Briefing on planned and potential Nitrogen Bylaws for the Fall 2007 and Spring 2008 Wareham Town Meetings

Presentation to
Town of Wareham
Board of Selectmen

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Program

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www.BuzzardsBay.org

Wareham & Nitrogen Pages

Talk Overview
Wareham Nitrogen Pollution Issues

1) Status of the DEP's Massachusetts Estuaries Project (MEP) report for the Wareham River Estuary

2) Release of Nitrogen from Cranberry Bogs
   a) exemptions for existing bogs
   b) proposed regulations for new bogs -fall town meeting
   c) potential Health Regs for flow-through bogs

3) A No-Net or Zero Increase bylaw for larger projects potentially for Spring 2008 town meeting
(need a town subcommittee)

4) Fall Town Meeting article for a bedroom per acre or pounds per acre standard
   a) need for supporting Board of Health Regs

Wareham's waters already degraded

- Agawam River Estuary classified as "B" salt waters (only 3 in Buzzards Bay)
- Wareham River-Agawam River Estuary and Weweantic River Estuary,already classified as Impaired (degraded)
- Buttermilk Bay and Onset Bay Fair to Good, but threatened by more nitrogen

Restoring Wareham's Polluted Waters Requires Two Actions:

1) Dramatically reduce nitrogen from existing sources

2) Limit nitrogen discharges from new development

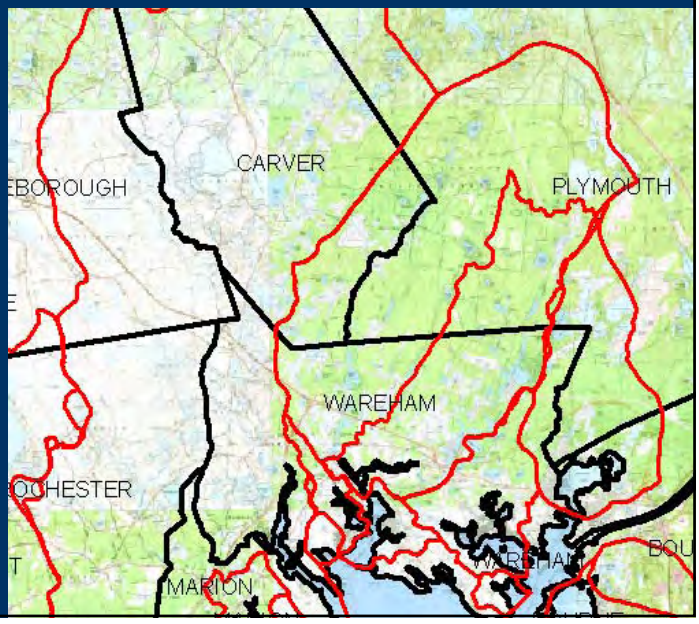
MEP report for the Wareham River Estuary not yet released: submitted to DEP, under review.

www.oceanscience.net/estuaries/

Reports for Onset Bay, Weweantic, and Buttermilk Bay may not be available for several years

Mill Pond Watershed= Agawam River Watershed

Parker Mills Pond Watershed= Wankinco Watershed



Mass Estuaries Project studies will lead to TMDLs for each estuary

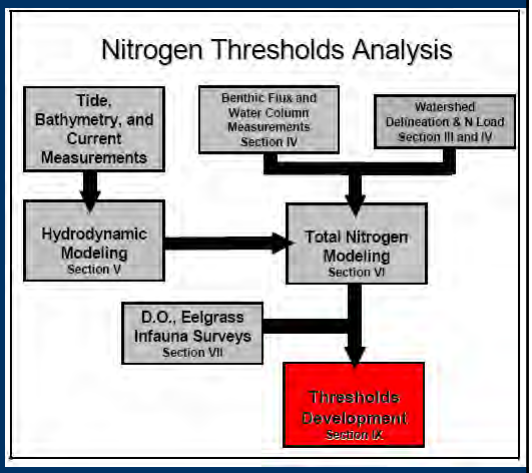
= "TOTAL MAXIMUM DAILY LOADS" (a number as in kilograms per day)

These studies will

- define existing and buildout conditions
- define nitrogen loading sources
- recommend nitrogen loading limits

reports are highly technical

A TMDL is the sum of loads that are allowable from all contributing "point" and nonpoint" sources of pollution.



It will be left up to the towns what to do and when they do it to meet these TMDLs

See the DEP TMDL Fact Sheet on their website

"Once the Technical Report and TMDL are complete, communities decide through Comprehensive Wastewater Management Planning (CWMP) how best to implement the TMDL in order to achieve the desired water quality goals. DEP reviews and approves a community's CWMP, and makes subsequent permitting decisions based on its approved Plan."

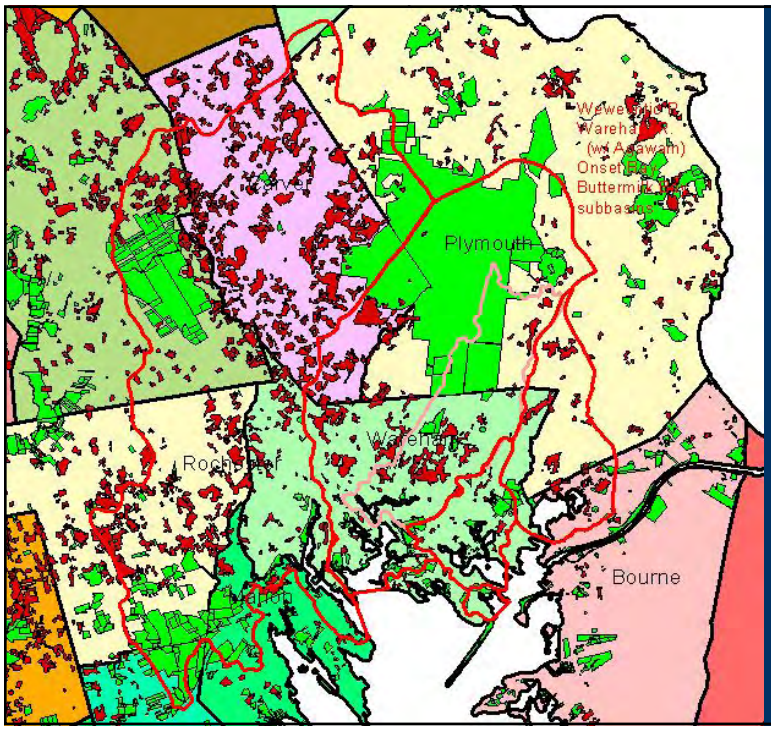
and

"How will DEP enforce a TMDL?
DEP prefers to work cooperatively with communities to protect and restore impaired waters. This is especially true when pollution comes from nonpoint sources such as stormwater runoff and on-site wastewater disposal, and where solutions are less straightforward than additional treatment of a point source discharge...."

Management Tools for Wareham

- Sewering, STF upgrades, community wastewater systems
- Zoning Overlay Management District requiring special permits limits limits on pounds per acre for pro, etc, enforced by Planning Boards
- BOHs adopt regs (e.g. all systems > 2000 gpd must discharge 10 ppm N or less)
- Protecting Open Space
- General Bylaw
- Better Stormwater regulations
- Agricultural and Turf BMPs
- Education (for lawns and other “non-point” sources

Other Sources besides wastewater.
You can develop strategies for those sources.
The spring bylaw addressed only wastewater.



Wareham has several complex watersheds

Green= protected open space

red= cranberry bogs

Preliminary Findings reported by DEP

	Total load	Local Controllable Load
Wastewater (septic)	37%	44%
WWTF	9%	11%
Fertilizer* (bogs and homes)	33%	40%
Impervious surfaces	4%	5%
Atmos. Deposition	11%	
Natural surfaces	6%	
*guestimate: 35% bogs 5% homes?		

Preliminary Findings: Mill Pond / Agawam River Watershed

Mill Pond / Agawam River Subwatershed		
	Total load	**Local Controllable Load**
Wastewater (septic)	54%	63%
WWTF	0%	0%
Fertilizer (bogs and homes)	27%	33%
Impervious surfaces	3%	4%
Atmos. Deposition	9%	
Natural surfaces	7%	

Preliminary Findings: Parker Mills Pond / Wankinco Watershed

Parker Mills Pond / Wankinco R. subwatershed		
	Total load	Local Controllable Load
Wastewater (septic)	17%	44%
WWTF	0%	0%
Fertilizer (bogs and homes)	64%	75%
Impervious surfaces	3%	4%
Atmos. Deposition	6%	
Natural surfaces	10%	

Preliminary Condition Assessment

Wareham River Estuary Subareas

Agawam/Wankinco	Moderate impairment
Marks Cove	Significant impairment
Broad Marsh River	High to Moderate impairment

Preliminary Model Finding

Estuary is over the recommended limits

To achieve the recommended limits, one modeled scenario showed that there must a 51% reduction in [existing] septic load or a 31% reduction in overall load.

It is estimated that 300 acres of eelgrass can be restored by meeting these targets.

Back to Cranberry Bogs...

1) Exemptions for existing bogs

2) Potential Health Regs for flow-through bogs

Start with a self-reporting requirement showing map of flow through bog area and annual pesticide reporting.

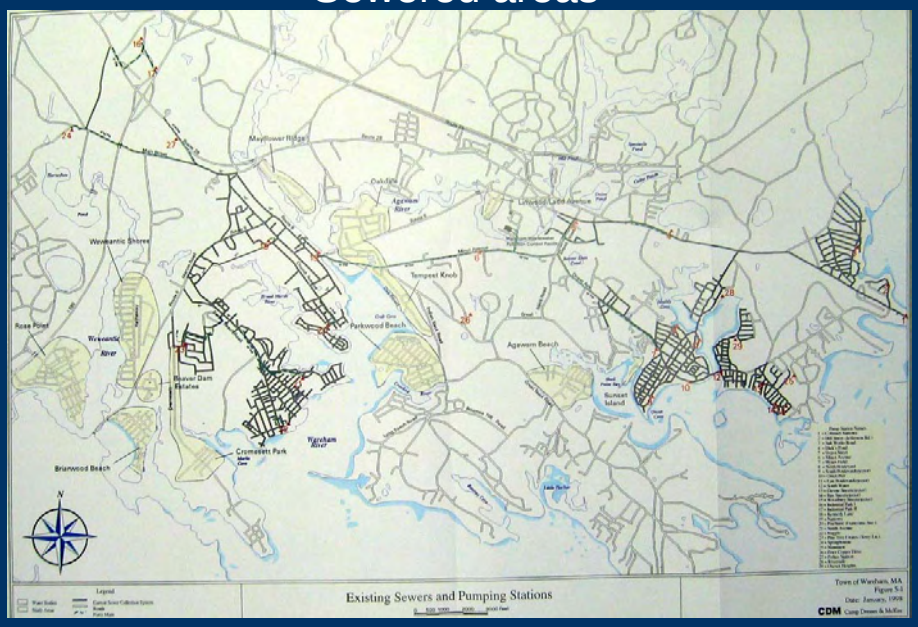
3) proposed bylaw for new bog construction -fall town meeting

Establishes a performance standard

Administered by the Board of Health because it is all about making sure new bogs are not in the water table

It is proscriptive, but also flexible in allowing variances for other solutions at least as protective

Sewered areas



Political and Policy Decision: Central Sewer versus advanced onsite septic systems

Onsite Pros:

Long term overall lower cost for large lot zoning or locations remote from sewer line

Private sector and homeowner maintains the system

Reduces subbasin interbasin water transfers

Cons:

Variable performance

Requires Operation & Maintenance contracts and towns must ensure these are in place

Treatment typically around 14 ppm now

Sewer Pros:

Centralized wastewater treatment to a consistent standard

O&M funding mandated by taxes and betterments

No homeowner worries

Cons:

Increases subbasin interbasin water transfers

High cost for remote locations or large lot zoning

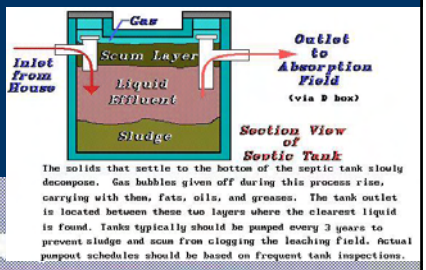
Can require larger town DPW staff

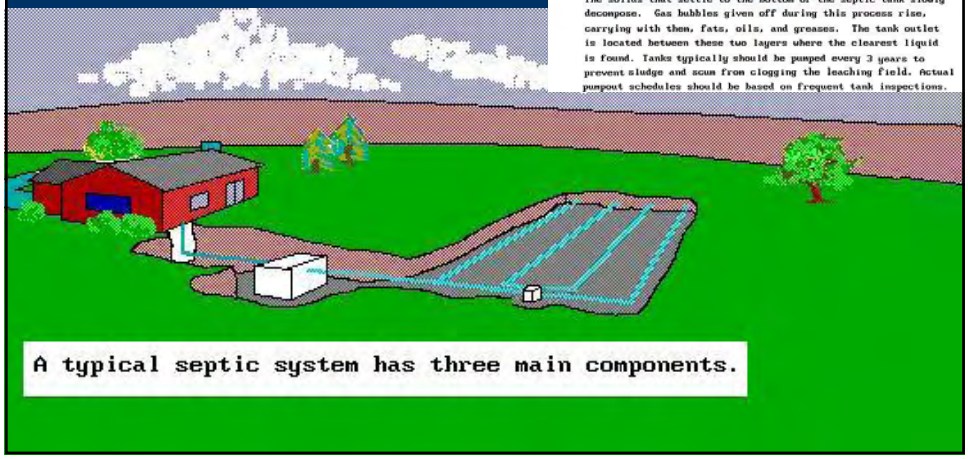
No Net Nitrogen Increase Option for Spring Town Meeting

We need a small town official work group or subcommittee to determine how you want to implement this. Some key decisions need to be made on how to implement this.

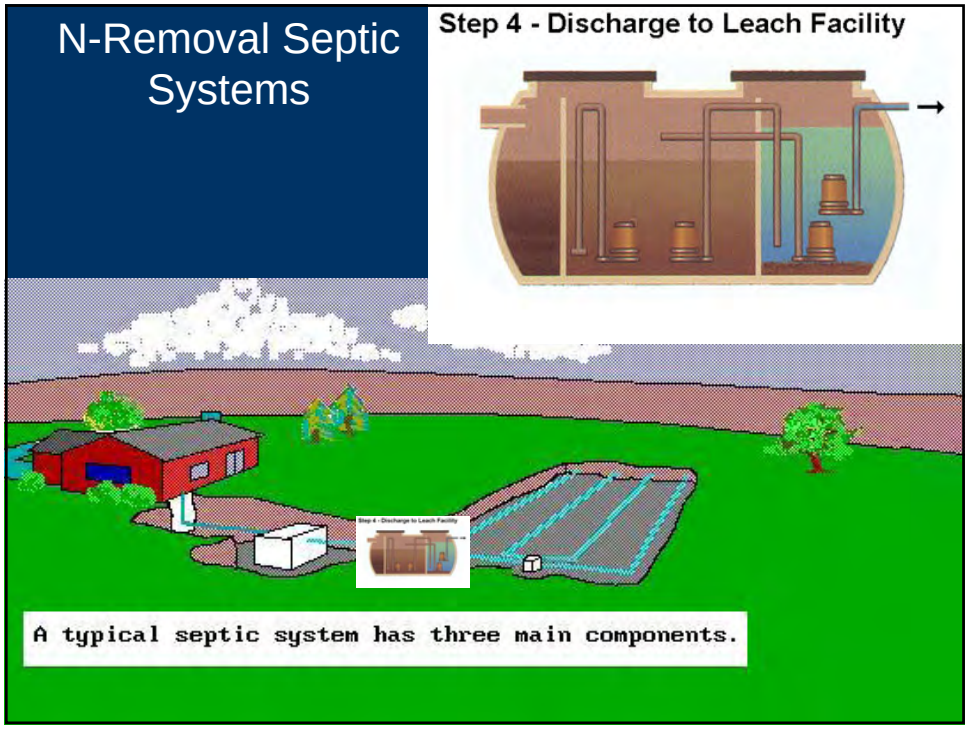
Conventional Septic System removes modest amounts of nitrogen

Working number is typically 30-38 ppm reaching groundwater.





N-Removal Septic Systems



Barnstable County Experience for Cape Cod

On Cape Cod there are 1,100 alternative septic systems for nitrogen removal (19 ppm)

~80% of these are for individual homes

~13% for condos or cluster residential

~7% for businesses, shopping plazas, etc. Supermarkets had discharge limits of 25 ppm.

Barnstable County Experience for Cape Cod

PERFORMANCE OF INNOVATIVE ALTERNATIVE ONSITE SEPTIC SYSTEMS FOR THE REMOVAL OF NITROGEN IN BARNSTABLE COUNTY, MASSACHUSETTS 1999-2007

Only 69% of single-family systems and 60% of multifamily systems met the state standard of 19 parts per million (ppm)
(Different technologies often have markedly different performance. For example, one new test system showed a remarkably low median discharge concentration of 2.7 ppm.)

"Towns that contemplate the wide-scale use of I/A systems to address nutrient issues should understand that the oversight of operation and maintenance of I/A systems is an essential part of ensuring a level of success. Quite simply, I/A systems that are not regularly inspected and occasionally monitored will not achieve treatment objectives."

Wastewater N Management General Bylaw 1

Simple Majority for Approval

Can be amended on the floor (as opposed to a zoning article)

No town board, officer, or employees thereof shall issue a permit or approval for the installation, repair, or replacement of an onsite wastewater disposal system, or use thereof, that will result in the discharge of a wastewater nitrogen loading rate that exceeds 18 pounds per acre.

Enforced by multiple Boards, but especially building department and Board of Health.

Wastewater N Management General Bylaw 2

Sets a nitrogen standard of 3 bedrooms per acre or equivalent for commercial permits as standard

1) Sewered areas, and planned sewered areas are exempt from the bylaw

2) Existing homes unaffected except:
a) failed systems at property transfer
b) the Board of Health is already requiring replacement or expansion of a septic system because of the addition of bedrooms)

3) Any other system failure would require replacement with a conventional title 5 system

4) New Construction: Guarantees a 3 bedroom lot on any parcel on any small lot, irrespective of size, but require a N removal system

5) Would require N removal systems on most bigger projects, but encourages creative solutions by developers like open space protection and transfer of development rights.

END