



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

# Department of Environmental Protection

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Paul Niedzwiecki, Executive Director  
Cape Cod Commission  
3225 Main Street  
Barnstable, MA 02630

Dear Mr. Niedzwiecki,

Thank you for the opportunity to comment on the draft Update to the 1978 Section 208 Water Quality Management Plan for Cape Cod (“the Plan”) – an effort that is intended to develop an integrated water and wastewater management system that includes a series of phased approaches that will remediate groundwater and surface water impairments in Cape Cod’s watersheds. In a January 30, 2013 letter, Massachusetts Department of Environmental Protection (“MassDEP”) Commissioner Kenneth Kimmell directed the Cape Cod Commission (“CCC”) to prepare an update to the Plan to address the degradation of Cape Cod’s water resources from excessive nutrients, primarily nitrogen. MassDEP appreciates the efforts of your team leading to preparation of the draft Plan Update, including the extensive public engagement process used to bring more voices to the table in order to develop consensus around a range of solutions to solve these water quality problems. MassDEP looks forward to the final Plan Update so that work on implementation can proceed as quickly and efficiently as possible. With that goal in mind, MassDEP is pleased to provide the following comments for your consideration.

## Background

The original 208 Plan was completed in 1978 by the CCC’s predecessor agency, the Cape Cod Planning and Economic Development Commission. The 1978 208 Plan focused primarily on protection of drinking water supplies, almost to the exclusion of other considerations; thus, the final recommendation was for the Cape to continue to rely primarily on septic systems for wastewater treatment. Forty years later, we find that septic systems are a major contributor to coastal eutrophication due to nitrogen enrichment. Accordingly, the CCC’s primary charge for

the Plan Update was to investigate strategies to mitigate nitrogen impacts on coastal embayments while still being mindful of other contaminants.

Consistent with that focus, the draft Plan Update evaluates a range of options to address nitrogen pollution, with an eye towards scalability, flexibility and cost-effectiveness. MassDEP recognizes that phosphorus in fresh water systems and emerging contaminants throughout the Cape are also a concern. While the draft Plan Update was not intended to be fully comprehensive in terms of all pollutants and water quality concerns on Cape Cod, the ability of nitrogen focused approaches to also deal with phosphorus in fresh water systems and emerging contaminants should be acknowledged as an issue to be considered during implementation.

### **Development of Plan Content**

The CCC has done a commendable job defining the role of nitrogen over-enrichment that has led to the decline in the health of Cape Cod's estuaries. In addition to summarizing those past and on-going efforts, the CCC has developed an ambitious program of community engagement, technology evaluation, creation of decision support tools and cost/financial models, and evaluations of regulatory, legal and institutional structures with recommendations for modifications.

### **Watershed Approach and Adaptive Management**

The draft Plan Update focuses on watershed-based planning with adaptive management rather than on nitrogen mitigation within town boundaries as part of a narrowly focused plan. This approach is consistent with the current thinking among the Commonwealth's regulatory agencies. The draft Plan Update identifies 57 watersheds (although Figure 4-1 only names 55) and promotes the concept of targeted watershed management plans (TWMP). A TWMP would include a thorough evaluation of ground and surface water impairment within a particular watershed and would evaluate alternatives for restoration, including, as needed, alternatives to meet a Total Maximum Daily Load (TMDL). Theoretically, a TWMP would be developed for each impaired watershed within a community, as well as for those watersheds that cross municipal boundaries. A TWMP, or assemblage of TWMPs for adjoining watersheds, could replace or support a Comprehensive Wastewater Management Plan (CWMP) for certain planning and implementation purposes. Alternatively, existing or newly developed CWMPs could be augmented to include one or more TWMPs for impaired watersheds targeted for restoration.

While using a TWMP appropriately focuses on determining the level of impairment and restoration needs based on watershed delineation rather than according to community boundary, the Plan Update should explain that before restoration decision-making occurs, the impacts and needs of surrounding watersheds should also be taken into account to design cost-effective solutions. It is important that the Plan Update articulate how implementation of water quality improvement measures in those watersheds should recognize the economies of scale in evaluating treatment alternatives that comes with combining watersheds. This is addressed to

some degree on a community scale in Chapter 6; however, there is a heavy focus on Joint Base Cape Cod (JBCC) and other opportunities could be further evaluated. An example of such an approach is the efforts of Chatham and Harwich to share capacity at the new Chatham wastewater treatment facility which incorporated both multi-community and multi-watershed planning and could serve as an appropriate model across the Cape.

Adaptive management is a key element of the draft Plan Update and has been in virtually all the community planning efforts made since the early 2000s. The draft Plan Update provides the context and expands the application of an adaptive management framework. Stakeholders involved in the development of the draft Plan Update have reportedly expressed a strong interest in incorporating alternative treatment technologies into any implementation efforts outlined in the draft Plan Update. Adaptive management allows the opportunity to initiate pilot projects to help demonstrate the degree of effectiveness of these alternatives in order to determine appropriate nitrogen credits. This also allows comparative analyses of a wide variety of approaches so that communities can optimize the most cost-effective combination of strategies for meeting nitrogen reduction targets.

### **Water Quality Monitoring**

One of the most important elements of a successful adaptive management plan is the ability to monitor improvements to water quality as the result of implementation activities. A carefully derived data collection protocol, sound quality assurance practices, and data management capabilities will be critical to understanding how various technologies and management approaches are working. This is especially true in the situation on the Cape where piloting of alternative technologies and approaches will be instrumental, as described below. MassDEP supports the CCC's desire to maintain an ongoing monitoring committee, and notes the need for monitoring to include salt water embayments as well as freshwater systems. In addition, resources will be sought to support the tasks outlined as necessary by that committee in the future. MassDEP remains committed to participating in these efforts by continuing to add technical guidance as needed.

### **Technology Analyses**

In an effort to address concerns that the implementation of community planning efforts focused on conventional technologies can be expensive, the draft Plan Update includes a comprehensive technology matrix that evaluates the efficiency and cost of both conventional and alternative approaches. It is important to evaluate alternative technologies and approaches to nutrient pollution management, and the draft Plan Update includes a thorough review. MassDEP cautions that the Plan Update and subsequent implementation strategies should not be overly reliant on approaches that have not fully demonstrated the ability to achieve water quality goals under local conditions. The technology matrix developed by the CCC provides ranges of removal efficiency for each technology; however, many of these technologies do not have well documented results and in some cases the referenced performance and costs are solely derived from the technology vendors. MassDEP recognizes the substantial potential benefit that

alternative or innovate approaches present for developing the most effective and efficient solutions to the Cape's water quality problems. However, communities must also consider the demonstrated performance and reliability of all approaches in making funding decisions. MassDEP encourages the use of the more conservative estimates of efficiencies when contemplating implementation to best assure that the water quality goals will be met and resources most effectively utilized.

Additionally, technologies and approaches included in the draft Plan Update run the range from well proven to highly experimental. It would be beneficial to rank the approaches in terms of feasibility, ease of permitting, and cost in order to identify those most worthy of consideration for use or piloting. Furthermore, the approaches should be evaluated on their potential to treat other pollutants, such as phosphorus, and/or adaptability for retrofitting in the event that new regulatory requirements should emerge. This information will be important to best inform communities' decision-making based on their specific circumstances. Because technologies and innovative concepts related to wastewater treatment are constantly evolving and improving, MassDEP recommends that the technology matrix be reviewed and updated annually so that the information it provides stays current and applicable. MassDEP and US EPA representatives should be a part of that review process.

During the development of the draft Plan Update, a series of decision support tools were also created. These include: the Multi-Variant Planner (MVP), Watershed Tracker, Watershed Calculator, Triple Bottom Line model, Technology Matrix and the updated Barnstable County Cost Report. As is the case with computer models in general, in some cases these models may not adequately account for existing conditions and will need ground-truthing for particular circumstances. For example, the MVP appears to utilize a "semi-standard" approach to zoning that may overlook town specific conditions such as conservation restrictions, thereby potentially over-estimating build-out. The Triple Bottom Line model has been referenced, but the actual model has not yet been demonstrated in detail and evaluated by the reviewing agencies. Likewise, additional information and clarification is needed with respect to the Barnstable County Cost Report revisions update.

## **Regulatory Compliance**

The draft Plan Update provides a thorough review of the various local, state, and federal regulatory programs that address coastal eutrophication. The draft Plan Update indicates that many of the regulatory structures in place have not kept pace with the current conditions, particularly with a focus on non-point sources. As a result, many of its recommendations, such as development of watershed-based permits are actively being considered by MassDEP. Use of watershed-based permitting would allow MassDEP to set appropriate and enforceable water quality targets that could be achieved by the permittee(s) using a combination of approaches (conventional or innovative alternatives, or both). The permit could incorporate phased approaches that allow for incremental improvements. Recent statutory changes have provided MassDEP with the authority to issue permits for up to a 20 year period, facilitating permitting of comprehensive, long-term plans. This type of permit could be issued to multiple permittees and could encourage communities with shared watersheds or multiple watersheds to work together

on meeting permit requirements. A watershed-based permit could be issued for one watershed or a number of watersheds that may benefit from a shared response. MassDEP will keep the CCC abreast of progress in this area as it relates to implementation of the Plan Update.

The draft Plan Update discusses MassDEP designating nitrogen sensitive areas (NSAs) on Cape Cod. The draft Plan Update explains that imposing this designation under current Title 5 regulations could require more expensive innovative/alternative on-site systems, even though such systems may not be sufficient to meet nitrogen loading limitations. Yet the draft Plan Update goes on to recommend that MassDEP consider designating NSAs. MassDEP recognizes that establishment of NSAs could provide for some reductions in nitrogen loads on Cape Cod. However, there should be discussion about the ways that NSAs might be redefined so that they are not limited to Title 5 as it relates to drinking water protection but could be expanded to encourage achievement of surface water quality standards with appropriate measures applied.

Section 208 requires the designation of a Waste Management Agency(ies) (WMA) charged with implementing the area wide water quality management plan. In the draft Plan Update, the CCC has identified various entities which could potentially fulfill the role of a WMA. It appropriately recommends that a task force should be convened by June 30, 2015 to evaluate potential new WMAs for designation in place of, or in addition to, the designated WMAs under the 1978 Plan.

## **Wastewater Management Planning**

As it pertains to planning and growth management, the draft Plan Update reviews the progress of all Cape towns with respect to their wastewater management planning efforts. It also specifically references the need for continued project planning partnerships with JBCC and MassDOT. While these are key agencies to include, they do not represent the totality of partnership opportunities. There is potential not only to provide guidance for inter-municipal and inter-watershed collaboration, but also to encourage and sponsor regional initiatives that solve existing needs. Effluent disposal sites across the Cape are limited. The draft Plan Update would benefit from an analysis of available sites and how they could be utilized sub-regionally for optimizing disposal capacity among watersheds. With the recent changes to the Ocean Sanctuaries Act allowing for ocean outfalls, a similar analysis of potential outfall sites could assist the towns in regional planning. An analysis of septage handling, treatment and disposal needs would help communities evaluate if a single septage treatment facility versus smaller sub-regional facilities could achieve cost-effective economies of scale. Recently enacted food waste bans coupled with the need for sludge disposal could allow for a regional waste to energy facility to flourish. These are the types of opportunities that the Plan Update could seek to exploit.

## **Cost Considerations**

The draft Plan Update states that the CCC provides communities with a cost model to help communities manage the greatest challenge of any implementation strategy: how to pay for it. The cost model is described as having cost, financing, affordability and revenue modules. The

narrative describes how the model should work, but it would be greatly improved if a demonstration of the actual model and additional information were included.

### **Assistance to Communities**

The draft Plan Update, along with years of data collection, analysis, and the need to meet state and federal requirements, support the need for action and indicate that Cape communities need to be more aggressive in moving forward with implementing nitrogen and wastewater management plans. The draft Plan Update includes several elements that can assist communities in formulating cost-effective plans and the CCC has instituted a protocol for providing technical assistance through assigned watershed teams. To that end, MassDEP encourages the CCC to continue to refine its decision support tools and assist communities in utilizing them moving forward. In addition, as communities are developing watershed plans, it would be beneficial to calculate each community's nitrogen load contribution to the watershed in order to determine appropriate allocation of responsibility. MassDEP believes this could most appropriately be done on a regional level.

### **Summary**

I hope you will consider our recommendations for improvement to the draft Plan Update as provided in the comments above. In summary, these include:

- 1) Address phosphorus and emerging contaminants during the implementation of measures to deal with nitrogen, where feasible;
- 2) Maintaining a monitoring committee and seeking resources to establish a robust monitoring plan and protocol, especially to track and share information related to alternative technology effectiveness and pilot study outcomes;
- 3) Providing information showing where there are likely economies of scale and how regional efforts across multiple watersheds for shared solutions may be most cost-effective in some cases, including, identification of geographic areas based on density, proximity or other factors, and the identification of particular technologies or approaches like collection areas, ocean outfall, septage handling facilities and waste-to-energy generation;
- 4) Annually updating the technology matrix and using conservative efficiency information until technologies have demonstrated success;
- 5) Providing assistance to communities in as many ways as possible; and,
- 6) Coordinating with MassDEP on revising regulatory approaches to include watershed permits.

MassDEP appreciates the tremendous effort that the CCC has undertaken in developing the draft Plan Update. The draft Plan Update shows that the problem cannot be affordably addressed using only one technology or with approaches limited by town boundaries, but must be tackled as a region. CCC's planning effort was not done in a vacuum. The development of the draft Plan Update has taken into account feedback gathered at hundreds of public stakeholder meetings that have been held throughout Cape Cod. Scientists, residents, business, environmental advocates, local leaders, state legislators, state and federal representatives, students, and all in between have had a voice in this process. The problem is not an easy one to solve, especially when the cost of doing so is significant. The work done by the Cape Cod Commission includes in-depth research on environmental and economic impacts while also looking for innovative ways for communities with shared watersheds to work together on solutions. MassDEP is proud to be a partner on this effort.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Moran". The signature is fluid and cursive, with a long horizontal stroke at the end.

Gary Moran  
Deputy Commissioner