

Chapter 3

Proposed Wastewater Management Plans Prioritization and Implementation Considerations

CHAPTER 3

PROPOSED WASTEWATER MANAGEMENT PLANS PRIORITIZATION AND IMPLEMENTATION CONSIDERATIONS

3.1 INTRODUCTION

The purpose of this chapter is to provide prioritization and implementation considerations for the management plans recommended in Chapter 2 and next steps the Town should follow as a result of this Wastewater Management Planning Project.

3.2 PRIORITIZATION CONSIDERATIONS

In an effort to prioritize areas of need, Table 3-1 was developed ranking areas of concern by need. As a result, the Town should focus implementation of the following alternative drinking water and wastewater management plans as follows:

Priority 1 – Human Health Need. Public water supply for all properties in the Town of Eastham from a protected water supply source.

Public water supply for all properties in the Town of Eastham will meet Priority 1 – Human Health Need as identified in Table 3-1. As discussed in this report and previously in the Interim Needs Assessment and Alternatives Screening Analysis Report, water quality within private on-site drinking wells is on the decline. The analyses performed by the Town’s Health Department have focused on documenting the nitrate concentrations of the private supply wells because nitrogen is an indicator of many septic system contaminants currently not being analyzed in the groundwater (phosphorus, volatile organic compounds, personal care products, pharmaceuticals, endocrine disruptors, viruses, etc.) that may be reaching the private wells and causing a public health threat.

Nitrate has a State and Federal drinking water limit (maximum contaminant limit or MCL) of 10 mg/L because it may cause serious illness in newborn children. As a result, the Cape Cod Commission has set a groundwater planning limit of 5 mg/L total nitrogen to protect drinking water supplies and other water resources. However, drinking water standards have not been set for all of the potential contaminants in wastewater especially the “emerging contaminants of concern” such as personal care products, pharmaceuticals, and endocrine disruptors. Analysis of these contaminants is very expensive, therefore the nitrate analysis is used as an indicator that these other contaminants may be present at the affected private water supplies.

A wastewater collection and treatment system for the Town of Eastham would not by itself be sufficient to improve private drinking water supply over time. There are other pollutant sources to the private drinking water supplies that require a public drinking water supply from a protected source; whether it is from a protected supply within Eastham or from a neighboring Town.

It is recommended that the Town proceed with the Drinking Water Supply Plan and continue to work to provide education to the public to ensure support; as wastewater management implementation will not solve the drinking water quality problem of the Town. Recently, a \$3.15 million Town Meeting Article was supported to conduct pump tests at potential public water supply sites and to conduct a cost-benefit analysis to determine the feasibility of receiving public water from Orleans.

Priority 2 – Environmental Health Need. Wastewater and nitrogen management to meet projected nitrogen limits in the Nauset-Town Cove Estuary. Nauset-Town Cove Estuary nitrogen limits are currently being developed by the MEP and are expected to be released by July 2009. A preliminary estimate of the wastewater nitrogen that needs to be removed from this watershed was made by the Town of Orleans Draft CWMP Project based on preliminary discussions with MEP staff. That estimate indicates that 55 percent of the existing wastewater nitrogen needs to be removed to meet the proposed limit.

Priority 3 – Environmental Health Need. Wastewater and nitrogen management to meet projected nitrogen limits in the Rock Harbor Estuary. The MEP findings indicate approximately 79 percent of the existing wastewater nitrogen loading to the watershed needs to be removed to remediate the impacted water quality in the lower portion of the watershed. There is some uncertainty about the development of the TMDL based on the features of Rock Harbor as a

dredged boat basin; therefore it is our recommendation to the Town to prioritize the Nauset-Town Cove Estuary Watershed above the Rock Harbor Estuary Watershed.

Priority 4 – Environmental Health Need. Wastewater and phosphorus management to address water quality problems in the Freshwater Pond System Watershed. Pond treatment is recommended to the Town to treat the phosphorus based on the estimated cost per household discussed in Chapter 2. Comparing the costs of sewerage to the costs of alum treatment, it becomes clear that alum treatment is the more cost effective way to precipitate (remove eutrophic conditions) phosphorus from the ponds, even if required on a periodic basis.

Priority Summary. The Town needs to protect the public health by providing a reliable public water supply from a protected source (Priority 1); and needs to remediate and protect the environmental health by removing and managing the excess nutrients going to the Nauset-Town Cove Estuary, Rock Harbor Estuary and the Freshwater Ponds System (Priorities 2, 3 and 4, respectively).

3.3 REPORT CONCLUSION AND IMPLEMENTATION APPROACH

Table 3-2 is a summary of the alternative management plans and how they relate to the primary needs of the Town of Eastham. The wastewater needs have been developed and categorized into two groups; human health needs and environmental health needs. The human health wastewater needs are best met with the development of a public water supply system from a protected water source. Wastewater collection and treatment will not solve the current drinking water quality problems of the Town. At the time this report is being developed the Town is proceeding with the development of a Drinking Water Supply Plan to implement that system. The May 2009 Town Meeting warrant article received funding for the needed evaluations to continue that planning process for public water supply.

The environmental health wastewater needs are also clear, but additional time is needed for the State and Federal agencies to finalize the nitrogen limits for the Nauset-Town Cove Estuary and Rock Harbor Estuary and the phosphorus limits for the Freshwater Pond System. We have estimated these limits based on draft reports from these agencies; significant wastewater flows (and associated nitrogen and phosphorus loadings) need to be removed to meet the limits. Several wastewater and nutrient management plans/approaches have been evaluated, and the following are the most cost effective and feasible:

- Wastewater collection and advanced treatment is needed for portions of the Nauset-Town Cove Estuary and Rock Harbor Estuary Watersheds.
- The most cost effective treatment site is the Orleans WWTF proposed for the Tri-Town Septage Facility site.
- The phosphorus loading problems associated with the freshwater ponds should be addressed by treatment with alum to bind the phosphorus that is already in the ponds and prevent it from acting as a fertilizer. (This is the same approach recently used for Long Pond in Brewster and Harwich).
- The Town should initiate discussions on the Rock Harbor nitrogen limit and the methods of alternative dredging and/or aeration to meet the limit and reduce the sewer extension in this area.

The recommended approach for the Town is a combination of providing Town-wide drinking water supply and service; sewerage of the portions of Nauset-Town Cove Estuary and Rock Harbor Estuary as identified in Figure 2-2 with treatment and recharge at the proposed Orleans WWTF; and addressing phosphorus issues through the use of alum treatment.

The Town should continue with the Drinking Water Supply planning and implementation activities as effectively as possible. There is greater time available for the Town to properly plan and budget for the recommended approaches to meet the environmental health needs because of the following:

- The Federal and State agencies may take up to one year to finalize the nitrogen limits.
- Orleans may take over one year to finalize its CWMP.
- The area of Orleans where Eastham's wastewater flows would connect to the Orleans system is not scheduled for construction until the later phases of their 15 to 20 year phased program.
- Additional studies are needed to determine which ponds and lakes need to be treated with alum.

The following next steps are recommended to proceed with the main findings of this Wastewater Management Planning Project report:

1. Proceed with the Drinking Water Supply planning and implementation.

2. Review the findings and recommendations of this report at a future Town Meeting and gain Town support.
3. Continue to coordinate with the Town of Orleans as they complete their CWMP and Wastewater Regionalization Study.
4. Continue to coordinate with MassDEP as they finalize the nitrogen limits for Nauset-Town Cove Estuary and Rock Harbor Estuary and determine their willingness to consider alternative dredging and/or tidal flushing methods to meet the limit for Rock Harbor.
5. Once the limits are set, finalize the wastewater flows and the portions of these two estuarine watersheds that should be connected to the proposed Orleans WWTF, and request Orleans to plan for that additional flow.
6. Finalize estimated costs after completing preliminary design of the collection system and connection to the Orleans system.
7. Continue with the pond water quality evaluations to determine pond treatment timing and approvals.
8. Summarize the findings of these actions in a Town of Eastham Comprehensive Wastewater Management Plan in compliance with State and regional requirements to gain regulatory approval of the plan and become eligible for zero percent loans as allowed by recent legislation.

These next steps are estimated to take two to four years depending on the early success of steps 1, 2, and 3.