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# An Application for a State Designated, Federally Approved No Discharge Area for Boston Harbor, MA

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# **AN APPLICATION FOR A STATE DESIGNATED, FEDERALLY APPROVED NO DISCHARGE AREA FOR BOSTON HARBOR, MA**

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On behalf of the:

**City of Boston**

**City of Quincy**

**Town of Braintree**

**City of Cambridge**

**City of Chelsea**

**City of Everett**

**Town of Hingham**

**Town of Hull**

**Town of Milton**

**City of Newton**

**Town of Watertown**

**Town of Weymouth**

**Town of Winthrop**

**April 4, 2008**

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## BACKGROUND

On August 7, 2007 Mayor Thomas M. Menino of Boston was joined by Mayor William Phelan of Quincy, municipal officials from Hull, Hingham, Weymouth, Chelsea, Everett and Winthrop, and state and federal agency representatives, to announce that an application to designate Boston Harbor as a No Discharge Area (NDA) was to be submitted to the US Environmental Protection Agency (EPA). Designated under the federal Clean Water Act, an NDA prohibits boats from discharging treated or untreated waste directly into the water. Prior to the announcement, both the Cities of Boston and Quincy had begun the process of gathering the data necessary for such an application. As the applications were being developed, personnel from the Massachusetts Office of Coastal Zone Management (MCZM) suggested that a meeting be convened to encourage other municipalities to join the effort so that the whole of Boston Harbor could be designated as an NDA.

The Urban Harbors Institute (UHI) of the University of Massachusetts Boston hosted such a meeting on May 23, 2007 where it became clear that there was strong support for the idea of a harbor-wide NDA. The Environment Department of the City of Boston continued developing their sections of the application. Quincy's efforts were undertaken by the city's harbormaster and led by the City Council. The Charles River Watershed Association focused on the Charles River Basin from the lock at the Museum of Science up to the Watertown Dam. With help from local officials, the Urban Harbors Institute prepared sections for the remaining municipalities and created the GIS maps to support this application.



Figure 1. The waters of Boston Harbor and the surrounding municipalities.

## INTRODUCTION

The municipalities surrounding Boston Harbor (Figure 1) are requesting that the Commonwealth of Massachusetts designate the waters of Boston Harbor as a No Discharge Area (NDA) pursuant to the Clean Water Act, Section 312(f)(3). An NDA is a body of water in which the discharge of vessel sewage, whether treated or not, is prohibited. The No Discharge Area would be called the Boston Harbor No Discharge Area.

While the waters of Boston Harbor are under the jurisdiction of a number of different municipalities (Figure 2), water quality issues affect the harbor as a whole. Past efforts to clean up the harbor have occurred across municipal boundaries and efforts to reduce vessel sewage inputs to the harbor should be addressed in a similar fashion. The fact that boating activity in the harbor also crosses municipal boundaries suggests that a harbor-wide approach is the most appropriate.

Vessel sewage, like many other pollutants, can be harmful to the environment when it is not adequately treated. Sewage contains high concentrations of nitrogen, a substance that can lead to algal blooms and low dissolved oxygen concentrations, which in turn can affect the health of fish, shellfish, and eelgrass beds. Sewage also contains bacteria and viruses that can make shellfish unsuitable for human consumption, can be a risk to human health and can severely restrict recreational opportunities (e.g. when swimming is prohibited at beaches due to elevated fecal coliform levels).

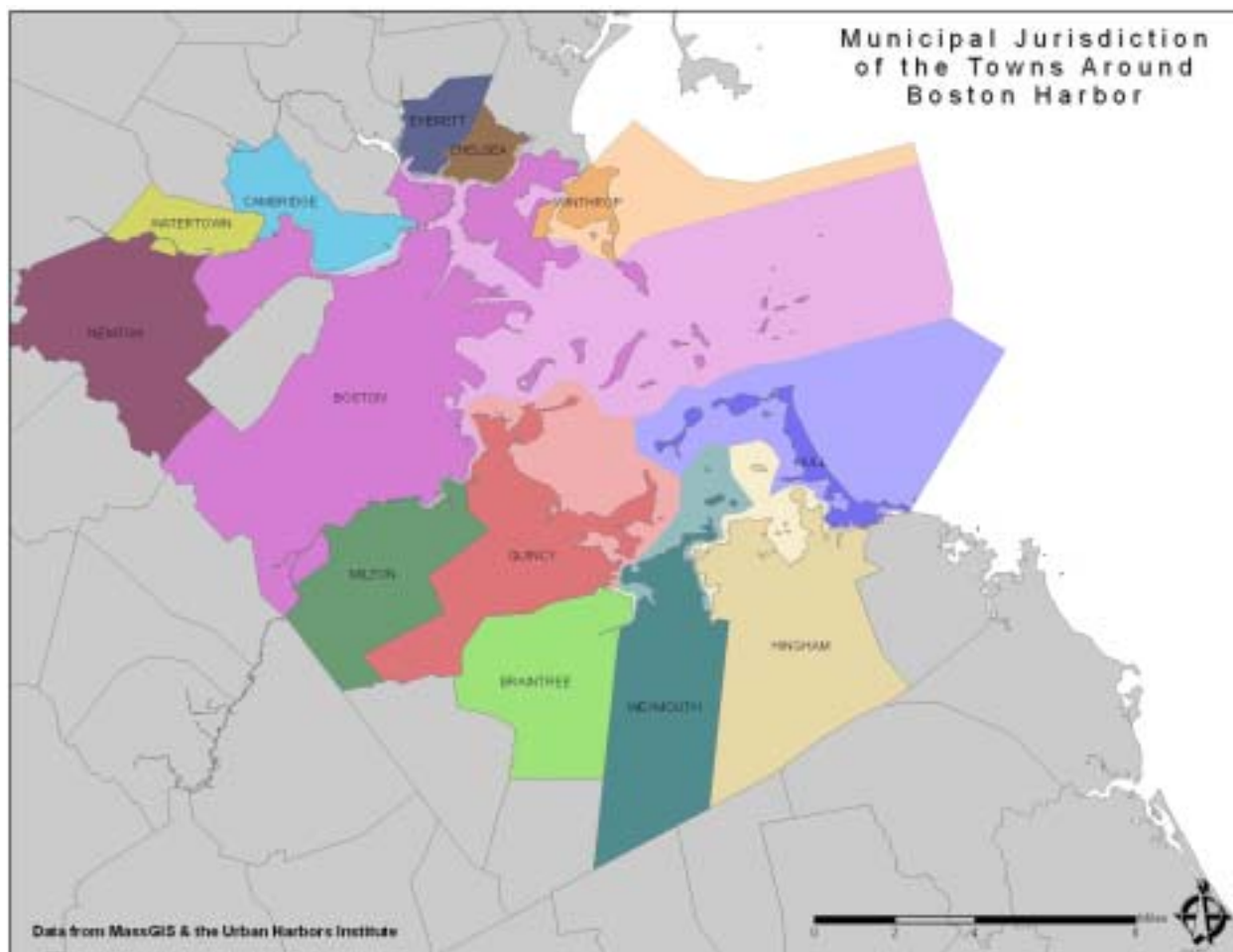


Figure 2. The municipalities around Boston Harbor and their jurisdictions.



Every boat with an installed marine head (toilet) must have a US Coast Guard approved Marine Sanitation Device (MSD). The US Coast Guard tests and certifies MSDs as Type I, Type II, or Type III. A Type I MSD is a device that treats the waste on board before the sewage is discharged overboard. Under the test conditions a Type I MSD produces an effluent with a fecal coliform count not greater than 1,000 per 100 milliliters and no visible floating solids. A Type II MSD also treats the sewage prior to it being discharged but, under the test conditions, produces an effluent having a fecal coliform count not greater than 200 per 100 milliliters and suspended solids not greater than 150 milligrams per liter. Type III MSDs are holding tanks designed to prevent the overboard discharge of any sewage, treated or untreated. However, some Type III MSDs are fitted with a “y” valve that allows boaters to discharge the contents of the holding tank overboard. As this sewage is untreated, it is illegal for a boater to do this within 3 miles of the shoreline. Boats larger than 65 feet in length must use a Type II or Type III MSD, while boats under 65 feet can use a Type I, II or III MSD. There are no legal requirements for boats under 65 feet to have a head on board.

There are a number of different treatments that are utilized by Type I and Type II MSDs. Some of the newer technologies can significantly reduce bacterial and viral levels but these systems must be carefully maintained in order for them to remain effective. Older systems are less effective at reducing bacterial and viral levels and none of the existing technologies remove significant amounts of nitrogen from the waste.

Certain waters of high public and environmental value that require greater environmental protection than existing laws provide, can be designated NDAs under the federal Clean Water Act. Due to the risk that sewage may negatively impact these sensitive areas, the discharge of any vessel sewage, even if treated by a Type I or Type II MSD, is prohibited in NDAs.

Sewage discharged from boats contributes to poor water quality, especially in poorly flushed embayments. Eliminating the discharge of boat sewage into the waters of Boston Harbor will further improve water quality.

This application has been developed in collaboration with the municipalities surrounding Boston Harbor and represents a harbor-wide effort, the outcome of which will be that sewage discharge from vessels will be prohibited throughout Boston Harbor and around the Boston Harbor Islands. The designation of Boston Harbor as a No Discharge Area represents another significant step in the ongoing efforts to clean up the harbor.

## **PROPOSED NDA BOUNDARIES**

The proposed Boston Harbor NDA will comprise of all the waters of the Inner and Outer Harbor and will extend into Massachusetts Bay to encompass all of the islands in the Boston Harbor Islands National Park Area, including the Brewster Islands and the Graves. It will include sections of the Chelsea, Mystic, Charles, Neponset, Weymouth Fore, Weymouth Back and Weir Rivers, all of which feed into the harbor. The waters of the proposed NDA fall within the jurisdictions of the following municipalities (Figure 3):

- |             |           |             |
|-------------|-----------|-------------|
| ▪ Boston    | ▪ Hingham | ▪ Watertown |
| ▪ Braintree | ▪ Hull    | ▪ Weymouth  |
| ▪ Cambridge | ▪ Milton  | ▪ Winthrop. |
| ▪ Chelsea   | ▪ Newton  |             |
| ▪ Everett   | ▪ Quincy  |             |

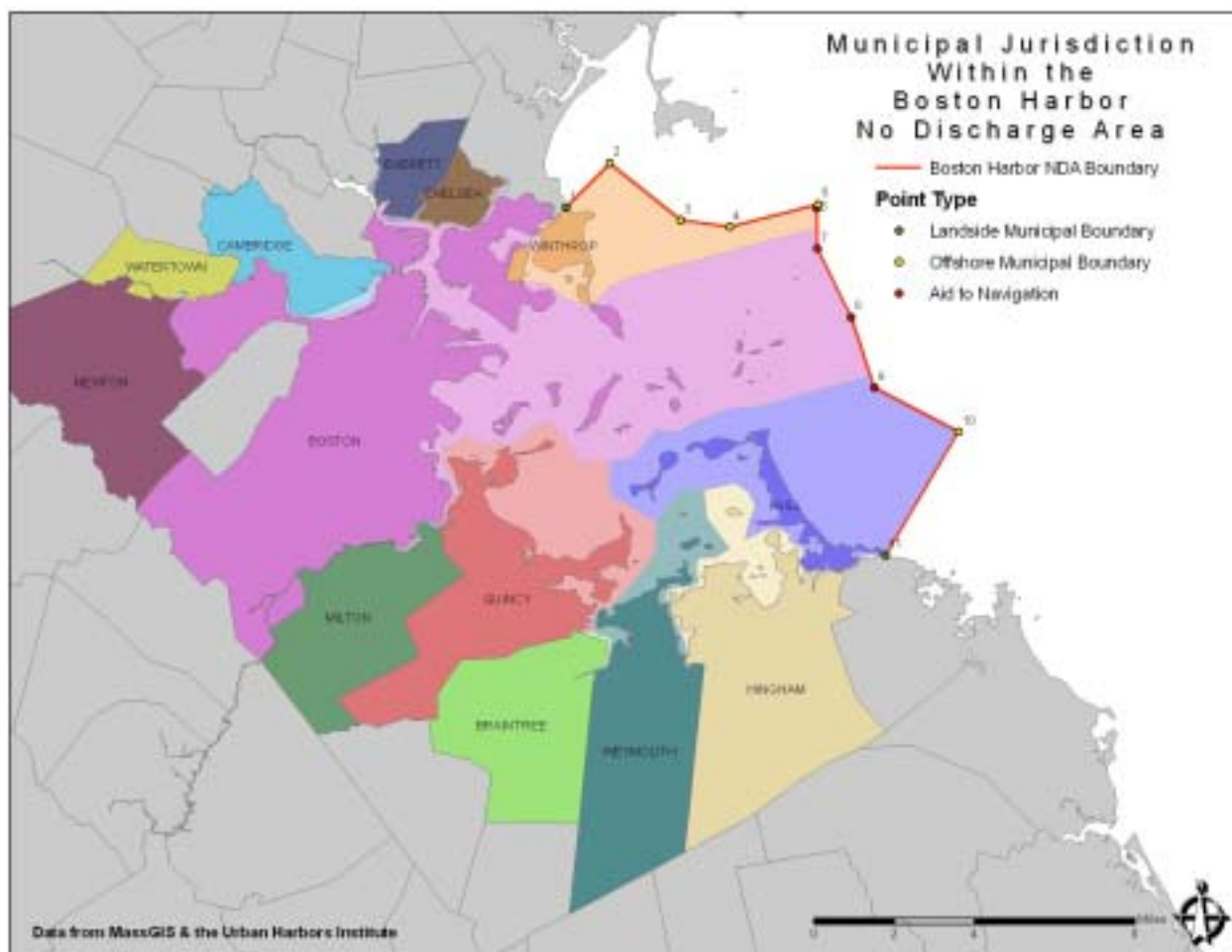


Figure 3. The municipal jurisdictions over the waters that will make up the Boston Harbor NDA and the proposed seaward NDA boundary line.

The seaward boundary of the NDA is defined by municipal boundaries and, where possible, aids to navigation. The boundary is made up of 11 points (Figure 3; Table 1). The first point (#1 in Figure 3) is the landside boundary between Winthrop and Revere ( $42^{\circ} 23' 30''\text{N}$ ,  $70^{\circ} 58' 50''\text{W}$ ). The boundary then follows the Winthrop/Revere boundary offshore to where this converges with the Nahant boundary (#2 at  $42^{\circ} 24' 28''\text{N}$ ,  $70^{\circ} 57' 33''\text{W}$ ). The boundary then follows the Winthrop/Nahant offshore boundary to point #5 at  $42^{\circ} 23' 32''\text{N}$ ,  $70^{\circ} 51' 28''\text{W}$ . This point lies approximately 600 feet north north-east of a red aid to navigation (#6) and on a line between this aid to navigation and the aid to navigation marking the Outer Breakers off Swampscott ( $42^{\circ} 27' 36''\text{N}$ ,  $70^{\circ} 50' 16''\text{W}$ ). The boundary then turns south south-west and runs to the red aid to navigation at  $42^{\circ} 23' 27''\text{N}$ ,  $70^{\circ} 51' 30''\text{W}$ , or about 1.6 nautical miles north north-east of The Graves (#6). The boundary then runs to the green aid to navigation (#7) 0.8 nautical miles NE of The Graves ( $42^{\circ} 22' 34''\text{N}$ ,  $70^{\circ} 51' 29''\text{W}$ ). The next point on the boundary (#8) is the red aid to navigation marking Three and One-Half Fathom Ledge ( $42^{\circ} 21' 04''\text{N}$ ,  $70^{\circ} 50' 31''\text{W}$ ) and then the green marker (#9) on Thieves Ledge ( $42^{\circ} 19' 32''\text{N}$ ,  $70^{\circ} 49' 51''\text{W}$ ). The boundary then runs SW along a line between Thieves Ledge and the green aid to navigation located at  $42^{\circ} 16' 33''\text{N}$ ,  $70^{\circ} 42' 23''\text{W}$ . After approximately 2 nautical miles, the boundary meets the Hull/Cohasset offshore boundary (#10) at  $42^{\circ} 18' 34''\text{N}$ ,  $70^{\circ} 47' 25''\text{W}$ . At this point it follows the boundary south-west until it reaches the shoreline at  $42^{\circ} 15' 54''\text{N}$ ,  $70^{\circ} 49' 34''\text{W}$  (#11).

Table 1 The coordinates for the points that make up the outer boundary of the Boston Harbor NDA.

#	Type	Description	Feature	Latitude			Longitude		
1	Land	Town / Town Boundary	Revere / Winthrop	42	23	30 N	70	58	50 W
2	Offshore Boundary	Town / Town Boundary	Nahant / Revere / Winthrop	42	24	28 N	70	57	33 W
3	Offshore Boundary	Town / Town Boundary	Nahant / Winthrop	42	23	13 N	70	55	28 W
4	Offshore Boundary	Town / Town Boundary	Nahant / Winthrop	42	23	04 N	70	54	04 W
5	Offshore Boundary	Town / Town Boundary	Nahant / Winthrop	42	23	32 N	70	51	28 W
6	Aid to Navigation	RW "BG" Mo (A)	1.6nm NNE of The Graves	42	23	27 N	70	51	30 W
7	Aid to Navigation	G "5" FI G 4s WHISTLE	0.8nm NE of The Graves	42	22	34 N	70	51	29 W
8	Aid to Navigation	R "2" FI R 4s BELL	Three & One-Half Fathom Ledge	42	21	04 N	70	50	31 W
9	Aid to Navigation	G "1" Q G WHISTLE	Thieves Ledge	42	19	32 N	70	49	51 W
10	Offshore Boundary	Town / Town Boundary	Hull / Cohasset	42	18	34 N	70	47	25 W
11	Land	Town / Town Boundary	Hull / Cohasset	42	15	54 N	70	49	34 W

Where possible, this seaward boundary was delineated in a way that should be clearly identifiable to boaters. Even without a GPS unit, it should be clear when vessels are entering the Boston Harbor NDA.

The landward boundaries of the NDA will be:

- The Saratoga Street bridge between Winthrop and Boston (42° 22' 58"N, 70° 59' 40"W);
- The railway bridge on the Chelsea River between Chelsea and Revere (42° 24' 06"N, 71° 00' 40"W);
- The Amelia Earhart Dam on the Mystic River (42° 23' 42"N, 71° 04' 30"W);
- The Watertown Dam on the Charles River (42° 21' 55"N, 71° 11' 22"W);
- The Baker Dam on the Neponset River (42° 16' 15"N, 71° 04' 08"W);
- The Shaw Street bridge on the Weymouth Fore River (42° 13' 20"N, 70° 58' 25"W);
- Where Bridge Street crosses the Weymouth Back River between Weymouth and Hingham (42° 14' 50"N, 70° 55' 52"W); and,
- Where Nantasket Avenue crosses the Weir River between Hingham and Hull (42° 15' 37"N, 70° 50' 41"W).

Based on data from MassGIS, the Boston Harbor NDA will encompass about 87 miles<sup>2</sup> (over 55,700 acres) of water. Over 90% of the waters of the Boston Harbor NDA will fall under the jurisdiction of four municipalities: Boston (44.7% of the whole NDA); Hull (23.5%), Quincy (11.8%); and Winthrop (10.2%). A further 8.4% is almost evenly split between Hingham and Weymouth. Therefore, over 98% of the proposed Boston Harbor NDAs falls under the jurisdiction of these six municipalities. The remaining municipalities each have jurisdiction over less than 1% of the total NDA, with Newton accounting for only 0.03% (Table 2).

Table 2. The areas of the Boston Harbor NDA that will lie within the jurisdiction of the surrounding municipalities.

Town	Area (miles <sup>2</sup> )	Area (acres)	Percentage of the NDA
Boston	38.92	24,906	44.69
Hull	20.43	13,076	23.46
Quincy	10.25	6,563	11.78
Winthrop	8.88	5,682	10.20
Hingham	3.67	2,350	4.22
Weymouth	3.61	2,312	4.15
Cambridge	0.49	317	0.57
Chelsea	0.28	179	0.32
Everett	0.15	98	0.18
Braintree	0.15	95	0.17
Milton	0.11	70	0.13
Watertown	0.10	66	0.12
Newton	0.02	14	0.03
<b>TOTAL</b>	<b>87.08</b>	<b>55,728</b>	

The designation of Boston Harbor as an NDA will complement continuing efforts to increase the number of NDAs along the Massachusetts coast. Figure 4 shows how the proposed Boston Harbor NDA will tie in with two adjacent NDAs that are currently being developed. An application for the South Shore NDA is currently being reviewed by the state and discussions are underway to develop a North Shore NDA application. Where possible, aids to navigation have been used to delineate the seaward NDA boundary. In some areas, the NDA boundary is concurrent with the offshore municipal boundaries. Once the adjacent NDAs are designated, the significance of the municipal boundaries will be reduced as the contiguous NDAs will form an offshore boundary along much of the eastern coast of Massachusetts (Figure 4).

## HARBOR-WIDE CERTIFICATION OF NEED

Boston Harbor is a moderately large coastal embayment with a very high nutrient load as compared to most coastal ecosystems. The water depth in the harbor averages approximately 18 feet; and the tidal range averages almost 9 feet. The harbor is typically described as having two parts: the Inner Harbor, which is under the jurisdiction of the City of Boston, and the Outer Harbor, which falls under the jurisdiction of multiple cities and towns. The Outer Harbor consists of three large bays: Dorchester Bay, Quincy Bay, and Hingham Bay. Several rivers run into the Outer Harbor including the Neponset River, the Weymouth Fore River, the Weymouth Back River, and the Weir River.

In the late 1800's, the City of Boston stored its waste in vats on Moon Island and would release millions of gallons of waste into the harbor with the outgoing tide in the hopes that the sewage would be carried out to sea. In 1889, the Metropolitan Sewerage District (MSD) was formed to build one of the country's first regional sewer systems. Though this system provided no treatment, it was recognized as one of the greatest regional sewer systems in the country for its time. Over the years however, pollution in the harbor worsened, causing shellfish contamination, and raising awareness for the need to treat sewage.

The dire state of the harbor was first seriously addressed in 1952 when a primary wastewater treatment plant was built on Nut Island in Quincy. A few years later, another wastewater plant was built on Deer Island to handle and treat the waste from the rest of the Boston metropolitan area.

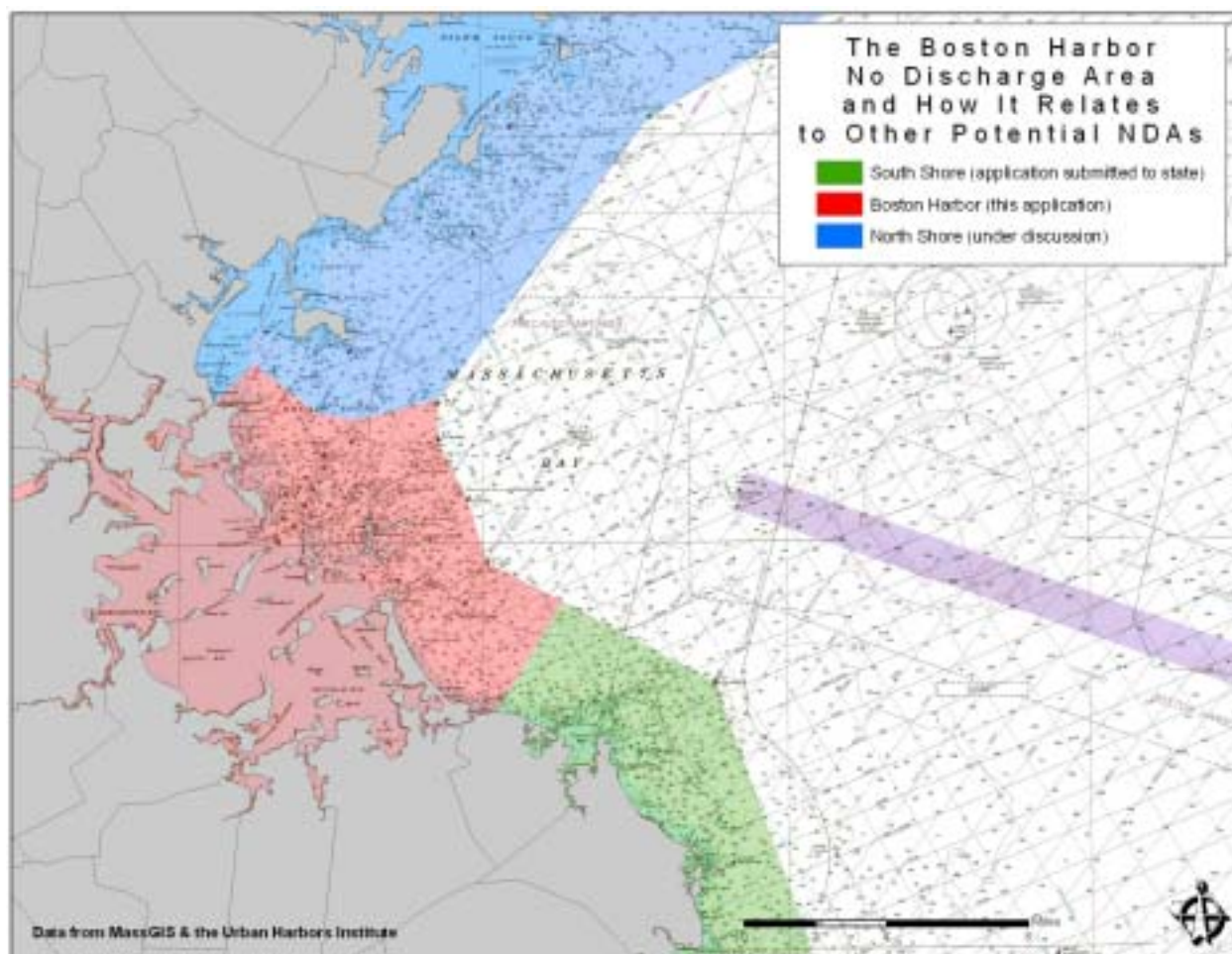


Figure 4. The location of the proposed Boston Harbor NDA and how it relates to the potential South Shore and North Shore NDAs that are proposed.

In 1985, the Massachusetts legislature established the Massachusetts Water and Resources Authority (MWRA) to manage water and sewer services, taking over for the Metropolitan District Commission (MDC). In 1985, the MWRA was found liable for federal violations of the Clean Water Act due to discharges of sewage into Boston Harbor. Mandated by the federal courts, the MWRA embarked on a \$4 billion, 20-year project to restore the harbor, starting with the construction of a new primary and secondary wastewater treatment facility on Deer Island in 1990. A sewage transportation tunnel was also constructed, connecting the Nut Island facility to the Deer Island facility, allowing for secondary treatment of waste from both facilities. In 2000, a 9.5 mile-long outfall tunnel, running under the waters of Boston Harbor, came on-line. This outfall tunnel now carries treated wastewater from Deer Island out into Massachusetts Bay.

Once labeled the “filthiest harbor in America”, Boston Harbor is once again becoming a popular locale for swimming, recreational boating, tourism, fishing, and other water-based activities.

Ongoing monitoring at multiple sites suggests a substantial decrease in *Escherichia coli* concentrations, along with a decrease in levels of ammonium, nitrogen, phosphorus, and biochemical oxygen. These water-quality improvements are allowing many organisms to recover. For example:

- The frequency of tumors and liver disease among flounder has fallen;
- Reduced levels of toxins have been found in the flesh and shells of shellfish and mollusks; and,
- The concentrations of polycyclic aromatic hydrocarbons from fuel and oil in the sediments of the harbor and bay have fallen.

Additionally, Save the Harbor/Save the Bay has noted that “the quantity of suspended discharge into the harbor and the bay” has declined by 80% since the efforts to clean the harbor began.

While water quality in Boston Harbor has significantly improved due to the sewage treatment upgrades at Deer Island and the construction of the outfall pipe, additional efforts are underway to further improve water quality in the harbor. One such effort aims to address pollution resulting from combined sewer overflows (CSOs) and illicit sewer connections to the CSO system. Another source of pollution, the discharge of sewage by vessels, is being addressed by this effort to have the whole harbor designated as a No Discharge Area.

## Embayment Flushing

Boston Harbor is relatively shallow, with an average depth of 18 feet. The harbor is generally well-flushed by strong tides and freshwater rivers, with an average residence time of five to seven days. The deep channels and the Outer Harbor are more rapidly flushed than shallow areas, the Inner Harbor, and areas along the shoreline. Those areas with slower flushing rates tend to be more impacted by pollution than those areas that are quickly flushed because pollutants and particles tend to accumulate in the calmer water. While the poorly flushed areas may benefit the most from a harbor-wide NDA, the ban on sewage disposal from boats will certainly have a positive impact on the harbor as a whole.

## Beaches

There are many popular beaches around Boston Harbor. Many of these are managed by the Massachusetts Department of Conservation and Recreation (DCR). Popular Boston Harbor beaches include:

- |                              |   |
|------------------------------|---|
| ▪ <i>Boston (Dorchester)</i> | Malibu Beach, Savin Hill Beach and Tenean Beach.                            |
| ▪ <i>East Boston</i>         | Constitution Beach  |
| ▪ <i>South Boston</i>        | Carson Beach, Castle Island, City Point, M Street Beach and Pleasure Beach. |
| ▪ <i>Hull</i>                | Nantasket Beach   |
| ▪ <i>Quincy</i>              | Wollaston Beach   |
| ▪ <i>Weymouth</i>            | George Lane Beach ("New Beach") and Wessagussett Beach                      |
| ▪ <i>Winthrop</i>            | Winthrop Beach  |

Additionally, swimming beaches can be found at a number of the islands in the Boston Harbor Islands National Park Area, including Bumkin, Grape, Lovells, Peddocks and Spectacle Islands.

In 1993, the Massachusetts Department of Conservation and Recreation, working with The Boston Harbor Association, was appropriated \$30 million for the cleanup and restoration of Boston beaches with the “Back to Beaches” program. Since the inception of this program there have been significant improvements made to waterfront parks through such initiatives as new sand on beaches, new and/or restored bathhouses, benches, shade shelters, body and foot showers, walkways, landscaping, and more.

The commitment to cleaner beaches continued in 2006 when the Massachusetts Legislature established the Metropolitan Beaches Commission. The purpose of this commission was to research the current

condition of the beaches and to create means to ultimately improve them. This commission works on Boston area beaches.

Even though great strides have been taken in making the beaches better suited for public use, there are still closures that occur (Tables 3 and 4) as well as failures to meet water quality standards (Table 5).

Table 3. Days that South Boston beaches failed to meet swimming standards in 2000-2003.

Swimming Season	Total number of sample days	Number of days that at least one beach failed to meet swimming standard	Percentage of sampled days that at least one beach failed to meet swimming standard
2000	79	12	15%
2001	79	18	23%
2002	62	8	13%
2003	57	11	19%

Note: includes data collected by the Massachusetts Water Resources Authority and the Department of Conservation and Recreation (2003)

Table 4. Percentage of days that Boston Harbor beaches failed safe swimming water quality tests.

Year	BEACH				
	Carson Reservation	Constitution	Pleasure Bay	Tenean	Wollaston
2004	15.79%	12.07%	8.77%	15.39%	10.53%
2003	19.18%	3.64%	1.85%	21.82%	5.45%
2002	8.82%	2.99%	0%	3.33%	4.35%

Note: Study by Save the Harbor/Save the Bay, within the "Indicator Report." Beaches tested through June-September for a total of 57 days

The closure of beaches due to high bacterial counts results from numerous sources including: combined sewer overflows (CSOs), stormwater runoff, untreated sewage from leaky pipes and illegal hookups that empty into storm sewers, waste from recreational and commercial vessels, and sediments contaminated by pathogens. Multiple sampling sites have been established in the harbor. Weekly, and in some places daily water samples are taken from these sites to test the water quality at the beaches. These samples allow colored flags to be flown at the beaches so that swimmers know if the water is safe to swim in.

Other efforts are being made to minimize pollution by petroleum products by encouraging boaters to use "bilge socks", which keep the bilges free from contamination and to use absorbent pads to clean up any spillages that might occur during refueling. These items have been given to boaters, marinas and yacht clubs, and are often free to boaters. Other efforts to keep the beaches clean include the Massachusetts annual beach cleanup called COASTSWEEP. This program encourages volunteers to organize groups to clean up specific beaches and to gather data on what they find. This data is then sent to the Ocean Conservancy where it is combined with data from around the world and analyzed.

Even with the continued efforts to encourage the public back to the beaches, the Metropolitan Beach Commission has found that the number of visitors has been slow to increase and it is believed that this is largely due to historic pollution issues. Designating the Harbor an NDA, along with other improvements that are sought to improve the beaches, will help to combat contamination and allow more beaches to be opened during the swimming season, as well as to encourage further participation in events.

Table 5. Exceedance of the federal water quality standard for swimming in 2005.

Beach	Single Sample Exceedance	Number of Samples Collected	Percent Exceedance
<b>Tested Daily</b>			
Pleasure Bay	1	52	1.90%
City Point	2	52	3.80%
Carson	10	106	9.40%
M Street	6	52	9.80%
Tenean	6	48	12.50%
Constitution	23	156	14.70%
Wollaston	40	212	18.90%
<b>Tested Weekly</b>			
Nahant	0	52	0%
Nantasket	0	48	0%
Winthrop	0	12	0%
Revere*	7 (2)	80 (48)	8.75% (4.2%)
Savin Hill	2	15	13.30%
King's	8	51	15.70%
Malibu	3	15	20%

\*A broken sewer pipe in Saugus was responsible for 5 of 7 days exceedance in 2005. The numbers in brackets exclude readings caused by the break.

Table from the Metropolitan Beach Commission Report 2007.

## Water Quality

The MWRA has overseen great improvements affecting the water quality in Boston Harbor. Ongoing monitoring enables the MWRA to track progress, identify new problems, and ensure that water quality continues to meet federal standards.

### General

Prior to consolidating the two regional systems on Deer and Nut Islands in 1998, bacteria counts were high along the shoreline, in the Inner Harbor and rivers, and around Deer Island, Nut Island, and the sludge outfalls. As the facilities were consolidated and the outfall pipe came on-line, all sewage received secondary treatment and was released 9.5 miles out of the harbor and into Massachusetts Bay, causing bacterial water quality in the harbor to improve. Currently, the water quality in most of Boston Harbor meets the EPA's most stringent swimming criteria.

Another indication of the improvement in water quality in Boston Harbor has been the increase in water clarity shown through Secchi disc studies conducted since 1993. Water clarity is one of the factors people tend to associate with clean water, making improvements in this area crucial for water-related recreation. A harbor-wide NDA will help further improve water clarity.

Having dealt with the major sewage issues, the sources of pollution in the poorly flushed areas are now more local, including stormwater, boats, animals, and birds.

### Continuing Efforts

The MWRA regularly monitors and reports on a variety of issues within Boston Harbor including harbor, beach, river, and tributary data. Additionally, the MWRA issues monthly water quality reports that covers



rainfall, water clarity, and levels of *Escherichia coli*, *Enterococcus* and algae. They also wrote an extensive report documenting pollution levels in Boston Harbor from 1986-2001.

The MWRA is also addressing the issues associated with Combined Sewer Overflows (CSOs) through its CSO Control Program. The program aims to protect swimming beaches, shellfish beds, and other sensitive waters by eliminating the discharge of stormwater contaminated with sewage that can occur during extreme wet weather events.

Since 1977, the Boston Water and Sewage Commission (BWSC) has made major water and sewer system improvements, resulting in increased system capacity and the virtual elimination of dry weather overflows from combined sewers into the harbor. The BWSC has worked in concert with the MWRA to institute water and sewer infrastructure improvements to better treat stormwater and prevent direct discharges of sewage to the waterways. The BWSC currently has an agreement with the MWRA to eliminate or substantially close CSOs, and has completed several sewer separation projects. Under the MWRA's CSO Control Plan, the BWSC is currently separating sewers in Dorchester, and expects to complete this effort in 2008. Additionally, the BWSC is attempting to ensure minimal pollution of the harbor through its annual Capital Improvement Program.

In addition to all of the aforementioned efforts to monitor and improve water quality in the harbor, the Charles River Watershed Association also runs daily flagging programs in the lower reaches of the river during the summer months, and a year-round monthly testing program throughout the watershed. The Flagging Program presents the daily flag colors of the river's health, which signify whether or not the river is safe for boating at nine boating locations from Watertown to Boston. The Flagging Program also provides information as to the quality of the water that will be entering the harbor from the river and the watershed.

Significant past and continuing efforts have been made to turn a highly polluted harbor into the excellent resource that Boston Harbor is today. While the improvements to water quality in the harbor have been immense, there is still more work to be done. The designation of all the waters of Boston Harbor as a No Discharge Area would clearly complement the past and ongoing efforts, making it the logical next step in ensuring the continued improvement of a valuable resource.

### **Eelgrass Restoration and Survival**

A number of eelgrass beds exist within Boston Harbor, yet the area covered by eelgrass has been significantly reduced over the years. The reduction has been attributed to coastal development, severe organic loading, and siltation occurring in many areas of the Inner and Outer Harbors.

The Boston Harbor Eelgrass Restoration Project transplants and closely monitors eelgrass, recording the health and survival of these transplanted plants. The project has noted successes with planted eelgrass in its Long Island and Peddocks sites, although there have been issues with growth at the Weymouth sites. The Boston Harbor Eelgrass Restoration Project notes that water quality improvements related to re-directing the discharge of sewage offshore has resulted in a reversal of environmental degradation of the harbor, and the rate of eelgrass loss has slowed. Improving the quality and clarity of the water through an NDA should improve the health and survival rates of eelgrass.

### **Shellfish and Lobster**

The numerous mud flats and embayments within Boston Harbor provide suitable habitat for blue mussels, razor clams, and soft shell clams. However, shellfishing is severely restricted due to elevated fecal coliform count.

Fecal coliform levels have been monitored by the Massachusetts Division of Marine Fisheries at locations in Hull, Hingham, Quincy, and Weymouth. Between 1993 and 2001, there were on average 15 to 16 fecal coliforms per 100 milliliters of water. This exceeds the approved standard of 14 fecal coliforms per 100 milliliters. While data shows that fecal coliform levels have decreased, most areas within Boston Harbor are still classified as restricted.

The MWRA has been monitoring lobsters, and has found lobster meat to be well within the federal Food and Drug Administration guidelines. However, the tamale of the lobster exceeded levels for PCBs. The MWRA concluded that one possible explanation for the higher levels of PCBs was because lobsters could be foraging less in the Outer Harbor and more in the Inner Harbor and Dorchester Bay, where there are more pollutants.

The NDA designation would help to continue reducing the fecal coliform counts in the harbor and could lead to the re-opening of some shellfish beds.

## **SPECIFIC CERTIFICATION OF NEED**

### **Boston**

The City of Boston is located in Suffolk County and is the capital and most populous city of Massachusetts. In 2000, Boston had a population of roughly 590,000. Boston has an area of approximately 89.6 miles<sup>2</sup> with 41.2 of those being water. Boston is bordered by multiple cities and towns including: Winthrop, Revere, Chelsea, Everett, Somerville, Watertown, Newton, Brookline, Dedham, Canton, Milton and Quincy.

The Charles River separates Cambridge, Watertown and Charlestown from Boston proper and the Neponset River forms the boundary between the southern Boston neighborhoods and the cities of Quincy and Milton. To the east of Boston lies Boston Harbor.

There are a number of resources that will benefit from Boston Harbor being designated an NDA. Such resources include:

- The harbor economy;
- The Inner Harbor recreation opportunities;
- The Boston Harbor Islands; and,
- Areas of Critical Environmental Concern.

#### *The Harbor Economy*

Boston Harbor is economically important both as a tourist destination and as a working port. The harbor affects not only the City of Boston, but also the greater Boston area and even the state of Massachusetts economically. The designation of an NDA would improve the condition of the waterfront, allowing the harbor to continue to flourish.

Generally, although consumerism in Boston is not solely linked to the harbor, its key attractions are the places where visitors will spend more their time and money. In 2005, Boston had 17.6 million visitors with a total direct and indirect economic and tax impact of \$9.8 billion and the average daily spending by a leisure visitor (as part of a party of four) is \$41 (no hotel) and \$160 (if at a hotel).

Most specifically to the Boston Harbor area, in 2000, 122 cruise ships calls were scheduled which had an estimated impact of \$50 million dollars in the region. In 2007, the new cruise season began on April 15th and it is estimated that this season (which runs through December 2007) shall have a 20% increase over 2006's call number, totaling roughly 103 ships call which will carry approximately 250,000 travelers. Boston is now considered one of the fastest growing high-end cruise markets handling approximately 233,000 cruise passengers coming into Black Falcon Cruise Terminal.

According to a recent study by the Massachusetts Port Authority (Massport), activities in the Port of Boston generate more than 34,000 jobs and have a \$2.4 billion annual economic impact. Massport is part of the Boston Harbor and is the hub of Massachusetts travel. Massport includes Logan International Airport, L.G. Hanscom Field, Worcester Regional Airport, Tobin Memorial Bridge, the Port of Boston and Massachusetts Port Authority. Current industries in the Port of Boston include: energy facilities, fish processing, automobile imports, cruise ship terminals, boat building, ship repair, and tugboat operations.

More than two million pounds of fish are caught in and around Boston each year, making fishing, food processing, and food storage prime industries. The Fish Pier in South Boston currently has twelve to fifteen fishing boats that dock daily. More than 23 million pounds of fish are processed annually at the Fish Pier; 8 million of which arrive by vessels docked at that pier.

The waterfront has also seen drastic changes over the years in regards to growth, development and economics such as:

- The number of people living in Boston's waterfront areas grew by 12 percent between 1990 and 2000, compared to Boston's overall growth of 3 percent.
- Waterfront areas accounted for more than 60 percent of all growth in the City's population in the 1990s.
- Between 1994 and 2001, employment in Boston's waterfront Zip Code areas rose by 29 percent, compared to Boston's overall employment growth of 11 percent. Waterfront Zip Codes accounted for 88 percent of all job growth in the City between 1994 and 2001.
- After adjusting for inflation, earnings per worker in the City's waterfront Zip Codes rose by 42 percent between 1994 and 2001, to \$67,764 – 13 percent higher than the Citywide average of \$60,014 per worker.
- Private investment in waterfront-area development projects completed between 1987 and 2004 totaled over \$2.2 billion. These projects included 3.2 million square feet of office space, 2,720 new residential units, 285,000 square feet of retail space, 1,098 hotel rooms, 1 million square feet of industrial space, 1.9 million square feet of research, cultural/entertainment and institutional space and 3,865 parking spaces.
- Other projects with a total cost of \$1.1 billion are now under construction. These projects will add 440,000 square feet of office space, 1,750 units of housing, 60,000 square feet of retail, and 1,210 hotel rooms.

The economic success and growth of the waterfront is tied into the health and appeal of the Harbor.

#### *The Inner Harbor Recreation Opportunities*

In 2003, with 16 million visitors to Boston, 18.4% of visitors engaged in beach activities and 6.6% engaged in water sports or boating activities. The Inner Harbor offers unique recreational resources from dining experiences to whale watching to ferry tours which citizens and tourists alike partake in.

Recreational boating has increased in the past decade; the number of registered boaters in Massachusetts rose by 9.1% between from 1995 to 2005, to just over 150,000 boaters. In 2006, Boston had a total of roughly 1,800 registered boaters. With the increase in recreational boating, there is also an increase in the popularity of the harbor's amenities.

The Inner Harbor also offers other recreational activities that take place both on the water and around it, thus being affected by the quality of the harbor in different ways. There are harbor cruises, ferry rides and charters, sailing lessons, whale watching expeditions, multiple marinas and shopping areas. The cruises offered in the harbor vary in type and in number of parties. The variety with which one can choose from makes the cruises in the Harbor a highly appealing outing. More than 400 restaurants are located on the harbor, varying in cuisine and formality.

The harbor offers water transportation from a variety of resources including Boston Harbor Cruises, Rowes Wharf Water Taxi, the Harbor Express and the Seaport Express. Water transportation is used by commuters as well as tourists to get to multiple destinations on the harbor.

The waterfront also has important cultural facilities including: The Children's Museum which attracted 410,000 visitors in 2004; the New England Aquarium which attracted 1.6 million visitors in 2004; the USS Constitution which attracted more than 239,000 in 2004, Faneuil Hall Marketplace which attracted 20 million visitors in 2004; and the Bank of America Pavilion which attracted 125,000 visitors in 2004. Gate numbers, even though high, have been decreasing in the years. For example, the number of visitors to the USS Constitution went from 520,182 in 2001 to the 335,262 listing of 2004. Obviously these facilities

would benefit from greater attendance based upon the harbor's continued appeal, fostered by the NDA designation.

The Inner Harbor offers a number of areas in which people are able to walk and take in the sites around the harbor. Such areas include: the East Boston Pier Park with piers, public sailing, walkways and picnic tables; the Navy Yard Historical Park which displays the USS Constitution; Central Wharf with a plaza and a dock for whale watch cruises and many others. Most of these sites (and more) are a part of the Boston HarborWalk. The HarborWalk is a way to connect the public to the harbor, running from Chelsea Creek to the Neponset River, through East Boston, Charlestown, North End, Downtown, South Boston and Dorchester.

The harbor has many events which attract large number of visitors. Such events include: The Fort Point Channel Summer Music Series, events at the Boston Harbor Hotel on Rows Wharf, HarborWalk Sounds, 4th of July Celebrations and Tall Ships.

The Inner Harbor is a juxtaposition of the natural appeal of the harbor and waterfront with the commercial and public sector of Boston, creating a unique resource and location which will only grow stronger as the harbor becomes a more appealing location.

#### *The Boston Harbor Islands*

Boston's Outer Harbor is readily accessible by boat and many are served by ferries. Thirty-four islands make up the Boston Harbor Islands National Park Area. The islands are: Bumpkin Island, Button Island, Calf Island, Deer Island, Gallops Island, Georges Island, Grape Island, The Graves, Great Brewster Island, Green Island, Hangman Island, Little Brewster Island, Langlee Island, Little Calf Island, Long Island, Lovells Island, Middle Brewster Island, Moon Island, Nixes Mate, Nut Island, Outer Brewster Island, Peddocks Island, Raccoon Island, Ragged Island, Rainsford Island, Sarah Island, Shag Rocks, Sheep Island, Slate Island, Snake Island, Spectacle Island, Thompson Island, Webb State Park, Worlds End.

There are multiple points of interest on these Islands which fall within the City of Boston's jurisdiction. Such points of interest include Lovell's Island Beach, Spectacle Island's Beach, Fort Warren on George's Island, Boston Light on Little Brewster's Island and Fort Strong on Long Island. These islands prove to be a recreationally appealing location with shuttles available to visitors, as well as camping sites, tours, and other such amenities. In 2002, more than 240,000 visits were made to the islands with more than 1,800 people taking part in community programs offered on these islands.

Even with the number of visitors indicating that the islands are healthy, numbers have declined from this 2002 number with 60,802 visitors recorded in 2004. Since a large part of the appeal of these islands is based upon the natural beauty that surrounds them, an NDA will allow these islands to flourish and the number of those visiting and engaging in the islands resources to increase.

#### *Areas of Critical Environment Concern (ACEC)*

ACECs are those areas that, because of the quality and significance of their natural resources, receive special recognition. In Boston, there are two ACECs: the Neponset River Estuary and the Rumney Marshes.

The Neponset River Estuary ACEC is approximately 1,300 acres with 435 of those being located in Boston. The featured resources in the Neponset River Estuary ACEC are the Neponset River and portions of its tributaries, estuary, salt marshes, floodplains, fishery habitat, and wildlife. Public open space and recreational opportunities are offered as well as educational and scientific programs.

The Rumney Marshes are considered some of the most biologically significant estuaries in Massachusetts. The Rumney Marshes are noted for their 1,000 acres of salt marshes which are key in helping the neighboring human populations in preventing flood damage. The Rumney Marshes also are home to a variety of bird species; five of which are on the "endangered", "threatened" or "of special concern" list.

## Quincy

The City of Quincy's waterfront has a diverse make-up. The Neponset River is made up of tidal mud flats and salt marshes with a large population of local wildlife and migratory birds. Squantum Point, once a naval air base, has been transformed into open space that is controlled by the DCR. The Squantum Point Park is open to the public for walking, biking, fishing, clam, and worm digging when permitted. There are a number of bird watchers who frequent this park. The city is in the process of trying to set up a ferry terminal at the site of the construction dock for the harbor clean project. This plan would give the public access to the Harbor Islands and to the historic Boston waterfront via water ferries.

Continuing south, in Dorchester Bay is Nickerson Beach. The beach is one of many neighborhood beaches where families go to cool off in the heat of summer. There is a small anchorage (8 to 10 vessels) at Nickerson Beach serving local boat owners only. Nickerson Beach abuts the conservation land at Squaw Rock. This conservation area is a local public open space that families can have picnics and fish from the shoreline.

The eastern boundary of the city's waters is Quincy Bay. The DCR stewards the Wollaston Beach Reservation along Quincy Bay, the area's largest public beach. DCR estimates between 1,500-1,700 people arrive via automobiles and then another 200-300 local walk-ons use the beach on a normal weekend day. The waters of Quincy Bay have approximately a 10 foot tide change twice a day, so the shoreline activities can change from swimming to clamming in that time frame. The bay hosts a number of fishing tournaments and sailing regattas every year. This has brought fisherman and sailors from around the country to enjoy one of the city's most valuable resources. There are many salt marshes on its perimeter and the Furnace Brook / Blacks Creek estuary which flows into the Quincy Bay. The south end of the bay has a number of city-run beaches including: Parkhurst, Perry, Adams Shore, and Rhoda.

The city's southern waters include Hingham Bay; this area local known as Houghs Neck and is home to Quincy Yacht Club and the city's public landing and free boat ramp. On the western shore of Hingham Bay is Edgewater Beach and Rock Island Cove. The Edgewater Beach is made up of both a public and private sections. Rock Island Cove is 90% salt marsh and tidal clam flats at low water. At high tide a number of people frequently go water skiing and tubing in the cove. It is also the home of the Gull Point Yacht Club. People also fish for striped bass along the beaches and marshes. The Fore River is the border of the city's waters to the south with Weymouth.

Town River has many areas of salt marshes and tidal mud flats. Birds and wildlife find this to be a safe haven.

## Hull

The Town of Hull is, in terms of land area, is the fourth smallest town in Massachusetts. It has a jurisdictional area of approximately 28.6 miles<sup>2</sup>, of which 25.2 miles<sup>2</sup> is water. The 2000 census estimated the town's population as 10,500.

Despite its relatively small size, Hull has many valuable resources, largely due to its location on the narrow Nantasket Peninsula, which leads out into Massachusetts Bay. Such resources include:

- Nantasket Beach;
- The Boston Harbor Islands;
- Various natural resources; and,
- Recreational resources such as boating.

### *Nantasket Beach*

One of the busiest beaches in the Boston Harbor area, Nantasket Beach has been a popular destination since the 19<sup>th</sup> century. At low tide, there are three acres of tide pools available. Nantasket Beach has also been consistently considered one of the cleaner beaches within the Boston Harbor area. In 2005, out of 48 samples taken, none of Nantasket's samples exceeded the federal quality for safe swimming

every day. There are recommendations for Nantasket beach renourishment and repairs in order to improve the overall quality of the shore area.

#### *The Boston Harbor Islands*

Peddocks Island lies within the waters of Hull and is one of the largest islands of the Boston Harbor Island National Park Area. Comprising of 184 acres (288 acres at low tide), Peddocks consists of four headlands, connected by sand or gravel bars called tomobolos. Peddocks is open from 9am until sunset, and has ferry service. There are guided tours as well as campsites and vegetation and fresh water reservoirs.

#### *Weir River Estuary Area of Critical Environmental Concern (ACEC)*

Approximately 55% of the Weir River Estuary ACEC lies within the Town of Hull. The area was designated as an Area of Critical Environmental Concern (ACEC) in 1986 recognizing its 17 miles of shoreline as one of the largest salt marsh ecosystems in the Boston Harbor area.

Within the ACEC, there are approximately 922 acres of open water and diverse wetlands habitat, including salt marsh, shallow marsh meadow, and wooded swamp. Abundant mollusks, crustaceans, salt marsh grasses, and aquatic vegetation found in the area provide a constant food source for over 100 species of resident and migratory birds. Clam flats in the ACEC are particularly productive, accounting for 17 percent of the total clams harvested within Boston Harbor.

#### *Recreational Boating*

Hull has marinas and yacht clubs available to boaters including, but not limited to, Waverland Marina, Sunset Marina and the Hull Yacht Club. Hull is also an ideal location for sailing with such programs as Sail Nantasket which was founded in 2005.

### **Winthrop**

The Town of Winthrop is located at the northern side of the entrance to Boston Harbor. Based on the 2000 census, Winthrop had a population of just over 18,000.

Resources found in the Town of Winthrop that will benefit from the NDA designation include:

- The Harbor Islands;
- Recreational boating and tourism; and,
- Other natural resources.

#### *The Harbor Islands*

The Town of Winthrop has islands that are located within the Boston Harbor Islands National Recreation Area. Snake Island is used as conservation lands and consists of mudflats and grassy clearings that offer prime bird-watching opportunities.

Deer Island is located at the entrance to the harbor. While its name would imply that it is an island, Deer Island is now attached to Winthrop as a result of a hurricane in 1938. Presently Deer Island is largely occupied with the Deer Island Wastewater Treatment Plant that treats sewage from multiple towns and is the second largest facility in the United States. The treatment plant offers tours for the public to learn more about this facility.

The remainder of the park is a recreational area consisting of places to walk, jog and sightsee. One of the best locations for such an activity is on the Deer Island HarborWalk. The HarborWalk runs for 2.6 miles around the perimeter of the island and offers multiple vantage points with views of Winthrop and downtown Boston. Visitors are also allowed to fish and can watch the boating activities associated with the Port of Boston.

The Boston Harbor Islands represent an important recreational resource for the surrounding municipalities. As such, it is clear that all of the islands, including those located within the waters of the Town of Winthrop, would benefit from an NDA designation.

#### *Recreational Boating and Tourism*

Recreational boating is an important activity in Winthrop and the Town has a number of boating facilities. Winthrop Harbor, for instance, is located 3 miles north-east of Boston and is used mostly by recreational boaters. A small number of commercial vessels are also homeported in this area. There are a number of yacht clubs and marinas such as Atlantis Marina, Winthrop Yacht Club, Crystal Cove Marina, Mullins Marine Service, Pleasant Park Yacht Club and Cottage Park Yacht Club as well as the Winthrop Town Dock. The Town Dock has recently undergoing a significant upgrade. While yacht clubs are generally not open to the general public, the Town Harbormaster suggests that the local yacht clubs are generally willing to allow non-members to use facilities such as restrooms.

The public is also able to participate in the Winthrop waterfront through such things as the fishing event, Hook the Cure, a fundraiser to benefit the Parkinson Foundation. Recreational boaters are also able to visit such sites as Winthrop Light just offshore.

#### *Other Natural Resources*

Belle Isle Marsh, a 241-acre salt marsh, is the last salt marsh in the Boston area. This area is a suitable habitat for diverse wildlife and vegetation, as well as a location to provide cover for different mammal life. Belle Island is an example of the wetlands that were historically much more common along the Massachusetts shoreline. The waters and marsh areas of Belle Island provide nurseries for fish and shellfish and host a variety of birdlife during the summer months. With parking and hiking paths available, Belle Isle can be toured by the public and is part of the Winthrop HarborWalk.

Lewis Lake Park is a small tidal inlet with a pond and a tidal river that has a beach area and a playground. This park also offers extensive birding opportunities.

The designation of the waters of Boston Harbor as an NDA will provide an additional means of protection from a diffuse, and difficult to detect form of pollution to the area and should represent another significant steps in the ongoing efforts to restore Boston Harbor to the ecological and recreational resource that offers so much to the local residents, as well as to visitors to the area.

## **Hingham**

Located on the south side of Boston Harbor, the Town of Hingham covers total area of 25 miles<sup>2</sup>, with 2.6 miles<sup>2</sup> of this being water. In 2004, Hingham had a population of 20,720. The town lies along the portion of the harbor known as Hingham Bay, and is separated from Hull by the Weir River. The western portion of Hingham is bordered by the Weymouth Back River, which empties into Hingham Bay. Hingham also has multiple forests, ponds, brooks and parks throughout its town.

Resources that would benefit from the NDA designation include:

- Hingham Harbor;
- Recreational boating;
- The Harbor Islands; and
- Other natural resources

#### *Hingham Harbor*

Hingham Harbor is an ideal place for those looking to boat or kayak in a relatively sheltered area. Hingham Harbor was once a regional port for trade back in 1750-1850, leading many businesses to establish themselves along the waterfront. Although this commercial aspect has declined, the harbor is still a unique recreational resource and maintains some commercial development.

In an effort to improve the harbor, the Hingham Development Committee (HDC), created in 1957 as the Dredging Committee, is dedicated to the improvement of safe, attractive and universal access to the waterfront, increased recreational activities, and future planning of the waterfront. The committee has been instrumental in the restoration of Whitney Wharf into a public park, the preservation of access to the Bouve property within the new Shipyard development, and the improvement of conditions at the town boat ramp in collaboration with the Commonwealth of Massachusetts Public Access Board.

The HDC is in the process of creating a detailed Inner Harbor plan to provide details for a pedestrian parkway and future development. The HDC is also working with other agencies on such issues as harbor dredging and reparation of seawalls. The HDC is committed to continued outreach and education, and sponsors activities such as a harbor cleanup and various waterway projects. The NDA designation would be consistent with the goals of the HDC.

### *Recreational Boating*

In addition to the recreational boating opportunities in Hingham Harbor, Hingham Bay PHRF hosts Wednesday and weekend races in Hingham Bay for both beginner and experienced sailors.

Hingham Harbor Yacht Club, located on the tip of Crow Point in Hingham, offers a family orientated sailing club with a tradition of sail boat racing and sailing programs. The Hingham Harbor Yacht Club also offers boat launching and other services to members, and is also open to visitors.

Bare Cove Sail and Power Squadron helps educate both sail and power boaters with a variety of courses open to the public.

### *The Harbor Islands*

Hingham has multiple Harbor Islands within its jurisdiction. World's End, a 244-acre peninsula overlooking Hingham Harbor, is comprised of 4.5 miles of gravel roads, grass trails, and four coastal drumlins. World's End is owned by the Trustees of Reservations, a 13-person partnership board that oversees management of this area.

Other islands include Bumpkin Island, which offers campsites, open beach, grounds for tourists, and other amenities such as picnic tables.

### *Other Natural Resources*

Bare Cove Park is a 469-acre area along the banks of the Weymouth Back River. Comprised of open fields, wetlands, dense vegetation, and a variety of wildlife, Bare Cove is an ideal place for visitors to bike and hike. Presently there is a proposal to connect four waterfront parks (Abigail Adams Park, Great Esker Park, Stoddard's Neck Park, and Bare Cove Park) that are separated by the Weymouth Back River and Route 3A. This project would improve access and uses of the coastal recreation area.

The Weir River ACEC runs from Cohasset to Hull, carrying over through Hingham. A 950-acre ACEC, the Weir River contains one of the most extensive salt marshes in the greater Boston area. This area supports over 300 migratory bird species and other small mammals. Shellfish have been historically harvested there, and it is a feeding area for other species of fish including alewives, flounder, and striped bass.

The Weymouth Back River ACEC is also located in Hingham. Composed of 950-acres, this ACEC is uniquely located in the midst of an urban/suburban area. Roughly 180 acres flush into Hingham Bay. Clamflats, nursery and feeding areas, and other fish life are present here. Hingham's Fresh River is located within this ACEC.

Hingham's Bathing Beach, also known as Otis Beach, offers visitors access to a boat ramp, picnic tables, and a sandy beach.



## Weymouth

The following section is taken from the Town of Weymouth's Master Plan (2001):

*"With waterfront on both Quincy and Hingham Bays, and Grape, Slate and Sheep Islands, the town also has spectacular waterfront resources that can serve the town with water-based recreation."*

*"The Back River has been designated as both a Scenic River by the State and.....an Area of Critical Environmental Concern (ACEC). The ACEC was established in 1982 and spans 950 acres between Weymouth and Hingham. The Secretary of Environmental Affairs designates areas of Critical Environmental Concern (ACEC's) with assistance from the local municipalities. The Department of Environmental Management (DEM) administers the ACEC Program. The objectives of the ACEC Program are: to identify and designate the critical resource areas; to ensure conformance of State agency actions to preserve, restore and enhance the areas; and support local activities necessary for long-term management."*

The Department of Environmental Management (DEM) has described the Back River ACEC as follows:

*"It is an unusual natural area in the midst of an urban/suburban environment, uniquely preserved considering its proximity to Boston. Approximately 180 acres are tidal waters flushing into Hingham Bay. There are productive clam flats and nursery and feeding areas for a wide variety of finfish. Herring Brook in Weymouth provides annual passage to Whitman's Pond for thousands of alewives, locally referred to as herring. The lower portion of Herring Brook, Hingham's Fresh River, and several unnamed tributaries provide spawning sites for an annual smelt run. The 100+ acres of salt marsh and several salt ponds are vital links to the marine food web. Also included in the ACEC are ponds and swamps that form the headwaters of various tributaries to the Weymouth Back River."*

*"Most of the uplands within the ACEC are parks managed by the two towns: Great Esker Park in Weymouth and Hingham's Bare Cove and Brewer-More Parks. Within these areas are several outstanding examples of glacial eskers - the size and scope of the eskers are unique in Massachusetts. There are also numerous historical sites, including evidence of prehistoric habitation as long ago as 500 to 7500 B.C. Breeding or feeding habitat for some 150 species of birds combines with the scenic quality of the parks. These conservation areas provide buffers for the waters of the river and space for passive recreation."*

The Town of Weymouth's Master Plan (2001) continues:

*"As a coastal community, Weymouth has a valuable mix of shorefront resources.... Weymouth's coast is protected by other land forms and has good access to the complex of Boston Harbor islands. Weymouth is also accessible from the water through federally protected channels. Weymouth also has an important resource in the town beaches. The mudflats, saltwater wetlands and coastal waters are all recognized under federal and state law for protection."*

*"Weymouth's major coastal waterways are the Fore and Back Rivers, tidal estuaries, which connect the Town to the harbors. Limited but valuable coastal wetland areas add to the environmental quality of the shorefront along both of the rivers."*

## The Charles River

### *Charles River Basin and Surrounding Communities*

The Charles River is a slow-moving river which follows a sinuous journey from its headwaters at Echo Lake in Hopkinton to its discharge location in Boston Harbor. The Charles River drains approximately 308 miles<sup>2</sup> and has an estimated mean annual flow of about 400 cubic feet per second. The Charles is one of the nation's most historically significant rivers. There is evidence to suggest that humans have

lived on the banks of the Charles for over six thousand years. The first public park, public school and college in the English colonies were established along the banks of the Charles River.

The Charles River Basin, the portion of the river which this application seeks to designate as an NDA, is a ten-mile stretch of river starting at Watertown Dam and extending to the New Charles River Dam where the river discharges into Boston Harbor. The Charles River Basin is bordered by the cities of Newton, Watertown, Cambridge and Boston, including the Boston neighborhoods of Allston, Brighton, Back Bay and Beacon Hill. Newton is a city of approximately 80,000 residents with a land area of 17.9 miles<sup>2</sup> that shares a roughly 0.8 mile border with the Charles River Basin. Watertown has a land area of just 4.1 miles<sup>2</sup> and a population of roughly 34,000. Watertown borders the Charles River Basin to the north and south for approximately 0.5 miles and just to the north for an addition 2.1 miles. Cambridge is a city of over 100,000 residents with an area of only 6.5 miles<sup>2</sup>. Cambridge borders the Charles River to the north for nearly 6 miles. Land use in these communities is primarily medium to high density and multi-family residential. Boston borders the river to the south for its final 8 miles before it discharges into Boston Harbor. Boston is the largest city bordering the basin with nearly 590,000 residents.

### *Water Quality*

The earliest investigations of the water quality of the Charles River Basin date back to 1891. Today, numerous organizations monitor the river on a regular basis including Charles River Watershed Association, Massachusetts Water Resources Authority and the U.S. Environmental Protection Agency. As an urban river, the Charles River Basin is subject to numerous anthropogenic pressures. While these pressures have changed over time, centuries of human settlement on the banks of the river have certainly left their mark.

The river has been used for sewage disposal for as many years. Today, bacterial contamination and nutrient overloading cause significant problems in the basin. Additionally, extensive damming along the Charles, including the New Charles River dam at the mouth of the Charles River Basin, prevents the river from flushing properly.

The Charles River is designated as a Class B river, therefore its designated uses include swimming and boating. In 1995, high levels of bacteria prevented the river from meeting these designated uses the majority of the time. In that same year, U.S. EPA Region 1 kicked off their "Clean Charles Initiative", which aimed to make the river safe for swimming and boating by Earth Day, 2005. Through this initiative, substantial efforts have been made to find and eliminate illegal connections of sewer pipes to storm drain systems, repair leaking sewer pipes, and reduce and eliminate combined sewer overflows. To date, combined sewers in the entire Stony Brook subwatershed of the Charles River Basin have been separated to eliminate sewage overflow to the river. In addition, by 2013, combined sewer overflows to the Charles River Basin are projected to be reduced by 99.5%. Finally, Boston, Brookline, Watertown and Newton are all actively working to identify and eliminate illicit connections to stormwater drainage systems. Newton and Brookline have succeeded in reducing a combined 8,368 gallons per day of sewage from entering the stormwater drainage system.

These accomplishments have reduced some significant sources of bacterial contamination to the river and increased the percentage of time the river is safe for swimming and boating. In fact, since 1995, the percentage of time the river is safe for boating has more than doubled, while the percentage of time the river is safe for swimming has increased three-fold. Fifty years ago, before extensive water quality testing revealed the extent of the pollution in the Charles, swimming in the river was not uncommon. Many long-time residents of the area still remember swimming in the Charles as a regular past-time of their youth. Despite improvements, in 2005, *E. coli* levels in the Charles River Basin still exceeded the Massachusetts surface water quality standards for swimming 50% of the time. Work is being done to eliminate large sources of bacterial contamination to the river, however; smaller sources, such as sewage discharged from boats, also need to be addressed so the river can meet its designated uses 100% of the time.

Along with bacterial contamination, another pollutant of concern in the Basin is phosphorus. Large amounts of phosphorus and other nutrients are a significant problem throughout the Charles River, which

requires the development of a nutrient TMDL. Sewage discharge from boats, even when treated, adds excess nutrients to the river. In recent years this nutrient overloading has caused toxic algal blooms in the Charles River Basin which can also make the water unsafe for swimming and boating.

### *Recreation*

The Charles River Basin is one of the most heavily used recreational areas in Massachusetts. Boating and other water sports are popular with both tourists and residents alike. The water is used for recreational and competitive rowing, sailing, canoeing, kayaking, windsurfing, power boating, fishing and swimming. The designation of the Charles River Basin as a No Discharge Area will help it meet Massachusetts bacterial surface water quality standard for primary (swimming) and secondary (boating) contact more often.

The banks of the Charles River Basin are home to Community Boating, Inc. (CBI), the nation's largest and oldest public sailing program. Each summer CBI provides sailing instruction and opportunities to roughly 2,000 youth, 300 high school students and 4,500 adults. In addition, the Charles River Basin contains three other sailing pavilions, eleven rowing boathouses, five public access points for boats, ten public landings, one canoe and kayak rental service and four private yacht clubs. The Charles is host to many rowing and sailing competitions including the Head of the Charles Regatta, the world's largest two-day rowing event which attracts up to 8,000 rowers and 300,000 spectators from around the globe. Other regattas include Regatta in Lilies, Run of the Charles Canoe and Kayak Race, New England Intercollegiate Sailing Association Regattas and Kids Sail the Stars Community Boating Regatta.

In the summer of 2007 the Charles River Swim Club (CRSC) sponsored the first ever Charles River One Mile Swim in which roughly 100 individuals participated in a 1 mile swim between the Longfellow and Boston University bridges. CRSC hopes Charles River water quality will permit the swim to become an annual event.

The Spaulding Rehabilitation Hospital in Boston, located along the banks of the Charles River sponsors the Dr. Charles H. Weingarten Adaptive Sports & Recreation Program. This program provides current and former patients as well as disabled members of the community the opportunity to improve muscle strength, coordination, balance, endurance and self-confidence by canoeing, rowing, kayaking, sailing, and windsurfing on the Charles. Additionally, tours of the river are offered to the public by the Charles Riverboat Company and the Boston Duck Tours which provide tours to over 625,000 people annually.

Recreation is not limited to water sports and a cleaner Charles River Basin would certainly lead to an increase in recreational opportunities surrounding the river as well. The entire Charles River Basin is surrounded to the north and south by picturesque parklands containing a public theater, a concert pavilion, playgrounds, skating rinks, community gardens, recreational playing fields, tennis courts and nearly 18 miles of scenic pathways for runners, walkers, cyclists, rollerbladers, picnickers and sightseers. The parklands neighboring the Charles River Basin are utilized by over 2 million people annually. The parklands are also host to the nation's largest 4<sup>th</sup> of July celebration which attracts approximately 400,000 revelers from all over the country, numerous walk-a-thons, river fairs and river cleanups. Finally, New England's most visited cultural institution, the Boston Museum of Science is located on the Charles River Dam, straddling the Charles River.

### *Economics Benefits of the Charles River*

A clean Charles River Basin not only provides recreational opportunities to local citizens but also benefits the surrounding communities economically in a multitude of ways. Recreational opportunities along the Charles not only improve the quality of life for local residents and visitors, they also provide significant income to the surrounding communities. As mentioned above, regattas attract competitors and spectators to the area who patronize local hotels, restaurant and other establishments. Tour boats, boat houses, yacht clubs and a canoe and kayak rental establishment all provide year-round and seasonal employment. Recreational opportunities in and along the river are heavily dependent on a clean Charles River Basin.

A survey conducted by the EPA in 1996, revealed that five major hotels situated along the river averaged a 78% occupancy rate and grossed over \$54 million annually. During large events along the river, such as the 4<sup>th</sup> of July celebration and the Head of the Charles Regatta these hotels typically reach capacity. Additionally, these hotels, as well as other, in the area typically charge a price premium for rooms with a river view. EPA also indicated that during the 1990s housing units located within a five block radius of the Charles River Basin commanded a rental or purchase value 13-18% higher than similar properties situated further from the river.

Many businesses and institutions are located along the banks of the river and receive benefits from being situated as such. Three of the areas major universities, Boston University, Harvard University and the Massachusetts Institute of Technology are situated along the banks of the Charles River Basin. These universities attract tens of thousands of students and visitors from around the globe and the aesthetic appeal of their campus setting is certainly dependent on a clean Charles River. Many major corporations in the area such as Pfizer, New Balance and Genzyme choose to situate their offices along the banks of the basin, providing their employees with river views and scenic lunching sites. The Mirant Corporation, a \$6.7 billion dollar company, operates the Mirant Kendall Generating Plant along the banks of the basin in Cambridge and utilizes river water for coolant as part of their daily operations.

### *Fisheries*

An assessment of Charles River fisheries conducted in 2000-2003 by Charles River Watershed Association (CRWA) and the Massachusetts Division of Marine Fisheries (MA DMF) revealed that an estimated 25 different species of fish, including two anadromous species, the Alewife and the Blueback Herring make their home in the Charles River Basin. The resident fish population includes a low presence of fish species that would be expected in a healthy Charles River. Instead, a high percentage of species that currently inhabit the river are tolerant to pollution and can survive in a wide range of habitats including lakes, ponds and reservoirs and do not require free-flowing water for any part of their life cycle.

In July, 2006, the MA DMF, US FWS and CRWA stocked two million shad fry into the Lakes District area of the Charles River in an attempt to reintroduce this native species to the River. The shad is an anadromous fish that was found in the Charles in abundance up until the mid-1800s but was not observed at all during the 2000-2003 fish community assessment. Excessive nutrients contribute to oxygen depletion in the basin, making it an environment in which it is difficult for fish to thrive.

As discussed above, the Charles River represents a valuable recreational resource. There are four yacht clubs between the Watertown Dam and the Charles River Dam at the Museum of Science. Additionally there are other recreational boating sites, many associated with sailing and rowing. These include:

- Community Rowing in Newton;
- Henderson Boathouse;
- Belmont Hill Boathouse;
- Cambridge Boat Club;
- Charles River Canoe and Kayak;
- Newell Boathouse;
- Weld Boathouse;
- Riverside Boat Club;
- Boston University Sailing;
- DeWolfe Boston University Boathouse;
- MIT Boathouse;
- Harvard Sailing;
- Union Boat Club; and,

- Community Boating in Boston.

## **SPECIFIC VESSEL POPULATIONS AND PUMPOUT FACILITIES**

The waters of Boston Harbor fall under the jurisdiction of a number of municipalities and, therefore, a number of harbormasters. A significant number of pumpouts are operated by municipalities and generally service vessels within the town's waters. Therefore the following discussion will focus on the vessel populations, pumpout needs and pumpout services available within each municipal jurisdiction. A later section will address these numbers harbor-wide.

The Clean Water Act states that there must be "adequate and reasonably available" pumpout facilities in an NDA. This means that there must be sufficient pumpout facilities to effectively handle the amount of sanitary boat waste in the proposed NDA area and that these facilities should be accessible to the boating population. If this can be shown to be true at both the municipal level and across the whole proposed NDA, this would suggest that not only are there sufficient pumpouts, but that they are also well distributed around Boston Harbor. The U.S. Environmental Protection Agency (EPA) recommends that there should be at least one pumpout facility for every 450 local boats with Type III MSDs on board (or one pumpout for every 600 transient boats).

In order to determine whether there are "adequate and reasonably available" pumpout facilities in the proposed NDA, it is essential to determine how many of the boats in the area are fitted with Type III MSDs and may require pumpout services. There is no way to determine the exact number, as information on the type of MSD installed in each vessel is not available. It is therefore necessary to estimate the number. The normal method employed when making such an estimate is based on the predicted relationship between the length of a vessel and the probability that it is equipped with a Type III MSD. In general, larger vessels are more likely to be equipped with a Type III MSD than smaller vessels.

According to the EPA, it should be assumed that:

- All vessels over 40 feet will be equipped with a Type III MSD;
- 50% of vessels between 26 and 40 feet will have a Type III MSD;
- 20% of boats between 16 and 25 feet will have a Type III MSD; and,
- No vessels under 16 feet will have such an MSD.

These percentages have been used in previous applications for NDA designations. However, in the summer of 2003 the Urban Harbors Institute (UHI) of the University of Massachusetts Boston conducted an evaluation of boats and pumpout facilities in the towns of Cohasset, Scituate, Norwell, Marshfield, Duxbury, Kingston and Plymouth. As part of this evaluation, questionnaires were distributed to boaters asking a number of questions regarding their vessels and pumpout needs. The results of this study suggest that the EPA estimates of the correlation between vessel size and Type III MSDs may no longer be reliable.

According to the UHI study, it should be assumed that:

- 82.6% vessels over 40 feet will be equipped with a Type III MSD;
- 78.5% of vessels between 26 and 40 feet will have a Type III MSD;
- 10.6% of boats between 16 and 25 feet will have a Type III MSD; and,
- 8.3% of vessels under 16 feet will have such an MSD.

The UHI study shows that there are likely to be more vessels equipped with Type III MSDs than the EPA estimates might suggest. Therefore, for this application, the UHI percentages will be used. Additionally, rather than differentiating between local and transient boats, this application will simply assume that there needs to be a minimum of one pumpout per 450 vessels. Using both of these more stringent criteria should ensure that the ratio of pumpouts to boats will greatly exceed what is deemed to be the minimum acceptable.

## Boston

### *Recreational Vessels and Pumpout Facilities*

There are four concentrations of boating activity within the City of Boston (Figure 5). These are:

- *East Boston* (#1 in Figure 5) – location of the East Boston Yacht Club and Orient Heights Yacht Club;
- *The Inner Harbor* (#2) – location of Quarterdeck Marina; Shipyard Quarters Marina, Constitution Marina, Commercial Wharf Marina, Boston Yacht Haven, Boston Water Boat Marina, The Marina at Rowe's Wharf and Boston Harbor Shipyard and Marina;
- *South Boston* (#3) – location of the Peninsula Yacht Club, South Boston Yacht Club, Columbia Yacht Club and Boston Harbor Yacht Club; and,
- *Dorchester* (#4) – location of the Savin Hill Yacht Club, Dorchester Yacht Club, Thomas Marina and Port Norfolk Yacht Club.

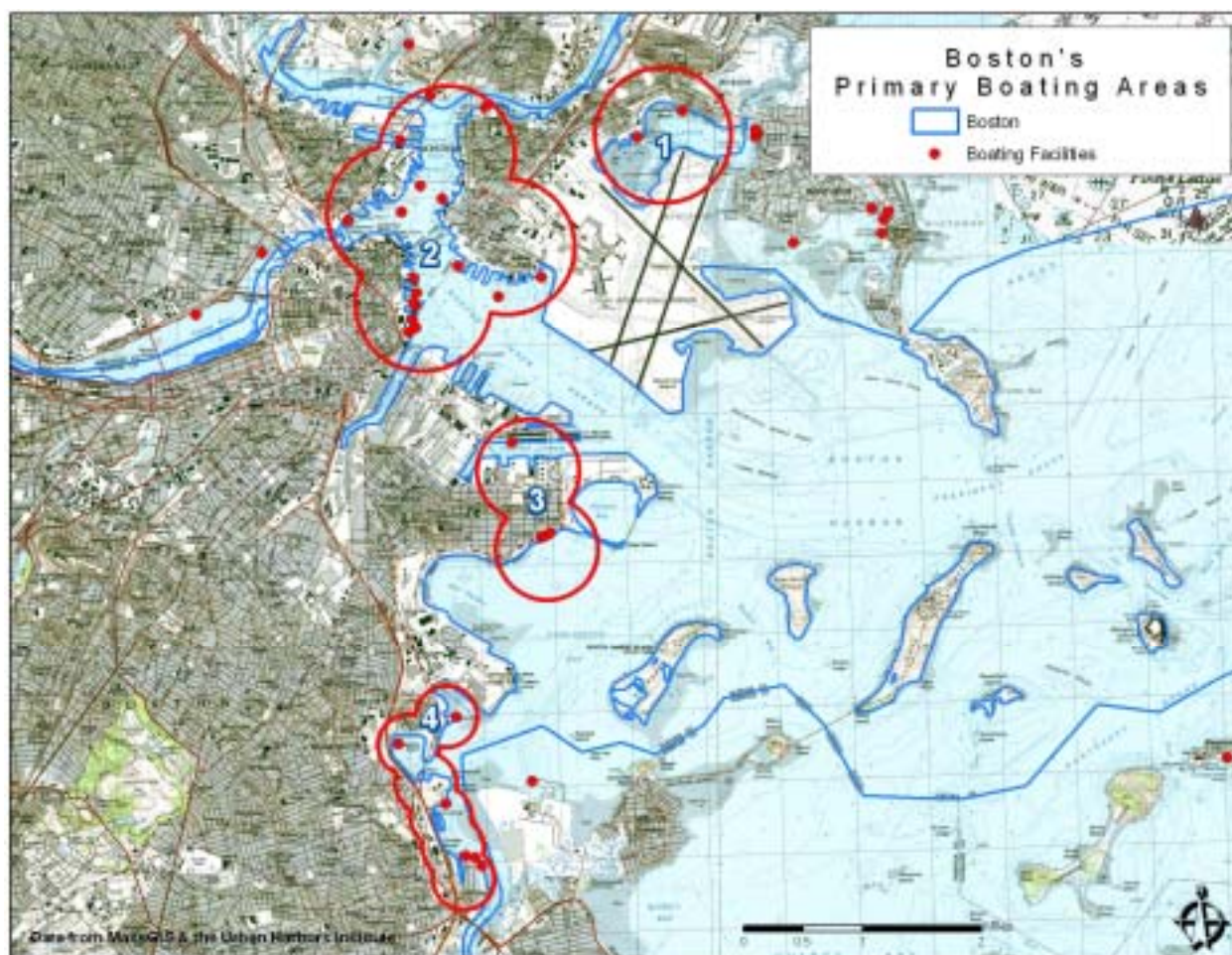


Figure 5. The City of Boston showing the approximate locations of the main boating areas and boating facilities.

The breakdown of the recreational vessel population in Boston is based on discussions with the City of Boston Harbormaster. His office maintains a “City Hall Master List” that contains information on all vessels for permit applications have been submitted. This permit data does not capture the transient

population. In addition to the vessels contained in the database, the harbormaster suggests that there are approximately an additional 350 vessels that are currently out of compliance and require permits. There is no size breakdown of these vessels and it is not clear whether they are recreational or commercial vessels. In order to determine if there are sufficient pumpout facilities within a proposed NDA, it is necessary to estimate the total recreational population by size. Therefore, so as not to underestimate the demand for pumpout services, it has been assumed that all the unpermitted vessels are recreational and that the size breakdown of the 350 boats is the same as that of the overall recreational population (Table 6). Based on these figures, there are approximately 2,295 vessels in the City of Boston's waters of which 2,044 (over 89%) are recreational.

Table 6. Estimated number of recreational and commercial boats in the City of Boston.

Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
Recreational (permitted)	33	718	821	122	1,694
Recreational (unpermitted estimate)	7	148	170	25	350
Commercial	8	44	60	47	159
Government	4	41	4	2	51
Other	0	13	26	2	41
<b>Total Recreational <sup>1</sup></b>	<b>40</b>	<b>866</b>	<b>991</b>	<b>147</b>	<b>2,044</b>
<b>Total Commercial <sup>2</sup></b>	<b>12</b>	<b>98</b>	<b>90</b>	<b>51</b>	<b>251</b>
<b>TOTAL VESSELS</b>	<b>52</b>	<b>964</b>	<b>1,081</b>	<b>198</b>	<b>2,295</b>

<sup>1</sup> The recreational total includes permitted and estimated unpermitted vessels

<sup>2</sup> The commercial total includes commercial, government and other vessels

Data: P. Terenzi, Harbormaster, City of Boston (2007)

Over 90% of the recreational boats are between 16 and 40 feet in length (42.4% are 16 to 25 feet and 48.5% are between 26 and 40 feet). A little over 7% of the recreational vessels are over 40 feet and less than 2% are less than 16 feet. Based on the research conducted by the Urban Harbors Institute, it is estimated that approximately 994 recreational boats in Boston are equipped with type III MSDs and may require pumpout services (Table 7). The EPA recommends that the minimum ratio is one pumpout facility for every 450 local boats. Therefore, to meet the minimum requirements set by the EPA, there would need to be three pumpout facilities within the City of Boston's waters.

Table 7. Estimated number of recreational boats with Type III MSDs in the City of Boston.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	40	866	991	147
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	3	92	778	121
<b>TOTAL</b>	<b>994</b>			

Data: P. Terenzi, Harbormaster, City of Boston (2007)

There are currently nine shoreside pumpouts and four pumpout boats in operation in the waters of the City of Boston (Figure 6). Therefore there are clearly a sufficient number of facilities to service the needs of the estimated local recreational boat population and any transient vessels. In addition to these, there are many other pumpout facilities located within the waters of surrounding municipalities, some of which

are immediately adjacent to Boston's jurisdiction. The total pumpout services that are available within the whole Boston Harbor NDA will be discussed later.

Details of the pumpout facilities located in the City of Boston:

*Mystic Marine* – 100 Terminal Street, Charlestown, MA 02129

- shoreside
- two pumpout hook-ups for recreational boats
- one pumpout for either recreational or commercial vessels with hoses
- one commercial hook-up (this is currently of limited use due to problems with pumps and sewer lines)
- privately funded
- open year round, 7am - 7pm
- no fee for pumpout, but must be a customer to use it (i.e. buying gas)
- they are connected to the sewerage system
- MLW is 35 feet, high is around 40-45 feet
- the channel is 280 feet across, so there are no real limitations
- currently service some tugs, motor yachts and ferries
- monitor VHF channel 72
- many pumpout boats discharge their tanks at this facility

*Shipyard Quarters Marina* – 113<sup>th</sup> Street #8, Charlestown, MA 02129

- open year round from 8am to – 7pm
- one pumpout boat with a 500 gallon holding tank
- one shoreside (currently out of operation)
- shoreside facility is connected to the sewerage system
- can accommodate boats up to 200 feet, typical the largest is 70 feet
- MLW is about 20 feet
- CVA funded
- no charge

*Boston Yacht Haven* – 87 Commercial Wharf, Boston, MA 02110

- one shoreside pumpout with 3 or 4 dock adaptors throughout the marina that link to the pumpout
- connected to the sewerage system
- MLW is 10 feet
- marina has 75 slips
- mostly recreational boats with a few “commercial” charter boats
- charter boats do not load/unload at this marina, however their boat can use the pumpout facility
- charter boats are around 120ft.
- average boat size in marina is around 50ft

*Constitution Marina* – 28 Constitution Road, Boston, MA

- approximately 300 boats at the marina
- most recreational with a few charter fishing boats
- one pumpout boat



- one shoreside pumpout
- connected to the sewerage system
- MLW is 30 feet

*Boston Waterboat Marina* – 66 Long Wharf, Boston, MA 02110

- open year round from 7am – 7pm, pumpouts generally done between 7am and noon
- monitor VHF channel 9
- one pumpout boat with a 220 gallon holding tank
- one shoreside pumpout (holds the sewage for a short time and then discharges it into the sewerage system)
- have had the boat for about 4 years, and shoreside for 5-6 years
- private facility, but will service any boat at no charge
- MLW is 25 feet in some areas, and 5 feet at the dock

*The Marina at Rowes Wharf* – 70 Rowes Wharf, Boston, MA 02110

- there are 70 sail boats at the marina
- one shoreside facility and a number of pumpout carts
- shoreside pumpout is difficult to access, so carts are used to pumpout boats and these are then emptied using the shoreside facility
- shoreside pumpout is connected to the sewerage system
- open May1 to October 31
- facility is staffed from 7am to 9pm but the pumpout can be used at any time
- CVA funded
- pumpout service is free
- local plumber does repairs
- MLW is 10 feet at the dock

*Boston Harbor Shipyard & Marina* – 256 Marginal Street, East Boston, MA 02128

- one pumpout boat with a 250 gallon tank
- the boat's holding tank is emptied after every use (even if not full)
- one shoreside pumpout
- shoreside pumpout is at the fuel dock and is tied into the sewerage system
- open 7am to - 8pm
- monitor VHF channel 9
- service coast guard, police boats and large yachts as well
- MLW is 25 feet.
- CVA funded and pumpout is free

*Dorchester Yacht Club* – 100 Playstead Road, Dorchester, MA 02125

- one shoreside pumpout
- pumpout system was donated and is currently out of operation
- the shoreside pumpout is tied directly into the sewerage system
- located on the fuel dock
- self service, but help is available if needed
- no fee

- club is open from 8am to 6pm
- the club is private, but transients come for pumpout services
- MLW is 7 feet

*Port Norfolk Yacht Club – 179 Walnut Street, Dorchester, MA 02122*

- one shoreside pumpout
- tied into the sewerage system
- MLW is 7.5 feet
- the pumpout is self service and is available 24/7
- CVA funded

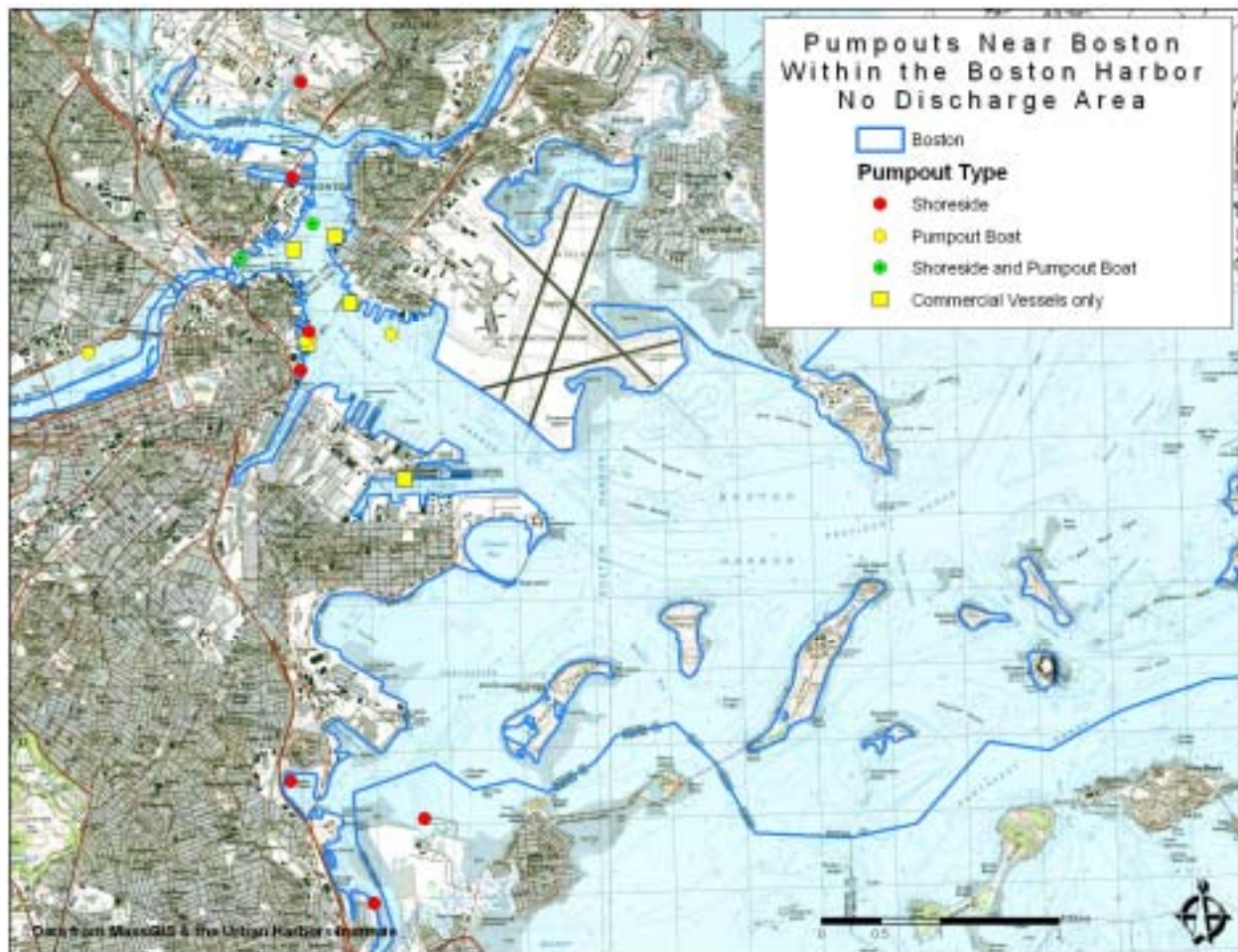


Figure 6. Existing pumpout facilities in and adjacent to the City of Boston within the proposed NDA.

#### *Commercial Vessels and Pumpout Facilities*

One of the important aspects of the NDA and pumpouts is making sure that there are adequate pumpouts for the commercial vessel population. In order to understand the situation, the main operators in Boston were contacted and information pertaining to their operations was gathered. Below is the compiled information about the present commercial vessel operations, tug operators and the pumpout situation for these vessels.

*Bay State Cruise Company* – 200 Seaport Boulevard, Suite 75, Boston, MA 02210

- Bay State Cruises operates two vessels: the 1,100 passenger *Provincetown II* and the 149 passenger *Provincetown III*.
- *Provincetown II* has a holding tank of 300 gallons and *Provincetown III* has a holding tank of 6,000.
- The vessels are used primarily on the Boston to Provincetown route.
- As the vessels are frequently as much as nine miles off shore, the standard practice is to empty their holding tanks while offshore in federal waters on their daily transits.
- Occasionally, the *Provincetown II* operates for a period without leaving the harbor. When this occurs, the holding tanks are serviced by a pumpout truck. The pumpout truck is only used 5 to 6 times per season (which equates to about once a week during the busiest weeks of the summer).

*Boston Harbor Cruises* – One Long Wharf, Boston, MA 02110

- Boston Harbor Cruises has a fleet of 19 vessels ranging in size from 36 to 145 feet and with capacities of 36 to 600 passengers.
- Year round services include the Charlestown Navy Yard to Long Wharf commuter route and the Hingham to Boston commuter route.
- Seasonal services include the Boston to Provincetown fast ferry, whale watch trips, Inner and Outer Harbor sightseeing tours, a thrill boat ride, services to Thompson Island and private charter cruises.
- In December 2007, they began operating a support vessel for the new offshore LNG terminal located off the coast of Salem.
- Each vessel is equipped with a holding tank ranging in capacity from 50 to 2,000 gallons depending on the size and capacity of the vessel.
- Boston Harbor Cruises operates its own, dedicated pumpout facility located at Long Wharf tied into the municipal sewerage system.
- The facility can accommodate 2 vessels at a time. For each vessel total pump out time is usually less than 30 minutes.

*Mass Bay Lines* – 60 Rowe's Wharf, Boston, MA 02110

- Mass Bay Lines operates a fleet of 6 vessels ranging from 61 to 97 feet in length and with capacities of 149 to 389 passengers.
- The vessels are used for charters, whale watching, public tours and one operates as a commuter boat.
- All are equipped with holding tanks.
- Four boats have onboard pumps that allow them to discharge the sewage to the dock and into the municipal sewerage system.
- Two other vessels are currently being reconfigured to allow them to do the same. Until recently their holding tanks were emptied via a shoreside pumpout but this had to be removed in September 2007.

*Water Transportation Alternatives / Harbor Express* – 703 Washington Street, Quincy, MA 02169

While Harbor Express is based in Quincy, their vessels operate largely in the waters of the City of Boston. Therefore, details of their vessels and pumpout systems are included here.

- Harbor Express operates six vessels:
  - *Voyager II* is a 113 foot whale watching boat operating out of Central Wharf;

- *Flying Cloud* and *Lightning* are both 90 foot MBTA commuter vessels operating from Long Wharf and service Quincy, Hull and Logan Airport;
- *Island Expedition* and *Island Discovery* are both 65 feet in length and service the Harbor Islands from Long Wharf
- *Nathanial Bowditch* is a 92 foot ferry running between Central Wharf and Salem
- All the vessels are equipped with vacuum pumpout systems and empty their holding tanks at dock at the Quincy Shipyard in Quincy. Their pumpout is tied directly into the municipal sewerage system.

*Constellation Tug – AutoPort, 100 Terminal Road, Charlestown, MA 02129*

- Currently they have eight tugboats; two with Type III holding tanks, two or three Type II MSDs that have some holding capacity (the Type II system empties into small holding tank), and three or four that have Type II MSDs with no holding tanks.
- They have an 80,000-gallon capacity barge that they use to hold sewage waste (e.g. from servicing the USS Kennedy) and it is emptied at Black Falcon or Pier 4.
- Constellation Maritime is owned by Foss, which is a multinational operation and the company feels that they will be able to handle the capital needed to retrofit and tugs that are equipped with holding tanks.
- Ideally, any retro-fitting could be incorporated into the vessels' standard 24-month maintenance schedule. However, this could be done sooner if necessary.

*Boston Towing and Transportation – 36 New Street, Boston MA 02128*

- BTT operates 10 tugs in Boston Harbor. Two of the tugs have USCG approved type II MSDs, while the rest have a Type-III holding tank.
- Currently the tugs with holding tanks discharge into either of their sewage barges. These barges discharge into a shoreside line that directly connects into the East Boston sewer line. This connection has been approved by Boston Sewer and Water Department and will eventually be metered.
- In the event that Boston becomes a No Discharge Area, they will convert the two tugs with the MSDs into type III holding tanks.
- The barges have a capacity of 92,000 gallons and around 280,000 gallons. If BTT were to offer commercial pumpout services, the smaller barge would remain exclusively for their vessels.
- MLW is approximately 20 feet.
- In regards to their pumpout facility, it is currently capable of handling commercial marine equipment. The current facility is a bit rough for private boats and yachts though with some help they could certainly upgrade.

*Acushnet Towing and Transportation Company – 256 Marginal Street, East Boston, MA*

- Offices and additional dockage are located on Main Street in Hull.
- In early 2008, Acushnet Towing reported that they had sold all their tugs.

There are an estimated 251 commercial vessels operating in Boston Harbor and many of these are equipped with Type III MSDs. If these boats operate in federal waters then they can legally discharge the contents of their holding tank while out to sea. However, if they do not operate offshore regularly, they must ensure that their holding tanks are pumped out at a pumpout facility or by a licensed "honey" truck operator. Smaller vessels with Type III MSDs normally require a pump located on the shore or on a pumpout boat to suck the contents of the holding tank up to the sewerage system or an alternative storage system. Large vessels often have onboard pumps that can pump the sewage to a landside

manifold connected directly to a sewer line. Clearly, if pumpout facilities are to be capable of pumping out the commercial fleet, systems must be in place, which are capable of servicing all vessels.

If the Boston Harbor NDA is designated, those commercial vessels equipped with Type I or Type II MSDs will no longer be allowed to use them within the NDA. It would be expected that many would decide to retro-fit their vessels so that they were equipped with holding tanks so that the head could continue to be used. This is likely to increase the demand for commercial pumpout services. As commercial vessels are frequently operating on tight schedules, pumpout services must be as convenient as possible.

There have been concerns that there are not enough facilities to effectively handle the commercial fleet's pumpout requirements, especially as this will increase with the NDA designation.

At present there are eight locations where commercial vessels can be pumped out:

- Black Falcon, 1 Black Falcon Ave. Boston, MA 02210
- Boston Towing and Transportation, 36 New Street, Boston MA 02128
- Constellation Tug, AutoPort, 100 Terminal Road, Charlestown, MA 02129
- Charlestown Pier 4, Charlestown Navy Yard, Charlestown MA 0212
- Boston Harbor Cruises, One Long Wharf, Boston, MA 02110
- Water Transportation Alternative/Harbor Express, 703 Washington Street, Quincy, MA 02169
- Rowes Wharf for Mass Bay Lines, 60 Rowe's Wharf, Boston, MA 02110
- Charles Riverboat Company, 100 Cambridgeside Place, Cambridge, MA 02141

However, Boston Harbor Cruises, Harbor Express, Mass Bay Lines at Rowe's Wharf and the Charles Riverboat Company are private pumpouts that are only used to service the needs of the vessels of each specific company. While these facilities are not open to other commercial vessels, it is important that these companies are ensuring that their own vessels are serviced.

Presently, only Black Falcon, Boston Towing and Transportation, Charlestown Pier 4 and Constellation Tug Corporation can service other commercial vessels. The ability to access the Black Falcon facility is limited when a cruise ship is alongside and the Charlestown Pier 4 hook-up is off limits when the navy is using the pier.

In order to address the needs of the commercial fleet, there are a number of new commercial pumpout facilities that are currently being built, designed or are under discussion and, when completed, will provide convenient commercial pumpout services. Additionally, the new facilities will help to alleviate any problems that might arise if a commercial pumpout facility were to become inoperable

- *New City of Boston Pumpout Vessel*

The EPA and MWRA have reached a settlement that has resulted in funding being made available to the City of Boston in order to purchase a pumpout vessel to be purchased. Specification for the vessel that the MWRA put in its Request for Bid that was released on February 19, 2008 and are contained in Appendix 2.

It is the intent of these specifications to describe a Pumpout vessel to be used in the pumping out of waste from other vessels and to transport such waste to a proper disposal facility. The Pumpout boat must meet standards for this type of vessel, and bidder must be able to attach a safety Coast Guard label to each boat.

Presently, Boston is working on establishing either an RFP for the vessel to go out to bid or looking into the possibility of creating a memorandum of agreement with another organization.

- *Berth 10 - Boston Marine Industrial Park*

Boston Industrial Marine Park is undergoing an upgrade which is expected it to be completed by April or before the summer. The construction of berth 10 consists of installing sewer service in the face of the pier at berth 10. This would provide a city-run sewer hook-up that could be used by commercial vessels.

- *Charlestown Pier 3*

Pier 3 in Charlestown is currently being upgraded and the existing MBTA floating dock will be relocated from Pier 4 to Pier 3. At the same time, a manifold will be built to allow commercial vessels to hook up to the sewerage system (as it currently possible at Pier 4). Pier 4 commercial pumpout hookup will remain in operation for navy vessels.

- *Mystic Marine*

Mystic Marine is another area that is being considered for an upgraded pumpout facility. This upgrade would help fix a number of problems that led to commercial pumpout services being curtailed. Various studies, including one conducted by the Urban Harbors Institute on behalf of the City of Boston identified this as an ideal location for a commercial pumpout facility. Initial engineering studies have been conducted and funding opportunities are currently being discussed.

- *Boston Towing and Transportation*

BT&T has previously expressed an interest in activating an additional pumpout facility at their location if the NDA is designated.

## Quincy

There are a number of boating areas and facilities in Quincy (Figure 7). Squantum Point is the home of one of the largest marinas in Massachusetts. Known as Marina Bay on Boston Harbor, it the home to over 800 vessels and caters to the larger transient vessels in the area.

Houghs Neck is home to Quincy Yacht Club and the city's public landing and free boat ramp. This area is also a designated mooring area with about 90 vessels. On any given weekend there will normally be 20-30 boaters launching at the landing for day trips in the bay. Rock Island Cove is home of the Gull Point Yacht Club.

Another significant boating area is the Town River. There are four marinas and one yacht club with 800 vessels moored or docked along the river. The far end of the river, known as The Reach is the home to Quincy's commercial fishing dock. The population at the commercial dock is made up of smaller vessels with Massachusetts rod and reel, long line, shellfish and lobster permits. These vessels generally less than 40 feet and most pump out at Town River Yacht Club.

The Fore River is a deepwater channel that allows tankers to bring product to the fuel terminals in Braintree and Quincy. There are also a number of catamaran commuter ferries that call Quincy their home port. They travel the waters of Quincy from the Harbor Express terminal in the Fore River Shipyard.

The city's boating population is over 2,000 vessels 17 feet or greater. There are another 250+ smaller powerboats and sailboats less than 17 feet. It is estimated that the city hosts 200-300 transient vessels traveling through Quincy's ports.

Estimates of the size breakdown of the vessels in Quincy can be found in Table 8.

The harbormaster has recently added a questionnaire to the city's mooring permit application to get a better idea of the actual number and types of MSDs.

Harbor Express operates six vessels out of their Quincy Shipyard location. The ferry operation runs approximately 25 round trips to Boston per day throughout the year. The also service Hull and Logan Airport. Additionally, during the summer they service the Harbor Islands, run a ferry service to Salem and

take people out whale watching. The Salem ferry uses pumpout services in Salem, while the other vessels are pumped out a Harbor Express' own hook up at the Quincy Shipyard. This is tied directly into the city's sewerage system.

Based on the UHI percentages, it is estimated that there are 969 boats in Quincy equipped with Type III MSDs (Table 9). A minimum of three pumpouts would be needed to adequately service this population based on EPA criteria. Currently there are five pumpout facilities servicing recreational boats so there are an ample number to service both the local and any transient vessels.

Currently, porta-potties can be emptied at the existing pumpout facilities and they are equipped with the necessary adapters to empty such units. The details of the pumpout facilities located in Quincy are as follows (Figure 8):

*Marina Bay on Boston Harbor (free)*

Marina Bay maintains a 286EP-40 Series peristaltic pump from Edson International. This is a shoreside pump with an unlimited capacity due to the fact that they are connected to the city's sewerage system. The waste travels from the vessels through the attached hose to the pumpout machine. From there the waste travels up a 2" line to the city's sewer line. The pump is capable of pumping 38 GPM at high tide, but pumps at lower rates at lower tides.

Marina Bay pumps out no less than 300 vessels and no more than 350 vessels per season, and pumps on average 15 gallons per vessel. The pumpout service is available when the gas dock is open seven days a week from 8am to sunset between May 1<sup>st</sup> and October 30<sup>th</sup>. The marina monitors VHF channel 10 and can be contact by telephone at 617-847-1800. The facility has deep water at all tides and can accommodate vessels up to 150 feet.



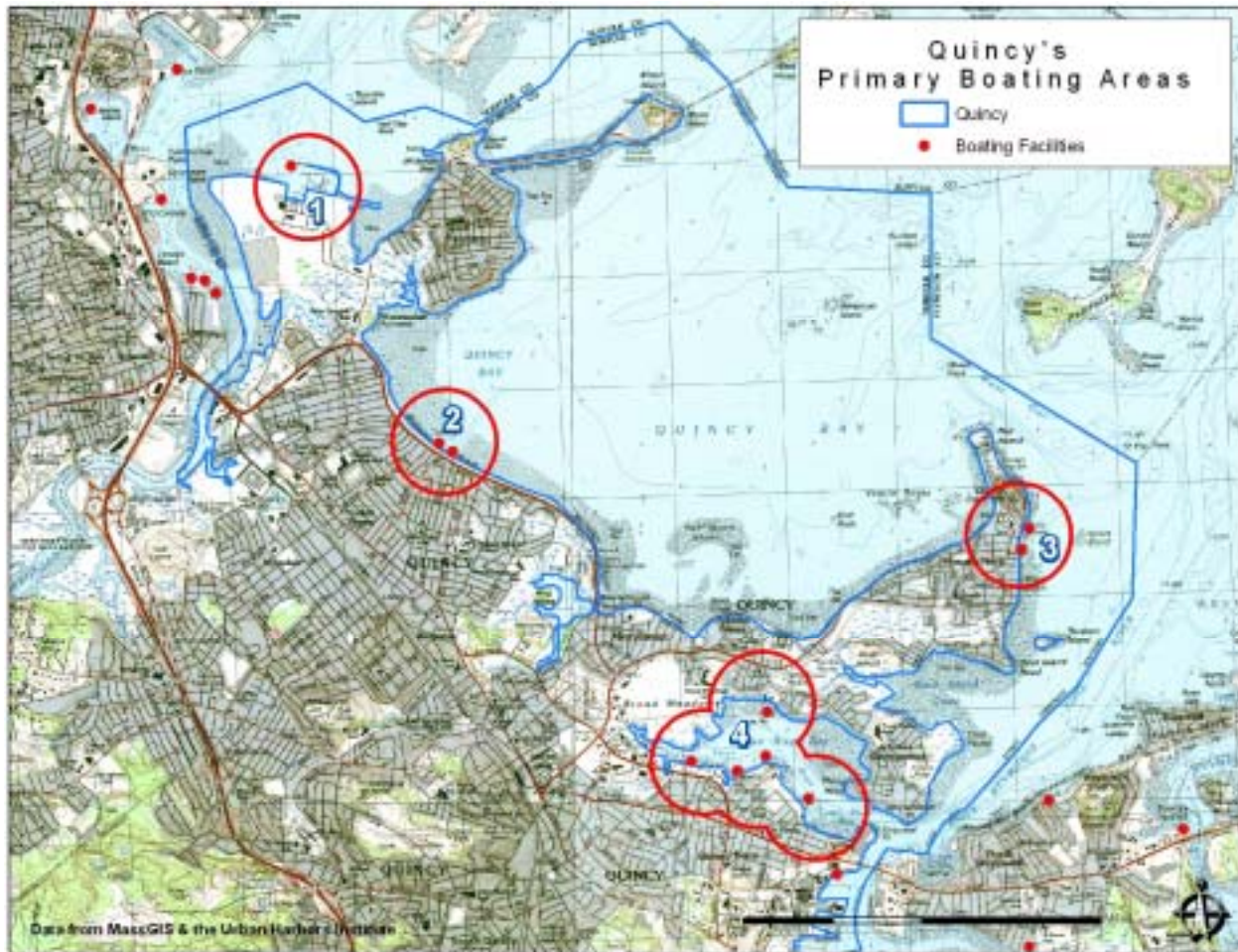


Figure 7. The City of Quincy showing the approximate locations of the main boating areas and boating facilities.



Table 8. Estimated number of boats in the City of Quincy.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Marina Bay on Boston Harbor	Moored	0	0	0	0	0
		Docked	2	215	434	62	713
		Transient	0	0	25	10	35
		Sub Total	2	215	459	72	748
2	Squantum & Wollaston Yacht Clubs	Moored	7	50	30	2	89
		Docked	0	0	0	0	0
		Sub Total	7	50	30	2	89
3	Quincy Yacht Club & Quincy Public Landing	Moored	2	62	40	1	105
		Docked	0	0	0	0	0
		Sub Total	2	62	40	1	105
4	Bay Pointe Marina	Moored	0	0	0	0	0
		Docked	0	61	147	39	247
		Sub Total	0	61	147	39	247
4	Town River Yacht Club	Moored	0	0	0	0	0
		Docked	3	119	109	12	243
		Sub Total	3	119	109	12	243
4	Town River Marina	Moored	0	5	2	0	7
		Docked	2	34	17	0	53
		Sub Total	2	39	19	0	60
4	Clipper Marina	Moored	0	0	0	0	0
		Docked	1	60	38	1	100
		Sub Total	1	60	38	1	100
4	Captain's Cove Marina	Moored	0	0	0	0	0
		Docked	2	88	107	6	203
		Sub Total	2	88	107	6	203
	Quirk Commercial Dock	Moored	0	0	0	0	0
		Docked	0	49	3	0	52
		Sub Total	0	49	3	0	52
	Private	Moored	20	108	16	1	145
		Docked	2	19	4	0	25
		Sub Total	22	127	20	1	170
TOTAL			41	870	972	134	2,017

Data: P. Morrissey, Harbormaster, City of Quincy.

Table 9. Estimated number of recreational boats with Type III MSDs in the City of Quincy.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	41	870	972	134
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	3	92	763	111
<b>TOTAL</b>	<b>969</b>			

Data: P. Morrissey, Harbormaster, City of Quincy

#### *Captain's Cove Marina (free)*

Captain's Cove maintains an Edson System. The system is a shoreside pump with unlimited capacity due to the fact that it is connected to the city's sewerage system. The waste travels from the vessel through the attached hose to the pumpout machine. From there it travels up a line to the city's sewer line. The pumpout is available to anyone 24/7 May through October. The marina is staffed from 11am to 6pm daily during the summer. The marina monitors VHF channel 69. Captain's Cove is primarily a small boat facility due to the pump's location. MLW is 6 feet.

#### *Town River Yacht Club (free)*

Town River Yacht Club maintains an Edson System. The system is a shoreside pump with unlimited capacity due to the fact that it is connected to the city's sewerage system. The waste travels from the vessels through the attached hose to the pumpout machine. From there it travels up a line to the city's sewer line. The club pumps about 300 vessels per season, which amounts to approximately 5,700 gallons. The hours of operation are from 8am to 8pm, seven days a week during the summer. Hours of operation are reduced in the spring and fall seasons. The club has a dock person to assist with pumpout. Most of the users are members, but the facility is open to the public for gas and free pumpouts. This pumpout is the closest to the boat ramp at Town River Marina. Many vessels stop at the facility before hauling out on their way home. The gas dock is located in a deep water area and can handle vessels up to 40 feet. MLW is 35 feet. The club monitors VHF channel 71 and can be reached by telephone at 617-471-2716.

#### *Quincy Pumpout Boat (free)*

The Quincy pumpout boat is a 22 foot Alcar Marine Environmental boat specifically designed to handle pumpout equipment and operations. The boat has a 300-gallon onboard holding tank. The pump system is an Edson diaphragm pump that is gas driven. The pumpout boat can be reached on marine VHF channel 9 or by calling 617-908-9757 or 617-376-1283. The vessel is operated by the City of Quincy Health Department, Shellfish Warden. The sewage from this vessel is pumped out at Bay Pointe Marina or Town River Yacht Club, both of which are connected to the city's sewerage system. The pumpout boat transfers around 16,200 gallons of sewage per year, servicing approximately 648 vessels. On weekends, the hours of operation are from 8am to 4pm. During the week, the boat works around the low tides. The boat is used for shellfish duties during low tides and pumpout services during high tides.

#### *Bay Pointe Marina (private – non-members pay \$15 if not purchasing fuel)*

Bay Pointe Marina is the only private pay pumpout in Quincy. The owner states that the system has problems because of tides and the elevation the sewage must be pumped. As this facility is not subsidized, the owner prefers to pump at higher tides to reduce the wear and tear on the equipment. The system is a shoreside pump with unlimited capacity due to the fact that it is connected to the city's sewerage system. Bay Pointe Marina is also where the city pumpout boat is moored. The owner does not charge vessels that are docked at their marina, but does charge \$15 to outside customers when they

are not buying fuel. They have a long face dock that can accommodate large vessels. There is always deep water at this dock (MLW is 8 feet). Hours of operation are from 8am to 4pm from May 1<sup>st</sup> to October 15<sup>th</sup>. The telephone number is 617-471-1777 and the marina monitors VHF channel 9.



Figure 8. Pumpout facilities in and adjacent to the City of Quincy within the proposed NDA.

## Hull

In July 2007, the Hull Harbormaster estimated that there were 838 boats docked or moored within the Town of Hull. There are four main concentrations of boats within the town (Figure 9). The first and largest area is Allerton Harbor (#1 in Figure 9) with 344 boats (Table 10). There are a number of boating facilities around this area and these include:

- Hull Yacht Club;
- Kelly's Sunset Marina;
- Nantasket Beach Saltwater Club;
- Waveland Marina; and,
- Spinnaker Island Marina.

Of the 344 boats in this area, 238 (or almost 70%) are between 26 and 40 feet in length.

The second largest concentration of boats is found up in the Hampton Hill area where approximately 333 boats are located (#2 in Figure 9). Over 60% of these boats are less than 26 feet in length. This area is also where the vast majority of the town's designated transient slips or moorings are located (140 out of a total of 144).

The Oceanside Mooring area (#3 in Figure 9) accommodates 111 vessels, of which over 60% are greater than 26 feet in length. These vessels generally pumpout offshore, at the Hull pumpout or in neighboring towns.

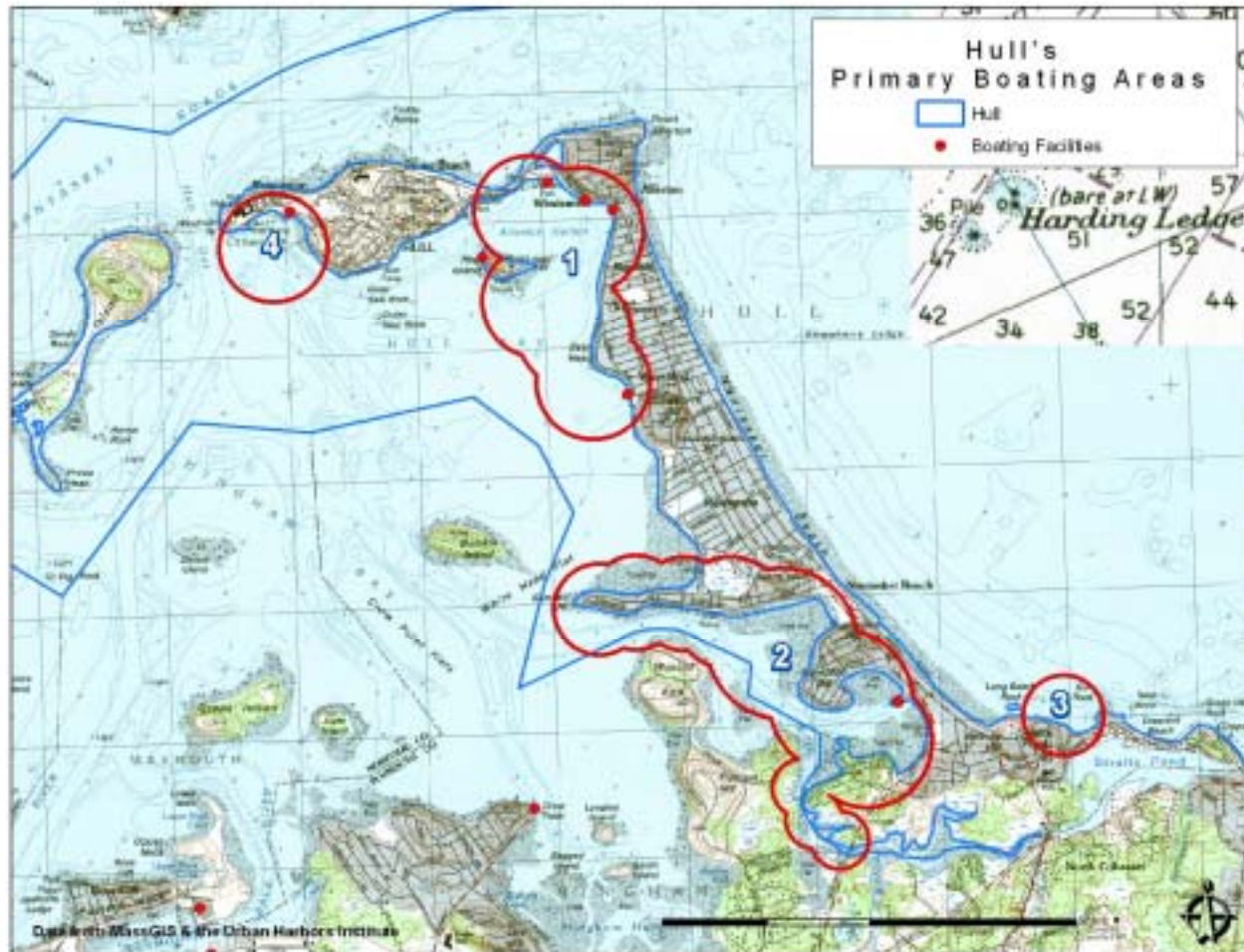


Figure 9. The Town of Hull showing the approximate locations of the main boating areas and boating facilities.

The fourth boating area is by Pemberton Point where there are 55 boats between 16 and 25 feet in length.

About 92% of the boats in Hull are between 16 and 40 feet in length. There are 55 vessels under 16 feet in length and 12 than are over 40 feet.

There are few commercial vessels in the town (Table 11) with over 97% of boats being used for recreation. Distinguishing between recreational and commercial vessels is important as pumpout facilities that are partially funded through the Clean Vessel Act are prohibited from servicing commercial vessels.

When the UHI percentages are applied to the recreational boat population of Hull, it is estimated that there are 369 boats in Hull with Type III MSDs that might require pumpout services (Table 12).

The EPA recommends that the minimum number of pumpout facilities required to provide “adequate and reasonably” coverage, is one per 450 local boats. The Town of Hull currently operates one pumpout boat, docked at Steamboat Wharf and so its coverage can be said to be adequate at this time. A second pumpout facility is slated to be up and running by the fall of 2008 as part of a marina expansion project. This second pumpout will be a shoreside facility, also located at Steamboat Wharf. Based on the above calculations, it is clear that Hull should be able to service all the vessels with Type III MSDs within its jurisdiction. The addition of the shoreside facility will greatly increase the local pumpout capacity and allow Hull to services boats from other municipalities as necessary.

The existing pumpout boat is docked at Steamboat Wharf and services all vessels within the town’s jurisdiction (Figure 10). The shoreside pumpout will also be located at Steamboat Wharf, specifically at the head of the pier, to accommodate boats with deep drafts.

Six of the eight boating facilities within Hull’s jurisdiction have restrooms available to boaters. Those facilities are Pemberton, Hull Yacht Club, Kelly’s Sunset Marina, Nantasket Beach Salt Water Club, Waveland Marina, and Steamboat Wharf. The Town Landing and Spinnaker Island Marine do not have restrooms for boaters to use.

The pumpout boat and the shoreside pumpout currently under construction are the responsibility of the Hull Harbormaster and his staff. They monitor VHF channels 9 and 16, and can also be reached by telephone at 781-925-0316 (Table 13). The pumpout boat operates from 8:00am to 4:00pm, seven days a week during the boating season. It is expected that the shoreside facility will maintain the same hours. The shoreside pumpout will be located on Steamboat Wharf to ensure its availability to the deepest draft vessels possible.

Table 10. Estimated number of boats in the Town of Hull.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Allerton Harbor Area	Moored	25	84	235	0	344
		Docked	0	0	0	0	0
		Sub Total	25	84	235	0	344
2	Hampton Hill Area	Moored	15	75	0	4	94
		Docked	0	70	25	4	99
		Transient	0	40	100	0	140
		Sub Total	15	185	125	8	333
3	Oceanside Mooring Area	Moored	15	27	0	0	42
		Docked	0	0	65	4	69
		Sub Total	15	27	65	4	111
4	Pemberton Area	Moored	0	50	0	0	50
		Docked	0	0	0	0	0
		Sub Total	0	50	0	0	50
TOTAL			55	346	425	12	838

Data: K. Bornheim, Harbormaster, Town of Hull (July 2007)



Table 11. Estimated number of recreational and commercial boats in the Town of Hull.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Allerton Harbor Area	Recreational	25	84	223	0	332
		Commercial	0	0	12	0	12
2	Hampton Hill Area	Recreational	15	185	118	8	326
		Commercial	0	0	7	0	7
3	Oceanside Mooring Area	Recreational	15	27	65	4	111
		Commercial	0	0	0	0	0
4	Pemberton Area	Recreational	0	45	0	0	45
		Commercial	0	5	0	0	5
TOTAL		Recreational	55	341	406	12	814
		Commercial	0	5	19	0	24

Data: K. Bornheim, Harbormaster, Town of Hull (August 2007)



Figure 10. Pumpout facilities in and adjacent to the Town of Hull within the proposed NDA.

Table 12. The estimated number of boats with Type III MSDs in the Town of Hull.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	55	341	406	12
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	5	36	319	10
<b>TOTAL</b>	<b>369</b>			

Data: K. Bornheim, Harbormaster, Town of Hull (August 2007)

The Harbormaster is very diligent about keeping the pumpout boat in good shape. Parts are replaced before they wear out, and spare parts are kept on hand in case of an unforeseen problem.

The pumpout boat's tank has a capacity of 300 gallons. The tank is emptied every week (or more if necessary) by Rosano-Davis, a private licensed company who hauls the waste, via truck, to their facility in Cohasset where they dispose of it. There is no formal contract between the Town of Hull and this private company.

The shoreside facility will directly discharge into the town's sewer. Plans for this pumpout have been reviewed by the town's Department of Public Works.

The Town of Hull currently pumps approximately 3,600 gallons of waste each year. As would be expected, pumpouts are more frequent during the summer months when recreational boating in New England is at its peak. A marina expansion at Waveland Marina will increase the number of slips at the facility from 65 slips to 130 slips. The new shoreside pumpout will help to address the increased demand on the pumpout boat when the expansion is completed, and will help address the likely increase in pumpouts when the NDA takes effect.

Table 13. Details of pumpout facilities in the Town of Hull.

Type	Boat	Shoreside <sup>1</sup>
Location	Steamboat Wharf	
Telephone Numbers	781-925-0316	
Hailing Frequencies	9 and 16	
Hours of Operation	During Season: 8AM - 4PM, 7 days per week	
Contact if Out of Operation	781-925-0316	
Waste Disposal Method	Rosano-Davis private haulage	Municipal Sewerage System
Capacity	300 gallons	NA
Waste Disposal Frequency	As needed	NA
Waste Disposal Agreement	No formal contract	NA
MLW at Facility	NA	To be determined
# of Boats Excluded	NA	To be determined

<sup>1</sup> Planned to be operational by Fall 2008

Data: K. Bornheim, Harbormaster, Town of Hull (July 2007)

## Winthrop

In July 2007, the Winthrop Harbormaster estimated that there were 1,000 boats docked or moored within the Town of Winthrop. There are two main concentrations of boats. The first and largest area is around the Town Dock and the Winthrop Yacht Club, which has approximately 650 boats (#1 in Figure 11). In this area there are five boating facilities:

- Winthrop Yacht Club;
- Crystal Cove Marina;
- Winthrop Town Pier, Marina and Landing;
- Winthrop Lodge of Elks; and,
- Cottage Park Yacht Club.

There are currently no designated transient slips or moorings in Winthrop.

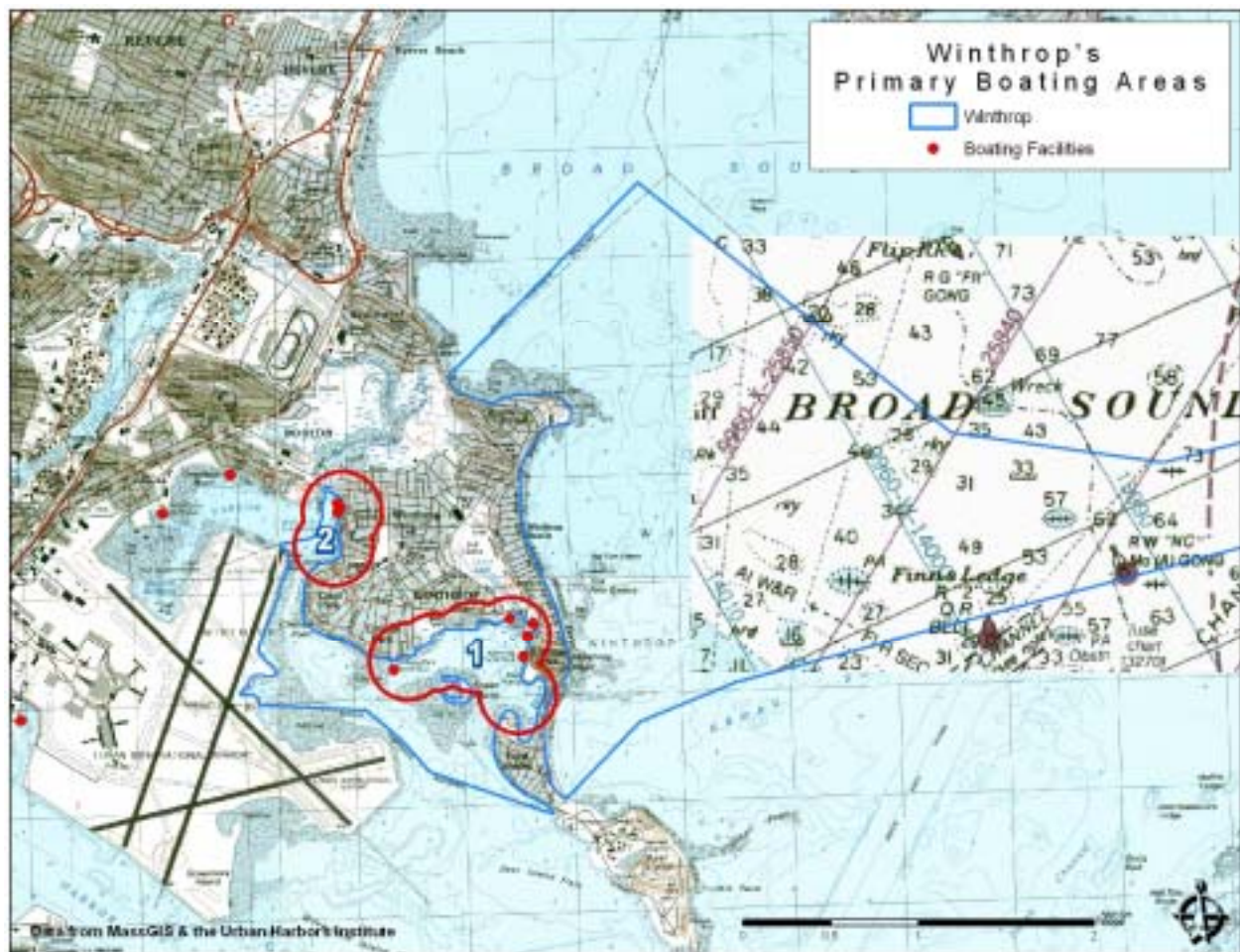


Figure 11. The Town of Winthrop showing the approximate locations of the main boating areas and boating facilities.

The Town Dock recently underwent a significant upgrade to become the Winthrop Town Pier, Marina and Landing and includes a new, shoreside pumpout facility. Further upgrades are planned and ultimately the site will include a 284-foot pier and marina. The marina will include 75 dinghy spaces, 6 charter fishing slips, 8 commercial fishing slips, 4 slips for water taxis or excursion vessels and 11 transient slips. The



facility will also be the base for 4, town-owned boats, including the existing pumpout boat. There are plans for an additional Maritime Center that will also house the Harbormaster's office.

The second concentration of boats is found up by Pleasant Park where approximately 350 boats are located (#2 in Figure 11). There are five facilities in this area:

- Pleasant Park Yacht Club
- Mullins Marine Services
- Atlantis Marina
- Zeoli's Marine Service; and,
- Belle Isle Boat Yard.

The size breakdown of the boats in each of the boating areas is presented in Table 14. Within Winthrop, the majority of boats (47.5%) are between 26 and 40 feet in length. Around 30% are between 16 and 25 feet. An estimated 12.5% are less than 16 feet, and the remaining 10% are over 40 feet in length. Of the 1,000 vessels in the town's waters, only about 35 are commercial vessels. These are lobster boats, charter fishing vessels and mooring tender vessels. All of these are located in the Winthrop Dock/Yacht Club area. The majority of them (20 boats) are between 26 and 40 feet. Ten of the 35 commercial boats are over 40 feet. And the remaining 5 are between 16 and 25 feet (Tables 14 and 15).

Based on the UHI study, there are approximately recreational 473 boats in Winthrop that are fitted with a Type III MSD and therefore may require pumpout services (Table 16). The EPA recommends that there should be a minimum of one pumpout facility for every 450 vessels in order for an NDA applicant to show that there are "adequate and reasonably available" pumpout facilities to service the boating population. As a result of the upgraded Winthrop Town Pier, Marina and Landing the Town of Winthrop now has two pumpout facilities (Figure 12). Therefore it is assumed that the existing facilities are capable of servicing the vessels located in Winthrop and any transient or visiting vessels.

Table 14. Estimated number of boats in the Town of Winthrop.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Winthrop Dock / Yacht Club	Moored	60	50	100	20	230
		Docked	15	150	200	55	420
		Sub Total	75	200	300	75	650
2	Pleasant Park	Moored	15	25	35	10	85
		Docked	35	75	140	15	265
		Sub Total	50	100	175	25	350
		TOTAL	125	300	475	100	1,000

Data: C. Famolare, Harbormaster, Town of Winthrop (July 2007)

Table 15. Estimated number of recreational and commercial boats in the Town of Winthrop.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Winthrop Dock / Yacht Club	Recreational	75	195	280	65	615
		Commercial	0	5	20	10	35
2	Pleasant Park	Recreational	50	100	175	25	350
		Commercial	0	0	0	0	0
TOTAL		Recreational	125	295	455	90	965
		Commercial	0	5	20	10	35

Data: C. Famolare, Harbormaster, Town of Winthrop (July 2007)

Table 16. Estimated number of boats with Type III MSDs in the Town of Winthrop.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	125	295	455	90
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	10	31	357	74
<b>TOTAL</b>	<b>473</b>			

Data: C. Famolare, Harbormaster, Town of Winthrop (July 2007)

The new Town Pier, Marina and Landing represents a significant upgrade of the facilities available with the Town of Winthrop. The shoreside facility is tied directly into the municipal sewerage system, and ultimately into the MWRA's system. The town's pumpout boat is emptied at the shoreside facility.

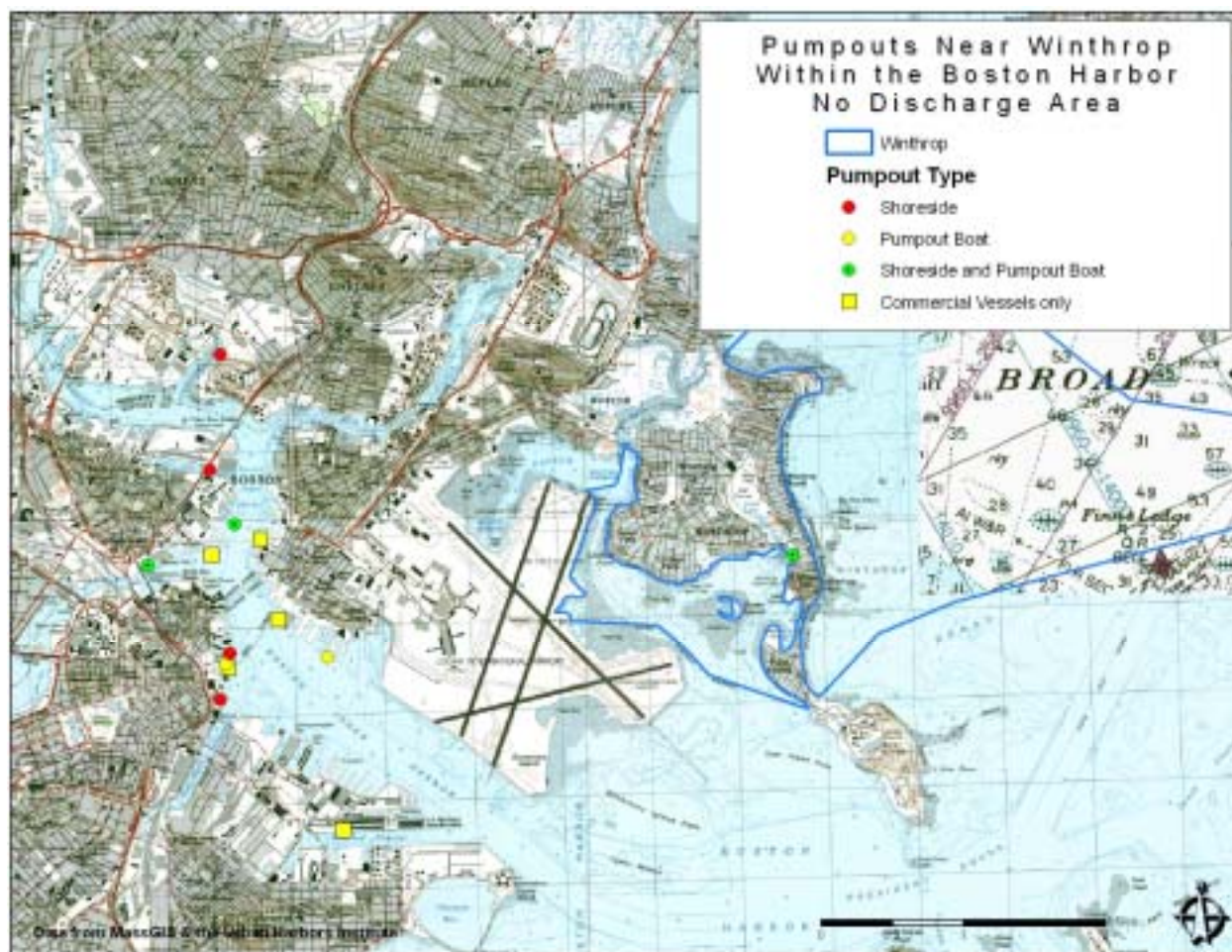


Figure 12. Pumpout facilities in and adjacent to the Town of Winthrop within the proposed NDA.

The renovated Town Pier has a minimum depth at mean low water of 8 feet. However, as the pier has multiple locations to access the shoreside pumpout facility, the Harbormaster suggests that while the minimum depth at MLW will be 8 feet, there is always at least one pumpout hook-up that will have a

minimum depth of 30 feet (MLW). It is therefore likely that no vessels will be excluded from the shoreside pumpout based on physical restrictions. Obviously, such restrictions do not apply to the pumpout boat.

While the new Town Pier offers facilities for transients, the number of slips is unlikely to have significant impact on the ability of the town to service the pumpout needs.

Details of the pumpout facilities are shown in Table 17.

The Winthrop Harbormaster works closely with the Revere Harbormaster and, if either of them suffers from a failure of pumpout equipment, it is standard practice that they cover each other's jurisdiction.

Table 17. Details of pumpout facilities in the Town of Winthrop.

Type	Boat	Shoreside
Location	Winthrop Town Pier, Marina and Landing	
Telephone Numbers	617-839-4000 or 617-846-3474 ext. 350	
Hailing Frequencies	9 and 16	
Hours of Operation	Summer: 10 AM - 8 PM, 7 days per week	
Contact if Out of Operation	617-839-4000 or 617-846-3474 ext. 350	
Waste Disposal Method	Winthrop Town Pier	Municipal Sewerage System
Capacity	300 gallons	NA
Waste Disposal Frequency	2-3 times per week	NA
Waste Disposal Agreement	NA	NA
MLW at Facility	NA	8 to 30ft along pier
# of Boats Excluded	NA	Zero

*Data: C. Famolare, Harbormaster, Town of Winthrop (July 2007)*

## Hingham

In July 2007, the Hingham Harbormaster estimated that there were 1,542 boats docked or moored within the Town of Hingham. There are eleven main areas of boating (Figure 13):

1. South Shore Yacht Club
2. Hewitts Docks
3. Hewitts Mooring Area
4. Wompatuck
5. Bel Air
6. North Beach
7. Hingham Yacht Club
8. Otis Street
9. Seal Cove
10. Inner Harbor (including Lincoln Maritime Center)
11. Worlds End (Gunk Hole)

The largest facility is Hewitt's Cove Marina which had 439 docked boats, and 93 moored boats during the 2007 boating season. Another large concentration of boating takes place in Hingham Harbor, which is home to boating facilities at Hingham Yacht Club, Otis Street, Seal Cove, and the Inner Harbor. Of these 1,542 vessels, only 40 are commercial.



Figure 13. The Town of Hingham showing the approximate locations of the main boating areas and boating facilities.

The size breakdown of the boats in each of the boating areas is presented in Table 18. Within Hingham, the majority of boats (approximately 47%) are between 16 and 25 feet in length. Around 21% are between 26 and 40 feet. An estimated 30% are less than 16 feet, and the remaining 2% are over 40 feet in length. Of the 1,542 vessels in the town's waters, only 40 were commercial vessels.

Based on the UHI study, there are approximately 649 boats in Hingham that are fitted with a Type III MSD and therefore may require pumpout services (Table 19). The EPA recommends one pumpout per 450 vessels. The town has a pumpout boat (Table 20). There used to be a shoreside facility at Hewitt's Cove Marina. However, this is out of operation due to on-going renovations. With Hewitt's Cove's pumpout out of operation, Hingham does not reach this threshold. However, Hingham is not applying for NDA designation on its own. All the municipalities around the harbor are involved and Hull to the east has an estimated 369 vessels with Type III MSDs for one pumpout (with a second planned for the fall of 2008). Weymouth to the west only has 151 vessels with Type III MSDs and one pumpout. Therefore boaters in Hingham have a number of options if the Hingham pumpout boat is busy (Figure 14).

The situation will improve significantly when the new shoreside facility in Hull is completed and Hewitt's Cove has been renovated.



Table 18. Estimated number of boats in the Town of Hingham.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	South Shore Yacht Club	Moored	3	22	61	0	86
		Docked	0	0	0	0	0
		Sub Total	3	22	61	0	86
2	Hewitts Docks	Moored	0	0	0	0	0
		Docked	2	207	189	41	439
		Sub Total	2	207	189	41	439
3	Hewitts Mooring Area	Moored	0	28	63	2	93
		Docked	0	0	0	0	0
		Sub Total	0	28	63	2	93
4	Wompatuck	Moored	6	0	0	0	6
		Docked	0	0	0	0	0
		Sub Total	6	0	0	0	6
5	Bel Air	Moored	21	0	0	0	21
		Docked	6	1	1	0	8
		Sub Total	27	1	1	0	29
6	North Beach	Moored	13	2	1	0	16
		Docked	0	0	0	0	0
		Sub Total	13	2	1	0	16
7	Hingham Yacht Club	Moored	31	151	101	14	297
		Docked	92	0	0	0	92
		Sub Total	123	151	101	14	389
8	Otis Street	Moored	15	0	0	0	15
		Docked	2	0	0	0	2
		Sub Total	17	0	0	0	17
9	Seal Cove	Moored	11	1	0	0	12
		Docked	5	0	0	0	5
		Sub Total	16	1	0	0	17
10	Inner Harbor	Moored	9	55	22	0	86
		Docked	0	136	42	0	178
		Sub Total	9	191	64	0	264
10	LMC (Inner Harbor)	Moored	12	6	0	0	18
		Docked	58	8	0	0	66
		Sub Total	70	14	0	0	84
11	Worlds End (Gunk Hole)	Moored	0	0	0	0	0
		Docked	0	0	0	0	0
		Transient	0	125	125	30	280
		Sub Total	0	125	125	30	280
TOTAL			286	742	605	87	1,542

Data: J. Souther, Harbormaster, Town of Hingham (July 2007)

Table 19. Estimated number of recreational boats with Type III MSDs in the Town of Hingham.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	286	742	605	87
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	24	79	475	72
<b>TOTAL</b>	<b>649</b>			

Data: J. Souther, Harbormaster, Town of Hingham (July 2007)

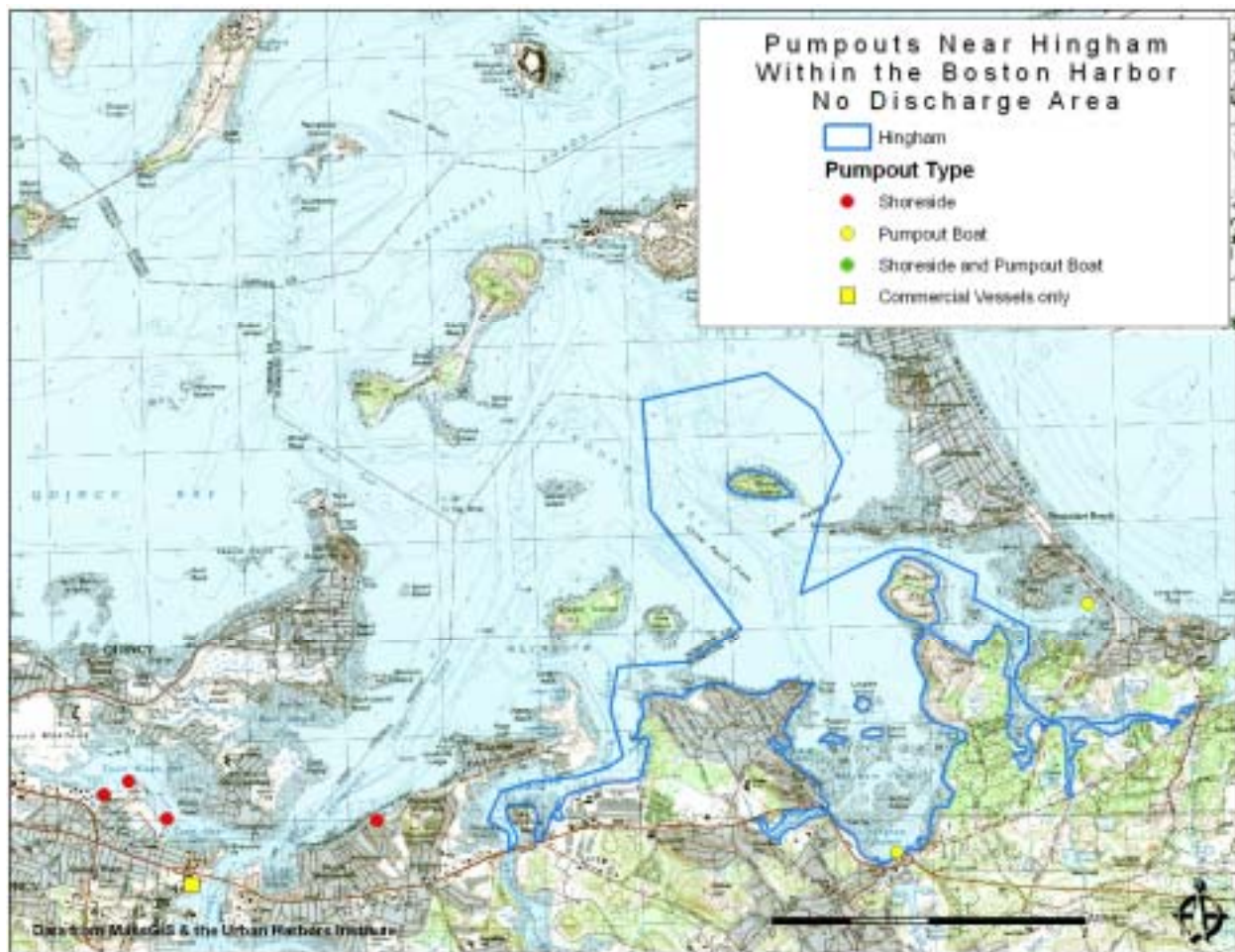


Figure 14. Pumpout facilities in and adjacent to the Town of Hingham within the proposed NDA.

Of the six boating facilities within Hingham's jurisdiction, four facilities have restrooms available to boaters. Those facilities are Lincoln Maritime Center, Hingham Yacht Club, Hewitt's Cove Marina, and South Shore Yacht Club. Pirate's Cove Marina and Hingham Boat Works do not have restrooms available to boaters.

Pumpout services can be arranged by calling the Hingham harbormaster at 781-741-1450, or by radioing to the harbormaster on channels 16 or 12. During the boating season, the pumpout boat operates Tuesdays, Thursdays, Saturdays, and Sundays from 3:00 to 7:00 pm. Exceptions are made for emergencies.

The pumpout boat has a holding tank with the capacity to hold 400 gallons of waste. The tank is emptied daily at the public facility at Wessagussett in Weymouth where the waste is discharged into the sewerage system. There is no formal contract between the Town of Hingham and Wessagussett (Table 20).

Table 20. Details of the pumpout facilities in the Town of Hingham.

<b>Type</b>	Boat	Shoreside <sup>1</sup>
<b>Location</b>	Inner Harbor	Hewitt's Cove
<b>Telephone Numbers</b>	781-741-1450	781-749-2222
<b>Hailing Frequencies</b>	16 and 12	
<b>Hours of Operation</b>	Tues, Thurs, Sat & Sun 3:00-7:00PM	
<b>Contact if Out of Operation</b>	781-749-2222	781-749-2222
<b>Waste Disposal Method</b>	Wessagussett in Weymouth	Private Contract
<b>Capacity</b>	400 gallons	300 gallons
<b>Waste Disposal Frequency</b>	Daily	
<b>Waste Disposal Agreement</b>	NA	Yes
<b>MLW at Facility</b>	NA	
<b># of Boats Excluded</b>	NA	Zero

<sup>1</sup> The shoreside facility at Hewitt's Cove is being renovated.

Data: J. Souther, Harbormaster, Town of Hingham (July 2007)

## Weymouth

In August 2007, the Weymouth Harbormaster estimated that there were 389 boats based in the town, of which 385 were recreational vessels. These vessels were found in four boating areas with the Fore River and Back River (Figure 15) accounting for over 48 and 36% of the boat population respectively (Table 21).

The majority of the boats in Weymouth (301 out of 389) are less than 40 feet in length and greater than 16 feet. There are only 17 vessels over 40 feet. There were also very few transient boats and only 4 commercial vessels (Table 22).

Based on the research conducted by the Urban Harbors Institute, there are estimated to be 151 vessels in Weymouth that are equipped with Type III MSDs and so may require pumpout services (Table 23). At this time, Weymouth has one shoreside pumpout facility located at the Wessagussett Yacht Club (Figure 16). This is directly tied in to the municipal sewerage system and the MLW is 6 feet. Using the EPA recommended minimum ratio of boats to pumpouts, it is clear that the single facility in Weymouth should be able to service all the local pumpout requirements with capacity to spare.

Table 21. Estimated number of boats in the Town of Weymouth.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Fore River	Moored	15	50	38	3	106
		Docked	15	30	35	2	82
		Sub Total	30	80	73	5	188
2	Back River	Moored	8	15	15	3	41
		Docked	18	25	50	8	101
		Sub Total	26	40	65	11	142
	Higgs / Thayer	Moored	0	2	0	0	2
		Docked	15	25	12	1	53
		Sub Total	15	27	12	1	55
	Harbor / Grape Island	Moored	0	0	0	0	0
		Docked	0	0	0	0	0
		Transient	0	4	0	0	4
		Sub Total	0	4	0	0	4
TOTAL			71	151	150	17	389

Data: P. Milone, Harbormaster, Town of Weymouth (August 2007)

Table 22. Estimated number of recreational and commercial boats in the Town of Weymouth.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Fore River	Recreational	30	80	73	5	188
		Commercial	0	0	0	0	0
2	Back River	Recreational	26	40	61	11	138
		Commercial	0	0	4	0	4
	Higgs / Thayer	Recreational	15	27	12	1	55
		Commercial	0	0	0	0	0
	Harbor / Grape Island	Recreational	0	4	0	0	4
		Commercial	0	0	0	0	0
	TOTAL	Recreational	71	151	146	17	385
		Commercial	0	0	4	0	4

Data: P. Milone, Harbormaster, Town of Weymouth (August 2007)

Table 23. Estimated number of recreational boats with Type III MSDs in the Town of Weymouth.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	71	151	146	17
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	6	16	115	14
<b>TOTAL</b>	<b>151</b>			

Data: P. Milone, Harbormaster, Town of Weymouth (August 2007)



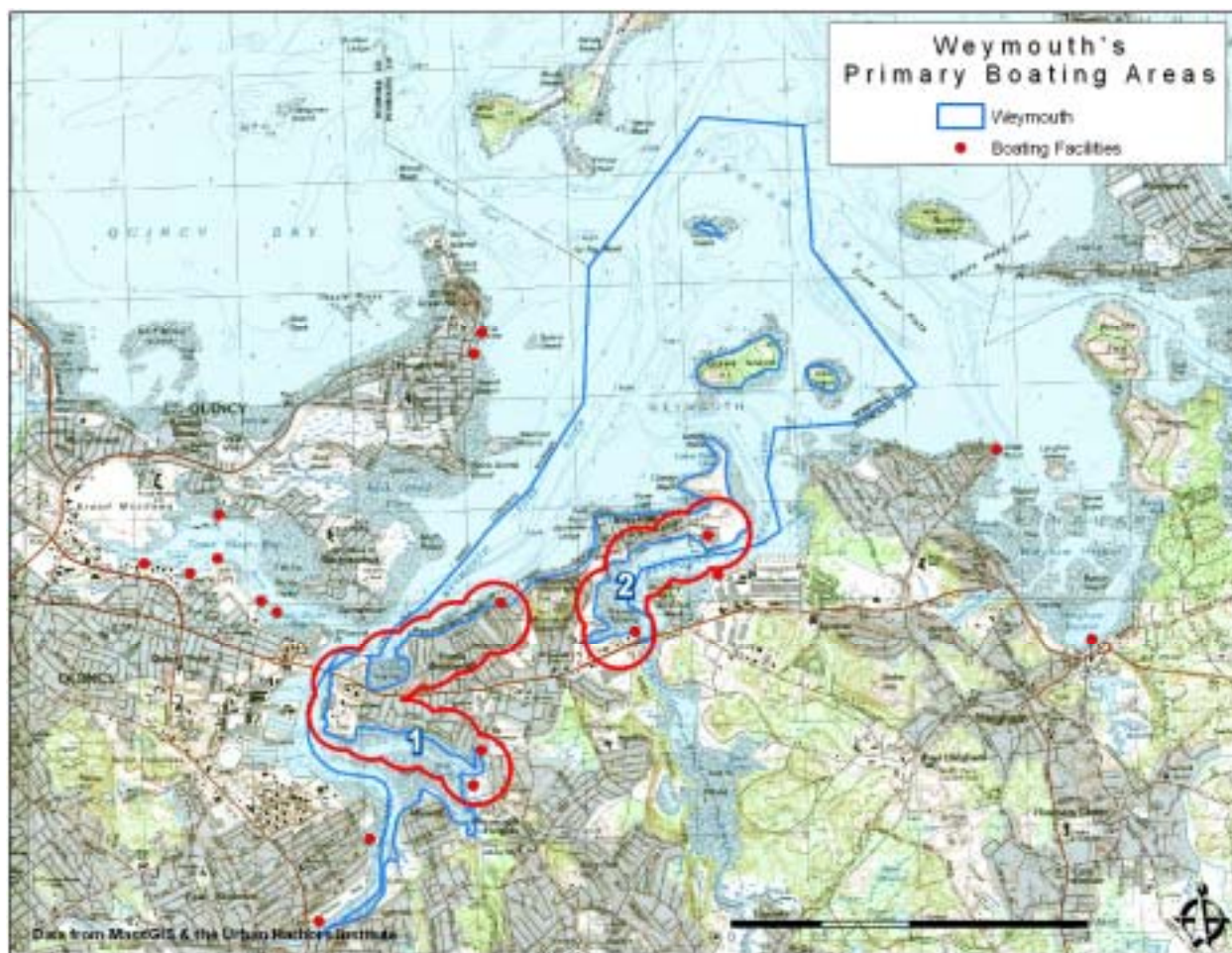


Figure 15. The Town of Weymouth showing the approximate locations of the main boating areas and boating facilities.

Table 24. Details of the pumpout facility in the Town of Weymouth.

Type	Shoreside
Location	Wessagussett Yacht Club
Telephone Numbers	781-335-9800
Hailing Frequencies	Channel 71
Hours of Operation	8:00 AM to 9:00 PM
Contact if Out of Operation	
Waste Disposal Method	Municipal Sewerage System
Capacity	NA
Waste Disposal Frequency	NA
Waste Disposal Agreement	NA
MLW at Facility	8 feet
# of Boats Excluded	Zero

Data: P. Milone, Harbormaster, Town of Weymouth (August 2007)

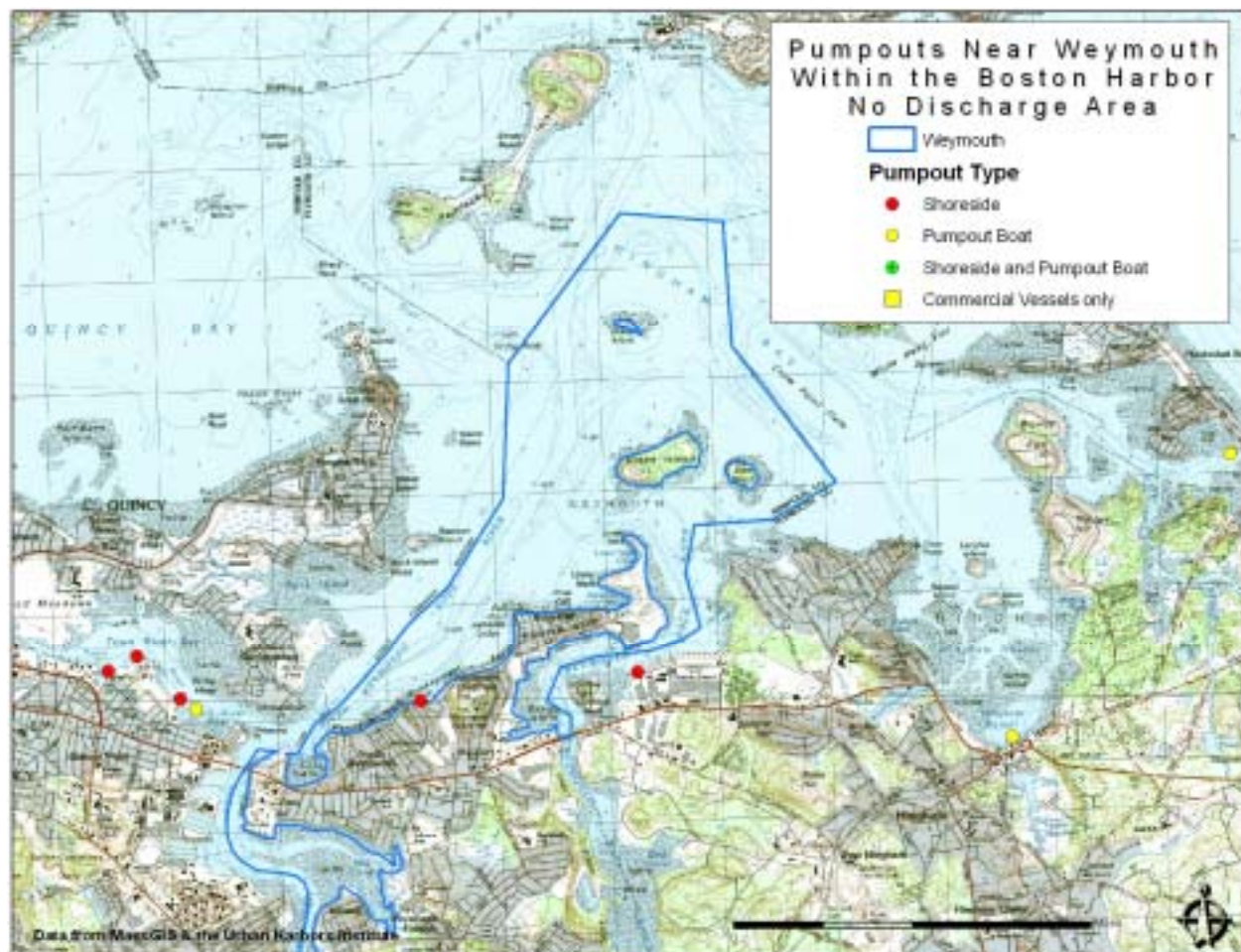


Figure 16. Pumpout facilities in and adjacent to the Town of Weymouth within the proposed NDA.

## Chelsea

There are two recreational boating facilities in Chelsea:

- Admiral's Hill Marina; and,
- Chelsea Yacht Club.

Within these two facilities there are approximately 150 vessels, the majority of which are in the 26 to 40 foot category. There are also a number of vessels over 40 feet in length (Table 25).

Based on these numbers, it is estimated that there are 86 boats equipped with Type III MSDs that would require pumpout services (Table 26). As there is a pumpout at Admiral's Hill Marina, there are ample local pumpout services. These vessels are also close the pumpouts located in the City of Boston.

*Admiral's Hill Marina* – 305 Commandants Way, Chelsea, MA 02150

- one shoreside pumpout
- tied directly into the sewerage system
- MLW is 6 feet
- the hours of operation are 8am to 5pm, 7-days a week
- CVA funded
- no charge for pumpout services
- mainly services boats in the marina

Table 25. Estimated number of boats in the City of Chelsea.

Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
Admiral's Hill Marina	Moored	0	0	0	0	0
	Docked	0	27	51	7	85
	<b>Sub Total</b>	<b>0</b>	<b>27</b>	<b>51</b>	<b>7</b>	<b>85</b>
Chelsea Yacht Club	Moored	0	0	0	0	0
	Docked	2	19	39	5	65
	<b>Sub Total</b>	<b>2</b>	<b>19</b>	<b>39</b>	<b>5</b>	<b>65</b>
<b>TOTAL</b>		<b>2</b>	<b>46</b>	<b>90</b>	<b>12</b>	<b>150</b>

*Data: City of Chelsea (April 2008)*

Table 26. Estimated number of recreational boats with Type III MSDs in the City of Chelsea.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	2	46	90	12
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	0	5	71	10
<b>TOTAL</b>	<b>86</b>			

*Data: City of Chelsea (April 2008)*

## **Braintree, Milton and Everett**

The municipalities of Braintree and Milton have boating facilities that fall within the Boston Harbor NDA but do not have any pumpout facilities. Boaters use shoreside facilities located in Quincy, Weymouth or Boston. Additionally, the pumpout boats in Quincy and Hingham will service boats based in Braintree. . The City of Everett has no recreational boating facilities and the only vessels that visit the city are larger ships.

### *Braintree*

In August 2007, the Braintree Harbormaster estimated that there were 191 boats docked or moored within the town. There are two boating facilities and a small number of vessels moored in the Fore River (Table 27). There are no commercial vessels based in Braintree. The two facilities are the:

- Braintree Yacht Club; and,
- Metropolitan Yacht Club.

Both of these yacht clubs have shoreside restrooms that may be used by boaters.

Based on these numbers, and using the UHI methodology, it is estimated that there are 112 vessels based in Braintree that are equipped with Type III MSDs and might require pumpout services (Table 28). As there are no pumpout facilities in the town, these vessels have to use the services offered in nearby towns.

Table 27. Estimated number of boats in the Town of Braintree.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Braintree Yacht Club	Moored	0	0	0	0	0
		Docked	0	50	20	8	78
		Transient	0	0	10	0	10
		Sub Total	0	50	30	8	78
2	Metropolitan Yacht Club	Moored	0	0	0	0	0
		Docked	0	20	80	13	113
		Sub Total	0	20	80	13	113
3	Fore River	Moored	0	7	0	0	7
		Docked	0	0	0	0	0
		Sub Total	0	7	0	0	7
TOTAL			0	77	110	21	191

Data: R. McDermott, Harbormaster, Town of Braintree (August 2007)

Table 28. Estimated number of recreational boats with Type III MSDs in the Town of Braintree.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	0	77	110	21
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	0	8	86	17
<b>TOTAL</b>	<b>112</b>			

Data: R. McDermott, Harbormaster, Town of Braintree (August 2007)

### Milton

There are two small boating facilities in the Town of Milton. These are the:

- Milton Yacht Club; and,
- Neponset Valley Yacht Club.

Neither facility has a pumpout. There are an estimated 50 boats that are based in Milton. Three of these are over 40 feet, 26 are between 26 and 40, 20 are between 16 and 25 feet and one is less than 16 feet (Table 29).

Based on these numbers, it is estimated that there are 25 vessels based in Milton that may require pumpout services (Table 30). Generally these boaters use the pumpouts at Port Norfolk Yacht Club in Boston or Marina Bay in Quincy.

Table 29. Estimated number of boats in the Town of Milton.

Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
Milton Yacht Club	Moored	1	15	19	3	38
	Docked	0	0	0	0	0
	<b>Sub Total</b>	<b>1</b>	<b>15</b>	<b>19</b>	<b>3</b>	<b>38</b>
Neponset Valley Yacht Club	Moored	0	5	5	0	10
	Docked	0	0	2	0	2
	<b>Sub Total</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>12</b>
<b>TOTAL</b>		<b>1</b>	<b>20</b>	<b>26</b>	<b>3</b>	<b>50</b>

Data: W. Haynes, Milton Yacht Club (March 2008)

Table 30. Estimated number of recreational boats with Type III MSDs in the Town of Milton.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	1	20	26	3
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	0.1	2.1	20.4	2.5
<b>TOTAL</b>	<b>25</b>			

Data: W. Haynes, Milton Yacht Club (March 2008)

## The Charles River

While there are many rowing clubs and boat houses along the Charles River between the Watertown Dam and the Museum of Science, there are only two concentrations of recreation boats that may be equipped with MSDs.

The first area is close to the Museum of Science and Boston Harbor and is the location of two recreational boating facilities:

- the Charles Gate Yacht Club; and,
- the Charles River Yacht Club

The second area is further up river and is located along the Watertown / Newton section of the Charles River, just below the Watertown dam. There are two additional yacht clubs located here:

- the Watertown Yacht Club; and,
- the Newton Yacht Club.

The numbers of boats located at these four yacht clubs are shown in Table 31. There are estimated to be 367 boats in the section Charles River included in this application. The majority of these are in the 26 to 40 foot category. Based on these numbers, there are an estimated 219 local vessels that may require pumpout services.



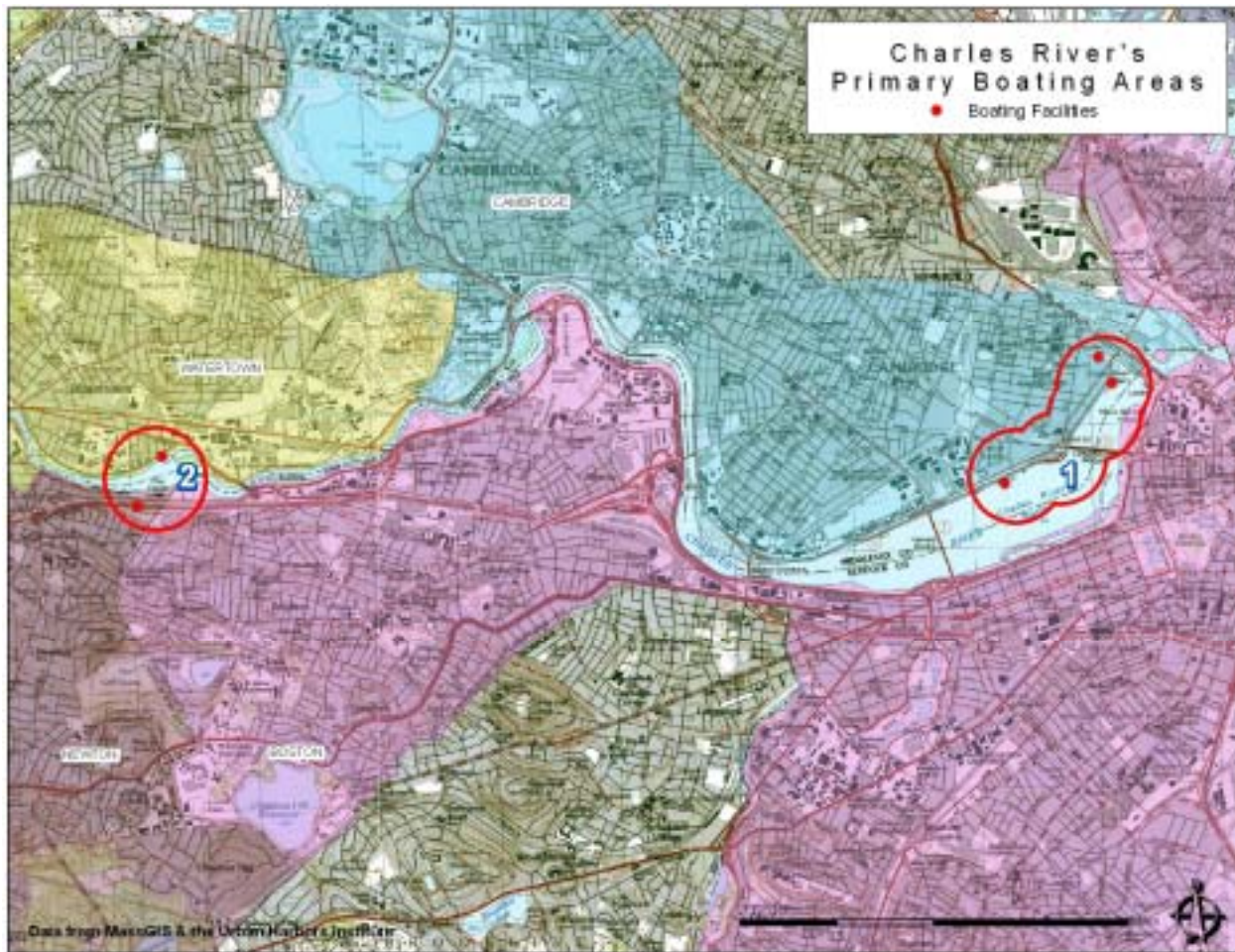


Figure 17. The Charles River showing the approximate locations of the main boating areas and boating facilities.

There are two recreational and one commercial pumpout on the Charles River between Boston Harbor and the Watertown Dam (Figure 18). The recreational pumpouts are:

*Charles River Yacht Club* – 99 Memorial Drive, Cambridge, MA 02142

- one pumpout boat with a 250-gallon capacity (replaced winter 2007-2008)
- the holding tank is emptied directly into a sewer connection
- transient vessels come to yacht club to use pumpout facility
- on-call from 8am to 8pm, 7-days a week during the season, shorter hours off-season
- monitor VHF channel 9
- CVA funded but no fee for pumpout

*Watertown Yacht Club* – 425 Charles River Road, Watertown, MA 02471

- shoreside pumpout tied directly into municipal sewerage system
- generally Tuesday, Wednesday and Saturday 8am to 4pm, Thursdays 9am to 5pm and Fridays 11am to 7pm.
- at other times club members will help if they are there

- open to the public
- generally do not get many transients
- do not monitor VHF.

The commercial pumpout is located at the Cambridgeside Galleria and is exclusively for the use of the Charles Riverboat Company.

*Charles Riverboat Company* – 100 Cambridgeside Place, Cambridge, MA 02141

- two commercial tour or charter boats traveling in the Charles River and the Boston Harbor
- a pumpout “clear out” facility is located at the Cambridgeside Galleria Mall
- boats are pumped out 3 times per week
- the clear out is connected to the City of Cambridge sewer system

The EPA suggests that there should be at least one pumpout facility for every 450 boats with Type III MSDs. As there are two shoreside pumpout facilities and one pumpout boat operating in the Charles River between the Watertown Dam and the Charles River Dam, it is clear that there are sufficient pumpouts to service the vessel population in the area.

Table 31. Estimated number of boats on the Charles River.

Area	Name	Type	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet	TOTAL
1	Charles Gate Yacht Club & Mooring Field	Moored	5	14	32	6	57
		Docked	1	6	37	24	68
		Sub Total	6	20	69	30	125
1	Charles River Yacht Club	Moored	0	0	0	0	0
		Docked	0	12	57	1	70
		Sub Total	0	12	57	1	70
2	Watertown Yacht Club	Moored	0	0	0	0	0
		Docked	0	30	60	0	90
		Sub Total	0	30	60	0	90
2	Newton Yacht Club	Moored	0	0	0	0	0
		Docked	7	28	47	0	82
		Sub Total	7	28	47	0	82
TOTAL			13	90	233	31	367

*Data: Charles River Watershed Association (March 2008)*



Table 32. Estimated number of recreational boats with Type III MSDs on the Charles River.

	< 16 feet	16 - 25 feet	26 - 40 feet	> 40 feet
Total Number of Recreational Boats	13	90	233	31
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	1	10	183	26
<b>TOTAL</b>	<b>219</b>			

Data: Charles River Watershed Association (March 2008)

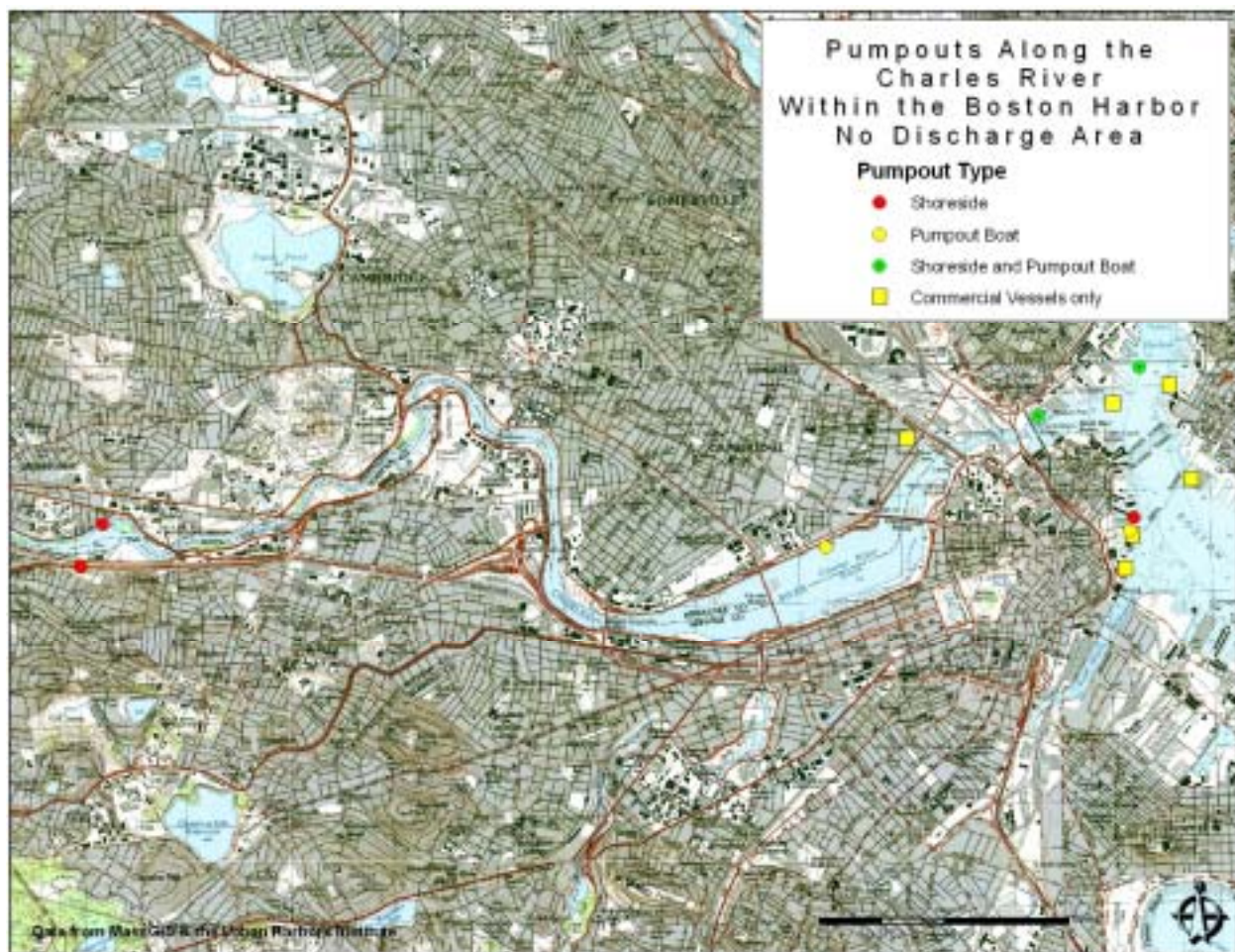


Figure 18. Pumpout facilities on the Charles River within the proposed NDA.

## HARBOR-WIDE VESSEL POPULATIONS AND PUMPOUT FACILITIES

The data gathered during the preparation of this application suggests there are 8,720 recreational boats located within the waters of the proposed Boston Harbor NDA (Table 33). A little over 6% of these are in

the largest size class, and a little over 7% are in the smallest. Of the remaining, about 40% are between 16 and 25 feet and over 46% are between 26 and 40 feet in length.

Based the work conducted by the Urban Harbors Institute (UHI), this means that there are approximately 4,047 local recreational boats equipped with Type III MSDs (Table 34).

Table 33. Estimated number of recreational boats in the proposed Boston Harbor NDA.

<b>Municipality</b>	<b>&lt; 16 feet</b>	<b>16 - 25 feet</b>	<b>26 - 40 feet</b>	<b>&gt; 40 feet</b>	<b>TOTAL</b>
Boston	40	866	991	147	2,044
Quincy	41	870	972	134	2,017
Hull	55	341	406	12	814
Winthrop	125	295	455	90	965
Hingham	286	742	605	87	1,720
Weymouth	71	151	146	17	385
Chelsea	2	46	90	12	150
Braintree	0	77	110	21	208
Milton	1	20	26	3	50
Everett	0	0	0	0	0
Charles River	13	90	233	31	367
<b>TOTAL</b>	<b>634</b>	<b>3,498</b>	<b>4,034</b>	<b>554</b>	<b>8,720</b>

Table 34. Estimated number of recreational boats with Type III MSDs in the proposed Boston Harbor NDA.

	<b>&lt; 16 feet</b>	<b>16 - 25 feet</b>	<b>26 - 40 feet</b>	<b>&gt; 40 feet</b>
Total Number of Recreational Boats	634	3,495	4,034	554
UHI Estimate of % of Boats with a Type III MSD, by size	8.3	10.6	78.5	82.6
Number of Boats with Type III MSDs based on UHI Estimate	53	370	3,167	458
<b>TOTAL</b>	<b>4,047</b>			

The EPA recommends that there is a minimum of one pumpout per 450 local vessels. This application identifies 16 shoreside pumpout facilities that are fully operational, two that have some operational issues and one that is being developed. There are also 9 pumpout boats operating within the waters of the proposed NDA. Therefore, there are an estimated 162 boats with Type III MSDs per operational pumpout at this time.

It is clear that within the waters of the proposed Boston Harbor No Discharge Area, there are an adequate number of recreational boat pumpout facilities as defined by the EPA.

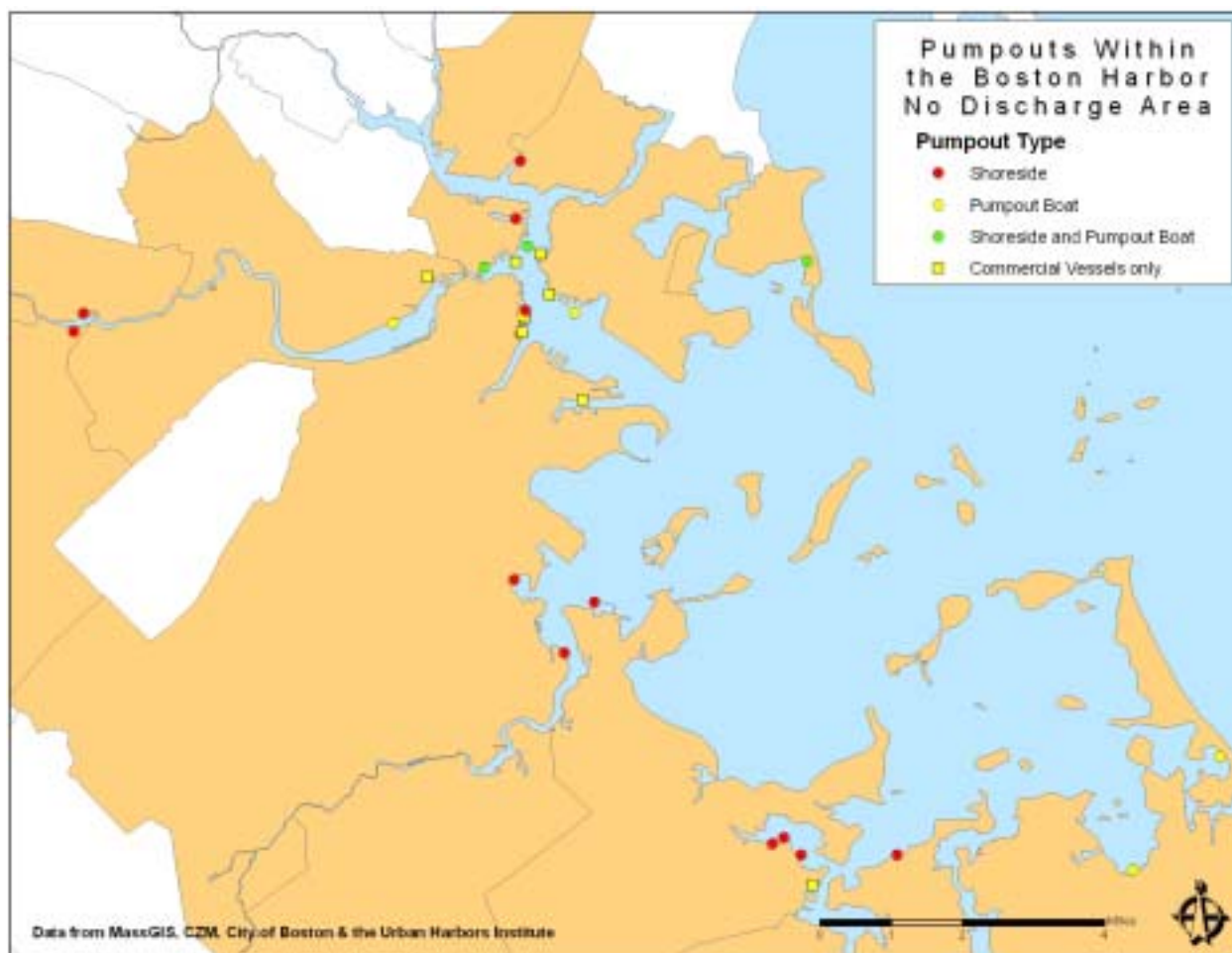


Figure 19. All existing pumpout facilities within the proposed Boston Harbor NDA.

A critical issue that had to be addressed during the preparation of this application was the needs of the commercial fleet. At this time there seem to be sufficient commercial pumpout facilities and a number of other facilities are being planned or built (Figure 19).

Having an “excess” of pumpout capacity is highly beneficial as not all pumpouts are the same. Some locations have multiple hook-ups that allow them to service many vessels at one time. Other facilities have smaller pumpouts and so take longer to pumpout a boat. Anecdotal information suggests that many boaters within the harbor access the pumpout facilities with shorter wait-times or with a larger number of hook-ups. Additionally, some facilities are more efficiently run than others and some facilities have older, less well maintained equipment which is sometimes not operational.

It is hoped that having a significantly higher number of facilities than the minimum requirements set forth by the EPA will help ensure that pumpout services are sufficiently accessible so that boaters do not illegally discharge the untreated contents of their holding tank within the NDA.

Once the NDA is designated, it is important that the pumpout services and the demand for them continue to be monitored. It is hoped that once the Boston Harbor NDA becomes a reality, the local harbormasters and marine facility operators will start to meet on a regular basis. The hope is that a coordinated support system can be developed where local operators work to cover other's jurisdiction when their facilities are not operational. Additionally, and more critically, a coordinated system could be developed so that if a system goes down, the operator knows who to contact and who may have spare parts. The Clean

Vessels Act, which partially funds many pumpouts, has a system for supplying spare parts, but it is reported that this system can be slow. If pumpout operators around Boston Harbor are aware of other locations where similar equipment is being used, the ability for a facility to be up-and-running may be enhanced through the development of a system to share spare parts.

## **TRENDS IN PUMPOUT USAGE**

Once the NDA is designated, it is important that the pumpout services and the demand for them continue to be monitored. As NDAs become more common, it would be expected that the number of vessels that are equipped with Type III MSDs will also increase. It is hoped that once the Boston Harbor NDA becomes a reality, the local harbormasters and marine facility operators will start to meet on a regular basis. The hope is that a coordinated support system can be developed where local operators work to cover other's jurisdiction when their facilities are not operational. Additionally, and more critically, a coordinated system could be developed so that if a system goes down, the operator knows who to contact and who may have spare parts. The Clean Vessels Act, which partially funds many pumpouts, has a system for supplying spare parts, but it is reported that this system can be slow. If pumpout operators around Boston Harbor are aware of other locations where similar equipment is being used, the ability for a facility to be up-and-running may be enhanced through the development of a system to share spare parts.

One important aspect of pumpout facilities is to make certain that there is a contingency plan in place if a pumpout becomes non-operational. To make certain that boaters always have an option available to them, marina owners should list the contact information for all nearby pumpout facilities. Additionally, all pumpout facilities should display a recognizable sign that can be read by boaters, advising them that the facility is "down" and where other available pumpouts may be located.

It is critical that when the Boston Harbor NDA is designated, the harbormasters from all the Boston Harbor municipalities should meet on a regular basis. Harbormasters and their deputies are normally responsible for enforcing NDA regulations and will be useful when determining how things are, or are not working. By meeting regularly to discuss ongoing or new issues, the harbormasters will be in an ideal position to leverage support and help from state agencies. Additionally, by meeting regularly, the harbormasters can further solidify existing relationships and develop a network of support for pumpouts. This network will ensure that, even if a town's pumpout is out of operation, there is an established and known system so that all boaters know where they can easily have their vessel pumped out.

Regular meetings will also facilitate the early identification of potential problems. While pumpout facilities may physically exist, if they have regular operation difficulties, boaters may become disillusioned if the facility is frequently out of operation. Harbormasters are in an excellent position to identify such problems and to react accordingly.

## **PUBLIC EDUCATION**

During the development of this application, a series of meetings were held to inform the public about the efforts to have Boston Harbor designated as an NDA. These included:

May 23, 2007	Federal, state, municipal officials, marine industry representatives and University of Massachusetts Boston personnel met to discuss the idea of having Boston Harbor designated as an NDA.
October 4, 2007	CZM, EPA, and UHI discussed the Boston Harbor NDA at the Water Transportation Advisory Committee meeting.
October 31, 2007	EPA and CZM met with Massport to discuss the Boston Harbor NDA and how it might affect port operators.

November 5, 2007	CZM met with members of the Clean Vessel Act Program to discuss the Boston Harbor NDA and Sail 2009.
November 14, 2007	CZM, EPA, and UHI discussed the Boston Harbor NDA at the Massport Port Operators meeting which included commercial operators and the USCG.
February 22, 2008	CZM met with the American Waterways Operators, an organization that represents the interests of tug operators, to discuss the Boston Harbor NDA and how it would affect tug operators.
February 28, 2008	Massport Fish Pier Tenants Meeting--CZM,EPA, and Massport spoke with Fish Pier Tenants about how a Boston Harbor NDA would affect them.

Additionally, on August 7, 2007 Mayor Thomas M. Menino of Boston was joined by Mayor William Phelan of Quincy, municipal officials from Hull, Hingham, Weymouth, Chelsea, Everett and Winthrop, and state and federal agency representatives, to announce that an application to designate Boston Harbor as a No Discharge Area (NDA) was to be submitted to the US Environmental Protection Agency (EPA).

Outreach and education was also discussed at a meeting on October 1, 2007 with The Boston Harbor Association and Save the Harbor/Save the Bay.

Public outreach and education efforts should be coordinated so that the information is standardized. Boaters will have to be informed that when they enter the NDA, the discharge of any type of sewage is no longer acceptable. Once Boston Harbor is designated as an NDA, standardized outreach material should be developed and distributed to all boating facilities. This material should then be given to all boaters who enter the harbor.

Boaters are able to get a *Boater's Guide to Pumpouts* from MCZM which gives information regarding the location of the pump-out, channel number, phone number, type of pumpout and if the pumpout participates in the Clean Vessel Act. This pamphlet allows boaters to determine the location of the nearest pumpout.

The EPA offers a *Boater's Guide to NDA in the New England Area*, which informs boaters of what NDAs are and why they are important, where present NDAs are, what MSDs are and how to operate ones' boat in a NDA. This guide is in pamphlet form and can easily be distributed to boaters through regular mail and can be made available at harbors and marinas.

## ENFORCEMENT

Enforcement plays an important role in the successful implementation of an NDA. The prohibition of discharging boat sewage in an NDA applies to all vessels, commercial and recreational, regardless of the type of MSD on board. Enforcement of federal laws related to MSDs is the responsibility of the US Coast Guard. States also have the authority to enforce the prohibition of vessel sewage discharges in NDAs, pursuant to 33 USC 26 Section 1322(k). In the Commonwealth of Massachusetts, the Environmental Police, a branch of the Division of Fisheries, Wildlife and Environment Law Enforcement (DFWELE), is the agency responsible for enforcing regulations on watercraft. The Commonwealth has delegated this enforcement authority to the Director of DFWELE and by extension, to all those that serve under him. This means that environmental police officers, harbormasters, police officers assigned to harbor patrol, fish and game wardens, members of the state police, and city and town police officers assigned to patrol the waters of the Commonwealth can enforce the provisions of NDAs. This authority is codified in Massachusetts General Law Chapter 90B Section 12.

In addition to DFWELE and USCG, there are other bodies of enforcement that are present on the harbor which will further help to aid in enforcing the NDA.

The Massachusetts State Police lend protection to the harbor. The State Police Marine Division is a specialized unit that is based in North Boston near the mouth of the Charles River, as well as the Boston Harbor Islands Park. The State Police focus on enforcing laws, such as speed limits and boat safety.

They are also involved with recreational boating through the certification process. Although they are not directly tied into enforcement regarding sewage dumping, their presence on the water garners additional help in keeping an eye out for illegal dumping. The Marine Division presently has seven boats, varying in size and capability, and a few jet skis.

Harbormasters and harbor patrols fall under the jurisdiction of the city police. The harbor patrol joins the Coast Guard and state police in enforcing laws. Most often, the harbor patrol is the first point of contact for new vessels.

The hope is that through the combined efforts of all these bodies, illegal discharge would be closely watched and enforcement of the NDA would be complete.

## **THE CLEAN VESSEL ACT**

The Federal Clean Vessel Act (CVA) and its grant program provide \$98.5 million to states to support the infrastructure for pumpout facilities and dump stations. Through this program, more and more pumpout facilities are being established throughout Massachusetts. The CVA offers significant financial opportunities to suitable facilities and restricts the costs that CVA-funded can charge for pumpout services. As a result, many pumpout facilities within Boston Harbor offer their services free of charge.

However, CVA funding is aimed at the recreational boating community. All CVA funded facilities are prohibited from servicing commercial vessels. This potential has some major implications with regards to a Boston Harbor NDA. Local Harbormasters have expressed concerns about some of the commercial operators within the harbor and there are a number of anecdotal reports of ferry operators illegally discharging their holding tanks, containing potentially hundreds or thousands of gallons of untreated sewage, within the harbor. This illegal act far-outweighs the impacts of sewage discharge from recreational boaters. However, while trying to address the pollution problems of Boston Harbor, multiple issues can be addressed at one time and it is not necessary to prioritize them. While efforts to reduce recreational sewage inputs are a clear next step in the ongoing cleanup of Boston Harbor, there also needs to be a concerted effort to increase the number of commercial pumpout facilities within the harbor. A Boston Harbor-wide NDA must address the commercial boating community. While some information suggests that certain operators may be clearly flouting the existing laws, there are others who simply operate vessels that cannot easily be retro-fitted to comply with NDA regulations. For an NDA to be functional and result in significant environmental improvements, Federal and State agencies may need to re-examine the current regulations.



## APPENDIX 1 – ALL PUMPOUT FACILITIES WITHIN THE BOSTON HARBOR NDA

Facilities	Location & Phone	Telephone	VHF	Hours	Type	Mean Low Water Depth	Access	Disposal	Holding Cap.	Notes
Boston Harbor Shipyard and Marina	256 Marginal St., E. Boston	617-561-1400	9	7:00a-8:00p; on call	Shoreside	25	2 Boats	City Sewer	250	Dockhands said about 60% of boats use pumpouts. The boat tank is emptied after every use, even if not full. CVA funded and, although private, there are no fees. Services Coast Guard, police boats and large yachts as well.
					Boat	N/A				
The Marina At Rows Wharf	70 Rows Wharf, Boston	617-439-3131	9	May 1-Oct 31	Shoreside	10	1 Boat	City Sewer		
Boston Waterboat Marina	66 Long Wharf, Boston	617-523-1027	9	7:00a-7:00a; call ahead	Shoreside	5 to 25	2 Boats	City Sewer	220	Had the shoreside for 5-6 years and the boat for 4. Free pumpout service.
					Boat	N/A				
Boston Yacht Haven	87 Commercial Wharf, Boston	617-367-5050	9	8:00a-7:00p	Shoreside	10	1 Boat (multiple adapters)	City Sewer		They service charters boats (around 120ft in length), but mostly recreational boats.
Constitution Marina	28 Constitution Rd., Charlestown	617-241-9818	69	9:00a-8:00p Summer 9:00a-5:00p Winter	Shoreside	30	1 Boat	City Sewer		
					Boat	N/A				
Dorchester Yacht Club	100 Playstead Rd., Dorchester	617-436-1002	9	8:00a-6:00p	Shoreside	7	1 Boat	City Sewer		Pumpout in need of repair; can be CVA funded. Private marina, but services transients.
Mystic Marine	100 Terminal St., Charlestown	617-293-6247	72	Mon-Fri 7:00a-7:00p	Shoreside	35	3 Boats	Moran Terminal	125	
Port Norfolk Yacht Club	179 Walnut St., Dorchester	617-822-3333	9, 11	24/7 and self-service	Shoreside	7.5	1 Boat	City Sewer		
Shipyard Quarters Marina	113th St. #8, Charlestown	617-242-2020	9, 7, 16	8:00a-7:00p	Shoreside	20	2 Boats	City Sewer	500	Up to 200 feet
					Boat	N/A				
Quincy Bay		617-908-9757	9	High-Tide (Weekday) 8:00a-4:00p (Weekend)	Boat	N/A	1 Boat	Bay Pointe Pumpout	300	
Bay Pointe Marina	64 Washington Ct., Quincy	617-471-1777	9	Call Ahead	Shoreside	8	1 Boat	City Sewer		
Captain's Cove Marina	100 Cove Way, Quincy	617-328-3331	69	24/7	Shoreside	6	1 Boat	City Sewer		
Marina Bay on Boston Harbor	333 Victory Rd., N. Quincy	617-847-1800	10	7:30a-8:00p	Shoreside	N/A	2 Boats	City Sewer	300	
Town River Yacht Club	60 Mound St., Quincy	617-471-2716	71	Call Ahead	Shoreside	35	1 Boat	City Sewer		
Town of Hull	Steamboat Wharf, Hull	781-925-0316	9, 16	8:00a-4:00p	Shoreside	TBD	TBD	City Sewer	300	UNDER DEVELOPMENT
					Boat	N/A				
Town of Winthrop	Town Pier, Winthrop	617-839-4000	9, 16	10:00a-8:00p	Shoreside	8 to 30	1 Boat	City Sewer	300	
					Boat	N/A				
Hewitt's Cove Marina	Hewitt's Cove Marina	781-749-2222			Shoreside				300	Currently out of operation
Town of Hingham	Town of Hingham	781-741-1450	12, 16	Tues, Thur, Sat & Sun 3:00p-7:00p	Boat	N/A			400	
Wessagussett Yacht Club	212 Wessagussett Rd., Weymouth	98000247	71	Mon-Fri 6:00a-8:00p Sat-Sun 9:00a-9:00p	Shoreside	8	1 Boat	City Sewer		
Marina At Admirals Hill	1000 Justin Dr., Chelsea	617-889-4002	9, 10	8:00a-5:00p	Shoreside	6	1 Boat	City Sewer		CVA funded, free service. Mostly service the Marina and there are not many transients present. Gas is available here.
Watertown Yacht Club	425 Charles River Rd, Watertown	617-924-9848		Tues, Wed, Thurs, Sat 8:00a-4:00p, Fri 11:00a-7:00p	Shoreside					
Charles River Yacht Club	99 Memorial Dr., Cambridge	617-354-8681	9	8:00a-8:00p	Boat	N/A	1 Boat	City Sewer	200	

Facilities	Location & Phone	Telephone	VHF	Hours	Type	Mean Low Water Depth	Access	Disposal	Holding Cap. (Gallon)	Notes
Black Falcon Pier	1 Black Falcon Ave., Boston 02210	617-946-4417		9:00a-5:00p	Commercial	35	1 Boat	City Sewer		
Boston Harbor Cruises	1 Long Wharf, Boston 02110	617-227-4321		6:30a-8:30p Wk 10:00a-6:30p Wknd	Commercial	22	1 Boat	City Sewer	100	Bosotn Harbor Cruises only
Boston Towing & Transportation	36 New St., E. Boston 02128	617-567-9100		24/7	Commercial	N/A	2 Boats	Black Falcon & Pier 4	90,000 and 280,000	
Charlestown Pier 4	8th St., Charlestown 02129	617-918-6201		Appointment Only	Commercial	30	3 Boats	City Sewer		
Constellation Tug	100 Terminal Road, Charlestown, MA 02129	617-561-0223		24/7	Commercial	N/A	1 Boat	Black Falcon & Pier 4	80,000	
Mass Bay Lines	60 Rowes Wharf, Boston, MA 02110				Commercial					Mass Bay Lines only
City of Boston	City of Boston				Commercial Pumpout Boat					UNDER DEVELOPMENT
Berth 10	Boston Marine Industrial Park				Commercial					UNDER DEVELOPMENT
Charlestown Pier 3	8th St., Charlestown 02129	617-918-6201			Commercial					UNDER DEVELOPMENT
Mystic Marine	100 Terminal St., Charlestown	617-293-6247			Commercial					POTENTIAL
Harbor Express	703 Washington St, Quincy, MA 02169				Commercial					Harbor Express only
Charles Riverboat Company	100 Cambridgeside Galleria, Cambridge, MA 02141				Commercial					Charles Riverboat only



## APPENDIX 2 – SPECIFICATION FOR THE BOSTON HARBOR PUMPOUT BOAT

**INTENT:** It is the intent of these specifications to describe a Pumpout vessel to be used in the pumping out of waste from other vessels and to transport such waste to a proper disposal facility. The Pumpout boat must meet standards for this type of vessel, and bidder must be able to attach a safety Coast Guard label to each boat.

**BIDDERS QUALIFICATIONS:** Bidder must have been in the business of delivering finished and complete Pumpout boats for at least five years, and be able to show purchase orders and proof of delivery with contact names and phone numbers for at least 8 boats delivered in the past five years. Pictures of the boat must be supplied with bid. Pictures must show full side view, full inside view, full top view, and full bottom view. If pictures are not provided bid will be rejected.

**MAKE:** Marine Boatbuilders CO. Pump Kleen 31' Pumpout Boat, YEAR 2008 (or equal)

**DEEP V HULL DESIGN:** The hull is to be constructed with a combination of hand laid woven, roving, and gun roving. All fiberglass is to be "E" glass and the resin will be thermo set polyester. The gelcoat will be ISO NPG thermo set gelcoat, normally 0.30" thick. The boat will have a 21-degree dead rise at the stern, and a 12-degree transom angle. The hull transom will be a composite laminate 2" thick, and 1" fiberglass a total of 3" thick. There should be no wood in the transom.

**STRINGER SYSTEM:** The stringer system should be a U channel all fiberglass state of the art system. There should be no wood in the stringer system.

The boat must come with an Navel Engineer/ Architect letter

Stating the tank capacity, and verifying that the boat was designed to handle the intended job.

**DECK, FLOOR:** The deck shall be a combination of hand laid woven, roving, and gun roving. Fiberglass "E" glass applied and the resin thermostat gelcoat (white). Deck should have a 12" step up in the bow area that is 48" long. It should include two forward large stowage areas with fiberglass hatches. The deck should be free from any pumps, vents, or pipes of any kind leaving much-needed extra workspace, and no trip hazards. The floor should be fiberglass composite, not wood. There should be no wood in the deck, floor or in the boat. The deck is to be finished with non-skid on the horizontal surfaces. The deck will be self-bailing at all times; whether containment cell is full or empty.

**FOAMED FLOTATION:** Two-part thermostat foam will be injected between the floor and hull in areas not occupied by tankage and other equipment.

**CENTER CONSOLE:** Large center console with an Edson diaphragm electric pump located under the Center console. One leaning post with storage aft of center console

**FUEL TANK:** The fuel tank will be 100 gallons and located below the deck.

**CONTAINMENT CELL:** A fiberglass 950-gallon holding tank shall be built into the hull. The containment cell shall be built completely below the water line. No part or parts of the holding tank shall be above the floor. The containment shall have five fiberglass baffles, 5 layers of fiberglass that include layers of 24 oz. cloth. Tank must be separate from the hull. No separate tank or non fiberglass shall be allowed. The Edson pump that runs the sewage tank shall be located completely under the center console, including all plumbing and vents. This shall allow the bow of the boat to have no trip hazards and much more needed working space. You must submit a signed letter from a certified Navel Engineer on the capacity of the holding tank. Holding tank must have a plunger type alarm that sounds when tank is full. Switch and sound alarm to me mounted on center console

**OTHER FEATURES MUST INCLUDE:**

- Running lights.
- Stainless steel bow eye and transom tie-downs.
- Two 3" scuppers.
- Heavy-duty rub rail.
- 1100 G.P.M. automatic bilge pump.
- (7) 10" stainless steel cleats pop-up cleats
- The cleat, chocks, and running lights in the bow must be stainless steel pop-ups.
- Ritchie compass
- Two deep cycle series batteries.
- Non-feed back battery switch.
- Water wash down pump.
- Stowage areas with doors.
- Seat in front of center console with stowage
- Fender system
- Teleflex hydraulic steering (of course.)
- Stainless steel bow rail
- (4) four mushroom cleats, two on each side
- One bow thruster

**SPECIFICATIONS**

Overall length:	31'
Beam:	11'1 1/2"
Draft:	18 1/2" lightship 22 1/2" full load
Dead rise:	24 degrees
Transom angle:	12 degrees
Weight:	7,250 lbs lightship
Weight:	14,850 lbs full load
HP rating:	500 HP
MINIMUM ENGINE	2 X 150HP
Freeboards:	44" forward, 27" aft.
Engine:	One 200 HP Mercury Verado four stroke with all gauges, and Bow thruster

**WARRANTY**

A five (5) year warranty on the hull and a 5-year warranty on the holding tank.

## **APPENDIX 3 – LETTERS OF SUPPORT**