

RECEIVED

By Bourne Health Department at 2:08 pm, Jul 25, 2023

Civil Engineering & Surveying For Greater Cape Cod



July 17, 2023

Ms. Terri Guarino, R.S., C.H.O.
Bourne Board of Health Agent
24 Perry Avenue
Bourne, MA 02532

RE: 90 Circuit Ave, Bourne - Erica K., Robert K., and Linda S. Morse

Dear Ms. Guarino:

On behalf of the applicants, Erica K., Robert K., and Linda S. Morse, we request the Town of Bourne Board of Health approval of a Title 5 Septic Upgrade Design (no increase in flow) at the above referenced address.

Based on a drawing by our firm, three (3) variances under Section 1 of the Town of Bourne Board Health Regulations and Title 5 are required for siting the proposed septic system. In specific, the variances needed in order to proceed with the upgrade of the substandard septic system are for the 150 feet setback from the Wetland Resource Areas to leaching facility, 10 feet setback to property lines and 5-foot separation to the groundwater. The property does not contain an area that will meet the local 150' setback to wetlands due to existing site features and topography of this lot, which includes wetlands in close proximity. The best approach to provide adequate environmental and public health protection similar to a conforming 150 feet requirement is to upgrade the system with the addition of nitrogen reducing technology. The homeowner is proposing the install a NitROE tank that will provide the nitrogen reduction. The system will also require waving the side property line setback and the 5-foot separation to groundwater setback. A pump chamber (lift station) is proposed to provide 4-foot separation to the groundwater table. Due to these circumstances, the setback distances requested are as follows:

NO	DESCRIPTION	BYLAW REQUIRED	STATE REQUIRED	PROPOSED	WAIVER
1.	S.A.S Setback to Wetland (dune)	150'	50'	44'	108'
2.	S.A.S. Setback to Property Line	10'	10'	6.9' & 9.0'	3.1 & 1'
3.	S.A.S. Setback to Groundwater	5'	5'	4'	1'

There are no additional bedrooms created, and therefore no increase in sanitary design flow.

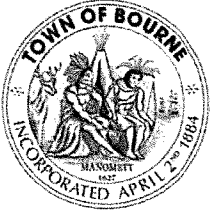
An application has been filed with the Bourne Conservation Commission for this septic system upgrade project. The proposed wetland setbacks waiver is for the local Board of Health requirements to the coastal dune. The proposed septic system exceeds the state Title 5 minimum required 50' setback to Surface Waters under 310 CMR 15.211 (1).

If you have any questions, please feel free to contact me.

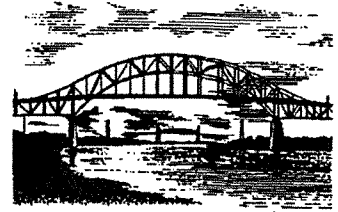
Sincerely,

Raul Lizardi-Rivera, P.E.
Director of Engineering

Encl. 7 Copies of Request and Plan
Cc: Robert & Linda Morse



Bourne Board of Health Application for Septic Variance or Waiver Requests



In accordance with the established procedures of the Bourne Board of Health, this application is for septic variances and waivers which have not been approved administratively and require approval at a public meeting. Please use the following application form for guidance on how to apply for variances and waivers which serve new construction, changes in use, increases in flow, or repairs and upgrades to on-site sewage disposal systems with design flows of less than 10,000 gallons/ day.

1. Facility Name and Address:

Owner's Name

Erica K. , Robert K. and Linda S. Morse

Facility's Street Address

90 Circuit Avenue, Pocasset (Bourne), MA 02559

Owner's Telephone Number

603-903-3815

Owner's E-mail Address

bmorsebomorse@gmail.com

Owner's Mailing Address

P.O. Box 907, Pocasset, MA 02559

2. Applicant or Preparer's Name and Address (if different from above):

Preparer's Name

Raul Lizardi-Rivera, P.E.

Company

Cape & Islands Engineering, Inc.

Telephone Number

508-477-7272

E-mail Address

raul@capeeng.com

Mailing Address

800 Falmouth Road, Suite 301C, Mashpee, MA 02649

3. Type of Facility (check all that apply):

Residential Commercial Institutional School Industrial Mixed Use

4. Describe Facility (i.e. single-family dwelling, 45 seat restaurant): Single Family Residence with two bedrooms serviced by an on-site septic system.

5. Type of System Proposed (check all that apply): Conventional Title 5 I/A System

Pumped System Gravity System Pressure Dosed Tight Tank Other

6. Describe the existing and proposed septic system components: Failed existing system. Septic tank and leaching system. Propose to keep existing tank, install new NitROE tank for enhanced nitrogen removal, install new pump chamber and new Title 5 Sewage Disposal System to provide adequate 4-feet separation to the adjusted groundwater level. The design consist of DEP approved NitROE alternative treatment system for remedial use.

7. Design Flow per 310 CMR 15.203 (in gallons/ day):

223 GPD (Capacity)	EXISTING	PROPOSED
Design flow of system:	220 GPD	220 GPD
Total design flow of facility: <i>(if more than one system on subject property)</i>	220 GPD	223 GPD

8. Enclose a **letter of request for variances/waivers** which makes reference to the specific provisions of Title 5 and/ or the Board Bourne of Health Regulations for which a variance is sought. Please use this opportunity to demonstrate compliance with 310 CMR 15.410, and to justify the relevant facts and circumstances of the individual case. Note that with regard to variances for new construction, enforcement of the provision from which a variance is sought must be shown to deprive the applicant of substantially all beneficial use of the subject property in order to be manifestly unjust. Be sure to explain why full compliance with the applicable regulations is not feasible, and how a level of environmental protection that is at least equivalent to that provided under Title 5 and the Board of Health Regulations can be achieved without strict application of said regulations.

9. In order for this Application to be deemed complete, it must be accompanied by the following:

- \$125 filing fee + any other applicable permit application fees paid to the Town of Bourne.
- Application for a Disposal System Construction Permit (may be filled out by installer).
- Six copies of Letter of Request describing nature of variances.
- Six sets of complete engineered plans and specifications, one with original stamp of design engineer; plus, one electronic copy. All variances/ waivers must also be listed on the plans per 310 CMR 15.220(4).
- Six sets of floor plans, existing and proposed.
- Six copies of [Nitrogen Loading Calculation Worksheet](#) *required for all applications.
- If abutter notification is required, one of each of the following must be submitted:
 - A copy of the certified list of abutters from the Assessor's Department.
 - Sample letter for abutter notification postmarked 10 days prior to meeting date.
 - Proof of certified mailing (receipts) meeting requirements of 310 CMR 15.405(2).
- Proposals for installation of Innovative/Alternative septic systems must be accompanied by:
 - A copy of the Certification for Use including technology specific conditions.
 - Draft [disclosure notice for the I/A technology](#) to be recorded in the deed.
- Hydrogeologic data may be required for new leaching facilities proposed within 100ft of a wetland/watercourse.
- Percentage of Increase Worksheet may be required for waivers or increases in flow.

10. Certification:

"I certify under penalty of law that this document and all attachments, to the best of my knowledge and belief, are true, accurate, and complete. I am aware that there may be significant consequences for submitting false information, including, but not limited to, penalties or fine and/or imprisonment for deliberate violations."

Facility Owner's Signature See Attached Previously Signed Date July 10, 2023

Print Name See Attached for Signature

Signature of Preparer Raul Lizardi-Rivera Date July 17, 2023

Print Name Raul Lizardi-Rivera, P.E., Cape & Islands Engineering, Inc.

7. Design Flow per 310 CMR 15.203 (in gallons/ day):

Design flow of existing system: 220 GPD

Design flow of proposed upgraded system: 220 GPD

Total design flow of facility: 223 GPD (Capacity)

8. Enclose a letter of request for variances/ waivers which makes reference to the specific provisions of Title 5 and/ or the Board Bourne of Health Regulations for which a variance is sought. Please use this opportunity to demonstrate compliance with 310 CMR 15.410, and to justify the relevant facts and circumstances of the individual case. Note that with regard to variances for new construction, enforcement of the provision from which a variance is sought must be shown to deprive the applicant of substantially all beneficial use of the subject property in order to be manifestly unjust. Be sure to explain why full compliance with the applicable regulations is not feasible, and how a level of environmental protection that is at least equivalent to that provided under Title 5 and the Board of Health Regulations can be achieved without strict application of said regulations. (See Attached)

9. In order for this Application to be deemed complete, it must be accompanied by the following:

- Supplemental permit application
- \$125 filing fee + applicable permit application fees paid to the Town of Bourne.
- Letter of request describing nature of variances (see samples)
- Six sets of complete plans and specifications, plus one electronic copy. One with original stamp of design engineer.
- Nitrogen Loading Calculation Sheet(s) if applicable
- If abutter notification is required, one of each of the following must be submitted:
 - A copy of the certified list of abutters from the Assessor's Department
 - Sample letter for abutter notification postmarked 10 days prior to meeting date
 - Proof of certified mailing (receipts) meeting requirements of 310 CMR 15.405(2)
- Proposals for installation of Innovative/ Alternative septic systems must be accompanied by:
 - A copy of the Certification for Use including technology specific conditions
 - Draft disclosure notice for the I/A technology to be recorded in the deed
- Hydrogeologic data for all leaching facilities proposed within 100ft of a wetland/ watercourse
- Percentage of Increase Worksheet may be required for waivers or increases in flow

10. Certification:

"I certify under penalty of law that this document and all attachments, to the best of my knowledge and belief, are true, accurate, and complete. I am aware that there may be significant consequences for submitting false information, including, but not limited to, penalties or fine and/or imprisonment for deliberate violations."

Facility Owner's Signature RK Morse Linda Morse Date 7/10/23

Print Name Robert K. + Linda S. Morse

Signature of Preparer Raúl Lizardi-Rivera Date 5/10/2023

Print Name Raúl Lizardi-Rivera, P.E., Cape & Island Engineering, Inc

July 11, 2023

Ms. Terri Guarino, R.S., C.H.O.
Bourne Board of Health Agent
24 Perry Avenue
Bourne, MA 02532

RE: Application for Local Upgrade Approval, 90 Circuit Avenue, Bourne, MA

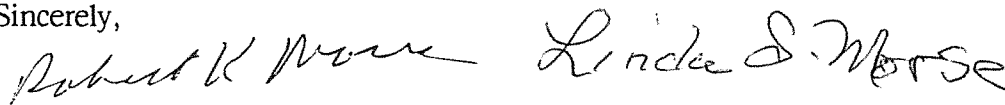
Dear Ms. Guarino:

This letter is in regard the above referenced application.

Please accept this letter as my written authorization to allow Raúl Lizardi-Rivera, P.E. of Cape & Islands Engineering, Inc. and/or his Associates to represent this property on my behalf.

If you have any questions, please feel free to contact me.

Sincerely,

Handwritten signatures of Robert K. Morse and Linda S. Morse.

Linda and Robert Morse
P.O. Box 907
Pocasset, MA 02559
bmorsebmorse@gmail.com
603-903-3815

Quitclaim Deed

We, Jonathan E. Morse of Toms River, New Jersey and Robert K. Morse and Linda S. Morse of Keene, New Hampshire

For nominal consideration paid, in the amount of ONE and 00/100 (\$1.00) Dollar

Grant to Jonathan E. Morse, Erica K. Morse, Robert K. Morse and Linda S. Morse, Husband and Wife, all as Joint Tenants, with a mailing address of 1312 Indian Hill Road, Toms River, NJ 08753

With Quitclaim Covenants

The land, with the buildings thereon, situated in the Town of Bourne, in the section known as Pocasset Heights, in the County of Barnstable, and Commonwealth of Massachusetts, being **LOT 139** on a plan of land entitled "Pocasset Heights" drawn and surveyed by L.T. Talbot and recorded in the Barnstable County Registry of Deeds, Plan Book 28, Page 1, to which reference may be had. Said lot it bounded and described as follows:

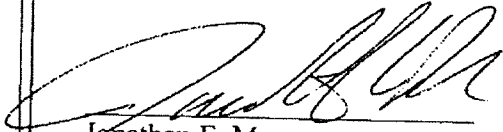
On the WEST by Circuit Avenue;
On the SOUTH by land of one Ewell;
On the EAST by land of one Spencer; and
On the North by land of one Edson.

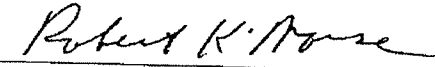
The above-described premises is subject to and together with the benefit of all rights, right of ways, easements, restrictions, reservations, covenants and encumbrances of record, insofar as the same are now in force and applicable.

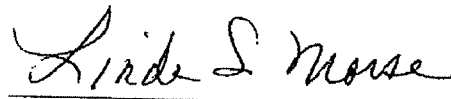
Property Address: 90 Circuit Avenue, (Pocasset) Bourne, MA

For our title reference, see deed from Joanne E. Wilson, Executrix of the Estate of Louis E. Cellineri, Middlesex County Probate No. 95P1076EP, dated June 27, 1997, recorded with the Barnstable County Registry of Deeds on June 30, 1997 in Book 10827, Page 201.

Witness our hands and seals this 24 day of December, 2004.


Jonathan E. Morse

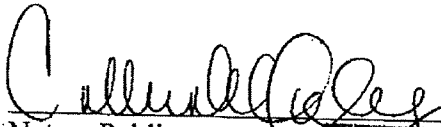

Robert K. Morse


Linda S. Morse

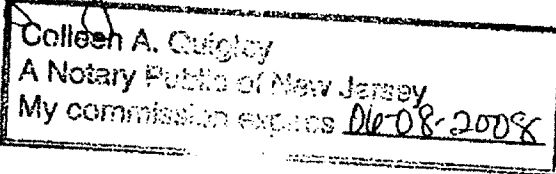
State of New Jersey

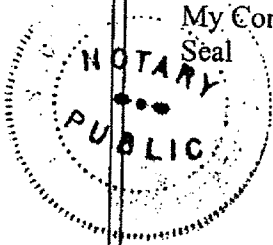
County of Ocean, ss.

On this 24th day of December, 2004, before me, the undersigned notary public, personally appeared Jonathan E. Morse, Robert K. Morse and Linda S. Morse, proved to me through satisfactory evidence of identification which were NJ Drivers Lic - NHDL's to be the person whose name is signed on the preceding or attached document, and acknowledged to me that they signed it voluntarily for its stated purpose.


Notary Public

My Commission Expires:


Colleen A. Cugley
A Notary Public of New Jersey
My commission expires 06-08-2008



LAW OFFICE OF
J. FORD O'CONNOR
6 MACARTHUR BLVD.
BOURNE, MA 02532
(508) 759-4070



July 17, 2023

RE: Notice of Public Hearing- 90 Circuit Avenue, Pocasset, (Bourne), MA

Dear Abutter:

In accordance with the State Environmental Code, Title 5: 310 CMR 15.00, you are hereby notified that Erica K, Robert K. and Linda S. Morse has requested a hearing before the Bourne Board of Health for relief from Title 5 and/or the Bourne Board of Health Regulations for the installation of an upgraded/new septic system.

The location of the property for this proposal is 90 Circuit, Bourne, MA where you are listed as an abutter. At said hearing the Board will discuss and possibly vote on:

NO	DESCRIPTION	BYLAW REQUIRED	STATE REQUIRED	PROPOSED	WAIVER
1.	S.A.S Setback to Wetland (dune)	150'	50'	44'	108'
2.	S.A.S. Setback to Property Line	10'	10'	6.9' & 9.0'	3.1 & 1'
3.	S.A.S. Setback to Groundwater	5'	5'	4'	1'

There are no additional bedrooms created, and therefore no increase in sanitary design flow. upgrade the system with the addition of nitrogen reducing technology. The homeowner is proposing the install a NitROE tank that will provide the nitrogen reduction.

This hearing is tentatively scheduled for August 9, 2023 at 5:30 pm. Information regarding the hearing may be available for your review one week prior to the meeting at the Bourne Health Department, 24 Perry Avenue, Buzzards Bay, Monday through Friday from 8:30am until 4:30pm.

Meeting agendas are posted on the Town of Bourne website, www.townofbourne.com/health no less than 48 hours in advance of the hearing. Please confirm the date, time, and location of the meeting with the Town, in case of any changes. Should you have any questions or concerns, please do not hesitate to contact me or the Bourne Health Department at 508-759-0600 ext. 1513.

Sincerely,

Jean E. Duff-Still
Permitting Specialist

Cc: Bourne Board of Health



TOWN OF BOURNE

Board of Assessors
24 Perry Avenue
Buzzards Bay, MA 02532
(508) 759-0600 Ext. 1510



Michael Leitzel, Chairperson
Ellen Doyle Sullivan, Clerk
Donna Barakauskas, Member

Rui Pereira, MAA
Director of Assessing

May 16, 2023

Stacy Hylinski
Cape & Islands Engineering, Inc.
800 Falmouth Rd., Ste. 301C
Mashpee, MA 02649

Re: Abutters List for Map 43.3 Parcel 226
Property address: 90 Circuit Avenue

As required by the Bourne Board of Health, pursuant with section 310 CMR 15.411(1), this is to certify that the attached list of names and addresses constitutes all of the parties in interest as shown on the most recent tax list of the Town of Bourne.

Abutting properties are: Map 43.3 Parcels 224, 225, 227, 228, 229 & 267.

Your filing fee of \$10.00 has been received by the Bourne Assessor's Office.

Please be advised that this abutters list is only good for 30 days from the date on this letter. Expired abutters list can be recertified for an additional filing fee.

See enclosed for abutters mailing addresses.

Board of Assessors

*Ellen Doyle Sullivan -
Donna Barakauskas
Michael Leitzel*

Extract: ABUTTERS LIST
 Database: LIVE
 Filter: Key IN 9495,9496,9498,9499,9500,9530
 Sort:

Report #24: Owner Listing Report
 Fiscal Year 2024

Bourne MA

Key	Parcel ID	Owner	Localtion	LC/JC	Bk-Pt(Cert) /Dt	Mailing Street	Mailing City	ST	Zip Cd/County
9495	43.3-224-0	MEIER PETER K	96 CIRCUIT AVE	N	1010 4/30/1996	P O BOX 855	POCASSET	MA	02559
9496	43.3-225-0	WINNER DONN G & NANCY S WINTHER	7 CAPE COD LN	N	1010 10/29/2018	681 HEATONS MILL CR	LONGHORNE	PA	19047
9499	43.3-227-0	O'REGAN JAMES & MARY AGNES O'REGAN	1 CAPE COD LN	N	1010 6/69/724	89 PLYMOUTH ST	CARVER	MA	02330-1035
9499	43.3-228-0	DOUCETTE NAIDENE A & KEVIN W DOUCETTE	86 CIRCUIT AVE	N	1010 1/22/2009	86 CIRCUIT AVE	POCASSET	MA	02559
9500	43.3-228-0	CONGDON GERALD S	46 SAGO AVE	N	1010 10/31/2013	172 SKYLINE DR	ACTON	MA	01720
9536	43.3-267-0	TOWN OF BOURNE BEACH AREA OFF CIRCUIT AVE	0 CIRCUIT AVE	N	9300 8/70/401	24 PERRY AVE	BUZZARDS BAY	MA	02532

Total Records 6

NOTICE OF ALTERNATIVE SEWAGE DISPOSAL SYSTEM

M.G.L. c. 21A, § 13 and 310 CMR 15.0287(10)

ADDRESS OF PROPERTY SERVED BY ALTERNATIVE SYSTEM: 90 Circuit Ave, Bourne, MA

TITLE REFERENCE FOR PROPERTY SERVED BY ALTERNATIVE SYSTEM *[check and complete each that applies]:*

- Deed recorded with the BARNSTABLE Registry of Deeds in Book 19415, Page 844
 Certificate of Title No. _____ issued by the Land Registration Office of the _____
Registry District
 Source of title other than by deed _____

NAME(S) OF OWNER OF PROPERTY SERVED BY ALTERNATIVE SYSTEM: Robert Morse and Linda Morse

OWNER(S) MAILING ADDRESS: P.O. Box 907, Pocasset, MA 02559

WHEREAS, Section 15.280 of Title 5 of the State Environmental Code (“Approval of Alternative Systems”), provides for the Massachusetts Department of Environmental Protection (the “Department”) to approve or certify, as appropriate, all proposals to construct, upgrade or replace on-site sewage disposal systems using alternative systems;

WHEREAS, owners and/or operators of approved or certified alternative systems are subject to general conditions, as specified in Section 15.287 of Title 5 of the State Environmental Code, 310 CMR 15.287, and may be subject to special conditions, as specified in the Department’s approvals or certifications; such general and special conditions potentially including, without limitation, requirements relating to the use of trained operators, periodic inspections, maintenance, sampling, reporting and/or recordkeeping;

WHEREAS, the owners and/or operators this alternative system acknowledges and agrees to comply with the provisions of all of the Bourne Board of Health Alternative Septic System Regulations and any other conditions for the existence of the system;

WHEREAS, Section 15.287(10) of Title 5 of the State Environmental Code, 310 CMR 15.287(10), requires that “prior to obtaining a Certificate of Compliance for installation of a new or upgraded system, the system owner shall record in the chain of title for the property served by the alternative system in the Registry of Deeds and/or Land Registration Office, as applicable, a Notice disclosing both the existence of the alternative on-site system and the Department’s approval of the system. The system owner shall also provide evidence of such recording to the Bourne Board of Health [;]” and

WHEREAS, the Property is served by an alternative sewage disposal system.

NOW, THEREFORE, Notice of an alternative sewage disposal system is hereby given for the above-referenced Property, as follows:

1. Existence. An alternative system has been installed as a new or upgraded alternative sewage disposal system, on or adjacent to the Property, and serves the Property. The trade name and model number(s) of the alternative system are as follows:

Trade name of technology: NitROE® Waste-Water Treatment System

Manufacturer Name: KleanTu LLC.

Model number(s): NitROE 2KS

A copy of the Department of Environmental Protection's Approval/Certification is available online at the Department's website:

<https://www.mass.gov/guides/title-5-innovativealternative-technology-approval-letters>

2. Approval/Certification. On May-12-2020 [date], the Department, pursuant to its authority under the section of Title 5 as specified below, approved or certified the technology used in the above referenced alternative system, under MassDEP Transmittal Number X285590 [Transmittal Number].

[Check one of the following, as applicable:]

- Approved for remedial use under 310 CMR 15.284
- Approved for piloting under 310 CMR 15.285
- Provisionally approved under 310 CMR 15.286
- Certified for general use under 310 CMR 15.288

****This Notice of Alternative Sewage Disposal System must be submitted to the Bourne Board of Health****

WITNESS the execution hereof under seal this ____ day of _____, 20____, made by the above-named Alternative System Owner(s).

[Alternative System Owner(s) Signature(s)]

Print Name(s): Robert Morse and Linda Morse

COMMONWEALTH OF MASSACHUSETTS

_____, ss

On this ____ day of _____, 20____, before me, the undersigned notary public, personally appeared _____ (name of document signer), proved to me through satisfactory evidence of identification, which were _____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

(Official signature and seal of notary)

Approved and Accepted By:

Terri Guarino, R.S., C.H.O.
Health Director
Town of Bourne



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

PROVISIONAL USE APPROVAL RENEWAL

Pursuant to Title 5, 310 CMR 15.000

Name and Address of Applicant:

KleanTu LLC.
300 Old Pond Road, Ste# 206
Bridgeville, PA 15017

Trade name of technology and models:

NitROE® Waste-Water Treatment System (NitROE® WWTS) with unit sizing for design flows up to 2000 gpd (NitROE® 2KS WWTS and NitROE® 2KM WWTS) (hereinafter the 'System' or the 'Technology'). Owner and Operator manuals, installation manual, schematic drawings illustrating the System models and the technology inspection checklist are part of this Certification.

DEP Transmittal No.: X285590
Date of Issuance: May 12, 2020,
Expiration date: May 12, 2025

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection (hereinafter "the Department") hereby issues this Provisional Approval to: KleanTu LLC, located at 300 Old Pond Rd., Ste 206 in Bridgeville, PA (hereinafter "the Company"), NitROE® 2KS WWTS and NitROE® 2KM WWTS (hereinafter "the Technology" or "System") for use in the Commonwealth of Massachusetts subject to the conditions herein. Sale and use of the Technology is subject to compliance by the Company, the Designer, the System Installer, the Operator, and the System Owner with the terms and conditions herein. Any noncompliance with the terms or conditions of this Certification constitutes a violation of 310 CMR 15.000.

Marybeth Chubb, Section Chief
Wastewater Management Program
Bureau of Resource Protection

May 12, 2020
Date

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.

TTY# MassRelay Service 1-800-439-2370

MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

I. PURPOSE

Subject to the conditions of this Approval and any other local requirements, the purpose of this Approval is to allow installation and operation of at least 50 on-site sewage disposal systems utilizing the technology in Massachusetts in order to conduct a performance evaluation of the capabilities of the Technology during the first 3 years of operation of each system, in accordance with Title 5 – 310 CMR 15.286 (7), *Provisional Approval of Alternative System*.

The specific goal of the Performance Evaluation is to determine if the Technology is capable of consistently meeting the concentration limits for total nitrogen (TN) of less than 11 milligrams per liter (mg/L) for installations with design flows less than 2,000 GPD in the effluent discharged to the soil absorption system. In areas subject to nitrogen loading limitations, increases in the discharge rate per acre may be allowed when the nitrogen concentration discharged to the soil is reduced.

The Company is responsible for oversight and sampling of the systems during the Performance Evaluation. The System Owner has responsibility for continued oversight and sampling of the system if the property served was allowed to increase the discharge rate per acre above 440 gallons per day per acre (gpda) in an area subject to Nitrogen Loading Limitations. The System Owner will be required to repair, replace, modify or take any other action as required by the Department or the local approving authority, if the Department or the local approving authority determines that the System is not capable of meeting the required reduction in nitrogen in the effluent.

With the other applicable permits or approvals that may be required by Title 5, this Approval authorizes the installation and use of the Alternative System in Massachusetts. All the provisions of Title 5, including the General Conditions for all Alternative Systems (310 CMR 15.287), apply to the sale, design, installation, and use of the System, except those provisions that specifically have been varied by this Approval.

II. GENERAL DESCRIPTION OF THE TECHNOLOGY

The NitROE® 2KS or 2KM WWTS (the 'System') is installed in series between a Title-5 system septic tank and a soil absorption system constructed in accordance with 310 CMR 15.100 – 15.279, subject to the provisions of this Approval to accommodate design flows of less than 2,000 GPD.

The System is comprised of two-unit processes which are sequentially performed in two different chambers. The first chamber is aerated, via an external air pump and airline header/hose arrangement, to achieve both organic carbon reduction along with the biological conversion of ammonia-N to nitrate-N. From the Aeration Chamber, the wastewater then gravity flows into a Denitrification Chamber where, in the presence of natural organics from wood chips, bacteria mediate the conversion of nitrate-N to inert N gas that exits to the atmosphere via the Title 5 system vent piping. Depending on design flow and availability of local tank structures, the sequential Aeration and Denitrification process steps can be performed in the same single tank, which is NitROE® 2KS WWTS, or each process could be performed in its own separate tank with the overall NitROE® WWTS comprised of multiple tank combinations, which is NitROE® 2KM WWTS.

The use of the Technology under this Approval requires:

- Disclosure Notice in the Deed to the property;
- Certifications by the Company, the Designer, and the Installer;
- System Owner Acknowledgement of Responsibilities;

- A certified operator under contract for periodic inspection and maintenance;
- Periodic sampling;
- Recordkeeping and reporting; and
- An external power supply

III. CONDITIONS OF APPROVAL

A. Basis for Conditions

1. The term "System" refers to the Technology in combination with any other components of an on-site treatment and disposal system that may be required to serve a Facility in accordance with 310 CMR 15.000.
2. The term "Approval" includes the Special Conditions, Standard Conditions, General Conditions of 310 CMR 15.287, and the approved Attachments.
3. Items required by this Approval include:
 - a) Performance Evaluation Plan (PEP) with sampling and analysis requirements and approved by the Department. The PEP must be submitted to the Department for review and approval within 60 days of issuance of this Approval and meet the requirements of the Department's *Guidance for the Preparation of Performance Evaluation Plans <2,000 GPD*;
 - b) Minimum System installation requirements;
 - c) Company schematic drawings and specifications;
 - d) Owner's Manual, including information on substances that should not be discharged to the System;
 - e) Operation and Maintenance manual, including but not limited to, operator qualification requirements, inspection requirements, sampling and analysis requirements, recordkeeping requirements, and/or reporting requirements; and
 - f) MassDEP Operation and Maintenance (O&M) checklist and I/A technology inspection checklist.

B. Special Conditions

1. Department review and approval of the System design and installation is not required unless the Department determines on a case-by-case basis pursuant to its authority at 310 CMR 15.003(2)(e) that the proposed System requires Department review and approval.
2. System installations must meet the specific siting conditions for Provisional Use provided in 310 CMR 15.286(4) and the facility must meet the siting requirements of this Approval.
3. Any System for which a complete Disposal System Construction Permit Application is submitted while this Approval is in effect, may be permitted, installed, and used in accordance with this Approval unless the Department, the local approval authority, or a court requires the System to be modified or removed or requires discharges to the System to cease.
4. The System Owner shall provide access to the site for purposes of sampling the System in accordance with the Company's technology Performance Evaluation Plan approved by the

Department, in addition to providing access for performing inspections, maintenance, repairs, and responding to alarm events.

5. The System Owner shall ensure that no permanent buildings or structures, other than the System, are constructed in the area for the installation of all the components of a fully conforming Title 5 system with a reserve area. The area for a fully conforming Title 5 system with a reserve area shall not otherwise be disturbed by the System Owner in any manner that will render it unusable for future installation of a fully conforming Title 5 system.
6. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sanitary sewer system.

If it is feasible to connect a new or existing facility to the sewer, the Designer shall not propose an Alternative System to serve the facility and the facility Owner shall not install or use an Alternative System.

When a sanitary sewer connection becomes feasible after an Alternative System has been installed, the System Owner shall connect the facility served by the System to the sewer within 60 days of such feasibility and the System shall be abandoned in compliance with 310 CMR 15.354, unless a later time is allowed in writing by the Department or the Local Approving Authority.

7. The control panel including alarms shall be mounted in a location accessible to the System Operator.
8. For any System that does not flow by gravity to the SAS, the System shall be equipped with sensors and high-level alarms to protect against high water due to pump failure, pump control failure, loss of power, or system freeze up. The control panel including alarms and controls shall be mounted in a location always accessible to the operator (or service contractor). Emergency storage capacity for wastewater above the high level alarm shall be provided equal to the daily design flow of the System and the storage capacity shall include an additional allowance for the volume of all drainage which may flow back into the System when pumping has ceased.

Instead of providing emergency 24-hour storage, an independent standby power source may be provided for operation during an interruption in power. With any interruption of the power supply the source must be capable of automatically activating in addition to manual start up capability. The standby power must be sufficient to handle peak flows for at least 24 hours and sufficient to meet all power needs of the System including, but not limited to, pumping, ventilation, and controls. Standby power installations must be inspected and exercised at least annually and all automatic and manual start up controls must be tested. Standby power installations must comply with all applicable state and local code requirements. Provided that a standby power installation complies with these requirements, no variance is required to the provisions of 310 CMR 15.231(2).

9. System unit malfunction and high water alarms shall be connected to circuits separate from the circuits to the operating equipment and pumps.
10. All System control units, valve boxes, conveyance lines and other System appurtenances shall be designed and installed to prevent freezing per the Company's recommendations.

11. Any System structures with exterior piping connections located within 12 inches or below the Estimated Seasonal High Groundwater elevation shall have the connections made watertight with neoprene seals or equivalent.
12. In compliance with 310 CMR 15.240(13), a minimum of one (1) inspection port shall be provided within the SAS consisting of a perforated four inch pipe placed vertically down into the stone to the naturally occurring soil or sand fill below the stone. The pipe shall be capped with a screw type cap and accessible to within three inches of finish grade.

Operation and Maintenance

13. Inspection, operation and maintenance (O & M), sampling, and field testing of the System required by this Approval shall be performed by a System Operator with the following qualifications:
 - a) is an approved System Inspector in accordance with 310 CMR 15.340;
 - b) has been trained by the Company and whose name appears on the Company's current list of qualified operators; and
 - c) has been certified at a minimum of Grade Level IV (four) by the Board of Registration of Operators of Wastewater Treatment Facilities, in accordance with Massachusetts regulations 257 CMR 2.00. The name of the Operator shall be included in the O&M agreement required by paragraph B (14).
14. Prior to the use of the System, the System Owner shall enter into an O&M Agreement with a qualified contractor and submit the Agreement to the Approving Authority and the Company. The Agreement shall be at least for one year and include the following provisions:
 - a) The name of the qualified Operator that appears on the Company's current list of Service Contractors;
 - b) The System Operator must have the qualifications specified in paragraph B (13);
 - c) The System Operator must inspect the System in accordance with the Approval and anytime there is an equipment failure, System failure, or other alarm event;
 - d) In the case of a System failure, an equipment failure, alarm event, components not functioning as designed or in accordance with the Company specifications, or violations of the Approval, procedures and responsibilities of the Operator and System Owner shall be clearly defined for corrective measures to be taken immediately. The System Operator shall agree to provide written notification within five days describing corrective measures taken to the System Owner, the Company, and the local board of health;
 - e) The System Operator shall determine the cause of total nitrogen effluent limit violations if they occur and take corrective actions in accordance with the approved O & M Manual; and
 - f) Procedures and responsibilities for recording quarterly or monthly wastewater flows must be defined, see paragraph B (32) "*Flow Metering*".
15. At all times, the System Owner shall maintain an O&M Agreement that meets the requirements of paragraph B (20).
16. The System Owner and the System Operator shall properly operate and maintain the system in accordance with this Approval, the Designer's operation and maintenance requirements, and the requirements of the local approving authority.

17. Upon determining that the System has failed, as defined in 310 CMR 15.303, the System Operator shall notify the System Owner immediately.
18. Upon determining that the System has failed, as defined in 310 CMR 15.303, the System Owner and the System Operator shall be responsible for the notification of the local approving authority within 24 hours of such determination.
19. In the case of a System failure, an equipment failure, alarm event, components not functioning as designed or in accordance with the Company specifications, or any violations of the Approval, the System Owner and the System Operator shall be responsible for the written notification of the local approving authority and the Company within five days describing corrective measures taken.
20. Within 60 days of any site visit, the System Operator shall submit an O&M report and inspection checklist to the System Owner and the Company. The O&M report and inspection checklist shall include, at a minimum:
 - a) for a System failing, any corrective actions taken;
 - b) wastewater analyses, wastewater flow data, and field testing results;
 - c) any violations of the Approval;
 - d) any determinations that the System or its components are not functioning as designed or in accordance with the Company specifications; and
 - e) any other corrective actions taken or recommended.
21. By September 30th of each year, the System Owner and the Service Contractor shall be responsible for submitting to the local approving authority all monitoring results with all O&M reports and inspection checklists completed by the System Operator during the previous 12 months.
22. By September 30th of each year, the Service Contractor shall be responsible for submitting to the Company copies of all O&M reports including alarm event responses, all monitoring results, violations of the Approval, inspection checklists completed by the Service Contractor, notifications of system failures, and reports of equipment replacements with reasons during the previous 12 months.
23. A copy of the wastewater analyses, wastewater flow data, field testing results, and System Operator O&M reports and inspection checklists shall be maintained by the Company. It is recommended the System Owner also maintain copies of these items.
24. The System Owner shall notify the Approving Authority in writing within seven days of any cancellation, expiration or other change in the terms and/or conditions of the O&M Agreement required by Paragraph B(14).
25. The System Owner and the Service Contractor shall maintain copies of the Service Contractor's O&M reports, inspection checklists, and all reports and notifications to the LAA for a minimum of five years.
26. The System may only be installed to serve facilities where a fully conforming Title 5 system with a reserve area exists on-site or could be built on-site in compliance with the design standards for new construction of 310 CMR 15.000, and for which a site evaluation in

compliance with 310 CMR 15.000 has been approved by the Approving Authority. A fully conforming Title 5 system may include other approved alternative technologies in accordance with the conditions imposed on the alternative technologies.

27. Subject to the provisions of this Approval, the Technology shall be installed in a manner which neither intrudes on, replaces a component of, or adversely affects the operation of all other components of the System designed and constructed in accordance with the standards for new construction of 310 CMR 15.200 - 15.279.

Effluent Limit and Monitoring Requirements.

28. For the new construction, unless the facility meets a TN effluent limit of 11 mg/l or less, the system shall not be designed to receive more than 440 gallons of design flow per day per acre (gpda) in an area that is subject to the Nitrogen Loading Limitations of 310 CMR 15.214. If the facility does not meet with the Nitrogen Loading Limitations pursuant to the aggregation provisions of 310 CMR 15.216, the System Owner shall repair, replace, modify or take any other action as required by the Department or the local approving authority to meet the total nitrogen concentration limits in the effluent.

Violation of the TN concentration in the System effluent shall not require notifications as required in paragraphs B (18) and (19).

29. Prior to Department approval of the Company's Performance Evaluation Plan, the Company shall be responsible for the following monitoring requirements for all System installations that are subject to a total nitrogen concentration limit in accordance with paragraph B (28). Sampling shall include pH, BOD5, TSS and Total Nitrogen, unless otherwise stated. Flow shall be recorded at each inspection, see "Flow Metering" section below.

- a) Year-round facilities shall be inspected and effluent sampled quarterly;
- b) Seasonal properties shall be inspected and effluent sampled a minimum of twice per year, with at least one annual sample taken 30 to 60 days after seasonal occupancy and a second sample taken no less than 2 months after the first sample; and
- c) After 12 rounds of monitoring, sampling may be reduced to TN only quarterly. Reduced sampling shall also include Field Testing of System wastewater when determined necessary by the operator, see *DEP Field Testing Protocol* at <http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/testsamp.pdf>.

Properties occupied at least 6 months per year are considered year-round properties.
Properties occupied less than 6 months per year are considered seasonal properties.

30. During the Performance Evaluation period, the Company shall follow the monitoring requirements specified in the Performance Evaluation Plan for installed Systems.
31. After the three (3) year Performance Evaluation period by the Company and approval by the Department, and until this Approval is modified, terminated, or superseded by a General Use Certification, the System Owner shall comply with the following monitoring requirements if the System is subject to a total nitrogen concentration limit in accordance with paragraph B? (28).

- a) Year-round properties shall be inspected and sampled for at least the TN parameter a minimum of twice/year, at least 5 months apart and with at least one sample taken between December 1 and March 1 of each year. Field testing shall be completed as determined necessary by the System operator, see *DEP Field Testing Protocol* at <http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/testsamp.pdf>.
Water meter readings shall be recorded at each inspection, see "Flow Metering" below.
 - b) Seasonal properties shall be sampled for at least the TN parameter a minimum of twice/year. At least one annual sample must be taken 30 to 60 days after each seasonal occupancy. A second sample must be taken no less than 2 months after the first sample. Field testing of the System shall be completed as determined necessary by the operator. Water meter readings shall be recorded at each inspection, see "Flow Metering" below.
32. Flow Metering - At a minimum, for all systems installed prior to this Approval, water meter flow data shall be recorded each time the system is inspected and sampled by the System Operator. For systems installed after the effective date of this Approval, wastewater flow data shall be recorded each time the system is inspected and sampled by the System Operator and may be based on:
- a) actual metering data of wastewater flow to the system; or
 - b) water meter data for the total facility with metered non-wastewater flows, if available, subtracted from the total facility water usage.
33. Field Testing: Turbidity, pH and Apparent Color - Turbidity, pH, DO and apparent color shall be measured and/or recorded in the field when when determined necessary by the operator. See applicable sections of the Department's *Field Testing Protocol* at <http://www.mass.gov/eea/docs/dep/water/laws/i-thru-z/testsamp.pdf>.
34. At a minimum, the System Operator shall inspect the System:
- a) two times per year;
 - b) in accordance with the approved O&M manual, the Designer's operation and maintenance requirements, and the requirements of the local approving authority; and
 - c) any time there is an alarm event, equipment failure, or system failure
35. The System Operator shall collect samples and obtain analysis results from an approved lab, perform field testing required by the Approval and submit results within 60 days of the site visit to the System Owner.
36. If the Company successfully demonstrates the effectiveness of the System to reduce nitrogen loadings during the Performance Evaluation period, a minimum of three years, the System Owner shall operate the System subject to the requirements of the General Use Certification, if issued, for this technology.

C. Special Conditions Specific to the Company

1. The Approval shall only apply to model units with the same model designations specified in this approval and meet the same specifications, operating requirements, and plans, as provided by the manufacturer at the time of the application. Any proposed modifications of the units shall be subject to the review of the Department for coverage under the Approval.

2. Prior to submission of an application for a DSCP, the Company shall provide to the Designer and the System Owner:
 - a) All design and installation specifications and requirements;
 - b) An operation and maintenance manual, including:
 - i) an inspection checklist;
 - ii) recommended inspection and maintenance schedule;
 - iii) monitoring (i.e. water use and power consumption) and sampling procedures, if any;
 - iv) alarm response procedures, if any, and troubleshooting procedures;
 - c) An owner's manual, including proper system use and alarm response procedures, if any;
 - d) Estimates of the Owner's costs associated with System operation including, when applicable: power consumption, maintenance, sampling, recordkeeping, reporting, and equipment replacement;
 - e) A copy of the Company's warranty; and
 - f) Lists of Designers, Installers, and Service Contractors.
3. The Company shall implement the Performance Evaluation Plan, as submitted and approved by the Department, and shall be responsible for all data collection and submissions to the Department until a final determination on the Performance Evaluation has been made by the Department.
4. Until a final determination has been made by the Department on a completed Performance Evaluation, the Company shall submit to the Department an annual report by February 15th of each year that includes the following:
 - a) a table of all sample data collected for all systems installed to date and all information required by the Department as part of the approved Performance Evaluation Plan;
 - b) status of preparation of a Performance Evaluation Plan if not yet provided to MassDEP, or any recommended changes to the approved Performance Evaluation Plan;
 - c) a list of pending applications for system installations which have been submitted to local approving authorities;
 - d) identification of any System after start-up in violation of the Approval or not in compliance with any performance criteria at the time of the annual report, the reasons for the noncompliance and the status of any corrective actions that are needed; and
 - e) any recommendations and requests for changes to the system monitoring and reporting plan or the performance criteria of the Approval.

The report shall be signed by a corporate officer, general partner or the Company owner.

(Service Contractor records submitted to the Company should not be included with the annual report to the Department, but shall be made available to the Department within 30 days of a request by the Department.)

5. The Company shall institute and maintain a program of Installer training and continuing education that is at least offered annually. The Company shall maintain and annually update, and make available the list of qualified Installers by February 15th of each year. The Company shall certify that the Installers on the list have taken the training and passed the Company's training qualifications.

6. The Company shall institute and maintain a program of Designer training and continuing education, as approved by the Department. The Company shall maintain and annually update, and make available the list of qualified Designers by February 15th of each year. The Company shall certify that the Designers on the list have taken the training and passed the Company's training qualifications.
7. The Company shall institute and maintain a program of Operator training and continuing education, as approved by the Department. The Company shall maintain and annually update, and make available the list of qualified Operators by February 15th of each year. The Company shall certify that the Operators on the list have taken the training and passed the Company's training qualifications.
8. The Company shall not sell the Technology to an Installer unless the Installer is trained to install the System by the Company.
9. Prior to its sale of any System that may be used in Massachusetts, the Company shall provide the purchaser with a copy of the Approval with the System design, installation, O&M, and Owner's manuals. In any contract for distribution or sale of the System, the Company shall require the distributor or seller to provide the purchaser of a System for use in Massachusetts with copies of these documents, prior to any sale of the System.
10. Within 60 days of issuance by the Department of a revised Approval, the Company shall provide written notification of changes to the Approval to all Service Contractors servicing existing installations of the Technology and all distributors and resellers of the Technology.
11. The Company shall provide written notification to the Department's Director of the Wastewater Management Program at least 30 days in advance of the proposed transfer of ownership of the Technology for which the Approval is issued. Said notification shall include the name and address of the proposed owner containing a specific date of transfer of ownership, responsibility, coverage and liability between them.
12. The Approval shall be binding on the Company and its officers, employees, agents, contractors, successors, and assigns, including but not limited to dealers, distributors, and resellers. Violation of the terms and conditions of the Approval by any of the foregoing persons or entities, respectively, shall constitute violation of the Approval by the Company unless the Department determines otherwise.

IV. CERTIFICATION AND NOTIFICATION REQUIREMENTS

1. Thirty (30) days prior to submitting an application for a DSCP, the Company or its representative shall provide to the Approving Authority a certification, signed by the owner of record for the property to be served by the unit, stating that the property owner:
 - a) has been provided a copy of the Provisional Use Approval and all attachments and agrees to comply with all terms and conditions;
 - b) has been informed of all the owner's costs associated with the operation including power consumption, maintenance, sampling, recordkeeping, reporting, and equipment replacement;

- c) understands the requirement for a contract with a company approved operator and has been provided a current list of all approved operators;
 - d) agrees to fulfill his responsibilities to provide a Deed Notice as required by 310 CMR 15.287(10) and the Approval; and
 - e) agrees to fulfill his responsibilities to provide written notification of the Approval conditions to any new owner, as required by 310 CMR 15.287(5).
2. Upon submission of an application for a DSCP to the Approving Authority, the Company shall submit to the Approving Authority, with a copy to the Designer and the System Owner, a certification by the Company or its authorized agent that the design conforms to this Approval and that the proposed use of the System is consistent with the unit's capabilities and all Company requirements. The review shall include evaluation of the need for installation of water meter(s) at each facility. An authorized agent of the Company responsible for the design review shall have received technical training in the Company's products.
 3. The System Designer shall be a Massachusetts Registered Professional Engineer, or a Massachusetts Registered Sanitarian provided that such Sanitarian shall not design a system with a discharge greater than 2,000 gallons per day.
 4. Thirty (30) days prior to delivery of the treatment unit to the site for installation, the Company shall provide to the Approving Authority a copy of a signed contract for a minimum period of one year with a Company approved Operator and the initial Owner/Occupant of the property.
 5. Prior to the commencement of construction, the System Installer must certify in writing to the Designer and the System Owner that (s)he has taken the Company's training, passed the Company's training qualifications, and is listed on the Company's list of Installers.
 6. Prior to the issuance of a Certificate of Compliance by the Approving Authority:
 - a) In accordance with 310 CMR 15.021(3), the System Installer and Designer must certify in writing that the System has been constructed in compliance with 310 CMR 15.000, the approved design plans, and all local requirements, including any local approving authority site-specific requirements;
 - b) In accordance with 310 CMR 15.021(3), the Designer must certify in writing that any changes to the design plans have been reflected on as-built plans which have been submitted to the Approving Authority by the Designer;
 - c) As a condition of this Approval, the System Installer and Designer must certify to the Approving Authority in writing that the System has been constructed in compliance with the terms of this Approval;
 - d) An authorized agent of the Company must certify to the Approving Authority in writing that the installation was done by a qualified Installer approved by the Company and the installation conforms to this Approval. The authorized agent of the Company responsible for the inspection of the installation shall have received technical training in the Company's products; and
 - e) Prior to signing any agreement to transfer any or all interest in the property served by the system, or any portion of the property, including any possessory interest, the System Owner shall provide written notice, as required by 310 CMR 15.287(5) of all conditions contained in the Approval to the transferee(s). Any and all instruments of transfer and any leases or rental agreements shall be included as an exhibit attached thereto and made

a part thereof of a copy of the Approval for the System. The System Owner shall send a copy of such written notification(s) to the Local Approving Authority within 10 days of such notice to the transferee(s).

V. STANDARD CONDITIONS

1. The provisions of 310 CMR 15.000 are applicable to the design, installation, use and operation of a System utilizing an approved or certified alternative technology, except those provisions that specifically have been varied by the conditions of this Approval.
2. The design, installation, and use of the System must conform to the terms and conditions of the Approval and the Department approved attachments.
3. The facility served by the System and the System itself shall be open to inspection and sampling by the Department and the local approving authority at all reasonable times. Standard Conditions Applicable to the System Owner.
4. This Approval shall be binding on the System Owner and on its agents, contractors, successors, and assigns. Violation of the terms and conditions of this Approval by any of the foregoing persons or entities, respectively, shall constitute violation of this Approval by the System Owner unless the Department determines otherwise.
5. The System Owner shall obtain all necessary permits and approvals required by 310 CMR 15.000 prior to the installation and use of the System in Massachusetts.
6. The System is approved for the treatment and disposal of sanitary sewage only. The System Owner shall not introduce any wastes that are not sanitary sewage into the System. The System Owner shall dispose of wastes generated or used at the facility that are not sanitary sewage by other lawful means.
7. Prior to issuance of the Certificate of Compliance and after recording and/or registering the Deed Notice required by 310 CMR15.287(10), the System Owner shall submit the following to the Local Approving Authority: (i) a certified Registry copy of the Notice bearing the book and page/or document number; and (ii) if the property is unregistered land, a Registry copy of the System Owner's deed to the property, bearing a marginal reference on the System Owner's deed to the property. The Notice to be recorded shall be in the form of the Notice provided by the Department.
8. The System Owner shall at all times have the installed System properly operated and maintained in accordance with the most recent O&M provisions of this Approval for the alternative technology and in accordance with any additional requirements of the Approving Authority. The most recent O&M provisions of this Approval for the alternative technology are available from the Department.
9. The System Owner shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of that request.

Standard Conditions Applicable to the Designer

10. The Designer shall be a Massachusetts Registered Professional Engineer or a Massachusetts Registered Sanitarian, including when designing systems for repair, provided that such Sanitarian shall not design a system to discharge more than 2,000 gallons per day.
11. Prior to the application for a DSCP, the Designer shall provide the System Owner with a copy of this Approval.

Standard Conditions Applicable to the Company

12. This Approval shall be binding on the Company and its officers, employees, agents, contractors, successors, and assigns. Violation of the terms and conditions of this Approval by any of the foregoing persons or entities, respectively, shall constitute violation of this Approval by the Company unless the Department determines otherwise.
13. The Company shall include copies of the Approval with each System that is sold. In any contract executed by the Company for distribution or re-sale of the System, the Company shall require all vendors, distributors, and resellers to provide each purchaser of the System with copies of the Approval.
14. The Company shall make available, in printed and electronic format, the approved Attachments and any approved updates associated with the Approval, to the System Owners, Operators, Designers, Installers, vendors, resellers, and distributors of the System.
15. The Company shall submit to the Department for approval any proposed updates or changes to the Attachments to the Approval.
16. The Company shall notify all System Owners, resellers, and distributors of changes to the Approval within 60 days of issuance by the Department.
17. The Company shall notify the Department's Director of the Wastewater Management Program at least 30 days in advance of the proposed transfer of ownership of the Technology for which the Approval is issued. Said notification shall include the name and address of the proposed owner containing a specific date of transfer of ownership, responsibility, coverage and liability between them. All provisions of the Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.
18. The Company shall furnish the Department any information that the Department requests regarding the Technology within 21 days of the date of receipt of that request.
19. If the Company wishes to continue the Approval after its expiration date, the Company shall apply for and obtain a renewal of the Approval. The Company shall submit a renewal application at least 180 days before the expiration date of the Approval, unless written permission for a later date has been granted in writing by the Department. Upon receipt of a timely and complete renewal application, the Approval shall continue in force until the Department has acted on the renewal application.

Reporting

20. All notices and documents required to be submitted to the Department by the Approval shall be submitted to:

Director
Wastewater Management Program
Department of Environmental Protection
One Winter Street - 5th floor
Boston, Massachusetts 02108

Rights of the Department

21. The Department may suspend, modify or revoke the Approval for cause, including, but not limited to, noncompliance with the terms of the Approval, non-payment of any annual compliance assurance fee, for obtaining the Approval by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare, or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to the Approval and/or a System utilizing the Technology against the Company, the Designer, the System Owner, the Installer, and/or the Operator of the System.

VI. GENERAL CONDITIONS

Title 5 Regulations 310 CMR 15.287: "General Conditions for Use of Alternative Systems Pursuant to 310 CMR 15.284 through 15.286"

"The following conditions shall apply to all uses of alternative systems pursuant to 310 CMR 15.284 through 15.286:

1. All plans and specifications shall be designed in accordance with 310 CMR 15.220.
2. Any required operation and maintenance, monitoring and testing plans shall be submitted to the Department and approved prior to initiation of the use. Monitoring and sampling shall be performed in accordance with a Department approved plan. Sample analysis shall be conducted by an independent U.S. EPA or Commonwealth of Massachusetts approved testing laboratory, or an approved independent university laboratory, unless otherwise provided in the Department's written approval. It shall be a violation of 310 CMR 15.000 to omit from a report or falsify any data collected pursuant to an approved testing plan.
3. The facility served by the alternative system and the system itself shall be open to inspection and sampling by the Department and the Local Approving Authority at all reasonable times.
4. The Department and/or the Local Approving Authority may require the owner or operator of the system to cease operation of the system and/or to take any other action necessary to protect public health, safety, welfare and the environment.
5. The owner or operator shall provide written notice to any new owner or operator that the system is an alternative system. Such notice shall include notice of the general conditions and any special conditions applicable to the system and its owner.

6. The owner or operator, or the proponent of the alternative system, shall obtain and provide the Department with a determination from the board of certification of operators of wastewater treatment facilities established pursuant to M.G.L. c. 21, § 34A as to whether a certified operator is required for operation of the alternative system. The Department shall waive this requirement if it has on file a determination for the alternative system, and shall notify the owner, operator, or proponent of the determination.
7. It is a violation of 310 CMR 15.000 to install, construct, or operate an alternative system except in full compliance with the written approval and 310 CMR 15.287.
8. The Department may require the issuance of a groundwater discharge permit pursuant to 314 CMR 5.00 (groundwater discharge program) for any alternative system.
9. The system owner shall maintain an operation and maintenance contract with a Massachusetts certified operator where one is required by 257 CMR 2.00, or otherwise with a person qualified to operate and maintain the system in accordance with the Department's written approval.
10. Prior to obtaining a Certificate of Compliance for installation of a new or upgraded system, the system owner shall record in the chain of title for the property served by the alternative system in the Registry of Deeds or Land Registration Office, as applicable, a Notice disclosing both the existence of the alternative on-site system and the Department's approval of the system. The system owner shall also provide evidence of such recording to the Local Approving Authority.



NitROE Information - 90 Circuit Avenue, Bourne

1 message

Maureen Thomas <mthomas@kleantu.com>

Mon, May 22, 2023 at 8:25 PM

To: "bmorsebmorse@gmail.com" <bmorsebmorse@gmail.com>

Cc: Raul Lizardi-Rivera <raul@capeeng.com>, Peter Valeri <valconstruction@aol.com>

Hello Bob,

For the installation of the NitROE wastewater treatment system at [90 Circuit Avenue, Bourne](#), KleanTu is required to send you the following documents in accordance with the NitROE Provisional Permit:

1. A copy of the Provisional Permit;
2. The Owner's Manual;
3. The Installation Manual (please note, this is a little outdated - the NitROE is delivered with all internals in place except the limestone which makes the tank too heavy to lift by Acme Shorey. We work with Acme Shorey to install limestone after tank is set. Also, KleanTu installs all risers, covers, sampling ports, manifold box, and air pump); and
4. The Operation & Maintenance Manual.

Specific to the 90 Circuit Avenue installation, you will be required to review and sign the following documents which will be sent to you via Adobe Sign for esignatures:

1. Monitoring, Operation, & Maintenance (MOM) Contract; and
2. Owner Certification.

I'm not sure if you want to sign the Installation Contract or if Peter Valeri will be signing the Install Contract. Either way is fine with us, but I need to know to whom we should address and send it for esignature.

In terms of the Monitoring, Operation, & Maintenance costs (which we are required to provide to you) the two tables below are provided in each MOM Contract:

Table 1. Routine Yearly O & M Deliverables & Pricing

Time Period	Deliverables	Price per Period (\$)
April 2023 Thru March 2024 (12 months)	<ul style="list-style-type: none"> • Start-up including bacterial seeding and monitoring at least once every 2 weeks during the 1st 8-weeks of operation to ensure that NitROE[®] 2KS WWTS is properly functioning. • Provide and Review a MOM Manual to homeowner and address any and all related questions. • Quarterly Sample Collection and Analyses per Mass DEP Provisional Permit & Wellfleet BOH. • Respond to Homeowner issues, concerns and questions. • Quarterly Inspection and Monitoring Updates to Homeowner. <p>(NOTE: All NitROE[®] WWTS Components Covered Under Warranty)</p>	\$1,300 (for site inspection/sampling visits and for Mass DEP certified lab analyses)
April 2024 Thru March 2025 (12 months)	<ul style="list-style-type: none"> • Semi-Annual Inspection and Sample Collection per Mass DEP Provisional or General Use Permit & Wellfleet BOH for seasonal properties. • Covers Maximum of 4 site calls per year. • Yearly Update to Homeowners. <p>(NOTE: O&M Calls (>4) and Issues Addressed per Table 2 Items)</p>	\$850 (for site inspection/sampling visits and for Mass DEP certified lab analyses)
April 2025 Thru March 2026 (12 months)	<ul style="list-style-type: none"> • Semi-Annual Inspection and Sample Collection per Mass DEP Provisional or General Use Permit & Wellfleet BOH for seasonal properties. • Covers Maximum of 4 site calls per year. • Yearly Update to Homeowners. 	\$850 (for site inspection/sampling visits and for Mass DEP certified lab analyses)

	(NOTE: O&M Calls (>4) and Issues Addressed per Table 2 Items)	
April 2026 Thru March 2027 (12 months)	<ul style="list-style-type: none"> • Semi-Annual Inspection and Sample Collection per Mass DEP General Permit & Wellfleet BOH for seasonal properties. • Covers Maximum of 3 site calls per year. • Yearly Update to Homeowners. (NOTE: O&M Calls (>3) and Issues Addressed per Table 2 Items)	\$400-\$600 (for site inspection/sampling visits and for Mass DEP certified lab analyses)

Table 2. Non-Routine O & M Items and Cost Estimates

Item	Description	Price Estimate
Air Pump Electrical Usage	<ul style="list-style-type: none"> • One (1) 120V air pump. • Total daily electrical usage measured at ~2.9 kWhr/day/pump. • Cost/day at \$0.20/kWhr x 2.9 kWhr/day = \$0.58/day. 	\$210 per Year
Non-routine Troubleshooting Visits	<ul style="list-style-type: none"> • After 12-month warranty period, troubleshooting site calls (more than 4/year) will be charged at \$120/hr with 1 hour minimum. 	\$120 per Hour
Septic Tank Pump Out	<ul style="list-style-type: none"> • KleanTu[®] will determine when this is needed based on scheduled site visits. • Pump out to be done by non-KleanTu[®] contractor with estimated price = \$600/tank. • Exact time period is site-specific with estimate of every 3-5 years. <p><i>(NOTE: This pump out cost would need to be done even if this was a conventional Title 5 septic system)</i></p>	\$600 (for Septic Tank Pumped Out Every 3-5 Years)
Replace Remote Sensing Probes and Unit	<ul style="list-style-type: none"> • Replacing remote sensing unit and probes = \$360. • Exact time period is variable with estimate of every 5-10 years. <p><i>(NOTE: For remote sensing operation, Wi-Fi connection from homeowner is needed – Please provide on p. 3)</i></p>	\$360 (Every 5-10 Years)
Replace Air Pump	<ul style="list-style-type: none"> • Air pump repair and/or replacement. • Exact time period range is variable with estimate of every 5-8 years. 	\$600 (Every 5-8 Years)
Replace Aeration Tubing	<ul style="list-style-type: none"> • Replace all air tubing = \$800. • Exact time period is variable with estimate of every 10-20 years. 	\$800 (Every 10-20 Years)
Replace Wood Chips	<ul style="list-style-type: none"> • Replace all wood chips = \$1,000. • Exact time period is variable with estimate of every 20-30 years. 	\$1,000 (Every 20-30 Yrs)
Replace Limestone	<ul style="list-style-type: none"> • Limestone Addition = \$1,600. • Exact time period is variable with estimate of every 20-30 years. 	\$1,600 (Every 20-30 Yrs)

You will also be required to file a Deed Notice with the Barnstable County Registry of Deeds to indicate that you have an innovative and alternative septic system on the property. This is to alert future owners of its presence on the property. You will need to sign the notice in front of a notary who will notarize it and then the notice will need to be recorded. Please find the deed notice attached here.

Please let me know if you have any questions. The MOM Contract and other documents will be sent to you for signatures via Adobe Sign. These sometimes end up in junk/spam mail so if you don't see the documents in the next few days, please check your junk/spam mailboxes as well. I am copying your engineer and your installer on this email.

We will look forward to working with you on this project.

Thanks so much,

Maureen

Maureen A. Thomas, Project Director

KleanTu[®] LLC

P.O. Box 206

Falmouth, MA 02541

339-832-2206

<https://www.kleantu.com>

5 attachments



NITROE Provisional Use x285590.pdf

277K



KleanTu NitROE WWTS Homeowner O&M Manual Final 02-01-2020.pdf

754K



KleanTu NitROE WWTS Installation Manual Final 02-01-2020.pdf

1717K



FINAL KleanTu NitROE WWTS Operator Manual rev 1-21-2022.pdf

5456K



90 Circuit Avenue Deed Notice.docx

33K



Wastewater
Treatment
Technologies

**Homeowner
Operation and Maintenance
Manual**

for

**NitROE® Waste-Water Treatment System
(Massachusetts)**

By

**KleanTuSM LLC
P.O. Box 1154
Edgartown, MA 02539**

February 1, 2020



NitROE® WWTS O&M Manual

NOTE

This Operation and Maintenance (O&M) Manual is designed to give an overall understanding of the NitROE® Waste-Water Treatment System (WWTS). It also provides information related to normal operation, operating dos and don'ts, and troubleshooting guidelines, including answers related to frequently asked questions a homeowner may have.

It is to be noted that this manual is primarily intended for use by the homeowner regarding general O&M related issues. For issues identified and cited as requiring changes to respective NitROE® WWTS components, such as aeration equipment, the homeowner is directed to contact the local KleanTuSM LLC service representative.

IT IS ROCOMMENDED THAT HOMEOWNERS REVIEW THIS MANUAL TO BECOME FAMILIAR WITH THE NitROE® WWTS TECHNOLOGY CONCEPT AND ITS OPERATION.

PLEASE CONTACT THE LOCAL DESIGNATED REPRESENTATIVE (CITED BELOW) WITH ANY QUESTIONS AND IF ANY ISSUES ARISE.

NitROE® WWTS INFORMATION

Model No.: _____
Serial No.: _____
Installation No.: _____
Installation Date: _____
Remote Sensing Unit No.: _____
GPS Coordinates: _____

KLEANTUSM REPRESENTATIVE (OR LISCENSED DESIGNEE)

Name: _____
Address: _____
Phone No.: _____



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NitROE® WWTS AT A GLANCE

As illustrated in Figure 1, a NitROE® WWTS tank is placed in the wastewater flow path between a Title 5 septic tank and a Title 5 leach pit or field. Here, the NitROE® WWTS tank serves as a supplemental tank component to a compliant Massachusetts Title 5 septic system for the main purpose of enhanced total nitrogen (N) removal, significantly beyond that achieved by a Title 5 septic system alone.

Specific to the NitROE® WWTS tank itself, Figure 1 illustrates that it has two primary chambers. The first chamber is aerated, via an external air pump and airline header/hose arrangement, to achieve both organic carbon reduction along with the biological conversion of ammonia-N to nitrate-N.

From the aeration chamber, the wastewater then gravity flows into a denitrification chamber where, in the presence of natural organics from wood chips, bacteria mediate the conversion of nitrate-N to inert N gas that passively exits to the atmosphere via the Title 5 septic system house vent piping.

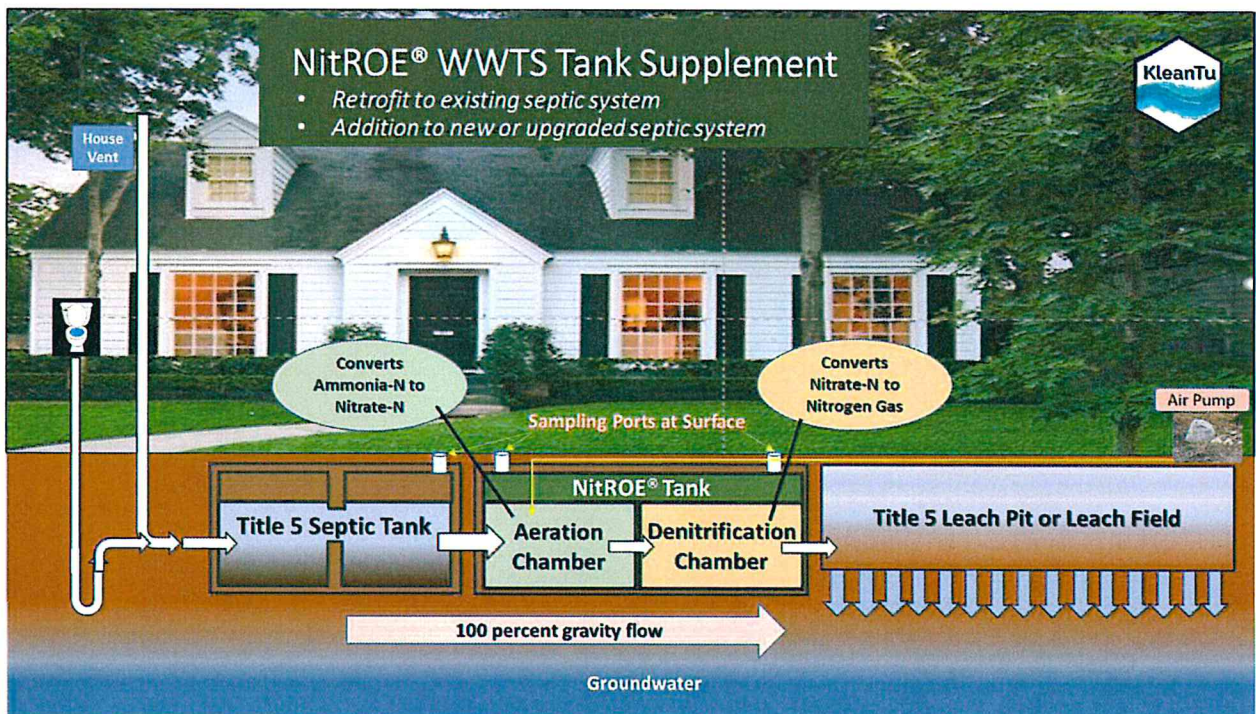


Figure 1. NitROE® WWTS Concept



Figure 2 provides photos of an installed NitROE® WWTS tank identifying the major design and operational elements.

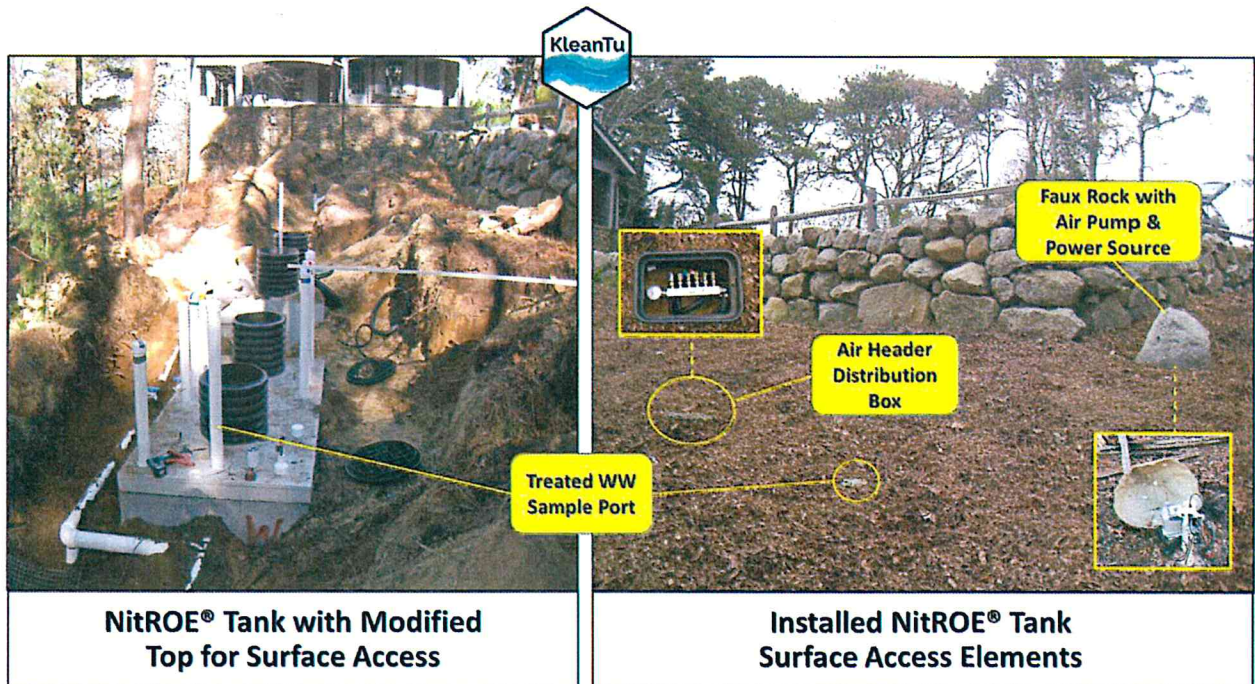


Figure 2. Installed NitROE® WWTS Tank Showing Orientation and Operational Elements

The items listed below are noteworthy:

- The NitROE® WWTS tank is a standard concrete septic tank that is retrofitted with internal recycled plastic wood partitions and aeration piping to provide both the aeration and denitrification chambers per previously shown Figure 1.
- The interior of the NitROE® WWTS consists of stationary, non-mechanical internal components, with the only piece of mechanical equipment being a small external air pump, with an average motor size of 120 watts.
- The NitROE® WWTS tank has a permanent top similar to that of a Title 5 septic tank. However, the NitROE® tank top is modified with specifically located access ports. These access ports allow for sampling and periodic maintenance to be performed from the surface without having to dig down or remove the top. Note that for routine sampling and checking the overall operation of the NitROE® WWTS tank, 2-3 access ports are in small round valve boxes with covers located at the ground surface. The other ports are for maintenance, if needed, and are located 6-12 inches below the ground surface for convenient access but are not visible at ground level.



NitROE® WWTS O&M Manual

- The external air pump, which supplies oxygen to the aeration chamber, requires a dedicated 115V/20-amp outlet and is installed in compliance with the appropriate local codes. The air pump is placed in a surface housing and connected to the aeration apparatus via a valve arrangement. Typically, the housing is a faux rock, as shown in Figure 2, but can also be a custom-made enclosure. The small size of the air pump and its enclosure results in a relatively quiet operation.



THINGS TO KNOW ABOUT YOUR NitROE® WWTS TANK

1. The NitROE® WWTS tank is not a replacement or modification to a compliant Title 5 septic system (i.e., septic tank and leach field or pit), but rather, it is a supplemental tank for the purpose of enhanced total nitrogen reduction beyond that which is typically achievable via a standard septic system.
2. The NitROE® WWTS tank is an integrated extension of a standard septic system and can be installed as part of a new septic system, or it can be installed to supplement an existing one.
3. After septic tank solids settling and removal, enhanced wastewater treatment is achieved via biological and chemical reactions. These reactions take place in a supplemental NitROE® WWTS tank which is designed to consistently generate a highly treated effluent low in suspended solids, biodegradable organics and total nitrogen. The treated wastewater is then discharged to a compliant Title 5 leach field or leach pit.
4. The NitROE® WWTS tank is designed and configured that in the unlikely event of the tank encountering operational difficulty, the Title 5 septic system will perform as originally designed and installed, thereby maintaining the overall environmental protection of a standard Title 5 septic system at a minimum.
5. In general, the NitROE® WWTS tank utilizes the same materials of construction and operational approach as a standard septic system. Thus, personnel servicing a standard septic system can also service a NitROE® WWTS tank with some minor additional training.
6. From a longer-term operational perspective, the NitROE® WWTS tank design provides for maintenance-related change-out and replacement of critical components via access ports without having to remove the tank top.
7. With focus on simplicity of design, fabrication and operation, the NitROE® WWTS tank requires relatively little maintenance as there are no recycle pumps or lines, no frequent routine sludge wasting, no continuous chemical addition, and no significant process control requirements.
8. To constantly monitor the NitROE® WWTS equipment operation to attain consistently good wastewater treatment performance over the long-term, the NitROE® WWTS tank is equipped with continuous remote sensing of the air pump pressure and the wastewater temperature, with high and low set point alarms for each. If a respective set point alarm is triggered, an e-mail will be sent to the local KleanTuSM representative (or a licensed designee) so that the situation can be addressed in an expeditious manner, with minimal homeowner action. This remote sensing unit is connected to the home wi-fi and only sends an outgoing signal and does not receive any input signals.
9. The NitROE® WWTS tank can be installed in a lawn area or under a driveway or parking area.
10. If operating correctly, the system requires little upkeep or involvement from the homeowner.



NORMAL OPERATIONAL OF YOUR NitROE® WWTS TANK

This section discusses the limited number of operational features that the homeowner should be aware of in terms of helping to confirm that the NitROE® WWTS tank is operating and treating household sanitary wastewater as designed.

Visual: All NitROE® WWTS tanks are located below the ground surface just as a septic tank is. For the septic tank, there will be one 4-inch diameter observation/sampling port, and for the NitROE® WWTS tank, there will two 4-inch diameter observation/sampling ports, with all three being located in small round valve boxes with green covers at ground level. There should also be no ponding water on the ground surface in and around both the septic tank and the NitROE® WWTS tank.

There will also be some combination of a diffuser box (about 1 ft. by 2 ft.) and a pump housing (often a faux rock). The storage of these two components may be combined to take up less space, but wherever the pump is located, it will have an illuminated blue light to signal electricity is being supplied to the pump. Along with the air pump, there will also be a small white box with a black antenna that is the remote sensing unit. Additionally, a blue light indicator (on the faux rock or air pump housing) should always be on, confirming that there is power to the air pump on a 24-7 continuous basis.

Sound: There should be a low humming noise coming from the air pump that is audible to a person nearby or with the air pump cover or faux rock lifted off. Depending on the depth of your system, a faint bubbling noise may be observable coming from the observation/sampling ports with the top off. Both of these sounds are completely normal and mean your NitROE® WWTS is operating correctly.

Smell: It is unlikely that an odor will be present unless the sampling port covers become dislodged.

Note: If you see, smell, or hear anything that is different than described above, please refer to the troubleshooting guide or call the local KleanTuSM representative as soon as possible.



THE DOs & DON'Ts OF YOUR NitROE® WWTS TANK

Avoid flushing the following items down your toilet or drain:

- Cooking Grease
- Strong Acids and Bases
- Baby Wipes / Cleaning Pads
- Q-Tips / Cotton Balls
- Pills
- Cigarette Butts
- Paints and/or Solvents
- Food
- Drain Cleaning Products
- Dental Floss
- Diapers
- Paper Towels
- Highly Concentrated Chlorine
- Personal Hygiene Products

** Even with a normal Title 5 septic system, it is recommended that you do not flush these items down the drain to avoid costly clogged pipes or system malfunction. This is more important with the introduction of your NitROE® WWTS, as it could complicate any repairs your system might need as a result, or disrupt the normal biological activities occurring in your system. If you do happen to flush such products down the toilet or drain, please flush with water for dilution.*

Keep sampling ports and other surface components covered and tightly sealed.

It is important for the function of your NitROE® WWTS that all the components remain protected by their covers. The sampling ports and air valve control box are designed and installed so that you can mow your lawn normally.

Chemical Septic Treatments

Before treating your septic system with any chemical oxidizers, please contact a KleanTuSM representative for advice as these could disrupt the biological activities occurring in your NitROE® WWTS.

Septic Pumping

Your NitROE® WWTS tank should not have to be pumped out if properly operated and maintained. If it does need to be pumped to address an upset condition, it should only be done so at the recommendation and direction of your KleanTuSM representative. However, it is recommended by most local boards of health that your *septic tank* should be pumped out every 3-5 years. This is an important aspect of regular maintenance for any septic system, especially when your system includes a NitROE® WWTS tank. If the septic tank fills with solids, including floating scum and oil & grease, due to insufficient periodic pumping, the solids can overflow into the NitROE® WWTS tank and negatively affect its treatment performance. Bringing the NitROE® WWTS tank back to its high level of performance could potentially result in a substantial cost to the homeowner.



THINK THERE'S A PROBLEM WITH YOUR NitROE® WWTS?

Check Out Our Homeowners Troubleshooting Guide Below

SOMETHING LOOKS WRONG

Blue Indicator Light is Off

If pump is running and humming, it is likely the indicator light has either been disconnected or has burned out, please call a KleanTuSM representative.

Depressions in the Ground

If one or more of your sampling ports seems to be popping too far out of the ground, or you can observe surface depressions around your system, it is likely that the soil is settling unevenly. This does not necessarily indicate an issue with your NitROE® WWTS tank, however, please call a KleanTuSM representative.

Surface Water Ponding on the Ground

If ponded surface water is observed in and around the septic tank and/or the NitROE® WWTS tank, please call a KleanTuSM representative immediately.

Damaged Surface Level Components

If there is any significant damage to any surface level components (green topped sampling ports, air control box, air pump, etc.) please call a KleanTuSM representative.

SOMETHING SOUNDS WRONG

Pump is Off (Not Humming)

If the humming of the air pump is not audible while standing next to it indicating it is not running, and the blue indicator light is off as well, then first check to see if the power source ground fault interceptor (GFI) outlet has tripped and reset it if it has. If this does not work for either the blue indicator light or the pump, then contact a KleanTuSM representative immediately. Please note that if the air pump has stopped running, that an alarm signal should have already been sent to a KleanTuSM representative, and they are aware of the situation and taking action to address it.

Pump is Making a Banging Sound

If the air pump is making a loud banging type noise, then first check to see if the air pump is level on the ground. If not level, then reposition the air pump so it is level, and the banging noise should stop. If this does not work, then please call a KleanTuSM representative immediately.

Rushing Air or Hissing Noise

If you can hear rushing air or hissing from any component of your NitROE® WWTS, including the air pump, the air distribution header box and any buried hoses in the vicinity of the NitROE® WWTS tank, then call a KleanTuSM representative immediately.



SOMETHING SMELLS WRONG

If you smell any offensive odor, like a septic smell or rotten eggs, then call a KleanTuSM representative immediately.



SCHEDULED OPERATION AND MAINTENANCE VISITS

While the NitROE® WWTS is designed to be LOW maintenance (i.e., just slightly more than a standard Title 5 septic system), it is not NO maintenance. Thus, to ensure that the NitROE® WWTS continuously operates as designed and consistently produces a treated wastewater of high quality and low total nitrogen, the following will be performed by a local KleanTuSM representative, or a licensed designee, regarding scheduled O&M visits and sampling as appropriate.

During these site visits, the “NitROE® WWTS Inspection and Sampling Checklist,” provided as Appendix A, will be completed. Once done, a copy will be provided to the homeowner, with any findings and recommendations cited. As appropriate, sample results, as may be required by the Mass DEP and/or the local Board of Health (BoH), will also be shared with the homeowner. As appropriate, copies will also be shared with the Mass DEP, the local BoH and/or other appropriate stakeholders.

Year 1

Monthly inspections during the first 6 months of operation.

Bi-monthly inspections (1 every 2 months) for the remaining 6 months of operation.

Years 2 and 3

Quarterly inspections (1 every 3 months)

Year 4 and Beyond

Semi-annual inspections (1 every 6 months)

All personnel conducting these site visits and inspections will have, or be directly supervised by someone having, a Mass DEP Grade 4 Wastewater Treatment Plant Operators Certification or higher.

NOTE: These site visits by local KleanTuSM personnel, or a licensed designee, are contingent on the respective homeowner having a contract in place for these visits and inspections.



Appendix A NitROE® WWTS Tank Inspection and Sampling Checklist

Date: _____ Time: _____
 Homeowner Name: _____ Location: _____
 By: _____ Signature: _____
 Sample ID: _____ Sample Date: _____

I. Field Measurements (In-Situ or From Collected Sample)

Item	NitROE® Tank Influent (I) (Sample ~1 ft. below surface)	NitROE® Tank Middle Trough (MT) (Sample ~2 ft. below surface)	NitROE® Tank Final Effluent (E) (Sample ~1 ft. below surface)
Water Depth (ft)			
pH (su)			
Temperature (°C)			
Dissolved Oxygen (mg/l)			
Conductivity (umho/cm)			
Sludge Depth via sludge judge (ft)			
Suspended Solids Present (visual)			
Color			
Turbidity (NTU)			
Odor			

NOTES: _____



II. Aeration System General Checklist

- ✓ Air Pump Running Hot: _____ Y _____ N
- ✓ Air Pump Make/Model #: _____
- ✓ Air Pump Power Indicator Light On: _____ Y _____ N
 - If light Not on provide details: _____
- ✓ Air Pump On: _____ Y _____ N
 - If air pump Not on provide details: _____
- ✓ Air Valves Open Pressure: _____ AIT (Black); _____ AC1 (Yellow); _____ AC2 (Red);
 _____ AC3 (Green); _____ AMT (White); _____ AOT (Blue)
- ✓ Air Pump Pressure: _____ psig
 - Air flow per pump curve: _____ LPM

III. Operational Sample Collection and Analyses

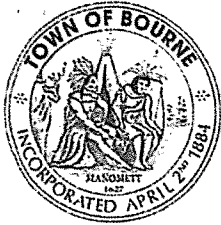
Item	NitROE® Tank Influent (I)	NitROE® Tank Final Effluent (E)	Test Kit Analysis Results
Carbonaceous BOD ₅ (mg/l)			
TSS (mg/l)			
Alkalinity (mg/l as CaCO ₃)			
Total Kjeldahl Nitrogen (TKN) (mg/l) = <u>A</u>			
Nitrite - N (mg/l) = <u>B</u>			
Nitrate - N (mg/l) = <u>C</u>			
Ammonia - N (mg/L) = <u>D</u>			
Meas. Total N (mg/l) = <u>A</u> + <u>B</u> + <u>C</u>			
Computed Organic N = <u>A</u> - <u>D</u>			

NOTES: _____



IV. Findings

V. Recommendations



Terri A. Guarino
Health Agent

Bk 30669 Pg 290 #38809
08-01-2017 @ 02:40p

TOWN OF BOURNE BOARD OF HEALTH

24 Perry Avenue
Buzzards Bay, MA 02532
www.townofbourne.com/health
Phone (508) 759-0600 ext. 1513
Fax (508) 759-0600



GRANT OF TITLE 5 BEDROOM COUNT DEED RESTRICTION

This Grant of Title 5 Bedroom Count Deed Restriction is made as of July 19, 2017 by Robert and Linda Morse ("Grantor"), of Bourne, Barnstable County, MA, pursuant to M.G.L. c. 21A, §13 and 310 CMR 15.000 (collectively, "Title 5").

WITNESSETH

WHEREAS, Grantor, being the owner(s) in fee simple of 90 Circuit Avenue, Pocasset, MA parcel of land located in Bourne, Barnstable County, Massachusetts, with the single family dwelling thereon, pursuant to a deed recorded with Barnstable County Registry of Deeds in Book 29239, Page 2666 ("Property"); and

WHEREAS, Grantor desires to restrict the number of bedrooms, as the term bedroom is defined at 310 CMR 15.002 ("Bedroom") and the Board of Health regulation dated effective April 24, 1992 regarding bedroom definition, through the granting of this Title 5 Bedroom Count Deed Restriction;

NOW, THEREFORE, Grantor does hereby GRANT to the Town of Bourne of Barnstable County, Massachusetts, a municipal corporation located in Barnstable County, having a mailing address of 24 Perry Avenue, Buzzards Bay, Massachusetts, and acting by and through its Board of Health ("Local Approving Authority"), for nominal and nonmonetary consideration, the sufficiency and receipt of which are hereby acknowledged, with QUITCLAIM COVENANTS, a TITLE 5 BEDROOM COUNT DEED RESTRICTION ("Restriction") in, on, upon, through, over and under the Property.

Said Restriction operates to restrict the Property as follows:

1. Restriction. Grantor hereby restricts the total number of Bedrooms in, on, upon, through, over and under the Property to **Two Bedrooms**, such that at no time shall there exist more than **Two Bedrooms** in, on, upon, through, over and under said Property.

2. Severability. Grantor hereby agrees that, in the event that a court or other tribunal determines that any provision of this instrument is invalid or unenforceable:

- (i) That such provision shall be deemed automatically modified to conform to the requirements for validity and enforceability as determined by such court or tribunal; or
- (ii) That any such provision, by its nature, cannot be so modified, shall be deemed deleted from this instrument as though it had never been included herein.

In either case, the remaining provisions of this instrument shall remain in full force and effect.

3. Enforcement. Grantor expressly acknowledges that a violation of the terms of this Restriction could result in the following:

(i) upon determination by a court of competent jurisdiction, in the issuance of criminal and civil penalties, and/or equitable remedies, including, but not limited to, injunctive relief, such injunctive relief could include the issuance of an order to modify or remove any improvements constructed upon the Property in violation of the terms of this Restriction; and

(ii) in the initiation of an enforcement action and/or assessment of penalties by the Bourne Board of Health and/or the Massachusetts Department of Environmental Protection, a duly constituted agency with a principal office located at One Winter Street, Boston, MA 02108 (DEP), to enforce the terms of this Restriction pursuant to Title 5; M.G.L. c.111, §§ 2C, 17, 31, 122, 123, 125, 127A-O, inclusive, and 129; and M.G.L c. 83, §11.

4. Provisions to Run with the Land. The rights, liabilities, agreements and obligations created under this Restriction shall run with the Property and any portion thereof for the term of this Restriction. Grantor hereby covenants for [himself/herself/itself] and [his/her/its] executors, administrators, heirs, successors and assigns, to stand seized and to hold title to the Property and any portion thereof subject to this Restriction.

The rights granted to the Bourne Board of Health, its successors and assigns, do not provide, however, that a violation of this Restriction shall result in a forfeiture or reversion of Grantor's title to the Property.

5. Concurrence Presumed. It is agreed that:

(i) Grantor and all parties claiming by, through, or under Grantor agree to and shall be subject to the provisions of this Restriction; and

(ii) Grantor and all parties claiming by, through, or under Grantor, and their respective agents, contractors, sub-contractors and employees, agree that the Restriction herein established shall be adhered to and shall not be violated, and that their respective interests in the Property shall be subject to the provisions herein set forth.

6. Incorporation into Deeds, Mortgages, Leases, and Instruments of Transfer. Grantor hereby agrees to incorporate this Restriction, in full or by reference, into all deeds, easements, mortgages, leases, licenses, occupancy agreements or any other instrument of transfer by which an interest and/or a right to use the Property, or any portion thereof, is conveyed.

7. Recordation. Grantor shall record and/or register this Restriction with the appropriate Registry of Deeds and/or Land Registration Office within 30 days of receiving the approved Restriction from the Local Approving Authority. Grantor shall file with the Bourne Board of Health and the DEP a certified Registry copy of this Restriction as recorded and/or registered within 30 days of its date of recordation and/or registration.

8. Amendment and Release. This Restriction may be amended only upon the approval and acceptance of such amendment by the Local Approving Authority. Release of this Restriction shall be granted by the Local Approving Authority upon (i) Grantor's request of such release; and (ii) the Property being connected to a municipal sewer system and the septic system serving the Property being abandoned in accordance with 310 CMR 15.354. Any such amendment or release shall be recorded and/or registered with the appropriate Registry of Deeds and/or Land Registration Office and a certified Registry copy of said amendment or release shall be filed with the Bourne Board of Health and the DEP within 30 days of its date of recordation and/or registration.

9. **Term.** This Restriction shall run in perpetuity and is intended to conform to M.G.L. c.184, §26, as amended.

10. **Rights Reserved.** This Restriction is granted to the Bourne Board of Health. It is expressly agreed that acceptance of this Restriction by the Bourne Board of Health shall not operate to bar, diminish, or in any way affect any legal or equitable right of the Bourne Board of Health or of DEP to issue any future order with respect to the Property or in any way affect any other claim, action, suit, cause of action, or demand which the Bourne Board of Health or DEP may have with respect thereto. Nor shall acceptance of the Restriction serve to impose any obligations, liabilities, or any other duties upon the Bourne Board of Health.

11. **Effective Date.** This Restriction shall become effective upon its recordation and/or registration with the appropriate Registry of Deeds and/or Land Registration Office.

12. **No construction permits shall be issued for the Property until a certified Registry copy is submitted to the office of the Bourne Board of Health unless written approval is otherwise granted by the Board of Health.**

WITNESS the execution hereof under seal this 1st day of August, 2017.

Robert Kevin Morse / Linda S. Morse
Grantor

COMMONWEALTH OF MASSACHUSETTS

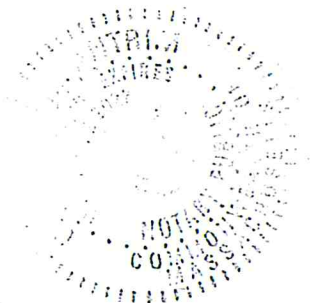
Barnstable County, MA, ss August 1, 2017

Then personally appeared the above-named Robert and Linda Morse and acknowledged the foregoing instrument to be their free act and deed before me.

Charlene M. Antrim
Notary Public: Charlene M. Antrim
My commission expires: December 2, 2022



CHARLENE M. ANTRIM
Notary Public
Commonwealth of Massachusetts
My Commission Expires
December 2, 2022



Approved and Accepted By:

T. Guarino
Terri A. Guarino, R.S.
Health Director
Town of Bourne

Date: Aug. 01, 2017

BARNSTABLE REGISTRY OF DEEDS
John F. Meade, Register



July 25, 2023

RE: Notice of Public Hearing- 90 Circuit Avenue, Pocasset, (Bourne), MA

Dear Abutter:

In accordance with the State Environmental Code, Title 5: 310 CMR 15.00, you are hereby notified that Erica K, Robert K. and Linda S. Morse has requested a hearing before the Bourne Board of Health for relief from Title 5 and/or the Bourne Board of Health Regulations for the installation of an upgraded/new septic system.

The location of the property for this proposal is 90 Circuit Avenue, Bourne, MA where you are listed as an abutter. At said hearing the Board will discuss and possibly vote on:

NO	DESCRIPTION	BYLAW REQUIRED	STATE REQUIRED	PROPOSED	WAIVER
1.	S.A.S Setback to Wetland (dune)	150'	50'	44'	108'
2.	S.A.S. Setback to Property Line	10'	10'	6.9' & 9.0'	3.1 & 1'
3.	S.A.S. Setback to Groundwater	5'	5'	4'	1'

There are no additional bedrooms created, and therefore no increase in sanitary design flow. upgrade the system with the addition of nitrogen reducing technology. The homeowner is proposing the install a NitROE tank that will provide the nitrogen reduction.

This hearing is tentatively scheduled for August 9, 2023 at 5:30 pm. Information regarding the hearing may be available for your review one week prior to the meeting at the Bourne Health Department, 24 Perry Avenue, Buzzards Bay, Monday through Friday from 8:30am until 4:30pm.

Meeting agendas are posted on the Town of Bourne website, www.townofbourne.com/health no less than 48 hours in advance of the hearing. Please confirm the date, time, and location of the meeting with the Town, in case of any changes. Should you have any questions or concerns, please do not hesitate to contact me or the Bourne Health Department at 508-759-0600 ext. 1513.

Sincerely,



Jean E. Duff-Still
Permitting Specialist

Cc: Bourne Board of Health

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City, State, ZIP+4® Pocasset, MA 02559	
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Street and A 681 Heaton's Mill Circle	
City, State, ZIP+4® Longhorne, PA 19047	
City, State, ZIP+4® 90 Circuit Box Morse	

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Street and A 89 Plymouth Street	
City, State, ZIP+4® Carver, MA 02330-1035	
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