

NO DISCHARGE AREA BACKGROUND

A No Discharge Area (NDA) is a state mandated, federally approved designation for a coastal water body. This designation prevents any discharge of boat sewage into the waters, including both treated and non-treated. Under current law, boats with Type 1 or 2 marine sanitation devices on board simply treat their sewage and then release it into the waters. This can occur anywhere in the water body, including right at a marina, near fishing areas, bathing beaches, etc. Sewage wastes from boaters may lead to poor water quality by introducing microorganisms, nutrients, and chemical products (used in the treatment process) into the marine environment. Microorganisms could then introduce diseases like hepatitis, and gastroenteritis to people in



contact with the water, and can contaminate shellfish beds and cause beach closures. In addition, nutrients associated with the sewage will lead to an excess of nutrients within the waters and may stimulate algae blooms, which could lead to the loss of eelgrass and depletion of oxygen in the water. Depletion of oxygen can stress and even kill fish and other aquatic animals. Finally, chemical products used in the treatment process can be toxic to marine and estuarine life and could pose a problem in areas where boats congregate and where there is little tidal flushing. A NDA designation would prevent any discharge of waste from a boat within the states jurisdictional area (typically 3 miles out from the coastline). The alternative method of disposal, that would be required for all boats, is to hold their wastes on board in a holding tank and use a pumpout station to remove the sewage from the boat. A pumpout station then transfers the sewage

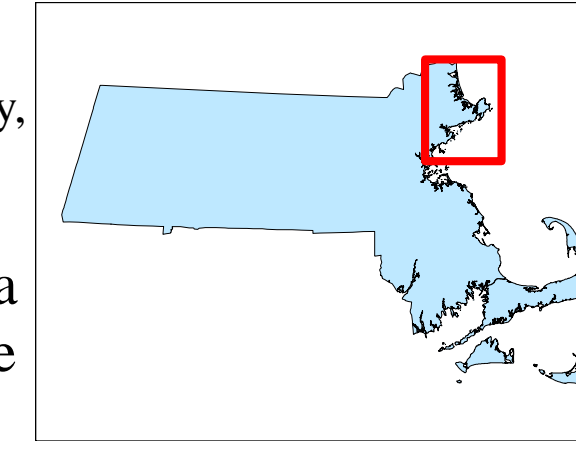
through a sewer line or septic hauler to a waste water treatment facility to properly dispose of the sewage



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



Study Area: North Shore Massachusetts (Amesbury, 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:

- For the most part there were an adequate number of pumpout facilities within reasonable distance for the marina 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.

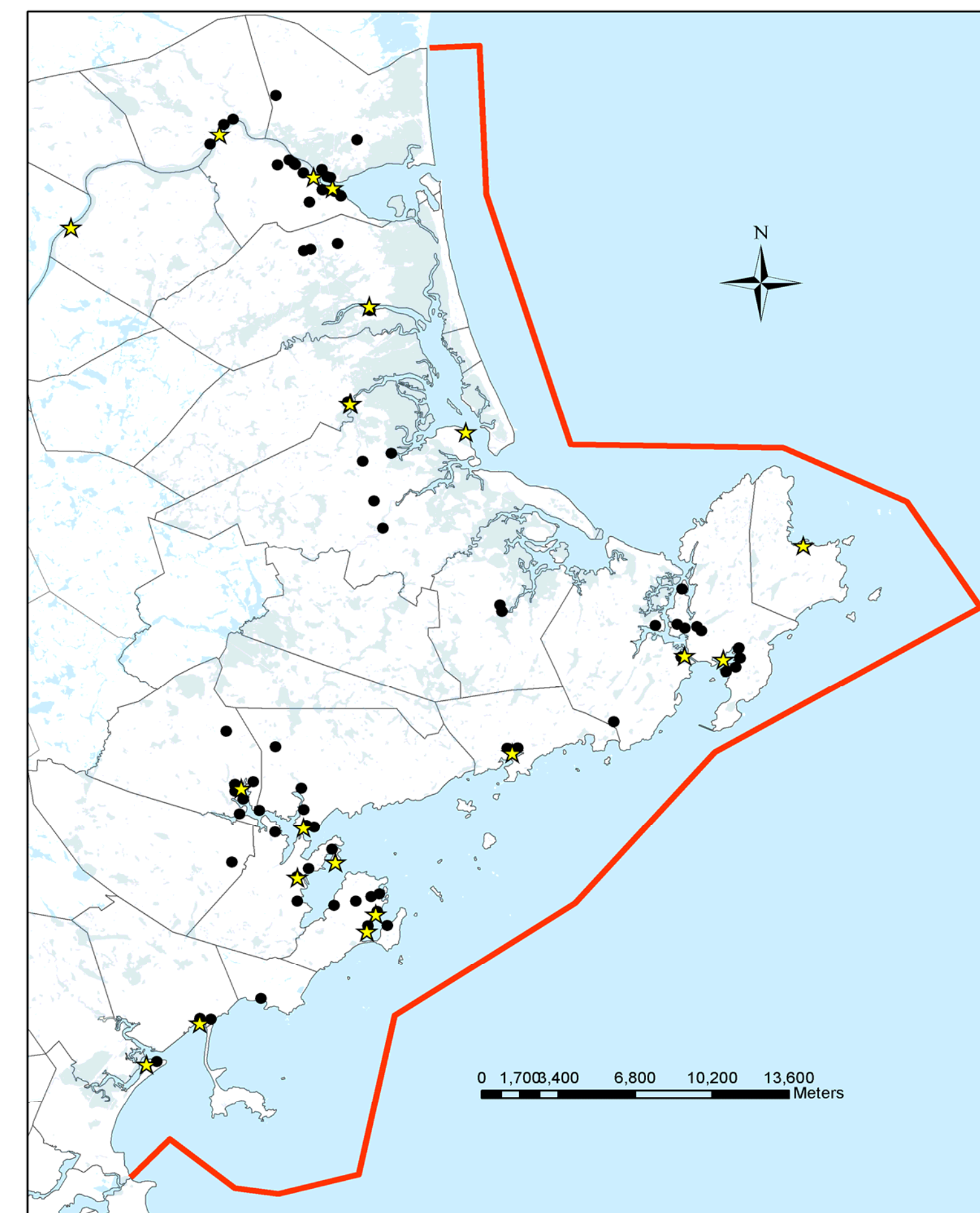
Results Continued:

- 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.
- 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:

- 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.
- 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.
- 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.

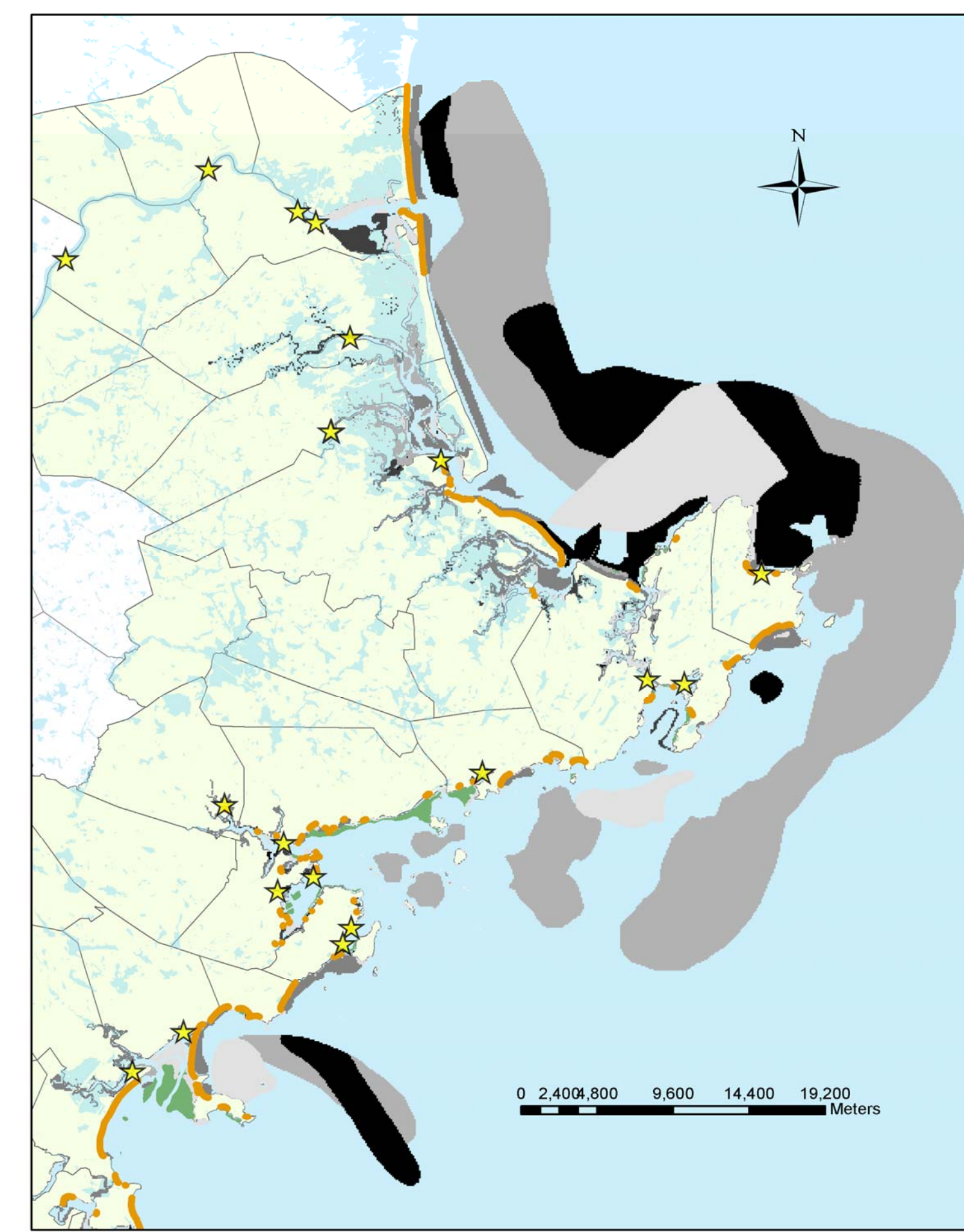
Where Are the Boats Located?
Marina and Yacht Club Locations in Reference to Pumpout Facilities



Legend

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

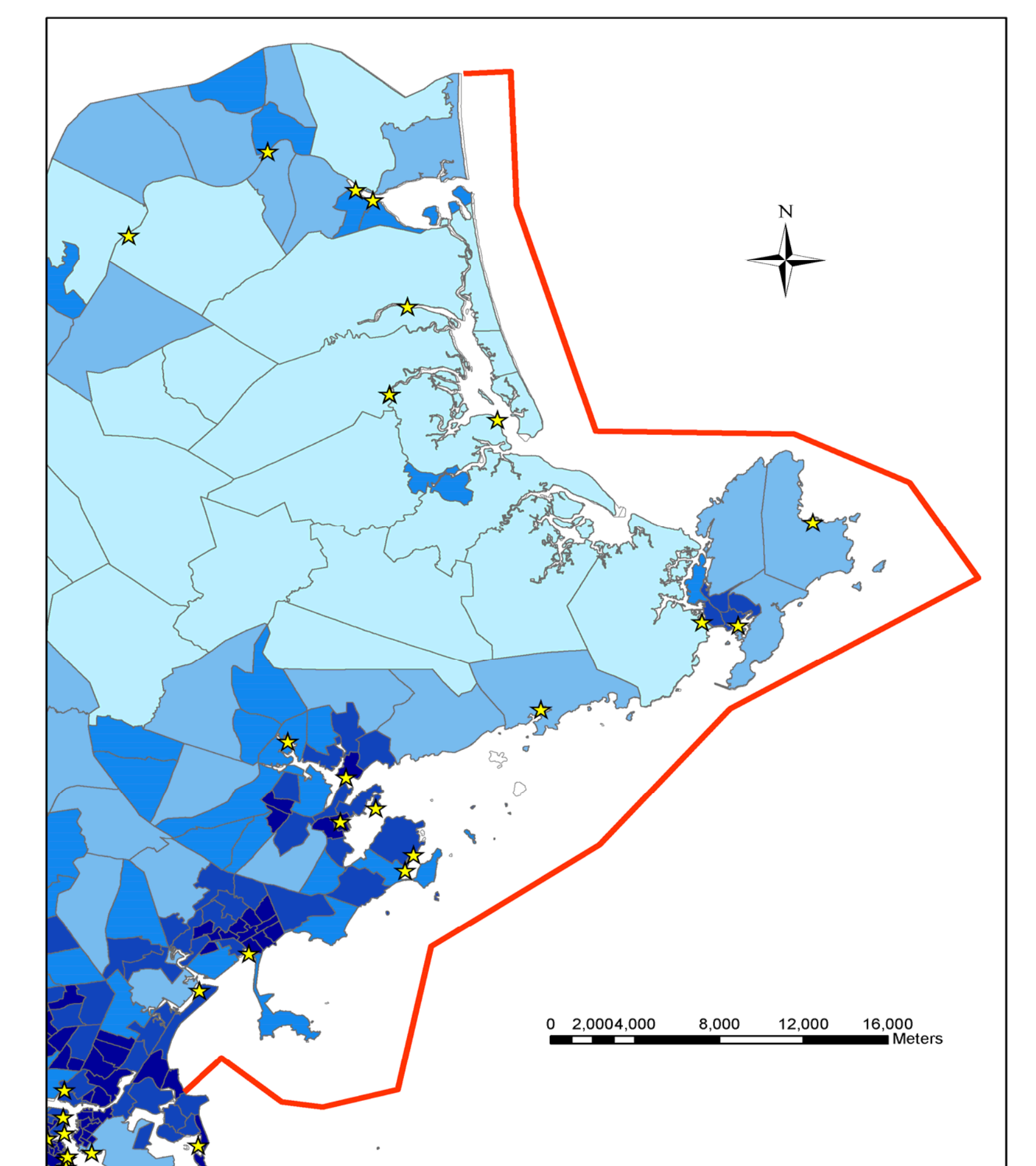
Why Does the North Shore Need Greater Water Quality Protection?
Coastal Habitats of Concern



Legend

- ★ Pumpout Facility
- Marine Beaches
- Eelgrass
- Quahog
- Oyster
- Scallop
- Mussel

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



Legend

- ★ Pumpout Facilities
- North Shore Purposed NDA Boundary

Population Density Census 2000 Tracts

- 0 - 670
- 671 - 1850
- 1851 - 4625
- 4626 - 11460
- 11470 - 105000

Cartographer: Regina Lyons, M.A. Candidate Tufts University
Data Sources: EPA Region 1, MassGIS, Urban Harbors Institute, ReferenceUSA
Map Projection: Massachusetts State Plane Mainland, NAD 1983, meters