

particularly larger vessels. Fixed pump-out systems located at gas docks can also result in waiting lines, and can cause operational problems during peak weekends and periods of heavy use. Depending on the location and the pumping system used, fixed stations may require a conduit run of long distances from the station to an upland holding tank or municipal system connection point, resulting in either sewage filled transfer pipes, or the need of high quantities of water or air pressure to flush the line effluent. The proposed pump-out system for the State Marina in New Bedford Harbor is of the fixed type, and will be located at the seaward end of the main dock system.¹²

4.2 Portable Pump-Out Facilities

A portable pump-out system consists of a 30 to 100 gallon tank that can be moved from boat to boat along the marina piers. These systems are less expensive than a fixed pump-out system since they do not require installation of piping and associated high powered vacuums and effluent line flushing. The portable unit provides an efficient way for a marina employee to directly access a boat for sewage pump-out. However, without a marina employee to provide this service, the use of a mobile pump-out system by a boater may be less convenient since it would require the boater to retrieve the portable system, transport it to the boat, and transport it back to the disposal location. Due to the limited volume capacity of a portable pump-out tank (approximately 30 to 100 gallons), disposal into a holding tank, or municipal sewer system would occur very frequently. The portable method of pump-out requires more operational demands and user monitoring than a fixed pump-out system. The choice of using a portable system should take these facts into consideration as well as the operator's ability to provide an employee to oversee and monitor proper boater use of the pump-out equipment.

4.3 Marina-Wide Facilities

There are also pump-out systems designed to service individual marina slips. These are fixed intake lines routed along main docks to a hook-up at each slip. However, this type of system is the most expensive and presents operational and maintenance concerns, such as incidental spillage by the boater, and potential system leakage and vandalism from the tremendous length of plumbing throughout the docking facility. Potentially difficult and costly maintenance and repairs requirements must also be considered. The advantage to this system would be its convenience of use by either the boater or the marina operator.

4.4 Mobile Sewage Pump-Out Boats

Mobile sewage pump-out boats are currently being used in many of the southeastern communities including New Bedford Harbor. The use of a mobile sewage pump-out boat is most effective for addressing the sewage pump-out needs of a harbor with moorings or series of marinas rather than an individual marina. Operational costs are high with this option as they must cover the boat operator, boat repairs and fuel. However, this system is extremely easy for a boater to use as generally the sewage pump-out boats are on call from the marinas at which they service. As mentioned previously the Town of Fairhaven has a mobile pump out boat and has attempted to keep operational costs as low as possible by making the boat available only at specific times during specific days of the week. This cuts down on unnecessary trips. In addition, operation of the mobile pump-out boat on weekdays allows pumpout operations to take place when boats are not being used.

4.5 Disposal

Disposal technologies include either a temporary storage tank with subsequent transfer to municipal sewage system, or direct online municipal sewage disposal. Direct online municipal sewage disposal is by far the most cost effective method of disposal. In this case the pump-out sewage is directly piped to a town sewer line. This avoids problems associated with the operation of a holding tank, and the high cost of having to use a truck to transfer the material to a sewage treatment plant.

4.6 Costs of Systems

Costs of systems vary from manufacturer to manufacturer and pricing of specific systems is included in the appendix. Fixed systems can run from \$2,500 to \$5000 dollars with additional installation costs depending on distance of the system from the shoreline. Portable systems are less expensive and can include a system as simple as hoses with a hand pumping device or hoses with a more sophisticated electrical pump. Portable systems be purchased for prices ranging from \$100 to \$1,000. The fixed system mounted on the Fairhaven sewage pump-out boat cost approximately \$5,000 (excluding the cost of the boat).¹³

KECO, Inc. of San Diego, California manufactures various types of pump-out facilities that are popular on both the west and east coasts. A standard fixed unit with a diaphragm pump, cover, hose and controls costs approximately \$3,350. A fixed vacuum system including only the pump and cover costs approximately \$3,500. For this system the hose and controls are not included. Purchase of these systems does not include installation and marinas must arrange for hook-up of electricity and installation of PVC discharge piping and associated plumbing. Maintenance for these pump systems can involve changing of the diaphragm (if applicable) at a cost of \$15, replacing two valves at a cost of \$28, and upgrading hoses at a cost of \$175. Thus, maintenance fees could amount to approximately \$220 for parts plus labor charges every other year. KECO indicated from their communications with various marinas that user fees for fixed pump-out facilities could range from \$0 (no fee required) to \$50 with the price set by the marina. Some marinas offer a discount on other marina services as a result of having used the pump-out facility. In some cases, where a fee was charged for using the pump-out facility, the pump was coin or token operated.

KECO's portable type of pump-out facility includes a cart with a pump and tank and a single section hose. The cart mounted with the storage tank costs approximately \$3,950. The manufacturers suggest that this equipment not be taken up a gangway when the tank is full. There should be a hydrant installed at the base of the gangway with the appropriate associated plumbing. Maintenance fees for the pump in this system would be similar to those previously discussed. User fees are not generally charged for this type of facility.

KECO's marina-wide type of pump-out facility includes a pump on a cart with brakes that costs approximately \$3,850. This set-up has very extensive piping and hydrant stations at various locations. Piping and hydrants are not included in overall costs quoted above. This type of system is used more in marinas that cater to larger boats. User fees are not usually charged but are calculated into the dock rental.

5.0 RECOMMENDATIONS FOR PROTECTION OF MARINE WATER QUALITY WITHIN NEW BEDFORD HARBOR FOR COMMERCIAL AND RECREATIONAL MARINE USES

In order to formulate the recommendations presented below, key marine operational issues for both commercial and recreational vessels were identified and evaluated for their potential impacts to water quality conditions within the Inner Harbor area. These issues were then ranked and prioritized from a water quality impact perspective based on research of existing technical information, completion of marine facility operator and recreational boater surveys, and detailed interviews with government officials and marine industry representatives using the Inner Harbor. The result of these studies is a framework of specific recommendations for each key issue identified. The recommendations address the regulatory, operational, and educational components of a harbor-wide and individual marine facilities management plan. The purpose of the plan is to minimize potential impacts to water quality conditions from these specific marine operations. It is expected that this recommended framework will eventually be implemented on the local level once selected recommendations have been chosen by the Harbor Master Plan Committee.

5.1 Identification of Issues

Based on the information and findings presented in this study, the following harbor-wide and specific marine facilities management issues have been identified as the most important issues which the marine industry must address to protect and enhance marine water quality conditions within New Bedford Inner Harbor. These issues are listed in order of priority.

- 1) Collection and disposal of vessel-generated engine waste oil principally generated by commercial fishing vessels which dock in the Inner Harbor. This was identified as the highest priority issue for water quality protection.
- 2) Collection and disposal of vessel sanitary sewage principally generated by recreational boats using the Inner Harbor.
- 3) Collection and disposal of solid waste generated from both commercial and recreational vessels using the Inner Harbor.

5.0 RECOMMENDATIONS FOR PROTECTION OF MARINE WATER QUALITY WITHIN NEW BEDFORD HARBOR FOR COMMERCIAL AND RECREATIONAL MARINE USES

In order to formulate the recommendations presented below, key marine operational issues for both commercial and recreational vessels were identified and evaluated for their potential impacts to water quality conditions within the Inner Harbor area. These issues were then ranked and prioritized from a water quality impact perspective based on research of existing technical information, completion of marine facility operator and recreational boater surveys, and detailed interviews with government officials and marine industry representatives using the Inner Harbor. The result of these studies is a framework of specific recommendations for each key issue identified. The recommendations address the regulatory, operational, and educational components of a harbor-wide and individual marine facilities management plan. The purpose of the plan is to minimize potential impacts to water quality conditions from these specific marine operations. It is expected that this recommended framework will eventually be implemented on the local level once selected recommendations have been chosen by the Harbor Master Plan Committee.

5.1 Identification of Issues

Based on the information and findings presented in this study, the following harbor-wide and specific marine facilities management issues have been identified as the most important issues which the marine industry must address to protect and enhance marine water quality conditions within New Bedford Inner Harbor. These issues are listed in order of priority.

- 1) Collection and disposal of vessel-generated engine waste oil principally generated by commercial fishing vessels which dock in the Inner Harbor. This was identified as the highest priority issue for water quality protection.
- 2) Collection and disposal of vessel sanitary sewage principally generated by recreational boats using the Inner Harbor.
- 3) Collection and disposal of solid waste generated from both commercial and recreational vessels using the Inner Harbor.

5.1.1 Collection and Disposal of Vessel Waste Oil

The results of the Marine Facilities Pump-Out Study indicate that the most important water quality protection issue for the Inner Harbor related to marine industrial and commercial uses is the collection and disposal of vessel engine waste oil. New Bedford and Fairhaven are both confronted with this water quality management issue; however, since the majority of commercial vessels dock on the New Bedford side of the harbor, it is more problematic for the New Bedford waterfront. The approximately 350 to 400 commercial fishing vessels presently located and operating within New Bedford Inner Harbor generate an estimated 7,600 to 14,200 gallons of engine waste oil per month. It has been reported that only a small percentage (25% \pm) of this monthly volume is collected and recycled at approved waste oil recycling facilities.

At present, the New Bedford Seafood Co-operative is the only operation providing waste oil recycling capabilities for vessel engine waste oil. However, since the oil recycling service is available only to Co-op customers, this service is used by only a small percentage of the vessels presently docking in the Inner Harbor. The lack of awareness of the program and the difficulty of storing and transporting the oil from the vessel's engine to the waste oil recycling facility appear to be the chief reasons for the lack of oil recycling. Frank Corp, another environmental services company operating in New Bedford, could also provide an oil collection and recycling service, but has not yet experienced a demand for this service.

The results of operator surveys completed for this study indicates that typical practices for engine waste oil disposal from commercial vessels docked on the New Bedford and Fairhaven waterfronts is for engine oil to be either transferred from the vessel's engine into oil drums (which are left on the docks); or discharged into the vessel's bilge water and then pumped out into the harbor while at berth or leaving berth. The municipality is then faced with the environmental problem of either collecting the abandoned oil drums and properly disposing of the waste oil, or controlling waste oil collection from the vessels to avoid discharge to the harbor.

The improper discharge of engine waste oil from leaking drums on the docks, improper transfer of waste oil from vessel to shore, and improper discharge of vessel bilge water contaminated with engine waste oil are the most important water quality impact issues affecting marine industry operations within the Inner Harbor. These environmental quality and management issues must be further evaluated and managed on a harbor-wide and individual facility basis.

5.1.2 Collection and Disposal of Vessel Sanitary Sewage

The results of the Marine Pump-Out Study indicate that the second most important water quality protection issue for the Inner Harbor related to marine commercial and recreational boating uses is the collection and disposal of vessel sanitary sewage. This issue principally relates to recreational boating facilities within the Inner Harbor since commercial fishing vessels typically do not generate significant volumes of sanitary sewage while at berth.

The only sanitary sewage collection and disposal facilities which are capable of servicing the commercial fishing and recreational boating fleets within the Inner Harbor include the fixed pump-out system at the New Bedford Coast Guard Pier (which was reported to be unusable to most vessels due to its height off the water at the pier), and the Mobile Sewage Pump-Out Boat which largely services recreational boaters docked at Fairhaven waterfront facilities. There are no fixed marine pump-out systems presently available to commercial or recreational boaters on the Fairhaven waterfront.

The study's survey of the level of use of existing vessel sewage pump-out facilities within the Inner Harbor indicates that they are not well used either due to their location or their lack of convenience for use. It should be noted, however, that the Fairhaven mobile pump-out vessel has only been in operation for one boating season. It is expected that this service will be more utilized as boaters become more aware of this service.

Previous studies on boater use of sewage pump-out facilities suggest that convenience and easy access are critical to the use of these facilities. Typically, boater awareness and knowledge of the location of sewage pump-out services provided by existing marinas or coastal municipalities is low. The boating public must be made more aware of the type and benefit of these services through public awareness and boater education programs.

Adoption of local regulations establishing ~~"no-discharge"~~ zones at recreational boating centers with rigid enforcement and compliance policies is also a proven method of encouraging use of existing available sewage pump-out facilities. Establishment of no-discharge zones within a specific marina or harbor area must be carefully evaluated for legal implementation and enforcement. Also, the municipality must consider how the potential establishment of this type of restriction would either conflict with or support the existing EPA program for establishing "No Discharge Areas" which are much more comprehensive and restrictive designations.

4 Dave Janick

Surveys conducted for this study indicate that over 1,000 recreational boats presently use the Inner Harbor or dock at existing marina facilities on both the New Bedford and Fairhaven waterfronts. Many of the newer boats which were constructed after 1978 are required to be equipped with on-board sewage treatment systems; either Marine Sanitation Devices (MSDs Types I, II, and III). However, older vessels built prior to 1978 before the federal MSD requirements went into effect, are equipped with septic holding tanks which must be periodically "pumped-out" once their volume capacity is reached. Many pre-1978 boats have still not converted from holding tanks to approved MSD systems, and therefore, still present a potential for direct discharge of sanitary sewage to marine waters.

Boats
prior to
1978 have
nothing
w/ holding
Tank I &
Holding
tanks are
a Type
III MSD

Although the recreational boater survey did not yield meaningful information on how, where, and when boaters "pump-out" their holding tanks, the lack of available pump-out facilities within the Inner Harbor (with the exception of the Fairhaven Pump-Out Boat) indicates that boater sanitary waste may be improperly discharged to harbor waters, particularly by older vessels not equipped with MSD systems.

Current state Waterways Regulations which require marina facilities over a certain slip capacity to provide sewage pump-out facilities for their slip users will assist in providing more convenient services and encourage use of pump-out facilities. Mobil pump-out boats will also help service boats on moorings as well as commercial fishing vessels. Public education and awareness of the location and environmental benefit of sewage pump-out facilities will also help to minimize improper discharge of boat sewage to the harbor.

5.1.3 Collection and Disposal of Boater-Generated Solid Waste

The results of the Marine Pump-Out Study indicate that the third most important water quality protection issue for the Inner Harbor related to marine commercial and recreational boating uses is the collection and disposal of boater-generated solid waste. Study surveys indicate that New Bedford provides and maintains an adequate number of large dumpsters and trash containers along its commercial waterfront area to service commercial fishing vessels. The Town of Fairhaven maintains a large dumpster at Union Wharf for use by the boating public and independent commercial marine facilities on the Fairhaven waterfront provide their own refuse collection. However, these dumpsters are also used by local marine industry for solid waste disposal and their capacity is routinely exceeded, requiring more frequent removal.

Although the proper collection and disposal of boater-generated solid waste is not as problematic as vessel waste-oil and sanitary sewage for the waterfront facilities, it should be considered as a facility maintenance requirement to minimize potential water quality and human health impacts. Previous studies have shown that recreational boaters generate a considerable amount of domestic solid waste which must be properly collected and disposed of. Each marina facility must maintain an adequate and sanitary refuse collection and disposal program or else the trash ends up in the harbor, thereby creating a potential adverse impact to water quality.

Recreational boating facilities that establish and maintain a responsible refuse collection and disposal program gain an added benefit: that of enhancing the environmental and aesthetic quality of their facility. This typically includes trash receptacles placed at strategic and convenient locations at the dock areas and dock access points. The refuse collection and disposal program should include boater awareness of collection and disposal schedules and policies. A solid waste recycling program may also be considered.

5.2 Specific Recommendations for Water Quality Protection

The following specific recommendations for water quality protection are to be considered by the Harbor Master Plan Committee as implementation level recommendations that may proceed independently or in conjunction with the Comprehensive Harbor Management Plan. These recommendations were developed as a result of surveys and information gathering conducted for this study as well as analysis of key marine operational issues which potentially affect water quality conditions in the Inner Harbor. The Marine Pump-Out Study, marine facilities survey, technical information, and extensive discussions with the marine industry, municipal officials, and the Massachusetts Office of Coastal Zone Management provided the supporting information and basis for these recommendations.

5.2.1 Recommendations for Public Education and Awareness

Before the recommendations described in the following sections can be successfully implemented, municipal officials must be committed to the proposed disposal and management programs, and marine facilities operators and users must be educated as to

the elements of the management plan. National and regional studies on the effectiveness of marine water quality protection programs aimed at the general boating public indicate that boater education and awareness of the issues is a critical component to successful implementation. Boater education and awareness of their responsibility to water quality protection, and how they can contribute to improved environmental quality of their common waterways and harbors has proven to be a fundamental consideration for a successful management plan.

A four-tiered public awareness program should be developed for implementation with the disposal and management recommendations. This program would address the needs and interests of four distinct audiences and would provide informational materials in the media best-suited to the needs of each. These four audiences are:

- 1) Municipal officials - harbor masters, boards of health, planning boards, Boards of Selectmen, City Council, and any other municipal officials directly or indirectly responsible for implementation and/or enforcement of some portion of the management and disposal plan.
- 2) Marine facilities operators - both commercial and recreational.
- 3) Marine facilities users - both commercial and recreational.
- 4) The general public.

For all four audiences the education program should relay the following information:

- 1) Why a management and disposal plan? To address water quality problems in the Inner Harbor specifically attributable to improper disposal activities.
- 2) What specific activities are subject to the management and disposal plan? For commercial operators and users, focus on improper disposal of oil with sanitary sewage discharge and refuse as secondary issues. For recreational operators and users, focus on sanitary sewage discharge with refuse and improper disposal of oil as secondary issues.

- 3) How can the objectives of the management and disposal plan be met? Explain procedures for proper disposal. Identify oil collection and recycling facilities. Identify sewage pump-out facilities. Remind audiences of penalties for non-compliance with management and disposal plan.

The information may be relayed through a variety of media in two basic ways - enforced or voluntary.

Examples of enforced education include:

- 1) Make applicable elements of the disposal and management plan a condition of annual contracts for marine facilities use, a condition of annual boat registrations, and/or a condition of seasonal or transient mooring rental agreements.
- 2) Make applicable elements of the disposal and management plan conditions of a permit to operate commercial or recreational marine facilities.

Examples of voluntary education include:

- 1) Provide signage re: proper disposal procedures and available disposal facilities at the point of use. It is reported that this is presently being addressed by the New Bedford Harbor Development Commission.
- 2) Distribute educational literature at the start of the season to all marine facilities operators; provide literature that operators can distribute to their users; encourage marine operators to generate their own flyers or customer literature which explains the sanitary and solid waste collection programs they offer; provide press releases to local papers and radio stations detailing the need for and methods of proper disposal.
- 3) Conduct workshops for municipal officials annually to encourage and facilitate a coordinated management approach. Do the same for commercial and recreational operators. Users are unlikely to attend such events due to other demands on their time, but let them know they are welcome.

- 4) Conduct a campaign to adopt a slogan addressing disposal issues: "Pump Don't Dump;" "Out of Sight is not Out of Mind;" or "Save our Harbor." A catchy slogan will capture not only your desired audiences but friends and family, too. This indirect influence can be powerful.

Finally, the following special concerns should be addressed:

- 1) Provide appropriate signage and literature, where needed, to effectively reach the desired audience.
- 2) Emphasize ease of access in developing an implementation plan. Even the best education program will be ineffective if disposal procedures or facilities are difficult or inconvenient to use.
- 3) Will cost be a disincentive? Seek and publicize programs to subsidize a portion of the costs for use of disposal facilities, at least in the first couple of years. This will encourage the development of good habitats. ~~habitats~~ habits
- 4) Publicize benefits of program implementation. Use municipal spokesmen to congratulate all players for their participation. Publish a report card on water quality showing measurable improvement attributable to successful implementation of the management and disposal plan.

Additional specific recommendations for public education are provided in the following sections.

5.2.2 Recommendations for the Collection and Disposal of Vessel Waste Oil

The improper disposal of waste oil is the most significant water quality issue facing New Bedford Harbor. To address this issue it is recommended that the following actions be considered for implementation:

- 1) Adopt local regulations requiring oil-free bilges in commercial vessels.
- 2) Create economic incentives for vessel operators to recycle oil.

- 3) Establish a private commercial service to pump-out waste oil from commercial vessels on a fee basis.
- 4) Establish an enforcement and compliance program. *Need examples*
- 5) Establish Manifest and Chain-of-Custody Procedure for purchase and return of oil.
- 6) Establish Best Management Practices Plan for waste oil collection and disposal at marine docking facilities.
- 7) *Establish* ~~Established~~ public awareness and education program for commercial and recreational boaters. *Need examples*
- 8) Establish Oil Barrel Labeling Program.

Each of these recommendations is discussed in more detail below.

o Adopt Local Regulation Requiring Oil-Free Bilges in Commercial Vessels When Docked in the Inner Harbor

A local regulation should be promulgated and adopted by the Board of Health prohibiting the presence of excessive oil in bilges and the disposal of vessel direct discharge of bilge water contaminated with oil while at berth or leaving the harbor. This local regulation will make it unlawful to allow vessel waste oil to be disposed of into the bilge of a boat while at berth. This regulation should include periodic inspections by the ~~Harbormaster~~ *is this feasible with the river?* accompanied by the U.S. Coast Guard as well as stiff fines or docking evictions for repeat violators.

Discussions with the U.S. Coast Guard, Providence Marine Safety office, indicate that they will assist local authorities in implementing and enforcing an oil-free bilge regulation. They would also assist in making inspections of bilges. Their purpose in bilge inspection is one of safety. If there is an

"excess" of combustible material in the bilge, which includes oil, the Coast Guard has the authority to order it removed and/or take enforcement action if the situation is hazardous. At present the Coast Guard does not assume jurisdiction over bilge water as a pollution source until it is pumped out of the boat. Nevertheless, the presence of the U.S. Coast Guard during bilge inspection will make the work safe for the harbor master to determine the extent of compliance with the local oil-free bilge regulations.

The establishment of a local regulation prohibiting engine waste oil in vessel bilges would give authority to harbor masters to investigate bilges for contamination. One method of enforcement would be to make the annual issuance of a fishing license or license to dock at a municipal wharf contingent on passing an "oil free bilge" boat inspection. Periodic, unannounced inspections can be conducted. Repeated violators can be evicted from the docks to send a clear message of enforcement and compliance.

- o Create Economic Incentives for Vessel Operators to Recycle Oil

The establishment of a mandatory deposit system for oil purchases would create an economic incentive for vessel operators to recycle their oil. The system would function like the bottle bill. Operators would be required to pay a deposit when purchasing oil which would then be refunded when used oil is brought back. Even with a free oil recycling program in place (refer to discussion of the Seafood Cooperative's Recycling Program), this type of financial incentive is necessary.

- o Establish Private and Commercial Service to Pump Oil from Commercial Vessels

The City of New Bedford and Town of Fairhaven should promote the establishment of a commercial waste oil pump-out boat or pump-out truck service in New Bedford Harbor. The pump-out boat or truck would be operated by a private commercial entity and would pump-out engine waste oil from commercial vessels for a reasonable fee. This service would be similar

to the water boat service which currently operates in the Inner Harbor to provide potable water to commercial fishing vessels. The establishment of a commercial service to pump-out oil from vessels must be cost effective to be realized. The development of the referenced oil deposit program or other such requirement which forces commercial vessels to recycle their oil would create demand for such a service. According to Coastal Safe Waters, a local sewage hauler, the operation and maintenance costs of a truck-based service would be much less than that of a pump-out boat. However, the lower costs of a truck must be weighed against its ability to serve boats in the fishing fleet. Both Coastal Safe Waters, a sewage hauling company in New Bedford, and Frank Corp., an environmental service company in New Bedford, are interested in providing this service.

o Establish an Enforcement and Compliance Program

To ensure that the proposed local regulation is effective in reducing improper disposal and discharge of engine waste oil, an enforcement and compliance program should be established. At present the U.S. Coast Guard provides some degree of enforcement; this is limited to investigation of reports of improper oil disposal by commercial boaters. On the local level, both the Fairhaven and New Bedford Board of Health have existing regulations prohibiting the discharge of oil and contaminants into New Bedford Harbor. These Board of Health regulations authorize enforcement provisions. Recommended local and federal enforcement is described below:

- Federal Enforcement

Upon report of a violation, the Coast Guard contacts its closest office to evaluate the boat in question and determine whether a spill has occurred. If the Coast Guard has justifiable reason to believe a boat is spilling oil, the boat is boarded and examined for signs of spillage. According to the Coast Guard Office in Providence, violations have been confirmed through a laboratory comparison of the spill area outside the vessel with the bilge water inside the vessel. The Coast

Guard has successfully fined many vessels for violation of the Clean Water Act - Section 312 in New Bedford Harbor using this technique referred to as "finger printing". Violators can be fined from \$100 to \$10,000, with the average fine being \$1,000.¹⁴

The success of this enforcement program depends to a large extent on the ability to report spills occurring in the area quickly and on the ability of the Coast Guard to arrive on the scene shortly after the spill has occurred. In the past, spills have been reported by various types of concerned citizens along the waterfront.

This system of enforcement could be further improved through closer coordination with the Coast Guard and the development of an organized inspection/reporting system. The harbor masters of Fairhaven and New Bedford have reported spills and should make inspections via motor boat of the fishing fleet on a more regular basis to raise the level of awareness of the fleet showing ongoing effective enforcement and compliance efforts. If members of the boating public are made aware of the environmental issues at hand, and of the Coast Guard's willingness to investigate these matters, additional reporting of spills is likely to take place. Enforcement actions should also be widely publicized so that commercial vessel operators are aware of the consequences of improper oil disposal.

Local Enforcement

Both Fairhaven and New Bedford have Board of Health Regulations prohibiting the discharge of oil into Harbor waters and monetary fines that can be issued to violators. Fairhaven can issue up to a \$100 fine under Section 10 of Chapter XIV for the discharge of oil and can use the shellfish officer, harbor master, or assign other individuals to enforce these rules. New Bedford has similar by-laws under Chapter 5 and can assess fines up to \$300 for violators. The Harbor Commission

should encourage the Board of Health to use these enforcement mechanisms as harbormasters and local officials have a better chance of identifying violators in the act than the U.S. Coast Guard. Furthermore, Fairhaven and New Bedford should consider raising the fine amounts from \$100 to \$500, and \$1,000 for repeated offenders.

o Establish Manifest and Chain-of-Custody Procedure for Purchase and Return of Oil

In order to control the purchase and disposal of oil, it is recommended that commercial vendors which sell petroleum products to the commercial fishing fleet be required to maintain and complete chain-of-custody forms for the distribution of engine oil and collection of engine waste oil that is sold to a vessel owner. These forms should indicate the following:

- 1) Name and signature of vendor.
- 2) Date, quantity and type of oil sold by the vendor.
- 3) Purchaser's name and signature, and vessel name, registration and docking location.
- 4) Date, quantity and type of oil returned by the purchaser.
- 5) Name, signature, and date of vendor accepting returned oil.
- 6) Name and signature of oil recycler.
- 7) Date and quantity of used oil delivered to recycler.

Vendors which sell petroleum products to vessel owners should be held responsible for collection of waste oil products through chain-of-custody documentation. Vendors should be required to clearly mark the containers (steel drums, etc.) with their name, logo, and location. Vendors should be required to provide the New Bedford Harbor Development Commission, or other harbor authority with an annual or semi-annual report on chain-of-custody documentation.

o Establish Oil Barrel Labeling Plan

To eliminate the problem of abandoned oil barrels left on town wharfs, it is recommended that vendors of oil clearly label their barrels with their company name. Vendors of oil should be held accountable for abandoned oil barrels left on docks which were sold by them. This procedure is currently being established in New Bedford and will put the onus on vendors to make sure used oil is returned. Oil barrel labeling will force vendors to be accountable for their oil barrels and assist in the implementation of the chain-of-custody program.

o Establish Basic Best Management Practices Plan

To encourage proper disposal of engine waste oil, the City of New Bedford and Town of Fairhaven Board of Health Departments should establish a policy requiring each docking facility to develop and implement a Best Management Practice Plan for engine waste oil collection and disposal.

A Best Management Program is a concept recently adopted by marine industry, particularly the marina industry in which a facilities operator establishes a management program at its facility for the management of waste products, hazardous materials, and worker safety. For example, a BMP may be established for the collection of waste oil. This BMP will describe safe handling, storage, and disposal procedures that either employees or patrons must comply with for environmental quality and health safety.

These BMPs could be enforced in conjunction with a Board of Health Permit. Each existing marine facility (commercial or recreational) would have to develop an Environmental Quality Management Plan that would be submitted to the appropriate municipality at the start of each boater season. Each facility would then implement the plan that would include a vessel waste oil collection and disposal program. At a minimum, the plan should identify facilities requirements for collecting and disposing of oil, oil pump-out services, and a fuel oil spill containment plan. The Environmental Quality Management Plan should address procedures for:

- 1) Proper Fuel/Oil Dispensing
- 2) Proper Waste Oil Collection and Storage
- 3) Proper Waste Oil Disposal and Recycling

o Establish a Public Awareness Program

A public awareness campaign should be conducted annually to educate commercial and recreational operators and users as to the environmental consequences of the improper disposal and discharge of engine waste oil. Municipalities should develop a flyer describing applicable applications, services, and recommended BMPs for engine oil pump-out and disposal. This literature should be distributed to all facilities operators and copies made available to the operators for distribution to their patrons. This could also be accomplished in the form of press releases to local papers, the posting of the new regulations, in several languages if necessary, along dock areas, and distribution of literature at the point of use. Municipalities should also conduct public information meetings or workshops to make commercial operators aware of the regulation services and BMPs, and of their role in complying with water quality protection regulations.

5.2.3 Recommendations for the Disposal of Recreational Boat Sewage

The improper disposal of recreational boat sewage is the second most significant water quality issue facing New Bedford Harbor. To address this issue it is recommended that the following actions be considered for implementation:

- 1) Establish an enforcement and compliance program.
- 2) Adopt a local regulation requiring marinas over a certain slip capacity to provide pump-out services.
- 3) Consider establishment of a Federal "No Discharge Area".
- 4) Establish Best Management Practices for recreational marinas.

- 5) Establish a public awareness program for recreational boaters.

Each of the recommendations is discussed in more detail below.

- o Establish an Enforcement and Compliance Program

Local Enforcement

The City of New Bedford and Town of Fairhaven both already have regulations under their Board of Health Department prohibiting the discharge of boat sewage into New Bedford Harbor. The City of New Bedford Board of Health Regulations at Chapter 5, Sec. 5-6(f) state, "No sewage, garbage, refuse or other contaminants shall be discharged from marine craft into any waters covered by this section at any time." Fairhaven has a similar regulation.

The regulation in both municipalities authorize the Board of Health to take enforcement action, if necessary, Chapter 5, Sec. 5-6(j) of the New Bedford Board of Health authorizes the Board of Health to assess fines on a per diem basis for the length of the violation. The New Bedford Board of Health can also enforce this regulation by not issuing the required annual Board of Health permit to marine facilities or through revocation of the Board of Health Permit. Fairhaven has the same type of enforcement mechanisms, including a \$100 fine for violators and a ticket process to be carried out by the Board of Health and/or Shellfish Officer.

Through review of Section 312 of the Clean Water Act and discussions with the U.S. Coast Guard, it is apparent only the discharge of "Untreated Sewage" is an illegal offense. The discharge of treated sewage from Type I, II, or III MSDs is authorized under the Clean Water Act and local communities cannot prohibit Type I, II, III MSD discharge unless a Federal "No Discharge Area" has been designated. However, Fairhaven and New Bedford can enforce their existing Board of Health regulations against "un-treated" sewage. Accordingly, the Board of Health in both municipalities should enforce these

regulations. The marine operators should be held responsible to ensure slip lessees comply with these regulations through their Board of Health Permit and/or monetary fines assessed to violators by the marine operator. This will force individual marina operators to establish their own enforcement and compliance rules for "no discharge at marina docks."

The Harbormasters Shellfish Officers and members of the Board of Health should be given the authority to enforce illegal discharge of sanitary waste by boaters and issue monetary fines to violators. The Shellfish Officer who operates the Fairhaven marine pump-out boat and the New Bedford Harbormaster could identify violators while conducting services in the harbor and either issue tickets or report violators to the Board of Health for enforcement action. Records of pump-out facilities' use should be kept by the Marina Operator and provided to the Board of Health as a prerequisite to renewal for a Board of Health Permit (this is already a requirement under Fairhaven's Regulations). These pump-out records will help the marina operator and the municipality to identify chronic non-users.

- o Federal Enforcement

Federal Enforcement is also available from the U.S. Coast Guard. As described previously, the U.S. Coast Guard provides some degree of enforcement; this is limited to investigation of reports of improper disposal of untreated boat sewage by commercial or recreational boaters and periodic inspections of recreational boats. The success of this enforcement program depends to a large extent on the ability of the Coast Guard to catch violators. The Local Enforcement Program described above should work in conjunction with the Coast Guard to help identify violators to the Coast Guard and enable the Coast Guard to issue Federal Fines.

- o Adopt Local Regulations Requiring Marinas to Have Pump-Out Services

The City of New Bedford and the Town of Fairhaven should consider adoption of regulations under the Board of Health requiring the following:

- 1) Marinas over 50 slips should have, at a minimum, a portable sewage pump-out system to service their customers or service contracted with a licensed sewage pump-out boat (this is already adopted in Fairhaven - see regulations in Appendix D).
- 2) Marinas over 100 slips in size should have a fixed pump-out system to service their customers.

Compliance with these requirements should be a prerequisite to obtaining a Board of Health Permit for marinas. The Board of Health would notify marina operators of these new regulations and allow an appropriate time period for marinas to comply with this requirement. This would be a relatively effective approach since the marina facility would have to comply with the same state regulations as required.

Requiring marinas over 50 slips to have, at a minimum, a portable sewage pump-out system or contract with a sewage pump-out boat is consistent with the requirements of the new Chapter 91 Waterways Regulations. The 50-slip criteria will ensure that marinas will have a system to dispose of boat sewage generated by boaters docking at their marinas. As an option to a portable pump-out system, marinas should also be allowed to obtain service from a sewage pump-out boat. This could provide an option for the marinas on Popes Island in which they could split the cost of a pump-out boat. Fees must be nominal to encourage use of whatever type of system is selected.

Adopting a regulation that requires marinas over 100 slips in size to have a fixed pump-out system ensures that larger marinas will have a pump-out system with adequate capacity to handle the larger number of boats. Typically, fixed pump-out systems are located at the fuel dock for boater convenience, and are more useful for larger marinas as they do not require a marina operator to transport the system to the pump-out area.

o Establish a Federally Designated No-Discharge Area

Apply for and obtain a Federally designated No Discharge Area for New Bedford Harbor. Obtaining a Federally designated No Discharge Area designation will make it unlawful for boats to discharge any sewage including sewage from Type I, II, III MSDs. Upon Federal designation, the U.S. Coast Guard, along with the local Harbormaster, can be delegated responsibility for enforcing the No Discharge Area regulations. Another benefit to the no-discharge status is the public awareness and recognition that results through the lengthy designation process. At present, the No Discharge Area designation requires an extensive public review and approval process. State and Federal government agencies must also participate in this designation. The Town of Wareham has recently received an EPA No Discharge Area designation to protect marine water quality within its harbor areas. This type of designation should be considered by New Bedford and Fairhaven as a comprehensive and proven approach to marine water quality protection. It would also involve a public review process which would certainly raise the level of awareness and concern of harbor users on these issues.

Attached in the Appendix is the EPA's, "Guidance For States and Municipalities Seeking No-Discharge Area Designated for New England Coastal Water."

o Establish Best Management Practices for Recreational Marinas

As previously described, Best Management Practices (BMPs) program for marinas should be implemented. This should include operation and maintenance of a pump-out system at a specified location. A proper sewage collection, storage and disposal plan should be adopted by each marina facility which meets the applicable State and Board of Health standards. Marina operators should be required to post signs and state in their slip lease agreements that the discharge of boat sewage into marina or harbor waters is prohibited and punishable by fines established by law. Instructions on the proper use of the pump-out system should also be posted at the service dock.

o Establish a Public Awareness Program for Recreational Boaters

A public awareness campaign addressing boat sewage pump-out issues should be conducted on an annual basis at the beginning of each boating season.

A flyer should be prepared by the municipalities Board of Health providing a brief statement on the negative impact of improper boat sewage disposal in New Bedford Harbor, the local and federal regulations prohibiting the disposal of boat sewage in the harbor, how the municipality enforces these regulations. Also included should be a listing and location of boat sewage pump-out facilities, including location, fees and hours of operation.

As a requirement to obtaining a Board of Health Permit, the marina operator shall be required to include these regulations as part of the marinas annual slip lease document for boating patrons. Slip leases would in turn be required by the marina operator to sign this portion of the lease document acknowledging the lessees understanding of sewage pump-out regulations and existing pump-out facilities available. Additional copies of this information should be available at the marina for transient users.

In addition, the City of New Bedford and Town of Fairhaven should sponsor annual public educational meetings and workshops to make marina operators aware of these pump-out issues, regulations, and services. Such workshops can be conducted by the local Harbormaster or Board of Health. Signage stating harbor pump-out regulations, and facilities operational requirements should be posted at all marina facilities.

5.2.4 Recommendations for the Collection of Boater-Generated Solid Waste

The improper disposal of boater-generated solid waste is the third most significant water quality issue facing New Bedford Harbor. To address this issue it is recommended that the following actions be considered for implementation:

- 1) Adopt local regulations prohibiting the direct disposal of solid waste into harbor waters.

- 2) Consider establishment of an enforcement and inspection program.
- 3) Provide adequate dumpsters and trash receptacles at marine facilities.
- 4) Establish Best Management Practices for refuse collection and disposal.
- 5) Establish a public awareness and educational program on solid waste disposal and recycling.

Each of these recommendations is discussed in more detail below.

o Adopt Local Regulations Prohibiting the Disposal of Solid Waste Directly Into the Harbor

The City of New Bedford and Town of Fairhaven already have local regulations through their Board of Health which prohibit direct disposal of boater-generated solid waste into harbor waters. Each marina facility should be directly responsible for monitoring compliance with this regulation at their site.

These regulations should require that an adequate number of dumpsters and trash receptacles be provided at boater access points at the docks. In addition, local approval of an appropriate solid waste collection and disposal program should be completed for each facility. Solid waste recycling programs should also be encouraged through the regulation.

o Establish an Enforcement and Compliance Program

The local regulation should require periodic inspections of each marina or docking facility by Board of Health officials to ensure that solid waste generated by the boaters is being properly collected and disposed of. Periodic compliance inspections by Board of Health Inspectors and fines for non-compliance with the regulation should be considered.

o Provide Adequate Dumpsters and Trash Receptacles at Marine Facilities

The local regulation should require a minimum number of dumpsters and trash receptacles to be located and maintained at each marine docking facility. Dumpsters should be provided for large volumes of solid waste collection. Trash receptacles should be placed and maintained at key upland locations, at all access gangways, and inside upland sanitary facilities.

o Establish Best Management Practices for Solid Waste Collection and Disposal

Each marina or commercial docking facility should be required to establish Best Management Practices for solid waste collection and disposal. These BMPs should include maintenance of the described number of dumpsters and receptacles at the facility, establishment of an adequate collection and disposal schedule, and assignment of responsibility for periodic or daily policing of facilities for trash pick-up. A solid-waste recycling program should be implemented if possible.

o Establish a Public Awareness Program

A public awareness program should be developed by each municipality and each individual marina operation to advise the public and facilities patrons of solid waste collection and disposal rules. This program could include posting and distribution of information to patrons of each facility indicating policies and regulations as well as locations and collection schedules for trash pick-up. The public awareness program should also encourage solid waste recycling programs for plastic, aluminum and paper. Public awareness and involvement in waste minimization and recycling are key elements in the reduction of fugitive trash in harbor waters generated from boating activities.

6.0 IMPLEMENTATION PLAN AND SCHEDULE

Implementation level recommendations were described in Section 5.0. Section 6.0 describes the recommended plan and schedule for implementing these recommendations. The implementation plan and schedule assigns implementation objectives as either immediate, short-term or long-term depending on the importance of the objective and the expected time requirements necessary to implement the particular recommendation.

6.1 Boater Education and Awareness Recommendations

A. Implementation of Annual Public Education Programs

1) Municipal Officials

- Short-Term Recommendation: Harbormaster and/or HDC conduct an annual information meeting with the chief elected municipal officials to present and discuss Harbormaster, Conservation Commission, Board of Health rules and regulations for moorings permits, and Board of Health Permits, marine sanitary waste control, and solid waste collection. This should be completed prior to commencement of the boating season, and should be updated each year.
- Long-Term Recommendation: The Harbormaster, Conservation Commission and Board of Health for each municipality should meet at least once a year prior to the beginning of the boating season to discuss and formulate new rules and regulations or revise existing rules for moorings and marina operation requirements. These meetings should be conducted over the winter months and prior to presentation to chief municipal officials and the boating public.

2) Marine Facilities Operators

- Short-Term Recommendation: Existing Board of Health and/or Harbormaster regulations for marine facilities should require each marine facility to submit a Facilities Operation Plan and Best Management Practices for protection of marine water quality. These plans should address:

- o Waste oil and sanitary waste collection procedures
 - o Solid waste collection procedures
 - o Hazardous materials handling procedures
 - o Boater awareness and education program for facility users
- Short-Term Recommendation: Annual review by Harbormaster of Marina Facilities Operations Plan and Best Management Practices for compliance with environmental protection regulations prior to issuance of seasonal mooring permits. This should begin in the spring of 1993.
 - Short-Term Recommendation: Annual review by Board of Health of Marine Facilities Operations Plans and BMPs for environmental protection prior to issuance of annual Board of Health Permit. This should be accomplished before a marina facility's renewal of annual or periodic Board of Health Permits.
 - Long-Term Recommendation: The Harbormaster and Board of Health should conduct an informational meeting each spring with the marina facilities operators prior to commencement of the boating season to present and discuss environmental protection regulations for sanitary sewage, waste oil, and solid waste collection and disposal procedures. Inform the operators of new or revised regulations prior to each boating season.

3) Marine Facilities Users

- Short-Term Recommendation: Harbormaster conducts annual workshop for recreational boaters to review harbor rules and regulations for navigation, mooring permits, and environmental

protection. This workshop should be held in late August, 1992 before boaters begin to remove their boats from the water. In subsequent years this meeting should be held in the spring prior to commencement of the summer boating season.

- Short-Term Recommendation: Harbormaster, Board of Health, Harbor Development Commission, and U.S. Coast Guard conduct annual or semi-annual meetings with commercial vessel operators to review fleet docking arrangements, vessel service and fueling procedures, waste oil collection, and vessel operator's responsibility for compliance with environmental protection regulations.

4) General Public

Short-Term Recommendation: Harbormaster and Board of Health conduct annual spring information workshop to review rules for use of harbor facilities, environmental protection regulations, and navigational/mooring assignments for harbor areas. This should be conducted beginning in the early spring of 1993.

B. Implementation of Annual Enforced Educational Programs

1) Municipal Officials

- Short-Term Recommendation: Harbormaster and/or HDC conducts annual spring meeting (beginning in the spring of 1993) with the chief elected municipal officials to review:
 - o Docking/mooring permit fees and procedures.
 - o Enforcement of environmental protection regulations - pump-out, waste oil, solid waste.
 - o Marine facilities environmental compliance initiatives for boating season - enforcement, fines, and inspection procedures.

2) Marine Facilities Operators

- Short-Term Recommendation: Harbormaster and/or Board of Health require each marine facility operator to complete a facility information survey and attach it to their annual permit application for mooring assignment or Board of Health Permits. This should be performed on an annual basis beginning in the spring of 1993. This Harbormaster survey should require information on the facility's:
 - o Mooring and Docking Plan
 - o Sanitary Sewage Collection Program
 - o Waste Oil Collection Program
 - o Solid Waste Collection Program
 - o Best Management Practices for Environmental Protection
 - o Specific Water Quality Protection Programs
- Short-Term Recommendation: The Harbormaster/Board of Health would review and approve the adequacy of the facility's environmental protection program each year through the issuance of an annual permit (e.g., mooring permit, etc.). This should begin in the spring of 1993.
- Specific facilities operation requirements can be incorporated as a condition of permit issuance.

3) Marine Facilities Users

- Short-Term Recommendation: Harbormaster/HDC/or marine facility operator requires boater to complete a vessel information questionnaire along with his annual contract forms for slip and/or mooring assignment. This should be done prior to the spring boating season and prior to signing of the annual slip lease by the boater.
- Vessel information required prior to assignment of slip/mooring should include:

- o Vessel description.
 - o Type of on-board MSD.
 - o Pump-out/fuel service requirements.
- Board of Health requires submission of marine facilities' annual solid/hazardous waste management plan to be submitted prior to renewal or issuance of a required annual Board of Health permit.

C. Voluntary Education Programs

1) Municipal Officials

- Short-Term Recommendation: Harbormaster and/or Board of Health conducts annual review with chief elected municipal officials to update them on available information, literature, and boater awareness campaigns for water quality protection initiatives prior to the beginning of each new boating season. This should be conducted in the spring of 1993.

Information on water quality protection initiatives can be generated by the local Harbormaster with the assistance of MCZM. Alternatively, the municipality could hire a public information specialist to assist in development of water quality protection literature.

2) Marine Facilities Operators

- Long-Term Recommendation: Harbormaster and/or other municipal agencies distribute information literature and environmental protection requirements to each marine facility operator at the beginning of each boating season.
- Long-Term Recommendation: Information materials can be distributed to marine facilities operators at the Harbormaster's annual meeting with operators, or prior to renewal of marina or mooring permits.

- Long-Term Recommendation: Encourage marine facilities operators to participate in the harborwide boater awareness campaigns.

3) Marine Facilities Users

- Immediate/Short-Term Recommendation: Harbormaster and/or marina facilities operators participate in and conduct boater education programs during the boating season. Boater education should begin in the summer of 1992 boating season. Boater education workshops should be conducted on an annual basis prior to commence of the summer boating season.
- Boater education information on marine water quality protection should include:
 - o Harborwide rules and regulations for sanitary waste discharge and disposal.
 - o Waste oil and solid waste collection and recycling programs and services.
 - o Environmental services available to boaters, including names of vendors, service capabilities, and costs for service (e.g., pump-out, waste oil collection).
- Short-Term and Long-Term Recommendations: Marine facilities operators should prepare and distribute to their users an annual information statement of facility and boater operational requirements for:
 - o Use of fuel and oil dispensing facilities.
 - o Use of sanitary sewage facilities.
 - o Solid waste collection schedules.
 - o Procedures and costs for waste oil/hazardous materials collection and disposal.

- o Best Management Practices that employees and boaters must observe for environmental protection within the marina basin area.

Facility operators will need to be informed of this requirement as soon as possible to allow for proper development of such information.

4) General Public

- Short-Term Recommendation: Community Affairs Department, Harbormaster, and Board of Health conduct annual awareness campaigns through advertisement and public distribution of:
 - o Water quality protection information.
 - o Rules and regulations for environmental quality protection for boaters using New Bedford Inner Harbor.
 - o Environmental clean-up or waste collection services available for use by the fleet and recreational boaters.
 - o Specific information on marine facilities operation and boater requirements for water quality protection (e.g., no discharge areas, sanitary sewage pump-out and fueling facilities locations, waste oil collection services, etc.).

This information should be prepared and distributed prior to the 1993 boating season. It should be updated and revised each boating season.

- Short-Term Recommendation: Conduct periodic media announcements during recreational boating and commercial fishing seasons (e.g., radio and newspaper announcements) which reminds the boating public and commercial fishing vessel operators of:

- o No discharge areas (if designated).
- o Use and location of marine pump-out facilities.
- o Required procedures for collection and disposal of petroleum waste products and solid waste.
- o Importance of water quality protection and environmental quality within the Inner Harbor.

6.2 Collection and Disposal of Vessel Waste Oil Recommendations

1) Adopt Local Regulations for Oil-Free Bilges in Commercial Vessels

- Short-Term Recommendation: Local regulations should be drafted and adopted by the Municipal Board of Health or Harbor Development Commission in 1993. Regulations should contain language "prohibiting the presence of oil in the bilges of commercial vessels," and should describe procedures for vessel waste oil collection and disposal as well as enforcement and compliance procedures.
- Adoption of this regulation should be a priority of the Committee since it has been identified as the most significant issue affecting water quality in New Bedford Harbor. This regulation should be developed and incorporated into the existing Board of Health Regulations and the New Bedford Harbor Development Commission Regulations within the next fiscal year.

2) Create Economic Incentives for Vessel Operators to Recycle Oil

- Short-Term/Long-Term Recommendation: The HDC should conduct an annual meeting with local fleet vendors who service the fishing fleet to review proposed vendor procedures and rebate incentives to encourage waste oil recycling for their customers. The HDC should begin by meeting with oil vendors in the summer of 1992 to organize the program. Establishment of a local regulation and an implementation plan should be completed in 1993.

3) Establish Private Commercial Pump-out Service for Fleet

- Short-Term Recommendation: This recommendation should be evaluated by the Harbor Development Commission and discussed with private waste oil collection companies in 1992. Commencement of a commercial waste oil pump-out service by boat or tank to service the fleet should occur by 1993 or in conjunction with the implementation of the oil-free bilge regulation.

4) Establish an Enforcement and Compliance Program

- Short-Term Recommendation: Development of waste oil collection enforcement and compliance programs should proceed concurrently with the adoption and implementation of local regulations requiring oil-free bilges to be completed in 1993.
- Short-Term Recommendation: Basic elements of a waste oil disposal enforcement and compliance plan should begin in 1992 under existing Board of Health Regulations, and should be fully developed and implemented by 1993. This could include:
 - o Vendor identification logo on engine oil containers sold to the fleet.
 - o Initiation of vendor chain-of-custody documentation procedures for engine oil distribution and recycling.
 - o Meet with engine oil/marine product vendors who sell to the fleet and inform them of new procedures.
- Once implemented, enforcement and compliance programs would become ongoing efforts, with higher degrees of activity during peak commercial fishing periods.

5) Establish Manifest and Chain-of-Custody Procedure

- Immediate Recommendation: This recommendation could be implemented immediately or in conjunction with adoption of local or

HDC regulations requiring oil-free bilges.

- The Harbormaster and HDC official should meet with local fleet vendors who provide engine-oil to fishing vessel operators to review and explain chain-of-custody procedures.

6) Establish Best Management Practices Plan

- Short-Term Recommendation: The basic elements of this BMP should be developed and adopted by the HDC and Town of Fairhaven in conjunction with adoption of oil-free bilge regulations. It would address issues such as:
 - o Waste oil Collection Procedures (Commercial and Recreational Vessels).
 - o Waste-oil Storage Procedures.
 - o Waste-oil Disposal Procedures.
- The plan should be implemented by marine facilities operators within one year after oil-free bilge regulations have been adopted.

7) Establish Public Awareness and Education Programs

- See Section 6.1 - Recommendations for Implementation Plan and Schedule.

8) Establish Oil Container Labeling Program

- Immediate/Short-Term Recommendation: The local Harbormasters and HDC should meet with local engine-oil vendors which service the fleet to describe the elements of the oil container labeling programs including:
 - o Schedule for implementation.
 - o Labeling procedures.

- o Completion of public review and federal adoption process in 1993-1994.
 - o Development of enforcement and compliance programs in 1994 for Fairhaven and New Bedford.
 - o Request funding assistance from EPA in 1993-1994 to assist in public education programs (similar to the Town of Westport).
- 4) Establish Public Education and Awareness Program for Recreational Boaters
- Short-Term and Long-Term Recommendations: Refer to Section 6.1 for specific implementation actions.
- 5) Establish Best Management Practices for Recreational Marinas
- Short-Term Recommendation: Develop BMP plan requirements for marine facilities operators in 1993, in conjunction with adoption of local regulations. BMPs for each facility should include:
 - o Description of sanitary sewage collection, storage and disposal procedures.
 - o Description of the type of pump-out facility available for servicing facility (mobile, fixed, portable, etc.).
 - o Description of boater awareness program to encourage patron use of the sewage pump-out service.
 - o Annual inventory of MSD types for boats docking at the facility.
 - Long-Term Recommendation: Require individual marine facilities operators to submit a specific BMP for water quality protection prior to the issuance of annual mooring permits and/or Board of Health Permits.

- Marine facilities operators should submit updated and revised BMPs on an annual basis associated with annual marina operation permit renewals.

6.4 Recommendations for Collection of Boater-Generated Solid Waste

1) Adopt Local Regulation Prohibiting Direct Disposal of Solid Waste into Harbor Waters

- Short-Term Recommendation: Modify existing Board of Health Regulations to require adequate number of dumpsters and trash containers at marinas and public docking areas. This should be determined by the Board of Health in consultation with the municipal Harbormasters and the HDC. This could be completed by the end of 1992.
- Local Harbormasters and HDC officials should evaluate the most effective location and servicing procedures for dumpsters and trash containers within the Inner Harbor area. Primary focus should be in high-use areas of the harbor such as fleet docking areas, public boat launching facilities, and large marina facilities. This should be completed prior to adoption of revised Board of Health regulations.

2) Enforcement and Inspection Program

- In conjunction with modification of the local Board of Health regulations increase fines and improve enforcement procedures. This should be accomplished concurrently with the changes specified in number 1 to allow for adequate number of dumpsters. Enforcement of these regulations should begin in the spring of 1993.

3) Establish Best Management Practices for Solid Waste Collection

- Short-Term Recommendation: Develop BMP requirements for marine facilities operators in 1993, in conjunction with adoption of local regulations. BMPs for each facility should include:

END NOTES

- 1 Patricia Fowle, Telephone Interview, Fairhaven Board of Health, November 5, 1991.
- 2 Larry Chongalitis, Telephone Interview, New Bedford Harbormaster, October 15, 1991.
- 3 Terry Wheeler, Telephone Interview, New Bedford Seafood Coop, October 16, 1991.
- 4 Fowle, loc. cit.
- 5 Fowle, loc. cit.
- 6 Kevin McGuire, Telephone Interview, DEM, October 16, 1991.
- 7 Wheeler, loc. cit.
- 8 Christofer Blake, Telephone Interview, Frank Corp., March 1992.
- 9 Richard Earle, Telephone Interview, Westport Harbormaster, September 11, 1991.
- 10 Robert Gilks, Telephone Interview, Edgartown Harbormaster, September 11, 1991.
- 11 William Ellis, 3rd, Telephone Interview, Wareham Harbormaster, September 11, 1991.
- 12 McGuire, loc. cit.
- 13 Dennis Bastarche, Telephone Interview, Coastal Safe Waters Corp., October, 1991.
- 14 O'Mally, Telephone Interview, U.S. Coast Guard, March 20, 1992

REFERENCES

- Bastarche, D. 1991. Personal Communication. November 18, 1991. Coastal Safe Waters Corp. New Bedford, MA.
- Bleier, A., 1992. Personal Communication. March 17, 1992. Vice President. DECO, Inc., San Diego, CA.
- Chongalitis, L. 1991. Personal Communication. October 15, 1991. New Bedford Harbormaster. New Bedford, MA.
- Coalition for Buzzards Bay. 1990. An Assessment of Marine Pump-out Facilities in Buzzards Bay. The Coalition of Buzzards Bay and Buzzards Bay Project. Marion, MA.
- Coalition for Buzzards Bay. 1989. Handbook for Mariners of Buzzards Bay. 1989. Coalition for Buzzards Bay. Marion, MA.
- Cote, M. 1991. Personal Communication. September 16, 1991. U.S. EPA. Boston, MA.
- Dias, D. 1991. Personal Communication. September 11, 1991. Dartmouth Harbormaster. Dartmouth, MA.
- Dore, M. 1992. Personal Communication. March 10, 1992. President. Edgartown Marine, Edgartown, MA.
- Earle, R. 1991. Personal Communication. September 11, 1991. Westport Harbormaster. Westport, MA.
- Ellis, W. 1991. Personal Communication. September 11, 1991. Wareham Harbormaster. Wareham, MA.
- Fowle, P. 1991. Personal Communication. November 5, 1991. Fairhaven Board of Health. Fairhaven, MA.
- Gilks, R. 1991. Personal Communication. September 11, 1991. Edgartown Harbormaster. Edgartown, MA.

- Janek, D. 1991. Personal Communication. September 9, 1991. Coastal Zone Management.
- Jennings, G. 1991. Personal Communication. September 11, 1991. Marion Harbormaster. Marion, MA.
- KECU, Inc. 1990. A Case Study of Pollution From Marine Waste Discharge in a Salt Water Harbor and the Solution to Reduce Contamination in a Harbor.
- Laughlin, S. 1991. Personal Communication. September 16, 1991. Virginia Coastal Resource Management Council. Virginia.
- McGuire, K. 1991. Personal Communication. October 16, 1991. Department of Environmental Management. Boston, MA.
- Natchez, D. 1990. Marine Sanitation - Approaches, Benefits, Misconceptions, and the Impacts of the Chemicals Used. September 5, 1990. Daniel S. Natchez and Associates, Inc. Memaroneck, NY.
- Neilson, K. 1990. Pump-out Design Considerations Case Study. Docko, Inc. Mystic, CT.
- Novak, J. 1989. The Effect of Boat Holding Tank Chemicals on Treatment Plant Performance. Virginia Polytechnic Institute. Blacksburg, VA.
- Resler, S. 1991. Personal Communication. September 16, 1991. New York Coastal Resource Management Council. NY, NY.
- RI CRMC. 1989. A Guide to the Harbor Management Planning Process. 1989.
- RI CRMC. 1988. Guidelines for the Development of Municipal Harbor Management Plans. November 22, 1988. RI CRMC. Rhode Island.
- Salty Acres, RI. Model Harbor Ordinance. Salty Acres, RI.
- Sawyer, C. 1990. Marina Pollution Abatement. Department of Public Health, Division of Wastewater Engineering, Richmond, VA.

APPENDIX A

MARINE PUMP-OUT HOLDING TANK SURVEY FORMS AND CORRESPONDENCE





ENGINEERS, ENVIRONMENTAL CONSULTANTS & PLANNERS
A Summit Environmental Group Company

HMM Ref. No. 5671-314/ENV-5876

August 29, 1991

Marine Facilities Operators
Recreational Boaters
Commercial Vessel Operators

HMM Associates, Inc. (HMM) working in conjunction with the New Bedford/Fairhaven Master Plan Committee, and through a grant from the Massachusetts Office of Coastal Zone Management, is developing a Comprehensive Harbor Plan for the City of New Bedford and Town of Fairhaven. The purpose of this Comprehensive Master Plan is to organize and prioritize harbor and waterfront uses to plan for future harbor-wide development and examine measures to enhance the protection of environmental resources and water quality within the harbor. A special study of marine pump-out facilities within the harbor planning area which presently service commercial and recreational boats using the harbor will be conducted concurrently with the Comprehensive Harbor Plan.

The purpose of the Marine Pump-Out Study will be to determine the location, type and capacity of existing marine pump-out facilities within the harbor planning area, and evaluate the effectiveness of these facilities in protecting marine water quality. Recommendations on the type and siting of marine pump-out and holding tank facilities within the harbor planning area will be developed based on the results of the survey and review of existing marine pump-out and storage technologies and best management practices.

The purpose of this information survey is to:

1. Determine the type, location, and capacity of existing marine pump-out and waste-oil holding tanks at commercial and recreational boating facilities presently servicing vessels within the harbor planning area.
2. Determine the type of Marine Sanitation Devices (MSD's) used by commercial and recreational boaters presently docking and mooring within New Bedford Harbor.

By responding to the questions listed in the attached survey form, you will provide valuable information to be used in the development of the Comprehensive Harbor Plan and Marine Pump-Out Facilities Study. This information will be used to formulate recommendations on future siting and types of pump-out/storage facilities that may be located in the inner harbor and serve to promote protection of marine water quality. We hope you will take the time to respond to the attached survey questionnaire, and forward this information to the contact listed on the survey form. **We would appreciate a response to the questionnaire by September 16, 1991.**

Sincerely,
HMM Associates, Inc.

A handwritten signature in cursive script that reads 'Charles Natale'.

Charles J. Natale, Jr., Associate
Project Director

CN/mrd

NEW BEDFORD / FAIRHAVEN COMPREHENSIVE HARBOR PLAN STUDY
MARINE PUMP-OUT / HOLDING TANK SURVEY
RECREATIONAL BOATER SURVEY

1. Name of marine facility where you presently dock your boat: _____

2. Type of Vessel: ☐ Power Size of Vessel: _____ ft. Beam
☐ Sail _____ ft. LOA

3. Docking arrangement: ☐ Seasonal lease ☐ Long-term lease
☐ Transient ☐ Offshore mooring

4. Does your vessel have an operational Marine Sanitation Device (MSD)? ☐ Yes ☐ No

If yes, please provide the following information:

a) Type of MSD

☐ Type I MSD (Macerator/chlorinator) Volume _____
☐ Type II MSD (Advanced treatment) Volume _____
☐ Type III MSD (Holding Tank) Volume _____

5. Do you presently have your vessel serviced by a marine pump-out system? ☐ Yes ☐ No

If yes, please provide the following information:

a) Location of facility _____
b) Frequency of use _____
c) Cost per pump-out \$ _____

6. Would you use a marine pump-out facility at your dockage facility, if available? ☐ Yes ☐ No

7. Would you participate in a marina refuse control and recycling program if provided at your dockage facility? ☐ Yes ☐ No

8. Any helpful comments on the use and siting of marine pump-out facilities and/or a refuse control and recycling program?

Please respond to the applicable information requests on this survey and forward this information to the address below **NO LATER THAN SEPTEMBER 30, 1991.**

MARINE PUMP-OUT / HOLDING TANK SURVEY
c/o HMM Associates, Inc.
196 Baker Avenue
Concord, Massachusetts 01742

Commercial Fishermen Are Asked To Respond To Survey

The City of New Bedford and Town of Fairhaven Master Plan Committee, are working to develop a Comprehensive Harbor Plan for the City of New Bedford and Town of Fairhaven. This project, funded through a grant from the Massachusetts Office of Coastal Zone Management, will involve a special study of marine

pump-out facilities within the harbor planning area which presently service commercial and recreational boats using the harbor.

The purpose of the Marine Pump-Out Study conducted by HMM Associates, Inc. will be to determine the location, type and capacity of existing marine pump-out facilities within the

harbor planning area, and evaluate future siting alternatives of pumpout/storage facilities for the protection of water quality.

The City of New Bedford and Town of Fairhaven strongly urge local mariners to respond to the attached survey

form. For this study to be effective, participation from boaters using the New Bedford/Fairhaven Harbor area is essential. By responding to the questions listed in the attached survey form, you will provide valuable information to be used in the development of the Comprehensive Harbor Plan and Marine Pump-out Facilities Study. This information will be used to formulate recommendations on future siting and types of pump-out/storage facilities that may be located in the inner harbor and serve to promote protection of marine water quality. Please respond to the survey questionnaire on the next page of this magazine, and forward this information to Marine Pumpout/Holding Tank Survey, c/o HMM Associates, Inc 196 Baker Ave, Concord, MA 01970. For further information please call HMM Associates at 508-371-4241.

Need Help
with...
Family Problems

Drugs/Alcohol

Money Worries

Job Training

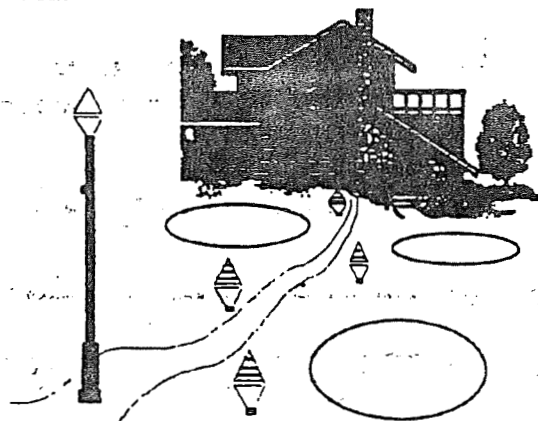


M.A.P.
Wharfinger Bldg.
New Bedford

997-6585
996-8572

Mariners Assistance Program
A program to serve mariners and their families

Come See Us For All Your Outdoor Lighting



**The LIGHTING CENTER
of ACUSHNET ELECTRIC**

993-1707

119 Alden Rd., Fairhaven

Mon.-Fri. 9-5, Sat. 8-4

For sale...



Westport River

4.26 Acres located in what has been call,
"The Best Kept Secret in Massachusetts."
Great vistas, rolling hills, natural beach,
Ready to Build. Great for horses.
Owner will help finance.

Offered by: M.A. Sweet Properties
508 997 4399 or 508 636 5563

NEW BEDFORD / FAIRHAVEN COMPREHENSIVE HARBOR PLAN STUDY
MARINE PUMP-OUT / HOLDING TANK SURVEY

RECREATIONAL BOATER SURVEY

1. Name of marine facility where you presently dock your boat: _____

2. Type of Vessel: ☐ Power Size of Vessel: _____ ft. Beam
 ☐ Sail _____ ft. LOA

3. Docking arrangement: ☐ Seasonal lease ☐ Long-term lease
 ☐ Transient ☐ Offshore mooring

4. Does your vessel have an operational Marine Sanitation Device (MSD)? ☐ Yes ☐ No

If yes, please provide the following information:

a) Type of MSD

☐ Type I MSD (Macerator/chlorinator) Volume _____
☐ Type II MSD (Advanced treatment) Volume _____
☐ Type III MSD (Holding Tank) Volume _____

5. Do you presently have your vessel serviced by a marine pump-out system? ☐ Yes ☐ No

If yes, please provide the following information:

a) Location of facility: _____
b) Frequency of use: _____
c) Cost per pump-out \$: _____

6. Would you use a marine pump-out facility at your dockage facility, if available? ☐ Yes ☐ No

7. Would you participate in a marina refuse control and recycling program if provided at your dockage facility? ☐ Yes ☐ No

8. Any helpful comments on the use and siting of marine pump-out facilities and/or a refuse control and recycling program?

Please respond to the applicable information requests on this survey and forward this information to the address below NO LATER THAN SEPTEMBER 30, 1991.

MARINE PUMP-OUT / HOLDING TANK SURVEY

c/o HMM Associates, Inc.

196 Baker Avenue

Concord, Massachusetts 01742

HMM Ref. No. 5671-314/ENV 6027

TEXT FOR RADIO ADVERTISEMENT RUN ON WBSM AND WNBH
9/25/91-9/26/91

Attention all Mariners - The City of New Bedford and Town of Fairhaven Master Plan Committee, are requesting all mariners in the New Bedford Harbor area to respond to a Marine Pumpout Holding Tank Survey that will appear on August 26th in this weeks Barnacle. The Marine Pumpout Holding Tank Survey will be used to plan future siting of marine pumpout and storage facilities that may be located in the inner harbor and serve to promote and protect water quality. The City of New Bedford and Town of Fairhaven strongly urge local mariners to respond to this survey as it will be used to develop an overall Harbor Management Plan for New Bedford Harbor. The Harbor belongs to all of us so lets work together. The completed survey will provide important information. For further information please call 508-993-1770.

NEW BEDFORD / FAIRHAVEN COMPREHENSIVE HARBOR PLAN STUDY

MARINE PUMP-OUT / HOLDING TANK SURVEY

FOR MARINE FACILITY OPERATORS

Name of Marine Facility: SEAPORT MARIWA

Address: 110 MIDDLE ST Contact Person: Ed Sylvia & Mike Yorston
FAIRHAVEN, MA Phone: 508-99-27985

Type of Facility: ☐ Commercial Fishing ☐ Marine Industrial ☒ Recreational Boating

1. Does your marine facility presently provide marine pump-out services to transfer and/or store marine sanitary waste from vessels docking at your facility? ☐ Yes ☒ No

If yes, please provide the following information:

a) Type of pump-out system

☐ Portable ☐ Floating
☐ Fixed Manufacturer _____

b) Type of pump-out system holding tank

☐ Above-ground tank Volume _____ gallons
☐ Inground Tank Volume _____ gallons
☐ Portable Tank Volume _____ gallons
☐ Other _____ Volume _____ gallons

c) Method of sanitary sewage disposal from pump-out facility

☐ On-site treatment (septic system)
☐ Truck transfer to an approved disposal site
☐ Direct discharge to the municipal system

2. Do you presently collect, store, or recycle waste oil at your marine facility? ☐ Yes ☒ No

If yes, please provide the following information:

a) Type of waste oil collection system

b) Type of waste oil storage facility

☐ Above-ground tank Volume _____ gallons
☐ Inground Tank Volume _____ gallons
☐ Portable Tank Volume _____ gallons
☐ Other _____ Volume _____ gallons

c) Method of waste oil disposal

☐ On-site recycling
☐ Truck transfer to an approved recycling center
☐ Other method _____

NEW BEDFORD / FAIRHAVEN COMPREHENSIVE HARBOR PLAN STUDY

MARINE PUMP-OUT / HOLDING TANK SURVEY

FOR MARINE FACILITY OPERATORS

Name of Marine Facility: BAYLINE MARINA, INC.
Address: 4 POPES ISLAND
NEW BEDFORD, MA 02740
(508) 994-2944

Contact Person: BRIAN SLOWIK
Phone: (508) 994-2944

Type of Facility: ☐ Commercial Fishing ☐ Marine Industrial ☒ Recreational Boating

1. Does your marine facility presently provide marine pump-out services to transfer and/or store marine sanitary waste from vessels docking at your facility? ☒ Yes ☐ No

If yes, please provide the following information:

a) Type of pump-out system

☐ Portable ☐ Floating OTHER FAIRHAVEN HONEY WAGON
☐ Fixed Manufacturer _____

b) Type of pump-out system holding tank

☐ Above-ground tank Volume _____ gallons
☐ Inground Tank Volume _____ gallons
☐ Portable Tank Volume _____ gallons
☒ Other TRUCK Volume _____ gallons

c) Method of sanitary sewage disposal from pump-out facility

☐ On-site treatment (septic system)
☒ Truck transfer to an approved disposal site
☐ Direct discharge to the municipal system

2. Do you presently collect, store, or recycle waste oil at your marine facility? ☒ Yes ☐ No

If yes, please provide the following information:

a) Type of waste oil collection system ENGINE

b) Type of waste oil storage facility

☐ Above-ground tank Volume _____ gallons
☐ Inground Tank Volume _____ gallons
☒ Portable Tank Volume 55 gallons
☐ Other _____ Volume _____ gallons

c) Method of waste oil disposal

☐ On-site recycling
☒ Truck transfer to an approved recycling center
☐ Other method _____

MARINE PUMP-OUT / HOLDING TANK SURVEY

FOR MARINE FACILITY OPERATORS (Page 2)

3. Does your marine facility presently have a stormwater drainage system to collect, filter, and convey stormwater run-off from the site?

☐ Yes☒ No

If yes, please provide the following information:

- a) Type of stormwater drainage system

- ☐ Oil/water separators
☐ Sediment traps
☐ Catch basins with sorbent pillows

- b) Type of stormwater discharge

- ☐ Direct discharge to marine waters
☐ Direct discharge to municipal stormwater system

4. Does your marine facility presently have a Best Management Practices (BMP) program in place to establish procedures to collect, store, and dispose of waste products generated by the marine facility?

☐ Yes☐ No

If yes, please provide the following information:

- a) Type of Best Management Practice

- ☐ Sanitary sewage and refuse collection
☐ Hazardous materials management
☐ Waste oil and waste chemicals collection
☐ Fuel or chemical spill contingency plan
☐ Stormwater run-off control system
☐ Other type of BMP _____

5. What is the present wet-slip capacity at your marine facility for both commercial and recreational vessels?

45 Total number of wet-slips
7 Total number of offshore moorings
/ Number of seasonal/long-term lease slips
/ Number of transient slips
45 Number of recreational vessels
/ Number of commercial fishing or service vessels

6. Do you presently provide boat haul-out, repair and service to your customers?

☐ Yes☐ No

If yes, please provide the following information:

- a) Type of haul-out facility (travel-lift, railway) H&D Trailer
b) General categories of service and repair (e.g. engine, hull, etc.) Engine, Main Repairs
c) Type of vessel service and repair _____ % Commercial vessels 100 % Recreational vessels

Please respond to the applicable information requests on this survey and forward this information to the address below **NO LATER THAN SEPTEMBER 30, 1991.**

MARINE PUMP-OUT / HOLDING TANK SURVEY
c/o HMM Associates, Inc.
196 Baker Avenue
Concord, Massachusetts 01742

NEW BEDFORD / FAIRHAVEN COMPREHENSIVE HARBOR PLAN STUDY

MARINE PUMP-OUT / HOLDING TANK SURVEY

FOR MARINE FACILITY OPERATORS

Name of Marine Facility: D. W. KELLEY SCOW INC.

Address: 32 WATER ST. Contact Person: DAVID W KELLEY JR.

FAIRHAVEN, MA 02789 Phone: 508-999-6266

Type of Facility: ☒ Commercial Fishing ☐ Marine Industrial ☒ Recreational Boating

1. Does your marine facility presently provide marine pump-out services to transfer and/or store marine sanitary waste from vessels docking at your facility? ☐ Yes ☐ No

If yes, please provide the following information:

a) Type of pump-out system

☐ Portable

☐ Floating

☐ Fixed

Manufacturer OUTSIDE SERVICE

b) Type of pump-out system holding tank

☐ Above-ground tank

Volume _____ gallons

☐ Inground Tank

Volume _____ gallons

☐ Portable Tank

Volume _____ gallons

☐ Other _____

Volume _____ gallons

c) Method of sanitary sewage disposal from pump-out facility

☐ On-site treatment (septic system)

☒ Truck transfer to an approved disposal site

☐ Direct discharge to the municipal system

2. Do you presently collect, store, or recycle waste oil at your marine facility? ☒ Yes ☐ No

If yes, please provide the following information:

a) Type of waste oil collection system TRANSFER TO TANK

b) Type of waste oil storage facility

☒ Above-ground tank

Volume 250 gallons

☐ Inground Tank

Volume _____ gallons

☐ Portable Tank

Volume _____ gallons

☐ Other _____

Volume _____ gallons

c) Method of waste oil disposal

☐ On-site recycling

☒ Truck transfer to an approved recycling center

☐ Other method _____

MARINE PUMP-OUT / HOLDING TANK SURVEY

FOR MARINE FACILITY OPERATORS (Page 2)

3. Does your marine facility presently have a stormwater drainage system to collect, filter, and convey stormwater run-off from the site?

☐ Yes☒ No

If yes, please provide the following information:

- a) Type of stormwater drainage system

☐ Oil/water separators☐ Sediment traps☐ Catch basins with sorbent pillowsBERM AROUND ALL OIL STORAGE
VANS -

- b) Type of stormwater discharge

☒ Direct discharge to marine waters☐ Direct discharge to municipal stormwater system

4. Does your marine facility presently have a Best Management Practices (BMP) program in place to establish procedures to collect, store, and dispose of waste products generated by the marine facility?

☒ Yes☐ No

If yes, please provide the following information:

- a) Type of Best Management Practice

☐ Sanitary sewage and refuse collection☒ Waste oil and waste chemicals collection☐ Stormwater run-off control system☒ Hazardous materials management☐ Fuel or chemical spill contingency plan☐ Other type of BMP _____

5. What is the present wet-slip capacity at your marine facility for both commercial and recreational vessels?

42 Total number of wet-slips2 Number of transient slips0 Total number of offshore moorings42 Number of recreational vessels35 Number of seasonal/long-term lease slips20 Number of commercial fishing or service vessels

6. Do you presently provide boat haul-out, repair and service to your customers?

☒ Yes☐ No

If yes, please provide the following information:

a) Type of haul-out facility (travel-lift, railway) 3 RAILWAYS, 1 TRAVEL LIFTb) General categories of service and repair (e.g. engine, hull, etc.) HULL REPAIRS, ENGINE REPAIRS -c) Type of vessel service and repair 65 % Commercial vessels 35 % Recreational vessels

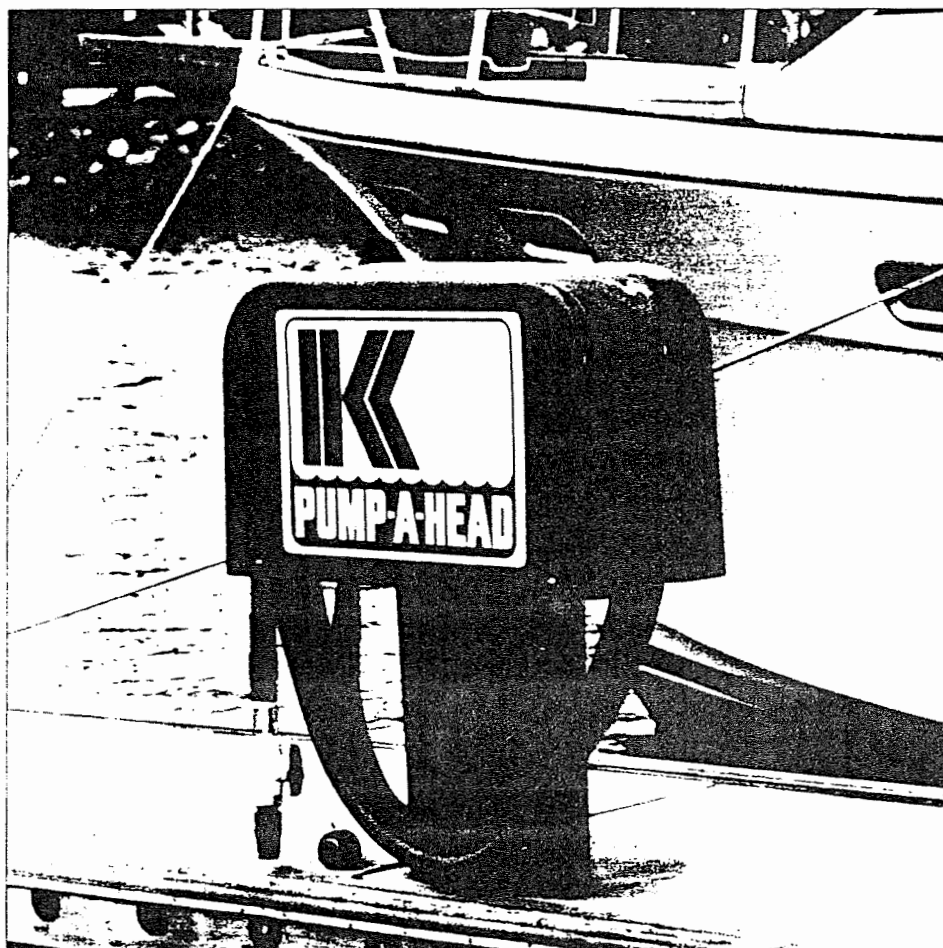
Please respond to the applicable information requests on this survey and forward this information to the address below **NO LATER THAN SEPTEMBER 30, 1991.**

MARINE PUMP-OUT / HOLDING TANK SURVEY
c/o HMM Associates, Inc.
196 Baker Avenue
Concord, Massachusetts 01742

APPENDIX B
INFORMATION ON PUMP-OUT MANUFACTURERS



DESIGNED TO SOLVE
YOUR SANITATION NEEDS



STATIONARY PUMP-A-HEAD

PUMP-A-HEAD is a convenient, complete pumping system for marinas, live-aboard facilities, boatyards, fuel docks, campgrounds, and RV parks. Components are housed in attractive, all-weather enclosures. Discharge piping is connected to a sewer line, septic tank system, or holding tank. **Stationary PUMP-A-HEAD** models are available in several configurations to fit any installation requirement.

PUMP-A-HEAD recreation & marine
sanitation systems 3235 Hancock St., Suite 200, San Diego, CA 92110 FAX (619) 298-7828 (619) 298-3800

PUMP IT, DØN'T DUMP IT

Components: All components are made of non-corrosive materials or feature a triple-layer finish. Stainless steel parts, including all nuts and bolts, are Grades 304 to 316.

Pump: The diaphragm-type pump is manufactured specifically for sewage handling and is capable of passing solids up to 1½" in diameter. Aluminum parts are coated for better resistance to saltwater corrosion. The reinforced neoprene diaphragm is supported by two plates and secured to a stainless steel drive-rod by a stainless steel nut and lock washer.

Power: **Models 150 and 175** are powered by a standard ½-HP, 115/230-volt, 60-Hz, TEFC, gear head motor. **Model 200** includes a standard ½-HP, explosion-proof motor and components. All three models may be ordered with an optional ¾-HP motor. A 50-Hz motor is available by special order.

Hose: The 1½"-diameter hose is manufactured specifically for the **PUMP-A-HEAD** system. Made from ethylene copolymer, it is crush-resistant, corrosion-resistant, and weather-resistant, with an operating range from -20°F to 150°F. The hose has reinforced joints, and its smooth interior prevents the trapping of any solids. Stainless steel clamps and fittings prevent marring or marking of decks and hulls. Polyolefin reinforcements at each end prevent kinking. The neoprene nozzle is copper-reinforced and will fit most hull-mounted waste fittings. The sanitary nozzle guard reduces wear on the nozzle and is adapted to a 1½" national standard pipe thread, common to all marine fittings. (A 1¼" thread is available to meet Canadian standards.)

Units are shipped with a 30' suction hose assembly that includes **PUMP-A-HEAD's** exclusive Lexan site glass, which provides a visual

signal when the holding tank is clear of waste. A shut-off valve provides a drip-tight seal when hoses are not in use. All units are available with an optional 50' suction hose assembly.

Capacity: The discharge capacity is 20 gallons per minute. Suction lifts to 20'; discharge heads to 30'. Capacity depends upon the length and size of discharge piping and the height that the fluid must be lifted.

Model 150 comes with a standard on/off switch. However, any of the following alternate security controls may be ordered: key operation, coin operation, Cor-Key operation, or token operation.

Model 175 has a 15-minute, industrial motor-driven timer. This unit shuts off automatically after the completion of the 15-minute cycle.

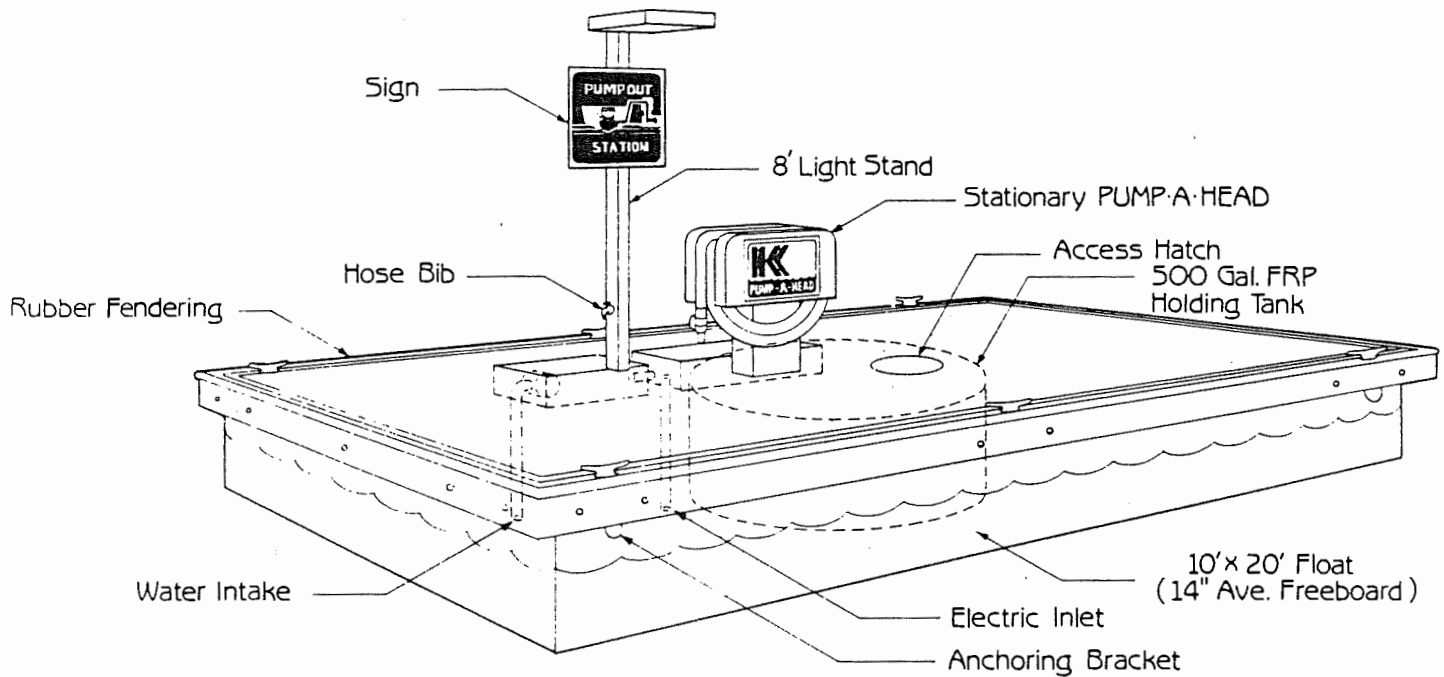
Model 200 is intended for use at a fuel dock or other hazardous location. It is fitted with a standard ½-HP, explosion-proof motor and components that meet Class 1, Group D requirements with a start/stop configuration.

All **Stationary PUMP-A-HEAD** models measure 45"(h) x 37"(w) x 15"(d). The shipping weight is approximately 250 pounds.

PUMP-A-HEAD recommends the use of its Coated Steel Mounting Plate (#PAH 165) for added stability on wooden decks.

PUMP-A-HEAD, formerly KECO, Inc., has been the recognized leader of engineering and technology in the marine sanitation field for over 20 years. **PUMP-A-HEAD** responds to the specific needs of its customers by offering a complete line of pump-out stations to solve any sanitation problem.

FLOATING PUMPOUT STATION



Available with optional accessories including restrooms, shore pump-out, KLEEN-A-POTTEE and anchoring systems.

Configuration can be adapted to meet specific requirements.

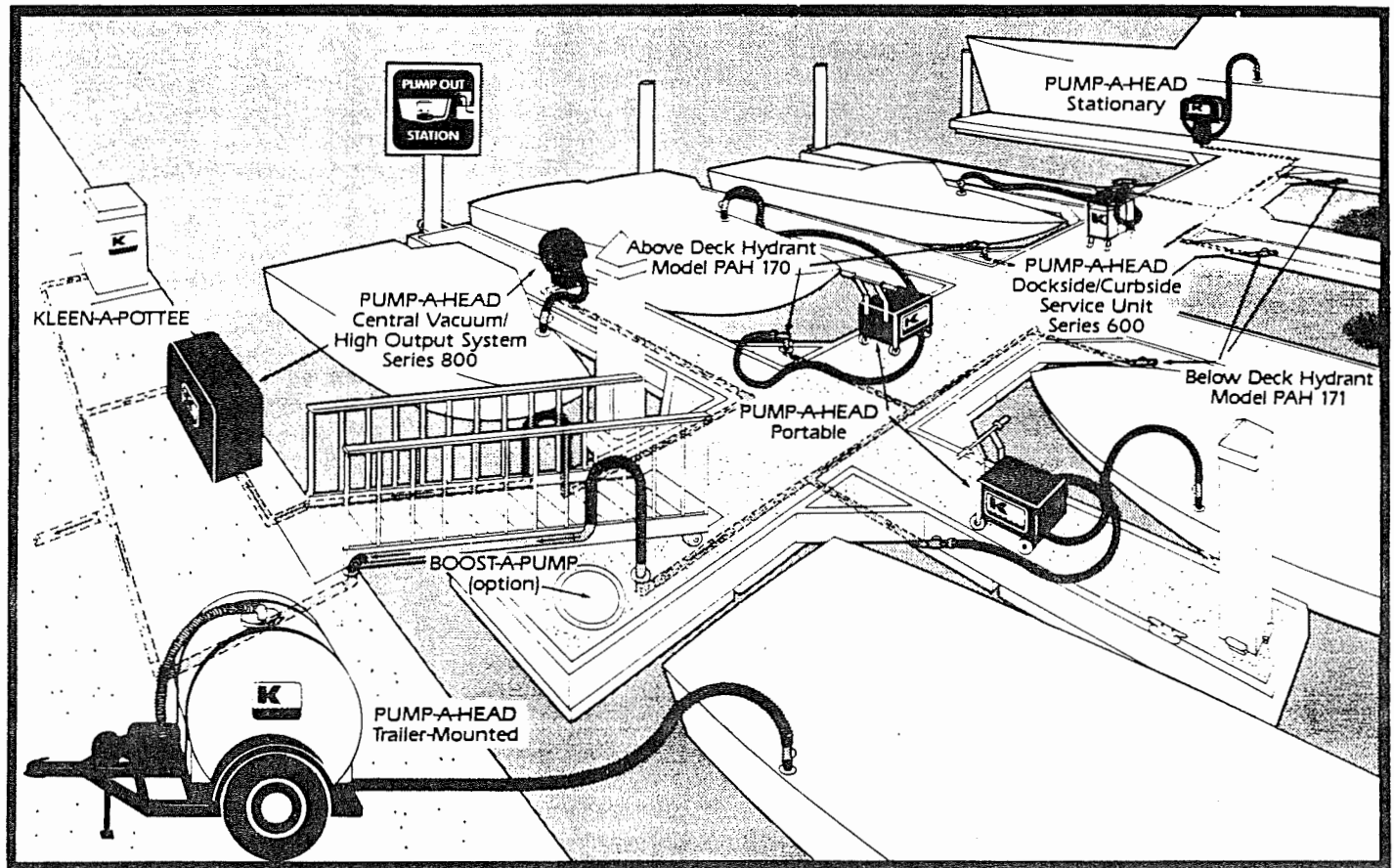
Consult factory for details.

PUMP-A-HEAD marine & recreation sanitation systems 3235 Hancock St., Suite 200, San Diego, CA 92110 (619) 298-3800 FAX (619) 298-7828

PUMP IT, DØN'T DUMP IT

PRICE LIST 1990

(Effective: 5/1/90)



Pump-A-Head manufactures a complete line of sanitation systems
for the marine & recreation industries.

PUMP-A-HEAD recreation & marine
sanitation systems 3235 Hancock St., Suite 3, San Diego, CA 92110 FAX (619) 298-3300 (619) 298-3800

PUMP IT, DØN'T DUMP IT

MODEL	STANDARD MOTOR (See Page 4 for Options)	STANDARD HOSE (See Page 4 for Options)	CONTROL	DESCRIPTION	PRICE	APPROX. SHIPPING WEIGHT
-------	--	---	---------	-------------	-------	-------------------------------

STATIONARY UNITS

200	1/2	30' Suction	On/Off	Explosion Proof Components Hazardous Location, Class I Group D	\$3,500.00	250 Lbs.
175	1/2	30' Suction	Timer 0-15 Min.	Totally Enclosed Electrical Components	\$3,350.00	250 Lbs.
150	1/2	30' Suction	On/Off	Totally Enclosed Electrical Components	\$3,350.00	250 Lbs.
OPTIONAL CONTROLS AVAILABLE:						
				Token PAH #11/w 200 Tokens	Add: \$ 450.00	
				Key PAH #12	Add: \$ 80.00	
				Cor-Key PAH #13	Add: \$ 100.00	
				Coin PAH #17	Add: \$ 350.00	
100	3/4	None	On/Off	Explosion Proof Components, Base Mounted	\$3,800.00	300 Lbs.

CENTRAL VACUUM/HIGH OUTPUT SYSTEMS

800	3/4	None	None	Central Vacuum System	\$3,600.00	350 Lbs.
810	3/4	None	None	Double Suction System	\$3,600.00	350 Lbs.
SPECIAL ACCESSORIES:						
				Above Deck Hydrant PAH #870	\$ 75.00	
				Below Deck Hydrant PAH #871	\$ 70.00	
				Hose Rack PAH #875	\$ 145.00	10 Lbs.
				Hose Reel PAH #880	\$ 990.00	125 Lbs.

INSTALLATION ACCESSORIES

Steel Mounting Plate	PAH #165	For Installations on Wooden Floats	\$ 125.00
----------------------	----------	------------------------------------	-----------

Gangway Flexible Hose

HOSE SIZE	PAH #	FIRST FOOT	EACH ADDITIONAL FOOT
2 1/2"	922	\$53.75	\$13.75
3"	923	\$55.75	\$15.00

NOTE: First foot of hose includes brass male and female threaded fitting with stainless steel band.

PRICES ARE F.O.B. SAN DIEGO, CALIFORNIA, PLUS APPLICABLE TAX. CRATED FOR DOMESTIC SHIPMENT.
PUMP-A-HEAD RESERVES THE RIGHT TO CHANGE PRICING AT ANY TIME WITHOUT NOTICE.

PUMP IT, DON'T DUMP IT

MODEL	STANDARD MOTOR (See Page 4 for Options)	STANDARD HOSE (See Page 4 for Options)	CONTROL	DESCRIPTION	TANK SIZE	PRICE	APPROX. SHIPPING WEIGHT
-------	--	---	---------	-------------	-----------	-------	-------------------------------

TRAILERS WITH TANK STORAGE

TR-225	1/2	30'	On/Off	Polyethylene Tank	225 Gallon	\$4,800.00	800 Lbs.
TR-125	1/2	30'	On/Off	Polyethylene Tank	125 Gallon	\$4,350.00	600 Lbs.
TR-65	1/2	30'	On/Off	Polyethylene Tank	65 Gallon	\$4,000.00	500 Lbs.
				Optional 3 HP Gas Engine	Add:	\$ 300.00	
				SPECIAL ACCESSORY: Trailer Dolly PAH #780		\$ 185.00	50 Lbs.

CART MOUNTED WITH TANK STORAGE

600	1/2	20' Suction	On/Off	Base Mounted/Polyethylene Tank	32 Gallon	\$2,700.00	300 Lbs.
609	1/2	20' Suction	On/Off	9" Wheels/Polyethylene Tank	32 Gallon	\$3,100.00	300 Lbs.
610	1/2	20' Suction	On/Off	9" Wheels/Polyethylene Tank	62 Gallon	\$3,550.00	350 Lbs.
				Optional 3 HP Gas Engine	Add:	\$ 300.00	

PORTABLE UNITS—5" CASTER WHEELS WITH BRAKES

130	3/4	20' Suction 12' Discharge	On/Off	Explosion Proof Components Hazardous Location Class I Group D		\$4,400.00	300 Lbs.
125	3/4	20' Suction 12' Discharge	On/Off	Totally Enclosed Electrical Components		\$4,100.00	300 Lbs.
				SPECIAL ACCESSORIES: Above Deck Hydrant PAH #170		\$ 95.00	
				Below Deck Hydrant PAH #171		\$ 85.00	

JUNIOR UNITS—BASE MOUNTED WITH CARRYING HANDLES

50	1/2	20' Suction	None	6' Electric Cord with 110V Plug		\$1,750.00	125 Lbs.
				Optional On/Off Switch	Add:	\$ 94.00	
50-E	1/2	20' Suction		Explosion Proof Assembly Hazardous Location Class I Group D		\$2,375.00	125 Lbs.
				Optional Explosion Proof Connecting Pkg.	Add:	\$ 650.00	
				Optional 3 HP Gas Engine	Add:	\$ 300.00	

PRICES ARE F.O.B. SAN DIEGO, CALIFORNIA, PLUS APPLICABLE TAX. CRATED FOR DOMESTIC SHIPMENT.
PUMP-A-HEAD RESERVES THE RIGHT TO CHANGE PRICING AT ANY TIME WITHOUT NOTICE.

PUMP IT, DON'T DUMP IT

EVAC

*Vacuum
Sewage
Collection
Systems
for Marinas*

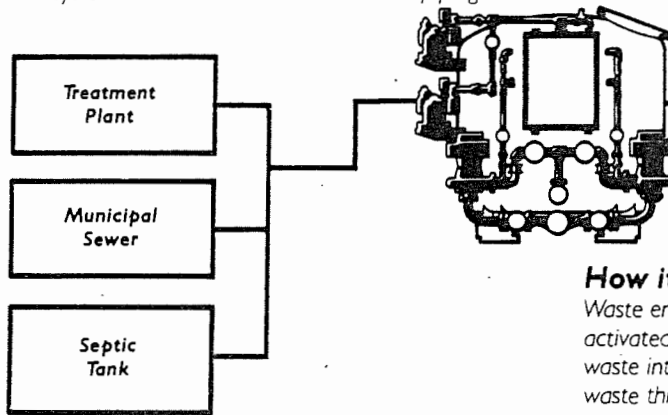


What is a Vacuum Sewage Collection System?

The EVAC vacuum sewage collection system uses vacuum to transport waste from the boat's holding tank through vacuum mains to a vacuum central module and eventually to an on-site treatment plant or gravity sewer system.

The system is made up of three essential parts:

1. **Vacuum central module** ... includes the vacuum pumps which automatically maintain vacuum throughout the piping system, a vacuum reserve tank which also temporarily stores sewage, and sewage pumps which pump waste from the vacuum reserve tank to a treatment plant or conventional sewer system.
2. **Small diameter plastic piping** ... is utilized as the sewer main between the boats and the vacuum central module. These small diameter pipes (2" to 4") are easily installed alongside the dock or within a floating pier.
3. **Vacuum valve** ... serves as the interface between the boat and the vacuum system and allows waste to enter the piping.



How it works

Waste enters into the system when a vacuum interface valve is activated either manually or automatically. The valve opens to allow waste into the piping system. Air rushing into the system propels the waste through the piping to the vacuum central module. From there, the waste is automatically pumped to a treatment plant or a gravity sewer system.

Advantages of the EVAC Vacuum Sewage Collection System

Since 1973 EVAC systems have been used in a variety of applications including:

- marinas
- resorts
- subdivisions
- remote construction camps
- ships
- trains
- planes

The EVAC system offers both a sanitary and convenient means to empty sewage holding tanks. For developers and owners of floating houses and motels, the EVAC system provides a reliable and totally automatic method of sewage collection.

Increased revenues – This system allows marina operators to offer essential sewage pump-out service at a reasonable cost. Increased slip fees can be justified and will offset the cost of the system investment.

Environmentally safe – Pollution is always a major concern particularly in view of increasingly strict rules on dumping. The use of vacuum eliminates the possibility of water pollution caused by a leaking or broken gravity sewer main. If the vacuum main breaks, air is immediately drawn into the pipe. Sewage will not leak out! A conventional pump-out system has residual sewage in the hose and often times, sewage spills when it is disconnected. Use of EVAC vacuum collection system eliminates this problem.

Engineered for reliable, trouble free operation –

EVAC vacuum sewage collection systems are designed to provide years of service with a minimum of maintenance. Operating the system is simple and straight forward ... specially trained operators are not needed.

Simple installation and start-up – The small diameter vacuum mains are easily installed alongside existing docks and slips. Layout and design of the entire system is provided by ENVIROVAC engineers. ENVIROVAC field engineers provide installation assistance, start-up and operator training.

Flexible hose connections ... between the boat and dock mounted vacuum interface valve allow for tidal movement.

Transients and Live-Aboard

Marinas serving transients and live-aboards face the challenge of meeting tougher environmental regulations while staying competitive with other marinas in the offering of improved services for their customers. The proven EVAC vacuum sewage collection system allows marina owners to take charge of the environmental issue and at the same time make their operation more attractive by offering essential sewage collection and pump-out service.

System Description

The EVAC system offers a convenient and sanitary means for transients and live-aboards to empty their sewage holding tanks. A valve box is located between slips and is manually operated serving 2 boats. Flexible hoses connect each boat to the valve box. Vacuum mains, located along or inside each dock or pier, connect the valve boxes and the vacuum central module.



Floating Houses and Motels

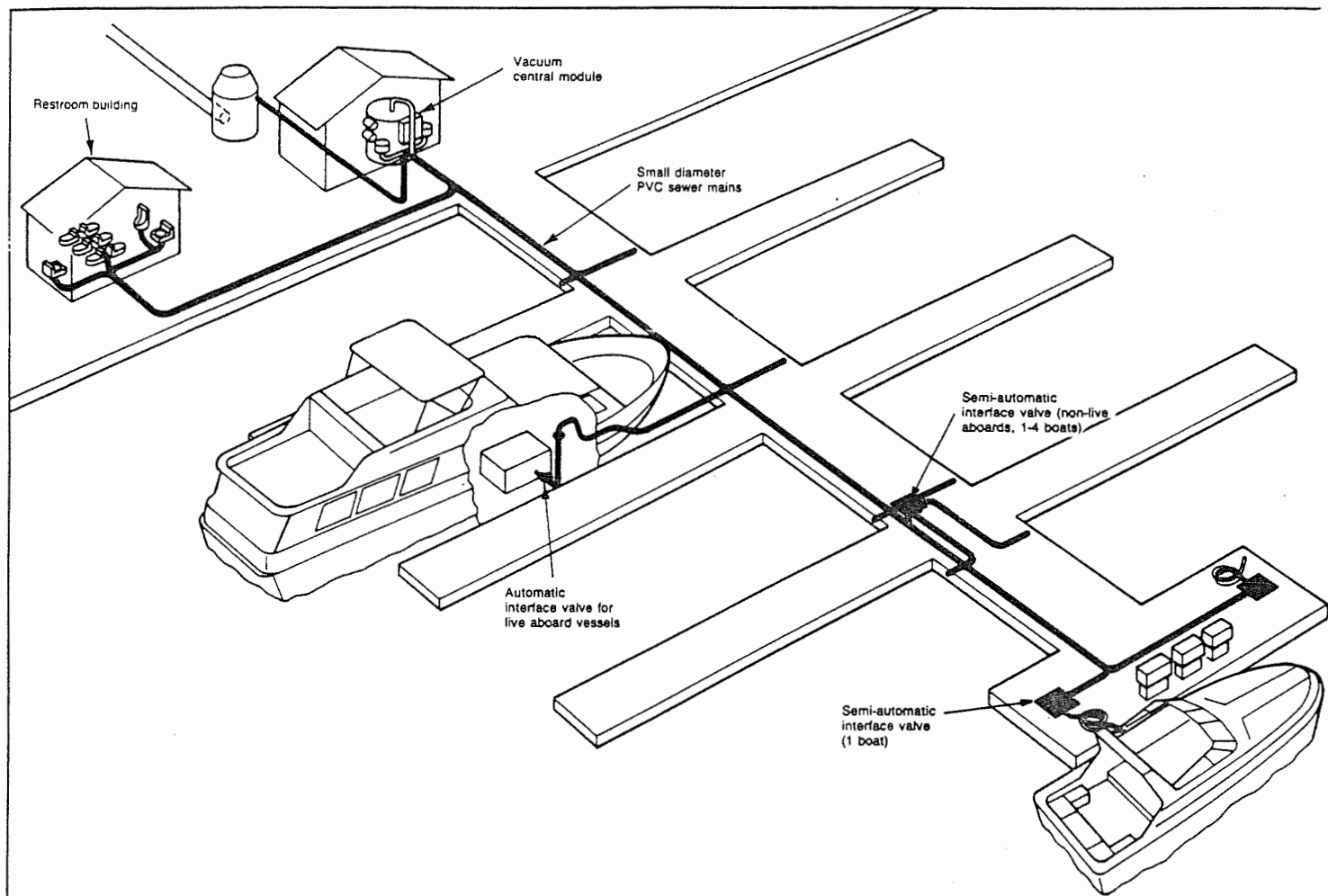
Development opportunities in floating housing have often been hampered for the lack of practical and reliable sewage disposal technology. With the introduction of the EVAC vacuum sewage collection systems to the floating housing market, owners/developers can now feel confident sewage disposal is a problem of the past.

System Description

For floating housing and motels, Envirovac engineers have designed the system to operate automatically without any action required by the occupant. A flexible hose connects the vacuum interface valve, located within the home, to the vacuum mains located in the adjacent pier or dock. Vacuum mains, located along or inside each dock or pier, connect the vacuum interface valve and the vacuum central module.



The engineered solution for marina sewage collection . . .



ENVIROVAC sewage collection systems

System description

ENVIROVAC sewage collection systems offer a sanitary and convenient means for boat owners and operators to empty their sewage holding tanks. The typical system consists of a vacuum central module, 2" and 3" PVC vacuum sewer mains and vacuum interface valves which isolate the vacuum system from the individual holding tanks. The vacuum mains, which do not require continuous slope, are easily installed alongside the dock or within the floating pier. Sewage is transported from a boat's holding tank through the mains to the vacuum central module where it is then automatically pumped to a gravity sewer or treatment plant.

System operation

A vacuum pump maintains a constant vacuum of half an atmosphere in the collection tank and in the

mains. The differential air pressure (7-8 psi) provides the motive force for sewage transport, and also provides the power for automatic interface valve operation, eliminating the need for an electrical power source at every boat connection. The use of vacuum eliminates the possibility of water pollution caused by leaking or broken gravity mains. If the vacuum main breaks, air is drawn into the pipe. Sewage will not leak out of the vacuum main.

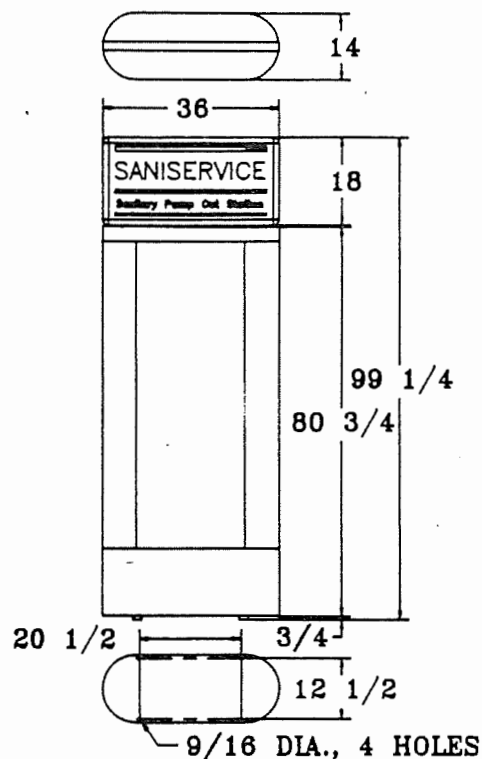
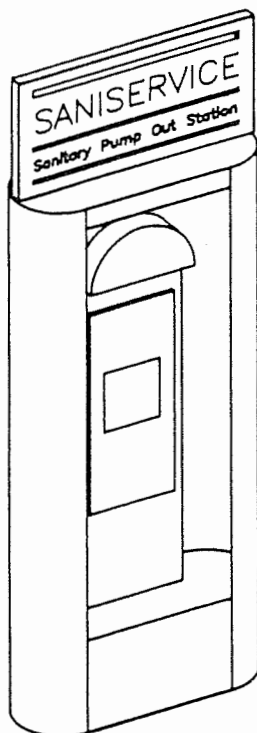
Engineered for reliable, trouble-free operation

ENVIROVAC sewage collection systems are designed to provide you with years of service with a minimum of maintenance. No specialized operator is required. Local representatives can also provide on-the-spot service and assistance. ENVIROVAC's world-wide experience in a variety of vacuum collection applications goes into every system we design.

SaniServiceTM

PUMP OUT STATION

Model DS4



The quality in design and function
you have come to expect from SeaLand.

- Stainless steel construction (18 gauge) to withstand the harshest environment.
- Heavy duty marine bronze 1/2 h.p. pump with unique clog-resistant check valves - 100's in service worldwide.
- TEFC motor.
- Lock and store stainless door reduces hose vandalism.
- Small footprint - less than four square feet.
- High visibility sign.
- 30' of suction hose.
- Quick disconnect fittings on hose.
- On/Off control.
- Built-in towel dispenser and waste basket.
- Controlled flow for reduced shock hazard to municipal and on-site waste treatment plants.
- Free case of SecureTM holding tank deodorant with purchase.

Finally - The alternative to plastic on your dock.

SaniServiceTM

1991 PRICE SCHEDULE

SaniService DS4
Shipping Weight

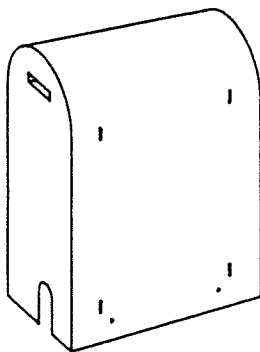
\$4400.00
400#

SaniService DS2
Shipping Weight

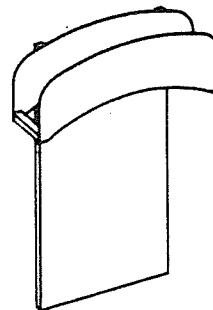
\$2300.00
175#

Options/Additions

EXP-4	Explosion proof motor and control (DS4) (In lieu of timer control)	\$300.00
EXP-2	Explosion proof motor (DS2)	250.00
DSH-3	30 feet of suction hose (DS2) (In lieu of 20 feet)	80.00
DSH-5	50 feet of suction hose (DS4) (In lieu of 30 feet)	160.00
DSC-2	18 gauge stainless steel cover (DS2)	700.00
DSR-2	Stainless steel hose rack for 30 feet of hose. Mounts on DSC-2 cover. (required) (DS2)	300.00
DSF-9	90° bronze elbow for pump (DS2, DS4)	200.00



DSC-2



DSR-2

Sealand Simulation Inc.
WASHNER SQUARE
1403 N. NORTH LAKE BLVD. SEATTLE, WA 98107
(206) 835-1100

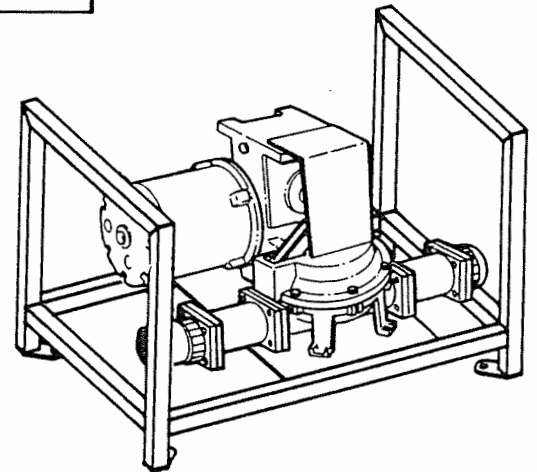
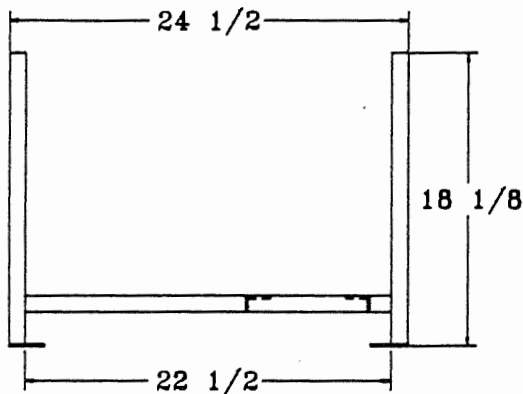
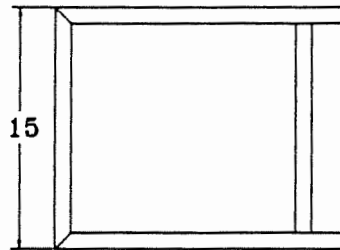
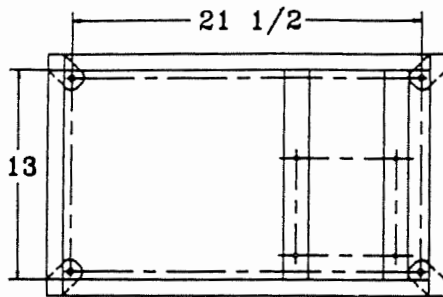
All prices effective October 1, 1990 through September 30, 1991.
Prices F.O.B. Big Prairie, Ohio plus applicable taxes in your area.
Prices subject to change without notice. This price list super-
cedes all previous lists.

Sealand
TECHNOLOGY INC.
P.O. Box 38, Fourth Street, Big Prairie, Ohio 44611 • (216) 496-3211
FAX (216) 496-3211

SaniServiceTM

PUMP OUT STATION

Model DS2



Compact unit to mount dockside or in a building.

- Stainless steel construction.
- 20' of suction hose.
- Quick disconnect fittings on hose.
- 1/2 h.p. marine bronze heavy duty pump with unique clog-resistant check valves - 100's in use worldwide.
- Small footprint - less than three square feet.
- TEFC motor, 6' of heavy duty electrical cord with plug.
- Controlled flow for reduced shock hazard to municipal and on-site waste treatment plants.
- Optional stainless steel cover (18 gauge), hose rack, and explosion proof motor.
- Free case of SecureTM holding tank deodorant with purchase.

NOTE: Unit must be covered when installed. Use DSC-2 cover, or install indoors.

Unit does not include ON/OFF control. Follow local electrical codes when specifying controls.

SaniServiceTM

INSTALLATION SPECIFICATIONS

DS4, DS2

1/2 h.p. - 16 gpm @ 0' head
 15 gpm @ 10' head
 14 gpm @ 20' head

Use 2" or greater hose/pipe for discharge lines. Keep 90' fitting, T's and valves to a minimum. Unit must be installed with 10 amp fuse with ground fault interrupter.

DS4, DS2 Operating Parameters

With 0' head, will pump:

300' through 2" hose/pipe
750' through 2 1/2" hose/pipe
1800' through 3" hose/pipe

With 10' head (suction and/or discharge) will pump:

150' through 2" hose/pipe
400' through 2 1/2" hose/pipe
1200' through 3" hose/pipe

With 20' head [maximum] - (suction and/or discharge) will pump:

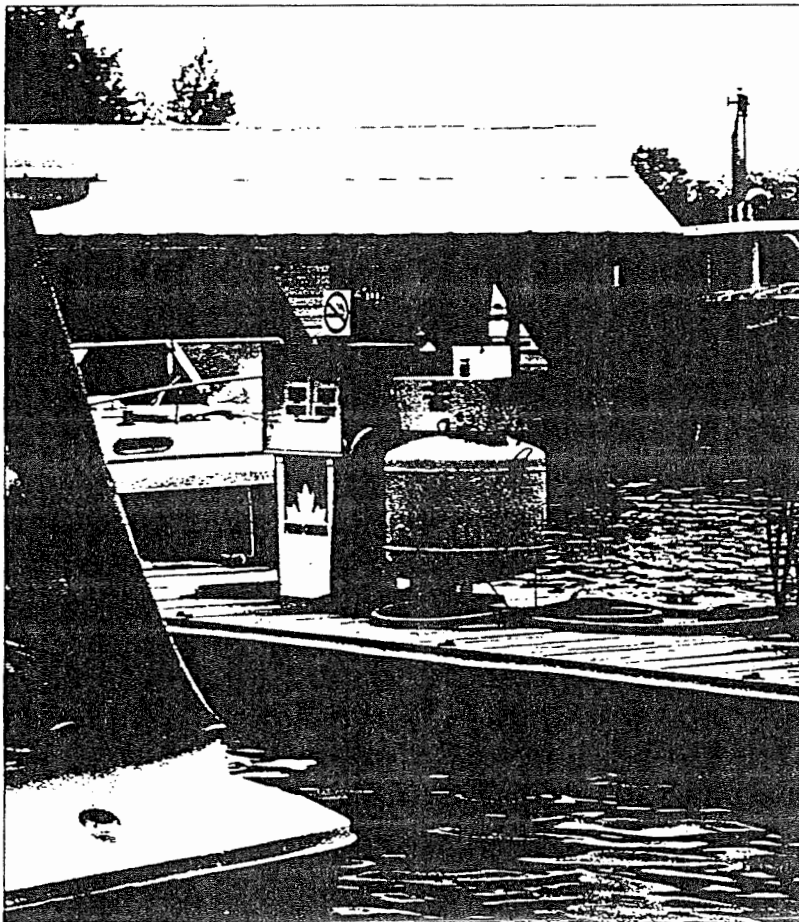
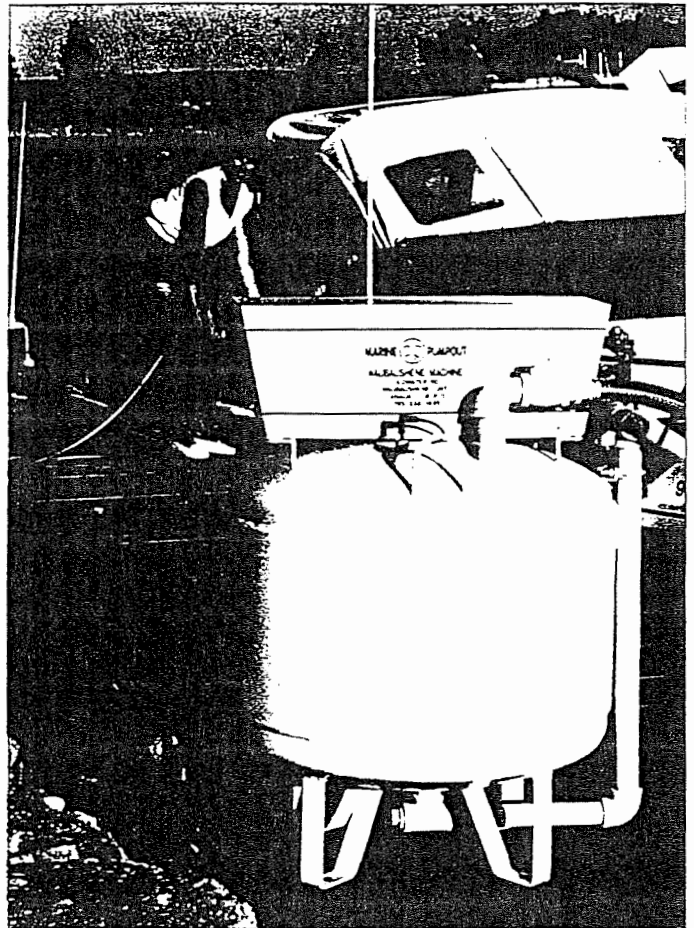
30' through 2" hose/pipe
60' through 2 1/2" hose/pipe
140' through 3" hose/pipe

With the increasing number of boats using our waterways, pump out service is becoming a necessary customer service. Boat owners and marina operators appreciate our pumps because they are **Clean, Odourless, Efficient and Easy to Use.**

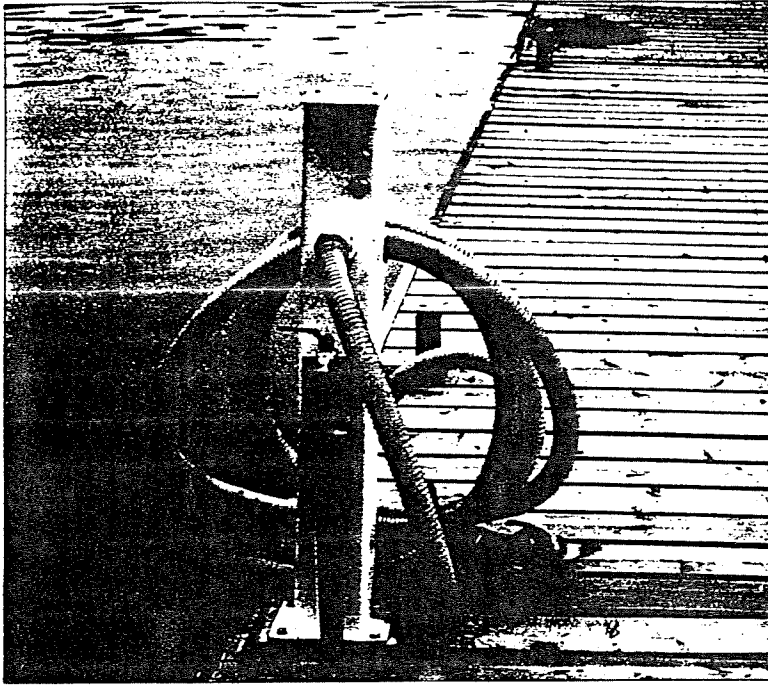
Waubashene Pump Out Systems replace outdated rotary and diaphragm pumps that are difficult to prime and jam easily.

THE WAUBAUSHENE MARINE PUMP OUT

- ***Requires No Priming EVER** — It works on a hydro pneumatic system, using difference in air pressure to move fluids in and out of a tank.
- ***Will Not Jam** — There are no moving parts in contact with the sewage, which means no broken diaphragms, jammed impellers or flapper valves.
- ***No Spills** — The suction hose is emptied by the air flow. If a hose is left open nothing happens.



- ***Automatic Shut Off.** — The pump will automatically shut off when the tank is full and discharge contents into the sewage facility.
- ***Easy to Use.** — Push a switch, connect the hose to the boat and thats it. As easy as using a gas pump.
- ***Easy to Install** — Standard models are self-contained and free standing, they require 120 volt power and a hose or pipe to the sewer.
- ***Longer Distances** — Pumping distances of several thousand feet eliminates the need for extra lift stations.
- ***Easily Serviced** — Our custom designed solid state controls are reliable and eliminate the need for any mechanical floats, switches or valves inside the tank. The controls and pump assembly are located inside a single housing which can be removed easily for repair or replacement.



REMOTE CONTROL OPTION

The remote stand enables the pump to be located a distance away from where the actual pumping is being done, freeing up space on a crowded service dock.

A suction line runs from the remote inlet on the dock to the pump (located on shore or in a little used area of the dock), the pump is controlled by a switch on the remote stand at the dock.

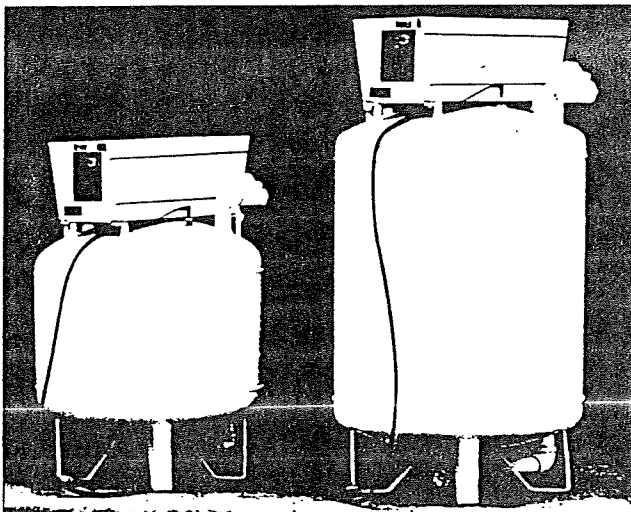
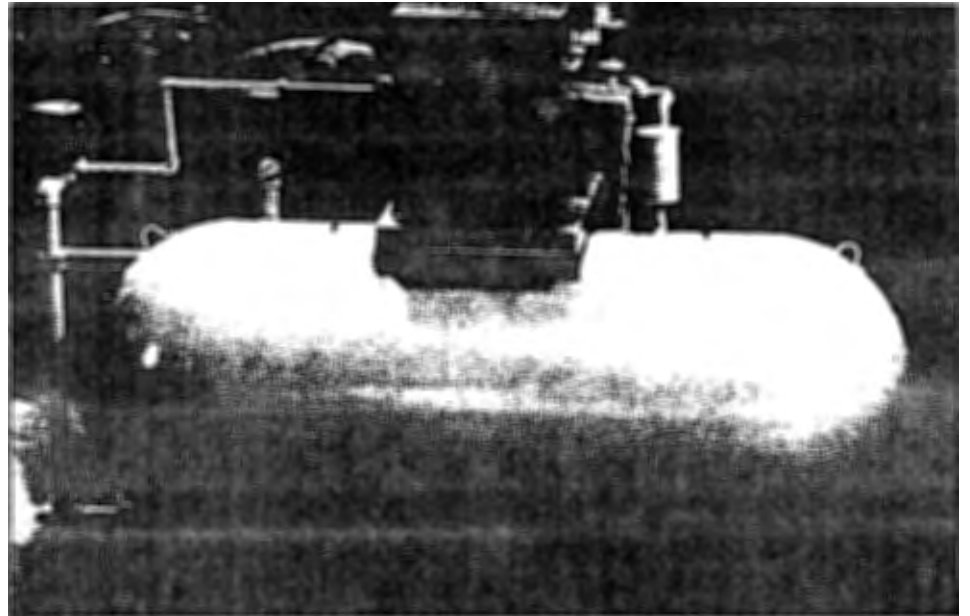
One or more remotes can be used off the same pump, similar to a central vac in a house. This enables you to pump from several different locations to a centrally located pump. A remote stand at the end of each finger dock is a popular installation. Remote wiring is low voltage and is colour coded for easy connection.

CUSTOM PUMPS

Custom pumps are designed to meet special requirements.

For example larger vacuum tanks designed to suit high volume situations and central units for live aboard marinas.

We design truck or trailer mounted vacuum tanks with electric, gasoline engine, or power takeoff drive. The pump system on the right is a 500 gallon central system.



TWO STANDARD MODELS TO CHOOSE FROM:

AVR 60

60 gallon working capacity per cycle.
Height 48"
Width 36"
Weight 300 lbs.
Motor 1/3 h.p.

AVR 125

125 gallon working capacity per cycle.
Height 63"
Width 36"
Weight 450 lbs.
Motor 3/4 h.p.

SERVICE AND WARRANTY INFORMATION

We have designed and built industrial machinery for many years and we know that sooner or later every mechanical device will need repair.

Our pumps are backed up with a complete stock of spare parts.

We use high quality components to give years of trouble free service.

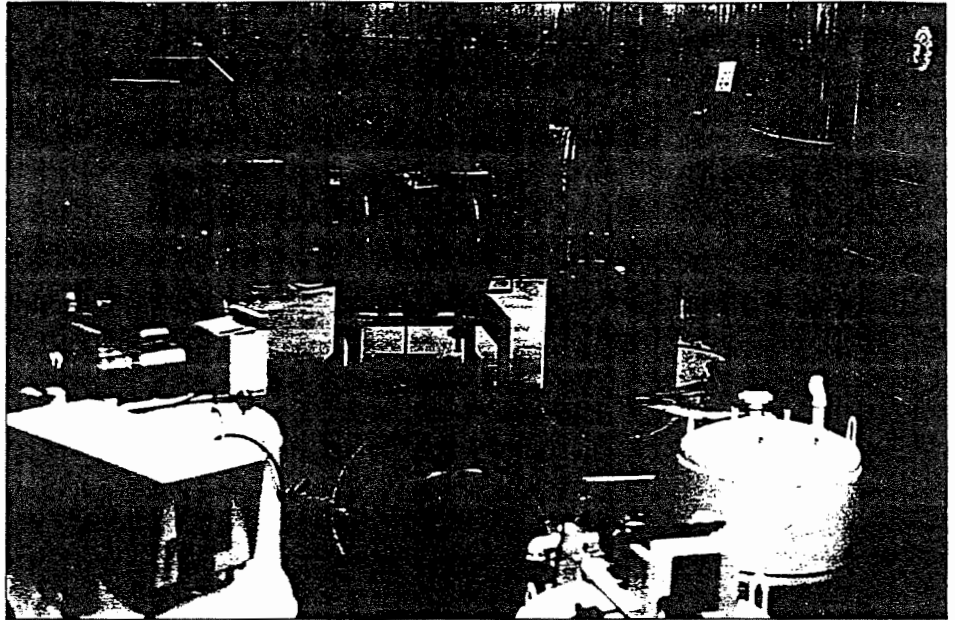
For example our vacuum pumps have a life expectancy of 4000 hours. Motors have copper windings and ball bearings. Electrical parts are rated in excess of 100,000 cycles.

All electrical and mechanical parts can be serviced by the owner.

Vacuum tanks are welded plate steel construction.

All pumps are prewired for use with remote control.

One year limited warranty on parts.



We don't make extravagant claims about our Pump Outs being uncloggable, when you pump out the public's toilet facility you have no control of what is put into them. There are only two valves in our system which control sewage flow. These are located at the top of the tank and can be serviced without emptying the system first.

FOR MORE INFORMATION CALL OR WRITE TO:

WAUBAUSHENE MACHINE AND WELDING

DIVISION OF 638311 ONTARIO INC.

WATER ROAD,

NE, ONTARIO,

K 2C0

(5) 538-1459 Fax: (705) 538-1776

MARTIN WALTER CO., INC.
P. O. BOX 1135
WEST HANOVER, MASS. 02339
(617) 878-1216



WAUBAUSHENE MACHINE & WELDING

P.O. BOX 99 111 COLDWATER RD.
WAUBAUSHENE, ONT. CANADA L0K 2C0
Telephone (705) 538-1459 Fax (705) 538-1776

PRICE LIST

EFFECTIVE - AUG. 1, 1990

AVR 60

\$4,195.00

INCLUDES 33' INTAKE HOSE AND COUPLINGS
SHIPPING AND DUTY TO MAINLAND U.S.

U.S. Funds

AVR 125

\$5,695.00

INCLUDES 33' INTAKE HOSE AND COUPLINGS
SHIPPING AND DUTY TO MAINLAND U.S.

U.S. Funds

LARGE CUSTOM PUMP UNITS ARE DESIGNED TO MEET SPECIFIC NEEDS.

ACCESSORIES

Prices Do Not Include Shipping or Duty

DECK FITTINGS - 1¼"	8.75 ea. U.S.
DECK FITTINGS - 1½"	8.90 ea. U.S.
COUPLER	24.00 ea. U.S.
BALL VALVE - Plastic	45.00 ea. U.S.
REMOTE CONTROL STAND	450.00 ea. U.S.
HOSE	3.30/Ft. U.S.
UNIVERSAL DECK ADAPTOR	45.00 ea. U.S.

TERMS:

IN STOCK ITEMS - Prepayment Before Shipping - Certified Cheque.

CUSTOM UNITS - 20% Deposit On Order - Payment of Balance Before Shipping.

SHIPPING AND DUTY EXTRA

Printed in Canada

APPENDIX C

LITERATURE FOR PUBLIC EDUCATION
AND PUBLIC AWARENESS OF PUMP-OUT ISSUES



Something terrible is happening in Buzzards Bay.
People are getting sick. The water is dirty.

Clean Water... What's Going on Anyway?

Everywhere it's the same story... real problems with our nation's waterways. Fortunately for us, government, citizens' groups, and individuals are rising to the occasion and beginning to tackle the problems affecting Buzzards Bay. We're improving sewage treatment plants, upgrading septic systems, coping better with stormwater runoff, working to prevent and contain oil spills, cutting down on pollution from lawns, businesses, and agriculture, and **involving Buzzards Bay mariners in protecting our harbors, bays, inlets, and other vulnerable waterways.**

The boating public wants to do the right thing to care for Buzzards Bay. Nobody wants to foul the water — which results in closed shellfish beds and swimming beaches, and makes people sick from eating contaminated shellfish. Nobody wants bacteria, viruses, and toxics from boats to create a chemical soup that harms water quality for everyone.

But to date there haven't been enough pump-out stations, or knowledge of where they are, to help mariners dispose of their waste responsibly. Now, however, more pump-out facilities are coming on line, more floating "honey wagons" are in use, and more enforcement is becoming apparent around the Bay (see pp. 4-5).

In time, we will also see no-discharge areas designated in Buzzards Bay by the EPA — once boaters are able to dispose of their waste at fixed or floating pump-out stations. Until then, mariners are encouraged to take advantage of the pump-out services that are available... and to act as though Buzzards Bay is already a no-discharge area.

Read on to see how you fit into the Buzzards Bay picture!

So, What Are We Supposed to Do?

Three miles from shore, mariners can legally dispose of sewage, treated or not — although everyone is urged to use pump-out services back in port. Until no-discharge areas are declared by the EPA, Types I and II Marine Sanitation Devices (MSDs) can continue to discharge in coastal waters. **Mariners are encouraged, however, to get ready for no discharge areas all around Buzzards Bay by retrofitting their boats with holding tanks.** This may not seem fair to those who have done the “right thing” earlier by installing a Type I or II MSD, but the national movement for no-discharge areas is changing the rules. (Boating publications have further details, including *Practical Sailor*, December, 1990).

What's Your System?

Bucket or Porta-Potty: No treatment. Some folks are still tempted to dump overboard, which is against the law within three miles of shore. Bring waste ashore and pour it down a toilet that connects to a septic system or sewage treatment plant. (Don't use chemicals, as they can kill beneficial bacteria that make septic and treatment systems work effectively).

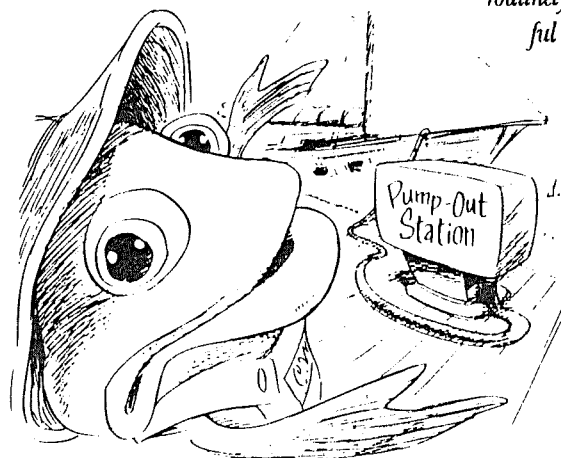
Type I Marine Sanitation Device: Chops up and disinfects waste with chemicals to a level of 1000 fecal coliform bacteria per 100 milliliters of water (about three ounces).

Type II MSD: Does same as Type I, but reduces fecal coliform bacteria to 200 per three ounces of water.

Type III MSD: Holding tank equipped with piping to discharge waste when over three miles from shore or, better yet, into fixed or floating pump-out facility.

Boats longer than 65 feet must use Type II or III, while boats less than 65 feet can use I, II, or III.

Special Note: Even waste treated in Types I and II is unhealthy for the Bay because (1) chemical treatment often sanitizes only the outer surfaces of waste clumps, and (2) chemicals routinely used in these toilets are harmful to sea life and water quality



(chlorine bleach, formaldehyde, formaline, phenol derivatives, ammonia compounds), and (3) waste adds to the nutrients in the water, lowering water quality for sea life. (Some new products on the market are billed as non-toxic, but their effectiveness has not yet been verified.)

And What Are the Regulations?

A fecal coliform bacteria count of 14 per three ounces of water results in the closing of shellfish beds, a mainstay of local economics and a cherished pastime for many Bay residents.

A count of 200 fecal coliform bacteria per three ounces of water closes Bay beaches to swimming, hurts tourism, and deteriorates the quality of life of all of us. **Even with dilution, boat sewage adds up fast, especially in tight harbors and bays with little flushing action.** (Sources: Marine Policy Center, Woods Hole Oceanographic Institution, and U.S. Department of the Interior).

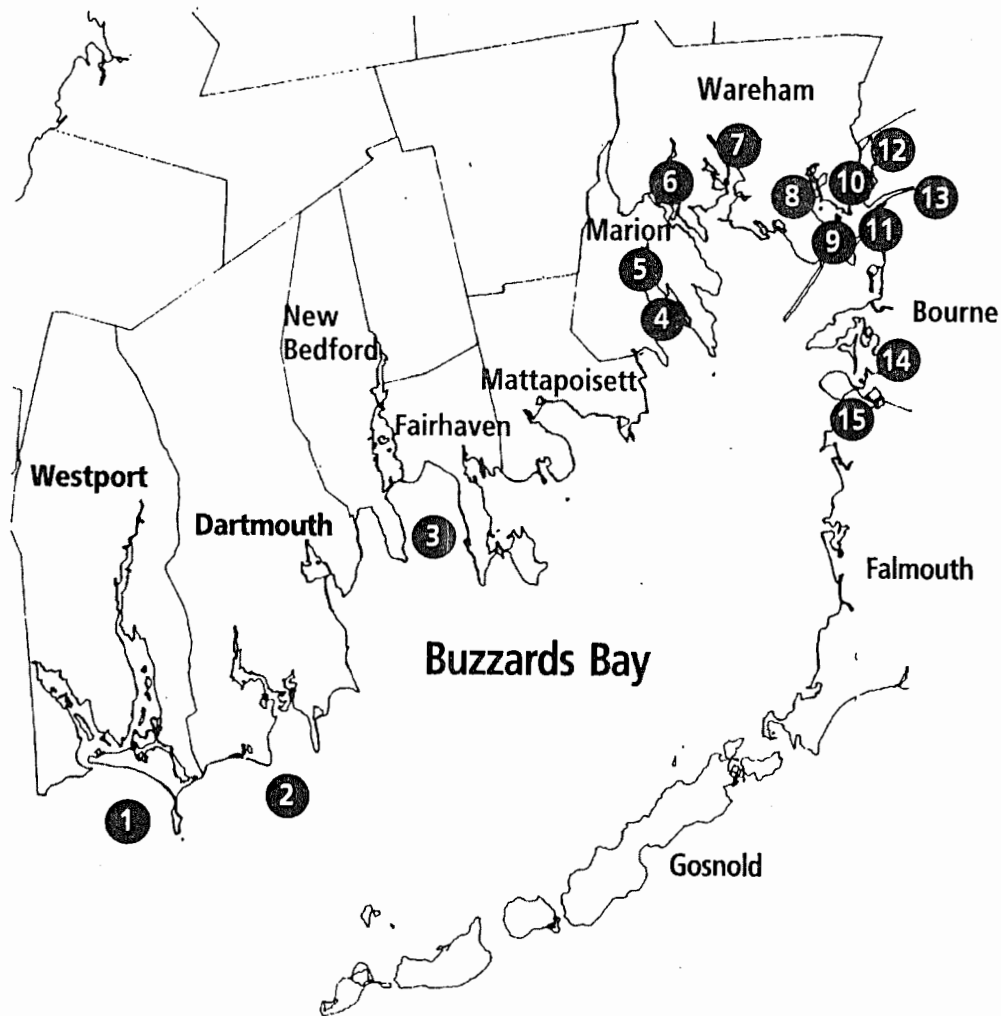
What Does All This Mean?

It means that pumping out your waste on shore or by a floating service is needed for healthy waterways, no matter what kind of MSD you have; likewise, proper porta-potty disposal is essential!

Turn the page for pump-out services in and around Buzzards Bay.

Marine Pump-Out Services Around Buzzards Bay, Summer, 1991.

Please update as new services come on line! All phone numbers are in the 508 area. Mariners may also use Channel 16 or other radio bands to call ahead regarding services.



1. **Westport Harbor** - floating station, due in 1991, approximately 4 hours daily. Free to boats on moorings & transients on moorings. 636-6827
2. **Dartmouth** - Padanaram Harbor, floating station, 8 AM - 8 PM Free. Channel 16 or 999-0759
3. **Fairhaven** - marinas arrange to have boat sewage pumped out, set by appointment with private contractor or the Town, as follows:
 Earl's Marina at West Island: \$15.00 993-8600
 Fairhaven Shipyard & Marina 996-8591
 D.N. Kelley & Sons 999-6266
4. **Marion** - Town Pier, due 1991 or 1992 993-9667
5. **Marion** - Burr Brothers, 9 AM - 4 PM, Mon - Sat. 992-7985 or
 Emergency Only Sun. \$5.00 997-1281
6. **Wareham** - Wareham Boat Yard, 9 AM - 5 PM, daily. Free. 997-2444
7. **Wareham** - Warr's River Marine, 8 AM - 4 PM, Mon - Sat. Variable, Sun. \$10.00 748-3535
8. **Wareham** - Onset Town Pier, 8 AM - 4 PM, weekdays; 8 AM - 6 PM, or so, weekends. \$5.00. 748-0541
 Free to holders of harbor services permit.
9. **Wareham** - Stonebridge Marina. Private only. 748-1472
10. **Wareham** - Point Independence Yacht Club, 8 AM - 4 PM, weekdays; 8 AM - 8 PM weekends. Free. 295-0022
11. **Wareham** - Onset Bay Marina, 7:30 AM - 6 PM, Sun - Fri.; 7:30 AM - 7 PM Sat. \$15.00 295-8160
12. **Wareham** - Bevans Marine, 8 AM - 5 PM daily. \$15.00 average. 295-3972
13. **Bourne** - Town Marina (at Buzzards Bay), 8 AM - 8 PM, daily. \$15.00. 295-0338
14. **Bourne** - Parker's Boat Yard, 8 AM - 8 PM daily. \$5.00 average. 759-5451
15. **Falmouth** - Fiddler's Cove Marina. Private only. 759-2512
16. **Falmouth** - Fiddler's Cove Marina. Private only. 563-9366

Clean Water and Boat Care — There is a Connection



Shun products that remove stains or make your boat shine — they can be very toxic and may kill marine life if washed overboard.

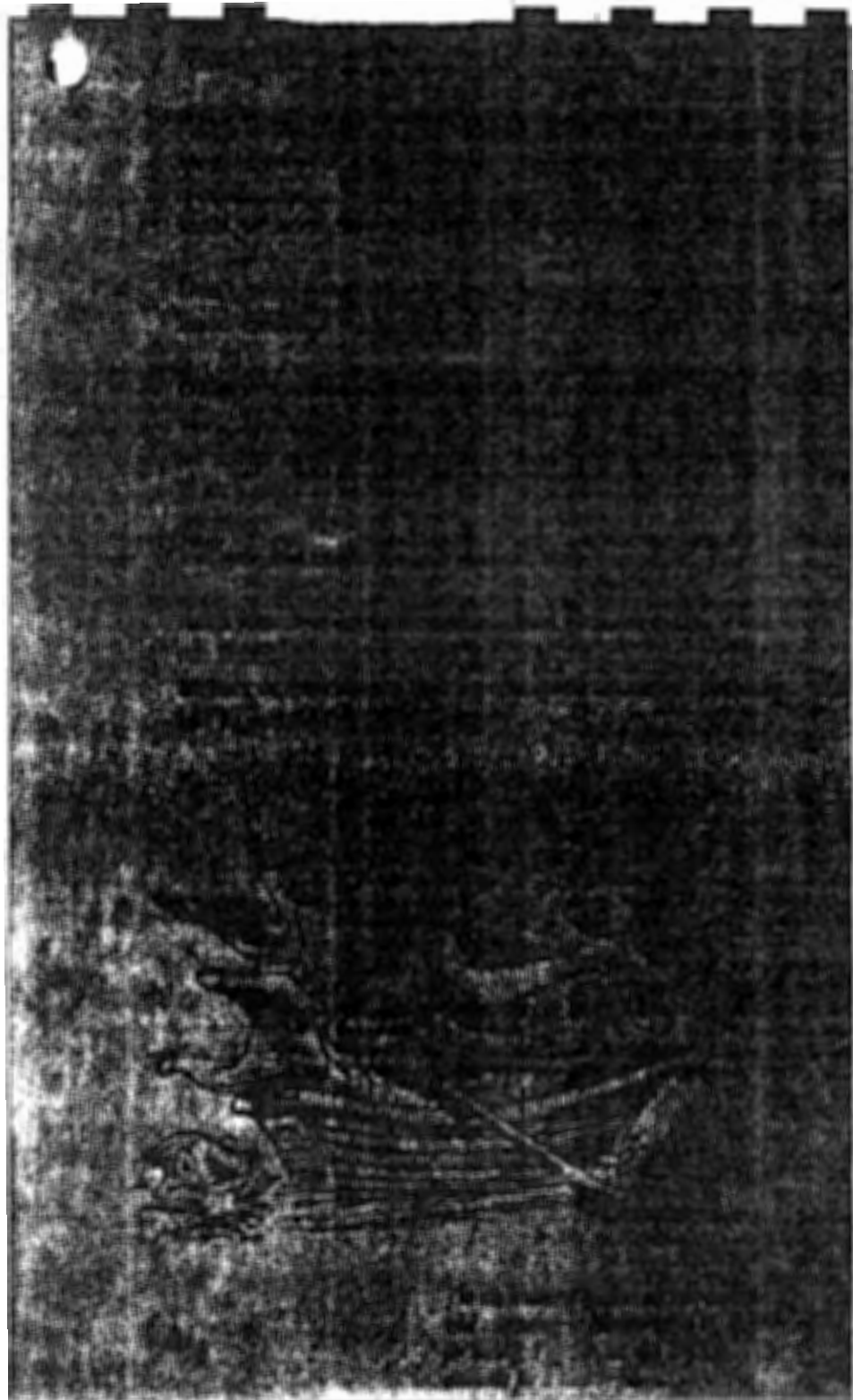
Rinse and scrub your boat with a brush after each use to minimize use of soap.

Use, or make sure your boatyard uses, the least damaging bottom paints available. Pesticides in these paints prevent barnacles, seaweed, and other fouling organisms from growing on boat bottoms, but can be harmful to valuable marine life. Incidentally, tributyltin (TBT) is banned nationally for non-aluminum boats less than 82'... Scrape and paint your boat away from the water; catch scrapings in a drop cloth and dispose of it at an official hazardous waste collection, or have your marina do so... Copper-only paints generally provide adequate protection over a full boating season. Scrubbing the bottom periodically extends the useful life of the paint, and there are formulas available that do not lose effectiveness during storage over the winter.

Use a paste of equal parts salt and flour, with enough white vinegar to moisten, to clean brass, copper, and bronze. Rub on, rinse with water, dry.

Mix 1 tablespoon white vinegar in 1 pint water to clean boat windows.

Thanks go to the following for checking the text for accuracy and appropriateness: David Janik and Bruce Rosinoff, Buzzards Bay Project; Mel Cote, U.S. Environmental Protection Agency; Lt. Robert Hazelton, U.S. Coast Guard; Bruce West, Debbie and Tom Herring, Samuel King, mariners all.





SoundChoices

A report to the boating community
on common sources of pollution
with a practical guide for helping
clean up Long Island Sound

Prepared by

SoundWaters

Two Stamford Landing

Stamford, Connecticut 06902

SoundWaters is an environmental educational organization dedicated to the restoration and preservation of Long Island Sound. Our most visible symbol is an 80-foot schooner that serves as our floating classroom. We hope to increase awareness of the contributions each of us can make and to encourage active involvement among those who live, work and play on and near this important resource. Although boaters are not the principal source of the Sound's pollutants, we believe they are a vital source of leadership. This report is intended to help boaters and the boating community understand the many ways they can participate in the effort to renew Long Island Sound.

Written by Dianne Seidlich

June 1991



Two Stamford Landing Suite 100
Southfield Avenue Stamford, CT
203 323-1978 FAX 203 975-1110
Zip code 06902

This report from SoundWaters describes some common boating practices that harm Long Island Sound and presents solutions to minimize the amount of waste that goes overboard, whether carelessly, accidentally or deliberately.

The report is divided into three sections, covering heads, holding tanks and pump-out facilities; fuel, maintenance and mopping up; and provisions, trash and recycling. Each section discusses the major pollutants entering the Sound, identifies their sources and examines their biological and environmental impacts. A list of pump-out facilities, including operating hours and fees, is attached to the report.

SoundWaters highlights successful practices adopted by members of Long Island Sound's boating community and catalogues choices that both boat owners and managers of shoreside facilities can adopt to protect our region's most important natural resource.

Additional copies of this report, as well as laminated boaters' guides, which list Long Island Sound pump-out facilities and specific Sound-Choices, can be obtained by writing to SoundWaters.

SoundWaters wishes to thank the following people for reviewing this document: Terry Backer, Long Island Soundkeeper; Nancy C. Balcolm, Connecticut Sea Grant Marine Advisory Program; Melissa Beristain and Jay Tanski, New York Sea Grant Extension Program; Ray Bovich, Connecticut Marine Trades Association; Mel Coté, U.S. Environmental Protection Agency, Region I; Gerry Giarla, Indian Harbor Yacht Club; William T. Rowe, The Advocate and Greenwich Time; Paul Stacey, Connecticut Department of Environmental Protection; John Volk, Connecticut Department of Agriculture; and Phyllis Shapiro and Benjamin Zelermeyer for editing and technical assistance.

We are very grateful for the contribution provided by Stewart M. Reid, President of SMR Energy Income Funds, and for the support from The Advocate and Greenwich Time and Xerox Corporation.

COUNCIL OF ADVISORY ORGANIZATIONS

United Nations Environmental Programme
National Audubon Society
Wainwright House
The Maritime Center of Long Island
Stony Brook University
Norwalk Seaport Association



SoundChoices

**A report to the boating community on common sources of pollution
with a practical guide for helping clean up Long Island Sound**

Long Island Sound touches the soul of the Northeast. From metropolitan New York City to the shores of Rhode Island, this 1,300-square-mile body of water connects 600 miles of coastline. The tide ebbs and flows between communities in Connecticut and the New York suburbs, bonding industrial harbor and public beach, elegant estate and seaside village, upland stream and the Atlantic Ocean.

Some 200,000 pleasure boats are registered along the Sound. At the peak of summer they are either crisscrossing its waters, moored at sheltered anchorages or tied up at docks that jut out from the coast. Within these enclosed harbors, windsurfers, water-skiers and swimmers navigate calm waters as fishermen try their luck from jetties, all protected from high winds and waves that cleanse the waterway. Below the surface, microscopic plants and animals called plankton struggle to survive alongside free-floating lobster larvae, the beginning of the food chain for hundreds of species of marine life. On the bottom, as deep as 30 or 40 feet, oysters, clams and mussels do what they do naturally, extracting tiny food particles from the water as it flows through their systems and, in the process, unnaturally, absorbing contaminants.

The summer boating season could not come at a worse time for the Sound. Common activities associated with the enjoyment and maintenance of boats produce waste, toxic materials and debris. Excessive boat speeds near the coast stir up sediment, causing murky waters or erosion. Although individual actions may produce minuscule quantities, when many boats gather in shallow waters and each dumps a little bit of waste or litter overboard, the health and ecological impacts can be serious, magnifying the effects of pollutants from other sources.

Every day, the waterway is assaulted by a billion gallons of treated, partially treated and sometimes untreated wastewater from 44 municipal sewage plants that empty into the Sound from coastal communities. Thousands of cars and trucks traveling high-volume, high-speed roads drop oil, gasoline and metallic contaminants onto adjacent highways such as Interstate 95. In suburban neighborhoods, fertilizers and pesticides are spread on lawns, golf courses and public parks. During heavy rains, residues wash into the Sound, either directly or through the network of storm drains. These daily stresses are compounded during warmer months when temperatures rise, the winds turn calm, and waters close to shore begin to stagnate, nurturing the growth of bacteria.

*As members of the boating community, we know
the value of clean, healthy waters. . . . But options
for the future depend on choices made today.*

What is startling is that the deterioration of Long Island Sound began with the Industrial Revolution, a sliver of time in the estuary's 500 million-year history. Now, less than 250 years later, the ability of the waterway to cleanse itself through natural tidal flushing has diminished. Marine plants and animals, forced to compete for already limited oxygen supplies and pollution-free waters, are dying.

An egret or sea gull that splashes its wings in oily waters may lose its ability to fly. Oysters and clams infused with bacteria can transmit diseases to human consumers. Excessive concentrations of nutrients, such as nitrogen and phosphorous, contribute to oxygen depletion in the water. And when populations of fragile phytoplankton and zooplankton, the first link in the chain of foodstuffs, are destroyed, imbalances occur throughout the cycle that links humans with single-celled organisms. If the aquatic life below the surface suffers chronic ill health and underwater habitats deteriorate, then the whole neighborhood, including the places where boats and boaters assemble, suffers as well.

Not everyone cares about floating debris, murky waters or an oily surface. To those who have never walked along the seashore, cast a fish-

ing line from a runabout or dock, or watched the setting sun transform the surface of the water into rippling pinks and blues, Long Island Sound's troubles may be of little concern. If you've never known the serenity of dropping anchor offshore and diving into cooling waters while the vessel waits, it may not matter. If you've never maneuvered into a new harbor, giddy at the prospect of exploring a new place, or if you've never pulled up anchor, hand-over-hand on the chain and line, then the quality of coastal waters may be too remote. But for most boaters, it is important.

"Long Island Sound has had the best fishing, the best boating, the best sailing and the best ports of call," says Walter Greeney, Sr., a retired Stamford, Connecticut, native who owned his first sailboat at 16 and has been sailing ever since. "You can get to a new port every weekend, can reach Huntington Harbor in an hour or spend the night at Ziegler's Cove and dive into the water. It's a great place, and you'd be nuts to ruin it."

As members of the boating community, we know the value of clean, healthy waters. Having experienced the freedom that comes from unhitching the last line and seeing the shoreline shrink in the distance, we know we want the same options next year and every year. But options for the future depend on choices made today. Some sources of pollution are beyond individual control. Wastewater-treatment systems may continue to malfunction or discharge nutrients until taxpayers approve funds to upgrade them. Heavy storms that wash pollutants from streets and lawns are inevitable. Boaters, however, have a clear choice: to bring ashore what's taken aboard or dump it in the Sound.



I. HEADS, HOLDING TANKS AND PUMP-OUTS

Pollutants: Disease-carrying bacteria, algae-feeding nutrients, toxic chemicals

Sources: Illegal discharges, untreated and poorly treated waste, disinfectants

Why all this fuss about discharges from heads on boats? According to many boaters, it is only a few gallons, a drop in the bucket compared to other sources of pollution like sewage-treatment plants and storm-water runoff. The recreational boater, many say, is being singled out. But with 200,000 boats registered on the Sound, clustered in marinas, yacht clubs or sheltered anchorages, each discharge from a boat has the potential to contaminate or transmit disease if it strikes a vulnerable spot near shellfish beds or swimming areas.

Human waste contains heavy concentrations of intestinal bacteria, some of which cause disease. While municipal sewage plants are generally effective, onboard treatment systems sometimes fail to disinfect properly, thus allowing disease-causing organisms to enter the waterway. The effect can be acute at marinas where boat owners spend more time at dockside than underway, especially if onshore facilities are not used. A secondary problem is that human waste, like all organic matter, contains nitrogen, which has been identified as a major pollutant of Long Island Sound. No onboard treatment is available to remove nitrogen. In addition, disinfectants used in marine toilets, such as formaldehyde and chlorine, may be toxic to aquatic life if used or discharged improperly.

Discharging raw sewage is illegal anywhere within U.S. territorial waters, a boundary that extends three miles off the U.S. coastline and includes all of Long Island Sound. But in the Northeast, Chesapeake Bay, Narragansett Bay, Puget Sound and parts of Florida and California, discharges of any sort, even with sophisticated onboard treatment systems,

may soon be prohibited. New York towns and villages have begun the process through local coastal management plans. The Connecticut legislature has authorized environmental officials to seek federal approval of no-discharge zones at several Connecticut harbors: Greenwich; Stamford; Norwalk and Westport; Milford; Branford; Madison, Clinton and Westbrook; and Noank. Although the federal designation may be years away and enforcement capabilities may be limited, individual marinas and coastal communities are making no-discharge practices part of their rules for reasons of health, ecology and aesthetics. And boaters who believed they were doing the right thing by installing Coast Guard-certified marine sanitary devices may now find they need to install holding tanks.

The writing is on the seawall. In Virginia the word is, "Don't pass the bucket. Bring it ashore." In Maryland, "The bay needs relief too. Pump don't dump." In Mystic, Connecticut, "Pump-out, don't dump-out." And in Hood Canal, Washington, "If you wouldn't swim in it yourself, don't throw it overboard."

HEALTH AND ECOLOGICAL IMPACTS

The biggest health hazard from disposing of untreated or improperly treated sewage is the potential transmission of pathogenic (disease-causing) microorganisms such as bacteria, viruses, protozoa or fungi, which can contaminate shellfish beds and swimming waters. Pathogenic organisms concentrate in the intestines of both warm-blooded animals and people who are ill or carriers and are discharged with fecal matter. Someone eating contaminated shellfish or swimming in contaminated waters could be subject to gastroenteritis or acute stomachaches, and, less likely, but by no means rare, typhoid fever, cholera, dysentery and infectious hepatitis.

To protect public health, officials regularly test waters around swimming areas and shellfish beds. No test exists to measure specifically for the presence of pathogens. Instead, health officials take samples of the water to test for the presence of coliform and fecal bacteria to determine whether human or animal waste has entered the water. High counts of either coliform or enterococci bacteria send up a red flag, alerting health officials to the possibility that disease-causing microorganisms also may be present. If the coliform count exceeds standards set by local municipalities, officials

may close shellfish beds or swimming waters until bacterial levels decrease.

However, coliform tests are most effective with large volumes of discharges from heavy rains or sewage-treatment plants. The low volume from heads and the fact that boat discharges occur

at random make it difficult to detect coliform bacteria through occasional water sampling. Influences such as temperature, salinity, the time of year, the number of boats present and the ability of the site to flush itself determine the rate by which bacteria die. But even when the count of coliform or enterococci bacteria is low, pathogens may still be present. To protect public health, officials advocate no-discharge practices where shellfishing or swimming might occur.

Suppose one person on one boat discharges human waste. If that person is ill, while the probability is slight, disease-causing bacteria may still contaminate the waters. Clams, mussels and oysters feed by extracting microscopic particles of food from large quantities of water. Because shellfish cannot distinguish healthy microorganisms from pathogenic bacteria and viruses, the food they consume may also contain contaminants. The organisms settle in their digestive tracts and the illness can be transmitted to us if the shellfish is eaten raw or partially cooked. Contamination of subsurface waters may seem a distant problem when viewed from the comfort and safety of a boat, but not to people at the end of the food chain who eat the shellfish and become violently ill.

Because of random discharges from boats, the results of scientific studies can be inconclusive. They sometimes conflict over whether high coliform counts or disease can be traced to boats. If other sources of pollution, such as storm-water runoff, are present, the effects of boat discharges cannot always be measured. Studies into the causes of high coliform counts in Zach's Bay on Long Island's South Shore in 1977 and in Chesapeake Bay in 1978, for example, both identified storm-water runoff as a more serious culprit. About 15 outbreaks associated with shellfish (two or more cases each) were reported in New York in 1989, and 10 cases during the same period in Connecticut. No data linked the illness to discharges from boats.

"If you wouldn't swim in it yourself, don't throw it overboard."

Hood Canal, Wash., Coordinating Council

Other studies, however, show a relationship between recreational boats and contamination. A yearlong analysis by the Woods Hole, Massachusetts, Oceanographic Institution, in 1988-89 concluded that the most important source of floating fecal contamination in Edgartown Harbor, on Martha's Vineyard, came from boats without marine toilets. The study also determined that high bacteria counts measured in the harbor originated from cruising boats that lacked or did not use holding tanks and, instead, discharged waste through the hull.

In Washington State during Labor Day weekend of 1988, health officials at the enclosed John Wayne Marina observed differences in water quality and shellfish contamination inside and outside the marina. As the holiday peaked, bacteria levels inside the marina increased while conditions in the open waters of Sequim Bay met acceptable standards. Contamination of shellfish appeared in 62 percent of samples collected inside the marina, while samples collected outside the marina met health standards. In a separate study, the Washington researchers demonstrated that even when water sampling proved inconclusive, shellfish contamination increased significantly with the presence of boats. At the beginning of the boating season, only 25 percent of the samples exceeded contamination standards, while in August, 67 percent of the samples collected exceeded those standards. The researchers said that no other source of pollution, such as storm-water runoff, could be identified.

As in Edgartown, the Washington researchers concluded that boat waste is a source of fresh (untreated) fecal matter and may also be a source of pathogens, since bacteria tend to cluster within solids.

Human waste from boats also contributes to nutrients that are polluting the enclosed bays and harbors of Long Island Sound. Excessive nitrogen, for example, stimulates growth of microscopic algae. Over-blooming plants sometimes cover the surface of the water, blocking light to underwater plants. Often mistaken for raw sewage, the brown particles seen floating on the surface can actually be an algae bloom. When the algae die and sink, bacteria that break down the plants consume much-needed dissolved oxygen, depleting the bottom waters so that fish and other marine life either leave the area or die, causing the waters to smell and turn a murky color.

A joint state and federal Long Island Sound Study has determined that the problem of depleted oxygen, known as hypoxia, is so severe that action must be taken to control nitrogen discharge. New York and Connecticut have adopted policies aimed at preventing future increases in nitrogen levels. The joint study also indicates that billions of dollars may have to be

spent to extract nitrogen from wastewater. While state and federal agencies are working to address these larger issues, they need the attention and diligence of members of the boating community and other Sound users to do their part. Although relatively small in quantity, waste from boats can have a significant impact, especially during warm summer months in shallow coastal waters.

ONBOARD INSTALLATION

One of the biggest headaches for any boat owner is maintaining a head or holding tank and choosing to use it. Most boats under 25 feet long carry portable toilets, if any onboard toilet is used. Portable units are generally carried to shore and either dumped in a shoreside toilet, discharged into a special receptacle, if available, or pumped out by a pump-out unit. No law says that a toilet has to be installed. But if one is, according to federal regulations, it must conform to one of three types of marine sanitary devices (MSD's).

Type I flow-through devices chop up and disinfect waste before discharging it into the water. One Type I system uses an electric charge that converts salt water to chlorine to disinfect waste. Type II devices, which are more sophisticated and common on vessels 65 feet or longer, combine biological, chemical, electrical or incineration treatment methods and remove suspended solids before the waste is discharged. They are generally more costly and require additional power.

Onboard treatment systems, however, can cause new problems for the environment if waste is discharged in shallow waters. Formaldehyde and/or chlorine-based disinfectants can be highly toxic to marine life if discharged improperly into the waterway. The chemicals may upset the ecological balance in sewage-treatment plants if the waste is pumped out on shore. Since they use very little water, marine toilets, even those with macerators, may not always break up solids.

Type III MSD's are simply holding tanks which temporarily store and sometimes disinfect waste until it is pumped out on shore. This is the first choice among marine regulators because there is no chance of pollution. Even with disinfectants, many boat owners complain that holding tanks and portable toilets smell, either from the waste itself or from the sickly odor of deodorants. No system is immune from odor, they say. A standard rule among many day sailors is that no one uses the head except in a dire

emergency. But onboard holding systems do not have to smell. Proper installation, materials and venting can prevent leakage, the cause of most odors. Home toilets generally do not leak and neither should heads on boats. However, a foolproof system may require additional attention. Most holding tanks are made of polyethylene plastic. A thicker grade, three-eighths inch rather than one-eighth inch, is recommended by *Practical Sailor* magazine. The plastic should be molded so that it is seamless and reinforced at points of stress where the edges and fittings meet the boat. The impulse to save money on cheaper models can result in owning a tank that splits, ruptures or traps small particles of sewage that eventually smell.

Although installation may be difficult in a cramped space, a proper fit is critical. Improperly fitted hoses and clamps cause odor-producing cracks; thin plastic hoses, especially those that are ribbed, can allow odors to escape. Engineers recommend using heavy-duty vinyl tubing, the type found in home bathrooms. Fabric tanks — sometimes the only option due to limited space — can be tricky to install because they must be perfectly fitted. Customized fiberglass and aluminum tanks are available for boat owners willing to pay the extra cost. The Coast Guard is trying to establish a 1.5-inch standard for the inside diameter of all pipes associated with sewage-removal deck fittings.

The choices among disinfectants and bactericides are still limited. Alcohol, chlorine, phenol derivatives, formaldehyde and quaternary ammonia compounds (quats) are toxic to aquatic life. Although bacterial and enzyme products are gentler on the environment, they may not ade-

SoundChoices (Heads)

- ♦ ***Install holding tanks and use pump-out facilities.***
- ♦ ***Examine the head for leaks, improper fittings and proper installation.***
- ♦ ***Try non-formaldehyde products or those using bacterial enzymes to disinfect and reduce odor.***
- ♦ ***Use shoreside facilities. Keep a portable toilet on board for use in harbors if your boat has no holding tank.***
- ♦ ***Check educational materials and cruising guides for location of pump-out facilities and try to use them regularly for MSD's and portable toilets.***
- ♦ ***Lobby manufacturers to develop more efficient MSD's.***

quately kill bacteria or pathogens. Manufacturers say work is continuing to improve the products. Meanwhile, some experts suggest that boat owners who have holding tanks that are properly installed and who regularly pump out should avoid any chemicals.

ONSHORE DISPOSAL

Despite growing evidence that boat discharges are harmful in enclosed areas, many boaters still cling to the attitude that their behavior has no impact.

"They're going after the little guy, like always," said one boat owner in Stamford, echoing what many believe. Although his boat has a holding tank, he has never used it and probably won't because "it isn't necessary" in harbors of the Sound. "Maybe in the Great Lakes, but not here," he said. "Besides, there's nowhere to go and pump out."

If boaters are being told to hold their waste and pump it out, they need a place to go. Both Connecticut and New York require pump-outs at new and expanding marinas if the service is not available in the vicinity. But a survey of dockside facilities indicates that fewer than 60 of the more than 350 marinas, boat yards, yacht clubs and town docks located along the Sound's 600 miles of coastline offer pump-out service.

Pump-out facilities fall into three categories: stationary pumps, usually installed on a dock near fuel pumps; portable systems that can be rolled up and down the dock; and mobile units, usually located on a barge or small boat to reach moorings. Most are designed to pump out holding tanks and portable toilets. Each unit has a pump, a tank and a flexible hose that connects the boat's wastewater fitting to the tank. Some tanks discharge directly into municipal sewage systems, while others must be pumped by a septic tank service or hauled to another site. Special dump stations for portable toilets can help eliminate the mess that occurs when someone tries to dispose of the waste in a standard toilet.

No single type of pump-out fills all needs. Although marina operators say they want their waters clean, they differ on the kind of system to use and on whether they feel pump-outs are practical. To succeed with boaters, pump-out service must be convenient and inexpensive, a combination not always easy to deliver. Pump-out units can be expensive to in-

tional easements to the town. Some local sewage plants are reluctant to accept boat waste, claiming that treatment chemicals, including formaldehyde and chlorine, can upset the balance in the municipal system. Some marina owners even say that their efforts seem useless when the local municipal

sewage plant may not be in compliance with its own discharge standards.

***"We'd rather pump it out
than have someone
dump it in the bay."***

Port Washington dock worker

To assist operators in Maryland, officials there prepared a 50-page guidebook that covers technical information and pricing for systems, collection and disposal methods, product information, listings of local wastewater-treatment plants and a general guide through the maze of agencies that a Maryland operator might face. Connecticut is preparing a guidebook of management practices for marinas, to be completed in 1992, and New York has begun surveying the use of pump-out facilities at marinas in the state.

Despite the obstacles, many operators are committed to clean harbors, either for environmental reasons, regulatory mandates, or because it makes good business sense to keep the harbor attractive. Some privately owned marinas include pump-outs as part of dockage fees. Other marinas charge pump-out fees, depending on whether the boater is seasonal or transient. Most fees range from \$3 to \$27, although one marina asks \$60.

Some marinas, including Danford's Inn in Port Jefferson, New York, and Montauk Yacht Club and Resort in Lake Montauk, New York, offer free pump-out service to the public to encourage use. So do municipal docks in Stamford, Connecticut; Rye, New York; as well as Port Washington, Oyster Bay, Huntington and Shinnecock County, Long Island. As a dock worker at the Port Washington town marina said, "We'd rather pump it out than have someone dump it in the bay."

Along Connecticut's Mystic River, 19-year-old Jeffrey Law cruises the river on a 20-foot launch, complete with a large holding tank, five horsepower motor and a large sign announcing that his mobile business, Harbor Marine Services, pumps out on demand. Traveling from marina to marina, monitoring VHF Channel 9, Law idles up alongside the boat, charging his

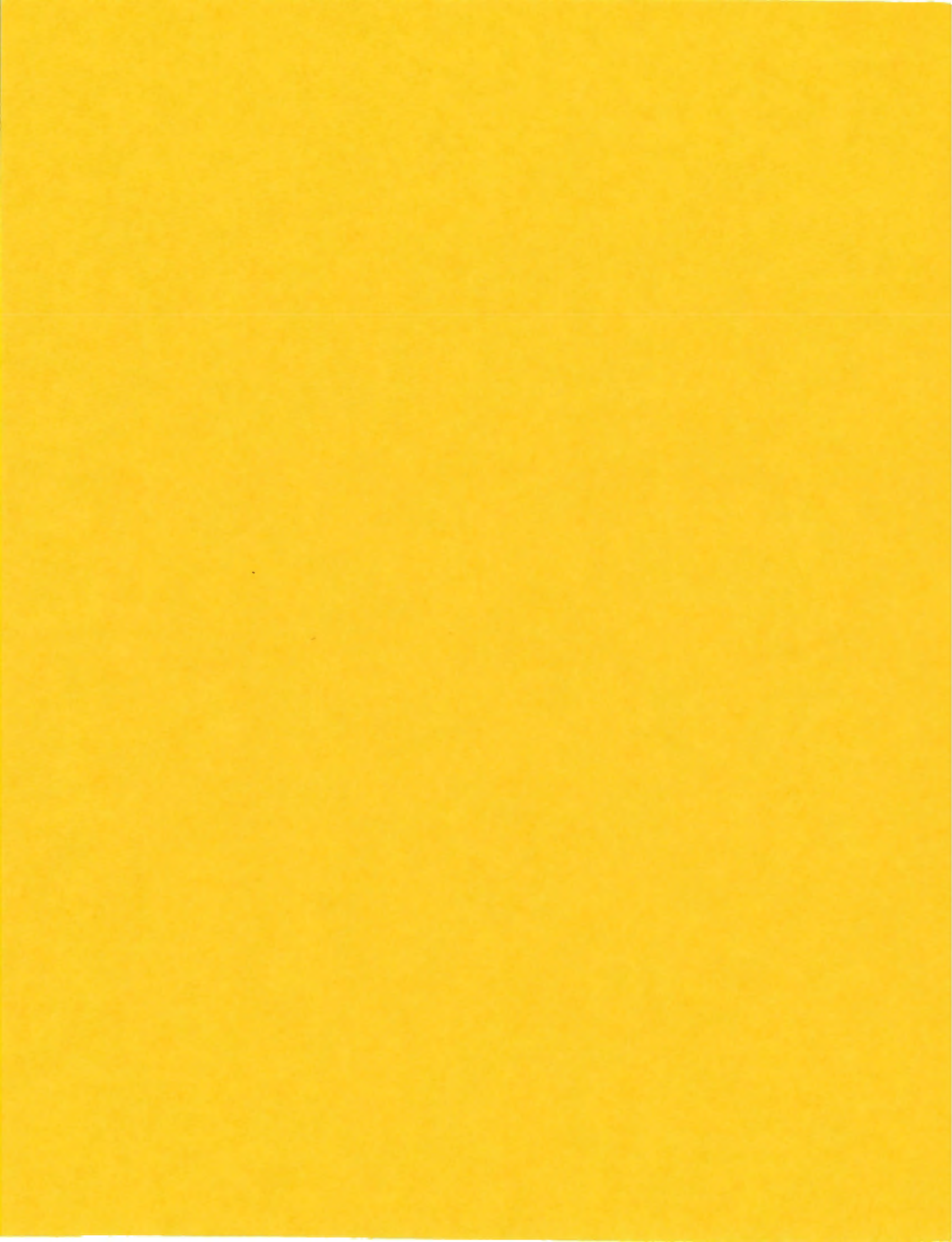
customer between \$10 and \$20 depending on the size of the holding tank. For \$85, he provides biweekly service between May and September. The waste is disposed into a pump-out station at a local marina. "People use the pump-out service, but 80 percent still haven't picked up on the idea," Law said.

Block Island, Rhode Island, and Edgartown Marina on Martha's Vineyard, Massachusetts, also offer free mobile launch services. "It's really worked," said Harbormaster Maury Dore, operations manager of the Edgartown Marina, where the service is included in the mooring fee and boaters get a \$10 certificate at the ship's store. "The harbor is clean. Scallop fishing has come back and you can see the clam flats. Now we have some of the best clamming around."

Cedar Island Marina in Clinton, Connecticut, has made pump-outs a marina-wide goal, with the service included in dockage fees or at a cost of 50 cents a foot for transients. The portable system, kept on the fuel dock, utilizes a three-inch hose, 220 horsepower motor and, according to owner Jeff Shapiro, can empty most boats in two minutes. "We're serious about pump-outs," said Shapiro. To make the task more fun, staffers keep track of each pump-out they perform by stamping the pump-out logo (a drawing of a soiled piece of toilet paper) onto the side of the holding tank. At the end of the season, a bronze plaque, complete with logo, is awarded to the Pump-Out King.

"You have to start somewhere," said Chris Littlefield, dockmaster at Block Island, where discharging is prohibited. "Now we're like a little lake full of boats. The water is cleaner, and we can see down 20 feet. We have people coming in from New York City who want to relax and just dive off their boats. It's nuts to discharge."

APPENDIX D
HARBOR PLANNING REFERENCE MATERIAL



**GUIDANCE FOR STATES AND MUNICIPALITIES
SEEKING NO-DISCHARGE AREA DESIGNATION
FOR NEW ENGLAND COASTAL WATERS**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

BOSTON, MASSACHUSETTS

JUNE 24, 1991

RECEIVED
JUL 8 1991

**COASTAL RESOURCES
MANAGEMENT COUNCIL**

Background

Pollution of estuarine and other near coastal waters has been identified by Federal and state environmental agencies as a priority problem in need of immediate attention. While point sources such as sewage treatment plants, industry, and CSOs contribute to the problem, non-point sources are recognized now as a major cause of coastal water pollution. These non-point sources include urban stormwater runoff, agricultural runoff, leachate from malfunctioning septic systems, wildlife, and sewage discharges from recreational and commercial vessels.

Although Federal law requires marine sanitation devices (MSDs) to meet certain discharge effluent standards, boat owners still discharge treated wastes legally and untreated wastes illegally into coastal waters. The discharge of these sewage wastes from boats may impact water quality by (1) introducing microbial pathogens into the environment and (2) locally increasing biological oxygen demand (U.S. EPA, 1985). While vessel sewage discharges represent only one of several sources of non-point pollution, the number of boats using New England coastal waters has increased substantially during the past decade.¹ The contribution of boat sewage to total pathogen loadings and local biological oxygen demand has grown proportionately.

A potentially serious problem resulting from vessel sewage discharges is the introduction of disease-carrying microorganisms from fecal matter into the coastal environment. Humans are put at risk by eating contaminated shellfish and swimming in contaminated waters. The major disease-carrying agents are bacteria and viruses, and the most common serious ailment is acute gastroenteritis. Other waterborne diseases include hepatitis, typhoid, and cholera (Milliken and Lee, 1990). The indicators used to detect sewage pollution are not the pathogens themselves, but, rather, coliform bacteria. These bacteria are always present in the human intestinal tract and are thus considered reliable indicators of the presence of human waste (U.S. EPA, 1985). Studies conducted in Puget Sound, Long Island Sound, Narragansett Bay, and Chesapeake Bay have demonstrated that boats can be a significant source of fecal coliform bacteria in coastal waters, particularly in areas with high boat densities and low hydrologic flushing (Milliken and Lee, 1990; JRB Associates, 1980). If coliform levels exceed allowable thresholds, shellfish beds and swimming beaches can be closed to minimize the threat of public health problems. In addition, shellfish beds and swimming beaches in the immediate vicinity of marinas usually are permanently closed because of the potential for contamination by sewage contamination.

These organic-rich wastes also have the potential to depress oxygen levels as they decay in the marine environment. Biological oxygen demand (BOD) is a measure of the dissolved oxygen required to decompose the organic matter in the water by aerobic processes. When the loading of organic matter increases, the BOD increases, and there is a consequent reduction in the dissolved oxygen available for respiration by aquatic organisms (U.S. EPA, 1985). Although the volume of wastewater discharged from boats is relatively small, the organics in the wastewater are concentrated, and therefore the BOD (1700-3500 mg/l) is much higher than that of raw municipal sewage (110-400 mg/l) or treated municipal sewage (5-100 mg/l) (JRB Associates, 1981). Sewage discharged from boats will thus increase the BOD in the vicinity of the boats. When this occurs in poorly flushed waterbodies, the dissolved oxygen concentrations of the water may decrease (Milliken and Lee, 1990).

¹ According to data from U.S. Coast Guard Statistics annual reports, the total number of registered boats in the five New England coastal states has grown from 408,453 in 1980 to 594,547 in 1989 - a 46 percent increase. The Coast Guard data also show that there were 351,181 registered boats in 1975, and 214,020 in 1970. This represents a 178 percent increase in boat registrations in New England coastal states between 1970 and 1989. These figures do not separate boats registered for use in coastal waters from those registered for use in inland waters (Ross, 1991).

Additional problems associated with boat sewage arise from the use of chemical additives such as chlorine and formaldehyde to disinfect on-board sewage. When discharged into shallow coastal waters, chlorine can be toxic to marine life. In addition, since the amounts of chemicals added are controlled by the individual, excess use may occur. A related problem is the reluctance of some sewage treatment plant operators to accept boat sewage because of its concentrated chemical content, which has been thought to reduce the effectiveness of many biological treatment processes. Research into the real impact of chemical disinfectants on sewage treatment processes indicates that this problem has been greatly overstated, and that, in general, most local wastewater treatment plants can handle boat holding tank wastes without difficulty (Novak et al. 1990).

Section 312 of the Clean Water Act

Federal statutory authority to regulate vessel sewage discharges and MSDs was established with passage of the Federal Water Pollution Control Act of 1972. This law was amended in 1977 with passage of the Clean Water Act, and again in 1987 by the Water Quality Act. The statute is now commonly referred to as the Clean Water Act. The primary goal of Section 312 of the Clean Water Act is to reduce direct vessel sewage discharges to surface waters. Section 312 sets forth requirements for MSDs on boats and enables states to apply to EPA for the authority to prohibit discharges of all boat wastes, whether treated or untreated. Treatment, and in specific locations, complete prohibition of vessel sewage discharges will improve water quality and afford additional protection to marine life. In striving to achieve its goal, the law also provides additional protection to human health. The regulation of MSDs is of particular importance in coastal embayments where marinas and other boating facilities are located because of the high concentration of boats, reduced tidal flushing capacity, and general proximity to sensitive resource areas.

Marine sanitation devices or MSDs are holding tank or treatment and discharge systems (T/D) that are classified by the Coast Guard as either Type I, Type II or Type III. The basis for these classifications is Section 312(b)(1) of the Act, which authorized EPA, with assistance from the Coast Guard, to:

"...promulgate Federal standards of performance for marine sanitation devices which shall be designed to prevent the discharge of untreated or inadequately treated sewage into or upon the navigable waters from new vessels and existing vessels, except vessels not equipped with installed toilet facilities."

Section 312(b)(1) also directed the Coast Guard to promulgate regulations "governing the design, construction, installation, and operation of any marine sanitation device" on board vessels with installed toilets. Type I MSDs (acceptable only for boats 65 feet or less in length) will produce an effluent which will not exceed a fecal coliform bacteria count of 1000 parts per 100 milliliters and have no visible floating solids. A Type II MSD (required on boats over 65 feet) will produce an effluent which does not exceed a fecal coliform bacteria count of 200 parts per 100 milliliters, and have suspended solids not greater than 150 milligrams per liter. Type III MSDs are no-discharge systems, and are designed to prevent the discharge of any treated or untreated sewage. Holding tanks are one type of Type III MSD. Type III MSDs are the only MSDs acceptable for use in areas designated by EPA as no-discharge areas.

EPA may grant no-discharge status to those areas that are particularly sensitive to contamination and will benefit from a complete prohibition of all vessel sewage discharges. Sections 312(f)(3) and (f)(4) describe the statutory requirements for no-discharge designation.

"Standard" No-Discharge Application Designations

Statutory Requirements - Section 312(f)(3)

Section 312(f)(3) enables states to apply to EPA for designation of certain waterbodies as no-discharge areas. If an application from a state is approved by EPA, the discharge of all sewage, whether treated or not, is prohibited within the area designated. Approval is contingent, however, upon the demonstration by the state that "adequate and reasonably available" pump-out facilities exist for boaters to use. An application for designation, documenting the need for establishing a no-discharge area and presence of "adequate and reasonably available" pump-out facilities, must be submitted to EPA for review and approval. The U.S. Coast Guard is the agency charged with enforcing MSD regulations and standards; however, when a state's application for no-discharge status is approved by EPA, enforcement of the no-discharge standard becomes the primary responsibility of the state. Section 312(f)(3) states that:

"...if any State determines that the protection and enhancement of the quality of some or all of the waters within such State require greater environmental protection, such State may completely prohibit the discharge from all vessels of any sewage, whether treated or not, into such waters, except that no such prohibition shall apply until the Administrator determines that adequate facilities for the safe and sanitary removal and treatment of sewage from all vessels are reasonably available for such water to which such prohibition would apply." (emphasis added)

The Act stipulated that the EPA Administrator make the final determination on all no-discharge applications. However, this authority has since been delegated to EPA Regional Administrators. Applications for no-discharge area status for any New England coastal waters from Maine to Connecticut shall be submitted to EPA Region I headquarters in Boston. While the application itself may be prepared by state or local officials, the application submitted to EPA must be signed by either the state's governor or chief environmental official.

Most coastal no-discharge areas designated under Section 312(f)(3) are located in California. These include: Upper and Lower Newport Bay; Sunset Bay; Huntington Harbor; portions of San Diego Bay; Mission Bay; Oceanside Harbor; Dana Point Harbor; Avalon Harbor on Santa Catalina Island; Channel Islands Harbor; and Richardson Bay. The only other coastal no-discharge area in the United States is Destin Harbor on Florida's Gulf Coast. There are currently no East Coast no-discharge areas.

Regulatory Requirements - 40 CFR 140.4(a)

Standards promulgated pursuant to Section 312(f)(3) are found in 40 CFR Part 140.4. Part 140.4(a) describes the basic requirements a state must meet in submitting an application to prohibit vessel sewage discharges. Under Part 140.4(a), applications made by states pursuant to Section 312(f)(3) shall include:

- 1) A certification that the protection and enhancement of the waters described in the application require **greater** environmental protection than the applicable Federal standard;
- 2) A map showing the location of commercial and recreational pump-out facilities;
- 3) A description of the location of pump-out facilities within waters designated for no discharge;
- 4) The general schedule of operating hours of the pump-out facilities;

- 5) The draught requirements on vessels that may be excluded because of insufficient water depth adjacent to the facility;
- 6) Information indicating that treatment of wastes from such pump-out facilities is in conformance with Federal law; and
- 7) Information on vessel population and vessel usage of the subject waters.

Supplemental Requirements - Advisory Guidelines

To clarify these statutory and regulatory requirements, and to ensure that the Agency has enough information to make a sound decision, EPA Region I has developed "advisory guidelines" that should be followed when preparing and submitting a no-discharge application. These guidelines address both pre- and post-application procedures. Pre-application procedures will help state and local officials determine whether a proposed no-discharge area meets the necessary criteria, and post-application procedures will enable EPA to make a well-informed decision. *Meeting the requirements of these "advisory guidelines" is not mandatory*; an application for no-discharge status will not be denied if the requirements are not met.

The most important requirement a state must meet before receiving an approval for no-discharge status for coastal waters is demonstrating that "adequate and reasonably available" pump-out facilities are in place and are operational. Before developing an application, applicants (whether they are state or local officials) should ascertain whether this basic requirement can be met. There is no set ratio or formula to determine the exact number of pump-out facilities necessary to serve a given population of boats. However, EPA Region I has determined that, in general, a range ratio of one pump-out facility per 300-600 boats with holding tanks (Type III MSD) should be sufficient to meet the demand for pump-out services in most harbor areas.

EPA Region I recommends that a minimum of *one pump-out station per 300 boats (with holding tanks)* be provided in "transient" harbors (where a larger percentage of boats are 27 feet in length or more, and are more likely to have holding tanks), and that a minimum of *one pump-out station per 600 boats* be provided in "parking lot" harbors (where a larger percentage of boats are less than 27 feet in length). This ratio of pump-out facilities to boats is based on our best professional judgement and on the experiences of regulators in other parts of the country where no-discharge area regulations are in effect.² EPA Region I intends to remain flexible on this issue, and *all no-discharge area applications will be reviewed on a case-by-case basis.*

² Unfortunately, no data exist regarding how many vessels have installed toilets or have Type III MSDs as opposed to Type I or II MSDs. A 1981 EPA study estimated that "the vast majority of recreational vessels (did) not have installed toilets and therefore (had) no MSD of any type," and that "about 10 percent of all recreational vessels can be expected to have installed toilets but that only a portion of these have Type III MSDs." EPA estimated that 20 percent of boats between 16 and 26 feet, 50 percent of boats between 26 and 40 feet, and all of the vessels over 40 feet had installed toilets with some type of MSD.

According to a 1982 study by Rogers and Abbas, it is unlikely that boats under 25 feet have installed toilets because of space and power limitations, and those that are equipped with toilets frequently use Type I MSDs or portable toilets. Data collected in New Jersey support these findings. When harbor masters and marina operators in New Jersey were asked to estimate average size of vessels using pump-out facilities, 57 percent said it was vessels over 30 feet and 43 percent said it was vessels over 25 feet. None reported that vessels under 25 feet were using their pump-out facility (Tiedemann, 1989).

EPA Region I also strongly recommends that applicants demonstrate that adequate sewage disposal facilities exist for boats that do not have Type III MSDs (holding tanks). These include shoreside restroom and "dump-out" (for disposal of portable toilet waste) facilities that are well maintained and easily accessible from mooring fields and docks/slips within and adjacent to the proposed no-discharge area. The provision of these facilities is especially important in "transient" harbors and other boating areas that service a large number of boats with Type I and II MSDs and portable toilets.

While the regulatory requirements described in 40 CFR Part 140.4(a) provide a good starting point in developing a no-discharge application, EPA Region I feels that some of the requirements need clarification.

- The certification referred to in Part 140.4(a)(1) should include a description of specific resources, such as swimming areas, shellfish beds, fish spawning or nursery areas, and endangered or threatened species habitat, that would benefit from additional protection. Applicants are encouraged to provide (if available) whatever fecal coliform data exists for waters within the proposed no-discharge area (for a minimum of one year preceding the date of application), and other relevant water quality data (e.g., BOD data). The inclusion of this data will enable subsequent improvements in water quality to be measured.
- The map referred to in Part 140.4(a)(2) should show the location of pump-out facilities within and adjacent to the proposed no-discharge area, as well as the specific resource areas that need additional protection. EPA Region I also encourages applicants to show on the map the location of restroom and "dump-out" facilities located on shore adjacent to the proposed no-discharge area.
- The description referred to in Part 140.4(a)(3) should be in the form of a written narrative that supplements the map described above. In addition to describing the number and location of the pump-out facilities, applicants should identify the owners and/or operators of each facility (whether public or private), the operating capacity of each facility (e.g., maximum number of pump-outs per hour/day based on pumping rate and sewer system/holding tank capacity), and accessibility of each facility (whether pump-out services are provided only to marina customers or open to all boaters). Applicants should also provide a similar description of restroom and "dump-out" facilities located on shore adjacent to the proposed no-discharge area.
- In addition to the requirements in Part 140.4(a)(4), applicants should provide maintenance plans for the pump-out facilities and a description of the fees (if any) charged for their use.
- Part 140.4(a)(5) basically requests that applicants describe the mean low water depth of waters adjacent to pump-out facilities and the percentage or actual number of boats that would be prevented from using facilities due to their draught requirements. In general, pump-out facilities should be located where adjacent water depths will not prevent any boats from using them.
- The information required in Part 140.4(a)(6) should consist of a written description of the method(s) that will be used to dispose of sewage collected from vessels, including discharge to a municipal sewage system or regularly scheduled collection by a licensed septage hauler. If holding tank waste is to be collected by a septage hauler, applicants are advised to ensure that the waste is disposed of in an acceptable manner.
- The information required under Part 140.4(a)(7) should consist of the total number of recreational and commercial vessels that use the waters within the proposed no-discharge area on a regular basis, both year-round and seasonally, and on a transient basis (the maximum number of boats experienced during a summer holiday weekend). Applicants should also

provide the actual or estimated number or percentage of boats with Type III MSDs. Remember, EPA Region I's suggested range ratio of pump-out facilities to boats is based on boats with holding tanks.

EPA Region I also feels that some additional information is desirable and would facilitate the review and approval process. We encourage all applicants to provide additional information, including:

- A *brief* description of existing point source discharges (such as sewage treatment plants, industrial direct dischargers, CSOs, and separate stormwater pipes) that either impact or have the potential to impact water quality within the proposed no-discharge area. The fact that other potential pollution sources exist does not justify exclusion from consideration for no-discharge status.
- A summary of existing or proposed local ordinances enacted to enhance regulation of vessel sewage discharges.
- A description of how the prohibition on vessel discharges will be enforced once Federal no-discharge status has been granted.
- A description of a public information program that will be used to educate boaters about the environmental impacts of boat sewage discharges, availability of pump-out and dump-out facilities, and which areas are designated as no-discharge areas.

"Special" No-Discharge Application Designations

Statutory Requirements - Section 312(f)(4)(A)

Another provision of Section 312 that deals with prohibition of vessel sewage discharges is Section 312(f)(4)(A). This subsection states that:

"If the Administrator determines upon application by a State that the protection and enhancement of the quality of *specified* waters within such State requires such a prohibition, he shall by regulation completely prohibit the discharge from a vessel of any sewage (whether treated or not) into such waters." (emphasis added)

The legislative intent of Section 312(f)(4)(A) is that it is to be used in "*extremely limited circumstances* such as would be found in national parks, national wilderness areas, and national recreation areas." (emphasis added) It is not intended to provide states with a way to circumvent the requirements of Section 312(f)(3) for adequate pump-out facilities in areas where such facilities could be made available. The Boundary Waters Canoe Area in Minnesota is the only waterbody in the United States that has been granted **no-discharge** status under Section 312(f)(4)(A). EPA will uphold the original intent of this provision by considering only those Section (f)(4)(A) applications that meet these strict requirements.

An important difference between Sections 312(f)(3) and (f)(4)(A) is that, under the former, it is the state that makes the determination that the waters within the proposed no-discharge area require greater protection. The state only has to demonstrate that "adequate and reasonably available" pump-out facilities exist. Under Section 312(f)(4)(A), the primary criterion for no-discharge designation is the need for additional protection. EPA evaluates the application based on this criterion, not on whether pump-out facilities are present.

Regulatory Requirements - 40 CFR 140(b)

Standards pursuant to Section 312(f)(4)(A) are found in 40 CFR Part 140.4(b). Under Part 140.4(b):

"A State may make a written application to (EPA), under Section 312(f)(4) of the Act, for the issuance of a regulation completely prohibiting discharge from a vessel of any sewage, whether treated or not, into particular waters of the United States or specified portions thereof, which waters are located within the boundaries of such State. Such application shall specify with particularity the waters, or portions thereof, for which a complete prohibition is desired. The application shall include identification of water recreational areas, drinking water intakes, aquatic sanctuaries, identifiable fish-spawning and nursery areas, and areas of intensive boating activities."

Supplemental Requirements - Advisory Guidelines

As is the case with 40 CFR Part 140.4(a), some of the requirements described in Part 140.4(b) need further clarification. Again, *meeting the requirements of these "advisory guidelines" is not mandatory*; an application for no-discharge status under Section 312(f)(4)(A) will not be denied if the requirements are not met.

- The "description of the waters, or portions thereof" should consist of both a map delineating the area to be designated as no-discharge, and a written narrative. The map should also show the resource areas that are required to be identified and those described below.
- In addition to identifying the resources required under Part 140.4(b), applicants should also describe other resources, such as shellfish beds and areas used by endangered or threatened species, that will benefit from a complete prohibition of vessel sewage discharges. Applicants are encouraged to provide whatever fecal coliform data exists for waters within the proposed no-discharge area (for a minimum of one year preceding the date of application), and if available, other relevant water quality data (e.g., BOD data). The inclusion of this data will enable subsequent improvements in water quality to be measured.
- In addition to identifying "areas of intensive boating activities," applicants should provide information on the total number of recreational and commercial vessels that use the waters within the proposed no-discharge area on a regular basis, both year-round and seasonally, and on a transient basis. Applicants should also provide the actual or estimated number or percentage of boats with Type III MSDs.

Although not specified in Part 140.4(b), additional information would also be helpful in determining the applicability of a Section 312(f)(4)(A) designation for specified coastal waters. EPA encourages applicants to **provide additional information**, including:

- A **map and written description** of pump-out facilities within and adjacent to the proposed no-discharge area. The location of facilities could be shown on the same map that is used to delineate the proposed no-discharge area and resource areas.
- A **brief description** of existing point source discharges (such as sewage treatment plants, industrial direct dischargers, CSOs, and separate stormwater pipes) that either impact or have the potential to impact water quality within the proposed no-discharge area. The fact that other potential pollution sources exist does not justify exclusion from consideration for no-discharge status.

- A summary of existing or proposed local ordinances enacted to enhance regulation of vessel sewage discharges.
- A description of how the prohibition on vessel discharges will be enforced once Federal no-discharge status has been granted.
- A description of the public information program used to educate boaters about the environmental impacts of boat sewage discharges, availability of pump-out and dump-out facilities, and which areas are designated as no-discharge areas.

General Guidance

A good rule of thumb to follow in preparing applications under either subsection is to provide EPA with as much information as possible. We also encourage applicants to submit a draft application to us before the final application is submitted so we can verify that all the necessary information is included. This measure is intended to streamline the process so that when the final application is submitted by the state governor or chief environmental official it is less likely to be returned by EPA for corrections.

Enforcement of No-Discharge Areas

Enforcement Authority - Section 312(k)

EPA feels that two of the most important factors in successfully implementing a no-discharge program are providing "adequate and reasonably available" pump-out facilities and conducting a comprehensive boater education program. The third important factor is an effective enforcement program. Enforcement of the standards promulgated pursuant to Section 312 is covered under Section 312(k) of the Act. Section 312(k), as amended, states that:

"The provisions of this section shall be enforced by the Secretary of the department in which the Coast Guard is operating and he may utilize by agreement, with or without reimbursement, law enforcement officers or other personnel and facilities of the (EPA) Administrator, other Federal agencies, *or the States* to carry out the provisions of this section. The provisions of this section may also be enforced *by a State.*" (emphasis added)

Section 312(k) basically provides three methods of enforcement: (1) the Secretary of the Department in which the Coast Guard is operating shall enforce; (2) Federal and state officials may be enlisted to enforce by agreement between the Coast Guard and state or agency; and (3) the states may enforce. Due to resource constraints, however, the Coast Guard has been unable to effectively enforce marine sanitation standards for recreational and small commercial vessels. To compensate for the lack of enforcement, the Coast Guard has entered into agreements with states to share enforcement responsibilities.

In New England, the Coast Guard has a "statement of understanding" with each of the five coastal states authorizing them to enforce Federal boating safety standards and forward reports of violations to the Coast Guard for disposition. Under the terms of the agreement, "The State has primary law enforcement responsibility concerning recreational vessels on the waters subject to the jurisdiction of the State." Further, "Violations of Federal safety standards for boats and associated equipment detected by State marine law enforcement officers will be reported to the Coast Guard for disposition." (emphasis added) While the agreement does not state so explicitly, the Coast Guard maintains that their intent is that the state, in addition to assuming responsibility for enforcement of boating safety standards, may also assume responsibility for enforcement of MSD and vessel sewage discharge regulations.

EPA Region I strongly encourages states to opt to undertake enforcement of MSD and vessel sewage discharge regulations. Under present law, all revenues gained through enforcement of Federal MSD standards and regulations must revert to the U.S. Treasury. ~~Proposed amendments to the Clean Water Act would, however, enable states and municipalities to retain fines collected through enforcement of Federal vessel sewage discharge regulations.~~

Under the third method, however, state governments may pass laws that will enable state enforcement officials to assess penalties and collect fines *for violations of Federal standards*. Since the 1977 amendment had already provided for state enforcement by agreement with the Coast Guard, the addition of state authority to enforce in the 1987 amendment means that, in order to avoid impermissible redundancy, the amendment grants to states a different power from that granted under the agreements. The language of the last sentence of ~~subsection (k) grants states enforcement authority without qualification.~~

States may also delegate enforcement authority to local enforcement officials, such as harbor masters, police and health officers. Although ~~political subdivisions of states may not assess their own penalties, states may share the penalties assessed by the harbor masters and health officers enforcing Federal marine sanitation standards with these subdivisions and law enforcement agencies to whom they have delegated their enforcement authority.~~ This will enable states and local subdivisions to receive some monetary compensation for enforcement of Federal standards.

Federal Preemption - Section 312(f)(1)

An important issue regarding the enforcement of vessel sewage discharge statute and regulations is described in ~~Section 312(f)(1)(A), which preempts state enforcement of MSDs.~~ Section 312(f)(1)(A) states in relevant part:

"After the effective date of the initial standards and regulations promulgated under this section, no State or political subdivision thereof shall adopt or enforce any statute or regulation of such State or political subdivision with respect to the design, manufacture, or installation *or use of any marine sanitation device* on any vessel subject to the provisions of this section." (emphasis added)

Section 312(f)(1)(A) indicates the express intent of Congress to preempt the *standards* for marine sanitation with certain limited exceptions, but since 1987 the statute has expressly permitted *state enforcement of Federal standards*. While enforcement was initially entrusted to the Coast Guard, the statute "left room" for exceptions to Federal enforcement in the houseboat and no-discharge area provisions of subsections (f)(1)(B) and (f)(3), and in subsection (k) for delegation of enforcement of states by cooperation agreements. In the ~~1987 amendment to Section 312(k) Congress expressly provided for independent state enforcement of Federal standards.~~

A complete **prohibition of vessel discharges** clearly falls under the category of regulating the use of MSDs. This further clarifies that only the Federal government may confer no-discharge status on coastal waters. ~~As stated previously, however, once Federal approval is obtained, enforcement of no-discharge areas is the primary responsibility of either state and (if delegated) local authorities.~~

Enforcement Methods - Section 312(l)

In accepting responsibility for enforcement of these provisions, a state may further delegate enforcement authority to local enforcement officials such as police and conservation officers, harbor masters, and public health officials. Enforcement actions may simulate those taken by Coast Guard officials at the Federal level. According to Section 312(l):

"Anyone authorized by the Secretary of the department in which the Coast Guard is operating to enforce the provisions of this section may, except as to public vessels, (1) board and inspect any vessel upon the navigable waters of the United States and (2) execute any warrant or other process issued by an officer or court of competent jurisdiction."

Officials charged with enforcing no-discharge areas elsewhere in the country have developed innovative enforcement methods. One such method involves placing fluorescent dye tablets in the holding tanks and marine heads of vessels. If the head is discharged illegally within the no-discharge area, the effluent is readily identifiable and penalties can be assessed. Officials in Avalon Harbor, California have issued 132 citations for illegal discharges since their dye tablet program was initiated in 1988, and the number of violations has been steadily decreasing. Another method involves sealing the Y-valve (which allows direct overboard discharges) in a closed position when in the designated area. **Marinas and other boating facilities located ~~within~~ no-discharge areas can prohibit sewage discharges and require the use of pump-out facilities as a condition for mooring and slip rentals.** On New Hampshire's Lake Winnepesaukee, marina operators are held accountable by state law for launching boats which are capable of discharging sewage wastes.

An important component of any enforcement program is informing boaters and marina/docking facility operators of the regulatory requirements. Educational strategies include: (1) posting large signs visible to boats entering or moored in the harbor area stating that the harbor is a no-discharge area; (2) providing boaters with written notices of the harbor's no-discharge status when collecting mooring fees; and (3) listing the locations of coastal no-discharge areas and pump-out facilities in boater safety and educational brochures distributed to boaters through vessel registration programs and with other mailings which target boaters. Coast Guard Auxiliary, Power Squadron, and local boating association safety courses can incorporate environmental education on proper MSD use and provide information regarding the location of no-discharge areas.

Summary

- Section 312(f)(1)(A) expressly preempts state legislation setting state standards for the design, manufacture, installation, or use of a MSD on any vessel.
- As amended in 1987, Section 312(k) permits states to enact state laws to enforce *Federal standards* with respect to design, manufacture, installation, or use of a MSD for all vessels.
- These state statutes must incorporate the exact standards provided in Section 312 of the Clean Water Act.
- As a normal aspect of enforcement states may assess their own penalties for violations under state law of **Federal** marine sanitation standards.
- Section 312(k) *does not* authorize the political subdivisions of states to enact ordinances to enforce **Federal** MSD standards or to assess penalties.
- By their statutes states may delegate the authority given to them by Section 312(k) to help enforce **Federal** marine sanitation standards to local police, harbor masters, and other enforcement personnel.
- Although political subdivisions of states may not assess their own penalties, *states may share the penalties which they assess* for violations of their laws enforcing **Federal** marine sanitation standards *with those subdivisions and law enforcement agencies to whom they have delegated their enforcement authority.*

- Only no-discharge areas approved by EPA are legally enforceable; once EPA approval has been received, enforcement is the primary responsibility of state and (if delegated) local officials.

BIBLIOGRAPHY

JRB Associates, Inc. 1981. Analysis of Wastewater Discharge from Marine Sanitation Devices. Final Report prepared for the Environmental Protection Agency by JRB Associates, Inc., McLean, VA.

Milliken, A.S., and Lee, V. 1990. Pollution Impacts from Recreational Boating. Rhode Island Sea Grant. University of Rhode Island Bay Campus, Narragansett, RI.

Novak, J.T., McDaniel, C.R., and Howard, S.C. 1990. The Effect of Boat Holding Tank Chemicals on Treatment Plant Performance. *Research Journal Water Pollution Control Federation* 62(3):288-295.

Ross, N.W. 1991. Personal communication. International Marina Institute, Wickford, RI.

Tiedemann, J. 1989. Pump It or Dump It?! An Analysis of the Sewage Pumpout Situation in the New Jersey Coastal Zone. New Jersey Sea Grant Marine Advisory Service, Rutgers Cooperative Extension, Toms River, NJ.

U.S. Environmental Protection Agency. 1985. Coastal Marinas Assessment Handbook. EPA Region IV, Atlanta, GA.

APPENDIX A

Common questions related to the use of MSDs and no-discharge areas.

- 1) Q: What waters are eligible for no-discharge status?
A: All navigable waters of the United States are potentially eligible for no-discharge status.
- 2) Q: Who can confer no-discharge status on coastal waters?
A: The EPA Regional Administrator for the EPA Region in which the no-discharge area is sought.
- 3) Q: Who can prepare and submit a no-discharge area application?
A: Anyone may prepare an application, but it must be signed and submitted by the governor or chief environmental official of the state in which the prohibition is being sought. If the proposed no-discharge area includes waters under the jurisdiction of more than one state, the governors or chief environmental officials from each of the states must sign the application. All no-discharge applications shall be submitted to the Regional Administrator for the EPA Region in which the no-discharge area is being sought.
- 4) Q: What information must be included in the application?
A: All the required information is described in the previous five pages. If you would like to see examples of previous no-discharge area applications, contact EPA Region I or water quality officials from those states where Federal no-discharge areas have been conferred for coastal waters (e.g., California and Florida).
- 5) Q: Can treated wastes be discharged in a no-discharge area?
A: No. The discharge of all wastes, whether treated or not, are prohibited in a federally designated no-discharge area. Y-valves for through-hull discharges must be set in the closed position and must be secured. Type I and II MSDs cannot be used, and portable toilets must be emptied in shoreside restrooms or dump-out facilities.
- 6) Q: I want to do the right thing, but I can't find a pump-out facility. What should I do?
A: Use marinas that provide pump-out services. Also, seek out and use shoreside facilities. Regionally, EPA is encouraging the installation of pump-outs facilities at both private and public docks and marinas. Several New England states have in place or are proposing policies or regulations that will lead to an increased number of pump-out facilities. One of the reasons marinas don't provide pump-out services is because they claim there is no demand for them - demand them! The Water Quality Act requires **untreated wastes** (those that pass directly through the hull without any treatment) to be **discharged outside** the three-miles territorial water limit. If you have a holding tank and no pump-outs facilities exist in your boating area, and your boating area is *not* a **no-discharge area** and you must discharge sewage, you must do so at least three miles **from shore**. If you have a Type I or II MSD, you should discharge in an area of great **dilution and flushing**, and away from any swimming beaches, shellfishing areas, or other important resource areas.
- 7) Q: How much does it cost to install an MSD on my boat?
A: Holding tanks start at around \$100. By comparison, treatment/discharge systems classified as Type I or II MSDs start at \$600.
- 8) Q: If additives are toxic to the environment, what can boaters and marina operators do?
A: There are now additive products on the market that are alcohol-based and are the most

environmentally benign products available. Marina operators can choose to sell only those additives that contain non-toxic ingredients.

- 9) Q: How much does it cost for a marina to purchase and install a pump-out facility?
A: Costs for the pump-out assembly alone range from under \$500 for a manual version to \$2500-3500 for electric powered units. The total installed cost of most commercially manufactured systems ranges from \$4000 to \$8000. Inexpensive "home-made" systems can also be built for marinas that service a small number of boats with holding tanks.