TOWN OF TISBURY
Board of Health Regulation
Deployment of Enhanced De-Nitrification Technologies within the
Lake Tashmoo and Lagoon Pond Watershed Nitrogen Overlay Districts

SECTION 1. FINDINGS

1.1 The Town's population has grown to the point where the wastewater treatment infrastructure in place lacks the capacity and/or capability to remove sufficient nitrogen to assure that Tisbury's ponds and other water resources meet applicable water quality standards as well as provide for the safety of those using those resources.

1.2 The presence of excess nitrogen in water resources contributes to harmful algal blooms (HABs) that retard aquatic plant growth, destroy wildlife habitat and degrade waters for shellfishing, recreation and other public purposes. Some of these HABs, including multiple cyanobacterial HABs, may present a toxic risk to humans. Swimmers, marine farmers and others in contact with water containing cyanobacterial toxins may suffer adverse reactions such as malaise, muscle weakness, eye irritation, rashes, and blisters. More serious responses such as pneumonia, hepatic failure, and proteinuria have also been documented. Animals, birds, and fish can also be poisoned by high levels of toxin-producing cyanobacteria. Freshwater and estuary HABs are initiated and exacerbated by excessive nutrient (nitrogen and phosphorus) loading and high surface water temperatures (>20 degrees C), all conditions increasingly prevalent in Tisbury's estuaries and ponds.

1.3 The 2015 Massachusetts Estuaries Project (MEP) reports for Lake Tashmoo and Lagoon Pond ("**Reports**") concluded that their combined annual estuarial load of controllable nitrogen coming from Tisbury properties be reduced by 11,000 pounds to satisfy the nitrogen standards in the federal Clean Water Act and remain sustainable water resources. These quantities were premised on the assumption that *no new nitrogen* would be entering these water bodies as a result of further development.[1]

1.4 The Reports also noted that nitrogen from human wastewater from standard Title V septic systems is considered to be controllable and that it constitutes approximately 80% and 76% of the overall controllable nutrient loading for Lake Tashmoo and Lagoon Pond, respectively. Standard Title V septic systems were designed by public health officials and are widely deployed in the maintenance of residential and commercial sanitation. They were not designed – nor do they have the potential – to address the ever-growing nutrification of our Island waterbodies.

1.5 In 2016 the Town of Tisbury first adopted a regulation requiring the installation of **Enhanced De-Nitrification Technology** capable of addressing both the Town's sanitation and denitrification needs. At that time, the best-in-class denitrification technology removed less than 50% of the nitrogen from household sanitary waste. Since then MassDEP has approved **Enhanced De-**

[1] Since 2015 the number of approved Title V septic systems in Tisbury's portion of the Lake Tashmoo and Lagoon Pond watersheds has increased by 10%. Portions of Oak Bluffs and West Tisbury also lie within the Lake Tashmoo and Lagoon Pond watersheds and nitrogen loading activities from those towns contributes to the current excess nitrogen condition of the ponds.

Nitrification Technologies that removes up to 85% of septic nitrogen waste and meets a groundwater discharge standard of not more than 12 mg/liter of nitrogen from septage waste.

SECTION 2. PURPOSE

2.1 This regulation seeks primarily to protect the public health by mitigating nitrogen toxicity in Lake Tashmoo and Lagoon Pond, while moving toward compliance with applicable water quality standards relating to controllable nitrogen. Accordingly, the regulation requires that, in specified circumstances in the **Watershed Districts**, new on-site wastewater treatment systems employ best available de-nitrification technology, in order to achieve removal of significantly more wastewater nitrogen than standard Title 5 septic systems. Suitable technologies include those approved for piloting by the Massachusetts Department of Environmental Protection, thus enabling the Board of Health to partner with property owners and septic engineers in the in-field testing of innovative de-nitrification technologies. This approach is designed to enhance the Town's capability and capacity to reduce the flow of nitrogen from on-site wastewater treatment systems into Lake Tashmoo and Lagoon Pond.

2.2 This revision to the 2016 initial version of the regulation reflects the MassDEP approval of new **Enhanced De-Nitrification Technologies** as of May 2020**.** The Board of Health will continue to review new technologies as they become available and may amend this regulation to lower the nitrogen discharge and/or removal standard as appropriate.

SECTION 3. AUTHORITY

This regulation is adopted by the Tisbury Board of Health as authorized by Massachusetts General Laws, Chapter 111, Section 31, and all other enabling authority.

SECTION 4. DEFINITIONS

For the purposes of this regulation (including the Appendix), the following words shall have the following meanings unless the context clearly indicates a different meaning:

Approved Sewer District means a district (with specified boundaries) approved by the Town for sewering.

Enhanced De-Nitrification Technology means an on-site de-nitrification wastewater disposal technology that meets a nitrogen groundwater discharge standard of not more than 13 mg/liter of nitrogen from septage waste or removes 75% of septic nitrogen waste, and is approved by the Massachusetts Department of Environmental Protection for general use, provisional use, or piloting use for nitrogen reduction. For the avoidance of doubt, Enhanced De-Nitrification Technology includes self-contained, zero discharge, stand-alone composting toilets used in conjunction with a greywater system, approved by the Massachusetts Board of Plumbers and Gas Fitters.

Financial Hardship means the property owner lacks the financial means to afford the installation of an **enhanced de-nitrification technology. I**ncome guidelines established for the low interest septic system loan program in place in the Town or authorized in the Town shall be used to determine eligibility for a financial hardship waiver under section 5.5.

Property means a residential or commercial property or properties.

Proposed Sewer District means a district (with specified boundaries) proposed, either by the Tisbury Wastewater Planning Committee or the Tisbury Sewer Advisory Board, for sewering.

Watershed District means the area of Tisbury lying within the boundaries of (a) the Lake Tashmoo Watershed Nitrogen Management Overlay District or (b) the Lagoon Pond Watershed Nitrogen Management Overlay District, both as defined by the Town of Tisbury at the Special Town Meeting of April 14, 2015, and as indicated on Appendix A.

SECTION 5. INSTALLATION OF ENHANCED DE-NITRIFICATION TECHNOLOGY

5.1 Upon the occurrence of a trigger as set out in section 5.2 (and subject to sections 5.4, 5.5 and 5.6), the Board of Health will only issue a permit for a proposed new wastewater treatment system and/or any system upgrade for a **Property** in a **Watershed District** provided:

a) the application provides for an **Enhanced De-Nitrification Technology**; and
b) all other conditions for the issuance of a permit are met.

5.2 The following situations are "triggers" for the purposes of section 5.1:

a) a new wastewater treatment system is required to serve a **Property** (i.e., new construction);
b) a **Property's** existing wastewater treatment system fails and replacement is necessary, as determined by the Board of Health[2].
c) additional development on the **Property** or a change in use or in intensity of use (or potential use) which would increase wastewater Nitrogen discharge beyond the Board of Health approved system capacity irrespective of whether the existing wastewater treatment system has excess sanitation capacity[3];
d) at the time that a **Property** is transferred to another owner and, based on a septic system inspection, the Board of Health determines that a new wastewater treatment system or system upgrade is necessary.

5.3 An **Enhanced De-Nitrification Technology** required under this regulation must be installed, commissioned, monitored, tested and maintained in accordance with all applicable state and local regulations and any manufacturer instructions. Copies of testing reports must be provided to the Board of Health within 30 days after completion of the testing.

5.4 This regulation does not apply to any **Property** in an **Approved Sewer District**.

5.5 The Board of Health may grant an applicant's request for a waiver of section 5.2 if:

a) there is insufficient or inadequate space on the **Property** to install an **Enhanced De-Nitrification Technology**;

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[2] If a **Property's** existing wastewater treatment system is near its maximum capacity and is approaching the end of its useful life (as determined by the Board of Health), the installation of **Enhanced De-Nitrification Technology** as an add-on is recommended, although not required, as it may increase the life of the existing system.

[3] In the circumstance of this trigger, **Enhanced De-Nitrification Technology** may be installed as an add-on to the existing wastewater treatment system to treat the total nitrogen effluent generated by the Property.

b) projected usage at the **Property** will be de minimis for a committed period of not less than 10 years as evidenced by projected occupancy and historic water usage;
c) an existing system fails per 5.2b and it would be a **Financial Hardship** for the applicant to install an **Enhanced De-Nitrification Technology,** and financial assistance is either unavailable or the applicant fails to meet the income guidelines established for the low interest septic loan;
d) the **Property** is in a **Proposed Sewer District;** or
e) the Board of Health finds a waiver is appropriate for any other reason consistent with the purposes of this regulation.

5.6 If a **Property** is in a **Proposed Sewer District** and the Board of Health has granted a waiver under section 5.5 d), the Board of Health may require the applicant to submit for approval engineering plans for an **Enhanced De-Nitrification Technology**. Such an applicant will be required to install the **Enhanced De-Nitrification Technology** only if the **Proposed Sewer District** is not approved by the Town at a Town Meeting or substantially altered by the vote of Town Meeting so as to eliminate or substantially reduce the de-nitrification that would reasonably be expected to be achieved as the result of the Proposed Sewer District, as determined by the Board of Health. In this event, installation of the **Enhanced De-Nitrification Technology** must be completed within 12 months of the date of the Town Meeting vote.

SECTION 6. EFFECTIVE DATE

This regulation applies to all applications submitted after January 31, 2022 and ceases to apply in respect of a **Watershed District** on the date on which the Town by declaration of the Board of Health, certifies that it is capable of removing sufficient nitrogen from that Watershed District to enable it to meet established and applicable state and federal water quality standards for nitrogen applicable to that **Watershed District**.

Appendix A
Map of the Lake Tashmoo Nitrogen Management Overlay District and the Lagoon Pond Watershed Nitrogen Management Overlay District