



## The Problem

For the purposes of the §208 Plan Update, areas of wastewater need are primarily defined by the amount of nitrogen reduction required as defined by the Total Maximum Daily Load (TMDL) or Massachusetts Estuaries Project (MEP) technical report. An MEP report will not be developed for the Buttermilk Bay watershed and other Cape watersheds where nitrogen is not believed to be a critical issue due to tidal flushing, low intensity development, or geomorphology.

All of the information below is for the Bourne portion of the Buttermilk Bay watershed, unless otherwise noted.

- **MEP TECHNICAL REPORT STATUS:** Not Being Studied
- **TMDL STATUS:** Not Being Studied
- **TOTAL WASTEWATER FLOW:** 42 MGY (million gal year)
  - Treated WW Flow: 1 MGY
  - Septic Flow: 41 MGY
- **UNATTENUATED SEPTIC NITROGEN LOAD:** 4,058 kg/Y (kilograms per year)
- **ATTENUATED NITROGEN LOAD:** Not assessed; Buttermilk Bay has significant opportunities for natural attenuation through ponds and streams.

## CONTRIBUTING TOWNS

- **NOTE:** The Buzzards Bay watershed is mostly located in the Towns of Plymouth and Wareham, which are outside of the jurisdiction of this planning effort. Data for towns outside of Cape Cod is not part of the Cape Cod Commission's database at this time.

## BUTTERMILK BAY ESTUARY

- **EMBAYMENT AREA:** 476 acres
- **EMBAYMENT VOLUME:** Unknown
- **2012 INTEGRATED LIST STATUS:** Category 5 for fecal coliform
  - Category 5: requiring a TMDL
  - [www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf](http://www.mass.gov/eea/docs/dep/water/resources/07v5/12list2.pdf)

## BUTTERMILK BAY WATERSHED

- **ACRES:** 6,916
- **PARCELS:** 824
- **% DEVELOPED RESIDENTIAL PARCELS:** 85%
- **PARCEL DENSITY:** 8.4 acres per parcel (approx.)
- **WASTEWATER TREATMENT FACILITIES:** 0

Buttermilk Bay is the northernmost estuary in Buzzards Bay with shoreline located in Bourne and Wareham. The Buttermilk Bay watershed extends from the village of Buzzards Bay into Plymouth and Wareham. The Bay supports a variety of recreational uses including boating, swimming, shell fishing and fin fishing. Buttermilk Bay is part of the Buzzards Bay National Estuary Program ([www.buzzardsbay.org](http://www.buzzardsbay.org)), which actively monitors and reports on the health of Buzzards Bay and its contributing embayments and provides technical assistance.

## Freshwater Sources

### PONDS

- **IDENTIFIED SURFACE WATERS:** 9
- **NUMBER OF NAMED FRESHWATER PONDS:** 3
- **PONDS WITH PRELIMINARY TROPHIC CHARACTERIZATION:** 0  
(Listed In Appendix 4C, Ponds With Water Quality Data)
- **2012 INTEGRATED LIST STATUS:** None listed
- **DISCUSSION:** There are a number of ponds in the Plymouth portion of the watershed; including several large ponds. The Town of Bourne has not been fully engaged in the Pond and Lake Stewardship (PALS) program that has helped establish baseline pond water quality Cape wide. Bourne has benefited from a Cape Cod Commission ponds assessment funded through Barnstable County.

### STREAMS

- **SIGNIFICANT FRESHWATER STREAM OUTLETS:**  
Not characterized
- **DISCUSSION:** There are numerous stream tributaries to Buttermilk Bay. Stream flows have not been gauged and nitrogen contributions to Buttermilk Bay have not been evaluated by the MEP.

### DRINKING WATER SOURCES

- **WATER DISTRICTS:** 3  
(including Wareham and Plymouth)
  - Buzzards Bay Water District
- **GRAVEL PACKED WELLS:** 1
  - 1 has nitrate concentrations between 0.5 and 1 mg/L
- **SMALL VOLUME WELLS:** 0

- **DISCUSSION:** The Towns of Plymouth and Wareham are served by the Plymouth Water department and Onset and Wareham Fire Districts.

## Degree of Impairment and Areas of Need

Since there is no evidence of water quality impairment at this time, wastewater needs are determined based upon other factors, such as Title5 compliance.

The 2012 Integrated list of Impaired Waters lists Buttermilk Bay as being a Category 5 impaired water body for Fecal Coliform.

The Buzzards Bay National Estuary Program, which has been monitoring water quality since the 1990s, indicates that water quality appears to be trending toward improvement.

## LOCAL PROGRESS

### BOURNE

The Town of Bourne has been engaged in wastewater planning in the village of Buzzards Bay, portions of which are located in the Buttermilk Bay watershed. In 2007, the Town of Bourne completed a Needs Assessment/Wastewater Management Study, which identified wastewater needs, including drinking and surface water quality, and Title 5 needs. Residential portions of the village of Buzzards Bay in the Buttermilk Bay watershed were identified for sewerage. In 2012, the Cape Cod Commission worked with the town to assess wastewater needs for economic growth in the downtown Buzzards

Bay area. This effort resulted in recommendations for the Town to pursue public-private partnerships as an incremental phase and culminated in the identification of disposal sites within the village. Further geophysical and hydrogeologic investigations are on-going.

Presently, Buzzards Bay is the only sewered area in the Town of Bourne. This largely includes the downtown area which is outside of the Buttermilk Bay watershed and a small area known as Hideaway Village which is located on the northern portion of the Bay. The town does not own or operate a wastewater treatment facility. All wastewater collected in Buzzards Bay is transferred to the Town of Wareham for treatment and disposal.

Local efforts by the town of Bourne are described in more detail in Chapter 6.

### PLYMOUTH AND WAREHAM

The Buzzards Bay watershed is mostly located in the Towns of Plymouth and Wareham, which are outside of the Cape Cod Commission's jurisdiction. Efforts to address water quality and habitat restoration in Buzzards Bay will require intermunicipal cooperation. In the early 1990s the Buzzards Bay National Estuary Program was successful in supporting a zoning change in Plymouth, Bourne and Wareham for decreased development density in the watershed to reduce overall nitrogen loading.