

Chapter 9

Alternative Plan Identification and Future Evaluations

CHAPTER 9

ALTERNATIVE PLAN IDENTIFICATION AND FUTURE EVALUATIONS

9.1 INTRODUCTION

The purpose of this chapter is to present several alternative plans for addressing the Town's wastewater and nutrient related problems as identified in the Needs Assessment Report; and to identify future evaluations to be performed in the next phase of the Project. A total of six alternative plans, including the No Action alternative, have been developed as part of this report based on the technologies and treatment and recharge sites screened in previous chapters.

9.2 NO ACTION ALTERNATIVE

The No Action alternative was presented in the Needs Assessment Report to identify the consequences of doing nothing. Under the No Action alternative, degradation of Popponeset Bay, Three Bay System, Centerville River System, and Lewis Bay will continue from the excessive nitrogen loading in the watersheds to these water bodies, primarily from the on-site septic systems. The MEP technical reports used colored maps to illustrate how the nitrogen concentrations would increase from their current levels to the projected buildout levels defined by current zoning. The increased nitrogen would promote further algal blooms, fish kills, eel grass loss, and other impacts to the habitat of the marine estuaries.

A portion of the Eastern side of Barnstable probably would be sewered as allowed by the 2007 Wastewater Facilities Plan. These areas are illustrated on Figure 1-4.

If the Town did not demonstrate progress to meet the nitrogen TMDLs, MassDEP would most likely initiate an enforcement action against the Town as allowed by state law.

If the Town did not demonstrate progress to meet the new TOC discharge limit, MassDEP would most likely initiate an enforcement action against the Hyannis WPCF and the Marstons Mills WWTF as allowed by state law

If progress is not made on the Barnstable Ponds Action Plan, pond water quality will decline.

9.3 NON-WASTEWATER NITROGEN MANAGEMENT RECOMMENDATIONS

The following non-wastewater nitrogen management components would be part of all Alternative Management Plans:

- ▶ Fertilizer and pet waste management through best management practices, public/private agreements, possible new regulations, public education, and county initiatives
- ▶ Stormwater management through best management practices, public/private agreements, possible new regulations, and education to homeowners,
- ▶ Sediment removal at Mill Pond to increase Nitrogen Attenuation for the Marstons Mills River watershed
- ▶ Estuarine inlet opening and maintenance for Rushy Marsh Pond
- ▶ New zoning or land use regulations to create possible flow neutral requirements for sewer extensions where Growth Centers are not identified. This will need to comply with MassDEP requirements to gain eligibility for 0% low interest loans as allowed by the 2009 Environmental Bond Bill legislation.
- ▶ Expanded use of aquaculture in the estuaries to reduce nitrogen concentrations and to promote local fisheries

9.4 ALTERNATIVE PLAN NO. 1: DECENTRALIZED PLAN A

This plan would utilize the following main components:

- Continued use of Title 5 septic systems as allowed in areas where nitrogen TMDLs do not require wastewater nitrogen removal.
- Implementation of individual nitrogen removal systems to areas where 25% wastewater nitrogen removal (or less) is required

- Multiple satellite systems and development of remote recharge sites for the areas where additional nitrogen removal is needed.
- Expansion of Hyannis WPCF, sewer extension to eastern portions of Town, and development of remote recharge sites

9.5 ALTERNATIVE PLAN NO. 2: DECENTRALIZED PLAN B

This plan would utilize the following main components:

- Continued use of Title 5 septic systems as allowed in areas where nitrogen TMDLs do not require wastewater nitrogen removal.
- Construction of up to two new satellite treatment facilities in the western part of Town, and development of associated sewer extensions and recharge sites.
- Expansion of the Hyannis WPCF, sewer extensions to eastern portions of Town, and development of remote recharge sites.

9.6 ALTERNATIVE PLAN NO. 3: CENTRALIZED PLAN A

This plan would utilize the following main components:

- Continued use of Title 5 septic systems as allowed in areas where nitrogen TMDLs do not require wastewater nitrogen removal.
- Expansion of the Hyannis WPCF, sewer extension to all portions of Town needing wastewater nitrogen removal, and development of remote recharge sites.

9.7 ALTERNATIVE PLAN NO. 4: CENTRALIZED PLAN B

This plan would utilize the following main components:

- Use of an ocean outfall from the Hyannis WPCF.
- Continued use of Title 5 septic systems as allowed in areas where nitrogen TMDLs do not require wastewater nitrogen removal.
- Expansion of the Hyannis WPCF, and sewer extension to all portions of Town needing wastewater nitrogen removal.

9.8 ALTERNATIVE PLAN NO 5: DEVELOPMENT OF NEW PUBLIC WATER SUPPLY SITES TO MITIGATE IMPACTS TO CURRENT WATER SUPPLIES FROM SEPTIC SYSTEMS AND FROM THE HYANNIS WPCF, AND USE OF IMPROVED DECENTRALIZED AND/OR CENTRALIZED FACILITIES

This plan would utilize the following main components:

- Development of new public water supply sites and Zone II Water Supply Protection Areas which would allow impacted water supply wells to be abandoned
- Possible use of the abandoned water supply areas for treated water recharge
- Continued use of Title 5 septic systems as allowed in areas where nitrogen TMDLs do not require wastewater nitrogen removal.
- Expansion of the Hyannis WPCF, sewer extension to portions of Eastern Barnstable needing wastewater nitrogen removal, and development of remote recharge sites.
- Development of up to 2 new satellite treatment facilities and associated sewer extensions and recharge sites in portions of Western Barnstable

9.9 FUTURE EVALUATIONS TO IDENTIFY A RECOMMENDED PLAN

The first phase of the CWMP Project was the development of nutrient limits. The second major phase of the Project was the identification of the wastewater and nutrient management needs as documented by the Needs Assessment Report. This Alternatives Screening Analysis Report documents the third major phase. The next phase of the Project (Phase IV) will provide a detailed evaluation of the screened alternatives retained for further evaluation. Detailed evaluation will include cost effectiveness comparisons using present-worth evaluation and evaluation of non-monetary factors. Prior to initiating Phase IV, specific subtasks of Phase VI are needed. These tasks are listed below with the Phase IV tasks

A. Subtasks of Phase VI – Environmental and Public Review Process.

3. Prepare and conduct a public participation program.
4. Prepare, submit, and coordinate the public review of the Environmental Notification Form (ENF) and Development of Regional Impact (DRI) Document.

B. After review of the ENF and DRI Documents, proceed with **Phase IV – Detailed Evaluation and Development of the Nutrient Management Plan.**

1. Perform subsurface and/or environmental investigations and modeling for potential nutrient management sites.
2. Prepare a methodology of the planned detailed evaluations for project and regulatory review.
3. Perform present-worth evaluations of the alternative nutrient management scenarios.
4. Perform non-monetary evaluations of the alternative scenarios.
5. Perform an environmental impact analysis of the alternative scenarios.
6. Evaluate the present-worth analysis with the non-monetary evaluation and the environmental impact analysis to select the most appropriate management scenario.
7. Develop and present the recommended Nutrient Management Plan, and prepare the Nutrient Management Plan and Draft Environmental Impact Report (DEIR).
8. Submit the Nutrient Management Plan and DEIR for regulatory and public reviews.

Water quality modeling by the Massachusetts Estuaries Project (MEP) team will be integrated into these detailed evaluations.

This modeling was recently initiated for Lewis Bay as part of regional evaluations to meet the nitrogen TMDLs in that water body. The water quality modeling for the other estuaries will typically be initiated in items 4 and 5 (listed above) to identify nitrogen management performance of the alternative scenarios.

This water quality modeling work will be guided by a Working Group comprised of the following individuals and organizations:

- Dale Saad, Ph.D., Barnstable DPW
- Ed Eichner, UMass SMAST
- Brian Howes, Ph.D., UMass SMAST
- Tom Cambareri, Cape Cod Commission
- Nathan Weeks, P.E., GHD Inc.

9.10 INTER-MUNICIPAL COOPERATION

Inter-municipal discussions and cooperation are ongoing between Barnstable and the towns of Yarmouth, Mashpee, and Sandwich who share several of the estuarine watersheds that have nitrogen TMDLs. These cooperative efforts include:

- Invitation of the three towns to be members of the Citizens Advisory Committee.
- Regional wastewater evaluations with the Town of Yarmouth as discussed in section 1.2E of this report and further documented in Appendix 1-4 of the Needs Assessment Report.
- Water quality modelling of Lewis Bay as discussed in the previous chapter section.
- Regional wastewater evaluations as part of the Mashpee Watershed Nitrogen Management Planning Project.

Additional discussion and cooperation is planned with the Town of Sandwich as they initiate their CWMP Project later in 2011.

The detailed evaluations of the CWMP Project will explore the possible inter-municipal agreements that may be needed for regional wastewater facilities, shared water quality monitoring, and TMDL compliance. These evaluations will include the Town's Growth Management and Legal Departments.

The recommended plan will identify the inter-municipal agreements needed for implementation.