Upper North Shore

Regional Boat Waste Pumpout Plan

Including coastal waters of:
Town of Newbury
Town of Rowley
Town of Ipswich
Town of Essex
City of Gloucester
Town of Rockport

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for
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I. Introduction: Purpose and Scope

The Upper North Shore area of Massachusetts, north of Boston from the Cape Ann peninsula to the Parker River, is notable for the beauty and diversity of its coastal areas as well as the significance and vulnerability of the habitat for wildlife and marine organisms. At the same time, the extraordinary resources of the area draw growing numbers of boaters, particularly recreational boaters, which in turn threatens potential pollution of the waterways due to discharges of boat wastes.

The Regional Boat Waste Pumpout Plan for the Upper North Shore provides a needs assessment and recommendations for boat waste management in a planning area which encompasses the Parker River/Essex Bay Area of Critical Environmental Concern (ACEC) and the northern waters of Cape Ann. The area includes coastal waters in the towns and cities of Newbury, Rowley, Ipswich, Essex, Gloucester and Rockport.

The Commonwealth's designation of the ACEC recognizes the importance and vulnerability of the resources of this unique area. The 25,500 acre ACEC, extending from Newbury to Gloucester, is part of the area locally known as the Great Marsh which comprises the largest salt marsh system (over 10,000 acres) north of Long Island, New York.

The Cape Ann peninsula also is an area defined by its coastal features, including harbors, rocky shorelines and intertidal and estuarine areas. The Annisquam River, bisecting the City of Gloucester, extends from Ipswich Bay on the north to Gloucester Harbor on the south. Extensive salt marshes and tidal flats line the river and its tributaries and provide habitat for birds, shellfish, and other marine life.

The Great Marsh and the Annisquam River both include extraordinary natural resources, such as shellfish beds and nursery areas for juvenile fish, with significant ecological and economic value. In addition, the defining features of these marsh and estuarine systems – shallow, protected waters, rich in aquatic and marine life – make them simultaneously

attractive to boaters and sensitive to impacts from boating activity. The increasing popularity of recreational boating is dramatically increasing the numbers of boaters who access these areas.

Discharge of sewage wastes from boats – both treated and untreated – may result in degradation of water quality in poorly flushed areas. Such discharges can be eliminated through the use of pumpout services, mechanically removing wastes from boats, either at a shoreside facility or by use of a pumpout boat, for disposal into an appropriate treatment system.

The Regional Boat Waste Pumpout Plan includes the following sections:

- a description of the plan area, including significant resources and characteristics;
- an assessment of boating activity occurring in the area, identifying numbers, types, and locations of boats; and a discussion of patterns of boating activity and potential impacts from waste discharges;
- a description of existing and planned pumpout services and facilities,
- an assessment of the adequacy and/or gaps in pumpout coverage; and
- recommendations for improvements in the availability and use of pumpout services.

The waterways of the plan area are most valuable to and most heavily used by the residents and boaters of the surrounding communities. Their local knowledge and interest in protecting the resources as well as familiarity with the patterns of boating activity have been critical in understanding how services are used and developing effective approaches to minimizing boat waste discharges. A working group including harbormasters from each of the six cities has provided assistance throughout the planning process. Their input is referenced in all of the Plan sections. Information and input also were provided by marinas and yacht clubs providing pumpout facilities. In addition, a boater survey was conducted to gather information about boaters' knowledge and use of pumpout services. All of these local information sources have contributed to the development of this Plan.

II. Plan Area: Setting and Coastal Resources

The area included in this regional plan is shown in Figure II-1. It is located on the northeastern coast of Massachusetts, approximately 35 – 50 miles north of Boston. The area was defined to include all of the Parker River/Essex Bay Area of Critical Environmental Concern (ACEC) and the Annisquam River, as well as the primary harbors serving boaters using these waterways. The plan area includes coastal waters of Newbury, Rowley, Ipswich, Essex, Gloucester and Rockport.

Inshore waterways in this area include the Parker, Rowley, Ipswich and Essex Rivers, Plum Island Sound and other rivers flowing into it, Essex Bay, Ipswich Bay, the Annisquam River and its tributaries including the Little River, Jones Creek, and Mill Creek, Gloucester and Rockport Harbors, and the nearshore waters around the perimeter of the Cape Ann peninsula. Boating activity is described in detail in Section IV.

This discussion of setting and coastal resources focuses on the areas of the ACEC and the Annisquam River. Both areas present a combination of highly significant habitats, some locations with restricted flushing characteristics, and high intensity of boating use – all important factors in evaluating the potential impacts from boat waste discharge.

The Parker River/Essex Bay ACEC

Resources

The boundaries of the Parker River/Essex Bay ACEC are shown in Figure II-2. The ACEC was designated in 1979 encompassing 25,500 acres including areas of Newbury, Rowley, Ipswich, Essex, and Gloucester. The ACEC includes over 10,000 acres of salt marsh, in addition to sand dunes, barrier beaches, and water bodies. Important values of the area include wildlife and fishery habitat, erosion protection, storm protection, water quality preservation, recreation use, and commercial shellfishing.

The 2,900 acre Parker River National Wildlife Refuge is within the ACEC, known as an important site on the Atlantic fly-way migration route. Over 300 species of birds have been sighted here, including 75 rare species. More than 60 species breed here. The waterways of the ACEC are the site of extensive shellfish beds, contributing significant economic activity in the region. Anadramous fish runs for smelt and alewives are found within the ACEC. The marshes are known as important nursery areas for fish of many kinds. The area is important for the tourism and recreation industries of the region, including regionally recognized beaches, historic sites, parks and natural areas.

In 2000, the Massachusetts Office of Coastal Zone Management published the *Parker River/Essex Bay ACEC Resource Inventory*, documenting resource characteristics, impacts from land use and activities in the area, and ongoing research. Information in the following paragraphs was obtained from this source, which also includes an extensive bibliography.

Shellfish resources have been of particular importance in this area. Six species are harvested, including soft-shell clams, surf clams, blue mussels, razor clams, oysters, and ocean quahogs. The total value of shellfish harvested in Plum Island was estimated at over $3 million in 1992-93. The soft-shell clam harvest in Ipswich alone was valued at $924,000 in 1990.

Shellfish populations vary in response to many factors, notably harvesting, predation and natural mortality. In addition, pollution from runoff and stormwater require both temporary and permanent closures in certain areas. While land use development is growing over time, potentially increasing pollution levels, many communities also are improving pollution controls and treatment. Most of Plum Island Sound currently is classified as Conditionally Approved for shellfishing, requiring temporary closures based on rainfall. Limited areas where shellfishing is prohibited today cover roughly the same acreage as when mapped in 1965. Essex Bay also is largely classified as Conditionally Approved for shellfishing, with some limited areas classified as Prohibited.

Research efforts also are underway to investigate the feasibility of shellfish aquaculture and stock enhancements in this area. The towns of Rowley, Ipswich and Gloucester are participating in this joint effort, involving academic and planning groups as well.

Water quality measurements in the open waters of Plum Island Sound and Essex Bay generally meet requirements for class SA waters (SA = excellent habitat for fish, wildlife, primary/secondary contact recreation, approved areas for shellfish harvesting without depuration, and excellent aesthetic values). However values for bacteria, nutrients and suspended solids are higher in many of the tributary areas, especially close to town centers or other locations with run off or point discharges.

Flushing Characteristics

The frequency with which water in a given area is exchanged with water from the open ocean or other adjacent clean water sources is a factor in determining its ability to maintain a healthy ecosystem. Replacement of the water flushes away contaminants and brings in needed oxygen and nutrients. Replacement occurs as a result of naturally continuing processes including river and tidal flows as well as wave action. The frequency of replacement depends on many factors including the size of the water body, the magnitude of the natural water flows in the area, and the specific geography and geometry of the water body, including depth and area of exchange. Shallower areas with constricted openings to the ocean have poorer flushing characteristics, ie. a longer time is required to replace the water.

For this discussion, the question is how well and how quickly boat wastes will be removed and dispersed from areas where boats congregate. When boat wastes are not removed, contaminants, nutrients and chemicals will accumulate, increasing the likelihood of degrading water quality and marine habitat.

On a statewide basis, poorly flushed coastal waters were characterized in a 1993 Clean Vessel Act funding proposal. Maps from this study show all of Plum Island Sound,

Essex Bay and their tributaries as poorly flushed embayments, defined as any small coastal estuary, bay or lagoon, whose entrance is typically narrower than the maximum width or length of the body and whose hydraulic turnover time exceeds three days. Hydraulic turnover time is defined generally as the time required to replace 63 percent of the water in the bay with new water.

More detailed analyses in the area of the ACEC show the upper reaches of Plum Island sound, where water enters from the Parker and Rowley Rivers, with a flushing time of over nine days, while more rapid turnover in the lower part of the Sound provides flushing in one day or less. Essex Bay was found to be very quickly flushed with dispersion due to tides occurring within ½ of a tidal cycle. (MCZM, 2000)

Boating and Recreation Activity

The area of the Parker River/Essex Bay ACEC is used for all kinds of recreation with many opportunities for both shoreside and waterside access. Waterway use includes swimming, kayaking, sailing, fishing, motor boats, jet skiis, permanent mooring areas, weekend anchoring areas, and transit for cruising boats and boats accessing offshore waters. Although waters in many areas are quite shallow, significant tidal ranges allow many boaters to access most areas at times. Boaters are drawn from an extensive area ranging from Newbury to Rockport to congregate on summer weekends in the protected waters behind the barrier beaches. Local officials estimate as many as 200-300 boats may be anchored or moored adjacent to both Plum Island and Crane's Beach on a sunny weekend day. These same waters are extensively used for many primary and secondary contact activities such as swimming, fishing, kayaking, and shellfishing.

More detail regarding the numbers, types and location of boats using these waterways is provided in Section IV below.

The Annisquam River

Resources

The Annisquam River (shown in Figure II-3) lies entirely within the City of Gloucester. Approximately 3.5 miles in length, the "river" actually opens to the ocean at both its northern and southern ends. The northern end flows into Ipswich Bay. The southern opening is manmade, the result of the Blynman Canal dug in 1634 to connect the river to Gloucester Harbor.

The Annisquam River provides a significant concentration of marsh and intertidal habitat. 847 acres of valuable salt marsh habitat are located along the river and its major tributaries. These areas provide significant habitat for birds and other wildlife as well as nursery areas for juvenile fish.

The river also is – and traditionally has been – a significant shellfishing area. Soft shell clams, surf clams, mussels and razor clams are harvested both commercially and recreationally. Shellfish populations fluctuate greatly from year to year due to many factors. Overfishing, predators, and pollution have led to declines in harvests in recent decades. Currently, investments in sewer installations, septic system upgrades, and elimination of combined sewer overflows, combined with management of fishing pressures and reseeding efforts, are allowing more areas to be used more productively.

Approximately 490 acres of productive soft shell clam flats were identified in the Annisquam River and its tributaries in 1965 (Jerome et al, 1969). In 1981, a similar survey estimated 155 acres (Resources for Cape Ann, 1982). (Direct year to year comparisons are difficult to interpret, due to potential fluctuations in many factors, such as weather, more or less successful "set", harvesting effort, etc.)

In 1965 the productive areas in the river were estimated to hold approximately 34,000 bushels of clams. In all Gloucester areas (ie. including the harbor and Essex River areas) a total of 13,600 bushels were harvested, including both commercial and recreational

activity. At $9.00/bushel, this represented a wholesale value of $122,400 or 19% of the landings for the Commonwealth for that year (Jerome et al, 1969). In 1981, it is estimated that the 155 productive areas in the river held 9,300 bushels. That year there were 219 commercial licenses issued, of which 30 fished full time. 900 recreational permits were issued. The 1980 commercial harvest in all Gloucester waters was estimated at 20,000 bushels. (Resources for Cape Ann, 1982)

The Gloucester shellfish warden estimated the commercial soft shell clam harvest for 2000 from the river areas at 355,000 pounds and a value of $391,000. A total of 112 commercial permits were issued. An additional 7,000 pounds were harvested recreationally. (Knowles, pers. comm., 2001)

Historically, as residential use of the bordering land areas increased, pollution sources from failing septic systems, street run-off and combined sewer overflows close to downtown Gloucester, increased as well. Over time, much of the river was closed to shellfishing. In 1966 approximately 32% of the productive areas were classified as either grossly contaminated or moderately contaminated (requiring depuration). In 1981, again 32% of productive shellfish beds in Gloucester were closed to shellfishing.

The City of Gloucester, in cooperation with the Massachusetts Division of Marine Fisheries (DMF), manages shellfish resources of the area. As areas have been sewered and combined sewer discharges have been eliminated, increasing areas of the river are now being reopened for shellfishing. Recent estimates identify 89.5 acres of shellfish area opened as a result of the North Gloucester sewer project. Additionally 18 acres, previously opened only seasonally (January – March) now have acceptable water quality year round. Repairs and upgrades to West Gloucester septic systems have allowed 65 acres of shellfish beds in the Jones River, previously closed, to open seasonally. (Sargent, pers. comm., 2001)

Shellfish aquaculture in Gloucester, including the Annisquam River, is focused on public stock enhancement projects. Currently, demonstration projects growing soft shell clams

are underway in Essex Bay, with cooperation among the towns of Gloucester, Essex and Ipswich. Also as a demonstration, some stocking of a seasonally closed, previously unproductive area of the Little River off the Annisquam is planned for 2001.

Flushing Characteristics

The Annisquam River and its tributaries are characterized by extensive areas of shallow tidal flats, bordered by extensive salt marsh. The river itself is a dredged channel, 8 feet deep at low tide. In the 1993 map of poorly flushed coastal waters statewide, the Annisquam River is designated as a poorly flushed embayment. This assessment is consistent with the 1969 study by Jerome et al which cites earlier work describing the flushing characteristics of the Annisquam River as "considerably less" than the Parker River – Plum Island Sound estuarine system. Individuals familiar with the river today describe the main channel as well flushed, while upstream tributaries show varying degrees of flushing due both the natural conditions (eg. straight vs. winding creeks) as well as man-made tidal restrictions, such as at road crossings (Sargent, pers. comm., 2001).

Boating and Recreation Activity

The Annisquam River is a heavily used waterway. For the three years from 1998 to 2000, an average of 14,000 recreational vessels per year passed through the Blynman Canal at the river's southern end. These include local boats making day trips as well as cruising boats making passage up and down the east coast. The river is a federally authorized navigation channel, maintained by the Army Corps of Engineers at a depth of 8 feet. In addition, approximately 2500 fishing boats (small inshore vessels and lobster boats) were recorded transiting the canal each year. (Mass Highway, 2001, Yearly Drawbridge Reports 1998 – 2000, Blynman/Gloucester)

The river is home to approximately 1000 boaters berthed at marinas and mooring areas along the length of the river. (More detail on the numbers, types, and location of boating

activity is found in Section III below.) The river also attracts many boaters from nearby harbors in Gloucester, Essex, and Rockport for day use along the beaches or recreational or commercial shellfishing. Sharing the waters are swimmers, fishermen, kayakers and other small boaters seeking protected waters.

In addition to concerns about boat waste discharges, the high level of boat traffic in the relatively narrow river results in disturbances due to wakes along the shoreline and elevated turbidity levels. Resuspension of sediments by the boat traffic can negatively impact nearby shellfish beds.

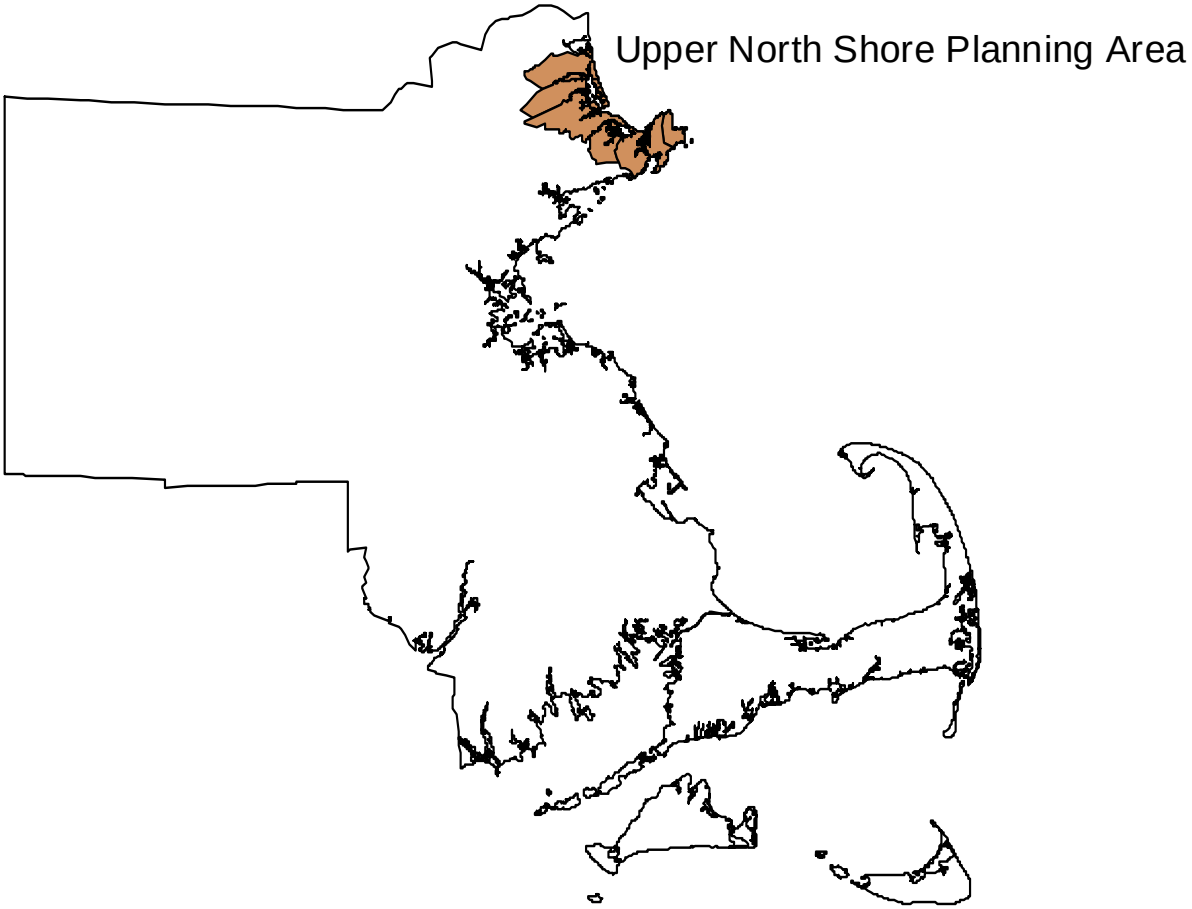

Figure II-1

Upper North Shore Planning Area

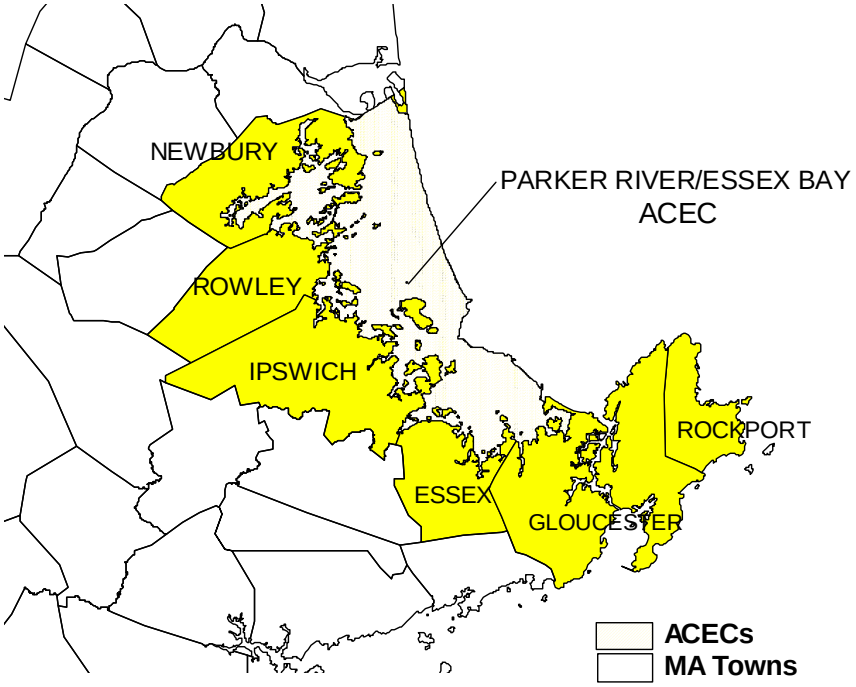

Figure II-2

Parker River/Essex Bay ACEC

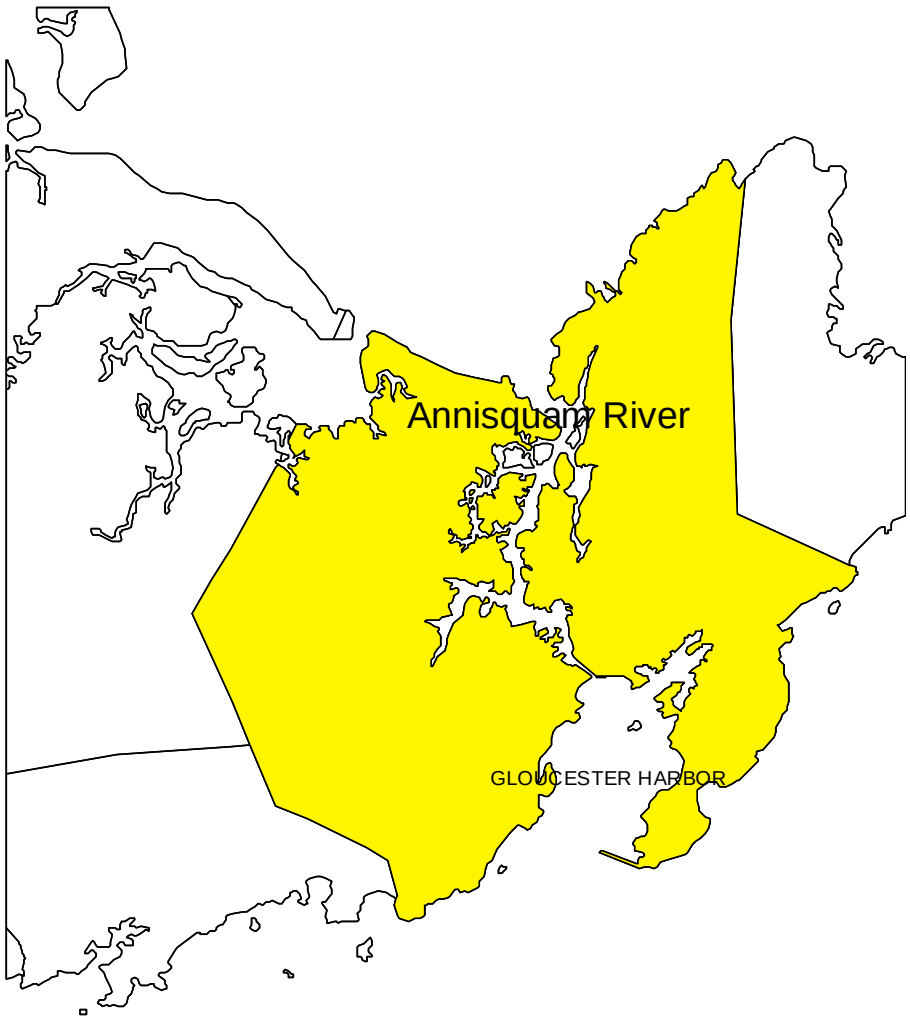

Figure II-3

Annisquam River

III. Managing Boat Waste Discharges

Introduction

As awareness of protecting coastal water quality has grown and as boating activity has increased on waterways nationwide, increasing controls have been placed on disposal of wastes from boats. These controls address both the types of equipment which must be used on vessels as well as what types of discharges are allowed in different areas. This section provides an overview of the regulatory framework.

Marine Sanitation Devices (MSD's)

In the 1970s, the EPA and the U.S. Coast Guard developed standards for waste handling systems required on vessels. The type of marine sanitation device (MSD) required on a boat is determined by its size and how and where it will be used.

Any vessel with an on-board toilet (head) must be equipped with an operable U.S. Coast Guard certified MSD. Manufacture or operation of a vessel without an approved MSD is prohibited.

Type I MSDs are devices which produce effluent with a fecal coliform bacteria count not greater than 1,000 per 100 milliliters and no visible floating solids. Type II MSDs produce effluent with a fecal coliform count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter. Type I and Type II systems generally rely on some form of maceration, chemical disinfection, and/or electrical treatment to meet the standards. Type III MSDs are designed to prevent the overboard discharge of treated or untreated sewage or any waste derived from sewage, generally a holding tank with no treatment beyond deodorizing chemicals.

Vessels equipped with marine heads 65 feet and under may use a Type I, II, or III MSD. Vessels over 65 feet must install a Type II or III MSD.

While there is no direct enforcement regarding the actual use of the various types of MSDs, the U.S. Coast Guard can board and inspect vessels to determine that approved equipment is installed and operating properly.

Regulation of Boat Waste Discharges

In addition, regulations establish standards for discharges of boat wastes in different types of coastal waters. Beyond three miles from the coastline, recreational vessels may discharge boat wastes, treated or untreated. Thus, a vessel with a type III MSD, with a holding tank but no treatment, may empty the holding tank outside three miles.

In waters defined as navigable waters of the United States, inside three miles, including all of the waters in the planning area, only treated discharges from approved MSD's, ie. Type I and II, are permitted. However, in areas of high concentrations of boating activity and/or in poorly flushed areas, such discharges still may result in impacts to marine resources and potentially to human health through inputs of nutrients, treatment chemicals, and bacteria and pathogens.

Again, enforcement of these restrictions on boat waste discharges is based on Coast Guard vessel inspections, checking to see that boats operating in nearshore waters are properly equipped and that the approved systems are functioning properly.

No Discharge Areas (NDA's)

Some coastal areas (as well as all small inland freshwater lakes) are designated as No Discharge Areas (NDA's) where discharge of treated or untreated boat waste is prohibited. Boat wastes must be removed at pumpout facilities on pumpout boats or at shoreside locations or held for disposal offshore, outside three miles. Thus, use of Type I or Type II MSDs would be prohibited.

EPA has established guidelines allowing states or local jurisdictions to request the designation of certain waters as NDA's. The guidelines establish standards for determining that "adequate facilities for the safe and sanitary removal and treatment of sewage from all vessels are reasonably available". The NDA regulations also require a determination that the "protection and enhancement of the quality" of the specified waters requires "greater environmental protection", based on the nature of the resources and uses of the area.

In Massachusetts, 8 NDA's have been established:

- Wareham Bay/Onset Bay
- Nantucket
- Waquoit Bay
- Westport/East & West Branches of the Westport River
- Wellfleet
- Chatham Stage Harbor Complex
- Harwich Coastal Waters
- Buzzard's Bay

Clean Vessel Act

Recognizing that convenient access to pumpout services is a critical factor in reducing nearshore coastal pollution from boat waste discharges, the U.S. Fish and Wildlife Service, under the Clean Vessel Act (CVA), provides funding to the states to defray costs associated with purchase and operation of pumpout facilities, both stationary and mobile. Since 1994, these funds have been available to Massachusetts communities and marina operators. In many communities, the local harbormaster will operate a pumpout vessel, while marinas may provide pumpout facilities along with other shoreside services such as the gas dock. (Section V provides information about types of pumpout facilities and specifically facilities and services provided in the planning region through the CVA program.)

Local Ordinances and By-laws

Locally, some towns have requirements that boats with holding tanks also must be equipped with fittings to allow use of pumpout facilities. Both Rowley and Ipswich have such requirements for boats with mooring/slip permits from the towns. (Copies of their requirements are provided in Appendix A)

IV. Boating Activity in the Plan Area

Introduction

This section describes and quantifies boating activity occurring in the planning area. The number of boats using a given area is a primary determinant of the potential impacts of boat wastes as well as the need for pumpout services. The size and age of the boats also affect the demand for services. The size provides an indication of whether or not a boat is likely to have on-board toilet facilities (a "head") and also whether the boat is likely to be taken more than three miles offshore, where boat wastes may be discharged legally. Assumptions used by EPA in estimating the percentage of boats with marine sanitation devices (MSD's), ie. potential users of pumpout services, in different size categories are provided below. Newer boats are more likely to be equipped with a holding tank, providing the option – or in some cases a necessity – for using pumpout services.

The number of boats also is a key factor, along with the number and location of pumpout facilities, in determining whether or not there is adequate "coverage" in the provision of pumpout services. (That evaluation for the Upper North Shore area is presented in Section VI below.)

Methodology

Information on the numbers of boats in the planning area was derived from several sources. Data on slips and moorings were collected for the 1998 MA Executive Office of Environmental Affairs (EOEA) Statewide No Discharge Area application, providing information for all coastal waters of the Commonwealth. Much of the information regarding numbers of boats in the statewide application originated from a 1994 Division of Marine Fisheries (DMF) Shellfish Survey. For this study, the data on boat numbers in the 1998 statewide documentation were used as a baseline and updated by harbormasters and marina owners in each of the six cities and towns in the planning area.

The data on slips and moorings have some limitations for estimating total numbers of boats and demand for pumpout services. They do not provide information on the number of trailered boats, boats on private docks or moorings, or transient boats which cruise through the area. Additional information can be gained by looking at data from the Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement (FWELE) for boats registered to owners in the six towns and cities in the planning area. These data do not include vessels which are documented by the US Coast Guard, which would tend to be larger vessels. However, they do include all boats, including those used exclusively on inland lakes and rivers which would not be counted in the data on local slips and moorings, and which would not impact the waters of the planning area. Therefore, we can assume the FWELE data will conservatively overestimate the numbers of boats for our purposes. The most recent FWELE data available by town were for 1997. These numbers were increased by 10% to arrive at estimates for 2000, based on advice from FWELE.

The information compiled by EOEA in 1998 did not include any information about size of boats. Boat length is of interest because of the relationship between boat length and presence of holding tanks. Based on earlier studies and guidance from the EPA it is assumed that 100% of boats less than 16 feet in length will not have any toilet facilities. Thus, these boats are not contributing to boat waste discharges and do not create demand for pumpout services. 25% of boats between 16 feet and 25 feet in length are assumed to have toilet facilities (MSD's). 50% of boats between 26 and 39 feet are assumed to have MSDs and 100% of boats 40 feet and longer are assumed to be so equipped.

The FWELE data can be used to estimate the numbers of boats in the planning area by size categories and thus boats that may use pumpout services. FWELE provided information on *statewide* percentages of boats in each size category and these percentages then were applied to the numbers of boats registered in each town. Different areas would be expected to have varying size characteristics for their boat populations. Coastal areas with access to offshore waters would have more large boats than areas restricted to inland waters and rivers. On the other hand, the shallow waters of Plum Island Sound and it's

tributaries would suggest that more small boats would be found. For this study, the statewide estimates are not an unreasonable basis for analysis.

An additional source of information is the assessor's office in each of the cities and towns. Local governments track boat ownership for purposes of assessing excise taxes. These records include information on boat length. These data were accessible for four of the six communities and are included for comparative purposes.

Data on Numbers of Boats

Table IV-1 presents the information derived from the earlier EOEA NDA application, as updated by the harbormasters and marina operators, organized by town and city. For most of the towns, this table includes detailed information on where the slips and moorings are located. Table IV-2 summarizes this information for total number of boats in each town and city. Added to the summary table for comparison are the data from FWELE and from the assessors' offices, where available. The data confirm that the boat registration information provides a higher estimate of total numbers of boats. Because it is available for all of the towns, it is the most useful data set.

Table IV-3 also presents summary data, but showing the distribution of boats in the major waterbodies. The distribution is according to the locations of slips and moorings as shown in Table IV-1. This analysis is useful in evaluating impacts from boat waste discharges and in estimating demand for pumpout services in the different geographic areas, defined by the waterbodies. The areas used for this breakdown are shown in Figure IV-1. The names used for the waterbodies correspond to their identification on the NOAA navigation charts. Thus, Ipswich Bay refers to waters outside of Plum Island and Crane's Beach, as well as off the northern end of the Annisquam River and up the western shore of Cape Ann. The protected waters of the Parker River/Essex Bay ACEC largely fall into the areas grouped as Plum Island Sound and Essex Bay.

The distribution by waterbody recognizes boating patterns in the study area. Boats docked or moored along the rivers must travel to and through the embayments at the mouths of the rivers. Thus the boats berthed along the tributaries of the major bays are potential dischargers or conversely potential users of pumpout services in those bays. Realistically, boaters travel from one area to another, so that on any weekend, boats congregating in a given area may come from an adjacent river or town or from outside the planning area. The analysis of boats in the waterbody areas is intended to estimate for planning purposes of the numbers of boats regularly using an area. This assumption is reasonable given that local boaters are likely to use pumpout services, assuming they are availabile, near where they keep their boat or where they use it regularly.

The FWELE data do not include any information on where boats are berthed or used. For Table IV-3, the distribution of registered boats throughout the waterbodies is based largely on the relative distribution seen in the data on slips and moorings. As noted previously, the FWELE data include boats which may not be used in coastal waters at all. The assumptions made here to include all of the boats in the coastal waters provides a conservative estimate, most likely overstating the actual numbers of boats in these waters.

Table IV-4 estimates the numbers of boats – by towns - in the size categories used in the EPA guidelines for estimating numbers of boats with MSD's, followed by a calculation of the number of boats with MSD's. This data is derived from the FWELE information. The FWELE size classes include a category for "other" which is reported to be small craft, generally hand powered. This category has been dropped from the analysis of boats using pumpout services.

Recalling that the assessors' data also included information on size of boats, Table IV-5 presents the same analysis as in Table IV-4 but uses assessors' data for the four towns for which it was available (see Table IV-2). When the assessors' data are used, more boats are estimated in the size classes greater than 16 feet. This results in a higher estimate of boats with MSD's, nearly doubling the total over the region.

A comparable analysis calculating numbers of boats with MSDs was done by waterbody, as shown in Table IV-6, using the distribution developed in Table IV-3 and applying the size breakdown from the FWELE data.

Conclusions

Looking at the data summary by town in Table IV-2, Gloucester has by far the largest number of boats. It should be noted that this analysis focused on recreational boats and these figures are not assumed to include the larger commercial fishing vessels in Gloucester. Gloucester's excursion vessels, such as whale watch boats and day boats or head boats for fishing trips, also have not been tallied. The larger vessels generally work offshore. The protected waters of Plum Island Sound, Essex Bay and the Annisquam River, which are the primary focus for this plan, are most heavily impacted by recreational rather than commercial boats.

Rowley has the fewest slips and moorings with 100. However, town boundaries do not necessarily coincide with patterns of boating activity. Many town boundaries cross or bisect waterbodies. Waters which are easily accessible by the waterways, may be in the next town. For example, much of the area of Essex Bay, is within the Town of Ipswich, although the waters are most easily accessed by boaters from Essex. Conversely, waterbodies which are close "as the crow flies" may be a long journey by boat, down the rivers or around the sand bars in Ipswich Bay. For these reasons, the numbers of boats by town may not be a good indicator of potential impacts or demand for pumpout services in different areas.

The boat numbers by waterbody are presented in Table IV-3. The greatest concentrations of boats are based in Plum Island Sound and the Annisquam River, with large numbers also found in Essex Bay and Gloucester Harbor. Of the total numbers of boats (slips and moorings) identified in the planning area, 44% are moored in Plum Island Sound and Essex Bay and their tributaries and another 26% are moored along the Annisquam River. Thus 70% of the recreational boats in these six cities and towns are based in areas notably

rich in marine life and sensitive to pollution due to shallow waters and, in some areas, low flushing characteristics.

Only anecdotal information is available to describe patterns of boating use. However, intense weekend use of the areas of Plum Island Sound and Essex Bay behind the barrier islands is a significant factor noted by all of the local harbormasters. Some boats are moored in these areas, but the majority of the weekend users are anchored and many boats raft up. Numbers of vessels in the area on a favorable weekend will be 200-300 in Plum Island Sound and Essex Bay. Many of these are medium to large boats (>25 feet) so a substantial number can be assumed to have MSDs. Similar congregations of boaters occur in the northern reaches of the Annisquam River near Wingaersheek Beach on warm summer weekends. Many of the same features which attract boaters to these areas, the protected and relatively shallow water and abundant wildlife, also make them sensitive to intense use and pollution.

The data tables (Tables IV-4 and Table IV-6) showing the distribution of boats by size classes and the numbers of boats with MSD's show patterns similar to the summary data, although the estimates of numbers of boats with MSD's are markedly lower than the total numbers of boats. From these data we estimate that 75% of the boats with MSD's are based in Plum Island Sound, Essex Bay, and the Annisquam River. However, it also is likely that many of the larger boats regularly travel offshore.

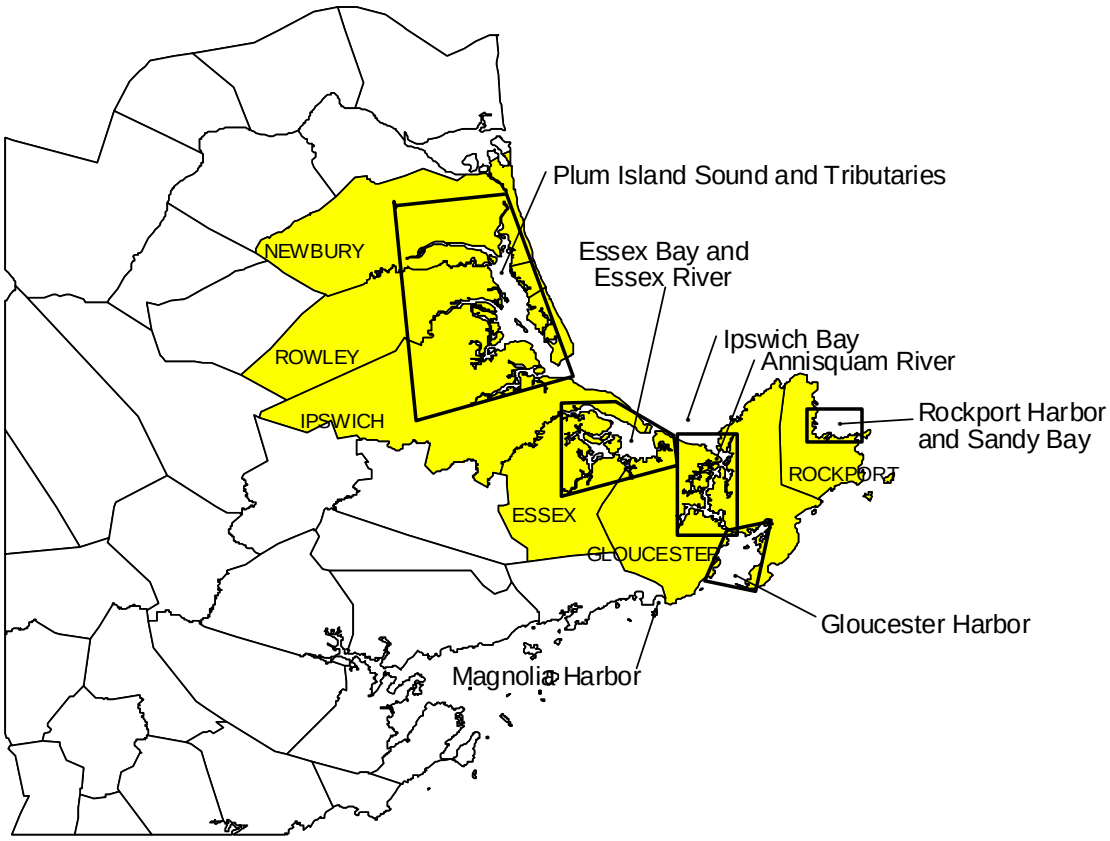

Figure IV-1

Planning Area Waterbodies

Table IV-1 Upper North Shore Regional Pumpout Project
Numbers and Locations of Slips and Moorings

Town	Waterbody	Marina Name	Mooring Area Name	# Slips	# Moorings	Total # Boats
Newbury	Parker River/Plum Island Sound	Riverfront		112	29	141
	Parker River/Plum Island Sound	Fernalds		15	37	52
	Parker River/Plum Island Sound	Town of Newbury	Town Moorings		314	314
					Subtotals:	**507**
Rowley	Rowley River/Plum Island Sound	Perleys		80	20	100
					Subtotals:	**100**
Ipswich	Plum Island Sound & Ipswich Riv.		Ipswich Bay YC & Town of Ipswich		500	500
					Subtotals:	**500**
Essex	Essex River	Pike Marina		60		60
	Essex River	Essex Marina		70		70
	Essex River	Perkins Marina		96		96
	Essex River	Essex Riv. Motel		12		12
	Essex Bay	Town of Essex			250	250
					Subtotals:	**488**
Gloucester*	Ipswich Bay		City Moorings - Ipswich Bay		14	14
	Essex Bay		City Moorings - Essex Bay		16	16
	Ipswich Bay		City Moorings - Hodgkin's Cove		47	47
	Ipswich Bay		City Moorings - Lanes Cove		47	47
	Annisquam River		City Moorings - Lobster Cove		157	157
	Annisquam River		City Moorings - Goose Cove		3	3
	Annisquam River		City Moorings - Mill River		56	56
	Annisquam River		City Moorings - Jones Creek		11	11
	Annisquam River		City Moorings - Little River		77	77
	Annisquam River		City Moorings - Annisquam River**		218	218
	Gloucester Harbor		City Moorings - Outer Harbor***		262	262
	Gloucester Harbor		City Moorings - Inner Harbor****		124	124
	Magnolia Harbor		City Moorings - Magn. Hbr/Pier		3	3
	Massachusetts Bay		City Moorings - Salt Island		9	9
	Gloucester Harbor	Anchorwatch		25		25
	Gloucester Harbor	Beacon Marine Basin		55		55
	Gloucester Harbor	Brown's Yacht Yard		40		40
	Gloucester Harbor	Bickford Marine		20		20

Table IV-1 Upper North Shore Regional Pumpout Project
Numbers and Locations of Slips and Moorings

Town	Waterbody	Marina Name	Mooring Area Name	# Slips	# Moorings	Total # Boats
	Gloucester Harbor	East Gloucester Marina		40		40
	Gloucester Harbor	Lighthouse Marina		20		20
	Gloucester Harbor	Enos Pier 7 Marina		25		25
	Gloucester Harbor	Gloucester Yankee Mar.		10		10
	Annisquam River	Cape Ann Marina		250		250
	Annisquam River	Gloucester Marina		115		115
	Annisquam River	Heron Way		50		50
	Annisquam River	Lobster Cove Marina		24		24
					Subtotals:	**1718**
Rockport	Sandy Bay/Rockport		Granite Pier		60	60
	Sandy Bay/Rockport		Pigeon Cove		60	60
	Rockport Inner Harbor		Rockport Inner Harbor	30	200	230
	Rockport Inner Harbor	Old Harbor YC		30		30
					Subtotals:	**380**
			REGIONAL TOTAL			**3693**

Data updated from EOEA 1998 Statewide NDA Application

*Gloucester numbers do not include transient moorings (55). Gloucester numbers do not include dockage used for commercial vessels.

**Gloucester Annisquam Riv. City Moorings include:
- Annisquam River Areas "A" - "E"
- Diamond Cove
- Cambridge Beach

****Gloucester Inner Harbor Mooring Areas include:
- Inner Harbor
- Pirates Cove
- Rocky Neck
- Smith Cove
- Vincents Cove

***Gloucester Outer Harbor Mooring areas include:
- Eastern Point and EPYC
- Freshwater Cove
- Southeast Harbor
- Ten Pound Island
- Wonson Cove
- Oak Cove
- Normans Woe

Table IV-2

Summary Table – Total Boat Numbers by Towns

Comparative Estimates

Town	Slip/Mooring Information[1]	FWELE Boat Registration Information[2]	Town Assessors' Data
Newbury	507	556	563
Rowley	100	358	na
Ipswich	500	1377	na
Essex	488	812	344[3]
Gloucester	1718	2518	2099[3]
Rockport	380	459	281[3]
Totals	**3693**	**6080**	**na**

[1] Updated from 1998 Statewide NDA Application. Slips and moorings data do not reflect trailered boats or boats at private docks.
[2] Source: MA Dept. of Fisheries, Wildlife and Environmental Law Enforcement (FWELE), pers. comm. D. Barber, 2000. Estimated by increasing by 10% total boats registered to owners in each town in 1997. Registered boats do not include documented vessels.
[3] Essex, Gloucester and Rockport Assessors data do not include boats less than 16'.

Table IV-3

Summary Table – Total Boat Numbers by Waterbody

Comparative Estimates

Waterbody	Slip/Mooring Information[1]	FWELE Boat Registration Information[2]
Plum Island Sound and Tributaries	1107	2291[3]
Essex Bay and River	504	837[4]
Ipswich Bay	108	151[5]
Annisquam River	961	1410[6]
Gloucester Harbor	621	906[7]
Magnolia Harbor & Mass. Bay	12	25[8]
Sandy Bay	120	147[9]
Rockport Harbor	260	312[10]
Totals	**3693**	**6079**

[1] Updated from 1998 Statewide NDA Application. Slips and moorings data do not reflect trailered boats or boats at private docks.
[2] Source: MA Dept. of Fisheries, Wildlife and Environmental Law Enforcement (FWELE), pers. comm. D. Barber, 2000, for boat registrations by town. 2000 numbers estimated by increasing by 10% total boats registered to owners in each town in 1997. Distribution by waterbodies by notes below.
[3] Assumes all boats registered to owners in Newbury, Rowley, and Ipswich.
[4] Assumes all boats registered to owners in Essex plus 1% of boats registered in Gloucester, pro-rated based on distribution of slips & moorings.
[5] 6% of Gloucester registered boats, pro-rated based on distribution of slips & moorings.
[6] 56% of Gloucester registered boats, pro-rated based on distribution of slips & moorings.
[7] 36% of Gloucester registered boats, pro-rated based on distribution of slips and moorings.
[8] 1% of Glouceser registered boats, pro-rated based on distribution of slips and moorings.
[9] 32% of Rockport registered boats, pro-rated based on distribution of slips and moorings.
[10] 68% of Rockport registered boats, pro-rated based on distribution of slips and moorings.

Table IV-4

Boat Numbers by Size Class by Town - FWELE Data

		Newbury	Rowley	Ipswich	Essex	Gloucester	Rockport	
	%							
<16 feet	0.304	169	109	419	247	766	139	
16 - <26	0.435	242	156	600	353	1096	200	
26 - <40	0.052	29	19	71	42	130	24	
40 - 65	0.002	1	1	2	1	4	1	
>65	0	0	0	0	0	0	0	
Other	0.207	115	74	285	168	522	95	
	Total	556	359	1377	811	2518	459	**6080**

Estimated from FWELE Boat Registration Data

Estimates of Boat Numbers with MSDs by Town

		Newbury	Rowley	Ipswich	Essex	Gloucester	Rockport	
	% w/ MSDs*							
<16 feet	0	0	0	0	0	0	0	
16 - <26	0.2	48	31	120	71	219	40	
26 - <40	0.5	15	10	36	21	65	12	
40 - 65	1	1	1	2	1	4	1	
>65	1	0	0	0	0	0	0	
Other								
	Total	64	42	158	93	288	53	**698**

*EPA guidelines

Table IV-5

Boat Numbers by Size Class by Town - Including Assessors' Data

	Newbury	Rowley	Ipswich	Essex	Gloucester	Rockport
<16 feet	214	109	419	na	na	na
16 - <26	297	156	600	286	1339	240
26 - <40	51	19	71	56	653	41
40 - 65	1	1	2	2	106	0
>65	0	0	0	0	1	0
Other		74	285			

From Assessors Office Data for Newbury, Essex, Gloucester, and Rockport

Estimated from FWELE Boat Registration Data for Rowley and Ipswich

na = not available

Estimates of Boat Numbers with MSDs by Town

		Newbury	Rowley	Ipswich	Essex	Gloucester	Rockport	
	% w/ MSDs*							
<16 feet	0	0	0	0	0	0	0	
16 - <26	0.2	59	31	120	57	268	48	
26 - <40	0.5	26	10	36	28	327	21	
40 - 65	1	1	1	2	2	106	0	
>65	1	0	0	0	0	1	0	
Other								
	Total	86	42	158	87	701	69	**1143**

*EPA guidelines

Table IV-6

Boat Numbers by Size Class by Waterbody - FWELE Data

		Plum Isl Sound	Essex Bay	Ipswich Bay	Annisq River	Gloucester Harbor	Magnol Hbr Mass Bay	Sandy Bay	Rockport Harbor	
<16 feet		697	254	46	429	275	8	45	95	
16 - <26		997	364	66	613	394	11	64	136	
26 - <40		119	43	8	73	47	1	8	16	
40 - 65		3	1	0	3	2	0	0	0	
>65		0	0	0	0	0	0	0	0	
Other		475	174	31	292	188	5	30	65	
	Total	2291	837	151	1410	906	25	147	312	**6079**

Estimates of Numbers of Boats with MSD's - by Waterbody

		Plum Isl Sound	Essex Bay	Ipswich Bay	Annisq River	Gloucester Harbor	Magnol Hbr Mass Bay	Sandy Bay	Rockport Harbor	
	%									
<16 feet	0	0	0	0	0	0	0	0	0	
16 - <26	0.2	199	73	13	123	79	2	13	27	
26 - <40	0.5	60	22	4	37	24	1	4	8	
40 - 65	1	3	1	0	3	2	0	0	0	
>65	1	0	0	0	0	0	0	0	0	
Other										
	Total	262	95	17	162	104	3	17	35	**696**

V. Existing and Planned Regional Pumpout Services

Introduction

To examine the adequacy of regional boat waste pumpout services and facilities, information is needed on the types of services and numbers of facilities available to boaters. This section begins with a discussion of the various types of pumpout facilities, advantages and disadvantages of each, and their usage in the Commonwealth. Data then are provided about the facilities that currently are available, or will be in the 2001 boating season, in the planning area and their availability and usage. General conclusions are drawn with regard to coverage provided throughout the region for boat waste pumpout services. A more detailed analysis of the adequacy of pumpout services in relationship to the numbers of boats is provided in the following section.

Since 1994, funding has been available for Massachusetts coastal communities to cover costs associated with providing boat waste pumpout services. These costs include the initial capital expenditures for purchasing and equipping pumpout boats or shoreside pumpout stations as well as ongoing operational costs for waste removal, boat operator salary, fuel and other maintenance costs. Costs, including overhead and administrative costs, are reimbursed at a rate of 75%.

Federal funds are made available to the states under the Clean Vessels Act (CVA). The Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement (FWELE), in turn, administers a CVA Pumpout Grant program, providing funding to communities and pumpout operators for acquisition of facilities and reimbursement for ongoing operation and maintenance costs. The availability of this funding is cited by the operators as an essential component in providing convenient and reliable pumpout services.

Types of Pumpout Facilities

All boat waste pumpout systems consist of a pump (which may be reciprocating, centrifugal, or vacuum), hoses and fittings to connect with fittings on the boat holding tank to be emptied, a holding tank in which to collect the wastes, and some means of ultimate disposal of the waste into an appropriate treatment system. The pumpout equipment may be stationary at a dock, or mobile –either on board a vessel or transportable on a cart through a docking or marina facility. Finally, while not technically pumpout facilities, dumping stations are provided in some areas for emptying porta-potty wastes. All of these systems are described below. (Most of the information in this subsection is taken from the statewide No Discharge Area [NDA] application prepared by Massachusetts Executive Office of Environmental Affairs [EOEA] in October of 1998).

Stationary systems

Stationary pumpout facilities generally are provided at marinas or gas docks, at a location easily accessible to boaters as they begin or complete their boating activity. The wastes removed from boaters' holding tanks are pumped either into a holding tank on shore or directly into a sewer line if one is available. If it is stored in a holding tank, then that tank also must be emptied periodically by a licensed septic hauler to a sewage treatment facility. The operator of a stationary facility generally is the owner of the marina or yacht club where it is located. In cases of public ownership of waterfront facilities, a city or town could be the operator.

Factors to be considered in siting or evaluating the availability of stationary facilities include the depth of water at the dock, accessibility of the dock to boaters, considering access channels, etc., and congestion or other uses of the dock at peak periods. Equipment generally can be managed by the boater although some operators prefer to have their own staff handle the equipment, which may limit the hours when service is available. An operational advantage is the potentially large capacity of a shoreside holding tank or the virtually unlimited capacity available through access to a sewer line.

Accordingly, access to a sewer line or room for a holding tank may present siting issues. Advantages from the perspective of the boater are direct access when they wish to use the service, although there may be a wait during busy periods. Use of such service may be inconvenient if the boater has to go out of his/her way to get to the facility.

Mobile systems

Mobile equipment may be used from a pumpout boat or provided on a dockside cart. Pumpout boats are the only mobile services provided in the planning area. There are several manufacturers of pumpout boats used in Massachusetts coastal waters. However all of the boats in the planning area are the "CB Environmental", manufactured by C.B. Boatworks Inc. of Wellfleet, MA. It is a 21 foot, 200 horsepower boat with a molded fiberglass hull and deck. Typically, the pumpout boat is fitted with a below-deck 300-gallon molded fiberglass holding tank and a gas-driven Edson bronze diaphragm transfer pump. The 300-gallon tank can be discharged easily into a shoreside pumpout station or pumped directly at the dock by a Licensed Septage Hauler.

The vast majority of mobile pumpout units in Massachusetts are pumpout vessels. The advantage of this type of service is that the pumpout vessels can go to where the boaters use their boats, reducing the inconvenience of using pumpout services. The pumpout boats generally are very shallow draft vessels so that they can provide service to vessels in most areas. Operators may provide service on call (by VHF radio or phone), they may patrol heavily used waterways and provide services as needed, or they may respond to flags or markers on vessels on moorings or in slips while the boat is not in use.

A limitation in using pumpout vessels is the capacity of the onboard waste holding tank. A 300 gallon tank may require the boat operator to return to a shoreside pumpout location after 10-15 pumpouts, depending on the size of boats serviced. On busy weekends this may be required more than once a day and may involve considerable travel time to the nearest pumpout location.

Also, operators, often public harbormasters, must provide boat operators, although these costs currently are reimbursed through state and federal programs.

Pumpout equipment on dockside carts is convenient for boats kept on slips at marinas. This type of equipment is not commonly provided in Massachusetts and none is located in the planning area.

Waste dump stations commonly are located at marinas or near boat launch ramps, in conjunction with rest room facilities. They consist of a station where a porta-potty can be emptied into a facility for disposal into a holding tank or a sewer system, with fixtures for rinsing and cleaning up after use. These stations are common on Cape Cod and less often seen in other areas of the Commonwealth.

Existing and Planned Pumpout Facilities in the Planning Area

Information about pumpout facilities was collected by EOEA for the 1998 statewide NDA application. That information was confirmed and updated through interviews with the operators for the preparation of this plan. The Harbormasters Working Group also reviewed the compiled information for accuracy.

Detailed information about currently available or planned pumpout facilities and services for boaters in Newbury, Rowley, Ipswich, Essex, Gloucester, and Rockport is shown in Table V-1. Summary information for each town is shown in Table V-2.

Services are provided in five of the six cities and towns, including a mix of stationary and mobile services. Boats based on the Parker, Rowley and Annisquam Rivers can access stationary facilities in these waterways. Until the 2000 boating season, a single pumpout boat operated by the Rowley Harbormaster provided mobile services to the Plum Island Sound/Essex Bay area. The addition of a boat operated by the Ipswich Harbormaster in 2000 expands this coverage, especially providing greater coverage in the area of Essex Bay – which includes Ipswich waters.

Ipswich and Rowley have cooperated in the planning and operation of their services to maximize availability to boaters. The two towns have coordinated in scheduling the operation of their pumpout boats to ensure 7 day a week coverage, with both boats available on weekends. Both towns also provide service "by flag" to make full use of the vessel operation time by providing services during non peak times. The new Ipswich pumpout boat has been provided access to the shoreside pumpout station at Perley's Marina in Rowley to minimize travel time for trips to empty the vessel's holding tank. The cooperation between the towns serves as model for the region in working to ensure that pumpout services are accessible and convenient for boaters, with the goal of increasing overall use pumpout services.

In considering the apparent gap in coverage in the town of Essex, it is noted that the waters of Plum Island Sound and Essex Bay, where the greatest concentrations of boats come together on summer weekends, lie almost entirely within the boundaries of Newbury, Rowley, Ipswich and Gloucester (see Figure II-2). Adequacy of coverage is discussed in the following section of this plan.

The remaining waters of Cape Ann are covered by the pumpout boat and stationary pump out facility at Cape Ann Marina on the Annisquam River, as well as the pumpout boat operated by the Rockport Harbormaster. An additional pumpout boat which will be operated by the City of Gloucester Harbormaster beginning in the 2001 boating season will improve services for the many boaters based in Gloucester and on the Annisquam River.

In the following section there is a more detailed analysis of the adequacy of pumpout services in the planning area considering detailed data on numbers and sizes of vessels and usage patterns.

It also should be noted that there is only a single waste dump facility for porta-pottys in the planning region, located at Riverfront Marina on the Parker River. The large numbers of small boats in the area suggests many boats may be equipped with porta-pottys. Facilities for appropriate disposal of these wastes would encourage cleaner boating practices.

Pumpout Volumes

The Massachusetts Clean Vessel Act Grant Program compiles data on the volumes of boat wastes pumped by facilities funded through the CVA program. For the planning area the following statistics were reported by that agency:

Boat Waste Pumped (gallons)

	1997 Season	***1998 Season***	***1999 Season***
Cape Ann Marina	2875	2900	3000
Perley's	0	427	3309
Riverfront	2045	6823	8910
Rockport	0	500	200
Rowley	950	3000	3791

Source: MA Clean Vessel Act Grant Program

This data reflects the most recent data available when this report was prepared. The Ipswich pumpout boat did not go into service until the 2000 season. It can be seen that for most of the facilities, the volumes are increasing year by year. Rowley and Ipswich confirmed at the working harbormaster's group meeting in December, 2000 that their combined pumpout volumes for the 2000 season exceeded the volumes pumped by the Rowley boat alone in 1999.

Table V-1 Upper North Shore Regional Pumpout Plan Pumpout Services and Facilities

Town	Operator	Location	Type of Facility	VHF or Tel. No.	MLW Depth	Season
Newbury	Riverfront Marina	Riverfront Marina Parker River	Stationary	CH 9 VHF 978 465-6090	10 feet	May - October
		Riverfront Marina Parker River	Waste Dump	CH 9 VHF 978 465-6090		May - October
Rowley	Rowley Harbormaster	Based at Town Boat Ramp, Rowley River	Pumpout Boat	CH 9 VHF	n/a	3 season
	Perley's Marina	Perley's Marina Rowley River	Stationary	CH 9 VHF 978 948-2812	1-2 feet	3 season
Ipswich	Ipswich Harbormaster	Based at Ipswich Yacht Club, Plum Island Sound	Pumpout Boat	CH 9 VHF 978 356-6660	n/a	May - October
Gloucester	Cape Ann Marina	Cape Ann Marina Annisquam River	Stationary	CH 10 VHF 978 283-3293	8 feet	Year round
	Cape Ann Marina	Based at Cape Ann Marina, Annisquam Riv.	Pumpout Boat	CH 10 VHF 978 283-3293	n/a	3 season
	Gloucester Harbormaster (Avail. 2001 Season)	Based in Gloucester Harbor	Pumpout Boat	Monitors CH 16 VHF 978 282-3012	n/a	May - October
Rockport	Rockport Harbormaster	Based in Rockport Harbor	Pumpout Boat	CH 9 VHF 978 546-9589	n/a	3 season

Table continues across 3 pages

Table V-1

Upper North Shore Regional Pumpout Plan
Pumpout Services and Facilities

Town	Operator	Summer Hours	Cost	Area Covered	Equipment Brand	Volume Pumped 1998	1999
Newbury	Riverfront Marina	8 am - 6 pm 7 days/wk	free	Parker River	Waubashene Pump	6823	8910
		8 am - 6 pm 7 days/wk	free				
Rowley	Rowley Harbormaster	Sat&Sun 10 am - 6 pm Tues-Thurs 9 am - 5 pm	free	Plum Island Sound and Essex Bay	Edson Pump CB Environ Boat	3000	3791
	Perley's Marina	9 am - 5 pm 7 days/wk	free	Rowley River	Waubashene Pump	427	3309
Ipswich	Ipswich Harbormaster	10 am- 6 pm Fri to Mon	free	Plum Island Sound and Essex Bay	Edson Pump CB Environ Boat	not yet in service	
Gloucester	Cape Ann Marina	8 am - 6 pm 7 days/wk	free	Annisquam River & Gloucester Harbor	Edson	2900	3000
	Cape Ann Marina	By appt.	free	Annisquam River & Gloucester Harbor	Edson CB Environ Boat		
	Gloucester Harbormaster (Avail. 2001 Season)	Weds-Sun 8 am - 5 pm	free	Gloucester Harbor Annisquam River	Edson CB Environ Boat	not yet in service	
Rockport	Rockport Harbormaster	By appt.	free	Rockport Harbor, Sandy Bay, Pigeon Cove	Edson CB Environ Boat	500	200

Table continues across 3 pages

Table V-1 Upper North Shore Regional Pumpout Plan Pumpout Services and Facilities

Town	Operator	Discharge to:	Comments	Funding
Newbury	Riverfront Marina	Holding Tank onsite	Holding tank = 12,000 gal; Uses licensed septic hauler, as needed.	CVA
Rowley	Rowley Harbormaster	Holding tank at Perley's Marina	Holding tank pumped as needed 3700 gal pumped 1999	CVA
	Perley's Marina	Holding Tank onsite	Holding tank = 4,000 gal; Uses licensed septic hauler, as needed.	CVA
Ipswich	Ipswich Harbormaster	Holding tank at Perley's Marina, Rowley	Service by appointment, by radio, or by flag when boats are moored	CVA
Gloucester	Cape Ann Marina	Municipal Sewer		CVA
	Cape Ann Marina	Municipal Sewer		CVA
	Gloucester Harbormaster (Avail. 2001 Season)	Municipal Sewer		CVA
Rockport	Rockport Harbormaster	Municipal Sewer		CVA

Table continues across 3 pages

Table V-2

Uppper North Shore - Boat Waste Pumpout Facilities

Summary - By Town

TOWN	TYPE OF FACILITY	COVERAGE
Newbury	1 Stationary Pumpout 1 Waste Dump	Parker River
Rowley	1 Stationary Pumpout 1 Pumpout Boat	Rowley River Plum Island Sound & Essex Bay
Ipswich	1 Pumpout Boat	Plum Island Sound & Essex Bay
Essex	None	
Gloucester	1 Stationary Pumpout 2 Pumpout Boats*	Annisquam River & Gloucester Harbor Annisquam River & Gloucester Harbor
Rockport	1 Pumpout Boat	Rockport Harbor, Sandy Bay, and Pigeon Cove

* 2nd pumpout boat in Gloucester will be available for the 2001 boating season.

VI. Adequacy of Pumpout Coverage

The adequacy of pumpout coverage may be addressed in a number of ways. The availability of pumpout facilities can be compared to numerical guidelines established by the Environmental Protection Agency (EPA) as standards for the establishment of No Discharge Areas (NDAs). These are areas where boats are not allowed to discharge any treated or untreated sewage wastes. The guidelines are intended to ensure that all boaters with marine sanitation devices (MSDs) on board will have ready access to pumpout services.

Adequacy also may be addressed more qualitatively through the assessments of harbormasters and pumpout operators regarding whether demand is being met. Also, the opinions of boaters can be assessed to determine their awareness of the availability of pumpout facilities and whether or not they think there are enough facilities and the services are convenient to use. All of these perspectives were explored in this project.

The Upper North Shore Harbormasters' Working Group addressed this issue at the beginning and the end of the 2000 boating season. At the beginning of the season, the harbormasters believed that, with the addition of the new Ipswich pumpout boat to provide additional services in the Plum Island Sound/Essex Bay area, there would be adequate coverage.

The Rowley pumpout boat previously had provided the only mobile service in the waters of the Great Marsh in the planning area. As numbers of boats and awareness of the pumpout service increased, demand outgrew the ability to provide service. The area to be covered was large and there was intense use on summer weekends. The addition of the Ipswich pumpout boat would double the availability of mobile pumpout services. The Ipswich boat also would be based farther south, greatly improving the ability to provide coverage of the Essex Bay area and behind Cranes' Beach. In addition, the Rowley and Ipswich harbormasters planned to coordinate hours of operation to provide 7 day a week

coverage. The Ipswich boat planned to provide service to boats on their moorings, increasing the ability to provide service during less busy times on weekdays.

The Rockport harbormasters reported that they were easily able to provide the services requested in their area. Many of the boats in their harbor are larger and/or transient boaters who travel offshore and thus have less need for pumpout services. The Gloucester Harbormaster noted the lack of services in Gloucester harbor, but expected that this deficiency would be corrected in 2001 with the addition of the Gloucester pumpout boat.

At the end of the 2000 boating season the harbormasters reported that use of pumpout services had increased with the availability of the new Ipswich boat. While the volume of wastes pumped by the Rowley boat during the season decreased, the combined total for the Rowley and the Ipswich boats was expected to exceed the estimated 4000 gallons pumped by Rowley in 1999. Cooperation between the two towns maximized coverage on the water, with services available in the waterways of the marsh area seven days a week, and two boats in service on the weekends. The Ipswich boat was able to empty its holding tank at Perley's Marina on the Rowley River. The Rockport harbormasters also volunteered use of their pumpout facility if that access would prove convenient for Ipswich on occasion.

The harbormasters also reported that the use of flags to signal the need for pumpout services continues to be popular and effective. However, they made several suggestions for improving the flagging system to make the pumpout operation more efficient. Larger flags would be more visible and easily recognized. Also, there needs to be a simple way for the boat owner to attach the flag in a visible location on the boat and for the pumpout out operator to take the flag down. Especially for the latter, the location and means of attachment are important. The operators would like to be able to take the flag down without having to board the vessel.

Finally, the harbormasters noted that their presence on the water with the pumpout boat where the boaters congregate is in itself a good means of raising awareness of the availability and convenience of pumpout services. They stressed the value of being able to interact with boaters in a positive way, offering a free, voluntary service, in promoting use of pumpouts and educating boaters about the value of reducing boat waste discharges.

A boater survey also was conducted during the 2000 boating season. Generally, most of the boaters interviewed were aware of the availability of pumpout services and used the services. However, the level of awareness appears to be closely related to the proximity of the services, ie. boaters in marinas or mooring areas with pumpout stations or boats were more aware. The survey results suggested that some boaters would prefer greater access to pumpout services at gas dock locations, to be able to take care of those tasks at the same time. There also was a noticeable difference among the attitudes of the owners of larger boats versus the owners of smaller boats. The owners of larger boats which go offshore for cruising and fishing saw little need for pumpout services. The owners of smaller boats use inshore areas more heavily and were much more aware of the need for and availability of pumpout services. The survey and its results are discussed in more detail in the following section.

To quantitatively assess the adequacy of pumpout services, it is useful to compare local data with the guidelines from EPA Region I for pumpout services in No Discharge Areas (NDA's). These guidelines recommend that there should be an overall ratio of one pumpout facility for every 450 boats with MSD's. The guidelines further recommend that there be a minimum of one pumpout facility for every 300 boats with MSD's if the area is considered a "transient" harbor where more boats are 25 feet in length or more and are more likely to have holding tanks. Harbors where more boats are less than 25 feet in length, and thus less likely to have holding tanks, could meet a standard for "parking lot" harbors with a minimum of one pumpout facility for every 600 boats with MSDs.

New England areas which recently have applied for NDA status also have developed methods for estimating numbers of boats with MSD's, based on boat length. As described previously in Section IV, the following assumptions have been used:

Boat Length	**% Boats with MSDs**
< 16 feet	0%
16 – 26 feet	20%
26 – 40 feet	50%
> 40 feet	100%

From the data presented in Sections IV and V, we can assess the adequacy of pumpout facilities in the planning area in comparison with EPA's guidelines. For purposes of this discussion, it will be assumed that the Gloucester pumpout boat, due to begin operation for the 2001 boating season, is in service.

From the information in Table IV-4, there are an estimated 698 boats with MSD's in the planning area. This suggests a need for 2 to 3 pumpout facilities, depending on which criterion is used. The total of eight pumpout facilities/boats in the region far exceeds the standard. A more conservative comparison could be made if we use the data in Table IV-5, using data from the assessors' offices where available. This analyses results in a higher estimate of 1143 boats with MSD's. Even with that greater demand, the EPA guidelines would recommend 3 to 4 pumpout facilities, which is more than exceeded.

This analysis can be conducted at a finer level of detail by looking at the number of boats in each town or in the major waterways. Summary tables of those estimates are shown below.

BOATS WITH MSD'S – BY TOWN

	Newbury	Rowley	Ipswich	Essex	Gloucester	Rockport	TOTAL
Boat Registration Data	64	42	158	93	288	53	698
Boat Registration & Assessors Data	86	42	158	87	701	69	1143

BOATS WITH MSD'S – BY AREA

	ACEC Vicinity	Gloucester – Annisquam River	Rockport	TOTAL
Estimated Boats with MSD's	374	269	52	695
Pumpout Facilities Required at 450:1	1	1	<1	

The first table shows that the numbers of boats estimated with MSD's in each town are relatively small. As noted in Section V, each of the cities/towns except Essex will have a pumpout facility as of the 2001 boating season. If the higher estimates derived from the assessor's offices data are used, Gloucester is estimated to have 701 boats with MSD's, requiring 2-3 pumpout facilities. With the addition of the Gloucester harbormaster's boat in the 2001 season, three facilities will be available, including both a stationary facility and a pumpout boat at Cape Ann Marina. This analysis of adequacy of coverage by jurisdiction is somewhat artificial because boaters clearly cross over community boundaries. However it is helpful to illustrate coverage and potential gaps and to consider the responsibilities of the various jurisdictions.

The second table distributes the region's boats into three areas, based on the estimates shown in Table IV-6. For purposes of this analysis, the ACEC area encompasses the waterbodies listed in Table IV-6 as Plum Island Sound, Essex Bay and Ipswich Bay. The Gloucester – Annisquam River area includes Gloucester Harbor, the Annisquam River, and Magnolia Harbor/Mass. Bay. And Rockport includes Sandy Bay and Rockport Harbor.

These numbers suggest that a single pumpout facility in each of these waterway areas would be sufficient. Even if we double the estimates, recognizing the data from assessor's offices suggesting a larger proportion of larger boats, each area still would be

more than adequately covered, with a total of four facilities serving the ACEC area (two pumpout boats and two stationary facilities), three serving the Gloucester/Annisquam River area, and one serving Rockport. The Gloucester harbor area has been underserved, but this is being addressed with the addition of a pumpout boat in the 2001 season.

Several caveats should be noted. The estimates and analyses are based only the boats berthed in these areas. Some of these areas attract boaters on day trips or on weekend excursions from outside the planning area as well, for example from Newburyport or areas south of Gloucester on the North Shore. In addition, the numbers do not reflect boats cruising through the area on longer trips. These factors would increase demand for pumpout services.

Also, the pumpout facilities are not well distributed. The availability of mobile services alleviates this concern, although the distances involved are significant in terms of travel time, eg. from the Rowley River to Essex Bay, or from Essex Bay to Cape Ann Marina. The area at the northern end of the Annisquam River and Essex Bay remain remote from the base of operations of the pumpout boats. The new Gloucester boat can expect significant demand within the harbor and will have a large area to cover south of the harbor as well. Given the large number of boats in Gloucester, service may still be limited at times.

A final caveat is that not all of the pumpout facilities may be operational all of the time. This is a good reason to look for redundancy in services in vulnerable areas.

Conclusions

It appears that the Upper North Shore planning area has good coverage for pumpout services. Inspite of the uncertainty or variability in the data regarding numbers of boats and boats in different size categories, even using the most conservative numbers still results in ratios indicating adequate availability of pumpout facilities.

Maintaining the facilities and improving boater awareness of the services are important steps to gain the maximum benefit from these facilities. The continuing financial support through the CVA program is critical to ensure that the pumpout facilities are used and maintained for maximum benefit. In addition, continuing the cooperation shown to date among the pumpout operators to facilitate coverage 7 days a week, to ensure balanced geographic coverage, and to allow efficient access to shoreside pumpouts for the pumpout vessels is enormously valuable.

VII. Boater Survey

Introduction

A boater survey was conducted to gather information about knowledge and use of pumpout facilities, opinions about the convenience and availability of pumpout services, and suggestions for improvements. Conducting the survey also served as an educational opportunity and a means of providing information to the boating public.

Methodology

The survey was conducted during July and August of the 2000 boating season. A standard survey questionnaire was developed and interviews were conducted in person, both at marinas and on the water. Survey locations included the Riverfront Marina on the Parker River, on the water in Plum Island Sound, Perkins Marina on the Essex River, and Cape Ann Marina and Gloucester Marina on the Annisquam River.

Survey questions included information about the type of boat, type of toilet/MSD equipment on board, use of pumpout services, and opinions about accessibility and convenience of the services.

A small sample of 40 boaters was interviewed. Boaters were selected randomly among people coming to the marinas, present on their boats at the dock, or on the water. The sample represented a cross-section of types of boats and locations in relationship to pumpout facilities. While not statistically significant, the survey results represent a snapshop of boater knowledge and opinions on use of pumpout facilities.

After completing the questions for the interview, the survey participants were provided with a sheet with information about the survey and a CZM pumpout brochure.

A copy of the survey questionnaire and the information sheet is included in Appendix B.

Results

A summary of the survey results is shown in Table VII-1. (Detailed survey results are included in Appendix B.)

Boaters surveyed represented boats of 16 to 50 feet in length. The vast majority were powerboats with a few sailboats and houseboats. Over 90% of the boats had some type of toilet facility on board. Approximately 25% used portable toilets which they reported carrying ashore for waste disposal. 10 boats (27% of boats with heads) reported having a holding tank and, of those, 5 (50%) used pumpout facilities. Another 16 (43% of boats with heads) described their system as having flow through capability with treatment. 9 (56%) of those boaters reported using pumpout services (indicating that their systems incorporated a holding tank).

Of the 26 boaters with a system compatible with use of pumpout facilities, over half (14) reported using the facilities. These users were evenly split between using mobile and stationary facilities. The type of facility used generally corresponded to where surveys were conducted. Thus, boaters at marinas with stationary pumpouts generally reported use of those services, while boaters on Plum Island Sound with two pumpout boats available often reported using those services.

Frequency of use was not consistently reported. More than half of the respondents reported pumping out at least once a month.

Users of stationary facilities generally use those facilities when they are purchasing gas. They reported inconvenience due to too many people accessing facilities at busy times. They were very interested in the concept of a mobile pumpout service at the dock. Boaters who used the services of the pumpout boats generally reported satisfaction with

the services. Several respondents indicated that more information on availability of services would be advantageous.

Larger boats often reported that they discharge offshore (outside 3 miles). These typically were large sport fishing boats.

Some boaters expressed opposition to further regulation regarding boat waste discharges. They thought that prohibiting any discharges would be a disincentive for boaters to continue to upgrade and maintain onboard treatment systems.

Conclusions

Boaters as well as marina operators were very cooperative in assisting with the survey. Marina operators were helpful in providing access to their facilities and suggesting times when boaters would be available. Boaters were willing to be interviewed and were candid in responding to the questions.

The survey results generally confirmed what would be expected in terms of boater awareness and attitudes. The survey responses indicate that use of pumpouts is related to the availability of facilities, ie. boaters in areas where pumpouts are readily available are aware and use the services. Boaters from areas not directly served by pumpout facilities were less aware. This also suggests that more pumpout facilities throughout the planning area would increase boaters awareness by making them more readily available.

The survey results highlight the importance of convenience in siting and providing pumpout services. Boaters served by pumpout boats, as opposed to shoreside facilities, clearly were the most satisfied. It also suggests that the pumpout boats, inspite of limited onboard capacity, are able to serve more boaters as a result of fully utilizing hours of access. Shoreside stations technically may be accessed the same or more hours, but actual access is limited to when boaters are beginning or ending their activity, resulting in

queuing and waiting, and access may be further restricted due to tidal fluctuations in some locations.

Boaters generally were receptive to the idea of using pumpout services, with some exceptions. The harbormasters operating pumpout boats also reported a positive attitude among boaters about using the services and believed that the motivating factor is protecting the environment and clean water. In the survey, boaters who regularly travel offshore were least supportive of using pumpouts, relying on offshore waste disposal.

These survey results provide a sense of local boater awareness and practices. A larger survey would be useful in developing better (statistically more reliable) regional information about types of boats and onboard equipment, waste disposal practices in areas of concern, and where more facilities would be most useful.

Table VII-1

Summary of Boater Survey Results

		Comments
# respondents	40 boaters	
Size of boats	16 – 50 feet	Primarily motorboats
Toilet facilities reported	37 (93%)	
Portable toilet	11 (28%)	
Holding tank	10 (25%)	
Flow thru w/ treatment	16 (40%)	
Pumpout users	14	54% of those with tank or MSD
Stationary facility	7	
Pumpout boat	4	
Both stationary & boat	3	

Additional comments and observations:

- Knowledge and use of pumpouts was closely related to the proximity of facilities
- Pumpout users generally were satisfied with the service.
- Suggestions from respondents:
  - While some boaters recommended co-locating gas and pumpout services for "one-stop" service, others noted that gas-docks often are congested and may discourage use of pumpouts.
  - Provide more information about the availability of pumpout services.
  - Provide mobile pumpout cart systems at marinas.
  - No discharge regulations may be a disincentive to upgrading to treatment systems.

VIII. Key Findings and Recommendations

The results of the analysis of adequacy of pumpout facilities, the boater survey, and the success of the regional harbormasters and marina operators in developing pumpout services for local boaters point to a number of key findings and recommendations.

Education and Outreach

Findings

- Pumpout services themselves are the most effective educational tool, through word of mouth and exposure to the facilities and services. Where the services are readily available, boaters are aware of them and have a positive attitude about using them.

Recommendations

- Educational efforts to make people aware of the services and facilities should continue, such as through providing information through flyers and hand-out materials. Key themes to emphasize in such materials include:
  - benefits to public health and environmental protection,
  - locations of pumpout facilities,
  - the convenience of using pumpouts, and
  - how to contact pumpout operators.

  As part of the project to develop this plan, outreach materials including key tags, waterproof information cards and a flyer were developed for distribution by the harbormasters and the North Shore Regional office of MCZM. Media coverage highlighting the availability and value of pumpout services also would help increase awareness.

Pumpout Facilities and Services

Findings

- The inter-municipal cooperation demonstrated among the Upper North Shore regional harbormasters is a model for the Commonwealth in maximizing the availability of services to boaters. Patterns of boat use depend more on the geography of the

waterways than on jurisdictional boundaries. Planning to ensure coverage for pumpout services is best coordinated across jurisdictions as well.

- Inter-municipal cooperation allows for increased efficiency in providing pumpout services, as in the example of Rowley and Ipswich optimizing scheduling of boat operators to ensure 7 day a week coverage.

- The number of pumpout facilities and the coverage provided for the Upper North Shore region have grown significantly in each of the last two boating seasons. Facilities appear to be adequate to meet current demand.

- While there is no pumpout facility based in Essex, coverage for Essex boaters is provided by the Ipswich and Rowley pumpout boats.

- Harbormasters need clear guidance on how they and their personnel can carry out their various responsibilities on the water when they are operating the pumpout vessels. Uncertainty and misunderstandings can limit their efficiency in providing the pumpout services for which the vessels are intended.

Recommendations

- The adequacy of pumpout facilities should be assessed on an ongoing basis, through communication with the pumpout operators, especially the harbormasters, as well as other groups interested in boating and protecting coastal waters.

- If additional pumpout facilities are funded in this region, consider siting a facility (mobile or stationary) in Essex, if and when the Town of Essex supports such a recommendation. As boating activity increases throughout the region, and demand for pumpouts grows, an additional facility based in Essex would greatly increase awareness among Essex boaters.

- The Harbormasters Working Group was emphatic in stating that continued funding through the Clean Vessel Act grant program is essential to maintain the services.

- Consider developing more waste-dump stations for porta-pottys. Small boat owners need readily accessible locations to properly dispose of their porta-potty wastes.

- Work with local harbormasters to improve the designs of flags used to signal a request for pumpout services. Flags should be substantial enough to be securely mounted, be easily visible from the pumpout boat, and be easily lowered after the pumping the tank, without boarding the boat.

- Provide clear guidance on how pumpout vessels may be used in the course of providing pumpout services.

Minimizing Boat Waste Discharges

Findings

- The current strategy of increasing the availability of pumpout services and educating boaters about the importance of using pumpouts continues to be successful in reducing boat waste discharges, as demonstrated by the increasing volume of wastes pumped, year to year.

- The harbormasters do not have resources to provide meaningful enforcement of discharge prohibitions. A positive approach toward encouraging pumpout use is believed to be more successful in actually reducing waste discharges than a program based on pursuing violators and enforcement. Harbormasters can be more pro-active in their interactions with boaters through a voluntary program.

- Encourage cities and towns to adopt ordinances similar to the by-laws in Rowley and Ipswich which require all boats with mooring permits which have MSDs to be equipped with fittings to be used for pumping out the holding tank.

- Questions about how a No Discharge Area (NDA) designation could be enforced and whether it would result in reduced boat waste discharges need to be addressed.

Recommendations

- Continue the strategy of increasing pumpout services and providing boater education.

- An NDA designation should not be pursued for this region at this time.

Research and Monitoring

Findings

- Data are needed demonstrating improvements in water quality parameters when boat waste discharges from MSDs are reduced or eliminated. A better understanding of when and where boat discharges are harmful could help to target resources for additional pumpout facilities. Finally, data showing improvements in water quality parameters *as a result* of NDA designations would make this management tool more attractive.

- Better data are needed on the types of boats using waters in the planning area, considering size, age, and type of use, as well as a clearer understanding of boater preferences on using pumpout services. Again, this information would help to target resources for pumpout facilities.

Recommendations

- Support monitoring programs to document changes in water quality parameters related to boat waste discharges as well as changes in response to increased availability of pumpout services or NDA designations.

List of References

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Massachusetts Highway Department, 2001. Yearly Drawbridge Reports 1998-2000, Blynman – Gloucester.

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Appendix A

Local Ordinances & By-laws

Town of Rowley

Harbor By Laws - Section 6: Mooring/Slip and Rack Regulations, Permits and Fees. See Item #18

Town of Ipswich

Legal Notice of Amendment to Harbormaster Regulations. See Item #3.

Town of Rowley
Harbor By Laws

Excerpt

Section 6 – Mooring/Slip and Rack Regulations, Permits and Fees

1. Residents have mooring rights ahead of non-residents. Permits shall be issued only to private persons.

2. All boats moored in Town waters, tied at slips or seasonally rack stored on waterfront property with launching capacity shall be assessed an annual fee. All boat tenders or dinghies belonging to or attached to another fee-paying boat shall be exempt.

3. No mooring shall be placed in Rowley waters without first obtaining permission from the Harbormaster and completing the required applications. Proof of ownership of mooring tackle and vessel may be required. Moorings in Rowley waters without a permit will be removed and the owner fined fifty ($50.00) dollars per day. Such action may be taken without notification to the owner if, in the reasonable discretion of the Harbormaster, the owner cannot be contacted within a forty-eight (48) hour period, or if emergency conditions require immediate action. Any expense incurred in the removal and relocation of said vessel and/or mooring, or any resulting damage thereto, shall be the responsibility of the owner.

4. No boat shall be moored, other than temporarily, at a private dock, marina, or yacht club in Rowley waters, without first obtaining a mooring/slip permit from the Harbormaster and paying the required fee. A mooring permit may be denied or revoked by the Harbormaster at any time for failure to comply with any waterways rules and regulations of the Town of Rowley and the Commonwealth of Massachusetts.

5. No boat shall be moored in Rowley waters without an approved mooring permit and permit decal. The decal shall be placed on the boat's transom (starboard side) or as close a s possible. This does not apply to transient boats moored on transient mooring if available for less than seven (7) days. If requested, the issued mooring permit must be made available and shown to the Harbormaster, Assistant Harbormasters or any authorized law enforcement official within 24 hours of request.

6. Mooring permits must be obtained by May 31 of each year. Permit applications received or postmarked after May 31 will be assessed a late fee. Permit locations not renewed by this date will be reassigned on a first come, first served basis.

7. Moorings not renewed by July 1 will be considered illegal and removed at the owner's expense and shall be delivered to the possession of the Harbormaster until claimed by the property owner or disposed of according to M.G.L. Chapter 91.

8. No mooring permit shall be transferable. The rental of any mooring is prohibited. Only the Harbormaster may authorize in writing the temporary use of a mooring of another boat upon application of the permit holder.

9. The permit fee is not refundable if the mooring permit has been revoked by the Harbormaster or if the mooring has been removed by the owner for any reason during the year. A permit may be suspended or revoked by the Harbormaster whenever in his opinion the boat and/or mooring unduly threatens the safety or public health of the mooring area or the reasonable use of that area by other boats. A mooring permit shall be revoked for pollution in the anchorage area by any vessel, including the discharge of oil, garbage, waste, rubbish, debris, and/or holding tanks. Mooring at a place other than that specified on the permit will be grounds for revocation.

10. All permits will expire on December 31 of the issuing year.

11. The sale of a boat does not include the sale of a mooring location. Upon the sale of any vessel, the Harbormaster must be notified in writing if the owner wishes to hold the mooring location. Said locations shall be held for one (1) year upon payment of the minimum application fee and shall not be subject to renewal.

12. Anyone requesting a new mooring in Rowley waters must first join the waiting list by contacting the Harbormaster. A Ten ($10.00) dollar fee is required each year to remain on the list. This fee will be subtracted from the first year's mooring permit fee.

13. Winter spars are not required, but if used, must be removed by June 1 and shall not be set before October 1 of each year.

14. No mooring shall be moved without first obtaining permission from the Harbormaster.

15. Excise tax shall be paid to the Town of Rowley Treasurer’s Office and should not be confused with the mooring/slip/launch ramp fee which is paid to the Town of Rowley prior to May 1.

16. No mooring or slip permit shall be issued until all fees and taxes from previous years are paid in full.

17. Mooring permit holders must notify the Harbormaster immediately upon any change in information provided on the mooring/slip/launch ramp permit application and when no longer desired, must cancel their permit prior to May 1 to avoid being billed for the season.

18. All boats moored in Town waters, tied at slips or seasonally rack stored on waterfront property with launching capacity shall, if equipped with Marine Sanitation Devices, have the ability to be discharged at a shore side "Pump Out Station" or by an authorized "Pump Out Boat". Vessel's with MSD's that fail to meet this regulation will be denied a mooring/ slip permit on Rowley Waterways.

Insert copy of memo

Town of Ipswich
3-20-00

Notice of amendment to
Town of Ipswich Harbormaster Regulations

See Item #3 re: pumpout deck fittings:

…adding a new subsection to Section 4: "e. A mooring permit shall be denied or revoked to any vessel equipped with a Marine Sanitation Device Type III that does not also have a pump out deck fitting. Inspections of such fittings may be held by the Harbormaster or his designee prior to the issuance of a mooring permit."

Appendix B

Boater Survey Documentation

- **Survey Questionnaire**
- **Detailed Survey Responses**

Boater Survey Questions Regional Boat Waste Management

Survey Location _____

Information About Your Boat

Length _____ **Type** (circle one) motor boat or sail boat

Town where you keep the boat (during the boating season)? (check one)**:**

Newbury_____ Essex _____ Rowley_____
Gloucester_____ Ipswich_____ Rockport_____
Other _____ Cruising – from out of the area_____

Where do you keep the boat? (check one)

Slip _____ Mooring_____ Trailer _____

Information about toilet (or head) facility and pump out

Does your boat have any toilet facility?(check one)

With a holding tank? _____
Flow through with treatment? _____
Portable Toilet? _____
Other toilet type? _____
No toilet (or head) facility _____

Do you use pump out services (or a dump station for portable toilets) now? Yes or No (circle one)

If yes, where? (Please be specific if you know the name of the marina or town which operates the pump out station or boat)_____

How often? _____

Typical time for pump-out (eg. early morning, end of the day, weekend, weekday)_____

How did you become aware of using pumpout services?

_____

What would make it more convenient to use a pump-out facility?
(Indicate all that apply.)

A different **location**? Where?_____
Different **hours of operation**? _____
Better **information about availability**? _____
Better **information about how to get pumped out**? _____
Other: _____

Additional Comments:

_____

_____

Optional:

Name: _____
Address: _____

Thank you for your assistance.

Thank you for participating in the Regional Boat Waste Management – Boater Survey

July, 2000

This survey is being conducted to gather information about the use of boat waste pump out facilities by boaters in the region of the Great Marsh and Cape Ann. This information will help the State and towns determine if additional pump out facilities are needed and how to increase public awareness of the availability and convenience of using the services.

Using boat waste pump out facilities eliminates the discharge of treated or untreated boat sewage, protecting public health and preventing pollution of sensitive marine habitats. The creeks and embayments of the Great Marsh and the Annisquam River often are poorly flushed and vulnerable to impacts of boat waste. These areas serve as critical habitat for shellfish and other marine resources and wildlife.

If you would like additional information about this survey or about pumpout facilities, please contact Dale Brown at 978 281-8740 or the MCZM North Shore Regional Office at 978 281-3972.

This survey is sponsored by the Commonwealth of Massachusetts, Office of Coastal Zone Management (MCZM), Executive Office of Environmental Affairs, in coordination with the cities and towns of Newbury, Rowley, Ipswich, Essex, Gloucester, and Rockport.

Boater Survey Responses

Response #	Survey Location	Boat Length	Boat Type	Town	Location Type	Toilet Facility*	PO Y or N	Where PO	Frequency	Time of Day
1	P.I.S. - Ipswich	42	Houseboat	Ipswich	Mooring	2	Y	PO Boat	1/mo	any
2	Perkins	22	Motor	Essex	Slip	3	N			
3	Perkins	27	Motor	Essex	Slip	2	N			
4	Perkins	16	Motor	Essex	Mooring	5	N/A			
5	Perkins	22	Motor	Essex	Slip	2	N/A			
6	Perkins	23	Motor	Essex	Slip	2	N			
7	Riverfront	20	Motor	Newbury	Mooring	3	N/A			
8	Riverfront	26	Motor	Newbury	Slip	3	N			
9	P.I.S. - Ipswich	20	Motor	Ipswich YC	Mooring	3	N			
10	P.I.S. - Ipswich	30	Motor	Ipswich YC	Mooring	1	Y	IBYC Boat	1/season	fall
11	Riverfront	32	Motor	Newbury	Slip	1	Y	IBYC or Riverfront	1/mo	pm - after
12	P.I.S. - Ipswich	30	Motor	Mystic River		1	Y	M.R. Club	as needed	whenever
13	P.I.S. - Ipswich	30		IpswichYC	Mooring	3	N			
14	P.I.S. - Ipswich	21	Motor	Rowley	Slip	3	N			
15	P.I.S. - Ipswich	42	Houseboat	Ipswich	Mooring	2	Y	Rowley Boat	biweekly	whenever
16	Perkins	17	Motor	Essex	Slip	5	N/A			
17	Perkins	23	Motor	Essex	Slip	1	N			
18	Perkins	16	Motor	Essex	Slip	5	N/A			
19	Perkins	27	Motor	Essex	Slip	2	Y	Cape Ann Marina	as needed	
20	Perkins	23	Motor	Essex	Slip	3	N			
21	P.I.S. - Ipswich	44	Houseboat	Ipswich	Mooring	1	Y	PO Boat	2 times per wk	as needed
22	Riverfront	24	Motor	Newbury	Slip	3	N			
23	Riverfront	24	Motor	Newbury	Slip	3	N			
24	Cape Ann Marina	31	Motor	Gloucester	Slip	2	Y	marina gas dock	tri-weekly	w/ gas
25	Cape Ann Marina	38	Motor	Gloucester	Slip	2	N			
26	Cape Ann Marina	34	Motor	Gloucester	Slip	1	N			
27	Cape Ann Marina	32	Motor	Gloucester	Slip	1	N			
28	Cape Ann Marina	20	Motor	Gloucester	Slip	3	N			
29	Cape Ann Marina	31	Motor	Gloucester	Slip	2	Y	marina gas dock	1-2 x/ year	w/ gas
30	Cape Ann Marina	23	Motor	Gloucester	Slip	3	N			
31	Cape Ann Marina	34	Motor	Gloucester	Slip	1	N			
32	Cape Ann Marina	30	Motor	Gloucester	Slip	2	Y			
33	Cape Ann Marina	27	Motor	Gloucester	Slip	2	Y	marina gas dock		
34	Cape Ann Marina	30	Motor	Gloucester	Slip	2	n			
35	Cape Ann Marina	32	Motor	Scituate	Slip	1	Y	transient - as avail		
36	Gloucester Marina	31	Motor	Gloucester	Slip	2	Y	CA Mar.gas dock	3-4 x/season	w/ gas
37	Gloucester Marina	26	Motor	Gloucester	Slip	2	Y	PO boat/gas dock		w/ gas
38	Gloucester Marina	50	Motor	Gloucester	Slip	2	N			
39	Gloucester Marina	32	Motor	Gloucester	Slip	2	N			
40	Gloucester Marina	40	Sail	Gloucester	Slip	1	N			

*Types of Toilet Facilities:
1 = With a holding tank
2 = Flow through with treatment
3 = Portable toilet
4 = Other toilet type
5 = No toilet (or head) facility

Boater Survey Responses

Response #	How Aware	How Could PO Be More Convenient	Additional Comments
1	Bill D.	Weekday availability	
2		N/A	
3		Avail. at gas dock	Discharges outside 3 miles
4		N/A	
5		Location - dockside	
6		Location & Information	Would prefer portable service at marina
7		N/A	
8			
9			
10	Boat US	Bigger holding tank	Also uses N'port boat; Rockport people nice
11	Life on water	Self-service - as in FL, quicker, cheaper	Fisherman - don't pollute for fishing
12	Through club		
13			Would use PO if change system
14			
15	Bill D.		Works well now
16		N/A	
17		Mandating use	(This must be a flow-thru tank.)
18		N/A	
19	R.I. Facility	Location - Essex	
20		N/A	
21	Bill D.		Convenient now.
22		N/A	Carry portable ashore
23		N/A	Not used much.
24		mobile svc	
25		mobile svc	Discharges outside 3 miles
26		mobile svc	Discharges outside 3 miles; must be flow-thru; former owner used mobile svc - damaged tank.
27			Discharges outside 3 miles; must be flow-thru; hasn't needed po this yr..
28		N/A	Carry portable ashore
29	known for yrs		Convenient now.
30		N/A	Carry portable ashore
31		svc at gas dock	Haven't needed PO
32		Info re avail.; mobile svc	Discharges outside 3 miles
33			Also discharges 3 mi out; svc at gas dock is good
34		mobile svc at dock	Discharges outside 3 miles
35	known for yrs	More sites and away from other uses	Concerned about chemical discharges
36	known for yrs		Convenient now.
37	saw Ipsw. Boat	dockside portable	New boat - valves make offshore discharge difficult;Boat US also a source of info
38		N/A	Discharges outside 3 miles
39		Info re avail.	Discharges outside 3 miles
40		Provide svc.like Marion; mobile service on weekdays - eg. flag system - he was unaware of this option;	Prior use of elec. treatment - used too much elec., still wasn't allowed to discharge in no discharge areas;discharges outside 3 miles; gas dock is too busy on wkends; Glouc. doesn't need svc - not enough rec. boats; generally thought we didn't need more regs on this topic.