Assessment of the North Shore Massachusetts for a No Discharge Area Designation

Study Area: North Shore Massachusetts (Andover, Beverly, Danvers, Essex, Gloucester, Ipswich, Lynn, Manchester, Marblehead, Nahant, Newbury, Newburyport, Peabody, Revere, Rockport, Rowley, Salem, Salisbury, Saugus, and Swampscott)

Objectives: In order to receive a State designated, Federally approved No Discharge Area for a water body the local applicant must meet certain criteria. First, they must show there are adequate and reasonably available pumpouts to serve the boating population. Second, the applicant must show that there is need for a greater water quality protection, from both a public health as well as from a coastal and marine environment perspective.

This study set out to determine:
1. The locations of marina and yacht clubs in relation to pumpout facilities, to see if the boating population has sufficient access to pumpout services.
2. The human population pressures being applied to the coastal areas, to see where large populations occur along the coast in relation to pumpout facilities to maintain there are an adequate number of facilities to help protect those who use the waters from exposure of boat sewage.
3. Where the habitats of concern are within the North Shore coastal zone in order to show the need for greater water quality protection in this area.

Results:
1. For the most part there were an adequate number of pumpout facilities within reasonable distance for the marinas and yacht clubs of the North Shore. However, the Town of Essex has marinas of yacht clubs but no pumpout to service these boats. For a NDA designation, Essex will likely need to install a pumpout.

Results Continued:
1. The population density of the North Shore communities correlates well with the location of pumpout facilities. The more populated an area is, the more likely they will have additional pumpouts to serve the town. Areas of particular concern are Gloucester Harbor, Salem Sound, Nahant Bay and Lynn Harbor. The large populations in these areas will in turn mean a greater number of people could be affected by boat sewage contamination of the coastal waters.
2. Lastly, there are numerous areas of habitats of concern within the North Shore coastal waters. A variety of shellfish habitats are along most of the coast. Salem Sound in particular has a large Eelgrass habitat and most of the coast line is marine beach habitat. The combination of all three, strongly show that these coastal waters deserve and are in need of greater water quality protection.

Limitations/ Lessons Learned:
1. The study design was to rasterize the habitat data to then overlay the different types and give them priority ratings, however, it was discovered that none of the coastal habitat areas overlapped, which made the overlay spatial analysis impossible.
2. In this study, land-use data was also looked. However, no conclusions were able to be drawn from this information that would directly affect a No Discharge Area.
3. The accuracy of the mapping is only as good as the data sets. Many of the data sets were a few years old (Census:2000, Marine Beaches:2003, Eelgrass:2001). This limits the conclusions that can be drawn, since both environmental and population dynamics are constantly changing.

WHERE ARE THE BOATS LOCATED?
Marina and Yacht Club Locations in Reference to Pumpout Facilities

Why Does the North Shore Need Greater Water Quality Protection?
Coastal Habitats of Concern

Are There Population Pressures Along the Coast of the North Shore?
Population Density by Census Tracts

Legend
- Pumpout Facility
- Marina or Yacht Club
- North Shore Purposed NDA Boundary

Legend
- Pumpout Facilities
- Suitable Shellfish Habitat
- Qualitig
- Oyster
- Clam
- Scallop
- Mussel

Map Projection: Massachusetts State Plane, Mainland, NAD 1983, meters
Cartographer: Regina Lyons, M.A., Candidate Tufts University
Data Sources: EPA Region 1, MassGIS, Urban Harbors Institute, Reference USA
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Population Density Census 2000
Tracts
477 - 619
620 - 759
760 - 924
925 - 1146
1147 - 1595
1596 - 2160
2161 - 2730
2731 - 3360
3361 - 4050
4051 - 4830
4831 - 5620
5621 - 6490
6491 - 7380
7381 - 8330
8331 - 9330
9331 - 10340
10341 - 11370
11371 - 12500
Census 2000 Total

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