



## The Problem

The Massachusetts Estuaries Project (MEP) technical report (available at [www.oceanscience.net/estuaries/](http://www.oceanscience.net/estuaries/)) indicates that the Rushy Marsh system exceeds its critical nitrogen threshold, resulting in impaired water quality. Although a MEP report is available, a Total Maximum Daily Load (TMDL) for nitrogen has not yet been established.

- **MEP TECHNICAL REPORT STATUS:** Final
- **TMDL STATUS:** TMDL Not Required
- **TOTAL WASTEWATER FLOW:** 1 MGY (million gal per year)
  - Treated WW Flow: 0 MGY
  - Septic Flow: 1 MGY
- **UNATTENUATED TOTAL NITROGEN LOAD (MEP):** 163 Kg/Y (kilograms per year)
- **ATTENUATED TOTAL NITROGEN LOAD (MEP):** 163 Kg/Y
- **SOURCES OF CONTROLLABLE NITROGEN (MEP):**
  - 89% Septic Systems
  - 4% Lawn Fertilizer
  - 7% Stormwater From Impervious Surfaces

## CONTRIBUTING TOWN

- BARNSTABLE

## THE MEP RESTORATION SCENARIO

- **WATERSHED TOTAL NITROGEN REDUCTION TARGET:** 79%
- **WATERSHED SEPTIC REDUCTION TARGET:** 100%  
(The scenario represents the aggregated sub-embayment percent removal targets from the MEP technical report)

## RUSHY MARSH ESTUARY

- **EMBAYMENT AREA:** 15 acres
- **EMBAYMENT VOLUME:** 3 million cubic feet
- **2012 INTEGRATED LIST STATUS:** Category 3
  - Category 3: No uses assessed
  - [www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf](http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf)

## RUSHY MARSH WATERSHED

- **ACRES:** 57
- **PARCELS:** 18
- **% DEVELOPED RESIDENTIAL PARCELS:** 33%
- **PARCEL DENSITY:** 3 acres per parcel (approx.)
- **WASTEWATER TREATMENT FACILITIES:** 0

Rushy Marsh is an embayment system with shoreline located entirely in the Town of Barnstable. The Rushy Marsh system is disconnected from Nantucket Sound during low tide with tidal waters entering the Marsh intermittently.

## Freshwater Sources

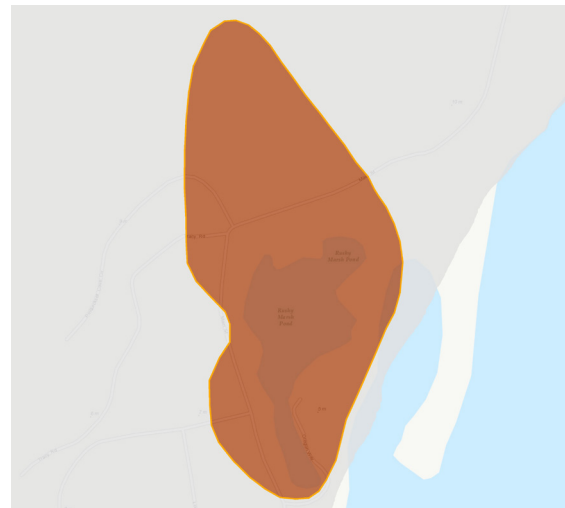
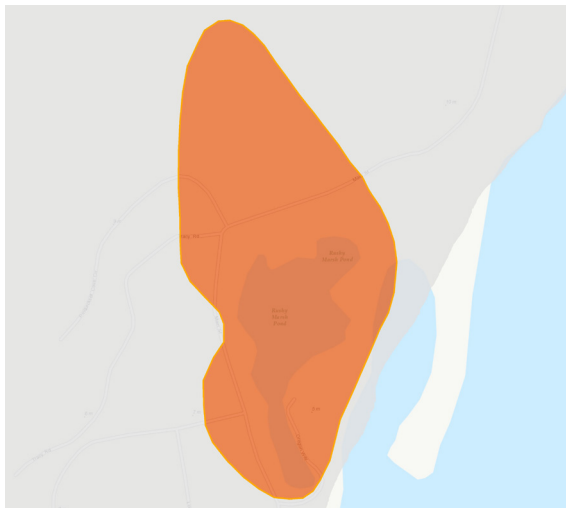
### PONDS

- IDENTIFIED SURFACE WATERS: 1
- NUMBER OF NAMED FRESHWATER PONDS: 0
- PONDS WITH PRELIMINARY TROPHIC CHARACTERIZATION: 0  
(Listed In Appendix 4C, Ponds With Water Quality Data)
- 2012 INTEGRATED LIST STATUS: None listed
- DISCUSSION: While the Town of Barnstable has been a participant in the Pond and Lake Stewardship

(PALS) program that has helped to establish baseline water quality, the pond in this watershed does not have water quality data that allows a preliminary trophic characterization.

### STREAMS

- SIGNIFICANT FRESHWATER STREAM OUTLETS:  
There are no surface freshwater contributions to Rushy Marsh.

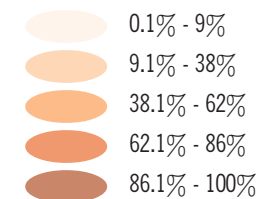


## DRINKING WATER SOURCES

- WATER DISTRICTS: 1
  - Centerville-Osterville-Marstons Mills (COMM) Water District
- GRAVEL PACKED WELLS: 0
- SMALL VOLUME WELLS: 0

## Degree of Impairment and Areas of Need

For the purposes of the §208 Plan Update, areas of need are



Subwatersheds with Total Nitrogen Removal Targetss

Figure 4-1 RM

Subwatersheds with Septic Nitrogen Removal Targetss

Figure 4-2 RM

### LOCAL PROGRESS

#### BARNSTABLE

The Town of Barnstable submitted a draft Comprehensive Wastewater Management Plan (CWMP) in 2012, which

characterized the wastewater needs of the Town of Barnstable in terms of required nitrogen reduction according to the Massachusetts Estuary Project (MEP). The earlier 2007 CWMP and its predecessor, the 1993 Needs Assessment, identified other wastewater needs according to Title 5 conditions.

The Town of Barnstable performed an inlet widening project for Rushy Marsh that met various obstacles resulting in an abandoning of the project.

Local efforts in Barnstable are described in Chapter 6.

## RUSHY MARSH

primarily defined by the amount of nitrogen reduction required as defined by the TMDL and/or MEP technical report. The aggregated watershed removal rates for Rushy Marsh are 79% and 100% for total watershed load and septic nitrogen load, respectively (see Figure 4-1 RM Subwatersheds with Total Nitrogen Removal Targets and Figure 4-2 RM Subwatersheds with Septic Nitrogen Removal Targets).

The nitrogen load from the watershed exceeds the threshold for Rushy Marsh, resulting in impaired water quality. The ecological health of a water body is determined from water quality, extent of eelgrass, assortment of benthic fauna, and dissolved oxygen and ranges from 1-severe degradation, 2-significantly impaired, 3-moderately impaired, 4-healthy habitat conditions.

## ECOLOGICAL CHARACTERISTICS AND WATER QUALITY

- **OVERALL ECOLOGIC CONDITION:** Severely Degraded
- **MAIN BASIN:** Severely Degraded
- **CHANNEL:** Severely Degraded
- **SENTINEL STATIONS:**
  - Total Nitrogen Concentration Threshold: 0.99 mg/L
  - Total Nitrogen Concentration Existing: 1.11 mg/L  
(As reported at the MEP sentinel water-quality monitoring stations)

## WATERSHEDS: MID CAPE