



YARMOUTH WASTEWATER FREQUENTLY ASKED QUESTIONS

Over the last eight years the Town of Yarmouth has been diligently working through its Integrated Water Resources Planning (IWRP) Committee and the Wastewater Implementation Committee (WIC) to develop a program to address wastewater management needs, protect drinking water sources and restore valuable estuaries. The Frequently Asked Questions (FAQs) is a comprehensive document, created by employees of the Town, to better assist with any questions you may have on the Wastewater Project. Construction financing of Phase One and design of phase two is being brought before voters at a Special Town Meeting on September 12, 2011.

YARMOUTH WASTEWATER FREQUENTLY ASKED QUESTIONS

TABLE OF CONTENTS	Page
-------------------	------

Chapter 1 - General Background

- | | |
|---|---|
| 1. What is the Comprehensive Wastewater Management Plan (CWMP)? | 5 |
| 2. What does this project involve? | 5 |
| 3. What is the Massachusetts Estuaries Project (MEP)? | 5 |
| 4. Who is involved in this project? | 6 |
| 5. Project Timeline | 6 |
| 6. MEP Science | 7 |
| 7. Why does Yarmouth have to do this? | 7 |
| 8. Why is this sewer project proposed now? | 8 |
| 9. Can Yarmouth afford not to do this? | 8 |
| 10. Statements of Support | 8 |
| • Board of Health | |
| • Board of Selectmen | |
| • Capital Budget Committee | |
| • Chamber of Commerce | |
| • Community & Economic Development Committee | 8 |
| • Conservation Commission | 8 |
| • Finance Committee | 9 |
| • Planning Board | 9 |
| • Waterways & Shellfish Advisory Committee | 9 |
| 11. Who can I call for more information? | 9 |

Chapter 2 - Financing

- | | |
|--------------------------------------|----|
| 12. How much will this project cost? | 10 |
|--------------------------------------|----|

13. How much will this project cost me?	10
14. What is a betterment?	11
15. Will there be betterments?	11
16. What did \$3.1 Million approved at the April 2008 Town Meeting buy?	11
17. Homeowner project costs	12
18. Homeowner Hook-up	12
19. Financial Assistance	13
20. State Revolving Funding (SRF)	13
21. State/Federal Aid	13

Chapter 3 - Environmental Issues

22. Why is nitrogen an issue?	14
23. What is an Estuary?	14
24. Why is eel grass so important?	14
25. Project requirements	15
26. Will Wastewater Treatment reduce the concentrations of nitrogen in the effluent entering recharge sites in conformance with the Total maximum Daily Load (TMDL) of nitrogen?	15
27. Individual nitrogen efforts	15
28. Lawn Fertilization	15
29. Groundwater wells	15
30. Nitrogen removal by watershed	16
31. Neighboring Community participation	16
32. Is a wind turbine part of the project?	16

Chapter 4 - Wastewater Treatment Issues

33. Why are sewers necessary?	18
34. Who will be sewerred?	18
35. System Technology	19
36. Outfall Pipe	19

37. Facility Appearance	19
38. Centralized Treatment vs. Neighborhood Treatment	19
39. Site Selection	20
40. Is the Wastewater Treatment Plant allowed through Zoning to be at the proposed site without a special permit?	21
41. Is the Proposed size of the treatment plant appropriate to the needs of the Town?	21
Chapter 5 - Project Implementation	
42. Project Timetable	22
43. Connection Timeframe	22
44. Household Title 5 grace period	22
45. Access during Construction	22
46. Traffic Detours	23
47. Appearance after Construction	23
48. Future project phases	23
49. Available Regionalization Options?	24
50. Cape Cod Commission Review	25
Chapter 6 - Economic Development	
51. Uncontrolled Growth?	26
52. Flow Neutral	26
53. Future Growth Control	26
54. Growth Control Mechanisms and effects on personal property	27
55. Will my Property values Decrease?	27
Index, Definitions & Acronyms	28

CHAPTER ONE

GENERAL BACKGROUND

1. What is the CWMP?

The purpose of the Comprehensive Wastewater Management Plan (CWMP) is to utilize a scientific and logical planning process designed to meet Yarmouth's long-term wastewater needs for the next 20 years and beyond. Specifically, the CWMP will:

- Address nitrogen issues that are degrading the water quality of the harbors and estuaries along the Yarmouth shore, and affecting the fishing and tourist community;
- Protect the high quality drinking water that exists in the Town's municipal groundwater wells;
- Preserve the valuable fresh water pond resources in Town;
- Provide future utilities for Yarmouth to implement smart growth via its Activity Centers Initiative; and
- Meet acceptable wastewater management practices through continued use of onsite Title 5 subsurface disposal systems and through the construction of a sewer collection and treatment system.

By addressing these needs Yarmouth will remain a vibrant tourist community that provides a desired quality of life for year-round and seasonal residents.

2. What does this project involve?

This project consists of two elements. One is the Massachusetts Estuaries Project (MEP), which identifies embayments to waterways where nitrogen reductions are required to occur. The other is a comprehensive review of Yarmouth's wastewater management practices to evaluate how these reductions can best be realized.

Using available information and projections, the future needs of the Town and alternatives to address those needs have been evaluated over the past seven years. A copy of all the work produced to date is in the Yarmouth CWMP, which is posted on the Town of Yarmouth Web site and available as hard copies at the Town libraries.

3. What is the MEP?

The MEP is evaluating the nitrogen impacts on about 89 estuaries in southeastern Massachusetts, including all of Cape Cod. Its purpose is to develop nitrogen thresholds for each estuary/embayment that will restore or maintain healthy water quality and to evaluate how to manage the nitrogen entering the embayment.

Ultimately the MEP will be utilized to develop an acceptable Total Maximum Daily Load (TMDL) for nitrogen that can enter the embayment. Under the Federal Clean Water Act the Environmental Protection Agency (EPA) and the MassDEP have the power to require the TMDL to be met by the communities contributing nitrogen to the particular embayment. The MEP addresses three embayments within Yarmouth: Lewis Bay (shared with Barnstable); Parkers River; and Bass River (shared with Dennis).

The MEP is funded by the communities and the state. The School for Marine Science and Technology (SMAST) is conducting the program in partnership with the local communities, the Cape Cod Commission (CCC), the United States Geological Survey (USGS) and MassDEP.

4. Who is involved in this project?

Several groups are involved in this process both at the local and state level. Locally the Integrated Water Resources Planning Committee (IWRPC) is coordinating the CWMP process, which includes consultants, Town staff, concerned citizens and many other stakeholders. At the state level the Massachusetts Department of Environmental Protection (MassDEP) is overseeing the MEP. The IWRPC is the lead group for the Town and they contracted with Camp Dresser & McKee Inc. (CDM) for technical guidance during this process. Coordination amongst all the groups has been crucial to the success of developing an implementable program that meets the needs of Yarmouth.

5. What is the timeline of the CWMP project?

This CWMP project began in 2003. Water quality sampling for the MEP began a few years before that. Several phases of the overall CWMP have been completed, including:

- The wastewater needs assessment with preliminary MEP input
- Effluent recharge site screening
- Treatment technology evaluations
- Sewer system collection technology evaluations
- Cost, environmental and institutional evaluations of several wastewater collection, conveyance, treatment, and effluent recharge alternatives

Subsequent to these phases the IWRPC next selected a sewer system master layout around a centralized treatment system with multiple effluent recharge locations. The Lewis Bay Watershed MEP was issued in December 2008 and the Parkers River Watershed MEP was issued in May 2010. Both support the proposed sewer system areas defined in the master plan. The Bass River Watershed MEP was issued in pre-draft form in October 2010 and will be further evaluated over the next year along

with Dennis. The recommend Phase 1 program for sewers in the CWMP is from the Barnstable Town line to the Parkers River.

The Draft CWMP and an Expanded Environmental Notification Form (EENF) were filed in September 2010 with the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA), which oversees the Massachusetts Environmental Policy Act (MEPA), and the Cape Cod Commission, which conducts a Development of Regional Impact (DRI) review. A certificate was issued by EOEEA (EEA # 14659) on November 24, 2010, approving the draft filing and authorizing a Single Environmental Impact Report (EIR) that addresses the issues raised during the EENF review. The Single EIR will be filed in mid-2011. MassDEP has also reviewed and approved the Draft CWMP.

6. How do we know the science behind the MEP reports is valid?

This is a fundamental question but one that has been answered at several levels. The MEP is being conducted mainly by SMAST at UMass Dartmouth for the MassDEP with input from several other agencies including the USGS, the Cape Cod Commission and MEP project communities and their consultants. The MEP uses at least four years worth of field water quality sampling data for each estuary that helps calibrate the linked computer models common to the science and engineering community. Results for each watershed MEP report are scrutinized by all of these involved parties.

Additionally, the Town of Orleans contracted with the Woods Hole Group (WHG) to independently review the MEP methodology utilized in its reports. While the WHG review suggested potential modifications to the models utilized, the bottom line in their report findings was that the methodology and modeling results were sound.

The recommended Yarmouth wastewater program is projected to be implemented in a phased manner over more than 20 years. This allows for a concept known as adaptive management, allowing the nitrogen removal program to be modified as either new information presents itself or conditions under which the modeling occurred change. This flexibility allows for appropriate changes to be made as the water quality is being restored, resulting in cost savings.

7. Why does Yarmouth have to do this?

The Town is proposing to construct a sewer system to protect beaches, rivers and harbors, to protect drinking water and to encourage the economic revitalization of the Route 28 business corridor. A comprehensive study has shown that the water quality of Lewis Bay, Parkers River and Bass River has deteriorated because of nitrogen that enters the groundwater from septic systems. We have seen visible results of this problem in the form of cloudy water, excessive sea weed, loss of shellfish and, in Parkers River, we have had fish kills where many fish suddenly die because of water quality problems. Some of the drinking water wells exceed the nitrogen levels recommended by the Massachusetts Department of Environmental

Protection and the Cape Cod Commission. Finally, it is in the Town's interest to retain local control of this large capital project. The state and federal environmental regulatory authorities are under pressure from a lawsuit to enforce the water quality standards of the federal Clean Water Act. If the Town does not initiate this project on its own terms, there is a real possibility that the project will be forced upon us by an outside agency in which case local residents will have less say on important issues regarding cost, traffic disruption, the timeline for constructing sewers and economic redevelopment.

8. Why is this sewer project proposed now?

The water quality problem is already serious and it will take many years to fix even if we start now. Also, the state of MA is offering 0% loans for a limited number of water quality protection projects and for a limited period of time. The Town has applied for these funds and is on the list of projects to be funded this year subject to Town approval of the project. The resulting savings to Yarmouth taxpayers exceeds \$11 million for phase 1. It is expected that more towns will be competing for these funds next year and thereafter. Postponing the project could result in the Town not receiving this state funding. Also, the state law that created this water protection funding specifies that if a Town is mandated to undertake a wastewater project by a state or federal agency, then the Town cannot receive 0% interest loans.

9. Can Yarmouth afford not to do this?

The quality of life that we enjoy here in Yarmouth is closely tied to our beautiful beaches, rivers and estuaries. . Our property values and our economy is primarily driven by tourism which is in turn dependent on maintaining the quality of our beaches and the natural environment generally. Even if the MassDEP did not regulate a plan to meet the TMDLs for each embayment, we must maintain our natural resources in order to protect our economy and our quality of life.

10. Who supports this project?

COMMUNITY & ECONOMIC DEVELOPMENT COMMITTEE

The CEDC supports the Comprehensive Wastewater Management Plan as well as the "Option 4" financing plan

CONSERVATION COMMISSION

The Conservation Commission supports the Town's efforts to improve and protect the Town's natural environment. The Conservation Commission will review all applicable aspects of the construction project as it proceeds to ensure compliance with State and Town Wetland bylaws

FINANCE COMMITTEE

The Finance Committee acknowledges that the Waste Water Implementation Committee has extensively studied the needs and alternatives and accepts those recommendations as the basis for financial projections associated with the wastewater implementation plan. Although the Finance Committee has not yet had the opportunity to review the details of the fiscal elements of the wastewater project, and plan to do so in the future, we have reviewed four alternatives proposed by the Wastewater Implementation Committee for the apportionment of costs to users and taxpayers. Of the options presented the Finance Committee prefers alternative 4 which consists of financing 75% of the capital cost through property taxes and a 25% capital offset through increased water and sewer rates.

PLANNING BOARD

The Planning Board is supportive of the Town's Comprehensive Wastewater Management Plan and is actively involved in related efforts to facilitate and direct the resulting economic development opportunities. The Planning Board expresses no opinion regarding the financing plan for the proposed wastewater plan.

WATERWAYS AND SHELLFISH ADVISORY COMMITTEE

In our continuing pursuit of clean waterways and environmentally healthy and productive rivers and embayments, that support abundant and diverse populations of living natural resources, we, the Waterways and Shellfish Advisory Committee, support the Town of Yarmouth's Comprehensive Wastewater Management Plan. It is imperative that we remove the excess nitrogen that is overfeeding both micro and macro algae resulting in extreme algae blooms that greatly reduce water clarity, accumulate on our beaches, smother beneficial aquatic vegetation as well as fish and shellfish habitat, and decreases the dissolved oxygen levels that results in fish and shellfish kills. We recognize the crucial efforts that the Town has taken to improve our water quality, and understand the critical role that sewerage will play in restoring our rivers and embayments to a more environmentally healthy and productive state, for resident, visitors and future generations to enjoy.

11. For more information, who do I contact?

Public outreach is important to this project and Town Employees are available to answer your questions. Please contact the Department of Public Works at 508-398-2231, ext 1290 or wic@yarmouth.ma.us.

Ongoing Public presentations are being made at Board of Selectmen meetings and Chamber of Commerce meetings to keep residents and business owners informed about the progress. Hard copies of the project documents are available at Town Hall, Yarmouth public libraries as well as on the Town's website at www.yarmouth.ma.us

CHAPTER TWO

FINANCING

12. How much will this sewer project cost?

The project is estimated to be done in a minimum of five phases to be constructed over a period of approximately 25 years. Phase 1 is projected to cost approximately \$58 million although the actual amount will not be known until after funds are approved and bids are received. At this time, we have only a rough planning level estimate of the cost of the entire five phase wastewater program. Our present estimate is \$275 million based on today's prices (not adjusted for inflation) to be financed over approximately 40 years.

13. How much will this sewer project cost me?

The cost of all five phases of the proposed project is estimated to be \$275M. The initial funding sought at the Special Town Meeting on September 12, 2011 will be \$58M. The Board of Selectmen have endorsed a funding plan for the project as follows:

75% Property Taxes: In order to pay for design and construction of the sewer system, a property tax increase in the form of a debt exemption will be required. This funding mechanism spreads the significant project cost over the entire property tax base therefore enhancing its affordability.

Betterments: The Board of Selectmen have determined that betterments will not be assessed for this project.

25% Capital Costs of the project will be offset by increased water fees and sewer fees. This funding mechanism pushes some portion of the capital from property value based property taxed to water and sewer use.

Connection Fee: Those properties in the sewer district will be required to connect to the sewer system. The cost to connect the private home or business to the sewer collection pipe is paid by the property owner. The estimated cost to connect to the system is estimated to be between \$4,000 - \$7,000 for the average residential home.

Sewer Fees: To pay for the annual cost to operate and maintain the sewer system, properties connected to the system will pay user fees. For Phase 1, user fees are estimated to be \$400 to \$600 for a typical single family home. Actual costs will vary depending on the actual water usage of the property.

The overall project cost over the life of the project may be determined by individual property owners by using the project cost calculator available at the Town’s website <http://www.yarmouth.ma.us/index.aspx?NID=1146> and inputting your property address. The immediate financial input for the project will be minor until 2014 at which time the initial project borrowing costs become due. The cost for the snapshot year 2021 (about the average cost over the life of the project for the average resident property owner) may be seen below for a homeowner with a home valued at \$300,000.

	<u>Inside Sewer Area</u>		<u>Outside Sewer Area</u>	
	Year	Month	Year	Month
2021 Increased Property Tax	\$399	\$33	\$399	\$33
2021 Increased Water Fee	\$50	\$4	\$50	\$4
2021 Total Sewer Fee	\$500	\$42	\$0	\$0
Total	\$949	\$79	\$449	\$37

* Plus a Connection Fee (est. @ \$4,000 - \$7,000)

14. What is a betterment?

A Betterment is a special property tax for a public improvement which betters your property. This betterment would be payable over a period of up to 20 years.

15. Will there be betterments?

The funding plan for this project endorsed by the Board of Selectmen will not include any betterment assessments.

16. What did \$3.1 million, approved at the April 2008 Town Meeting, buy?

The Town approved this money at the April 8, 2008 Town Meeting, and it is funding development of design documents and related permitting for the first phase of the wastewater program. The first phase design includes about 12 miles of pipelines mainly along Route 28 from the Barnstable Town line to the Parkers River Bridge, three pumping stations, and a 1.0 million gallon per day (mgd) treatment plant and associated effluent recharge basins next to the Water Department facility on Buck Island Road. Updated topographic surveys and borings to define soil characteristics and groundwater elevations are also included. Permitting includes MassDEP groundwater discharge permits, MassDOT permits for work in Route 28 and local conservation commission permits.

17. What will it cost for a homeowner to connect to the sewer? What is the annual cost?

Since every home will have to hire a contractor licensed by the Town to excavate a trench and install a pipe from the home to the connection point, the cost will vary depending on the length and depth of the excavation and whether the existing exit pipe is in the front of the home. The amount of landscaping and/or paved surfaces that is disrupted and repaired as part of the excavation for the connection will also influence the overall cost. The estimated homeowner cost to connect is expected to be in the range of \$4,000 to \$7,000 including decommissioning of the existing septic system. For gravity and vacuum sewer connections, there should be essentially no annual maintenance cost. For low-pressure sewer connections requiring a grinder pump unit, the Town will provide the pump unit and the homeowner will pay to have it installed. The annual electrical cost for these pump units should be equal to a small household appliance used over a year's time.

There is an annual user charge for the sewer system which is estimated to be between \$400 to \$600 for a typical residence, depending on how many customers are using the system and how much water is used annually. The more users on the system to share in the fixed collection, conveyance, and treatment costs, the lower the individual costs will be.

18. What is the responsibility of the homeowner in respect to hardware for sewer connection?

The answer to this question varies based on existing conditions and the type of collection system serving the property. Yarmouth will have three different types of collection systems: gravity, vacuum, and low-pressure lines. Each of these systems requires somewhat different hardware that the Town will install.

For *gravity and vacuum collection systems*, homeowners only need to supply a pipe from their existing pipe outlet, where it exits the foundation of the home, over to the connection point provided at the property line for that home's connection. The Town is proposing to use vacuum sewers extensively to minimize excavation depths, minimize infiltration, expedite construction time, and provide the most cost-effective overall system. If the elevation of a home's exit pipe is much lower than the road surface, the vacuum system connection point may require a pump to lift waste up to the connection point. This would be a very rare situation or could happen in a case where a homeowner wanted to finish a basement with a bathroom lower than the connection point provided.

Low-pressure areas are topographically located such that vacuum sewers are not feasible, thus requiring a pump to be utilized with a smaller pressure pipe to make the connection to the collection system. A vast majority will require a pipe installed in a trench from the home to the connection point provided at the property line. The

Town will provide the exterior pump unit and the homeowner will hire a contractor to install it along with appropriate piping and wiring. Inspectors for the Town will consult with homeowners during the construction phase to determine the best connection point location and will instruct the installation contractor where to install the point of connection.

19. What resources are available to assist a homeowner in paying for the new sewer connection?

The County has low-interest loans available for septic system repairs and the same is true for sewer connections, if eligibility requirements are met. Through the Community Septic Management Loan Program, Barnstable County has low-interest loans available for septic system repairs and sewer connections for eligible households. In addition, the Town is eligible to borrow up to \$600,000 through the U.S. Department of Housing and Urban Development's "Section 108" Program to assist low- and moderate-income households with costs associated with connecting to municipal sewer.

20. What is "SRF" funding and will the Town apply for it?

Low interest loans for water and sewer projects are offered on a competitive basis by the MA Water Pollution Abatement Trust State Revolving Fund (SRF). There are two categories of loans one of which subsidizes market interest rates by about 2% (e.g. from 4% to 2%); the other offers 0% interest loans – both include administrative fees which amount to less than 0.2%. Receiving a 2% discount on interest is equivalent to a grant of over \$11 million for a \$55 million project. The Town applied for a \$55 million SRF loan for Phase 1 of this sewer project and we have been listed #17 out of 21 on the intended use plan for 2011 by the state DEP. The Town is now required to approve the equivalent funding amount for the project in order to receive the SRF loan. Funding normally has to be approved by June 30th but the Town received an extension until September 14, 2011. If not funded, the Town would need to re-apply for the 2012 SRF funds and likely face increased competition from other communities on and off the Cape.

21. Is the Town seeking state and/or federal aid?

Because of the tremendous financial needs throughout the country, the EPA no longer provides grants but does provide some federal funds to states for low-interest (2 percent) loans which are administered by the DEP, called the "State Revolving Fund" (SRF) loan program. Communities with loans pay back the state and they in turn loan the money to new communities seeking money, assuming the new communities qualify for the competitive intended use plan. Communities on the intended use plan for the given year are ranked based on a DEP ranking criteria. The nutrient issues documented in Yarmouth estuaries raise our ranking with DEP. However, three times as many communities seek SRF loans than there are funds available. The Town will seek other funding opportunities, State or Federal, as they arise.

CHAPTER THREE

ENVIRONMENTAL ISSUES

22. Why is nitrogen an issue?

Nitrogen deposited in an estuary or embayment acts as a fertilizer and stimulates the over production of algae in the salt water. The algae can become so dense that desirable eel grass beds, shellfish resources, and overall water quality are diminished, greatly affecting boating, swimming and overall aesthetics. Reduced light penetration affects healthy plant growth. Decaying plants and algae settle to the bottom using up oxygen in the water, often resulting in fish kills and odors. If nitrogen is allowed to continue to flow to the embayments at excessive levels then the embayments will become severely degraded.

Nitrogen enters the embayments from several sources. These sources include wastewater effluent from onsite septic systems, infiltration from lawn and garden commercial fertilizers, stormwater runoff from pavements and roofs, and atmospheric deposition. Nitrogen from these sources enters the groundwater or surface waters that ultimately discharge to the embayments. The first three sources are considered to be controllable while the direct atmospheric deposition is not. Title 5 septic systems only remove about 10 to 15 percent of the nitrogen entering them while more sophisticated onsite nutrient removal treatment systems can remove up to about 50 percent nitrogen. Studies on the Cape and specifically in Yarmouth have shown that nitrogen entering the embayments from septic systems accounts for 75 to 85 percent of the controllable source.

23. What is an Estuary?

An estuary is A bay, river, creek or salt pond that is influenced by ocean tides and where fresh water from either over land run-off or ground water mixes with the salt water.

24. Why is eel grass so important?

Eel grass essentially serves two key purposes. First, it provides a habitat for aquatic organisms by creating incubation areas for marine life, generating oxygen for use by fish and other healthy organisms and serving as ideal shellfish bed areas. Second, it indicates water quality health. Eelgrass is very sensitive to nitrogen levels. As more nitrogen enters the water body, acting as a fertilizer, more algae grows, blocking the sunlight and killing off the eelgrass. The loss of eelgrass results in less oxygen and no healthy habitat for marine life, leaving a less diverse aquatic community and aesthetically unpleasant looking waters.

25. Who is requiring us to spend these large sums of money to address nitrogen removal from the estuaries?

The MassDEP is utilizing MEP results to establish a TMDL for that specific estuary. MassDEP has been tasked with establishing the TMDLs and enforcing programs to meet them per the Federal Clean Water Act. The loading listed in the TMDL is that amount of nutrient (in this case nitrogen) that can be discharged to that water body and still maintain a healthy environment for fish and other aquatic life.

26. Will wastewater treatment reduce the concentrations of nitrogen in the effluent entering recharge sites in conformance with the Total Maximum Daily Load (TMDL) of nitrogen?

Yes! All phases of the Comprehensive Wastewater Management Plan will satisfy the nitrogen balancing required by the Total Maximum Daily Load limit set for each estuary.

27. As a Yarmouth resident, what can I do to reduce my nitrogen contribution?

While septic systems contribute 75 to 85 percent of the controllable nitrogen residents can minimize the remaining contribution sources. Using slow-release fertilizers and not applying commercial fertilizers before a rainstorm where it can run off would help. Using alternative landscapes that do not require as much fertilizer would also have a positive impact. Channeling run-off from paved surfaces or roofs on to vegetated areas for nitrogen uptake will help versus direct discharge into a surface water or coarse sand where it enters the groundwater table. The run-off from these areas (or stormwater) contains the nitrogen from atmospheric deposition. While these actions alone are not likely to meet the nitrogen removal recommended in the MEP reports for embayments in Yarmouth, they will help reduce the overall sewerage required.

28. Could we just stop fertilizing our lawns and solve the problem?

There are essentially three main sources of controllable nitrogen (atmospheric nitrogen is considered not controllable): wastewater, including septic system effluent, stormwater run-off, and fertilizers. Typically these sources account for about 85, 8 and 7 percent of the controllable nitrogen load, respectively, in a given watershed. With requirements to remove between 80 and 100 percent of the nitrogen load to restore water quality, merely eliminating fertilizer use will not achieve that goal. Education programs on how to best use fertilizers to minimize their impacts should be implemented. Similarly, alternative landscapes that do not require as much fertilizer use should be encouraged. Most golf courses already incorporate both aspects. Minimizing fertilizer use will help decrease this nitrogen component and could help reduce future sewer system costs if benefits are recognized in the adaptive management plan.

29. If impacts are affecting estuaries, are the groundwater wells protected?

Fresh water bodies and groundwater supply wells are more resilient to nitrogen impacts than salt water embayments. Salt water is much more sensitive to elevated

nitrogen levels, as the recommended limits to the estuaries are less than 1.0 mg/L, and limits to drinking water are 10 mg/L. In general, the Yarmouth municipal groundwater drinking supply wells have less than 1.0 mg/l (Nitrate), which indicates the Zone of Contribution to the Town's wells have limited development (only a few septic systems) and are sufficiently protected. However, at two Town wells nitrate concentrations have increased steadily over the past 30 years and are now above 5 mg/l, indicating they are affected by nitrogen from the septic systems in the densely developed areas around them.

30. Will all of the wastewater within the MEP watersheds need to be conveyed out of the watersheds to achieve the desired levels of nitrogen removal?

Not necessarily. Although nitrogen reductions are expected for each of the MEP watersheds, the amount of reduction is likely to vary in each watershed. A watershed requiring 100 percent nitrogen reduction will likely require sewerage and recharge of the treated effluent outside of that watershed. However a watershed requiring 70 percent nitrogen reduction could result in sewerage a higher percentage than that (say 80 percent) since the septic system effluent contains nitrogen with around 35 mg/l and treatment plant effluent contains around 3 mg/l or about 90 percent nitrogen removal. In this case 72 percent of the nitrogen would be removed from the area sewerage allowing the effluent to be recharged in the watershed. Combined with fertilizer and stormwater management programs, the Town would feel comfortable that the acceptable nitrogen removal level would be attained. This was considered in developing the various scenarios evaluated and ultimately in developing the recommended program.

31. Are neighboring communities participating where watersheds are shared between adjacent communities?

Yes, Yarmouth is participating in a collaborative effort with Barnstable and Dennis. Two watersheds in Yarmouth are shared with abutting communities. The Lewis Bay Watershed is shared with Barnstable and the Bass River Watershed is shared with Dennis. These will require a joint effort to meet the TMDL for those embayments. The Parkers River Watershed is completely within the Town of Yarmouth.

32. Is a wind turbine part of the project?

No. The Energy Committee has been seeking to develop a wind energy project for Yarmouth for some time. The committee had a Fatal Flaw Analysis completed thru the Energy Research laboratory at UMASS for 6 sites (one of which was the Water Division HQ on Buck Island Road) and sought public comment on preferred the 6 preferred sites via a survey through the water bills. Because the Town is height restricted for turbines due to its close proximity to the Barnstable airport, Buck Island Road site had the highest height available for a turbine project based on the fatal flaw analysis. As a result the committee requested a meteorological (MET) tower to be installed to monitor the wind speed and direction for a 13 month period. The agency approved that MET tower which was installed and the info recorded.

The CEC then awarded a grant to do a Wind Feasibility study, which is currently in process with completion in July 2011. Once the feasibility is completed and if we find out a wind turbine investment may be feasible by a private entity public input will be sought. This initiative is not associated with the wastewater treatment plant but coincidentally is located at the same site. Public hearings on the potential turbine project will proceed independently from the wastewater initiative and be decided by the public input. Revenue produced by wind turbines, if the project moves forward, can be used to offset energy cost for Town.

CHAPTER FOUR

WASTEWATER TREATMENT ISSUES

33. Why are sewers necessary?

As detailed in the Massachusetts Estuaries Project (MEP) reports for the Yarmouth estuaries, a significant amount of nitrogen needs to be removed within the watersheds contributing to those estuaries to restore them to healthy and aesthetically acceptable environments. Typically over 85 percent of the controllable nitrogen comes from water leaching from fully compliant Title 5 septic systems down to the groundwater table, which ultimately surfaces in our streams and estuaries. Title 5 systems remove about 10 to 15 percent of the nitrogen in waste discharged to them. More sophisticated on-site systems often referred to as innovative and alternative (I/A) systems usually remove about 50 percent of the nitrogen. To remove the required 80 to 100 percent nitrogen in the Yarmouth watersheds the wastewater needs to be collected and treated in a much more sophisticated treatment system that will remove 90 percent or more of the nitrogen.

It is important to understand that effluent leaving a Title 5 septic system on a lot 300 feet or 3 miles from an estuary can still affect the water quality of the receiving estuary. The septic system effluent infiltrates down to the groundwater table where the groundwater then conveys it as it flows toward an estuary before daylighting in the open water body. Thus a sewer system is required to collect the wastewater from these parcels and convey it to a treatment facility for sufficient nitrogen removal before applying it to an appropriate recharge site.

34. Will this plan result in providing sewers to the entire Town of Yarmouth?

No. The CWMP is a “planning” tool to identify and recommend a course of action to address Yarmouth’s overall wastewater management plan. Based on MEP report results to date it is clear sewers will be required as part of an overall strategy to address nitrogen impacts to our estuaries. However, it is likely that only portions of Yarmouth south of Route 6 will require a sewer collection system. The full extent of sewerage will not be known until the Bass River Watershed MEP report is evaluated and a plan to meet nitrogen removal in that estuary incorporated into the current wastewater plan. Based on current MEP information sewers are required from Route 28 south to the sound and from the Barnstable Town line to the Dennis Town line. Also sewers extended up into the Captains Village area to protect Town drinking water wells with a history of increasing nitrogen concentrations will be required. The central portion of Town along Route 6 and north to the bay are not likely to require widespread sewerage. Some areas north near the Bass River may need some type of increased wastewater treatment once that MEP Report is fully evaluated.

35. Why were the sewer system technologies for wastewater collection and conveyance selected?

The IWRPC and our consultant, CDM, evaluated the three major types of sewer collection systems as they relate to conditions here in Yarmouth. The systems include gravity, pressure and vacuum sewers. Gravity sewers are most commonly used and are good for receiving a wide range of flow capacities. This system has the fewest moving parts, relies on a constant downhill slope to convey flow and requires the least amount of maintenance. Pressure sewers rely on a pump to convey the collected wastewater through small-diameter forcemains. This system is good for collecting flow from smaller low-elevation areas and pumping the flow up to another gravity system as it saves the cost of lowering the gravity system. Pressure sewers can also be used in relatively flat areas as pipes do not need to be installed as deep as gravity pipes would. Vacuum systems are newer to New England and have some similar characteristics to pressure sewers but with fewer moving parts. A centralized vacuum pumping system draws the wastewater to it via small-diameter, relatively shallow pipes. A vacuum valve assembly is located at each lot instead of a grinder pump unit used for pressure sewers. After evaluating several scenarios, including costs, a preliminary Sewer System Master Plan was developed that is a hybrid system, relying on each of the three systems to maximize their best attributes. These evaluations and the plan are detailed in the CWMP.

36. Can the wastewater be piped out into the ocean like in Boston?

No, environmental regulations (Ocean Sanctuaries Act) prohibit new wastewater outfalls (discharges) to the oceans. Some communities such as Boston and Plymouth already had an ocean discharge prior to this regulation. Thus, they were allowed to continue to use it but only after significantly increasing the treatment level of the effluent prior to discharge.

37. If wastewater treatment facilities are recommended to be built, will they be an eyesore?

Through careful planning and site selection, the treatment facilities and pumping stations can be designed to be harmonious with the architectural style of the community and employ proper screening techniques to minimize visual and other aesthetic impacts. Also, state-of-the-art measures will address potential odor issues. The proposed treatment facility site off Buck Island Road is well buffered, being about 1,000 feet from the nearest residence.

38. Why are we building only one treatment plant instead of several smaller plants?

The CWMP details the analysis from the IWRMP and the Town's consultant, CDM, in which options for one, three and five treatment plants with multiple effluent recharge sites were evaluated. Regional options with Barnstable were also considered and are still being discussed. However, based on operational issues, siting requirements and a cost-effective analysis, the centralized single treatment facility with multiple effluent recharge sites was selected as the best long-term solution for the community. Regional discussions with Dennis will take place for

Bass River Watershed options and they may result in an additional treatment plant for that area.

39. Can we use the Yarmouth-Dennis Septage Treatment Plant or that location for the new wastewater treatment facility?

Since the beginning of the wastewater planning process in 2003, the Town of Yarmouth worked to define the most suitable location for the new wastewater treatment facility based a number of factors including cost, aesthetics, and impacts to the surrounding community and the environment. Based on these factors, the Town's long-term wastewater program recommended the Buck Island Road site for the location of the new facility. To determine the location, a site screening analysis, summarized in the CWMP, evaluated sites throughout the Town that could be used both for locating the treatment facility and for effluent recharge - having the treatment facility at or near the effluent recharge site(s) makes it a more efficient operation and less costly to build and operate. The evaluation identified larger sites, which provide a better buffer to mitigate potential noise, aesthetics or odor issues. The Buck Island Road site provided the best alternative, both for its size and because it is already utilized for effluent recharge from the septage facility located three miles away on Workshop Road.

The Yarmouth-Dennis Septage Treatment Plant site was one of the sites considered in the site review process, but the wastewater planning committee realized that the site would not be suitable for the new wastewater treatment facility. It is not as well buffered and would require a lot more piping to convey wastewater to the site and effluent to remote recharge sites, adding significant capital and operating expense. Another reason is that the forcemain between the Workshop Road treatment site and the Buck Island Road recharge site is intended to convey reclaimed water from Buck Island back to the Links at Bayberry Hills Golf Course in the future. Also, the septage plant treats only septage, a high-strength, low-volume waste compared to the mainly low-strength, high volume wastewater treated at a wastewater plant. Septage can be added to a wastewater treatment plant at low rates but wastewater cannot be added to a septage plant. Thus, the septage plant would essentially need to be rebuilt to receive wastewater.

Because of the need to provide septage treatment facilities until the new wastewater treatment plant is operating, there is insufficient room to locate both facilities at the Workshop Road septage facility site. The septage facility, which will need a major upgrade to remain in operation, will eventually be abandoned, with septage being received at the new wastewater treatment plant.

40. Is the Wastewater Treatment Plant allowed through Zoning to be at the proposed site without a special permit?

The Building Commissioner has determined that the proposed Waste Water Treatment Plant, classified as a municipal use, is to be located on a site zoned for Municipal Use (“MU”). Therefore, pursuant to the Town’s zoning bylaw Table 202.5, the proposed waste water treatment facility is permitted by right.

41. Is the proposed size of the treatment plant appropriate to the needs of the Town?

The size of the treatment plant allows for an average annual daily flow of 2.75 million gallons per day (mgd) to be treated at the facility once all five phases of the sewer system are built over the next 25 years. The treatment plant being constructed in the Phase 1 Comprehensive Wastewater Plan will be large enough to handle wastewater from the first two phases of sewer areas. The flow projection allows for a projected 21 percent increase in water use consumption within the current proposed sewer system areas, or about 550,000 gallons per day (gpd) to accommodate redevelopment in Town. The Town still has to fully address the Bass River Watershed wastewater requirements in conjunction with the Town of Dennis. If at some point in the future the Town needs more treatment capacity, then the Town can adjust this number upward by amending the Comprehensive Wastewater Management Plan, which requires approval of state and county agencies. If we were to adjust this projected capacity up now, we would have to pay for a larger plant which in turn would make start-up more difficult due to low, more erratic flow reaching the plant in the early stages. The real key is making sure the nitrogen contained within the wastewater is being treated and recharged appropriately.

CHAPTER FIVE

PROJECT IMPLEMENTATION

42. When will the first phase sewer program be completed?

Sewer construction work is intended to begin in the streets in the Spring of 2012. Winter work is weather-dependent and no work can be done in Route 28 per the Massachusetts Department of Transportation (MassDOT) from Memorial Day to Labor Day. So, most of the sewer work will be done in fall and spring. Some pipeline work off of Route 28 will likely be done in the summer. Construction of the wastewater treatment facility located off Buck Island Road near the Water Division facility will occur year-round. Both components are expected to be completed and in service by the end of 2014.

43. Will all residential and commercial property owners be required to connect and within what timeframe?

The residential and commercial property owners will be given a 6- to 12-month timeframe to connect once the sewer system and treatment plant have been completed. Logistically, notices to residential and commercial property owners requiring their connection will be spread out over a fixed time period to ensure that the Town is not inundated with more installations than can be inspected.

44. Will a Household or Commercial property owners with a new "Title 5 septic system" be granted a grace period before being required to connect?

It was the consensus of the Board of Health that a property owner who has spent \$6,000 or more to install a new septic system will be subject to the following schedule for tying into a sewer line from the date of installation of the septic system:

- a. A new owner must tie into the sewer line immediately upon the real estate transfer regardless of the age of the septic system.
- b. If the septic system is five years old at the time of installation of the sewer line, the property owner must tie into the line.
- c. If the septic system is four years old at the time of installation of the sewer line, the property owner has one year to tie into the line.
- d. If the septic system is three years old at the time of installation of the sewer line, the property owner has two years to tie into the line.
- e. If the septic system is two years old, at the time of installation of the sewer line, the property owner has three years to tie in to the line.
- f. If the septic system is one year old at the time of installation of the sewer line, the property owner has four years to time into the line.

45. Will I have access to my home or business during construction of the sewers?

Yes. Construction will at times result in traffic delays but residents and businesses will have access to their property. Detours for the public may be required in some

locations during the day. Owners and the public will be informed about any detours in advance so appropriate arrangements can be made.

46. If detours are utilized during construction, how will my customers know my business on Route 28 is still open?

Every effort will be made to minimize the need for detours. In most instances the detour will only affect through traffic as access for local traffic will be maintained. It may be necessary to access a specific location from a different direction depending on where the actual construction is taking place. Single-lane traffic patterns may be required frequently with one directional or alternating traffic patterns. Similarly, a short-term detour may result in faster construction in certain areas, shortening the overall construction period and associated impacts. Detail officers will be available to assist with traffic and access.

Message boards, signage and a Town Web site will keep residents, business owners and the general public informed.

47. How will my street look once the sewer construction is completed in it?

Streets will look better once the construction is completed. In most cases, temporary pavement will be placed over pipeline trenches immediately after construction and then after an appropriate period to allow additional settlement to occur (at least 90 days or one winter period) the final full street width paving will be done. Other disturbed areas will be restored to pre-existing like conditions.

48. What granting authority and by what method will the future sewage flow allocations be determined?

The School of Marine Science and Technologies (SMAST), which analyzed the water quality of the Yarmouth estuaries, following discussions with the Yarmouth Planning office, allowed for some additional flow to accommodate build-out in Town on a watershed-based allocation. Since Yarmouth's population has remained fairly steady over the last decade, further single-family home new construction or bedroom expansions, which generate more flow, are anticipated to be marginal (15 percent in Lewis Bay; 3 percent in Parkers River). Most of the flow increase over time will result from commercial redevelopment (40 percent Lewis Bay; 40 percent Parkers River) which at this time seems reasonable. For the current proposed sewer service area, this results in an approximate 21 percent combined increase in water use. The Town will have to develop a system for monitoring water consumption in the redeveloped areas to see how flow is increasing (or not) over time. If the flow projection proves to be insufficient, then the Town would have to file a Notice of Project Change (NPC) to amend the Comprehensive Wastewater Management Plan with the state and county agencies to garner more flow.

49. Does moving forward with the proposed Phase 1 wastewater program preclude us from potential regional solutions with Barnstable and/ or Dennis? Is the proposed five phase plan flexible to accommodate these options?

By moving forward with the Phase 1 wastewater program the Town of Yarmouth does not preclude pursuit of potential regional alternatives with its neighbors being Barnstable to the west and Dennis to the east. Phase 1 is required as the “backbone” of the proposed overall wastewater system master plan as it stands today. The five area phases have been proposed for environmental, economic and logistical reasons but the specific areas and sequence for how they are sewerred can be revised going forward as any of those reasons change for the Town. That also includes the status of regional alternatives.

The Town has evaluated various flow alternatives for sending flow from sewerred areas in west Yarmouth to Barnstable for treatment and returning the treated effluent back to Yarmouth for recharge. These areas are essentially shown as the Phase 3 areas now and have been slotted there to see if anything changes in terms of regional discussions. To date those alternatives have not proven to be cost effective for Yarmouth mainly due to the cost of returning the effluent back to Yarmouth for recharge.

The Town received the Draft Bass River MEP in late 2010 and alternatives to meet the TMDL in the Bass River are still to be finalized. Portions of the currently proposed sewer system master plan address nitrogen removal in the Bass River Watershed but more area is likely required to fully meet the TMDL. Alternatives for doing this will include in-Town options and will include potential regional solutions with Dennis who shares the Bass River Watershed with Yarmouth. This work will be done over the next year or two and revisions to the existing CWMP will be approved via a Notice of Project Change (NPC) process.

The Phase 1 wastewater treatment plant located at Buck Island Road is sized to handle the flows from the first two sewer phases. It will need to be expanded and treatment levels potentially upgraded at that point. This also requires the Route 28 bridge to be expanded prior to Phase 3 sewers being placed online. The Buck Island Road site is also limited to only recharge about 1.95 mgd of treatment effluent as that is the nitrogen limit in the Parkers River Watershed where this site is located. Flow above that level needs to be pumped for recharge to the Bass River or Nantucket Sound watersheds for recharge in order to comply with nitrogen limits. So if less flow is brought to Buck Island Road site from the Lewis Bay watershed should a regional option come about with Barnstable and less flow is sent there from the Bass River Watershed should a regional option with Dennis come about, then the Buck Island Road treatment facility would still be needed for that 1.95 mgd of treatment and recharge with the other 0.80 mgd (plus any increase for Bass River)

being handled in the regional options. The sewer system layout is designed with this flexibility to breakout these areas if need be.

Flexibility to adapt to changing conditions and priorities in Yarmouth and regionally has been a key component in the development of the Towns wastewater program.

50. Where is the Town in the Cape Cod Commission's review process?

The CWMP is currently under joint review by MEPA (for an Environmental Impact Report, or EIR) and the Cape Cod Commission (as a Development of Regional Impact, or DRI) and the review processes have been coordinated. When the Town filed the draft CWMP, the Commission held a public hearing to inform their comments to the state. Once the Town files its Single EIR and it is advertised in the Monitor, the Commission will provide a hearing before the MEPA comment period is closed and a subsequent hearing within 45 days after the Certificate is issued.

CHAPTER SIX

ECONOMIC DEVELOPMENT

51. Will installing sewers in Town lead to uncontrolled growth?

No. The Town of Yarmouth has very little land left to develop based on current zoning. Similarly, in developed areas where sewers will need to be installed fairly conservative zoning already exists. The areas defined in the CWMP for sewerage will be designated as a sewer district, and the Town is evaluating whether any other Board of Health regulations or zoning regulations will be required to control growth prior to any flow being collected and treated. A 21 percent increase in wastewater flow from the current sewer district area has been included in flow projections. This allows for increased development or redevelopment in desired areas such as the proposed Activity Centers. However, land use controls will need to be in place so that wastewater flows are managed to that projected flow increase in what is termed flow neutral regulations if the Town intends to utilize zero percent interest loans from the State to help pay for this program. These regulations must be approved by MassDEP and in place prior to the State loan being bonded.

52. What is the meaning of the term "flow neutral"?

"Flow neutral" is a new requirement from the DEP that municipalities must meet to qualify for zero percent interest loans to construct wastewater collection and treatment systems. It requires a community to manage its growth and redevelopment such that at the end of the wastewater planning period of 20 to 25 years, the flow generated at the wastewater treatment plant does not exceed the build-out flow amount predicted when the plan was initiated. The Town needs to have bylaws and/or regulations in place to ensure that the planned and desired growth stays within the projected flow amount.

53. Will Title 5, as a growth control measure, unduly restrict future residential and business growth?

In order to be eligible for a zero percent interest loan from the State Revolving Fund (SRF) Loan program the Town must implement appropriate zoning bylaws and/or Board of Health regulations that limit the water use increase in the proposed sewer service area to 21 percent above current water use. During the development of the Comprehensive Wastewater Management Plan (CWMP) the Town estimated residential (bedroom additions, etc.) and commercial (planned developments, revitalization, etc.) growth within those areas projected to be sewerage. The combined growth resulted in an increase in water use of 21 percent. If the Town qualifies and accepts the zero interest SRF Loan then it must manage to that increase value as a condition.

There are collaborative discussions going on between the environmental interests of the Board of Health, the economic development interests of the Planning Board and

several other interested parties to determine the best mix of zoning bylaws and regulations to achieve this requirement. The controls do not need to be in place until the loan to the Town is actually bonded which should be about one year out. Town meeting will likely need to endorse the selected program however, all parties have agreed that the 21 percent increase is a reasonable growth projection for the Town.

54. What growth control mechanisms must be in place in order to proceed with the project and how will individual property owners be affected?

In order to be eligible for the funding subsidy of the State Revolving Loan Fund, the Town needs to limit growth allowed to be no more than the 21% growth over current build-out estimates. The Board of Health has indicated a unanimous willingness to this through regulation. However, the exact language acceptable for this local guarantee has not been authorized. Once it is the Town will take the action required.

Thereafter, the Planning Board may propose Town Meeting approval Zoning amendments which address more specifically the distribution of the 21% limited growth. A sewer bank overseen by a Water and Sewer Commission will be enabled to allocate this additional growth which will additionally be subject to zoning and Board of Health regulations.

It can be safely said that individual property expansion (within each project phase) will be available if requested. For example, a property connected to the sewer could expand by a bedroom, or a commercial property could expand on a case by case basis as long as the total increase is held within the total 21% above buildout flow estimates. Designation of increased flow will continue throughout the project as a collaborative process between the environmental interests of the Board of Health, the economic development interests of the Planning Board and determined ultimately by the Water & Sewer Commissioners.

55. As a Yarmouth property owner, will my property values decrease?

No. Projects in other communities have demonstrated that sewers and/or enhanced wastewater management actually increase property values. Improving wastewater management procedures will restore water quality in the embayments, and protect the other water resources so that the tourist economy continues to flourish and the quality of life is maintained. All of these factors combine to preserve property values.

ACRONYMS & DEFINITIONS

CCC	Cape Cod Commission
CEC	Commonwealth Energy Center
CWMP	Comprehensive Wastewater Management Plan
DEP	Department of Environmental Protection
DRI	Development of Regional Impact
EDU	Equivalent Dwelling Unit
EENF	Expanded Environmental Notification Form
EOEEA	Massachusetts Executive Office of Energy and Environmental Affairs
EPA	Environmental Protection Agency
I/A	Innovative & Alternate Systems
IWRMP	Integrated Wastewater Regional Management Plan
IWRPC	Integrated Water Resources Planning Committee
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MEP	Massachusetts Estuaries Project
MEPA	Massachusetts Environmental Policy Act
MET	Meteorological
MGD	Million Gallons per Day
NPC	Notice of Project Change
SMAST	School for Marine Science and Technology
SRF	State Revolving Fund
TMDL	Total Maximum Daily Load
WHG	Woods Hole Group
WIC	Wastewater Implementation Committee