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Boater Waste Disposal "Briefing Paper" and Proceedings from
Narragansett Bay Project Management Committee 63 pp

Narragansett Bay Estuary Program

**BOATER WASTE DISPOSAL
"BRIEFING PAPER"
AND
PROCEEDINGS FROM
NARRAGANSETT BAY PROJECT
MANAGEMENT COMMITTEE**

**Ms. Caroline A. Karp,
Dr. Clayton A. Penniman,
and the staff of the
Narragansett Bay Project**

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Recommendations included in this briefing paper represent preliminary decisions reached by the Management Committee and are subject to amendment prior to their incorporation into the Comprehensive Conservation and Management Plan (CCMP).

FOREWORD

The United States Congress created the National Estuary Program in 1984, citing its concern for the "health and ecological integrity" of the nation's estuaries and estuarine resources. Narragansett Bay was selected for inclusion in the National Estuary Program in 1984, and the Narragansett Bay Project (NBP) was established in 1985. Narragansett Bay was designated an "estuary of national significance" in 1988. Under the joint sponsorship of the U.S. Environmental Protection Agency and the Rhode Island Department of Environmental Management, the NBP's mandate is to direct a program of research and planning focussed on managing Narragansett Bay and its resources for future generations.

The NBP will develop a draft Comprehensive Conservation and Management Plan (CCMP) by December, 1991, which will recommend actions to improve and protect the Bay and its natural resources.

The NBP has established the following seven priority issues for Narragansett Bay:

- management of fisheries
- nutrients and potential for eutrophication
- impacts of toxic contaminants
- health and abundance of living resources
- health risk to consumers of contaminated seafood
- land-based impacts on water quality
- recreational uses

The NBP is taking an ecosystem/watershed approach to address these problems and has funded research that will help to improve our understanding of various aspects of these priority problems. The Project is also working to expand and coordinate existing programs among federal, state and local agencies, as well as with academic researchers, in order to apply research findings to the practical needs of managing the Bay and improving the environmental quality of its watershed.

The attached report includes a "briefing paper" prepared for consideration by the Management Committee of the Narragansett Bay Project (Section I) and Management Committee Proceedings (Section II). Section II includes a) minutes of the Management Committee meeting(s) where the issues identified in the "briefing paper" were discussed (Appendix A); b) preliminary recommendations endorsed by the Management Committee (Appendix B); and c) Management Committee attendance (Appendix C). The Narragansett Bay Project will subsequently estimate the cost of each preliminary recommendation made by the Management Committee and identify possible funding sources. This information will enable the Management Committee to develop the draft CCMP including priorities for implementation over a five year planning horizon. Upon completion, the draft CCMP will be available for public review and comment.

TABLE OF CONTENTS

Foreward

Table of Contents

SECTION I - BOATER WASTE DISPOSAL "BRIEFING PAPER"

Synopsis	i
Issues For Management Committee Consideration	1
Issue A: Elimination of Boat-Sewage Discharges	1
Issue B: Establishment of Additional Marina Pump-out Facilities	7
Issue C: Access of Marina Pump-out Facilities to Public Sewers	10
Issue D: Education and Enforcement of MSD Use	13
Issue E: Encouragement and Enforcement of Pump-out Facility Use	18
Issue F: "No Discharge" Zone Designation	20
Bibliography	24
Appendix 1	26
SECTION II - MANAGEMENT COMMITTEE PROCEEDINGS	
A. Management Committee Meeting Minutes	A-1
B. Summary of Management Committee Decisions	B-1
C. Management Committee Attendance	C-1

SECTION I:

**BOATER WASTE DISPOSAL
" BRIEFING PAPER "**

**Ms. Caroline A. Karp,
Dr. Clayton A. Penniman,
and the staff of the
Narragansett Bay Project**

**"Now...we have begun a long voyage. If we get along well together, we shall
have a comfortable time; if we don't, we shall have hell afloat."**

Richard Henry Dana; Two Years Before the Mast - 1840

SYNOPSIS

Boaters operating within Narragansett Bay potentially represent a seasonally and locally significant public health risk related to sewage discharge based upon the location of existing boat anchorages, boat density and the lack of publicly available toilet and pump-out facilities. There were over 160 private marinas, yacht clubs, boat yards, town docks and launching ramps operating within Narragansett Bay (and Mount Hope Bay) waters in summer 1988. (Boating Almanac, 1988; CRMC, 1988). These facilities provided in excess of 15,000 berths, slips and moorings for recreational and commercial vessels, not including "wet" and "dry" storage on land (Ibid.). The actual level of boating activity in Narragansett Bay is, however, much higher than reported slip capacity. Over 29,000 boats were registered with the Rhode Island Division of Boating Safety in 1988 (29,900 in 1989). In excess of 28,000 additional boats, including vessels documented by the U.S. Coast Guard (18,000), visitors (6,000), boats registered in Massachusetts' portion of Mount Hope Bay and the Taunton River (number unknown), and vessels not required to register (4,000), are also estimated to have used Rhode Island waters in 1988 (Roman, 1990).

As of summer 1988, only 27% of the marinas, yacht clubs and boat launching facilities bay-wide, were reported to have shoreside toilet facilities and there were only two operational marina pump-out facilities in Narragansett Bay waters (Boating Almanac, 1988; CRMC, 1988). Greenwich Bay, which is heavily used by recreational boaters and is also a designated Shellfish Management Area, is surrounded by 32 marinas with slip and mooring capacity for over 4,000 boats (Ibid.). Only 12 of the Greenwich Bay marinas were reported to have shoreside toilet facilities, not including restaurants, and none had operational pump out facilities in 1988 (Ibid.). [Five (5) marina pump-out stations were in operation in Narragansett Bay as of summer 1990 and ten (10) more are planned or under construction (RIMTA 1990)].

The public health risk exists to the extent that boaters may discharge untreated sewage to bay waters in the vicinity of shellfish harvesting areas and bathing beaches. [See "Sewage Contamination-Pathogens" briefing paper, 1990.] Although the magnitude of boat-related fecal discharges is difficult to quantify because boats are mobile and discharges are likely to be surreptitious, 769 acres of shellfish harvesting waters in Narragansett Bay are presently seasonally restricted by RIDEM (RIDEM, 1990), 115 acres in the coves surrounding Greenwich Bay (J. Migliore, RIDEM, pers. commun., 1.2.91). These closures are due to the proximity of boating facilities and shellfishing areas and, in some cases, observed exceedance of fecal coliform concentrations in waters adjacent to marinas.

This briefing paper focuses primarily on eliminating boater discharges of sewage to Narragansett Bay. It should be noted, however, that boater discharges of floatables (trash, sewage solids), solvents (marine paints, antifreeze, cleaning agents) and petroleum derivatives (gasoline, oil, grease) also contribute to water quality and habitat degradation. These issues will be addressed based on recommendations made by the Implementation Committee of the Chesapeake Bay Program to the Chesapeake Executive Council in January 1991.

ISSUES PRESENTED FOR MANAGEMENT COMMITTEE CONSIDERATION

ISSUE A: Should the State of Rhode Island and affected municipalities take additional steps to assure that boat-sewage discharges are eliminated in order to meet State water quality goals?

ISSUE B: Should additional marina pump-out facilities be established around Narragansett Bay?

ISSUE C: Should marina pump-out facilities be tied to public sewers wherever possible, especially at facilities where boats are continuously occupied? Should CRMC consider designating some harbors or marinas that have access to sewer lines as exclusive ports for "live-aboards"?

ISSUE D: Should efforts to educate boaters and enforce boater use of required MSD equipment be increased?

ISSUE E: Should efforts to encourage and enforce boater use of available marina sewage pump-out facilities be increased?

ISSUE F: Should the State of Rhode Island petition the U.S. EPA for designation of all or part of Narragansett Bay as a "no discharge" zone?

ISSUES FOR MANAGEMENT COMMITTEE CONSIDERATION

ISSUE A: Should the State of Rhode Island and affected municipalities take additional steps to assure that boat-sewage discharges are eliminated in order to meet State water quality goals?

Section 312 of the Federal Water Pollution Control Act, as amended, governs vessel discharges to all navigable waters of the United States, including Narragansett Bay. Under Section 312, untreated wastes from vessels with installed toilets must either be discharged beyond the three mile territorial limit or transferred to land for proper treatment and disposal. Direct discharge to state waters, including Narragansett Bay, is permitted by Section 312 if and only if the waste is properly treated (macerated and disinfected) on-board with a Type 1 or 2 marine sanitation device (MSD). The U.S. Coast Guard is authorized under Section 312, as amended, to enforce discharge restrictions with respect to all vessels with installed heads and can share or delegate this authority to the states by agreement.

Rhode Island Department of Environmental Management (RIDEM) is separately authorized to enforce prohibitions on the unpermitted disposal of pollutants, including untreated or partially treated sewage, to the State's surface waters (Rhode Island General Laws (R.I.G.L.) 46-12-5). In addition, RIDEM is required to investigate the sanitary quality of shellfishing waters (R.I.G.L. 20-8.1-3) and to determine if the waters are "polluted" based on direct fecal coliform measurements or "evidence that significant volumes of fresh raw sewage or inadequately purified sewage may reach the area intermittently" (R.I.G.L. 20-8.1-4).

Although both federal (Section 312, Clean Water Act) and state law (R.I.G.L. 46-12-5) prohibit the discharge of untreated fecal waste in state waters, i.e., within the three mile territorial sea, the Federal and State governments' ability to enforce prohibitions on boater disposal of untreated sewage is severely limited by the logistics of inspecting individual boats (West, 1982). As a result, EPA (1981) estimated that only 25% of boaters, nationwide, are in compliance with federal regulations in terms of having required MSD equipment on board and/or having it properly functioning. The International Marina Institute estimates that the rate of compliance with MSD requirements may be closer to 10% (N. Ross, Boater Waste Round Table, December 1990).

Of the 57,000 vessels estimated to be using Rhode Island waters, which does not include boats registered or moored in Massachusetts' portions of the bay basin, 34,000 are expected to have either an installed or portable toilet (marine head) based upon boat length and port of origin (Roman, 1990). Most of the recreational boats in Narragansett Bay with on-board toilets use either a Type 3 Marine Sanitation Device (holding tank with a Y-valve to allow off-loading of wastes) or a portable toilet (Ibid.). Since Type 3 MSDs and portable toilets do not provide treatment, the boat wastes must either be discharged outside the three mile limit or "pumped out" for treatment and disposal at a land-based facility. However, as of the 1988-89 boating season, there were only two operational marina pump-out facilities in Narragansett Bay (five operational as of 1990). As a result, some level of illegal vessel discharge in bay waters is likely to occur.

Although boater discharges can be inferred based on the scarcity of land-based toilet and pump-out facilities, the magnitude of boater discharges is often difficult to measure except in some coves and embayments, e.g., Potters Cove, where no other anthropogenic sources of fecal contamination exist. Boaters represent only one of many potential sources of fecal contamination to Narragansett Bay. For example, in developed harbors and marinas other sources could include surface runoff from failed septic systems, stormdrains conveying human waste from illegally connected sewers or leachate from failed septic systems and animal waste. (See Appendix 1., "Relative contribution of fecal contaminants to Narragansett Bay, by source, based on estimated annual and daily input of fecal coliform bacteria"; and "Sewage Contamination: Pathogens" briefing paper, 1990.) In addition, boater discharges are difficult to quantify because boats are mobile, boat use and occupancy rates are variable, and discharges are likely to be surreptitious and sporadic.

Since direct measurements of boater discharge are difficult to obtain, an indirect estimation procedure has been used to compare boater inputs of fecal waste with other sources (Appendix 1). The Rhode Island Division of Planning's "Marinas Task Study" (1978) estimated that a boat used two days per week with a two person occupancy rate would generate 115 gallons of untreated sanitary waste per season. Using the "Marinas Task Study" estimations and a boat population of 34,000, 3.9 millions gallons of sanitary waste could potentially be discharged to Narragansett Bay by boaters per boating season. If only 3,400 or 10% of the boaters presumed to have marine toilets discharged untreated sewage wastes overboard on the same day,

the estimated combined discharge would exceed measured fecal coliform concentrations from the Narragansett Bay Commission's chlorinated final effluent by 50 to 50,000 times (Roman, 1990). Using the same hypothetical level of boater discharge, boater wastes would be closely comparable to daily inputs of fecal coliform bacteria from the Blackstone and Taunton Rivers and the modeled discharge from CSO Areas C and 9 in the Providence River (Appendix 1). The hypothetical level of boater discharge may be unrealistic. However, the present level of boating activity in Narragansett Bay potentially represents a locally significant source of fecal contaminants (and pathogens) during the boating season to the extent that vessel discharges of untreated or partially treated sanitary waste occur in poorly flushed or shallow waters in close proximity to shellfishing and swimming areas, or otherwise violate state water quality standards. [See the "Sewage contamination: Pathogens" briefing paper, 1990, for a discussion of point and nonpoint sources, indicators and public health risk associated with sewage discharges to marine waters.]

Although Rhode Island Marine Trades Association (RIMTA) reports a 10 to 20% decline in boating activity since 1989 (K.Kubic, RIMTA, pers. commun., 1.4.91), the number of vessels registered to operate in Rhode Island waters has increased at the rate of 6 to 8% per year since the late 1970's to a high of 29,900 in 1989 (RIDEM Division of Boating Safety). Coastal Resources Management Council (CRMC) reports a 75% increase in the construction of boat slips and moorings over this period (1978 and 1988). Based on reported levels of boating in Narragansett Bay, the boat "carrying capacity" of several coves and embayments has been exceeded based upon calculations derived from the Interstate Shellfish Sanitation Conference (ISSC) model (Roman, 1990). [The ISSC model is used to calculate the maximum number of boats that can operate within shellfishing areas without exceeding the Food and Drug Administration's fecal coliform standard for certified shellfish growing waters. The formula has been approved by the U.S. EPA and adopted by the National Shellfish Sanitation Program which oversees certification of shellfish growing waters in Rhode Island and Massachusetts.]

In summary, although CRMC is encouraging coastal communities to draft Harbor Management Plans which will include provisions for marina pump-out facilities, and RIDEM prohibits the expansion of marinas in Class SA waters, a potentially serious public health risk continues to exist given 1) existing boat density and use, 2) the limited availability of marina pump-out facilities, 3) the boaters' record of using pump-outs even when available, 4) the government's

ability to enforce MSD requirements and prohibitions on illegal discharge, 5) available evidence of boat discharge in the bay, and 6) the increasing demand for recreational boating in Narragansett Bay.

Alternative A-1. The State of Rhode Island and affected municipalities do not need to take additional steps to assure that boat-sewage discharges are eliminated in order to meet State water quality goals.

Boaters represent a relatively unimportant source of pollutants to Narragansett Bay. In addition, there is no evidence of a significant water quality or public health problem related to boater discharges of treated or untreated sewage to Narragansett Bay even though the density of boats in some coves and embayments exceeds the carrying capacity indicated by the ISSC formula for certifying shellfish growing waters. The existing policies of RIDEM and CRMC with respect to regulating marina expansion and development, placement of mooring fields, and disposal of vessel waste are adequate to protect bay water quality, habitat, important living resources and public health.

In addition, the municipal Harbor Management Planning process started by CRMC represents the appropriate level of government to make decisions about the desired balance between commercial and recreational, and public and private uses of Narragansett Bay. Additional Federal or State regulation could conceivably limit entrepreneurial investment in desirable marine-dependent businesses such as marinas, yacht clubs etc. and ultimately impair recreational access to Narragansett Bay.

Alternative A-2. The State of Rhode Island should take additional steps to assure that boat-sewage discharges are eliminated in order to meet State water quality goals.

The volume of vessel discharge of sewage within Narragansett Bay is relatively insignificant relative to other sources of treated and untreated fecal waste. However, the State of Rhode Island has a statutory obligation under both federal and state law to protect water quality, significant marine habitats, important living resources and public health for the benefit of all citizens of the State (Federal Water Pollution Control Act of 1972, R.I.G.L. 46-12-1 et seq.). Consequently, the State has an obligation to regulate all pollutant sources that cause water quality or resource degradation or impair historic or existing uses of Narragansett Bay.

There is direct empirical evidence of fecal contamination (high fecal coliform levels) in the vicinity of marinas or mooring fields in Potter Cove, Greenwich Cove, Dutch Island Harbor, Wickford Harbor, Bristol Harbor, Warren River, Sakonnet River, and Mount Hope Bay, among others (RIDEM, 1990). A total of 769 acres of shellfish growing waters were seasonally closed to shellfishing in 1990 based on the proximity of boating facilities to shellfishing grounds (RIDEM, 1990a). The present scarcity of marina pump-out facilities in Rhode Island (two operational in 1988-89, five operational as of 1990) combined with the low use rate of existing marina pump-out facilities (120 pump-outs during 1988) provides circumstantial evidence that some level of boat discharge occurs in Narragansett Bay.

In order to abate existing vessel-related sources of fecal contaminants and ensure that no additional shellfish management or harvesting areas become restricted due to vessel discharges,

- RIDEM and CRMC should continue or resume discussions begun in 1989 regarding the reconciliation of RIDEM water quality classifications, CRMC water use classifications and state regulations regarding uses of tidal waters.
- RIDEM and CRMC should continue or resume discussions begun in 1988 regarding the development of a written policy for regulating boater discharges and construction of marinas, docks and mooring fields. For example, RIDEM and CRMC should clearly identify what number of berths or moorings constitute a "marina" or "boating facility" for the purposes of regulation.
- RIDEM and CRMC should continue to enforce restrictions on marina expansion and development in Class SA and Type 1 and 2 waters in order to assure that boating activity does not cause water quality violations. RIDEM and CRMC should also continue to restrict marina expansion, development and the development of mooring fields in all marine waters 1) where water quality standards are already exceeded, 2) that are included within the boundaries of marine sanctuaries such as the Narragansett Bay National Estuarine Research Reserve (NERR), 3) identified as finfish nursery or spawning grounds, 4) identified as shellfish harvesting areas that are of significant or outstanding commercial or recreational value, or 5) where access to shellfish harvesting areas, and bathing beaches may be jeopardized by potential increases in boat sewage discharges.

• RIDEM Divisions of Water Resources, Fish and Wildlife and Planning and Development (Natural Heritage Program) and CRMC should prepare and update maps on a biennial basis that indicate the location of

- high quality (Class SA, Type 1 and 2) waters,
- critical or significant tidal and subtidal habitats,
- shellfish harvesting areas that are of significant or outstanding commercial or recreational value,
- threatened or endangered marine flora and fauna,
- bathing beaches, and
- marine waters where state water quality criteria are currently exceeded.

The maps should be based on existing information, including information compiled by the NBP "Habitat Inventory/Species Mapping" program, and should be incorporated into the Coastal Resources Management Plan (CRMP), local Harbor Management Plans and RIDEM regulations to designate "special or protected" areas. The maps should be used and updated by RIDEM and CRMC to determine where restrictions on marina expansion, placement of mooring fields and/or boater discharge should apply.

• RIDEM and appropriate Massachusetts authorities should work together to develop and display a sign that clearly indicates the availability of pump-out facilities. The sign should be immediately recognizable and visible from the water.

• RIDEM should consider issuing "discharge permits" to marinas. Since marinas and mooring fields behave like nonpoint sources of fecal wastes, the R.I. Pollutant Discharge Elimination System (RIPDES) permit would apply to a zone or dilution field around the seaward perimeter of the facility. The permits would require marinas to comply with the state's marine water quality criteria and would cover all facility-related point and nonpoint source pollutant inputs, including fecal discharges. The facilities would be subject to self-monitoring criteria and reporting standards.

• RIDEM and CRMC should continue to work with and encourage marinas to require boaters to obey all rules and regulations relating to boater discharge and to report and, if necessary, expel all violators of these rules.

Preferred Alternative. A-2.

ISSUE B. Should additional marina pump-out facilities be established around Narragansett Bay?

A study of the use of sewage pump-out facilities by recreational boaters in Chesapeake Bay (Strand, 1990) indicated that boater use was dependent on convenient access, cost and the time required per pump-out. The study also found that although less than one in 20 boaters ever used a pump-out facility, boaters were twice as likely to use a pump-out if it was located in his/her home marina (Ibid.). There is also some local evidence for the importance of convenient access to sewage pump-out facilities. The Block Island Harbormaster reported a 160% increase in pump-out use between the 1989 and 1990 boating seasons. The increase in use was attributed to increased awareness of environmental problems caused by boater discharge and convenience of the service (Block Island Times, October 20, 1990).

Government and trade organization representatives who participated in the 'Boat Sewage Management Task Force' instituted by the R.I. Sea Grant Marine Advisory Service and the Boater Waste Round Table (Narragansett Bay Project (NBP), December 1990) generally agreed that sewage pump-out facilities should be strategically located around the bay in order to provide recreational and commercial boaters with convenient access. The present system of requiring sewage pump-out facilities as a permit condition for new marinas and marinas seeking to expand may result in unnecessary facility development in some harbors and inadequate facilities in others. As a result, boater acceptance and use of sewage pump-outs may remain erratic.

There were five operational pump-out facilities in Narragansett Bay in summer 1990 (RIMTA, 1990) and ten (10) more are planned or under construction. Therefore, as of 1990, the bay-wide ratio of pump-out facilities to boats with on-board toilets in Narragansett Bay was approximately one (1) sewage pump-out facility per 7,000 boats. In addition, as of summer 1990, there were no sewage pump-out facilities in several active harbors, including Wickford, Jamestown, Warren and Bristol Harbors, and there was only one operational marina pump-out facility available for the entire Greenwich Bay basin (although two additional private marinas were awaiting permits as of summer 1990).

The RIDEM currently requires pump-out facilities as a condition for permitting 1) the expansion of existing marinas where predicted 'boat carrying capacity' or State water quality standards are presently exceeded, and 2) the development of new marinas. The CRMC

encourages the establishment of marina pump-out facilities through the municipal Harbor Management Planning process. Although the need for and location of public and private pump-out facilities has not been evaluated on a bay-wide basis, RIDEM and CRMC are considering requiring one sewage pump-out station per 300 boats in all harbors that serve both resident and "transient" boaters, and one sewage pump-out station per 500 boats in "parking lot" harbors or coves (J.Migliore, RIDEM, pers. commun., 1.4.91). [NOTE: Recommendations from the URI Sea Grant Marine Advisory Service Boat Sewage Management Task Force are expected to be released in January 1991 and will include a list of potential sites for placement of sewage pump-out stations (T.Brillat, URI, pers. commun., 1.14.91)].

Figures for the number of pump-out facilities necessary to provide adequate service vary from 200 to 250 boats per pump-out facility (EPA, 1985) to 2,000 boats per pump-out facility (Wolf, 1989). Consequently, other jurisdictions have addressed the siting of pump-out facilities differently. Delaware, for example, requires pump-out facilities at every marina that services vessels with Type 3 MSDs (Del. Gen. Laws Chapter 60, Title 7, Section 6002-6036, 1989). In 1989, the State of Washington passed legislation requiring sewage pump-outs at any facility located in environmentally sensitive or polluted waters, or that had over 125 slips (Title 88 Revised Code of Washington (RCW), Section 4). By regulations adopted pursuant to Mass. Gen. Laws Chapter 91, Section 59(B), Massachusetts can require sewage pump-outs to be installed at any boating facility that proposes to add ten (10) or more berths above existing capacity, as a licensing condition.

In summary, the number and location of marine pump-out facilities are key factors in reducing or eliminating boater discharges of sanitary waste to Narragansett Bay. Factors identified as significant in determining the appropriate ratio of boats per pump-out facility include geographic location of the facility, public notice of pump-out locations, accessibility to boaters, ease of use, and cost per pump-out.

Alternative B-1. No additional marina pump-out facilities are necessary.

RIDEM's present policy of requiring marina pump-out facilities as a condition of permitting marina expansion and the development of new marinas is sufficient to assure boater access.

Alternative B-2. Additional marina pump-out facilities should be established around Narragansett Bay.

In order to assure convenient boater access to and use of pump-out facilities, Rhode Island and Massachusetts should develop a bay-wide marina pump-out siting plan, and

- Rhode Island and Massachusetts should establish and maintain publicly available shore-based toilet and/or pump-out facilities at heavily used state parks with boat facilities.
- Coastal communities should establish and maintain publicly available shore-based toilet and/or pump-out facilities in municipal harbors.
- As proposed by RIDEM (LMigliore, pers. commun., 1.4.91), and consistent with U.S. EPA guidelines for designating "no discharge" zones, the RIDEM and CRMC should work toward requiring a minimum of one pump-out station per 300 boats with marine sanitation devices (MSDs) or portable toilets in "transient" harbors, and one pump-out station per 500 boats with MSDs or portable toilets in "parking lot" harbors for the use of both resident and transient boaters. This approach should be adopted for all of Narragansett Bay, including Massachusetts' portions of Mount Hope Bay and the Taunton River.
- Regional land-based pump-out facilities and/or the use of pump-out barges should be encouraged.
- Sewage pump-out facilities should be located at or near central service areas such as fuel docks wherever possible in order to provide convenient access and increase the probability of use by boaters.
- Pump-out facilities, as referred to in these recommendations, are not restricted to fixed, shore-based facilities.

Preferred Alternative. B-2.

ISSUE C. Should marina pump-out facilities be tied to public sewers wherever possible, especially at facilities where boats are continuously occupied? Should CRMC consider designating some harbors or marinas that have access to sewer lines as exclusive ports for "live-aboards"?

Sanitary wastes collected at marine facilities still require treatment prior to disposal whether the wastes are handled as septage or discharged directly to a Wastewater Treatment Facilities (WWTF). At present, marine facilities either have to 1) treat the waste on-site pursuant to an on-site septic system (ISDS) permit, or 2) hold the waste on site and have it periodically pumped by a septage hauler for eventual conventional treatment at a WWTF, or 3) directly tie-in to a local WWTF. On site treatment of boater waste presents problems related to soil type (permeability), depth to water table, sea water intrusion and exchange, and chemical and physical characteristics of the waste that interfere with microbial decomposition. In addition, there is some evidence that viral particles can migrate significant distances down gradient from fully functional septic systems. [See "Sewage Contamination-Pathogens" briefing paper.]

On-site holding tanks are subject to primary problems associated with corrosion and maintenance and secondary problems related to ultimate disposal at WWTFs. Although the Narragansett Bay Commission, Jamestown, Newport and Warwick WWTFs accept boat septage, many Rhode Island WWTFs do not out of concern that the concentration of chemical additives used in boat waste (e.g., formalin, chlorine, hyperchlorous acid) may act as a toxic "shock" load to the biological treatment process (T. Uva, Boater Waste Round Table, December 1990), or increase metals' loadings to the plant because of metals contained in the dyes (E. Gleber, Boater Waste Round Table, December 1990). More research may be required in this area. However, the additives commonly used to preserve and deodorize boat wastes are quickly broken down when mixed and diluted with normal sanitary wastestreams (T. Uva, Boater Waste Round Table, December 1990). In addition, "benign" disinfection and deodorizing agents are commercially available (M. Cote, US EPA, pers. commun., 1.11.91). Most significantly, the Rhode Island Division of Planning "Marinas Task Force" (1978) estimated that the total volume of sanitary waste generated by boaters per day would represent less than 0.1% of the design capacity of Rhode Island WWTFs. Direct tie-ins to local WWTFs would eliminate several of the problems described above to the extent that treatment would not occur on site, the on-site holding

tank could be down-sized or eliminated, and waste is continuously discharged to the WWTF at low volumes.

Alternative C-1. Marinas and other marine facilities that are presently served by on-site septic systems should not be required to tie-in to municipal WWTFs even where possible.

The total volume of boater waste generated per season and the small number of "live-aboards" would not justify the expense of direct tie-ins to WWTFs. In addition, many WWTFs are reluctant to accept boat wastes because of the chemicals commonly used in vessel holding tanks, portable toilets and sewage pump-out stations and the possible lack of available dilution.

Alternative C-2. Marinas and other marine facilities that are presently served by on-site septic systems should be required to tie-in to municipal WWTFs wherever possible.

In order to assure proper treatment and disposal of boater wastes,

- Marinas and other marine facilities should be required to directly tie-in to existing municipal sewer lines wherever possible. Within the limits of their regulatory jurisdiction, EPA, RIDEM, Massachusetts Department of Environmental Protection (MADEP) and local WWTF industrial pretreatment coordinators should develop criteria for chemical treatment and WWTF handling of boat wastes. [NOTE: The RIDEM Division of Water Resources has worked with some municipal industrial pretreatment programs on an ad hoc basis to identify boating facilities as "significant industrial users". Affected facilities are then subject to "local limits" for discharge to the sewer system, required to install pretreatment equipment (e.g., holding tanks) as necessary, and monitor facility effluents (E. Gleber, RIDEM, pers. commun., 1.11.91)]

- If necessary, EPA, Rhode Island and Massachusetts regulatory agencies should draft legislation and regulations to require municipal wastewater treatment facilities to accept septage from marine pump-out facilities. EPA, Rhode Island and Massachusetts regulatory agencies should work with municipal authorities, including WWTFs, to assure that barriers to septage treatment are not unnecessarily created along jurisdictional lines, i.e., that one coastal community does not refuse to accept boat waste generated in an adjacent community.

- EPA, Rhode Island and Massachusetts regulatory agencies should evaluate alternative methods for treating (disinfecting, deodorizing) boater wastes that reduce toxicity and concentrations of 'toxic' metals and organic compounds.
- By December 1991, based on available information regarding the use, or limitations on use, of specific chemicals used to treat (disinfect, deodorize) boater wastes, the URI Boat Sewage Management Task Force should generate a list of chemicals whose use should be phased out by 1994. If effective alternative treatment methods are identified, the federal and state agencies (within the framework of their regulatory jurisdictions), RIMTA and other trade organizations should promote and/or require their use by boaters.
- Vessels that are continuously occupied for any length of time (e.g., greater than two days) should be required to dock at marinas with direct tie-ins to municipal sewers, shore-based toilet facilities or sewage pump-out facilities. The Coastal Resources Management Council (CRMC) in cooperation with the RIDEM, the R.I. Marine Trades Association (RIMTA), the International Marina Institute and other trade organizations, should assess the number and location of "live-aboards" and houseboats using Narragansett Bay facilities in order to evaluate the magnitude of the problem.
- The RIDEM, CRMC and their Massachusetts counterparts should formally adopt the RIDEM and CRMC proposal to require one pump-out station per 300 boats in "transient" harbors, and one pump-out station per 500 boats in "parking lot" harbors for the use of both resident and transient boaters in Narragansett Bay, including Massachusetts portions of Mount Hope Bay and the Taunton River. [NOTE: EPA Region I expects to use this approach in its guidance on pump-out siting for potential no-discharge zone designations throughout Region I (M. Cote, US EPA, pers. commun., 1.11.91).]
- The U.S. Army Corps of Engineers, RIDEM, CRMC and their Massachusetts counterparts should require developers of marina facilities to submit complete plans for boater waste disposal as a condition of permits for expansion or development of new facilities.
- The RIDEM should base its formula for calculating the size of on-site holding tanks for boater wastes on the projected maximum number of boats to be served per pump-out station per three day period. In lieu of facility-specific information regarding number of vessels, occupancy rate and frequency of use, RIDEM should base its

dimensional requirements for holding tanks on the R.I. Division of Planning's calculations of waste generated per boat per three day period ("Marinas Task Study", 1978). In order to allow 'down-sizing' of holding tanks where physical site restrictions exist, the RIDEM should require more frequent pump-outs and establish a mandatory holding tank maintenance schedule as a condition of permitting.

- The RIDEM should require municipal WWTFs that are not presently accepting boater waste from boating facilities within their jurisdiction or service area to include provisions for direct marina tie-ins and treatment of boat septage as a mandatory part of the facility planning process. The RIDEM, with input from CRMC and the Rhode Island 'Septage Management Task Force', should continue to work with WWTFs that do accept vessel wastes to encourage them to accept boater wastes from sources outside their jurisdiction or service area. In addition, RIDEM, CRMC and the Rhode Island 'Septage Management Task Force' should include boater septage in their considerations of a statewide policy for septage treatment and disposal, including the establishment of regional wastewater management districts (WWMD's).

- Municipal Harbor Management Plans should include marinas in wastewater management districts as districts are developed.

- Rhode Island and Massachusetts should phase in requirements for sewage pump-out stations at marine facilities, including mooring fields, over a three (3) to five (5) year period in order to 1) evaluate the performance of existing pump-out facilities, including boater acceptance and compliance, 2) establish regulations and procedures for the treatment and disposal of boater wastes, and 3) enable the operators of public and private facilities to secure low-cost financing from funding sources such as AquaFund and the State Revolving Fund.

Preferred Alternative. C-2.

ISSUE D. Should efforts to educate boaters and enforce boater use of required MSD equipment be increased?

The U.S. Coast Guard is authorized under Section 312, as amended, to enforce marine sanitation device (MSD) equipment and discharge restrictions with respect to all vessels with installed heads. (New vessels with permanently installed heads built after January 1977

are required to have certified Type 1, 2 or 3 MSDs. After January 1980, all existing vessels with permanently installed heads are required to have certified Type 2 or 3 MSDs. Vessels with Type 1 MSDs installed before January 1978 may keep the Type 1 device for its operational life.) At present, the U.S. Coast Guard routinely inspects the operation of MSD equipment on all commercial vessels but infrequently inspects MSDs on recreational vessels, and only if the vessels are boarded for other reasons (M. O'Malley, Boater Waste Round Table, December 1990). Although RIDEM appears to have independent federal and state bases for enforcing these requirements in State waters (see below), RIDEM officials have not exercised it out of uncertainty about the scope of the Department's authority (M. Scanlon, Boater Waste Round Table, December 1990).

Section 312(f)(1) specifically prohibits the states from adopting or enforcing "any statute or regulation...with respect to the design, manufacture, or installation or use of any marine sanitation device on any vessel" covered by the statute, i.e., any vessel with an installed head. However, the Coast Guard is authorized by Section 312(k) to "utilize by agreement, with or without reimbursement, law enforcement officers or other personnel and facilities of the Administrator [U.S. EPA], other Federal agencies, or the States to carry out the provisions" of Section 312. (Emphasis added.) Effective 30 June 1987, a "Statement of Understanding" was entered by the U.S. Coast Guard and representatives from all the New England states, including Rhode Island (signed by Mr. Robert Bendick, Director, RIDEM, and Mr. Mal Daniels, Chief, RIDEM Division of Boating Safety) to provide for State enforcement of Section 312. 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 United States which are within the jurisdiction of the State ... [V]iolations 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" (M. Cote, US EPA, pers. commun. as reported by Lt. Commander Peter Blaisdell, Chief, Port Operations Branch, 1st Coast Guard District, 1.11.91).

[NOTE: The RIDEM Division of Water Resources expects to meet with representatives from the Divisions of Boating Safety and Enforcement in the near future to review the Department's authority to enforce marine vessel discharge prohibitions, pursuant to the State's no discharge requirements under R.I.G.L. 46-12-5. (J.Migliore, RIDEM, pers. commun., 12.31.90).]

Section 312 of the Federal Water Pollution Control Act authorizes the discharge of Type 1 and 2 MSD-treated wastes to coastal waters. However, as noted earlier, EPA (1981) estimated that only 25% of boaters, nationwide, are in compliance with Federal regulations in terms of having required MSD equipment on board and/or having it properly functioning. The International Marina Institute estimates that the rate of compliance with MSD requirements may be closer to 10% (N. Ross, Boater Waste Round Table, December 1990). Consequently, defective installation or operation of Type 1 and 2 MSDs may result in unauthorized discharges of untreated or partially treated wastes to Narragansett Bay.

Type 3 MSDs are simply holding tanks, i.e., no treatment is provided. Under Section 312, vessels with Type 3 MSDs must either discharge wastes outside the three mile limit or pump-out the holding tanks at available sewage pump-out stations. Given the historic lack of sewage pump-out facilities within Narragansett Bay, and the common practice of installing Y-valves or through hull fittings to facilitate at-sea disposal, some level of unauthorized discharge of untreated or partially treated wastes to Narragansett Bay probably occurs. Similar concerns exist with regard to disposal of wastes from portable toilets, i.e., in the absence of land-based sewage disposal facilities, some level of unauthorized discharge of untreated or partially treated wastes to Narragansett Bay probably occurs.

Alternative D-1. Efforts to educate boaters and enforce boater use of MSD equipment should not be increased.

There is no evidence of a significant public health risk associated with boater discharges of sewage in Narragansett Bay. Therefore, the cost of enforcement, and the private cost of compliance, are not likely to result in a tangible improvement in water quality or a visible reduction in public health risk.

Alternative D-2. Efforts to educate boaters and enforce boater use of MSD equipment should be increased.

The proper use of MSDs will eliminate one source of untreated sewage to Narragansett Bay. Although the volume of boater discharge is small relative to other sources of sanitary waste such as municipal WWTFs, the present level of boating activity in Narragansett Bay represents a seasonally and locally significant, and controllable source of fecal contaminants (and pathogens) to the bay. A potentially significant public health risk exists to the extent that boater discharges

may occur in poorly flushed, shallow waters or in close proximity to shellfishing or swimming areas.

In order to increase boater compliance with MSD requirements,

- RIDEM should continue discussions with the Coast Guard and EPA Region I to develop an Interagency Memorandum of Agreement that provides for increased and consistent Coast Guard enforcement of MSD equipment requirements during routine inspections of all commercial and recreational vessels operating in State waters.

- The U.S. Coast Guard, in consultation with the U.S. EPA, should review federal MSD manufacturing, installation and maintenance requirements. Equipment and enforcement problems identified by the Chesapeake Bay Program (1991) include improper manufacturer or dealer installation of subsurface, by-pass valves with Type 3 MSDs; the lack of standard, 'universal' fittings on vessels with MSDs; and the lack of regulations governing MSD operation, maintenance and effluent monitoring.

- RIDEM should continue discussions with the Coast Guard and EPA Region I to re-authorize or amend the existing inter-agency Statement of Understanding that provides for some delegation of authority to State and local governments for enforcement of MSD and boater waste disposal requirements.

[NOTE: RIDEM officials are meeting with representatives of the U.S. Coast Guard and U.S. EPA in January 1991 to discuss 1) increasing Coast Guard enforcement of MSD equipment requirements on non-commercial vessels when they are boarded for routine inspections, and 2) formal delegation of inspection and enforcement authority to state and local officials (J.Migliore, RIDEM, pers. commun., 12.31.90). In addition, the status of present federal, state and local enforcement efforts as authorized by the existing Statement of Understanding and the possibility of State reimbursement as provided by Section 312 should be discussed. In particular, the State representatives should raise the possibility of obtaining a percent set-aside from the recently enacted boat luxury tax as one mechanism for financing local enforcement of Section 312 requirements.]

- Based on agreements reached with the U.S. Coast Guard, necessary State and local enabling legislation and regulations should be

drafted that describe requirements for MSD installation and use, discharge limitations, disposal, treatment and enforcement.

[NOTE: RIDEM has submitted a bill titled "An Act Relating to Marine Discharge of Sewage" for consideration during the 1991 session of the Rhode Island General Assembly. If passed, the statute would a) prohibit boat discharges of sewage in the waters of the State unless treated with a Type I or Type II MSD in "proper working condition" (R.I.G.L. 46-12-37 (A)); b) prohibit boat discharges of sewage in any area declared to be a no-discharge zone (R.I.G.L. 46-12-37 (B)); c) authorize RIDEM, harbor masters, assistant harbor masters and police officers to enforce the provisions of the Act (R.I.G.L. 46-12-39); and d) establish penalties for violations of the provisions of the Act (R.I.G.L. 46-12-38).]

- Rhode Island and Massachusetts should investigate the possibility of increasing the pass-through of federal and state funds available from the state boating safety offices to coastal communities in order to support local enforcement of equipment and discharge requirements.

- Rhode Island and Massachusetts should promulgate regulations pursuant to existing State authority over pollutant discharges to surface waters that would

- license some full service maintenance or repair boating facilities as official vessel inspection stations;
- require all vessels required to have marine sanitation devices (MSD) to be inspected at the time of registration for the presence of properly installed and functioning MSD equipment.

In Rhode Island, this program should be administered by the RIDEM Division of Enforcement, Office of Boating Safety.

- The U.S. Coast Guard through the Coast Guard Auxiliary, and the RIDEM Division of Enforcement, Office of Boating Safety (and its Massachusetts counterpart) should develop and distribute boater education materials through Boater Safety courses and relevant marine trades organizations.

Preferred Alternative. D-2.

ISSUE E. Should efforts to encourage and, where required, enforce boater use of available marina sewage pump-out facilities be increased?

Although local governments and marina operators are generally willing to install and maintain sewage pump-out facilities, boaters have historically been reluctant to use them. As noted previously, there were a total of 120 pump-outs recorded at the two operational pump-out stations in Narragansett Bay during the 1988 boating season when there were an estimated 34,000 boats operating in Narragansett Bay with installed or portable heads (Roman, 1990). This finding generally agrees with a Maryland study of recreational boaters in Chesapeake Bay that found that boater use was dependent on convenient access, cost and the time required per pump-out (Strand, 1990). The study also found that although less than one in 20 boaters ever used a pump-out facility, boaters were twice as likely to use a pump-out if it was located in his/her home marina (Ibid.).

Alternative E-1. Efforts to encourage and, where required, enforce boater use of available marina sewage pump-out facilities should not be increased.

There is no evidence of a significant public health risk associated with boater discharges of sewage in Narragansett Bay. Therefore, the cost of enforcement, and the private cost of compliance, are not likely to result in a tangible improvement in water quality or a visible reduction in public health risk. In addition, boater use of sewage pump-out facilities is already increasing because of increased availability of facilities and increased boater awareness.

Alternative E-2. Efforts to encourage and, where required, enforce boater use of available marina sewage pump-out facilities should be increased.

The consistent use of sewage pump-out stations will eliminate one source of untreated sewage to Narragansett Bay. Although the volume of boater discharge is small relative to other sources of sanitary waste such as municipal WWTFs, the present level of boating activity in Narragansett Bay potentially represents a seasonally and locally significant source of fecal contaminants (and pathogens) to the bay. A potentially significant public health risk exists to the extent that boater discharges occur in poorly flushed, shallow waters or in close proximity to shellfishing or swimming areas.

Although many coastal communities and members of the Rhode Island Marine Trades Association are willing to install and maintain sewage pump-out facilities, boaters have historically been reluctant to use them. In order to increase boater use of available pump-out facilities,

- The RIDEM Division of Enforcement, Office of Boating Safety should institute a boater education program regarding proper boater waste disposal. This program should a) provide information on how to install, operate and maintain a marine sanitation device (MSD), b) promote the use of MSDs and pump-out stations, c) state applicable federal and state laws regarding disposal of boat waste, including federal and state penalties for illegal disposal, d) identify areas where disposing of wastes is prohibited in order to protect shellfishing waters or bathing beaches, and e) identify the locations of pump-out stations. General public educational programs should be performed in conjunction with URI's Narragansett Bay Classroom, public schools, the Rhode Island Marine Trades Association (RIMTA), trade shows and harbor masters to the maximum extent possible.
- The RIDEM's Division of Enforcement's Office of Boating Safety, Parks and Recreation or Information and Education should produce a map of Narragansett Bay and adjacent waters that clearly indicates the location of available pump-out stations. The map should be distributed with boat registration forms, and/or in conjunction with RIMTA, other trade organizations or the publishers of regional boating guides.
- Operators of vessels with Type I and II MSDs should be required to comply with federal and state laws regarding operation, maintenance and required retrofits of MSD equipment.
- Operators of vessels with Type I and II MSDs should be encouraged to use marine pump-out facilities.
- The RIDEM shall consider requiring the mandatory use of Type III MSDs with holding tanks, or portable toilets, on all commercial vessels registered to operate in State waters.
- The RIDEM shall consider requiring the mandatory use of Type III MSDs with holding tanks, or portable toilets, on all vessels registered to operate in State waters that are designed with overnight accommodations or are greater than 25 feet in total length.

- The municipal Harbor Management Plans should include plans for increasing and enforcing the use of available marina pump-outs. For example,

- municipalities should establish fines for boaters who discharge untreated sewage (or solid waste) in local waters;
- docking privileges should be conditional on use of available pump-out facilities, as is the case for *Shooters* and the *Light House Marina* (S. Adamowicz, RIDEM, pers. commun., 1.10.91);
- harbormasters should be delegated full inspection and enforcement powers in conjunction with RIDEM and the U.S. Coast Guard (see above).

- Owners and operators of public and private marinas, yacht clubs etc. should enforce the use of pump-out facilities by their customers by

- contractually linking docking privileges with proper disposal of boat wastes, as is the case for *Shooters* and the *Light House Marina* (S. Adamowicz, RIDEM, pers. commun., 1.10.91);
- including the cost of pump-outs in the docking fee and/or offering coupons, rebates or other incentives to promote the use of pump-out facilities.

Preferred Alternative. E-2.

ISSUE F. Should the State of Rhode Island petition the U.S. EPA for designation of all or part of Narragansett Bay as a "no discharge" zone?

EPA requirements for a State application to classify its marine waters as a "no discharge" zone include

- 1) a certification that the protection and enhancement of the waters described in the petition require greater environmental protection than that provided by 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" (33 Code of Federal Regulations (CFR) Part 140), including, if possible, information on the percentage of boats with Type 3 MSDs (EPA Region I).

In addition, the application must identify aquatic recreational areas, aquatic sanctuaries, identifiable fish spawning or nursery areas and areas of intensive boating activity.

Classification of all or part of Narragansett Bay as a "no discharge" zone would increase regulatory attention on enforcement of MSD equipment and discharge restrictions, encourage the U.S. Coast Guard to increase and share enforcement of discharge prohibitions with other Federal, State and local agencies, and contribute to the protection of critical marine habitats, living resources and existing commercial and recreational uses of Narragansett Bay.

Alternative F-1. The State of Rhode Island should not petition the U.S. EPA for designation of all or part of Narragansett Bay as a "no discharge" zone.

"No discharge" requirements applied only to boaters is not likely to result in measurable water quality, living resource or public health benefits because the volume of vessel discharges to Narragansett Bay is relatively insignificant compared to existing treated and untreated sewage discharges from municipal WWTFs, CSOs, failed and failing septic systems and storm drains. In addition, "no discharge" status for all or part of Narragansett Bay could conceivably limit entrepreneurial investment in desirable marine-dependent businesses such as marinas, yacht clubs etc.

Alternative F-2. The State of Rhode Island should petition the U.S. EPA for designation of all or part of Narragansett Bay as a "no discharge" zone.

The volume of vessel discharge of sewage within Narragansett Bay is relatively insignificant relative to other sources of treated and untreated fecal waste. However, the designation of all or part of Narragansett Bay as a "no discharge" zone, and enforcing no discharge requirements on vessels operating in those zones, will 1) operate to

protect identified high quality waters, marine habitats and important living resources; 2) address a real or perceived problem that is easy to solve relative to abating Combined Sewer Overflows (CSOs) or mitigating failed and failing septic systems; and 3) increase the State's attention on Narragansett Bay as an "estuary of national significance" that requires environmental protection beyond existing Federal standards, especially as population and development within the bay basin continues to increase and as commercial and recreational demands on the bay increase.

In order to better protect water quality, critical marine habitats, important living resources and existing and future uses of Narragansett Bay,

- RIDEM and CRMC should petition the U.S.EPA to designate all or part of Narragansett Bay as a "no discharge" zone. Certain regions of Narragansett Bay such as:

- the Narragansett Bay National Estuarine Research Reserve (NERR): Prudence, Patience and Hope Islands seaward to the 18 meter isobath,
- Greenwich Bay,
- Dutch Island Harbor,
- Wickford Harbor, and
- Newport Harbors,
- Great Salt Pond (Block Island),
- and the coastal ponds

should qualify for 'no-discharge' status based upon 1) their value as marine sanctuaries (NERR); shellfish management areas (Greenwich Bay); historic and scenic waterfronts (Newport and Wickford Harbors); and 2) evidence that increased boat sewage discharges may be contributing to water quality degradation and/or limitations on historic or existing uses (Dutch Island Harbor, Great Salt Pond). Adequate sewage pump-out facilities do not presently exist in these waters. However, RIDEM's and CRMC's existing policies with respect to requiring marine sewage pump-out facilities, in combination with strategies recommended above, should result in appropriate geographic coverage within a three (3) to five (5) year period.

[The Rhode Island Marine Trades Association (RIMTA) has suggested a ten year program for achieving no discharge status for Narragansett Bay. RIMTA's proposal calls for "eliminating all black water discharge within 36 months, elimination of all grey water discharge within 82 months and 0 discharge in the next 120 months; beginning in 1991" (K.Kubic, RIMTA, pers. corres., 1.10.90). As noted by K.Kubic, achieving zero discharge of sanitary waste and bilge water within 120 months would require cooperation from government, boat manufacturers, marine trade organizations and boat owners.]

Preferred Alternative. F-2.

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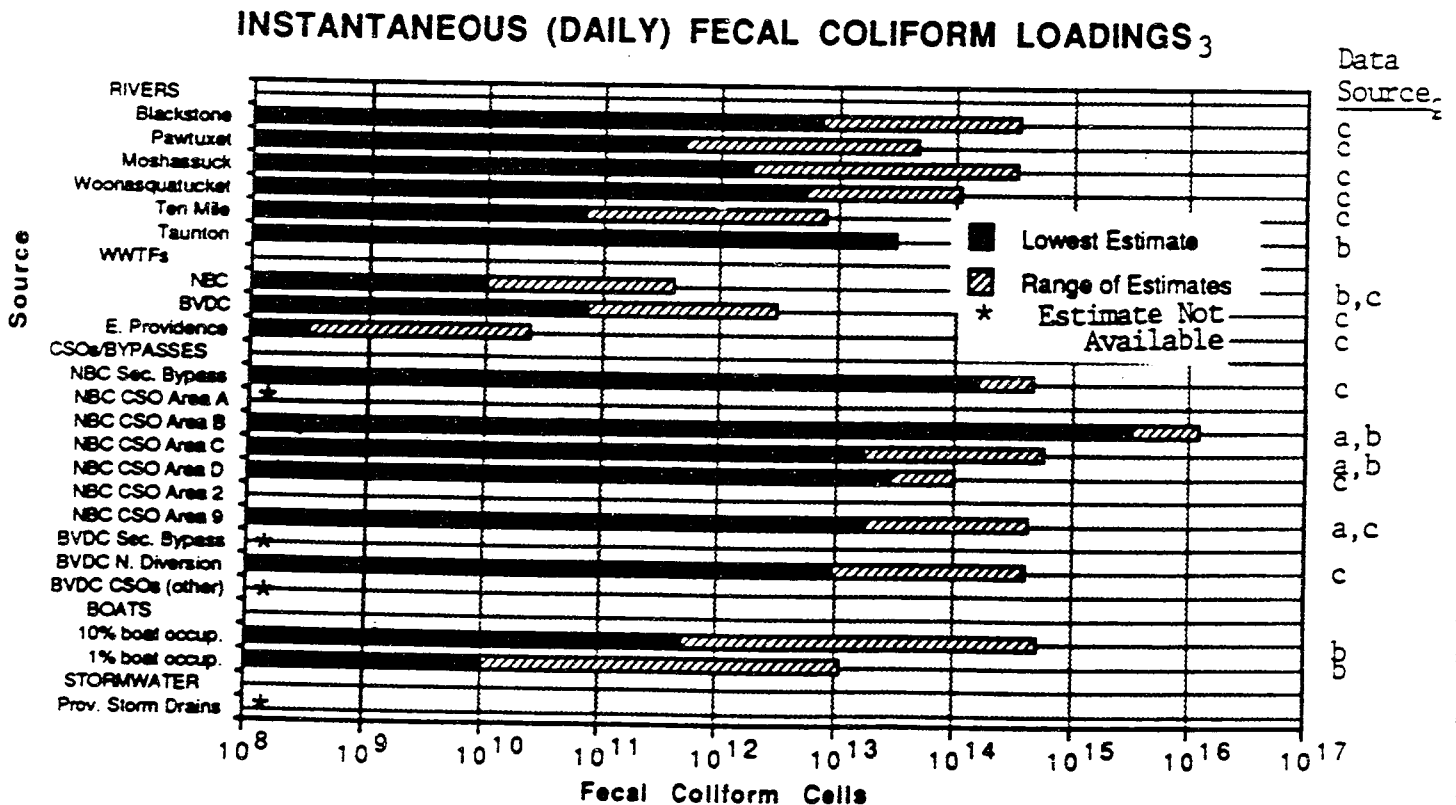
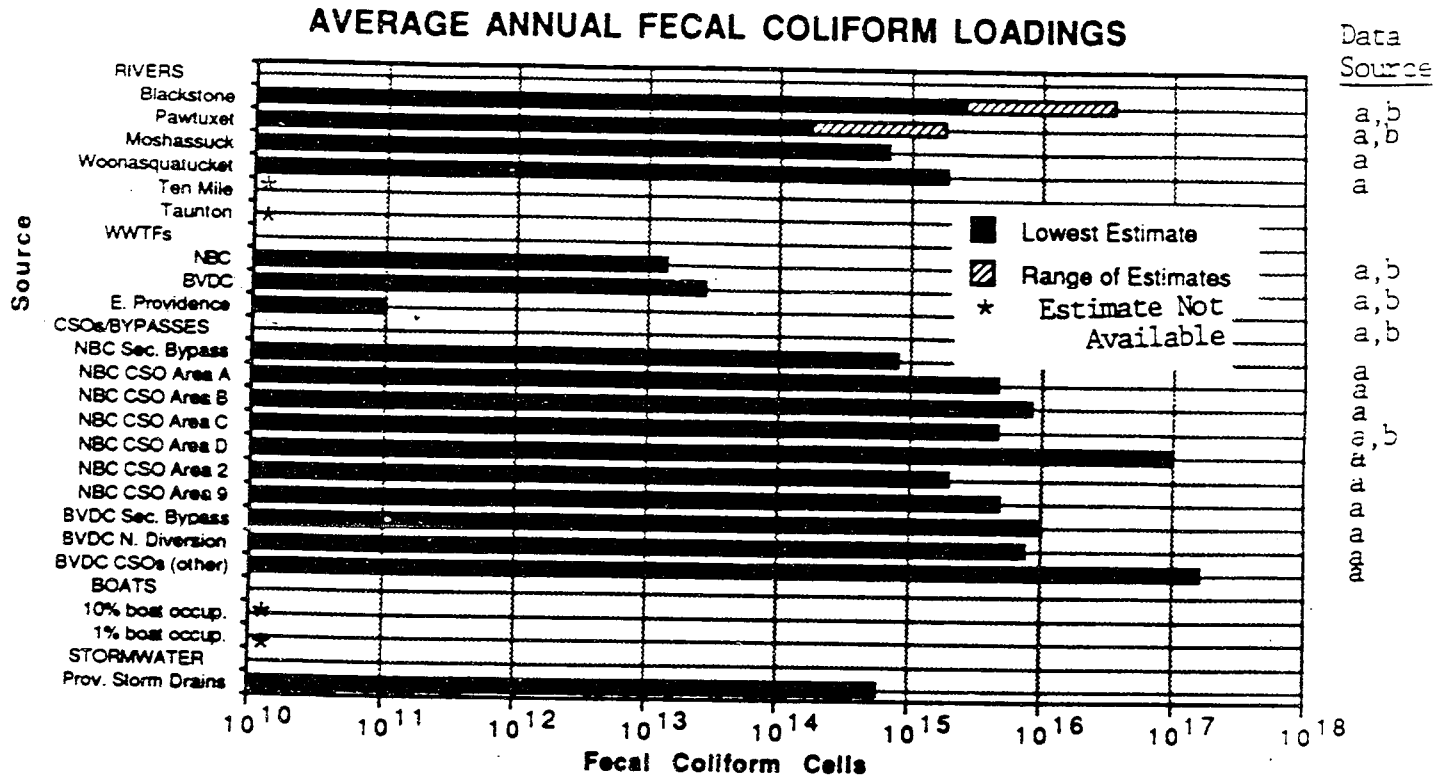
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APPENDIX 1

Figure 1: Relative contribution of fecal contaminants to Narragansett Bay, by source, as measured by estimated average annual and instantaneous (daily) input of fecal coliform bacteria. 1



FOOTNOTES TO FIGURE 1:

1. The graphs are intended only to show the relative magnitude of various sources of fecal coliform bacteria loadings, as an indirect measure of potential pathogen loadings. Differences of one order of magnitude or less should not be considered to be significant.
2. Graphs represent data compiled from a number of sources. The primary data sources used were:
 - a) Metcalf & Eddy, Inc. 1990. Narragansett Bay Combined Sewer Overflows. Draft report to the Narragansett Bay Project.
 - b) Roman, C. T. 1990. Pathogens in Narragansett Bay - Issues, Inputs, and Improvement Options. Narragansett Bay Project, Providence, RI. NBP-90-47.
 - c) Watkins, W. D. and S. R. Rippey. 1990. Narragansett Bay Project Wet Weather Study - Microbiology. Draft report to the Narragansett Bay Project.

No attempt has been made to verify or reconcile the estimates from various data sources. Since each source used different raw data sets and methodology in developing estimates for annual and daily loadings, estimates from different sources may not be directly comparable (e.g., an average annual loading estimate from one data source may not be equal to 365 times an average daily loading estimate from a different data source).

3. The graph of instantaneous daily loadings contains data for three categories of sources: continuously discharging sources (rivers, WWTFs), intermittent wet weather discharges (CSOs/bypasses, stormwater), and intermittent dry weather discharges (boats).
 - a) For continuously discharging sources, the loadings represent a range from average daily discharge (lowest estimate) to "typical" wet weather discharge [events of longer than 24 hours were converted to "daily" by dividing event load by (period of discharge)/24].
 - b) For intermittent wet weather discharges, the loadings represent a range of "typical" wet weather discharges [events of longer than 24 hours were converted to "daily" by dividing event load by (period of discharge)/24].
 - c) For boats, the loadings represent estimates under specified boat occupancy and discharge assumptions, as follows:
 - Approximately 34,000 boats using Rhode Island waters are equipped with a head/toilet.
 - Scenarios of 10% or 1% of these boats discharging to the Narragansett Bay were assumed.
 - Each boat discharges 8 gallons per day, at a fecal coliform density of 1×10^5 to 1×10^8 fc/100 ml.

SECTION II:

**PROCEEDINGS FROM
NARRAGANSETT BAY PROJECT
MANAGEMENT COMMITTEE**

**JANUARY 24, 1991
FEBRUARY 13, 1991**

APPENDIX A:

MANAGEMENT COMMITTEE MEETING MINUTES

JANUARY 24, 1991
FEBRUARY 13, 1991

NARRAGANSETT BAY PROJECT
MANAGEMENT COMMITTEE MEETING

January 24, 1991
1:00 p.m. - 4:00 p.m.

Meeting Minutes

Boater Waste Disposal

ISSUE A: Should the State of Rhode Island and affected municipalities take additional steps to assure that boat-sewage discharges are eliminated in order to meet State water quality goals?

Alternative A-1: No.

Alternative A-2: Yes.

Mr. Ken Kubic (RIMTA) said that given the relative insignificance of the boat sewage problem, additional measures may be unnecessary. The most important thing to do, he said, is to enforce the regulations in place and aid marina owners in constructing new pump-outs.

Mr. Brubaker agreed that additional pump-outs are a large part of the answer, but said that we also need to adjust existing enforcement to make it more effective.

Mr. Joe Migliore (RIDEM) said that we also need to formalize our approach to marina expansion because it results in loss of shellfishing areas and constitutes a violation of the CWA.

Mr. Grant suggested considering the specific recommendations under this alternative one at a time.

Mr. Dillingham, Mr. Borden, and Mr. Migliore said that they approved of most of the recommendation with minor clarifications.

Ms. Karp clarified that any recommendations not commented on would enter into the CCMP as written.

In regards to the third bullet (at the bottom of page 6.):

Mr. Greene suggested adding the following three conditions for restricting marina and mooring field expansion: 1) in critical areas; 2) where threatened marine flora and fauna exist; and 3) in finfish harvesting areas and finfishing access areas. He also suggested that all of the restricted areas should be mapped.

Mr. Ken Kubic said that RIMTA should be involved in the discussions between RIDEM and CRMC.

Dr. Prager said that RIMTA's involvement is mandated.

Mr. Dillingham said that CRMC and RIDEM try to include both RIMTA and shellfishermen in their discussions about policy and regulation changes that affect them.

Ms. Karp suggested adding a statement that all of these recommendations should be made available for review and comment to accommodate all groups with an interest in the issue.

Mr. Borden asked if this recommendation allowed a degradation of water quality.

Mr. Dillingham said no. He noted that boaters do not need to discharge into coastal waters at all. He said that we should not assume that the existence or expansion of marinas necessarily leads to discharges and water quality degradation.

Mr. Borden suggested replacing the phrase "water quality violations" with "water quality degradation."

Dr. Deacutis said that the restricting expansion from "finfish spawning grounds" would prevent all expansion since spawning occurs to some extent virtually everywhere.

Ms. Karp clarified that the recommendation directs RIDEM and CRMC to address and identify these areas, not necessarily to restrict expansion everywhere that fish spawn.

Mr. Greene suggested adding "critical subtidal or tidal habitats" to the list of restricted areas.

Dr. Prager said that this restriction would be too broad unless it was limited to critical habitats "of limited distribution."

Mr. Migliore said we also need to consider historical uses and areas that could be rehabilitated.

Mr. Brubaker said that our approach, in these cases, should be to upgrade water quality classifications.

In regards to the fourth bullet (at the top of page 7):

Mr. Borden expressed concern about the phrase "significant or outstanding commercial or recreational value," and suggested that it be omitted.

Ms. Karp said this language was quoted from existing state regulations.

Dr. Deacutis asked what format the recommended maps would have.

Ms. Karp said the format would depend on the source of information.

Mr. Borden commented that the maps seem like a good idea and asked how they would be used.

Ms. Karp said that the maps should probably be included as an appendix or incorporated by reference into agency policies and/or regulations and will then govern marina and mooring field expansion.

Mr. Brubaker said that this seemed like a good recommendation. He noted that the implication seems to be that we will manage Narragansett Bay on the basis of resources instead of the "numbers." He suggested that the committee explore expanding this approach to other management issues.

Mr. Dillingham said that the maps will be helpful as a planning tool, but he expressed concern about defining every critical habitats. On the other hand, he said, we don't want to preclude creative efforts, such as those currently under way in Portsmouth for Powder Cove, to restore already degraded water quality by limiting moorings.

In regards to the sixth bullet (on page 7):

Dr. Deacutis expressed concern that this recommendation applies point source controls to a nonpoint source issue. He said that the measures listed in it may be illegal, that RIDEM permitting does not have the resources to conduct them, and that this type of self-monitoring is very difficult.

Mr. Dillingham agreed that this problem does not lend itself to regulatory solutions. He said what we really need to do is recommend best management practices (BMPs) to marina operators.

Mr. Brubaker noted that BMPs can be written into RIPDES permits.

Mr. Mike Scanlan (RIDEM) commented that we can't hold a marina operator responsible for every boat in a marina. He said we need to hold the boater who discharges responsible.

Ms. Karp noted that legally the marina owner is also responsible.

Mr. Scanlan noted that commercial marina operations can, should be, and are subject to permitting.

Ms. Karp clarified that this recommendation proposes a self-monitoring requirement for mooring facilities.

Mr. Scanlan said that there already is a requirement for reporting discharges.

Mr. Grant noted that it was commented earlier that monitoring a marina won't reveal anything about the sources of discharges.

Ms. Karp said that what we learn from monitoring depends on how we use the data gathered.

Mr. Migliore noted that RIDEM already monitors all marinas.

Dr. Prager said that gathering data served no purpose in itself and suggested that the Committee omit this recommendation.

Mr. Dillingham and Mr. Migliore said that all marina operators already require boaters to abide by all applicable laws and regulations on penalty of expulsion.

Mr. Grant proposed that we omit the proposed RIPDES permits recommendation, and replace this bullet with an acknowledgement that marinas require compliance and should continue to do so.

Dr. Deacutis agreed and suggested that we also recommend EPA research on the impacts of bottom paints and other potential boater-related pollutants.

Dr. Prager said that the EPA database *AQUIRE* already covers some of these issues.

NARRAGANSETT BAY PROJECT
MANAGEMENT COMMITTEE MEETING

February 13, 1991
1:00 p.m. - 4:00 p.m.

Meeting Minutes

Boater Waste Disposal

Mr. Malcolm Grant (Chair) opened the meeting by noting that parts of the briefing paper had already been modified as a result of two NBP-sponsored "Round Table" meetings and other discussions about boater waste. He also noted that written comments on the paper had been received from EPA and the URI Coastal Resources Center and suggested reading them aloud as the relevant issue was discussed.

Mr. Tom Brillat (URI CRC) suggested including a statement about the economic and emotional value of shellfishing for the Bay in the briefing paper problem description.

Mr. Art Ganz (RIDEM) said that if this statement is included, the "\$13.8 million" figure quoted should be modified to show that it is a "first-cut," ex-vessel figure that does not reflect the true value of shellfishing because it does not include any multipliers.

Ms. Caroline Karp (NBP) said that these sort of economic figures were deliberately excluded to avoid creating an appearance of favoring any one user group.

Mr. Grant concluded that the problem description should remain unchanged.

Mr. Brillat noted that the "3,400" boaters cited in the 2nd full paragraph on page 4 is a hypothetical number that describes an extremely unlikely situation and potentially leads to damaging and unsupportable conclusions.

Mr. Joe Migliore said that this paragraph is intended to emphasize the existence of many known discharges. Although hypothetical, the quoted number represents a valid justification for the recommendations that follow, he said.

Ms. Karp said that the number was chosen to denote relative importance.

Mr. Grant said that the number was less significant than the recommendations that follow.

Mr. Tom Mulhearn suggested that the committee needs to address how pollutant sources are measured and how significant these measurements are.

Ms. Gwen Ruta (EPA) observed that statements and specific numbers which help us visualize the nature and potential of different problems provide a valuable perspective and should be included in the briefing paper.

Mr. Grant concluded that there was consensus on including the reference to 3,400 boaters.

Mr. Brillat and Mr. Tim Dillingham (CRMC) disagreed.

Mr. Brillat suggested that a table listing empirical evidence of sources of fecal contamination should be included.

Ms. Karp noted that such evidence had been included in the Pathogens briefing paper.

Ms. Ruta said that it would be helpful, if repetitive, to have such a table in this and all other briefing papers.

Mr. Grant agreed and directed staff to make this change.

Dr. Jan Prager (U. S. EPA ERL-N) suggested replacing the phrase "finfish nursery or spawning grounds" (ISSUE A, third bullet, third clause) with the phrase "distinctive habitats of limited distribution."

Mr. Brillat said that the word "biennial" should replace the term "biannual" in the following paragraph.

Ms. Karp said that staff would make both of these changes.

ISSUE B: Should additional marina pump-out facilities be established at public and private marinas around Narragansett Bay?

Alternative B-1: No.

Alternative B-2: Yes.

Mr. Brillat suggested indicating that figures for the number of pump-out facilities necessary to provide adequate service vary from 200 -250 to 2,000 boats per pump-out.

Ms. Ruta agreed. While noting that EPA planned to be flexible regarding the number of pump-outs required, she nonetheless suggested that some range of numbers, though not final, should be specified.

Mr. Migliore agreed, provided that EPA's suggested number of pump-outs is consistent with RI's goal of achieving no discharge status for Narragansett Bay. He suggested including language to this effect, and a clarification that the figures refer only to boats with MSDs, in the third bullet on page 9.

Mr. Dillingham suggested replacing the word "requiring" with the word "establishing" in this bullet.

Mr. Grant concluded that there was consensus on including the changes suggested above.

Mr. Brillat expressed concern about the consequences of this wording, especially for crowded harbors. He suggested that the Committee recommend a minimum of one shore-based pump-out facility, while allowing flexibility to provide the remaining facilities, possibly through barges.

Mr. Migliore suggested that rather than making a recommendation which could encourage barges to transport waste—which RIDEM may not allow—the Committee should agree to specify a definition of pump-outs. He also noted that the pump-out barges used on Block Island discharge their collected wastes to land-based facilities before leaving the harbor.

Mr. Grant agreed and directed staff to define pump-out facilities as not restricted to a fixed, shore-based facility.

Mr. Brillat, noting the general agreement on the need for more pump-outs, suggested including a statement specifying a schedule and the minimum number of pump-out services that must be provided by all operators managing facilities for boats that use pump-outs.

Mr. Migliore noted that RIDEM was exploring the possibility of providing up to 50% funding—through the Environmental Response Fund—for private entities to install pump-out facilities.

Mr. Roy Anderson (Newport) said that, in regards to treating boater waste, RIDEM has designated WWTFs to accept "septic dumping" in all regions in the state. He noted that Newport does not differentiate between "marina waste" and septic dumping.

Mr. Migliore said that some WWTFs do, in fact, distinguish between the two types but that RIDEM was trying to resolve those cases.

Ms. Joan Beskemis (MA DEP Water Pollution Control) commented that MA is still in the process of planning for pump-outs and marina waste, and cautioned that MA may not agree with RI's projected number of facilities required. She stressed that MA did not envision problems, but that RI should be aware of the potential for disagreement.

Ms. Ruta said that Mr. Jan Smith, the MA representative on the EPA Regional Task Force had reviewed the document and did not foresee any difficulties with the figures recommended.

Mr. Brubaker expressed concern that the first paragraph under Alternative B-2 seemed to remove RIDEM's "stick," by suggesting that pump-outs will not be required as part of re-permitting. He recommended that RIDEM should continue to require pump-outs as a condition of permitting.

Mr. Kubic said that making pump-out installation an absolute requirement would force many of the marinas in the Bay to go out of business, because they can't install holding tanks on their properties.

Mr. Migliore disagreed, noting that it is possible to install holding tanks below parking areas.

Mr. Kubic said that such installations may be technically possible, but they are not economically feasible.

Ms. Karp said that staff did not intend to remove RIDEM's ability to require pump-outs during re-permitting, but to encourage placement of strategic pump-outs first, rather than allow installation on an erratic basis.

Mr. Migliore said that the recommendation appeared to suggest that the stick should be removed.

Mr. Grant suggested that staff should clarify that the paragraph in question was a background statement, not a recommendation.

Ms. Karp clarified that the recommendation started with the words "In order to ensure..." and offered to relocate the paragraph as part of the problem description.

Mr. Brillat asked if the NBP had defined "marina."

Ms. Karp said that staff recommended that RIDEM and CRMC do so.

Mr. Brillat said that given the present absence of a definition, the phrase "public private marina" be removed from Alternative A-2.

Mr. Grant agreed and directed staff to delete this phrase.

ISSUE C. Should marina pump-out facilities be tied to public sewers wherever possible, especially at facilities where boats are continuously occupied? Should CRMC consider designating some harbors or marinas that have access to sewer lines as exclusive ports for "live-aboards"?

Alternative C-1. Marinas and other marine facilities with direct discharges that are presently served by on-site septic systems should not be required to tie-in to municipal WWTFs even where possible.

Alternative C-2. Marinas and other marine facilities which presently discharge directly to coastal waters that are presently served by on-site septic systems should be required to tie-in to municipal WWTFs wherever possible.

Mr. Grant asked what the phrase "discharge directly to coastal waters" referred to, noting that direct discharge is currently illegal.

Ms. Karp said the phrase was intended to refer to those facilities with leaching and other malfunctioning of on-site septic systems and suggested replacing this phrase with the words "that are presently served by on-site septic systems."

Ms. Ruta suggested that the written comments from EPA be accepted without additional discussion unless there were specific questions or objections.

Ms. Karp agreed, but suggested that EPA should help develop the regulations being discussed.

Ms. Ruta noted that EPA is usually not involved in this level of regulation.

Mr. Brubaker said that EPA regulates industrial pretreatment and asked how this sort of pretreatment would differ.

Mr. Migliore asked if EPA could provide a list of guidance about preferred products (referred to in the first and third bullets). He commented that EPA needs to be involved because the regulatory issues are national not just local.

Ms. Ruta said that while EPA can prohibit the use of specific chemicals, it cannot prohibit the use of specific products.

Mr. Migliore said that he was referring to formula-based preservatives.

Ms. Ruta said that EPA can not recommend specific chemicals.

Mr. Brubaker suggested that EPA's role should be to provide guidance to local regulators and to help generate a list of environmentally harmful chemicals that should be avoided.

Ms. Ruta agreed and said that EPA was playing such a role currently. She also restated EPA's written comment that further research into non-toxic alternatives is unnecessary since environmentally safe alternatives already exist.

Ms. Karp noted that there seemed to be agreement that EPA should help develop guidance; and prohibit certain chemicals, if warranted.

Dr. Prager agreed and suggested that the Committee also state that EPA databases can be accessed to supply information on alternatives.

Mr. Kubic said that RIMTA and the International Marina Institute could publicize this information, if EPA provides it.

Mr. Grant concluded that there was consensus on supporting the development of this list and that within the framework of their jurisdiction, federal, state, and local regulatory agencies should take steps to ensure its development.

Mr. Brillat suggested that WWTFs should be required to accept boater septage, provided that pre-treatment standards are met.

Mr. Migliore noted that the only time WWTFs can refuse septage is if they have a moratorium on new capacity and said that RIDEM has not had a problem with acceptance so far.

Ms. Karp noted that enabling legislation to require septage acceptance failed to pass in the General Assembly.

Mr. Brillat said legislation is still required because septage acceptance currently is determined on a case by case basis and because marina operators are unfairly required to ensure that waste haulers properly dispose of their wastes.

Dr. Prager and Mr. Migliore noted that this responsibility is an inescapable civil liability.

Ms. Karp noted that the state currently lacks the ability to require WWTFs to accept marina waste and that the state may need this ability in the future.

Mr. Dillingham suggested that the Committee recommend that this legislation should be drafted if necessary.

Mr. Grant agreed and concluded that there was support for this suggestion.

Mr. Migliore and Mr. Brillat said that in regards to the fourth bullet, the state can not tell boaters where to dock. Rather, we can recommend that they dock at marinas with adequate discharge facilities.

Mr. Dillingham agreed and said that CRMC would not assume responsibility for enforcing such a requirement.

Mr. Grant directed staff to replace the word "require" with the word "encourage."

Mr. Brillat suggested adding a bullet recommending that holding tank products made with a formaldehyde base should be phased out of use and ultimately prohibited from being sold in Rhode Island as of a certain date, perhaps by 1994. He also noted that the industry is prepared for formaldehyde to be phased out.

Ms. Beskemis said that MA studies to date indicate that Type I and II MSDs might still need to use formaldehyde based solutions because EPA might not allow use of ammonia-based solutions.

Mr. Brubaker said that this recommendation applies to holding tanks not MSDs.

Mr. Brillat agreed and said that we should also stress the use of safer alternatives.

Dr. Judy Pederson (MA DEP) said that we should be careful not to back ourselves into a corner and pointed out that formaldehyde may be the safest alternative in some cases. Noting that sea water quickly neutralizes formaldehyde, she expressed concern that the Committee might be micro-managing this issue.

Mr. Deacutis agreed that formaldehyde could be neutralized quickly, but only if pretreated properly.

Mr. Migliore suggested striking "formaldehyde" and broadening the recommendation "to promote environmentally sound products."

Ms. Karp asked if the Committee wanted to emphasize source reduction or treatment.

Mr. Grant suggested dropping the reference entirely and returning to the original language of developing a list.

Mr. Brubaker said that the proposed formaldehyde ban was precisely the type of strong recommendation that the Committee needs to make and expressed concern about not including it.

Dr. Pederson suggested that the Committee defer the issue to the URI Boat Sewage task force and adopt their recommendation.

Ms. Ruta agreed and suggested stating that the task force should by the end of 1991 produce a list of chemicals to be phased out by 1994.

Mr. Grant agreed and directed staff to make these changes.

Mr. Dillingham said that the CRMC should not be listed in the fourth bullet on page 12, because it is not required to be involved.

Mr. Brubaker observed that the CRMC might still want to be involved.

Mr. Grant directed staff to modify this recommendation to include "input from" CRMC.

ISSUE D. Should boater use of required MSD equipment be encouraged and enforced?

Alternative D-1: No.

Alternative D-2: Yes.

Dr. Prager noted that the law already requires use of this equipment and said that this recommendation is unnecessary because it may convey the impression that we are recommending a weakening of existing regulations.

Ms. Karp cited a variety of evidence that the majority of MSDs don't function properly, and noted the repeated concern expressed at the Round Tables and in other forums about an MSD education and enforcement "gap."

Mr. Migliore noted that RIDEM has recently submitted legislation to address the enforcement gap.

Dr. Prager said that we should address this gap directly rather than risk appearing to weaken existing law.

Ms. Ruta noted that a lot of agencies have essentially decided not to enforce this law.

Ms. Karp agreed. She added that staff had intended to recommend that efforts to enforce the law, which is explicit in its requirements, should be increased.

Mr. Kubic and Mr. Brillat agreed but said that we need to increase education and non-regulatory approaches as well.

Dr. Prager said that we should simply stress the need for greater education and enforcement.

Mr. Grant agreed and said the question should be whether or not efforts to enforce should be increased and concluded that there was consensus that both educational and enforcement efforts should be increased.

Mr. Migliore said that many of the URI Boat Sewage Task Force's recommendations could be incorporated at this point if the Committee wanted to include that level of detail.

Mr. Grant asked who the audience is for the Task Force's plan.

Mr. Kubic suggested that the plan could be included by reference.

Ms. Karp suggested that the Task Force's recommendations would be more effective if they were written directly into the CCMP rather than incorporated by reference.

Mr. Art Ganz praised the plan and expressed support for incorporating it into the NBP's work.

Mr. Grant suggested that the Committee members read the document and then consider endorsing it. He directed staff to distribute copies to all Management Committee members.

Ms. Morrison asked what was the basis for licensing only some facilities as inspection stations (first bullet on page 16).

Mr. Kubic said that only "full service" facilities have the capability to conduct the proposed inspections.

Mr. Brillat said that second part of this bullet should be revised to specify all vessels "with MSDs." He also noted that all references to the 'Division of Boating Safety' should be changed to 'Division of Enforcement'.

Mr. Kubic suggested the revision should state all vessels "required to have MSDs."

ISSUE E. Should boater use of available marina sewage pump-out facilities be encouraged and enforced?

Alternative E-1: No.

Alternative E-2: Yes.

Mr. Brubaker asked if municipalities currently have the authority to establish fines.

Mr. Brillat said yes.

Ms. Karp noted that the written comments from EPA contain a suggested word change for the third bullet on page 17 and said that she disagreed with the proposed change.

Mr. Grant noted that this bullet will be moot once the Bay receives no discharge status.

Ms. Ruta agreed but noted that only EPA can designate no discharge zones.

Mr. Migliore noted that the state could declare certain embayments no discharge zones.

Mr. Kubic agreed but noted that the common goal is to declare the entire Bay a no discharge zone.

Mr. Brubaker said that it made sense to include the change proposed by EPA and suggested inserting the word "untreated" before sewage.

Mr. Dillingham said that additional funds should be passed on to local authorities.

Mr. Migliore noted that the legislation as written gives municipalities 50% of collected fines.

Dr. Prager said that, as with the previous recommendation, use is mandated and we should therefore recommend increased enforcement efforts.

Mr. Migliore noted that use is only mandated for Type III MSDs within the 3-mile limit or for all vessels within a designated no discharge zone.

Mr. Grant asked if the encouragement was directed at requiring those boaters (with Type I and II devices) not required to use the facilities.

Mr. Migliore said yes and noted that we also want to encourage all boaters to change to or install Type III devices.

Mr. Grant asked if there was consensus that we should: 1) encourage all boats with Type I and II MSDs to use the facilities and convert to Type III devices as soon as possible; and 2) increase enforcement efforts directed at all noncompliant boaters required to use the facilities (i.e., those with type Type III devices or portable toilets).

Mr. Brillat said yes and noted that he had suggested language to this effect on page five of his comments.

Mr. Dillingham suggested that the staff check the legality of this requirement, noting that it may be prohibited under the CWA.

Mr. Migliore noted that after no discharge designation is gained, Type I and II devices will be disallowed.

Mr. Brillat stressed that all vessels will still be allowed to discharge sanitary waste outside the 3 mile limit and that vessels with properly functioning Type I and II MSDs will still be allowed to discharge in the bay.

Mr. Kubic suggested stipulating that by time the designation is achieved all vessels will be requires to have either a "portapotty" or a Type III MSD.

Mr. Brillat said that shellfishing boats are an additional concern.

Mr. Karp asked if there was agreement that Mr. Brillat's written comments should be included with the caveat that RIDEM should consider requiring portable toilets or Type III holding tanks.

Mr. Brillat said yes, but noted that there will be exceptions.

There was general agreement on this recommendation with the changes noted above.

ISSUE F. Should the States of Rhode Island and Massachusetts petition the U.S. EPA for designation of all or part of Narragansett Bay as a "no discharge" zone?

Alternative F-1: No.

Alternative F-2: Yes.

Ms. Karp noted that EPA had suggested beginning the process by designating individual embayments and asked if the designation should apply to the Narragansett Bay National Estuarine Research Reserve.

Mr. Migliore said yes, but noted the designation of embayments depends upon municipal actions regarding pump-out installation.

Ms. Ruta said that the EPA comment was meant to provide additional information, not to specify a specific order.

Mr. Brillat said that it would be worthwhile to name the embayments that are close to achieving no discharge designation.

Ms. Karp said she would include the following embayments: Great Salt Pond, Dutch Island Harbor, Wickford Harbor, Newport Harbor, the coastal ponds, and the Narragansett Bay National Estuarine Research Reserve.

The next meeting will take place on March 21, from 1:00 pm to 4:00 pm at the Department of Administration Building. The following three meetings will take place on March 27, April 24 and April 30.

**NARRAGANSETT BAY PROJECT
MANAGEMENT COMMITTEE MEETING**

March 27, 1991

1:00 - 4:00 p.m.

Excerpts from Meeting Minutes

IV. Review and Approval of Minutes re "Boater Waste Disposal" briefing paper

Mr. Grover Fugate (CRMC) said that he had just received his staff's comments on the minutes and summary, and requested that this review and approval be delayed.

Mr. Grant agreed to this request, but emphasized that in the future, committee members should either get their comments to NBP staff in advance or have someone present who could defend the comments.

NARRAGANSETT BAY PROJECT
MANAGEMENT COMMITTEE MEETING

April 17, 1991

1:00 - 4:00 p.m.

Excerpts from Meeting Minutes

II. Review and Approval of Minutes and Summary re "Boater Waste Disposal" briefing paper

Ms. Karp noted that Mr. Tim Dillingham (CRMC) and Mr. Tom Brillat (URI CRC) had submitted written comments on the Boater Waste briefing paper and suggested reviewing these comments in the order in which they appeared in the briefing paper.

Mr. Jim Fester (RIDEM), in response to the CRMC's first comment, noted that current RIDEM regulations would prevent marina development or expansion where the development would result in further degradation of waters not currently meeting designated classifications.

Mr. Dillingham suggested that the recommendation should specifically address the issues of discharge and of where facilities should be sited.

Mr. Mike Keyworth (Cove Haven Marina) said that the recommendation should also allow for the positive effects of mitigation measures.

Ms. Karp suggested adding the following phrase to the end of #1 (3rd bullet, ISSUE A, page 2), "unless mitigation measures are taken to prevent further degradation."

Ms. Karp read the CRC's two comments regarding provision of affordable pump-out facilities.

Mr. Keyworth said that these comments are in line with the policies of other states.

Dr. Christopher Deacutis (RIDEM) suggested that the fees should be applied to pump-out facilities, not to shore-based toilets.

Mr. Grant agreed and directed staff to make these changes.

Ms. Karp summarized the CRMC's second comment and asked if RIDEM has the authority to compel Publicly Owned Treatment Works (POTWs) to accept pump-out septage from a holding tank.

Mr. Fester said that under certain conditions, where public health concerns exist, RIDEM has this authority. He also noted that POTWs' reluctance to accept boater septage was based on a "phobia," and not on evidence that this septage would disrupt their operations.

Mr. Jankel noted that, while septage from marinas dealing strictly with boater waste should not create operational problems for treatment facilities, POTWs do nonetheless have legitimate concerns about the potential disruption resulting from marina facilities with significant maintenance operations feeding into their septage. The substances contained in the septage of these facilities could cause a POTW to exceed its permit limits, he said.

Mr. Grant directed staff to clarify that, in situations where a public health threat is possible because no facility will accept boater septage, RIDEM should require the appropriate POTW to accept it.

Mr. Fester said that acceptance of boater septage should also be added as a condition for receipt of state grants and permits.

Mr. Dillingham said that all marinas serving "live-aboards" should be required to address the waste disposal issue.

Ms. Karp asked who would oversee this requirement and noted that CRMC stated in an earlier meeting that it lacked the resources, and possibly the authority, to do so.

Mr. Dillingham said that oversight would be most appropriate at the municipal level, but acknowledged that municipal oversight would not always be a workable option.

Mr. Keyworth said that the magnitude of this discussion greatly exceeded the magnitude of the problem and suggested that the recommendation under discussion be left as written.

Mr. Grant observed that current regulations deal adequately with all new marina expansion and asked how we could fill in the gaps to address the live-aboard issue at existing facilities.

Ms. Karp noted that one possibility would be to require, as part of the Harbor Management Plans, development of waste management plans by all marina facilities servicing live-aboards.

Dr. Deacutis asked which agency is responsible for overseeing waste management.

Mr. Dillingham said while RIDEM has this responsibility for new facilities, no agency is adequately providing this role for existing facilities.

Ms. Ruta suggested recommending that RIDEM assume this responsibility as well.

Dr. Deacutis said that RIDEM might not have this authority.

Mr. Grant concluded that this recommendation should not be changed.

Ms. Karp summarized CRMC's additional comments (#5 and #6) and suggested that they be incorporated into the briefing paper.

Mr. Grant concluded that there was consensus on making these changes.

Ms. Karp summarized URI's comments regarding ISSUE D and suggested that they be incorporated into the briefing paper.

Ms. Ruta said that implementation of some of URI's recommendations should await EPA's resolution of legal questions regarding the authority of the U.S. Coast Guard and the states. She offered to pass on EPA's decision as soon as possible.

Mr. Grant concluded that URI's suggestions should be incorporated to the extent determined to be legally allowable. The minutes and summary were accepted without further revision.

APPENDIX B:

SUMMARY OF MANAGEMENT COMMITTEE DECISIONS

JANUARY 24, 1991
FEBRUARY 13, 1991

BOATER WASTE DISPOSAL BRIEFING PAPER

SUMMARY OF DECISIONS

ISSUE A: Should the State of Rhode Island and affected municipalities take additional steps to assure that boat-sewage discharges are eliminated in order to meet State water quality goals?

DECISION: The State of Rhode Island should take additional steps to assure that boat-sewage discharges are eliminated in order to meet State water quality goals.

In order to abate existing vessel-related sources of fecal contaminants,

- RIDEM and CRMC should continue or resume discussions begun in 1989 regarding the reconciliation of RIDEM water quality classifications, CRMC water use classifications and state regulations regarding uses of tidal waters.
- RIDEM and CRMC should continue or resume discussions begun in 1988 regarding the development of a written policy for regulating boater discharges and construction of marinas, docks and mooring fields. For example, RIDEM and CRMC should clearly identify what number of berths or moorings constitute a "marina" or "boating facility" for the purposes of regulation.
- RIDEM and CRMC should continue to enforce restrictions on marina expansion and development in Class SA and Type 1 and 2 waters in order to assure that boating activity does not cause water quality degradation. RIDEM and CRMC should also continue to restrict marina expansion, development and the development of mooring fields in all marine waters 1) where water quality standards are already exceeded UNLESS the applicant can demonstrate that the proposed activity will not result in further water quality degradation OR that expected water quality effects can be mitigated, 2) that are included within the boundaries of marine sanctuaries such as the Narragansett Bay National Estuarine Research Reserve, 3) identified as distinctive habitats of limited distribution, 4) identified as shellfish harvesting areas that are of significant or outstanding commercial or recreational value, or 5) where access to shellfish harvesting areas, finfishing areas, and bathing beaches may be jeopardized by potential increases in boat sewage discharges.

- RIDEM Divisions of Water Resources, Fish and Wildlife and Planning and Development (Natural Heritage Program) and CRMC should prepare and update maps on a biennial basis that indicate the location of

- high quality (Class SA, Type 1 and 2) waters,
- critical or significant tidal and subtidal habitats,
- shellfish harvesting areas that are of significant or outstanding commercial or recreational value,
- threatened or endangered marine flora and fauna,
- bathing beaches,
- marine waters where state water quality criteria are currently exceeded, and
- areas targeted for resoration projects.

The maps should be based on existing information, including information compiled by the NBP "Habitat Inventory/Species Mapping" program, and should be incorporated into the CRMP, local Harbor Management Plans and RIDEM regulations to designate "special or protected" areas. The maps should be used and updated by RIDEM and CRMC to determine where restrictions on marina expansion, placement of mooring fields and/or boater discharge should apply.

- RIDEM and appropriate Massachusetts authorities should work together to develop and display a sign that clearly indicates the availability of pump-out facilities. The sign should be immediately recognizable and visible from the water.

- RIDEM should not issue RIPDES discharge permits to marinas at this time because of the difficulty in defining the land and water area that would be subject to permit limitations at each facility.

- RIDEM and CRMC should continue to work with and encourage marinas to require boaters to obey all rules and regulations relating to boater discharge and to report and, if necessary, expel all violators of these rules. For example, as a prerequisite to issuing a water quality certification, the RIDEM should consider requiring marine facilities operators to certify that facility users have agreed in writing

- to comply with all federal, state and local rules and regulations pertaining to the discharge of sewage from boats; and
- that failure to comply may result in termination any contract or agreement to use the facilities.

ISSUE B. Should additional marina pump-out facilities be established around Narragansett Bay?

DECISION: Additional marina pump-out facilities should be established around Narragansett Bay.

In order to assure convenient boater access to and use of pump-out facilities, Rhode Island and Massachusetts should develop a bay-wide marina pump-out siting plan, and

- The States of Rhode Island and Massachusetts, and their coastal communities should establish and maintain publicly available shore-based toilet and/or pump-out facilities at heavily used state parks and municipal harbors with boat facilities. Pump-out facilities funded with public monies should be available to all users and should have controlled fees for a designated period of time.
- All facilities that service or accommodate boats with MSDs or port-potties should provide convenient and affordable shore-based toilet facilities and waste disposal facilities. As proposed by RIDEM (I. Migliore, pers. commun., 1.4.91) and consistent with U.S.EPA guidelines for designating "no discharge" zones, the RIDEM and CRMC should work toward establishing a minimum of one pump-out station per 300 boats with marine sanitation devices (MSDs) or portable toilets in "transient" harbors, and one pump-out station per 500 boats with MSDs or portable toilets in "parking lot" harbors for the use of both resident and transient boaters. This approach should be adopted for all of Narragansett Bay, including Massachusetts portions of Mount Hope Bay and the Taunton River.
- Regional land-based pump-out facilities and/or the use of pump-out barges should be encouraged.
- Sewage pump-out facilities should be located at or near central service areas such as fuel docks wherever possible in order to provide convenient access and increase the probability of use by boaters.
- Pump-out facilities, as referred to in these recommendations, are not restricted to fixed, shore-based facilities.

ISSUE C. Should marina pump-out facilities be tied to public sewers wherever possible, especially at facilities where boats are continuously occupied? Should CRMC consider designating some harbors or

marinas that have access to sewer lines as exclusive ports for "live-aboards"?

DECISION: Marinas and other marine facilities that are presently served by on-site septic systems should be required to tie-in to municipal WWTFs wherever possible.

In order to assure proper treatment and disposal of boater wastes,

- Marinas and other marine facilities should be required to directly tie-in to existing municipal sewer lines wherever possible. Within the limits of their regulatory jurisdiction, EPA, RIDEM, MADEP and local WWTF industrial pretreatment coordinators should develop criteria for chemical treatment and WWTF handling of boat wastes. [NOTE: The RIDEM Division of Water Resources has worked with some municipal industrial pretreatment programs on an ad hoc basis to identify boating facilities as "significant industrial users". Affected facilities are then subject to "local limits" for discharge to the sewer system, required to install pretreatment equipment (e.g., holding tanks) as necessary, and monitor facility effluents (E.Gleber, RIDEM, pers. commun., 1.11.91)]
- Where a public health risk exists, Rhode Island and Massachusetts regulatory agencies shall require municipal wastewater treatment facilities to accept boat-generated septage. State grant and permits to WWTFs shall be conditioned upon acceptance of generated septage.
- If necessary, EPA, Rhode Island and Massachusetts regulatory agencies should draft legislation and regulations to require municipal wastewater treatment facilities to routinely accept septage from marine pump-out facilities. EPA, Rhode Island and Massachusetts regulatory agencies should work with municipal authorities, including WWTFs, to assure that barriers to septage treatment are not unnecessarily created along jurisdictional lines, i.e., that one coastal community does not refuse to accept boat waste generated in an adjacent community.
- By December 1991, based on available information regarding the use, or limitations on use, of specific chemicals used to treat (disinfect, deodorize) boater wastes, the URI Boat Sewage Management Task Force should generate a list of chemicals whose use should be phased out by 1994. If effective alternative treatment methods are identified, the federal and state agencies (within the framework of their regulatory jurisdictions), RIMTA and other trade organizations should promote and/or require their use by boaters.

- The RIDEM, CRMC, their Massachusetts counterparts and coastal communities should require marine facilities that serve a live-aboard population to address the issue of waste disposal. State-approved municipal Harbor Management Plans should contain a policy encouraging vessels that are continuously occupied for any length of time (e.g., greater than two days) to dock at marinas with direct tie-ins to municipal sewers, shore-based toilet facilities or sewage pump-out facilities. The CRMC in cooperation with the RIDEM, the R.I. Marine Trades Association, the International Marina Institute and other trade organizations, should assess the number and location of "live-aboards" and houseboats using Narragansett Bay facilities in order to evaluate the magnitude of the problem.

- The RIDEM, CRMC and their Massachusetts counterparts should formally adopt the RIDEM and CRMC proposal to require one pump-out station per 300 boats in "transient" harbors, and one pump-out station per 500 boats in "parking lot" harbors for the use of both resident and transient boaters in Narragansett Bay, including Massachusetts portions of Mount Hope Bay and the Taunton River. [NOTE: EPA Region I expects to use this approach in its guidance on pump-out siting for potential no-discharge zone designations throughout Region I (M.Cote, USEPA, pers. commun., 1.11.91).]

- The U.S. Army Corps of Engineers, RIDEM, CRMC and their Massachusetts counterparts should require developers of marina facilities to submit complete plans for boater waste disposal as a condition of permits for expansion or development of new facilities.

- The RIDEM should base its formula for calculating the size of on-site holding tanks for boater wastes on the projected maximum number of boats to be served per pump-out station per three day period. In lieu of facility-specific information regarding number of vessels, occupancy rate and frequency of use, RIDEM should base its dimensional requirements for holding tanks on the R.I. Division of Planning's calculations of waste generated per boat per three day period ("Marinas Task Study", 1978). In order to allow 'down-sizing' of holding tanks where physical site restrictions exist, the RIDEM should require more frequent pump-outs and establish a mandatory holding tank maintenance schedule as a condition of permitting.

- The RIDEM should require municipal WWTFs that are not presently accepting boater waste from boating facilities within their jurisdiction or service area to include provisions for direct marina tie-ins and treatment of boat septage as a mandatory part of the facility planning process. The RIDEM, with input from CRMC and the Rhode Island 'Septage Management Task Force', should continue to work

with WWTFs that do accept vessel wastes to encourage them to accept boater wastes from sources outside their jurisdiction or service area. In addition, RIDEM, CRMC and the Rhode Island 'Septage Management Task Force' should include boater septage in their considerations of a statewide policy for septage treatment and disposal, including the establishment of regional wastewater management districts.

- Municipal Harbor Management Plans should include marinas in wastewater management districts as districts are developed.
- Rhode Island and Massachusetts should phase in requirements for sewage pump-out stations at marine facilities, including mooring fields, over a three (3) to five (5) year period in order to 1) evaluate the performance of existing pump-out facilities, including boater acceptance and compliance, 2) establish regulations and procedures for the treatment and disposal of boater wastes, and 3) enable the operators of public and private facilities to secure low-cost financing from funding sources such as AquaFund and the State Revolving Fund.

ISSUE D. Should efforts to educate boaters and enforce boater use of required MSD equipment be increased?

DECISION: Efforts to educate boaters and enforce boater use of MSD equipment should be increased.

In order to increase boater compliance with MSD requirements,

- RIDEM should continue discussions with the Coast Guard and EPA Region I to develop an Interagency Memorandum of Agreement that provides for increased and consistent Coast Guard enforcement of MSD equipment requirements during routine inspections of all commercial and recreational vessels operating in State waters.
- The U.S. Coast Guard should require operators of vessels with Type I and II MSDs to comply with federal and state laws regarding operation, maintenance and required retrofits of MSD equipment and should encourage operators of vessels with Type I and II MSDs to use marine pump-out facilities.
- The U.S. Coast Guard, in consultation with the U.S.EPA, should review and enforce federal MSD manufacturing, installation and maintenance requirements. Equipment and enforcement problems identified by the Chesapeake Bay Program (1991) include improper manufacturer or dealer installation of subsurface, by-pass valves with

Type 3 MSDs; the lack of standard, 'universal' fittings on vessels with MSDs; and the lack of regulations governing MSD operation, maintenance and effluent monitoring.

- RIDEM should continue discussions with the Coast Guard and EPA Region I to re-authorize or amend the existing inter-agency Statement of Understanding that provides for some delegation of authority to State and local governments for enforcement of MSD and boater waste disposal requirements.

[NOTE: RIDEM officials are meeting with representatives of the U.S.Coast Guard and U.S.EPA in January 1991 to discuss 1) increasing Coast Guard enforcement of MSD equipment requirements on non-commercial vessels when they are boarded for routine inspections, and 2) formal delegation of inspection and enforcement authority to state and local officials (J.Migliore, RIDEM, pers. commun., 12.31.90). In addition, the status of present federal, state and local enforcement efforts as authorized by the existing Statement of Understanding and the possibility of State reimbursement as provided by Section 312 should be discussed. In particular, the State representatives should raise the possibility of obtaining a percent set-aside from the recently enacted boat luxury tax as one mechanism for financing local enforcement of Section 312 requirements.]

- Based on agreements reached with the U.S. Coast Guard, necessary State and local enabling legislation and regulations should be drafted that describe requirements for MSD installation and use, discharge limitations, disposal, treatment and enforcement.

[NOTE: RIDEM has submitted a bill titled "An Act Relating to Marine Discharge of Sewage" for consideration during the 1991 session of the Rhode Island General Assembly. If passed, the statute would a) prohibit boat discharges of sewage in the waters of the State unless treated with a Type I or Type II MSD in "proper working condition" (R.I.G.L. 46-12-37 (A)); b) prohibit boat discharges of sewage in any area declared to be a no-discharge zone (R.I.G.L. 46-12-37 (B)); c) authorize RIDEM, harbormasters, assistant harbormasters and police officers to enforce the provisions of the Act (R.I.G.L. 46-12-39); and d) establish penalties for violations of the provisions of the Act (R.I.G.L. 46-12-38).]

- By January 1, 1995, the RIDEM shall require the installation of Type III MSDs with holding tanks, or portable toilets, on all commercial and

recreational vessels registered to operate in State waters that are designed with overnight accommodations or are greater than 25 feet in total length.

- Rhode Island and Massachusetts should investigate the possibility of increasing the pass-through of federal and state funds available from boat registration fees to coastal communities in order to support local enforcement of equipment and discharge requirements.

- Rhode Island and Massachusetts should promulgate regulations pursuant to existing State authority over pollutant discharges to surface waters that would

- license some full service maintenance or repair boating facilities as official vessel inspection stations;

- require all vessels required to have marine sanitation devices to be inspected at the time of registration for the presence of properly installed and functioning MSD equipment.

In Rhode Island, this program should be administered by the RIDEM Division of Enforcement, Office of Boating Safety.

- The U.S. Coast Guard through the Coast Guard Auxiliary, and the RIDEM Division of Enforcement, Office of Boating Safety (and its Massachusetts counterpart) should develop and distribute boater education materials through Boater Safety courses and relevant marine trades organizations.

ISSUE E. Should efforts to encourage and enforce boater use of available marina sewage pump-out facilities be increased?

DECISION: Efforts to encourage and, where required, enforce boater use of available marina sewage pump-out facilities should be increased.

In order to increase boater use of available pump-out facilities,

- The RIDEM Division of Enforcement, Office of Boating Safety should institute a boater education program regarding proper boater waste disposal. This program should a) provide information on how to install, operate and maintain a marine sanitation device (MSD), b) promote the use of MSDs and pump-out stations, c) state applicable federal and state laws regarding disposal of boat waste, including federal and state penalties for illegal disposal, d) identify areas where disposing of wastes is prohibited in order to protect shellfishing waters or bathing beaches, and e) identify the locations of pump-out stations. General public educational programs should be performed in conjunction with URI's Narragansett Bay Classroom, public schools,

the Rhode Island Marine Trades Association (RIMTA), trade shows and harbor masters to the maximum extent possible.

- The RIDEM's Division of Enforcement's Office of Boating Safety, Parks and Recreation or Information and Education should produce a map of Narragansett Bay and adjacent waters that clearly indicates the location of available pump-out stations. The map should be distributed with boat registration forms, and/or in conjunction with RIMTA, other trade organizations or the publishers of regional boating guides.
- The RIDEM and its Massachusetts counterpart should establish penalties for violation of sewage discharge regulations. For example, penalties could include
 - fines, payable by mail; and/or
 - loss of state boat registration privileges or loss of permission to operate in state waters for out of state boaters.
- Approved municipal Harbor Management Plans should include plans for increasing and enforcing the use of available marina pump-outs. For example,
 - municipalities should establish fines for boaters who discharge untreated sewage (or solid waste) in local waters;
 - docking privileges should be conditional on use of available pump-out facilities, as is the case for *Shooters* and the *Light House Marina* (S.Adamowicz, RIDEM, pers. commun., 1.10.91);
 - municipalities should be encouraged to appoint full-time harbor masters; and
 - harbor masters should be delegated full inspection and enforcement powers in conjunction with RIDEM and the U.S. Coast Guard (see above).
- Owners and operators of public and private marinas, yacht clubs etc. should enforce the use of pump-out facilities by their customers by
 - requiring valve seals on vessels with overboard discharge fittings and/or using dye tablets to monitor for improper overboard discharges;
 - contractually linking docking privileges with proper disposal of boat wastes, as is the case for *Shooters* and the *Light House Marina* (S.Adamowicz, RIDEM, pers. commun., 1.10.91);
 - including the cost of pump-outs in the docking fee and/or offering coupons, rebates or other incentives to promote the use of pump-out facilities.

ISSUE F. Should the State of Rhode Island petition the U.S. EPA for designation of all or part of Narragansett Bay as a "no discharge" zone?

DECISION: The State of Rhode Island should petition the U.S. EPA for designation of all or part of Narragansett Bay as a "no discharge" zone.

In order to better protect water quality, critical marine habitats, important living resources and existing and future uses of Narragansett Bay,

- RIDEM and CRMC should petition the U.S.EPA to designate all or part of Narragansett Bay as a "no discharge" zone.
- Certain regions of Narragansett Bay such as
 - the Narragansett Bay National Estuarine Research Reserve (Prudence, Patience and Hope Islands seaward to the 18 meter isobath),
 - Greenwich Bay,
 - Dutch Island Harbor,
 - Wickford Harbor,
 - Newport Harbors,
 - Great Salt Pond (Block Island), and
 - the coastal ponds

should qualify for 'no-discharge' status based upon 1) their value as marine sanctuaries (NERR); shellfish management areas (Greenwich Bay); historic and scenic waterfronts (Newport and Wickford Harbors); and 2) evidence that increased boat sewage discharges may be contributing to water quality degradation and/or limitations on historic or existing uses (Dutch Island Harbor, Great Salt Pond).

APPENDIX C:

MANAGEMENT COMMITTEE ATTENDANCE

**JANUARY 24, 1991
FEBRUARY 13, 1991**

Management Committee Attendance at January 24, 1991 Meeting

Attended:

Mr. Roy B. Anderson
Director of Utilities
Newport Water Department

Dr. Walter S. Combs, Jr.
Associate Director, Environmental Affairs
RI Department of Health

Mr. Malcolm J. Grant (Chair)
Assistant Director of Administration
RI Department of Environmental Management

Ms. Caroline A. Karp
Project Manager
Narragansett Bay Project

Ms. Katrina V. Kipp
Project Officer
Region I
US Environmental Protection Agency

Mr. Robert Klumpe
State Conservationist
US Department of Agriculture - Soil Conservation Service

Ms. Susan P. Morrison
Chief, Office of Systems Planning
Division of Planning
RI Department of Administration

Mr. Thomas E. Mulhearn
Executive Vice President
RI Association of Realtors

Dr. Harold R. Ward
Director
Center for Environmental Studies
Brown University

Sent Alternate:

Mr. Roger Greene for
Mr. David Abedon
Cooperative Extension
University of Rhode Island

Mr. Ken Kubic for
Ms. Holly A. DesRosiers
RI Marine Trade Association

Dr. Christopher Deacutis for
Mr. James W. Fester
RI Department of Environmental Management

Ms. Gwen Ruta for
Mr. David A. Fierra
Water Management Division
Region I
US Environmental Protection Agency

Mr. Timothy Dillingham for
Mr. Grover J. Fugate
RI Coastal Resources Management Council

Mr. Thomas Grala for
Mr. Eric R Jankel
Narragansett Bay Commission

Dr. Jan Prager for
Dr. Norbert A. Jaworski
Environmental Research Laboratory - Narragansett
US Environmental Protection Agency

Ms. Kristie Kapp for
Dr. Judith Pederson
MA Coastal Zone Management Program

Mr. Ray Hewitt for
Mr. Gary S. Sasse
RI Public Expenditure Council

Mr. Kevin Brubaker for
Mr. H. Curtis Spalding
Save The Bay

Mr. David Borden for
Mr. John A. Stolgitis
Division of Fish & Wildlife
RI Department of Environmental Management

Did Not Attend:

Mr. Eddie Agin
Board Member
RI Shellfishermen's Association

Mr. Allan D. Beck
Reserve Manager
Narragansett Bay-National Estuarine Research Reserve

Mr. Robert L. Bendick, Jr.
Deputy Commissioner
NY Department of Environmental Conservation

Senator John J. Bevilacqua
RI Senate Majority Leader
Rhode Island State Senate

Mr. Thomas E. Bigford
Division Chief
National Marine Fisheries Service
National Oceanic and Atmospheric Administration

Ms. Priscilla Chapman
Executive Director
New England Chapter
Sierra Club

Mr. Alan N. Cooperman
Environmental Engineer
Technical Services Branch
MA Department of Water Pollution Control

Mr. David C. DePetrillo
Director of Tourism
RI Department of Economic Development

Mr. Thomas Hall, III
President
Ocean State Fishermen's Association

Rep. Donald J. Lally, Jr.
RI General Assembly

Ms. Virginia Lee
Coordinator of Domestic and Environmental Programs
Coastal Resources Center
University of Rhode Island

The Honorable Robert J. McKenna
Representative
RI League of Cities and Towns

Dr. Scott W. Nixon
Director
RI Sea Grant

Mr. Lawrence R. Oliver
Environmental Resources Specialist
Environmental Resources Branch
US Army Corps of Engineers, New England Division

Mr. R. Daniel Prentiss, Esq.
Attorney-at-Law

Mr. David L. Rocha
Assistant Executive Director
Mfg. Jewelers & Silversmiths of America

Mr. Terence J. Tierney
Special Assistant Attorney General
Attorney General's Office

Ms. Janet White
Senior Policy Analyst
RI Governor's Office

Management Committee Attendance at February 13, 1991 Meeting

Attended:

Mr. Roy B. Anderson
Director of Utilities
Newport Water Department

Mr. Malcolm J. Grant (Chair)
Assistant Director of Administration
RI Department of Environmental Management

Ms. Caroline A. Karp
Project Manager
Narragansett Bay Project

Ms. Katrina V. Kipp
Project Officer
Region I
US Environmental Protection Agency

Representative Donald J. Lally, Jr.
R.I. State Assembly

Ms. Susan P. Morrison
Chief, Office of Systems Planning
Division of Planning
R.I. Department of Administration

Mr. Thomas E. Mulhearn
Executive Vice President
RI Association of Realtors, Inc.

Dr. Judith Pederson
Principal Policy Analyst
MA Coastal Zone Management Program

Ms. Janet White
Principal Policy Analyst
R.I. Governor's Office

Sent Alternate:

Ms. Joan Beskemis for
Mr. Alan N. Cooperman
Technical Services Branch
MA Department of Water Pollution Control

Mr. Ken Kubic for
Ms. Holly A. DesRosiers
R.I. Marine Trade Association

Mr. David Weeks for
Ms. Kristine A. Stuart
Soil Conservation Service
US Department of Agriculture

Dr. Christopher Deacutis for
Mr. James W. Fester
RI Department of Environmental Management

Ms. Gwen Ruta for
Mr. David A. Fierra
Water Management Division
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US Environmental Protection Agency

Mr. Timothy Dillingham for
Mr. Grover J. Fugate
RI Coastal Resources Management Council

Ms. Marie O'Neill for
Mr. Eric R Jankel
Narragansett Bay Commission

Dr. Jan Prager for
Dr. Norbert A. Jaworski
Environmental Research Laboratory - Narragansett
US Environmental Protection Agency

Mr. Tom Brillat for
Ms. Virginia Lee
Coastal Resources Center
University of Rhode Island

Mr. Kevin Brubaker for
Mr. H. Curtis Spalding
Save the Bay

Mr. Dick Sisson for
Mr. John A. Stolgitis
Division of Fish and Wildlife
RI Department of Environmental Management

Did Not Attend:

Mr. David Abedon
Cooperative-Extension Specialist
University of Rhode Island

Mr. Eddie Agin
Board Member
RI Shellfishermen's Association

Mr. Allan D. Beck
Reserve Manager
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NY Department of Environmental Conservation

Senator John J. Bevilacqua
RI Senate Majority Leader
Rhode Island State Senate

Mr. Thomas E. Bigford
Division Chief
National Marine Fisheries Service
National Oceanic and Atmospheric Administration

Ms. Priscilla Chapman
Executive Director
New England Chapter
Sierra Clu

Dr. Walter S. Combs, Jr.
Associate Director, Environmental Affairs
R.I. Department of Health

Mr. David C. DePetrillo
Director of Tourism
R.I. Department of Economic Development

Mr. Thomas Hall, III
President
Ocean State Fishermen's Association

Mr. Dennis B. Ledbetter
Vice President
Armbrust Chain Company

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Mr. David L. Rocha
Assistant Executive Director
Manufacturing Jewelers & Silversmiths of America, Inc.

Mr. Terence J. Tierney
Special Assistant Attorney General
R.I. Attorney General's Office