

3225 MAIN STREET • P.O. BOX 226  
BARNSTABLE, MASSACHUSETTS 02630



CAPE COD  
COMMISSION

---

(508) 362-3828 • Fax (508) 362-3136 • [www.capecodcommission.org](http://www.capecodcommission.org)

**Sent via E-mail**

March 11, 2022

To: Elizabeth Sullivan, Town Administrator  
Town of Dennis  
685 Route 134  
South Dennis, MA 02660

Re: Dennis CWMP - 208 Plan Consistency Determination and Analysis

Dear Ms. Sullivan,

In response to your submission of the Dennis Comprehensive Wastewater Management Plan (CWMP), dated November 2021, with the request for a determination that this CWMP is consistent with the Cape Cod Area Wide Water Quality Management Plan Update pursuant to Section 2(d)(iii) of the Commission's *Enabling Regulations*, I am pleased to inform you that I have determined that the Dennis CWMP is consistent with the criteria set out in the Commission's "Guidance on Section 208 Plan Update Consistency Review," dated April 2018, and thus have determined that **the CWMP is consistent with the Cape Cod Area Wide Water Quality Management Plan Update** ("208 Plan"). The attached Exhibit A, "Dennis CWMP 208 Plan Consistency Analysis," provides additional staff comments and analysis in support of this determination and identifies suggested future actions for maintaining consistency with the 208 Plan under this determination.

The Commission is committed to supporting communities in the development and implementation of local water quality management plans. One way in which the Commission provides assistance region-wide is by making large and complex data sets more accessible. The Commission strives to provide decision-support tools that utilize, analyze and display information in ways that make it more understandable, including to the general public, and more easily employed or consumed in the decision-making process. To that end, Exhibit B contains a data sharing protocol that provides detail on data, technical studies, reports, maps, and other relevant information that the Commission requests from the Town as it moves forward with CWMP implementation.

Pursuant to this determination and as recognized in the CWMP, the Commission anticipates receiving annual progress reports and five-year Adaptive Management Plan update reports from the Town. I look forward to continued progress on this effort in Dennis. Please feel free to contact me with any questions.

Sincerely,

*Kristy Senatori*

Kristy Senatori  
Executive Director

CC: Richard Roy, Dennis Cape Cod Commission Representative  
Gary Moran, Deputy Commissioner, MassDEP  
Michaela L. Bogosh, PE, PMP, Project Manager, CDM Smith

### Criteria

#### **WMA assumes responsibility for controllable nitrogen for any part of the watershed within its jurisdiction.**

In the Comprehensive Wastewater Management Plan (CWMP), the Town of Dennis commits to taking responsibility for its share of controllable nitrogen load in the Bass River, Swan Pond River, Herring River, Chase Garden Creek (Bass Hole) and Sesuit Harbor (awaiting final MEP report) watersheds to which the town contributes as outlined in Massachusetts Estuaries Project (MEP) reports. The town's share of nitrogen load reduction is based on MEP reports for these watersheds, and the Dennis CWMP states that the neighboring towns of Harwich and Yarmouth have also utilized the MEP nitrogen allocations for their wastewater planning. The Quivett Creek watershed, while partially within the Town of Dennis boundaries, does not show evidence of water quality impairment and therefore does not currently require a reduction in nitrogen load. Conditions in Quivett Creek should be periodically monitored to verify these conditions do not change.

Future Action: Dennis shares watersheds with the Towns of Brewster, Harwich, and Yarmouth. The town should prioritize discussions about opportunities for collaboration, particularly as future loads change due to buildout or nitrogen management activities within the respective towns. Annual reports should detail any updated data used in future discussions of nitrogen responsibility, as well as any advancements in collaboration.

#### **Plan meets applicable nutrient reduction targets.**

The MEP results and required nitrogen load reductions were used by the Town of Dennis as the primary basis for the water quality management scenarios proposed within the CWMP, though other criteria including economic development, freshwater ponds, and drinking water were considered during the planning process. Nitrogen load reductions required in each watershed within Dennis are detailed in Table 10-1 of the CWMP. Scenario 6A and 7A, the town-preferred scenarios, exceed nutrient reduction targets and consist of traditional and non-traditional technologies within the jurisdictional limits of the Town of Dennis. These scenarios are also adaptable and the basis for permutations that allow for potential collaboration with neighboring towns. Anticipated nitrogen reductions are based on the removal of nitrogen from wastewater, as well as the addition of effluent recharge.

Future Action: The town should continue to engage with the Towns of Harwich, Yarmouth, and Brewster about potential collaborative nutrient reduction efforts. As discussions about future collaboration proceed and agreements are finalized, the applicable nitrogen loads, thresholds, and progress toward required nitrogen reduction in partner municipalities should be reflected in Dennis's annual and adaptive management plan updates.

#### **Planning occurs at a watershed level with consideration of a hybrid approach.**

The Town of Dennis considered multiple scenarios to achieve nutrient reduction targets, some of which relied primarily on sewerage, and some of which incorporated non-traditional technologies. Ultimately, the preferred scenarios balance costs and nitrogen reduction needs with a hybrid approach. Strategies to be used include sewerage with permeable reactive barriers (PRBs),

stormwater best management practices (BMPs), credit for fertilizer reduction, and aquaculture. Additionally, innovative/alternative (I/A) technologies will be considered as additional information about their performance and management becomes available. Dennis will create a committee to monitor potential options for I/A technologies, their implementation, and adaptive management approaches. The Town of Dennis considered many additional non-traditional technologies using the Commission's site screening viewer, and the CWMP states that these identified sites will be considered if additional nitrogen reduction is required.

Future Action: The CWMP phasing plan clearly outlines the sewerage process, but it does not outline a clear phasing plan for non-traditional technologies. Phase 1 states the potential beginning of the aquaculture program, implementation of stormwater BMPs, and fertilizer education program, and potential continuation of these within Phase 2. As progress on traditional and non-traditional approaches is evaluated throughout Phase 1, additional detail regarding the timing, scope, and role of non-traditional strategies as part of the adaptive management plan should be developed for consideration at the initial five-year plan review. Annual updates should include progress and performance analysis of these non-traditional strategies, as well as any additional data gathered or required to support planning for other non-traditional strategies like I/A systems.

#### **The public was engaged to gain plan consensus.**

Public participation and outreach have been a priority of the CWMP and began in 2005 during the Phase I Needs Assessment, when participation and feedback from residents and business owners was sought out by the Town. A subcommittee of the Wastewater Implementation Committee (WIC) was formed in 2018 to determine the best avenues for the Town to reach its residents. An array of avenues that WIC and the Town have used and will continue to use for outreach are highlighted in section ES.4.2 and 14.7 of the CWMP. Education and public outreach programs were also considered in operating and maintenance cost calculations for proposed non-traditional technologies. Community meetings were held in 2015, but largely included Town governing, planning, and advisory entities. Public information sessions and annual resident meetings were also held to provide updates on CWMP development. Additional public meetings and outreach efforts are being considered throughout CWMP implementation. The majority of proposed outreach and education will focus on the non-infrastructure components such as education on fertilizer, stormwater BMPs, ponds evaluations, low impact landscaping, monitoring programs, water conservation programs, on-site system support, and boat pump-outs.

Future Action: The Town of Dennis should consider adopting a communication framework to be included within the CWMP and used to guide public education and outreach efforts. A framework can be provided by the Commission and staff are available to assist the Town in tailoring the framework to meet their needs. Outreach efforts and updates should also seek to address, among other things, implementation progress and scheduling, anticipated construction impacts during implementation, plan changes due to adaptive management, financial matters, and the efficacy of intended nitrogen removal. Annual updates should describe the outreach activities that have been conducted, assess their effectiveness, and describe any proposed changes or adjustments to the outreach process.

#### **Plan includes proposed strategies to manage nitrogen loading from new growth.**

The CWMP details the future growth needs of Dennis, which include but may not be limited to growth to meet affordable housing goals and provide for additional commercial space. All areas

identified by the Town for growth, economic development, or redevelopment are included in the recommended sewer plan. Build-out estimates for wastewater flows were calculated using MEP nitrogen loading models, which were assembled with consideration for future town planning projects. Project design scenarios and cost estimates were calculated using these MEP build-out estimates for each watershed. Additionally, Cape Cod Commission regional buildout data was also considered. The CWMP states that MEP and Cape Cod Commission buildout estimates will be further evaluated to determine which dataset to use. The Town of Dennis proposes to follow Scenario 6A, as well as Scenario 7A in the long term, which increases the towns buildout wastewater flow to additional Areas of Concern (AOC).

Within the proposed adaptive management plan, the Town will evaluate and compare actual growth to the buildout analysis used in the plan, and institute any necessary program modifications.

Future Action: As stated in Section 14.4.1 of the CWMP, the timing of when the infrastructure is needed to support desired development and when sewers are installed in the areas will be the driving force for when these identified areas for potential growth are addressed in the phasing plan. The Commission recommends the Town of Dennis explore strategies to manage growth that reduce the future scale of nutrient reduction approaches required and minimize water quality impacts in areas slated to receive infrastructure in later phases of the CWMP.

#### **Plan includes an adaptive management approach.**

An adaptive management plan scope is outlined in section 14.8.1 of the CWMP and includes 5-year phasing. The WIC will continue to review planning and track progress of the CWMP. The adaptive management plan also includes various water quality monitoring throughout embayments, ponds, and potentially groundwater. Results of water quality monitoring will be reported to the WIC annually, along with an implementation and funding report.

The proposed wastewater treatment facility (WWTF) technologies include Sequencing Batch Reactors and Membrane Bioreactors technologies that allow for flexibility in nutrient flows, as well as provide advanced nitrogen removal. The preferred scenarios include additional capacity for expanded wastewater flows. The CWMP proposes establishment of a new committee to monitor changes technology. The committee may propose consideration of new technologies as new information becomes available. In the next phase of the CWMP, the Town of Dennis will use the Water Utility Resilience Program to ensure resilient design of the treatment system.

Future Action: Monitoring should also track performance measures for non-traditional technologies like the PRBs, stormwater management, and any future implementation of I/A systems. While the adaptive management plan includes important elements for consideration throughout CWMP implementation, development of milestones or triggers for action and potential changes will benefit the town. Initial data collected during the first phase of implementation can be utilized to clarify when and how early adaptive management decisions will be evaluated. The adaptive management plan should clarify how the data from monitoring or analysis of growth, funding, or implementation will alter changes or actions throughout the CWMP phases.

#### **Plan includes a pre- and post-implementation monitoring program.**

The monitoring already performed at bathing beaches, freshwater ponds, groundwater wells, and at wells in potential effluent recharge sites in Dennis are outlined within the CWMP. Additional monitoring programs anticipated include tracking the performance of fertilizer and stormwater

management, an expansion of monitoring at freshwater ponds, and continued and increased monitoring at the defined embayment stations. Continued saltwater sampling previously completed by MEP will have oversight from the WIC and will continue for the duration of implementation (section 14.7.5). Water quality monitoring at the sentinel and check stations is also a component of the adaptive management plan (section 14.8.1). The CWMP states that a monitoring plan will be drafted and sent to the WIC for review. Additional monitoring may be required by the potential groundwater discharge permit for the effluent recharge site. Water quality monitoring results will be reported to the WIC annually.

Future Action: Commission staff recommends the water quality monitoring plan to be drafted be designed to include all types of monitoring necessary to evaluate ongoing CWMP effectiveness. These may include ponds, groundwater, estuaries, and performance of proposed non-traditional approaches (permeable reactive barriers and aquaculture) and non-structural approaches (fertilizer and stormwater management). Consistent, long-term monitoring is extremely valuable for town and regional planning efforts in determining the success of watershed-based water quality improvement efforts. The Cape Cod Commission requests, under this 208-consistency determination, that water quality data be shared with the Commission for inclusion in the Regional Water Quality Monitoring Database when available, in accordance with the Commission's established data sharing protocols. Any data provided may be accessed through the [Water Quality Monitoring Data Portal](#), which provides temporal trends at the site and embayment scale. This resource may be useful for the town in monitoring changes in water quality throughout and following CWMP implementation.

Commission staff are available to provide technical assistance in development or review of the monitoring plan at the towns request and can provide guidance on the structure and format of data files necessary to be included in the Regional Water Quality Monitoring Database.

### **Plan includes a description and assessment of the town's proposed funding strategy.**

The Town of Dennis has included a detailed estimate of the CWMP costs and proposed funding and cost recovery mechanisms. The CWMP estimates that the total cost of non-traditional technology, collection and conveyance, the treatment system, effluent recharge with conveyance, and a PRB is \$344 million. Operations and maintenance costs total \$7.9 million. The Town prefers a cost recovery strategy that grants responsibility to all residents, operates within a single fund that other town programs cannot source from, and does not rely solely on the tax base.

Preferred cost recovery methods for the CWMP include a Clean Water State Revolving Fund (CWSRF) loan for a 20- or 30-year period at up to 2.4% interest. A Wastewater Stabilization Fund would be used to repay these borrowed funds for capital costs. Money for the stabilization fund is proposed to stem from 50% of landfill solar revenue, the 6% rooms tax, a real estate surcharge (currently the Town of Dennis is proposing a 1% surcharge), and a Town-wide property tax through the general tax fund. The annual tax increase based on CWMP costs over the 8 phase, 40-year period for a \$350,000 assessed home ranges from \$224 (average) to \$407 (maximum). In addition to the cost recovery plan outlined, additional possible revenue sources are highlighted (section 15.4), which include but are not limited to the Cape Cod and Islands Water Protection Fund, increased beach parking and beach parking costs, and betterments to those receiving sewer service.

Future Action: It is recommended that the Town of Dennis assess any currently available town funds that can help contribute to the cost recovery plans. Additionally, the Town should clarify how the

proposed cost recovery plan fits into the town's long-term capital planning needs. As the town has expressed the need to meet affordable housing standards, assessment of how the town will balance costs of future planning projects in addition to the CWMP will benefit current and future financial planning. This assessment should also focus on planning needs for beach parking and the potential for costs to contribute to the cost recovery fund. Commission staff anticipate additional cost analyses will be included in the first annual update.

Estimated costs within the CWMP for non-traditional technologies include stormwater BMPs, the fertilizer education program, and the aquaculture program. No funding has been set aside for potential addition of I/A technologies or others through the site identification process. Commission staff recommend flexibility within the funding strategy as the Town considers additional technologies throughout CWMP progress.

As part of the annual update and adaptive management plan processes, the town should identify any changes to the cost recovery, funding and borrowing plans, how this affects overall CWMP costs, financial impacts to residents, and opportunities to provide financial assistance to low-income, fixed income, or other disadvantaged populations.

**WMA commits to regular 208 Plan Update Consistency reviews until water quality goals are achieved, generally reviewed at least every five years.**

The Town of Dennis has acknowledged regulatory requirements for 208 consistency reviews to be performed by the Cape Cod Commission throughout CWMP phasing. The Dennis CWMP consists of eight, five-year implementation phases which provide clear points for ongoing consistency review. The Town is committed to maintaining communication with applicable regulatory agencies and frequent implementation review.

Future Action: Commission staff recommends that in addition to the Town of Dennis updating regulatory agencies, the Town should engage neighboring communities on their wastewater management planning and implementation as part of its periodic plan reviews to ensure opportunities for collaboration are considered.

**In shared watersheds, WMA seeking 208 Consistency Review collaborates with neighboring WMA(s) on nitrogen allocation, shared solutions, and cost saving measures.**

The Town of Dennis had been in conversation with the surrounding municipalities of Harwich and Yarmouth, joined as the DHY Clean Waters Community Partnership between 2017 and 2021. Additionally, Dennis shares watersheds with Brewster, with whom they also communicate with. While the CWMP acknowledges the large cost savings collaboration can provide, in June 2021 the Towns within the DHY partnership decided to pursue their individual town CWMPs. However, it is understood that the potential for partnership between Dennis and all the surrounding communities remains an option in the future, as each individual CWMP progresses. Dennis is pursuing a single treatment facility for the Town with viable technology for a shared plant with surrounding towns in the future. Previous DHY discussions also considered the Town of Dennis as the site for the shared WWTF.

Future Action: The Commission recommends the Town of Dennis prioritize continued communication with their neighboring Towns. Acknowledging the cost savings a regional collaboration can provide, Commission staff recommend Dennis pursue and host discussions throughout CWMP implementation to consider any changes in nitrogen load responsibility or

Exhibit A to Dennis CWMP 208 Plan Consistency Determination dated March 11, 2022  
"Dennis CWMP 208 Plan Consistency Analysis"

opportunities to collaborate on reduction strategies. The Town of Dennis should communicate their proposed CWMP and WWTF phasing and design, outlining any opportunities afforded by the proposed WWTF design to take on additional flow in the future. Future collaboration to provide wastewater treatment and/or disposal capacity between the Town of Dennis and a neighboring municipality(ies) may be accommodated through individual inter-municipal agreements. Annual updates should address progress in collaboration and any subsequent phasing or wastewater flow changes.



Exhibit B to Dennis CWMP 208 Plan Consistency Determination dated March 11, 2022  
 “Data Sharing Protocol for Consistency with the Cape Cod 208 Plan”

The Commission expects the following data and information be provided within the timeframes suggested. The following is subject to amendment from time to time and/or as Commission staff deems new information necessary to determine the Plan’s consistency with the 208 Plan.

<b>Data/Information</b>	<b>Timeframe</b>
<b>Technology Performance Data</b>	<b>Annually</b>
<i>Traditional and non-traditional technology performance data from pilot and/or full-scale projects.</i>	<i>Provided as part of annual report, unless otherwise agreed upon.</i>
<b>Groundwater Discharge Permits</b>	<b>Upon Issuance</b>
<i>Issued by MassDEP</i>	<i>Provided upon receipt by the Town.</i>
<b>Watershed Permits</b>	<b>Upon Issuance</b>
<i>Issued by MassDEP</i>	<i>Provided upon receipt by the Town.</i>
<b>Building Permit Data</b>	<b>Annually</b>
<i>Providing the location and square footage for new structures and new bedrooms added</i>	<i>Provided as part of annual report, unless otherwise agreed upon.</i>
<b>Assessors Data</b>	<b>Annually</b>
<i>Extracted town-wide assessors data.</i>	<i>Provided as part of annual report, unless otherwise agreed upon.</i>
<b>Water Use Data</b>	<b>Annually</b>
<i>Parcel specific water use data from water purveyor(s)</i>	<i>Provided as part of annual report, unless otherwise agreed upon.</i>
<b>Water Quality Monitoring Data</b>	<b>Annually</b>
<i>Results of marine (embayments) and fresh (ponds, lakes) water quality monitoring</i>	<i>Provided as part of annual report, unless otherwise agreed upon. The first submission should include all historical monitoring data not previously provided to the Commission.</i>
<b>Habitat, Pond, and Watershed Assessments, Technology Evaluations, and other Reports/Information</b>	<b>As Completed</b>
<i>Draft and final reports, such as Massachusetts Estuaries Project Technical Reports, pond assessments, pilot project evaluations, and/or other reports providing information related to water quality status, habitat health, technology performance and other water quality initiatives.</i>	<i>Provided as released and available.</i>