CULTEC, Inc.

Septic installer/Designer Certification Test v. 2019

for Massachusetts Title 5 310 CMR 15.000 Compliance

CULTEC, Inc.
P.O. Box 280, 878 Federal Road Brookfield, CT 06804
Phone: 203-775-4416 Toll Free: 800-4-CULTEC Fax: 203-775-5887
Web: www.cultec.com Email: custservice@cultec.com

CULTEC Septic Installer/Designer Certification Test for Contactor and Recharger Plastic Chambers

Did you attend a training session with a CULTEC representative prior to taking this test?

_____ YES _____ NO

Name of Certifying Agent:

Please fill in your personal information

Date:
Name:
Company Name:
Address:
City, State, Zip:
Phone:
Cell:
Fax:
Email:

Return the completed test via fax to 203-775-5887 or email to custservice@cultec.com

1. What type of filter fabric is required to be used with the CULTEC Septic Chambers?

2. If you are installing CULTEC chambers without stone, do you need to use filter fabric?

3. When installing a gravel-less system, where do you place the filter fabric?

4. When installing a system using stone, where do you place the filter fabric?

5. A Starter R-model has how many end walls?

6. A Middle/End E-model has how many end walls?

7. Should you traverse horizontally or perpendicularly to the line of chambers when backfilling?

8. What type of machinery should be used for backfilling?

9. How do the CULTEC chambers connect to one another?

10. When standing in front (the beginning) of a line of chambers, is the large rib end or small rib end closest to you?

11. For typical installations, how do you install the feed pipe?

12. In a pressure distribution system (PDS), where is the pipe located?

13. Which series includes the CULTEC low profile units - Contactor or Recharger?

14. What is the recommended method of installing a pipe through the filter fabric when feeding the starting chamber?

15. Identify the following models as R-Starter or E-Middle/End

This model has two closed end walls. Therefore, it is a Model: (check one)
_____ R- starter _____ E-middle/end

Large Rib End Detail

Small Rib End Detail

This model has one open end wall and one closed end wall. Therefore, it is a Model: (check one)
_____ R- starter _____ E-middle/end

Large Rib End Detail

Small Rib End Detail

FOR INTERNAL USE ONLY

_____ PASS _____ FAIL

Certification Number: _____

Reviewed by: _____

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

APPROVAL FOR GENERAL USE
Pursuant to Title 5, 310 CMR 15.000

Name and Address of Applicant:

CULTEC, Inc.
P.O. Box 280
878 Federal Road
Brookfield, CT 06804

Trade name of technology: CULTEC Chambers; model: Field Drain Contactors C4; Contactor EZ-24, 100, 125, and 202; and Recharger 180, 280, and 330XL (hereinafter the "System"). Schematic drawings of each model are attached and made a part of this Certification. This approval allows the installation of the above identified chambers without aggregate.

Transmittal Number: **X260808**
Date of Revision: March 31, 2016

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection hereby issues this Certification to: CULTEC, Inc., P.O. Box 280, 878 Federal Road, Brookfield, CT 06804 (hereinafter "the Company"), for General Use of the System described herein. The sale, design, installation, and use of the System are conditioned on compliance by the Company, the Designer, the Installer and the System Owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

/Signed/

March 31, 2016

Marybeth Chubb, Acting Section Chief
Groundwater/Title 5/Reuse
Bureau of Water Resources

I Design Standards

1. The models listed in Table 1 are covered under this Certification.

Table 1: Chamber Dimensions

Model*	Dimensions W x L** x H Inches	Invert Height Inches
Field Drain Contactor C4	48 x 96 x 8.5	3
Contactor EZ-24	16 x 96 x 12.5	6
Contactor 100	36 x 89 x 12.5	6
Contactor 125	30 x 75 x 18	12
Contactor 202	24 x 84 x 24	17
Recharger 180	36 x 76 x 20.5	14
Recharger 280	47 x 84 x26.5	20.5
Recharger 330XL	52 x 84 x 30.5	24

* All models also include a Heavy Duty (HD) model for H20 loading.
** Denotes Cultec chamber installed length.

2. The System is an open-bottom leaching unit molded from high density, high molecular weight polyethylene (HDPE) with a 3.5 to 4.5 ounce non-woven geosynthetic filter fabric cover (CULTEC No. 410™). It can be installed without aggregate or distribution pipe as an absorption trench or as a bed or field. If the System is installed with stone aggregate then the "Effective Leaching Area" in Tables 2 and 3 is not applicable, and must be designed in accordance with the provisions of 310 CMR 15.000.

Table 2: Effective Leaching Area for Trench Configuration for New Construction and Remedial Sites[1]

Model	Effective Leaching[2] Area SF/LF	Effective Leaching[3] Area SF/LF
Field Drain Contactor C4	NA	3.5
Contactor EZ-24	3.9	NA
Contactor 100	6.7	NA
Contactor 125	7.5	NA
Contactor 202	8.1	NA
Recharger 180	8.9	NA
Recharger 280	NA	6.4
Recharger 330XL	NA	7

[1.] Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.
[2.] Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width.
[3.] Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

3. For new construction or upgrade, the applicant can size the System in a trench configuration, using the effective leaching areas presented in Table 2.

4. Systems installed on remedial sites shall be allowed to utilize the effective leaching areas presented in Tables 2 or 3, or additional reductions in soil absorption system may be allowed. In no instance shall the reduction in the soil absorption system required in 310 CMR 15.242 exceed the maximum reduction allowed for alternative systems approved in accordance with 310 CMR 15.284.

Table 3: Effective Leaching Area for Bed or Field Configuration for New Construction and Remedial Sites[1]

Model	Effective Leaching[4] Area (SF/LF)
Field Drain Contactor C4	6.7
Contactor EZ-24	2.2
Contactor 100	5.0
Contactor 125	4.2
Contactor 202	3.3
Recharger 180	5.0
Recharger 280	6.5
Recharger 330	7.2

[4]Effective Leaching area is equal to 1.67 times bottom width only.

5. For new construction or an upgrade, the applicant can size the System in bed or field configuration without aggregate, using the effective leaching areas presented in Table 3.

6. When the System is used with a secondary treatment unit approved in accordance with 310 CMR 15.284 or 15.288, additional reductions in soil absorption system may be allowed. In these situations the reduction in the SAS cannot exceed the maximum allowed under the secondary treatment units approval. In no instance shall the reduction in the soil absorption system area required in 310 CMR 15.242 exceed the maximum reduction allowed for alternative systems approved in accordance with 310 CMR 15.284.

II. Special Conditions

1. The System is an approved Alternative Chamber for use as an Alternative Soil Absorption System. In addition to the Special Conditions contained in this Approval, the System shall comply with the *Standard Conditions for Alternative SAS with General Use Certification and/or Approved for Remedial Use* (the 'Standard Conditions'), except where stated otherwise in these Special Conditions.

2. New Construction This Certification is for the installation of a System to serve new construction or an existing facility with a proposed increase in flow, for which a site

evaluation in compliance with 310 CMR 15.000 has been approved by the Approving Authority and the site meets the siting requirements for new construction, as provided in Paragraph 6 in section II Design and Installation Requirements of the Standard Conditions.

3. Remedial Site This General Use Certification also applies to the installation of a System for the upgrade or replacement of an existing failed or nonconforming system, provided that the facility meets the siting requirements for upgrades, as provided in Paragraph 7 in section II Design and Installation Requirements of the Standard Conditions

4. The System shall be exempt from the minimum inlet spacing requirements of 310 CMR15.253.

5. The System shall have a minimum of one inspection port through the top of one of the chambers. The inspection port shall be capped with a screw type cap and accessible to within three inches of finish grade.

6. When the System is installed in trench configuration, then the system shall comply with these requirements:
   a) Length (each trench) 100 feet maximum (310 CMR 15.251(1)(a));
   b) Width (each trench) 2 feet minimum to 3 feet maximum (310 CMR 15.251(1)(b)). - Chambers greater than 3 feet wide, when specifically approved, are subject to other Special Conditions and limitations;
   c) The minimum separation distance between any two trenches shall be two times the effective width or depth of each trench, whichever is greater, or where the area between trenches is designated as reserve area, three times the effective width or depth of each trench, whichever is greater (310 CMR 15.251(1)(d));
   d) The effective leaching area shall be calculated using the bottom area and a maximum of two feet (per side) of side wall area for each trench (310 CMR 15.251(1)(e));
   e) Trenches shall be situated, where possible, with their long dimension perpendicular to the slope of the natural soil. Where possible they shall follow the contour lines (310 CMR 15.251(2));
   f) Trenches constructed at different elevations shall be designed to prevent effluent from the higher trench(es) flowing into the lower trench(es) (310 CMR 15.251(3));
   g) The area between trenches may be designated as system reserve area only where the separation distance between the excavation sidewalls of the primary trenches is at least three times the effective width or depth of each trench, whichever is greater (310 CMR 15.251(4)) - Chambers greater than 3 feet wide, when specifically approved, shall be separated by three times the actual width and are subject to other Special Conditions and limitations; and
   h) Effluent distribution lines exceeding 50 feet in length shall be connected and venting provided in accordance with 310 CMR 15.241 (310 CMR 15.251(11)).

7. When installed in trench configuration, approved Alternative Chambers greater than 3 feet wide:
   a) shall be installed with a minimum separation distance between any two trenches of two times the actual width of the chamber, or where the area between trenches is designated as reserve area, three times the actual width of the chamber; and
   b) shall only be entitled to a maximum effective width of 3 feet for the purposes of calculating total effective leaching area.
8. When installed in a bed or field configuration, the System may be installed without distribution piping, but must comply with the following requirements in 310 CMR 15.252:
   a) the use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field (310 CMR 15.252(1));
   b) the maximum length of chambers in series shall be 100 feet (310 CMR 15.252(2)(b));
   c) separation distance between adjacent beds/fields shall be ten feet (310 CMR 15.252(2)(f)); and
   d) the effective leaching area shall include only the bottom area, not the sidewalls (310 CMR 15.252(2)(i)).
9. For Systems constructed in fill and installed, the System shall be installed as specified in 310 CMR 15.255- Construction in Fill, except the minimum 15 foot horizontal separation distance to be provided between the soil absorption area and the adjacent side slope shall be measured horizontally from the top of the chamber.
10. The System is exempt from 310 CMR 15.287, specifically items: (5) requiring written notification of alternative system prior to property transfer, (6) need for a certified operator, (9) need for an operation and maintenance contract with an operator and (10) deed notice requirement.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Standard Conditions for Alternative Soil Absorption Systems with General Use Certification and/or Approved for Remedial Use

Revised: March 5, 2018

These Standard Conditions apply to Alternative Soil Absorption System (Alt. SAS) technologies for disposal-only as well as for technologies providing both treatment and disposal. Currently these approved alternative technologies include the following,

Alt. SAS Disposal-Only,

- **Contactor, Field Drain Contactor, and Recharger Chambers,** by Cultec, Inc.
- **Biodiffuser &ARC Chambers,** by Infiltrator Systems, Inc.
- **Infiltrator Chambers,** by Infiltrator Systems, Inc.
- **Eljen Mantis M5,** by Eljen Corp.

Alt. SAS Treatment with Disposal - Patented Sand Filters,

- **Eljen GSF Geotextile Sand Filter System,** by Eljen Corp.
- **Enviro-Septic Wastewater Treatment System,** by Presby Environmental, Inc.
- **Advanced Enviro-Septic System**, by Presby Environmental, Inc.
- **Simple-Septic Wastewater Treatment System**, by Presby Environmental, Inc.
- **Infiltrator ATL system,** by Infiltrator Systems, Inc.
- **GeoMat Leaching System,** by Geomatrix Systems, LLC.

An alternative SAS may be appropriate for new construction, increases in flow, or for the upgrade of an existing failing, failed, or nonconforming system where reducing the disturbance of the site is desired.

Alternative Disposal-Only technologies approved by the Department may be substituted for conventional SAS's allowed under Title 5. The alternative Chamber technologies, when compared to conventional Title 5 chambers, provide options from some of the Title 5 requirements such as offering plastic instead of concrete chambers and eliminating the need for stone aggregate around the chamber while allowing higher loading rates and reduced effective leaching area. Other options include Chambers installed with aggregate meeting the requirements of Title 5, however Alternative Chambers used with aggregate are not allowed higher loading rates which must remain the same as required by Title 5 for conventional chambers with aggregate. In addition to alternative Chambers,

disposal-only approved Alt. SAS technologies also include the Mantis M5 pipe and sand System design.

Alternative Treatment with Disposal technologies approved by the Department refer to alternative leaching systems that have demonstrated higher removal of organics and suspended matter prior to the percolation of wastewater into underlying unsaturated pervious soils when compared to conventional leaching systems. Higher loading rates are allowed than would be permissible with a conventional design and additional relief from other design standards is permissible for upgrades.

A System approved under these Standard Conditions consists of a septic tank conforming to the requirements of Title 5, either conventional or I/A approved, followed by the Alt. SAS which may provide for a reduced effective leaching area.

The use of an approved Alt. SAS, subject to these Standard Conditions, requires among other things:

- A Disclosure Notice in the Deed to the property for installed Systems according to the following:
  - when installing an Alt. SAS Disposal-Only System (chambers or Eljen Mantis M5) a Disclosure Notice in the Deed to the property is not required;
  - when installing an Alt. SAS Treatment with Disposal-Patented Sand Filters System under the General Use Certificate a Disclosure Notice in the Deed to the property is not required;
  - when installing an Alt. SAS Treatment with Disposal-Patented Sand Filters System under the Approval for Remedial Use a Disclosure Notice in the Deed to the property is required in accordance with 310 CMR 287(10);
- Certifications by the Designer and the Installer (310 CMR 15.021(3));
- Notification within 24 hours by the System Owner to the Local Approving Authority (LAA) of any System failure;
- When System requires pumping prior to the SAS, 24-hour emergency wastewater storage capacity above the elevation of the high level alarm;
- System Owner Acknowledgement of Responsibilities, in accordance with these standard conditions and the Technology Approval's Special Conditions.

This Approval **does not** address the use of the following alternative SAS's, which are covered under separate Title 5 I/A Program Approvals:

a) Drip Dispersal Systems

b) Bottomless Sand Filters

Definitions and References

The term "System" refers to the approved technology in combination with the 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.

The term "Approval" or "Certification" refers to these Standard Conditions; the Special Conditions contained in the Technology Approval, the General Conditions of 310 CMR 15.287, and any Attachments.

The phrase "new construction" always refers to construction of a new facility or any increase in actual or design flow to any existing system above the approved capacity.

The phrase "upgrade of a system" or the term "upgrade" or the term "remedial site" refers to any repair, modification, or replacement of a whole system or a component of an existing failing, failed or nonconforming system where there is no increase in the actual or design flow to the system.

The Conditions contained herein MUST be read in conjunction with any Special Conditions that are technology-specific.

I. Purpose

1. These Standard Conditions shall apply to all Alt. SAS technologies identified in a General Use Certification or a Remedial Use Approval as either a Disposal-Only technology or a Treatment with Disposal technology as listed above. In addition to the Special Conditions contained in the technology-specific Approvals, the System shall comply with all these "Standard Conditions for Alternative Soil Absorption Systems", except where stated otherwise in the Special Conditions.

2. The sale, design, installation, and use of the System shall be subject to these requirements for all systems that submit a complete Disposal System Construction Permit (DSCP) application after the effective date of these Standard Conditions. Existing systems and systems for which a complete DSCP application was submitted prior to the effective date of these requirements shall not be subject to the design and installation requirements, however, the System Owner, the Service Contractor, and the Company shall be subject to all other requirements contained herein.

3. With the other applicable permits or approvals that may be required by Title 5, the Approval authorizes the installation and use of the System in Massachusetts. All the provisions of Title 5, including the General Conditions for 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.

4. Provided that the Local Approving Authority (LAA) approves the System in conformance with the Department's Approval for the System, Department review and approval of the site-specific 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.

II. Design and Installation Requirements

1. Where any contradiction may exist in design standards between the Company guidance and the requirements of Title 5 or this Approval, the design shall meet the

standards of Title 5 and this Approval unless the Company guidance is more stringent.

2. In accordance with 310 CMR 15.240(6), absorption trenches should be used whenever possible. Accordingly, approved Disposal-Only and Treatment with Disposal Alt. SAS Systems shall be used in trench configuration whenever possible, unless a different configuration is allowed by the Approval(s) Special Conditions.

3. The Alternative System shall include a properly sized and constructed septic tank, designed in accordance with 310 CMR 15.223–15.229 or approved as an Alternative technology per 15.280-15.288, connected to the building sewer and followed in series by the approved Alternative Soil Absorption System. A 1,000 gallon septic tank may be allowed in accordance with the provisions of 310 CMR 15.404(3)(a).

4. The Alternative System shall be installed in a manner which does not intrude on, replace, or adversely affect the operation of any other component of the subsurface sewage disposal system.

5. 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 with a discharge greater than 2,000 gallons per day.

6. <u>For new construction or increases in flow</u>, the System shall be subject to the following:
   a) The System may only be installed in soils with a percolation rate of up to 60 minutes per inch (MPI);
   b) A site evaluation, in compliance with 310 CMR 15.100 through 15.107, must be approved by the Approving Authority and the site must meet the siting requirements for new construction;
   c) The record drawings, approved by the LAA, must clearly indicate an area for a full-sized conventional primary SAS and a full-sized conventional reserve area that are for the sole purpose of on-site sewage disposal;
   d) Where the System has reduced the effective leaching area, as allowed by the Standard Conditions, the installation shall not disturb the site in any manner that would preclude the future installation of the conventional full-sized primary SAS without encroaching on the reserve area; and
   e) Except for the installed SAS, the System Owner shall not construct any permanent buildings or structures or disturb the site in any manner that would encroach on the area approved for a full-sized conventional primary SAS or the area approved for a full-sized conventional reserve SAS.

7. <u>For the upgrade of a system</u>, the installation of the proposed System shall be subject to the following:
   a) The System may only be installed in soils with a percolation rate of up to 90 minutes per inch (MPI);

b) Prior to approving the installation of the System, the LAA must determine there is no increase in the actual or proposed design flow;

c) Prior to Local Approval of the System, the Designer shall show on the plans the maximum available area for a conventional system (without reserve) designed in accordance with the standards of 310 CMR 15.100 through 15.255.

d) The proposed System must include the approval by the LAA for the upgrade or replacement of all other existing components, as necessary, to comply with the standards of Maximum Feasible Compliance (MFC) of 310 CMR 15.404;

e) The record drawings, approved by the LAA, must clearly indicate an area for the best feasible replacement system that could be installed in the event that the proposed Alternative Soil Absorption System fails or it is determined that it is not capable of providing equivalent environmental protection;

f) When evaluating the best feasible replacement system that could be installed in the event that the proposed Alternative Soil Absorption System fails or it is determined that it is not capable of providing equivalent environmental protection, the Designer shall consider these options in the following order:

   i. a conventional system designed in accordance with the standards of 310 CMR 15.100 through 15.255 that can be built feasibly, with the exception of providing a reserve area (15.248);

   ii. a conventional system that can only be built feasibly under a Local Upgrade Approval (LUA);

   iii. where a conventional system cannot be built feasibly under a LUA, a Bottomless Sand Filter, in conjunction with a Secondary Treatment Unit;

   iv. where a System can only be built feasibly with variances, a System that has been demonstrated to vary the design requirements of 310 CMR 15.000 to the least degree necessary and have the least effect on public health, safety, welfare and the environment (the System may be an Alternative System with variances); or

   v. a tight tank.

g) The installation of the proposed System shall not disturb the site in any manner that would preclude the future installation of the best feasible replacement system that could be installed to replace the proposed System. Components of the proposed System may be sited in an area for the future installation of the best feasible replacement system, provided that it does not render the area unusable for a potential future replacement system; and

h) Except for the installed SAS, the System Owner shall not construct any permanent buildings or structures in the area for the best feasible replacement system that could be installed to replace the proposed System and the System Owner shall not disturb the site in any other manner that would preclude the future installation of the best feasible replacement system.

8. <u>Alternative Design Standard to 310 CMR 15.242(1)(a) Effluent Loading Rates</u>

For new construction or increases in flow, the required effective leaching area may be reduced up to 40 percent when using the loading rates for gravity systems of 310 CMR 15.242(1)(a), provided:

a) no variance is granted for a reduction in depth to groundwater;

b) no variance is granted for a reduced depth of pervious material; and

c) a minimum of 400 square feet of effective leaching area shall be installed if any proposed reduction in the leaching area would result in less than 400 square feet of effective leaching area; (Facilities with small flows that would not require 400 sq.ft. of effective leaching area, when designed in accordance with Title 5, may be built with less than 400 sq. ft. provided that no reduction in effective leaching area is taken).

9. Alternative Design Standard to 310 CMR 15.242(1)(a) and 15.245(4), Effluent Loading Rates

For the upgrade of a system, the System shall be subject to the following:

g) For soils with a percolation rate of 60 minutes or less per inch, the size of the SAS may be sized with 40 percent less effective leaching area than required when using the loading rates for gravity systems of 310 CMR 15.242(1)(a);

h) For soils with a percolation rate of between 60 and 90 minutes per inch, the size of the SAS may be sized with 40 percent less effective leaching area than required when using the loading rate of 0.15 gpd/square foot as specified by 310 CMR 15.245(4);

i) Unless allowed under the Special Conditions for the Technology, no additional reduction in the effective leaching area is allowed under an LUA or a variance that would result in a reduction greater than 40% of that which would be required under 310 CMR 15.242(1)(a) and 15.245(4), respectively. Any other deviations to design standards, except the effective leaching area, may be granted under LUA or a variance; and

j) A minimum of 400 square feet of effective leaching area shall be provided if any proposed reduction in the leaching area would result in less than 400 square feet of effective leaching area. Where 400 square feet of effective leaching is not feasible, the greatest effective leaching area shall be installed provided that no more than a 40 percent reduction is taken.

10. Specific Conditions for Treatment with Disposal Alt. SAS Technologies

a) The use of aggregate as specified in 310 CMR 15.247 is not allowed with Patented Sand Filters.

b) Unless determined necessary by the Designer or Company, the System shall not be used with pressure distribution for any design flow. When installed for a facility with a design flow of 2,000 gpd or greater, approved Patented Sand Filter Systems are exempt from the requirement for pressure distribution under 310 CMR 15.231.

c) Patented Sand Filters shall not be installed in a Nitrogen Sensitive Area (NSA) to serve facilities with actual or design flows of 2,000 GPD or greater since those facilities require installation of a Recirculating Sand Filter (RSF) or equivalent technology. Patented Sand Filters may be installed as a disposal-only alternative technology when used in addition to an approved Secondary Treatment Unit (reduction of BOD/TSS). When a Patented Sand Filter is used in this type of septic system design, only the reductions permitted in the Secondary Treatment Unit's (STU) alternative technology approval, such as a reduction in SAS size, depth of naturally occurring pervious material or depth to groundwater, are allowed.

d) For upgrades only, a reduction in the depth to groundwater and/or a reduction in the pervious material may be taken in accordance with Section II, paragraph 5 of the *Standard Conditions for Secondary Treatment Units Approved for Remedial Use*. In no case, shall the reductions allowed under the Standard Conditions for Secondary Treatment Units be combined with any reduction provided by this Approval, the alternative technology's Remedial Use Approval Special Conditions or with any reduction that may be allowed under the procedures of Local Upgrade Approval or variance procedures of 310 CMR 15.401-415.

11. Specific Conditions for Disposal-Only Alt. SAS Technologies

a) In a NSA, as defined in 310 CMR 15.215, Alternative Systems serving facilities with actual or design flows of 2,000 GPD or greater must include treatment with a RSF or equivalent technology, as required by 310 CMR 15.202(1). Under this Approval, Disposal-Only Alt. SAS technologies shall not be installed in an NSA to serve facilities with actual or design flows of 2,000 GPD or greater unless installed in conjunction with a RSF or equivalent technology.

b) For new construction or upgrades, a reduction in the effective leaching area may be taken in accordance with the conditions and limitations imposed by the approval of the Secondary Treatment Unit employed. (approved Alternative Chambers may be installed with or without aggregate for the disposal of effluent from an approved Secondary Treatment Unit, see paragraph 11(e) below.) For upgrades only, a reduction in the depth to groundwater and/or a reduction in the pervious material may be taken in accordance with the conditions and limitations imposed by the Remedial Use Approval of the Secondary Treatment Unit employed. In no case, shall the reductions allowed under the Secondary Treatment Unit approval be made less stringent. In no case, shall the reductions allowed under the Secondary Treatment Unit approval be combined with any reduction provided by this Approval or combined with any reduction that may be allowed under the procedures of Local Upgrade Approval or the variance procedures of 310 CMR 15.401-415.

c) For the upgrade of a system, installations without secondary treatment are entitled to reductions in depth to groundwater or depth of naturally occurring pervious material only to the limits that may be allowed by the LAA under the procedures of Local Upgrade Approval or the variance procedures of 310 CMR 15.401-415.

d) The use of aggregate as specified in Title 5, 310 CMR 15.247 is not required.

Chambers Specific Standard Conditions,

e) The installation of approved Alternative Chambers with aggregate is allowed provided that it complies with the aggregate requirements of 310 CMR 15.247. However, when approved Alternative Chambers are installed with aggregate the reduction in effective leaching area provided by Standard Conditions II (8) and (9) is not allowed. Only when upgrading a system, approved Alternative Chambers installed with aggregate may be allowed a reduction in effective leaching area (up to 25%) under the limitations and procedures of a Local Upgrade Approval (310 CMR 15.401-405).

f) Effluent pressure distribution shall be provided for actual or design flows of 2,000 gpd or greater and shall be designed in accordance with Department guidance. The effluent loading rates provided in 310 CMR 15.242(1)(b) for pressure distribution may be utilized, but no reduction in the effective leaching area as may be provided under this Approval may be taken when using the loading rates for pressure distribution, as stated in the regulation.

12. All System control units, valve boxes, distribution piping, conveyance lines and other System appurtenances shall be designed and installed to prevent freezing.

13. When pumping is required to a distribution box or to a SAS pressure distribution tank, the System pump chambers/tanks shall be equipped with sensors and high-level alarms to protect against high water due to pump failure, pump control failure, loss of power, system freeze ups, backups, etc. Emergency storage shall be provided when pumping to discharge is employed, including but not limited to, pressure distribution. Emergency storage capacity for wastewater above the high level alarm shall be provided equal to the daily design flow of the System including an additional allowance for the volume of all drainage which may flow back into the System when pumping has ceased.

14. System control panel(s) including alarms and controls shall be mounted in a location always accessible to the operator (Service Contractor). Any System malfunction and high water alarms shall be readily visible and audible for the facility occupants and the Service Contractor and shall be connected to circuits separate from the circuits serving the operating equipment and pumps.

15. The System shall not include any relief valve or outlet for the discharge of wastewater to prevent flooding of the system, back up or break out.

16. Any System structures with exterior piping connections located within 12 inches of or lower than the Estimated Seasonal High Groundwater elevation shall have the connections made watertight with neoprene seals or equivalent.

17. 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 to the elevation of the SAS interface with the underlying unsaturated pervious

soils to enable monitoring for ponding. The pipe shall be capped with a screw type cap and accessible to within three inches of finish grade. (A locking cap at-grade is preferred) Facilities with multiple SAS's shall have an inspection port in each.

18. Upon submission of an application for a Disposal System Construction Permit (DSCP), the Designer shall provide to the Local Approving Authority:
    a) proof that the Designer has satisfactorily completed any required training by the Company for the design and installation of the Technology;
    b) certification of the design by the Company for any residential system with a design of 2,000 gpd or more or for any proposed non-residential system or if required by the Special Conditions for an approved Technology;
    c) certification by the Designer that the design conforms to the Approval, any Company Design Guidance, and 310 CMR 15.000; and
    d) a certification, signed by the Owner of record for the property to be served by the Technology, stating that the property Owner:
        i. has been provided a copy of the Title 5 I/A technology Approval, the Owner's Manual, and the Operation and Maintenance Manual, and the Owner agrees to comply with all terms and conditions;
        ii. for Systems installed under a Remedial Use Approval, the owner agrees to fulfill his responsibilities to provide written notification of the Approval to any new Owner, as required by 310 CMR 15.287(5);
        iii. if the design does not provide for the use of garbage grinders, the restriction is understood and accepted; and
        iv. whether or not covered by a warranty, the System Owner understands the requirement to repair, replace, modify or take any other action as required by the Department or the LAA, if the Department or the LAA determines the System to be failing to protect public health and safety and the environment, as defined in 310 CMR 15.303.

19. The System Owner and the Designer shall not submit to the LAA a DSCP application for the use of a Technology under this Approval if the Approval has been revised, reissued, suspended, or revoked by the Department prior to the date of application. The Approval continues in effect until the Department revises, reissues, suspends, or revokes the Approval.

20. The System Owner shall not authorize or allow the installation of the System other than by a locally approved Installer and, if required by the Company, a person certified or trained by the Company to install the System.

21. Prior to the commencement of construction, the System Installer must certify in writing to the Designer, the LAA, and the System Owner that (s)he is a locally approved System Installer and, if required by the Company, is certified by or has received appropriate training by the Company.

22. The Installer shall maintain on-site, at all times during construction, a copy of the approved plans, the Owner's manual, the O&M manual, and a copy of the Approval.
23. Prior to the issuance of a Certificate of Compliance the following shall be provided:

    a) the System Installer and Designer must provide certification in writing to the LAA that the System has been constructed in compliance with the terms of the Approval; and

    b) For System upgrades installed under a Remedial Use Approval the System Owner shall provide a copy of record and/or register the Deed Notice required by 310 CMR 15.287(10), to the LAA. The Deed Notice shall be completed as follows:

        i. a certified Registry copy of the Deed Notice bearing the book and page/or document number; and

        ii. if the property is unregistered land, a copy of the System Owner's deed to the property as recorded at the Registry, 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.

24. 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.

    a) 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; and

    b) 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 current Code requirements, unless a later time is allowed in writing by the Department or the LAA.

III. Operation and Maintenance

1. For Systems with design flows of 2,000 gpd or greater where the effective leaching area installed is less than 75% of that required by Title 5 (310 CMR 15.240(4)), measurement of the depth of ponding within the SAS above the interface with the underlying unsaturated pervious soils shall be performed once per year by means of the inspection port(s) and any other available access to the distribution system. Inspector must be an Approved System Inspector.

2. Whenever an Alt. SAS system's inspection port ponding depth is measured and indicates the ponding level within the SAS is above the invert of the distribution system, an additional measurement shall be made 30 days later. If the subsequent reading indicates the elevation of ponding within the SAS is above the invert of the distribution system, the System Owner shall be responsible for the submittal to the

LAA within 60 days of the follow-up inspection, a written evaluation of the System with recommendations for changes in the design, operation, and/or maintenance. The written evaluation with recommendations shall be prepared by a Designer and the submission shall include all monitoring data and inspection reports for the previous 3 years.

Recommendations shall be implemented, as approved by the LAA, in accordance with an approved schedule, provided that all corrective measures are implemented consistent with the limitations described in Paragraph IV.4.

3. For Systems less than 2,000 gpd or facilities where the effective leaching area installed meets the requirements of Title 5, the System shall not be required to be inspected at any greater frequency than would be required if the facility was served by a conventional system, unless the LAA, Company, or Designer requires more frequent inspection.

4. If at any time a septic system with an Alt. SAS is inspected by a System Inspector, the following shall be recorded, at a minimum:

   a) date, time, air temperature, and weather conditions;
   b) observations for objectionable odors;
   c) observations for signs of breakout of sanitary sewage in the vicinity of the Alternative System;
   d) depth of ponding within the SAS;
   e) identification of any apparent violations of the Approval;
   f) since the last inspection, whether the system had been pumped with date(s) and volume(s) pumped;
   g) sludge depth and scum layer thickness, if measured;
   h) when responding to alarm events, the cause of the alarm and any steps taken to address the alarm and to prevent or reduce the likelihood of future similar alarm events;
   i) field testing results when performed as part of the site visit;
   j) samples taken for laboratory analysis and results of previous samples, if any
   k) any cleaning and lubrication performed;
   l) any adjustments of control settings, as recommended or deemed necessary;
   m) any testing of pumps, switches, alarms, as recommended or deemed necessary;
   n) identification of any equipment failure or components not functioning as designed;
   o) parts replacements and reason for replacement, whether routine or for repair; and
   p) further corrective actions recommended, if any.

5. The System Owner shall maintain copies of any service records or inspection reports and all reports and notifications to the LAA for a minimum of three years.

6. Unless directed by the LAA to take other action, the System Owner shall immediately cease discharges or have wastewater hauled off-site, if at any time during the operation of the Alternative System the system is in failure as described in 310 CMR 15.303(1)(a), items 1 or 2 (sewage backing up into facilities or breaking out to the surface).

IV. Additional System Owner Requirements

1. For System upgrades installed under Remedial Use Approval, 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 include as an exhibit attached thereto and made a part of thereof a copy of the Approval for the System. The System Owner shall send a copy of such written notification(s) to the LAA within 10 days of giving such notice to the transferee(s).

2. The System Owner shall not install, modify, upgrade, or replace the System except in accordance with a valid DSCP issued by the LAA which covers the proposed work.

3. Upon determining that the System is failing to protect public health and safety and the environment, as defined in 310 CMR 15.303, the System Owner shall be responsible for the notification of the LAA within 24 hours of such determination.

4. In the case of a System that has been determined to be failing to protect public health and safety and the environment, an equipment failure, alarm event, components not functioning as designed, components not functioning in accordance with manufacturers' specifications, or violations of the Approval, the System Owner shall provide written notification within five days, describing corrective measures to the local board of health and the Company and may only propose or take corrective measures provided that:
   a) all emergency repairs, including pumping, shall be in accordance with the limitations and permitting requirements of 310 CMR 15.353;
   b) the design of any repairs or upgrades are consistent with the System Approval;
   c) the design of any repairs or upgrades requiring a DSCP shall be performed by a Designer who is 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.
   d) the installation of any repairs or upgrades requiring a DSCP shall be done by an Installer with a currently valid Disposal System Installers Permit and, if training is required, the Installer shall be certified by the Company as qualified to install the System.

5. To determine whether cause exists for modifying, revoking, or suspending the Approval or to determine whether the conditions of the Approval have been met, 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.

6. The Approval shall be binding on the System Owner and on its agents, contractors, successors, and assigns, including but not limited to the Designer, Installer, and Service Contractor. 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 System Owner unless the Department determines otherwise.

V. Company Requirements

1. The Approval shall only apply to the model unit(s) with the same model designation(s) specified in the System Approval and meet the same specifications, operating requirements, and plans, as provided by the Company or its authorized agent at the time of the application. Any proposed modifications of the unit(s), installation requirements, or operating requirements shall be subject to the review of the Department for inclusion under a modification of the Approval. The Designer shall be responsible for the selection of the appropriate model unit(s) as applicable. The Company shall be responsible for verification of the appropriate model unit(s) as part of any review of proposed installations that may be required by Paragraph V.3 of these Standard Conditions or the Special Conditions in the Approval.

2. Prior to submission of an application for a DSCP, the Company or its authorized agent shall provide to the Designer and the System Owner:
   a) All design and installation specifications and requirements;
   b) An owner's manual and, if alarms are provided, including response procedures;
   c) A copy of the Company's warranty; and
   d) If training or certification is required by the Company, lists of qualified Designers, Installers, and Service Contractors.

3. Prior to the submission of an application for a DSCP, for all nonresidential Systems and any System with a design flow of 2,000 gpd or greater, the Company shall submit to the Designer and the System Owner, a certification by the Company or its authorized agent that the design conforms to the Approval and all Company requirements and that the proposed use of the System is consistent with the Technology's capabilities. The authorized agent of the Company responsible for the design review shall have received technical training in the Company's products.

4. If the Company requires trained or certified Designers, Installers, or Service Contractors, the Company or its authorized agent shall make available programs of training and continuing education, as necessary. The Company or its authorized agent shall maintain, annually update, and make available by February 15th of each year, lists of trained or certified Designers, Installers, and Service Contractors. If training or certification is required, the Company shall not sell the Technology to an Installer unless the Installer is trained or certified to install the System by the Company. Similarly, if training is required, the Company shall ensure distributors

and resellers of the Technology shall not sell the Technology to an Installer unless the Installer is trained or certified to install the System by the Company.

5. As part of any training programs for Designers, Installers, or Service Contractors, the Company or its authorized agent shall provide each trainee with a copy of this Approval with the design, installation, O&M, and owner's manuals that were submitted as part of the Approval.

6. The Company shall provide, in printed or electronic format, the System design, installation, O&M, and Owner's manuals, and any updates associated with this System Approval, to the System Owners, Designers, Installers, Service Contractors, vendors, resellers, and distributors of the System. Prior to publication or distribution in Massachusetts, the Company shall submit to the Department for review a copy of any proposed changes to the manual(s) with reasons for each change, at least 30 days prior to issuance. The Company shall request Department approval for any substantive changes which may require a modification of the Approval.

7. Prior to its sale of any System that may be used in Massachusetts, the Company shall provide the purchaser with a copy of this 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.

8. To determine whether cause exists for modifying, revoking, or suspending the Approval or to determine whether the conditions of the Approval have been met, 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.

9. Within 60 days of issuance by the Department of these Conditions and any other revisions to the Approval, the Company shall provide written notification of changes to the Approval to all distributors and resellers of the System.

10. 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 this 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 this Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.

11. The Company shall maintain copies of:

    a) the Approval;

    b) the installation manual specifically detailing procedures for installation of its System;

c) an owner's manual and, if alarms are required, including alarm response procedures;

d) a copy of the Company's warranty; and

e) if training or certification is required, lists of qualified Designers and Installers.

12. The Company shall maintain the following additional information for 'Treatment with Disposal' Systems installed in Massachusetts, and make it available to the Department within 30 days of a request by the Department:

a) the address of each facility where the System was installed, the Owner's name and mailing address (if different), the type of use (e.g. residential, commercial, institutional, etc.), the design flow, the model installed; and

b) the installation date, start-up date, current operational status.

13. 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.

VI. General Requirements

1. Any System for which a complete Disposal System Construction Permit ("DSCP") Application is submitted while the Approval is in effect, may be permitted, installed, and used in accordance with the Approval, unless and until:

a) the Department issues modifications or amendments to the Approval which specifically affect the installation or use of a System installed under the Approval for the System; or

b) 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.

2. 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

3. The Department may suspend, modify or revoke the Approval for cause, including, but not limited to, non-compliance with the terms of the Approval, 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 the System against the Company, a System Owner, a Designer, an Installer, and/or Service Contractor.

Contactor® & Recharger®
Septic Chambers

Septic Design & Installation Manual

for Massachusetts

The Founder of Plastic Chamber Technology

www.cultec.com | 1(800) 4-CULTEC |

CULTEC®

Published by
CULTEC, Inc.
P.O. Box 280
878 Federal Road
Brookfield, Connecticut 06804 USA
www.cultec.com

The purpose of this design and installation manual is to aid in the design and installation of CULTEC On-Site Sewage Disposal Systems in the Commonwealth of Massachusetts. CULTEC products must be used in conjunction with Massachusetts DEP Title V, 310 CMR 15.000 and CULTEC's Certification for General Use Approval. CULTEC On-Site Sewage Disposal Systems must be designed by a Registered Sanitarian and/or Professional Engineer, and installed according to CULTEC's latest installation instructions.

Copyright Notice

Disclaimers:
The drawings, photographs and illustrations shown in this document are for illustrative purposes only and are not necessarily to scale.
Actual designs may vary.

CULTEC reserves the right to make design and/or specification changes at any time without notice at CULTEC's sole discretion.

CULTEC is not responsible for typographical errors.

Protected by one or more of the following patents:
Protected by one or more of the following patents:
U.S. Patents 6,129,482; 6,322,288; 6,854,925; 7,226,241; 7,806,627; 8,366,346; 8,425,148; and others; U.S. Designs D613819; D638,095; D668,318 and others; Canadian Patent 2,591,255 and others; Community Designs 1092191; 1745209; and others.

Contact Information:
For general information on our other products and services, please contact our offices within the United States at (800)428-5832, (203)775-4416 ext. 202, or e-mail us at custservice@cultec.com.

For technical support, please call (203)775-4416 ext. 203 or e-mail tech@cultec.com.

Visit www.cultec.com/downloads.html for Product Downloads and CAD details.

Doc ID: CULG093 10-17
October 2017

Table of Contents

Features & Benefits....4
Chamber + Non-woven Geotextile = A Two-Part System....6
Pipe Distribution Systems - PDS....7
Approval for General Use....8
General Septic System Information....13
CULTEC Contactor® Series Specification Information....14
CULTEC Recharger® Series Specification Information....14
End Detail Information....15
CULTEC Typical Installation Method....15
Contactor Series - Trench Configuration Chart....16
Contactor Series - Bed / Field Configuration Chart....16
Recharger Series - Trench Configuration Chart....17
Recharger Series - Bed / Field Configuration Chart....17
Chamber Specification Information....18
Trench Configurations....22
Bed / Field Configurations....25
Gallery Equivalent Configurations....40
Constructed In Fill Configurations....41
Pressure Dosing Configurations....42

CULTEC Septic Leachfield Systems

Features & Benefits

- Less land area required than pipe and stone leachfields
- Greater contact with primary leaching area promotes maximum infiltration capabilities
- Gravel-less installation allows for less heavy equipment time
- Overlapping rib connection is fast and easy to install
- Long structural life expectancy
- Able to transport in a pickup truck and hand-carry to placement
- System sizing reductions allowed in most areas *(Check your local septic code.)*
- Optional inspection port opening on each unit
- Repeating support panel adds to strength of installation
- Chemically resistant
- Variety of sizes available
- No separate end plates required
- Integrated internal and external pipe supports
- Manufactured in ISO 9001:2008 certified facilities
- International Association of Plumbing and Mechanical Officials (IAPMO) certified

Gravel-less septic application using CULTEC chambers and CULTEC No. 410™ non-woven geotextile. Lightweight chambers minimize heavy equipment time and labor.

Chamber + Non-woven Geotextile = A Two-Part System

Use of a non-woven polypropylene geotextile is required for CULTEC Contactor® and Recharger® septic installations to prevent soil intrusion and promote infiltrative capability.

For CULTEC gravel-less septic systems, the non-woven geotextile is placed directly over the chamber.

For septic installations using stone, the non-woven geotextile is placed over the top of the stone prior to final backfilling.

CULTEC distributes its own CULTEC No. 410™ Non-woven Geotextile to be used with the Contactor® and Recharger® septic chambers.

Substituted fabrics must meet or exceed the properties of the CULTEC No. 410™ Non-woven Geotextile listed below in order to not void the warranty.

Properties	Test Method	Test Results
Appearance		Black
Grab Tensile	D 4632	90 lbs 400 N
Elongation	D 4632	50%
Trapezoid Tear	D 4533	35 lbs 155 N
Puncture	D 4833	55 lbs 245 N
Mullen Burst	D 3786	175 psi 1205 kPa
AOS	D 4751	70 U.S. sieve .21 mm
Permittivity	D 4491	2.0 sec^{-1}
Permeability	D 4491	.2 cm/sec
Water Flow	D 4491	145 gal/min/sf 5908 l/min/sq.m
UV Stability	D 4355	70%

Pipe Distribution Systems - PDS

CULTEC promotes the placement of perforated pipe along the top of the outside of their septic chambers. A non-woven geotextile covering is then placed over the pipe and chamber. This method of installation is called a Pipe Distribution System or PDS system.

Wastewater is discharged through the perforations of the pipe directly onto the non-woven geotextile. The non-woven geotextile works as a sponge and absorbs the effluent and increases the total surface area of the septic system through capillary action. Overall concentration of effluent per square foot is thereby decreased.

When the pipe is on top of the unit, the suspended solids settle out on the outside of the chamber between the fabric and the sidewall bottom of the unit. This allows for the open bottom within the chamber to perform at maximum effectiveness since it is not being contaminated by the settling out of particles.

The effectiveness of the primary leaching base area is increased by allowing suspended solids to settle on the outside of the chamber rather than contaminating the open bottom area beneath the chamber.

A PDS system may either be a gravity system that relies on gravity to distribute the effluent or may be a pressure distribution system that employs a lift station with a pump to dispense the wastewater to the leachfields.

This method of installation may not be approved in all areas, check with your local septic code.

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

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

APPROVAL FOR GENERAL USE
Pursuant to Title 5, 310 CMR 15.000

Name and Address of Applicant:

CULTEC, Inc.
P.O. Box 280
878 Federal Road
Brookfield, CT 06804

Trade name of technology: CULTEC Chambers; model: Field Drain Contactors C4; Contactor EZ-24, 100, 125, and 202; and Recharger 180, 280, and 330XL (hereinafter the "System"). Schematic drawings of each model are attached and made a part of this Certification. This approval allows the installation of the above identified chambers without aggregate.

Transmittal Number: **X260808**
Date of Revision: March 31, 2016

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection hereby issues this Certification to: CULTEC, Inc., P.O. Box 280, 878 Federal Road, Brookfield, CT 06804 (hereinafter "the Company"), for General Use of the System described herein. The sale, design, installation, and use of the System are conditioned on compliance by the Company, the Designer, the Installer and the System Owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

/Signed/

March 31, 2016

Marybeth Chubb, Acting Section Chief
Groundwater/Title 5/Reuse
Bureau of Water Resources

I Design Standards

1. The models listed in Table 1 are covered under this Certification.

Table 1: Chamber Dimensions

Model*	Dimensions W x L** x H Inches	Invert Height Inches
Field Drain Contactor C4	48 x 96 x 8.5	3
Contactor EZ-24	16 x 96 x 12.5	6
Contactor 100	36 x 89 x 12.5	6
Contactor 125	30 x 75 x 18	12
Contactor 202	24 x 84 x 24	17
Recharger 180	36 x 76 x 20.5	14
Recharger 280	47 x 84 x26.5	20.5
Recharger 330XL	52 x 84 x 30.5	24

* All models also include a Heavy Duty (HD) model for H20 loading.
** Denotes Cultec chamber installed length.

2. The System is an open-bottom leaching unit molded from high density, high molecular weight polyethylene (HDPE) with a 3.5 to 4.5 ounce non-woven geosynthetic filter fabric cover (CULTEC No. 410™). It can be installed without aggregate or distribution pipe as an absorption trench or as a bed or field. If the System is installed with stone aggregate then the "Effective Leaching Area" in Tables 2 and 3 is not applicable, and must be designed in accordance with the provisions of 310 CMR 15.000.

Table 2: Effective Leaching Area for Trench Configuration for New Construction and Remedial Sites[1]

Model	Effective Leaching[2] Area SF/LF	Effective Leaching[3] Area SF/LF
Field Drain Contactor C4	NA	3.5
Contactor EZ-24	3.9	NA
Contactor 100	6.7	NA
Contactor 125	7.5	NA
Contactor 202	8.1	NA
Recharger 180	8.9	NA
Recharger 280	NA	6.4
Recharger 330XL	NA	7

[1] Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.
[2] Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width.
[3] Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

3. For new construction or upgrade, the applicant can size the System in a trench configuration, using the effective leaching areas presented in Table 2.

4. Systems installed on remedial sites shall be allowed to utilize the effective leaching areas presented in Tables 2 or 3, or additional reductions in soil absorption system may be allowed. In no instance shall the reduction in the soil absorption system required in 310 CMR 15.242 exceed the maximum reduction allowed for alternative systems approved in accordance with 310 CMR 15.284.

Table 3: Effective Leaching Area for Bed or Field Configuration for New Construction and Remedial Sites[1]

Model	Effective Leaching[4] Area (SF/LF)
Field Drain Contactor C4	6.7
Contactor EZ-24	2.2
Contactor 100	5.0
Contactor 125	4.2
Contactor 202	3.3
Recharger 180	5.0
Recharger 280	6.5
Recharger 330	7.2

[4]Effective Leaching area is equal to 1.67 times bottom width only.

5. For new construction or an upgrade, the applicant can size the System in bed or field configuration without aggregate, using the effective leaching areas presented in Table 3.

6. When the System is used with a secondary treatment unit approved in accordance with 310 CMR 15.284 or 15.288, additional reductions in soil absorption system may be allowed. In these situations the reduction in the SAS cannot exceed the maximum allowed under the secondary treatment units approval. In no instance shall the reduction in the soil absorption system area required in 310 CMR 15.242 exceed the maximum reduction allowed for alternative systems approved in accordance with 310 CMR 15.284.

II. Special Conditions

1. The System is an approved Alternative Chamber for use as an Alternative Soil Absorption System. In addition to the Special Conditions contained in this Approval, the System shall comply with the *Standard Conditions for Alternative SAS with General Use Certification and/or Approved for Remedial Use* (the 'Standard Conditions'), except where stated otherwise in these Special Conditions.

2. New Construction This Certification is for the installation of a System to serve new construction or an existing facility with a proposed increase in flow, for which a site

evaluation in compliance with 310 CMR 15.000 has been approved by the Approving Authority and the site meets the siting requirements for new construction, as provided in Paragraph 6 in section II Design and Installation Requirements of the Standard Conditions.

3. Remedial Site This General Use Certification also applies to the installation of a System for the upgrade or replacement of an existing failed or nonconforming system, provided that the facility meets the siting requirements for upgrades, as provided in Paragraph 7 in section II Design and Installation Requirements of the Standard Conditions

4. The System shall be exempt from the minimum inlet spacing requirements of 310 CMR15.253.

5. The System shall have a minimum of one inspection port through the top of one of the chambers. The inspection port shall be capped with a screw type cap and accessible to within three inches of finish grade.

6. When the System is installed in trench configuration, then the system shall comply with these requirements:

   a) Length (each trench) 100 feet maximum (310 CMR 15.251(1)(a));

   b) Width (each trench) 2 feet minimum to 3 feet maximum (310 CMR 15.251(1)(b)). - Chambers greater than 3 feet wide, when specifically approved, are subject to other Special Conditions and limitations;

   c) The minimum separation distance between any two trenches shall be two times the effective width or depth of each trench, whichever is greater, or where the area between trenches is designated as reserve area, three times the effective width or depth of each trench, whichever is greater (310 CMR 15.251(1)(d));

   d) The effective leaching area shall be calculated using the bottom area and a maximum of two feet (per side) of side wall area for each trench (310 CMR 15.251(1)(e));

   e) Trenches shall be situated, where possible, with their long dimension perpendicular to the slope of the natural soil. Where possible they shall follow the contour lines (310 CMR 15.251(2));

   f) Trenches constructed at different elevations shall be designed to prevent effluent from the higher trench(es) flowing into the lower trench(es) (310 CMR 15.251(3));

   g) The area between trenches may be designated as system reserve area only where the separation distance between the excavation sidewalls of the primary trenches is at least three times the effective width or depth of each trench, whichever is greater (310 CMR 15.251(4)) - Chambers greater than 3 feet wide, when specifically approved, shall be separated by three times the actual width and are subject to other Special Conditions and limitations; and

   h) Effluent distribution lines exceeding 50 feet in length shall be connected and venting provided in accordance with 310 CMR 15.241 (310 CMR 15.251(11)).

7. When installed in trench configuration, approved Alternative Chambers greater than 3 feet wide:
   a) shall be installed with a minimum separation distance between any two trenches of two times the actual width of the chamber, or where the area between trenches is designated as reserve area, three times the actual width of the chamber; and
   b) shall only be entitled to a maximum effective width of 3 feet for the purposes of calculating total effective leaching area.
8. When installed in a bed or field configuration, the System may be installed without distribution piping, but must comply with the following requirements in 310 CMR 15.252:
   a) the use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field (310 CMR 15.252(1));
   b) the maximum length of chambers in series shall be 100 feet (310 CMR 15.252(2)(b));
   c) separation distance between adjacent beds/fields shall be ten feet (310 CMR 15.252(2)(f)); and
   d) the effective leaching area shall include only the bottom area, not the sidewalls (310 CMR 15.252(2)(i)).
9. For Systems constructed in fill and installed, the System shall be installed as specified in 310 CMR 15.255- Construction in Fill, except the minimum 15 foot horizontal separation distance to be provided between the soil absorption area and the adjacent side slope shall be measured horizontally from the top of the chamber.
10. The System is exempt from 310 CMR 15.287, specifically items: (5) requiring written notification of alternative system prior to property transfer, (6) need for a certified operator, (9) need for an operation and maintenance contract with an operator and (10) deed notice requirement.

General Septic System Information

A septic system or on-site sewage disposal system achieves sewage treatment and disposal for rural homes where centralized sewage systems may not be available. Septic systems are comprised of a septic tank, one or more distribution boxes and soil absorption system or leaching field. Due to system size and/or system location, some systems also include a dosing chamber between the septic tank and distribution box to distribute the effluent water under pressure. Sewage flows from the house to the septic tank where the solids and scum settle and are broken-down by bacteria; the effluent then flows to the soil absorption system where it is allowed to soak into the surrounding soil further treating the effluent.

The soil absorption system or leachfield is a system of trenches, galleries, chambers, pits, field(s) or bed(s) together with effluent distribution lines and aggregate. The soil absorption system receives effluent from a septic tank or treatment system and disposes of the effluent water as bacteria further treat it. Conventional drainfields have used perforated pipe and stone systems or concrete galleries to distribute the effluent. CULTEC's Contactor® and Recharger® plastic chambers are used in place of these conventional systems for performance that is more effective and installation that is more efficient.

Our plastic septic chambers have been widely accepted in most parts of the United States for gravel-less septic leachfields as replacements for concrete galleries and conventional pipe and stone systems. The fully open bottoms, perforated sidewalls, and the use of CULTEC No. 410™ Nonwoven Geotextile maximize contact area. Due to their greater contact area, CULTEC chambers overall system sizing requirements are commonly reduced up to 50% when approved by the local authority. In the Commonwealth of Massachusetts CULTEC soil absorption systems reduce overall system sizing requirements up to 40%.

This sizing reduction may be a key factor when choosing septic products for a residence with tight site constraints, existing landscaping or when area is desired for other structures such as a swimming pool.

An Innovative/Alternative (I/A) system is any septic system or part of one that is not designed or constructed in a way consistent with a conventional Title 5 system. A conventional system has a septic tank, a distribution box or dosing mechanism, a soil absorption system (SAS) and a reserve area. Some examples of alternative systems are recirculating sand filters, aerobic treatment units, Wisconsin mounds, peat filters, humus/composting toilets, and intermittent sand filters.

For most Massachusetts homes without access to municipal sewers, septic systems provide for on-site wastewater treatment and disposal. However, site limitations can make it difficult to replace a failing cesspool or septic system with a conventional septic system that will meet state standards. I/A systems can help address these situations:

- They are generally better than conventional septic systems at removing solids and other pollutants from wastewater before it goes to the soil absorption system (SAS).
- The SAS following an I/A technology can be expected to have a longer life.
- I/A technology can also provide advanced treatment to reduce the wastewater's nitrogen content. For this reason, nitrogen reducing systems may be required for new home construction near a private or public water supply well or other nitrogen-sensitive areas.

Whether your home already has an I/A system or you are thinking about installing one, it's important to get acquainted with the basics: what your alternatives are, how they work, what they cost to install and maintain, what is required to stay in compliance with Title 5 (the State Environmental Code), and who you can turn to for additional information and assistance.

CULTEC Contactor® Series Specification Information

	Contactor® Field Drain C-4™ and C-4HD	Contactor® EZ-24™ and EZ-24HD	Contactor® 100™	Contactor® 100HD™	Contactor® 202™
Length	8.5'	8.5'	8'	8'	8.33'
Installed Length	8'	8'	7.4'	7.5'	7.0'
Width	48"	16"	36"	36"	24"
Height	8.5"	12"	12.5"	12.5"	24"
Invert Height	3"	6"	6"	6"	17"
Installed Storage Capacity	101 gallons	52 gallons	109 gallons	105 gallons	114 gallons

CULTEC Recharger® Series Specification Information

	Recharger® 180HD™	Recharger® 280HD™	Recharger® 330XLHD™
Length	7.33'	8'	8.5'
Installed Length	6.33'	7'	7'
Width	36"	47"	52"
Height	20.5"	26.5"	30.5"
Invert Height	14"	20.5"	24"
Installed Storage Capacity	114 gallons	318 gallons	391 gallons

Field Drain C-4 EZ-24 100 100HD 202

End Detail Information

Large Rib End Detail

Small Rib End Detail

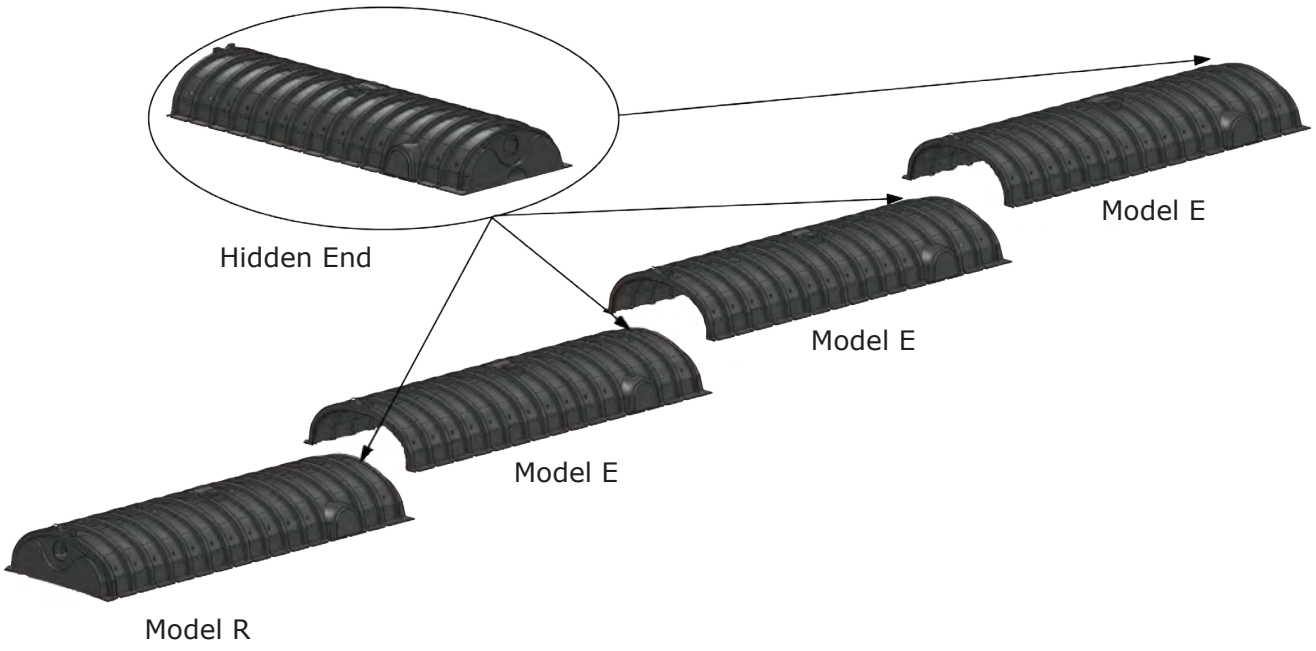
Model R (or RHD for heavy duty version) is a **starter / stand alone** unit with two full endwalls. They are used to start lines or can be used singularly.

Model E (or EHD for heavy duty version) is a **middle / end unit** with one closed endwall and one open end. They are used to continue lines and also used to end a line.

CULTEC Typical Installation Method

Interlock Model R to E using the patented overlapping rib connection.

- Start each line with a Model R.
- Use Model E to continue the length of your line.
- End your line by using a Model E.



The overlapping rib connection used by CULTEC's chambers permit a curved line of installation. This is a beneficial quality when following land contours or a sweep around an obstruction is necessary.

Contactor Series in Trench Configuration

Soil Class	Percolation Rate (min/in)	Effluent Loading Rate (gpd/sq.ft)	Number of Chambers in Graveless Trench System (See Note below for min. requirements)											
			330 GPD Design Flow (3 Bedrooms or Less)				440 GPD Design Flow (4 Bedrooms or Less)				550 GPD Design Flow (5 Bedrooms or Less)			
			C-FDC4 3.5 SF/LF	C-EZ24 3.9 SF/LF	C-100 6.7 SF/LF	C-202 8.1 SF/LF	C-FDC4 3.5 SF/LF	C-EZ24 3.9 SF/LF	C-100 6.7 SF/LF	C-202 8.1 SF/LF	C-FDC4 3.5 SF/LF	C-EZ24 3.9 SF/LF	C-100 6.7 SF/LF	C-202 8.1 SF/LF
Class I Sandy, Loamy Sands	≤5	0.74	16	15	9	8	22	20	12	11	27	24	15	14
	6	0.70	17	16	10	9	23	21	13	12	29	26	16	14
	7	0.68	18	16	10	9	24	21	14	12	29	26	17	15
	8	0.66	18	17	11	9	24	22	14	12	30	27	17	15
Class II Sandy Loams, Loams	≤5	0.60	20	18	12	10	27	24	15	13	33	30	19	17
	6	0.60	20	18	12	10	27	24	15	13	33	30	19	17
	7	0.60	20	18	12	10	27	24	15	13	33	30	19	17
	8	0.60	20	18	12	10	27	24	15	13	33	30	19	17
	10	0.60	20	18	12	10	27	24	15	13	33	30	19	17
	15	0.56	22	19	12	11	29	26	16	14	36	32	20	18
	20	0.53	23	20	13	11	30	27	17	15	38	34	21	19
	25	0.40	30	27	17	15	40	36	23	20	50	45	28	25
	30	0.33	36	33	21	18	48	43	27	24	60	54	34	30
Class III Silty Loams	15	0.37	32	29	18	16	43	39	24	21	54	48	30	27
	20	0.34	35	32	20	18	47	42	27	23	58	52	33	29
	25	0.33	36	33	21	18	48	43	27	24	60	54	34	30
	30	0.29	41	37	23	21	55	49	31	27	68	61	39	34
	40	0.25	48	43	27	24	63	57	36	32	79	71	45	39
	50	0.20	59	53	34	30	79	71	45	39	99	89	56	49
	60	0.15	79	71	45	39	105	95	60	52	131	118	74	65
Class IV Clays, Silty Clay Loams	50	0.20	59	53	34	30	79	71	45	39	99	89	56	49
	60	0.15	79	71	45	39	105	95	60	52	131	118	74	65

Contactor Series in Bed/Field Configuration

Soil Class	Percolation Rate (min/in)	Effluent Loading Rate (gpd/sq.ft)	Number of Chambers in Graveless Bed System (See Note below for min. requirements)											
			330 GPD Design Flow (3 Bedrooms or Less)				440 GPD Design Flow (4 Bedrooms or Less)				550 GPD Design Flow (5 Bedrooms or Less)			
			C-FDC4 6.7 SF/LF	C-EZ24 2.2 SF/LF	C-100 5.0 SF/LF	C-202 3.3 SF/LF	C-FDC4 6.7 SF/LF	C-EZ24 2.2 SF/LF	C-100 5.0 SF/LF	C-202 3.3 SF/LF	C-FDC4 6.7 SF/LF	C-EZ24 2.2 SF/LF	C-100 5.0 SF/LF	C-202 3.3 SF/LF
Class I Sandy, Loamy Sands	≤5	0.74	9	26	13	20	12	34	17	26	14	43	21	33
	6	0.70	9	27	13	21	12	36	17	28	15	45	22	35
	7	0.68	10	28	14	22	13	37	18	29	16	46	22	36
	8	0.66	10	29	14	22	13	38	19	29	16	48	23	37
Class II Sandy Loams, Loams	≤5	0.60	11	32	15	24	14	42	20	32	18	53	25	40
	6	0.60	11	32	15	24	14	42	20	32	18	53	25	40
	7	0.60	11	32	15	24	14	42	20	32	18	53	25	40
	8	0.60	11	32	15	24	14	42	20	32	18	53	25	40
	10	0.60	11	32	15	24	14	42	20	32	18	53	25	40
	15	0.56	11	34	16	26	15	45	22	35	19	56	27	43
	20	0.53	12	36	17	27	16	48	23	36	20	59	29	45
	25	0.40	16	47	23	36	21	63	30	48	26	79	38	60
	30	0.33	19	57	28	44	25	76	37	58	32	95	46	73
Class III Silty Loams	15	0.37	17	51	25	39	23	68	33	52	28	85	41	65
	20	0.34	19	56	27	43	25	74	35	57	31	92	44	71
	25	0.33	19	57	28	44	25	76	37	58	32	95	46	73
	30	0.29	22	65	31	50	29	87	42	66	36	108	52	83
	40	0.25	25	75	36	58	33	100	48	77	42	125	60	96
	50	0.20	31	94	45	72	42	125	60	96	52	157	75	120
	60	0.15	42	125	60	96	55	167	80	127	69	209	100	159
Class IV Clays, Silty Clay Loams	50	0.20	31	94	45	72	42	125	60	96	52	157	75	120
	60	0.15	42	125	60	96	55	167	80	127	69	209	100	159

Recharger Series in Trench Configuration

Soil Class	Percolation Rate (min/in)	Effluent Loading Rate (gpd/sq.ft)	Number of Chambers in Graveless Trench System (See Note below for min. requirements)								
			330 GPD Design Flow (3 Bedrooms or Less)			440 GPD Design Flow (4 Bedrooms or Less)			550 GPD Design Flow (5 Bedrooms or Less)		
			R-180 8.9 SF/LF	R-280 6.4 SF/LF	R-330XL 7.0 SF/LF	R-180 8.9 SF/LF	R-280 6.4 SF/LF	R-330XL 7.0 SF/LF	R-180 8.9 SF/LF	R-280 6.4 SF/LF	R-330XL 7.0 SF/LF
Class I Sandy, Loamy Sands	≤5	0.74	8	10	10	11	14	13	14	17	16
	6	0.70	9	11	10	12	15	13	14	18	17
	7	0.68	9	11	10	12	15	14	15	19	17
	8	0.66	9	12	11	12	15	14	15	19	18
Class II Sandy Loams, Loams	≤5	0.60	10	13	12	14	17	15	17	21	19
	6	0.60	10	13	12	14	17	15	17	21	19
	7	0.60	10	13	12	14	17	15	17	21	19
	8	0.60	10	13	12	14	17	15	17	21	19
	10	0.60	10	13	12	14	17	15	17	21	19
	15	0.56	11	14	13	14	18	17	18	22	21
	20	0.53	12	14	13	15	19	17	19	24	22
	25	0.40	15	19	17	20	25	23	25	31	29
	30	0.33	18	23	21	24	30	28	30	38	35
Class III Silty Loams	15	0.37	16	20	19	22	27	25	27	34	31
	20	0.34	18	22	20	23	29	27	29	37	34
	25	0.33	18	23	21	24	30	28	30	38	35
	30	0.29	21	26	24	27	34	31	34	43	39
	40	0.25	24	30	27	32	40	36	40	50	45
	50	0.20	30	37	34	40	50	45	49	62	57
	60	0.15	40	50	45	53	66	60	66	82	75
Class IV Clays, Silty Clay Loams	50	0.20	30	37	34	40	50	45	49	62	57
	60	0.15	40	50	45	53	66	60	66	82	75

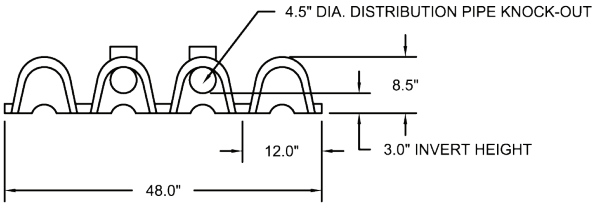
Recharger Series in Bed/Field Configuration

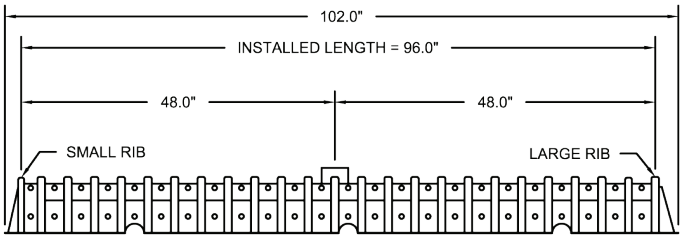
Soil Class	Percolation Rate (min/in)	Effluent Loading Rate (gpd/sq.ft)	Number of Chambers in Graveless Bed System (See Note below for min. requirements)								
			330 GPD Design Flow (3 Bedrooms or Less)			440 GPD Design Flow (4 Bedrooms or Less)			550 GPD Design Flow (5 Bedrooms or Less)		
			R-180 5.0 SF/LF	R-280 6.5 SF/LF	R-330XL 7.2 SF/LF	R-180 5.0 SF/LF	R-280 6.5 SF/LF	R-330XL 7.2 SF/LF	R-180 5.0 SF/LF	R-280 6.5 SF/LF	R-330XL 7.2 SF/LF
Class I Sandy, Loamy Sands	≤5	0.74	15	10	9	19	14	12	24	17	15
	6	0.70	15	11	10	20	14	13	25	18	16
	7	0.68	16	11	10	21	15	13	26	18	17
	8	0.66	16	11	10	22	15	14	27	19	17
Class II Sandy Loams, Loams	≤5	0.60	18	13	11	24	17	15	29	21	19
	6	0.60	18	13	11	24	17	15	29	21	19
	7	0.60	18	13	11	24	17	15	29	21	19
	8	0.60	18	13	11	24	17	15	29	21	19
	10	0.60	18	13	11	24	17	15	29	21	19
	15	0.56	19	13	12	25	18	16	32	22	20
	20	0.53	20	14	13	27	19	17	33	23	21
	25	0.40	27	19	17	35	25	22	44	31	28
	30	0.33	32	22	20	43	30	27	53	37	34
Class III Silty Loams	15	0.37	29	20	18	38	27	24	47	33	30
	20	0.34	31	22	20	41	29	26	52	36	33
	25	0.33	32	22	20	43	30	27	53	37	34
	30	0.29	36	26	23	48	34	31	60	42	38
	40	0.25	42	30	27	56	39	35	70	49	44
	50	0.20	53	37	33	70	49	44	87	61	55
	60	0.15	70	49	44	93	65	59	116	81	73
Class IV Clays, Silty Clay Loams	50	0.20	53	37	33	70	49	44	87	61	55
	60	0.15	70	49	44	93	65	59	116	81	73

CULTEC Contactor® Field Drain C-4™ and C-4HD

Available in both Standard and Heavy Duty.
All Contactor C-4HD Heavy Duty units are marked with a color stripe formed into the part along the length of the chamber.

Size (L x W x H)	8.5' x 48" x 8.5"
Installed Length	8'
Length Adjustment per Run	0.5'
Invert Height	3"
Installed Storage Capacity	101 gallons

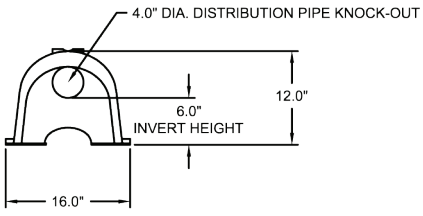


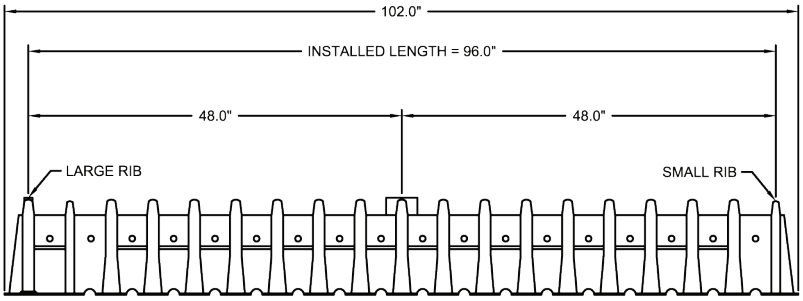


CULTEC Contactor® EZ-24™ and EZ-24HD

Available in both Standard and Heavy Duty.
All Contactor EZ-24HD Heavy Duty units are marked with a color stripe formed into the part along the length of the chamber.

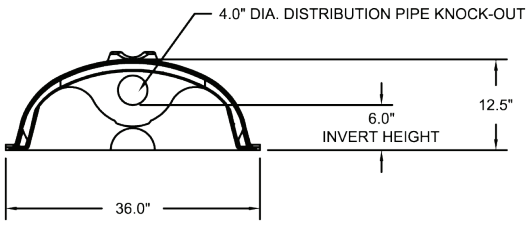
Size (L x W x H)	8.5' x 16" x 12"
Installed Length	8'
Length Adjustment per Run	0.5'
Invert Height	6"
Installed Storage Capacity	52 gallons

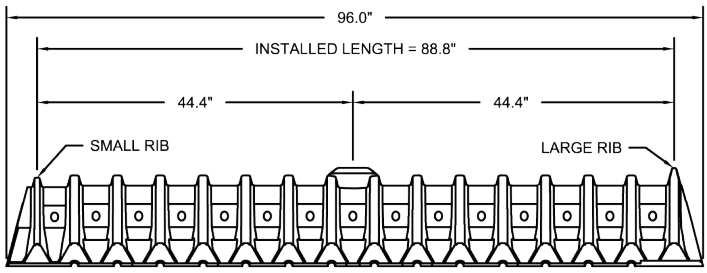




CULTEC Contactor® 100™

Size (L x W x H)	8' x 36" x 12.5"
Installed Length	7.4'
Length Adjustment per Run	0.6'
Invert Height	6"
Installed Storage Capacity	109 gallons

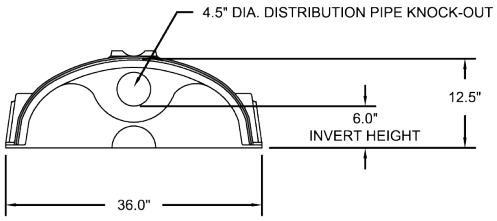


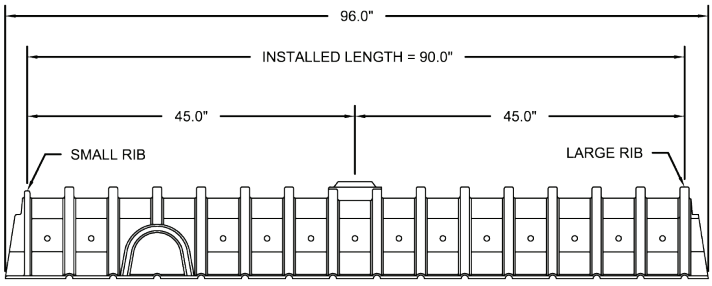


CULTEC Contactor® 100HD™

All Contactor 100HD Heavy Duty units are marked with a color stripe formed into the part along the length of the chamber.

Size (L x W x H)	8' x 36" x 12.5"
Installed Length	7.5'
Length Adjustment per Run	0.5'
Invert Height	6"
Installed Storage Capacity	105 gallons

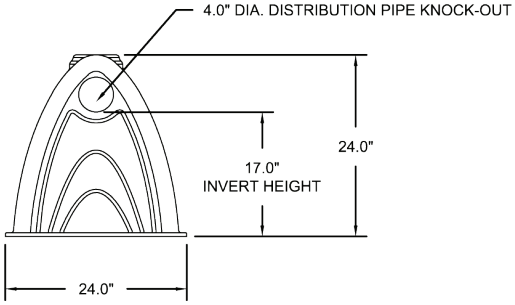


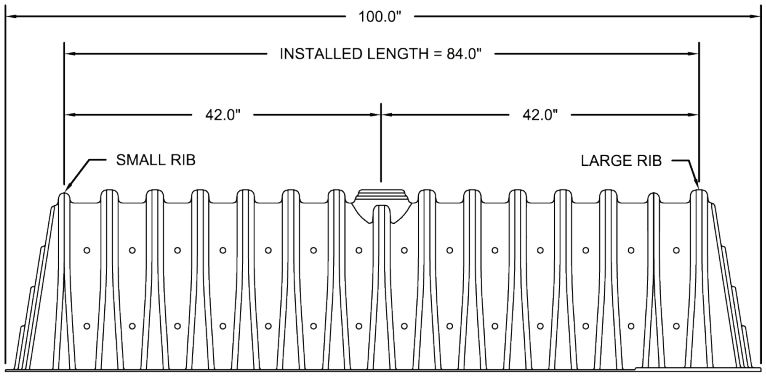


CULTEC Contactor® 202™

Available in Standard Duty only.

Size (L x W x H)	8.33' x 24" x 24"
Installed Length	7.0'
Length Adjustment per Run	1.33'
Invert Height	17"
Installed Storage Capacity	114 gallons

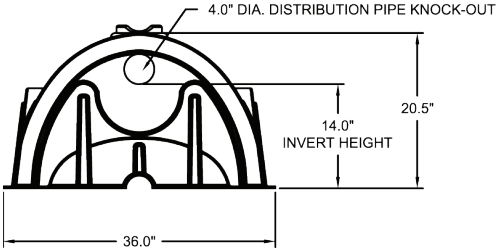


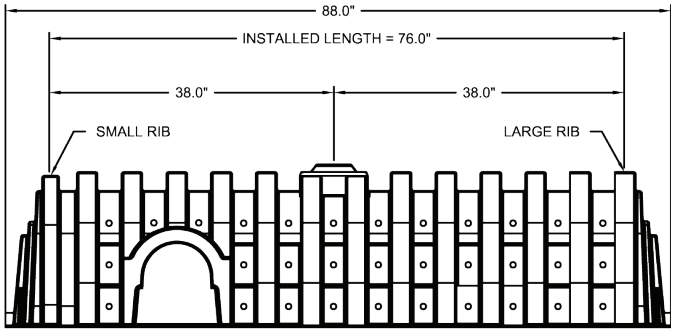


CULTEC Recharger® 180HD™

Available in Heavy Duty only.
All Recharger 180HD Heavy Duty units are marked with a color stripe formed into the part along the length of the chamber.

Size (L x W x H)	7.33' x 36" x 20.5"
Installed Length	6.33'
Length Adjustment per Run	1'
Invert Height	14"
Installed Storage Capacity	114 gallons

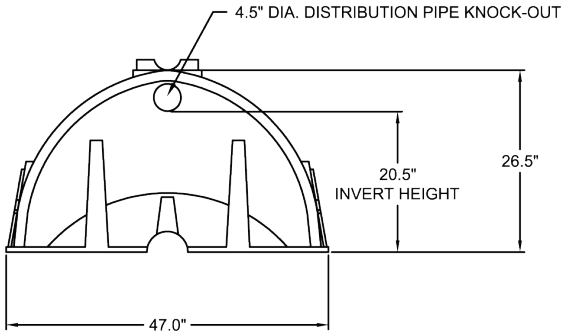


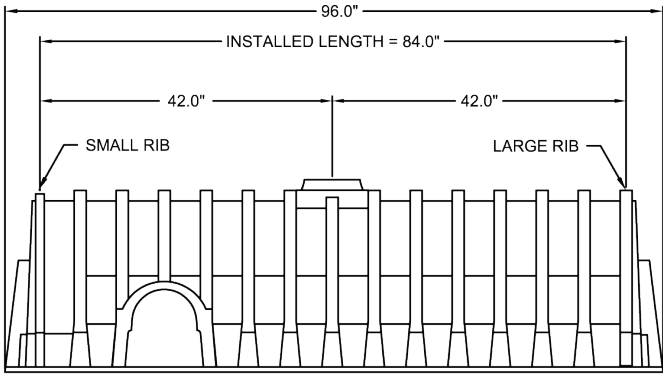


CULTEC Recharger® 280HD™

Available in Heavy Duty only.
All Recharger 280HD Heavy Duty units are marked with a color stripe formed into the part along the length of the chamber.

Size (L x W x H)	8' x 47" x 26.5"
Installed Length	7'
Length Adjustment per Run	1'
Invert Height	20.5"
Installed Storage Capacity	318 gallons

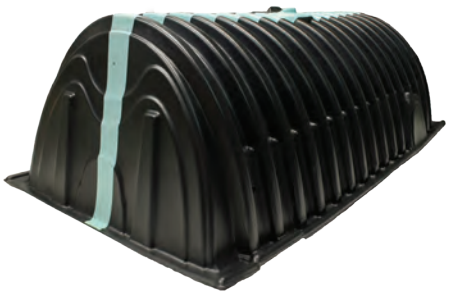


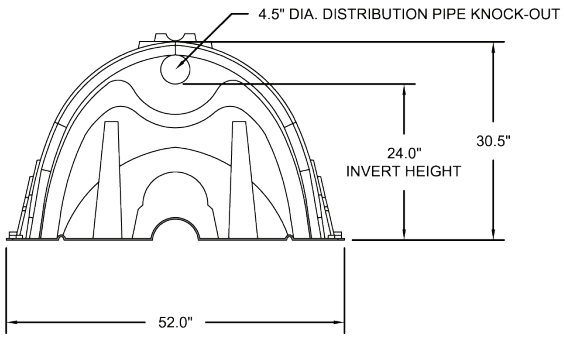


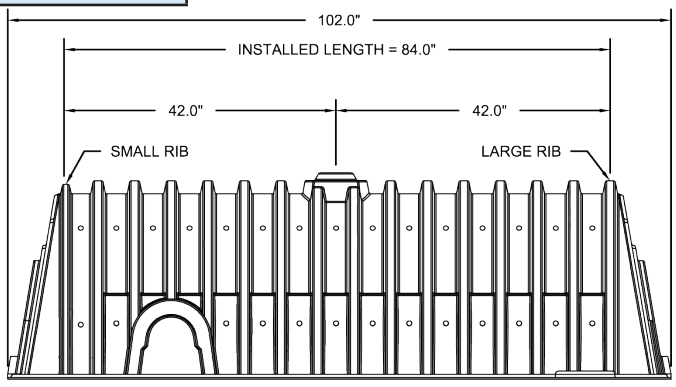
CULTEC Recharger® 330XLHD™

Available in Heavy Duty only.
All Recharger 330XLHD Heavy Duty units are marked with a color stripe formed into the part along the length of the chamber.

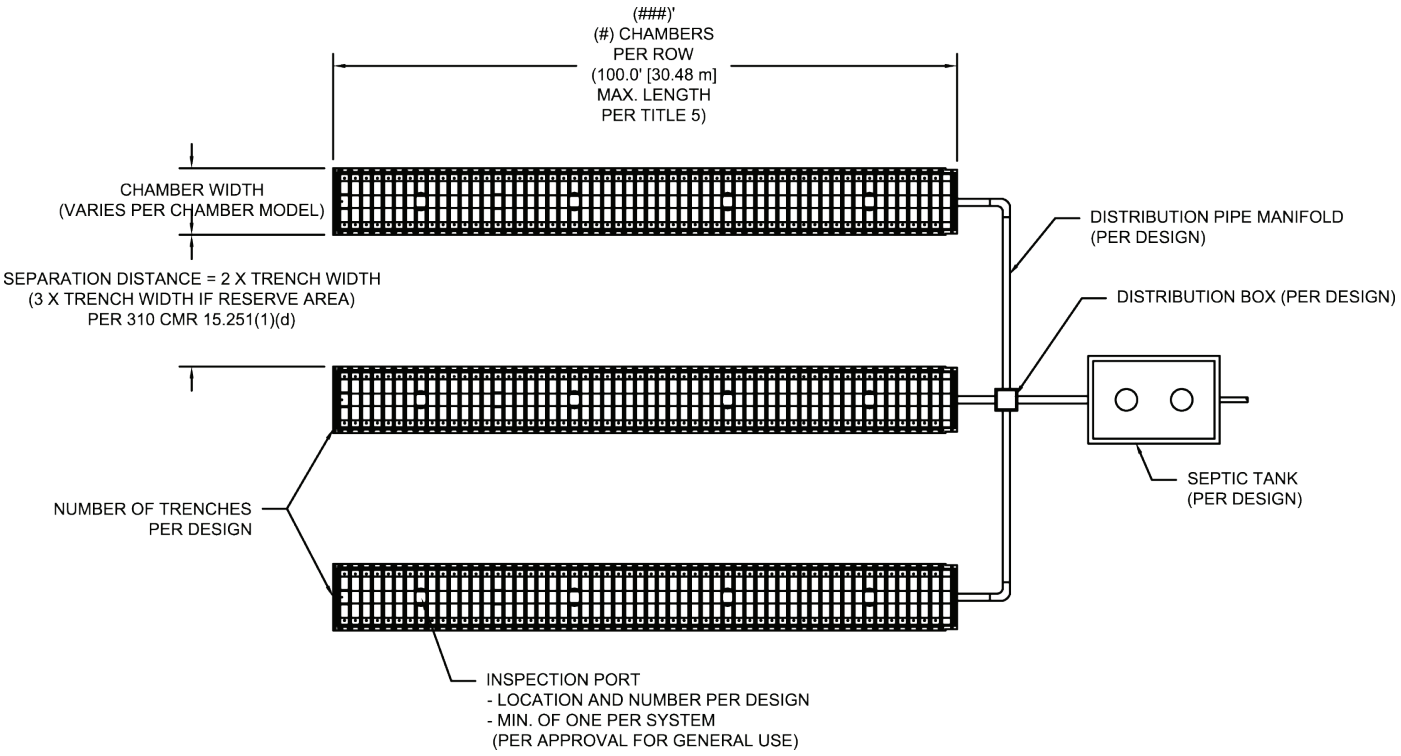
Size (L x W x H)	8.5' x 52" x 30.5"
Installed Length	7'
Length Adjustment per Run	1.5'
Invert Height	24"
Installed Storage Capacity	391 gallons







Trench Configurations



Contactor Field Drain C-4 and C-4HD

Effective Leaching Area Rating = **3.5 sf / lf**

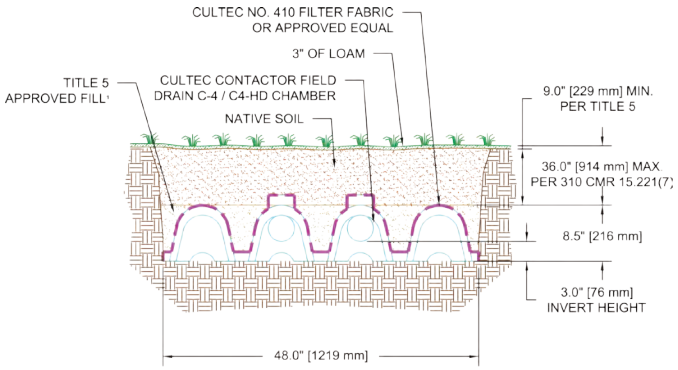
Invert Height = 3.0”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

Minimum separation distance between trenches = 8.0’ (12.0’ if reserve area)



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Contactor EZ-24 and EZ-24HD

Effective Leaching Area Rating = **3.9 sf / lf**

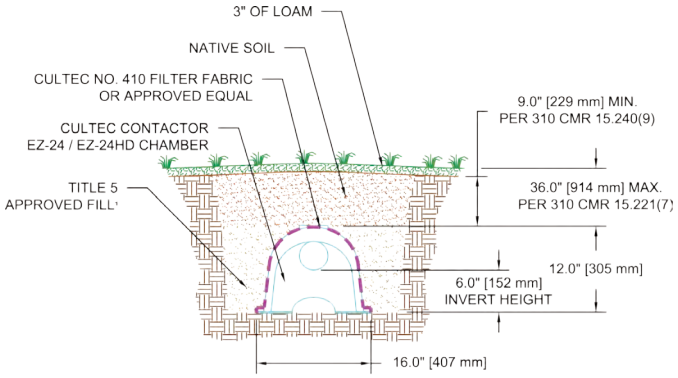
Invert Height = 6.0”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

Minimum separation distance between trenches = 2.67’ (4.0’ if reserve area)



Contactor 100 and 100HD

Effective Leaching Area Rating = **6.7 sf / lf**

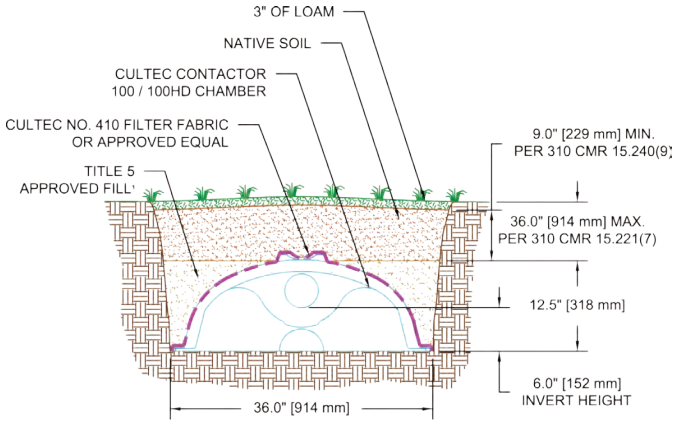
Invert Height = 6.0”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

Minimum separation distance between trenches = 6.0’ (9.0’ if reserve area)



Contactor 202

Effective Leaching Area Rating = **8.1 sf / lf**

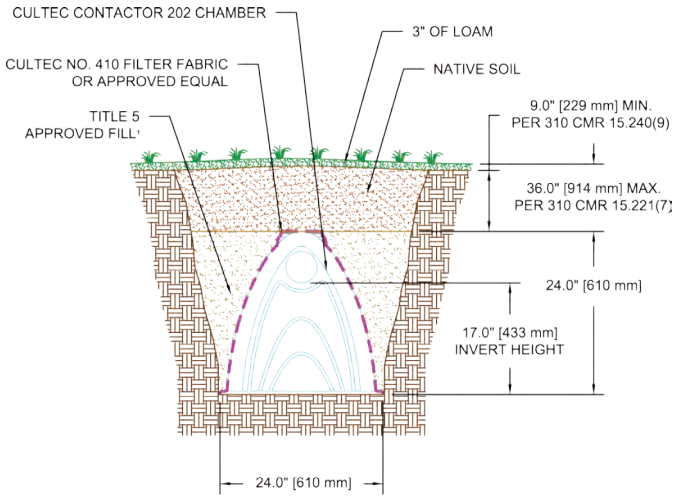
Invert Height = 17.0”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

Minimum separation distance between trenches = 4.0’ (6.0’ if reserve area)



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Recharger 180HD

Effective Leaching Area Rating = **8.9 sf / lf**

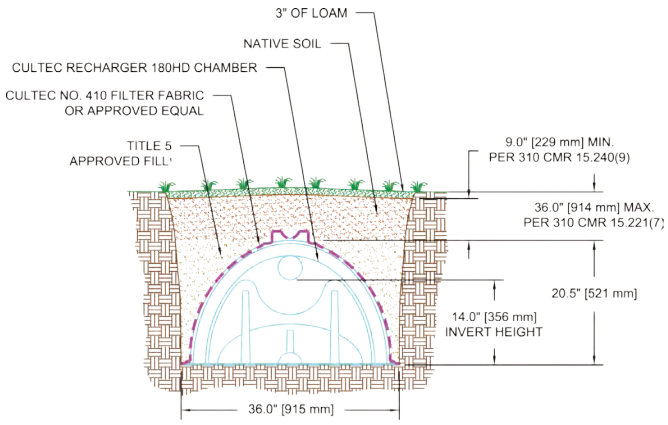
Invert Height = 14.0”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

Minimum separation distance between trenches = 6.0’ (9.0’ if reserve area)



Recharger 280HD

Effective Leaching Area Rating = **6.4 sf / lf**

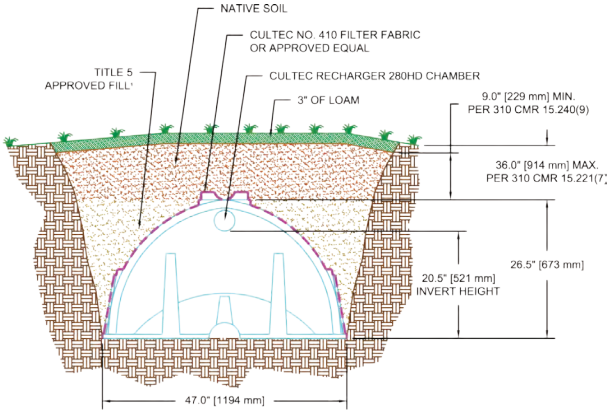
Invert Height = 20.5”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

Minimum separation distance between trenches = 7.83’ (11.75’ if reserve area)



Recharger 330XLHD

Effective Leaching Area Rating = **7.0 sf / lf**

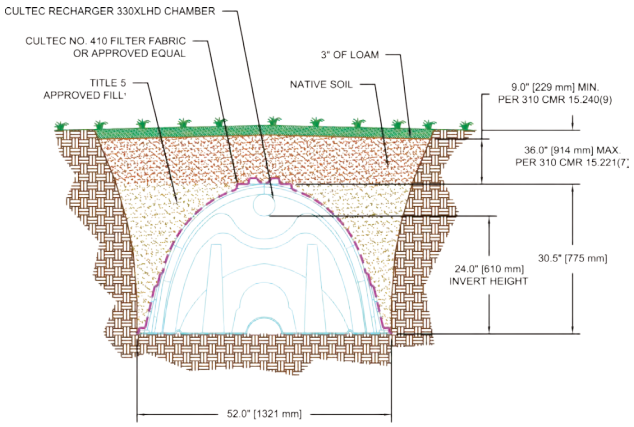
Invert Height = 24.0”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

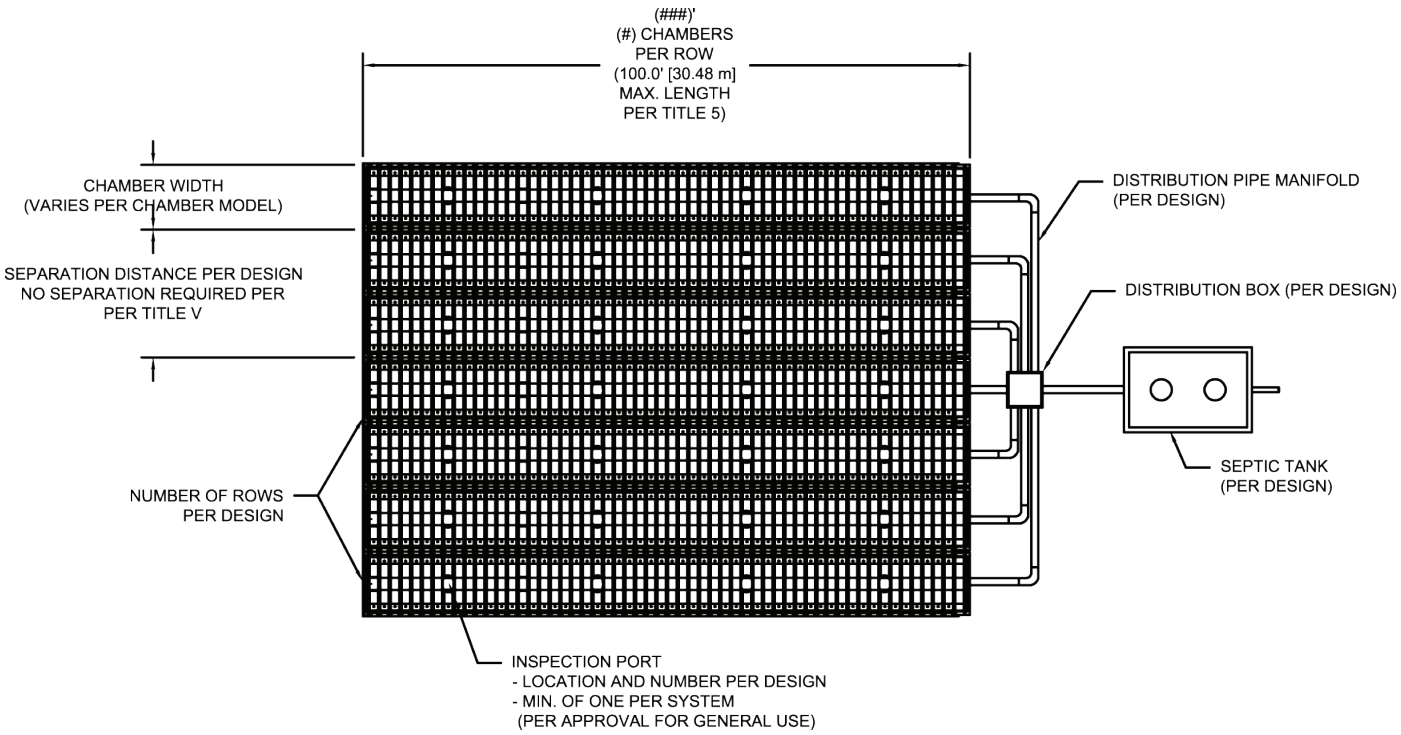
Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

Minimum separation distance between trenches = 8.67’ (13.0’ if reserve area)



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Bed/Field Configurations



Bed/Field Configurations

Contactor Field Drain C-4 and C-4HD

Effective Leaching Area Rating = **6.7 sf / lf**

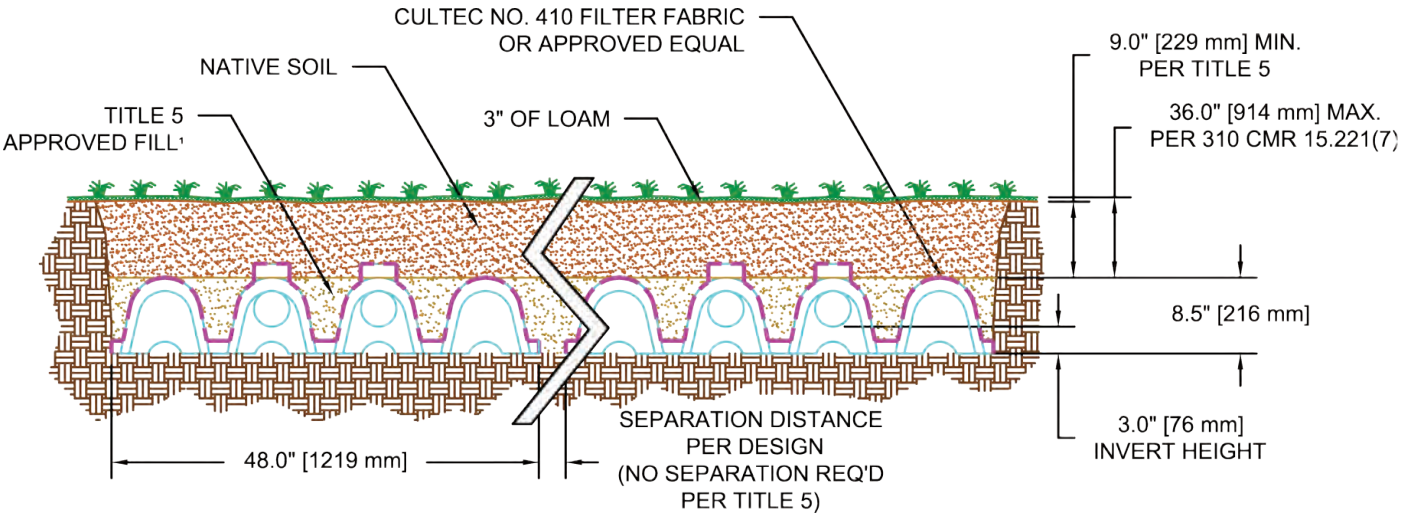
Invert Height = 3.0”

Effective leaching area is equal to 1.67 times bottom area only

No separation between chamber rows required (Per Title 5)

The use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field (310 CMR 15.252(1))

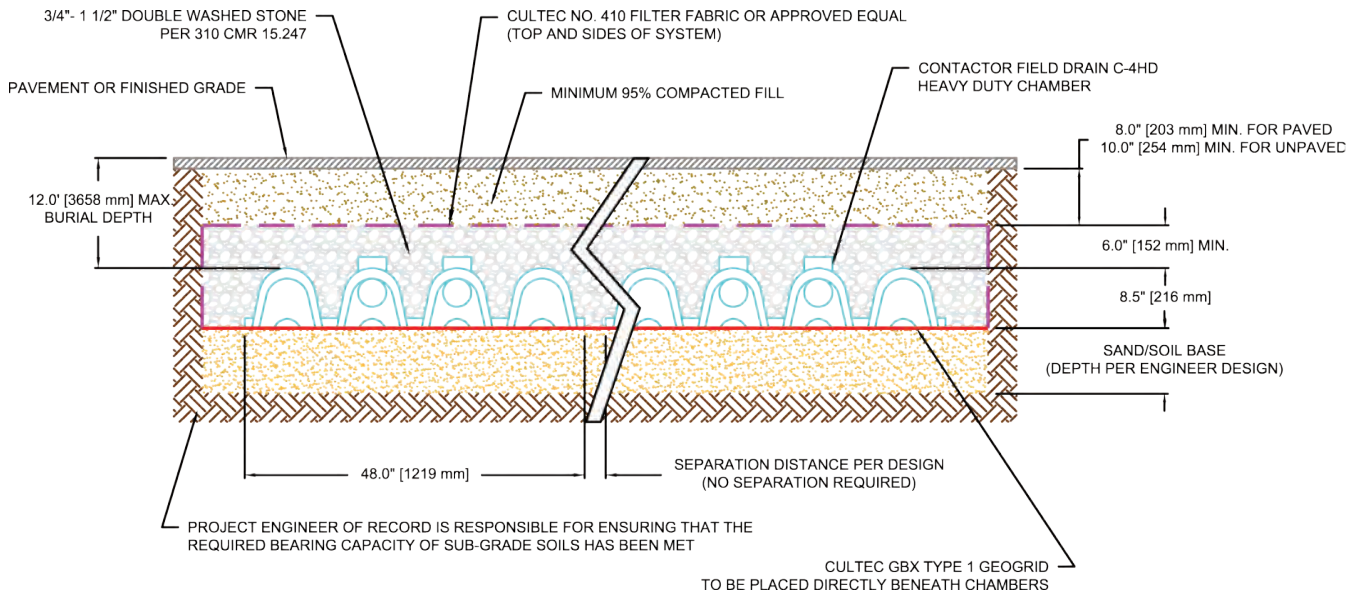
Separation distance between adjacent beds/fields shall be 10 feet (310 CMR 15.252(2)(f))



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Contactor Field Drain C-4HD - Traffic Application

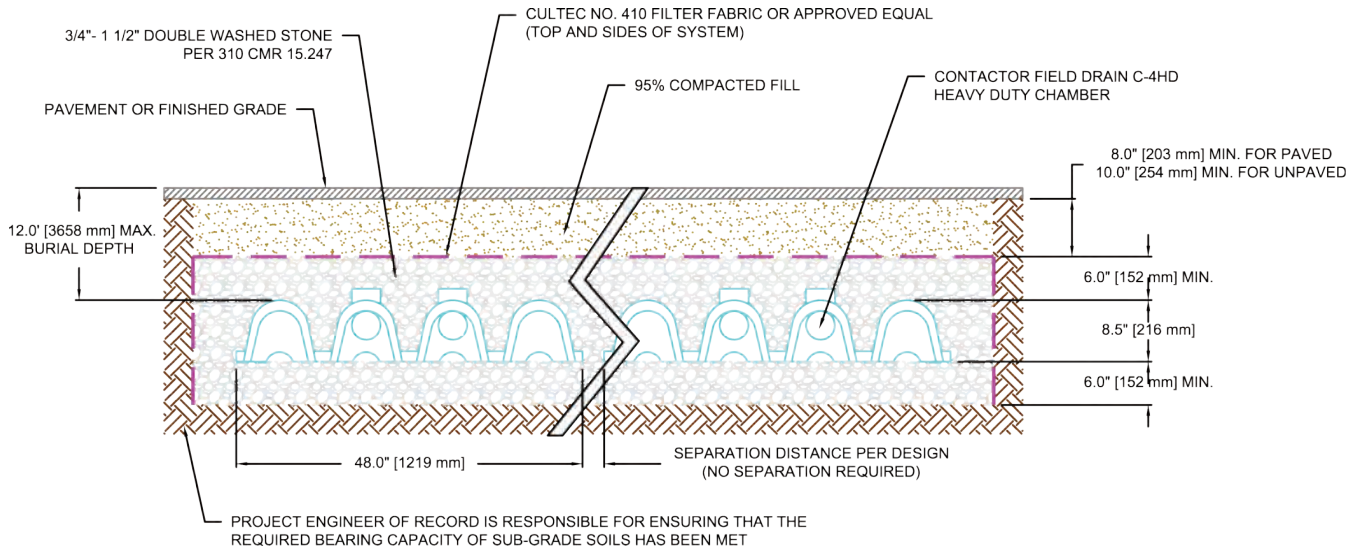
Effective Leaching Area Rating = **6.7 sf / lf**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems

Contactor Field Drain C-4HD - Traffic Application with aggregate

Effective Leaching Area Rating = **Bottom Area of Bed / Field**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems
Note: If a system is installed with a stone aggregate base, Table 3 Effective Leaching Area is not applicable. Refer to CULTEC MA Title 5 approval letter.

Bed/Field Configurations

Contactor EZ-24 and EZ-24HD

Effective Leaching Area Rating = **2.2 sf / lf**

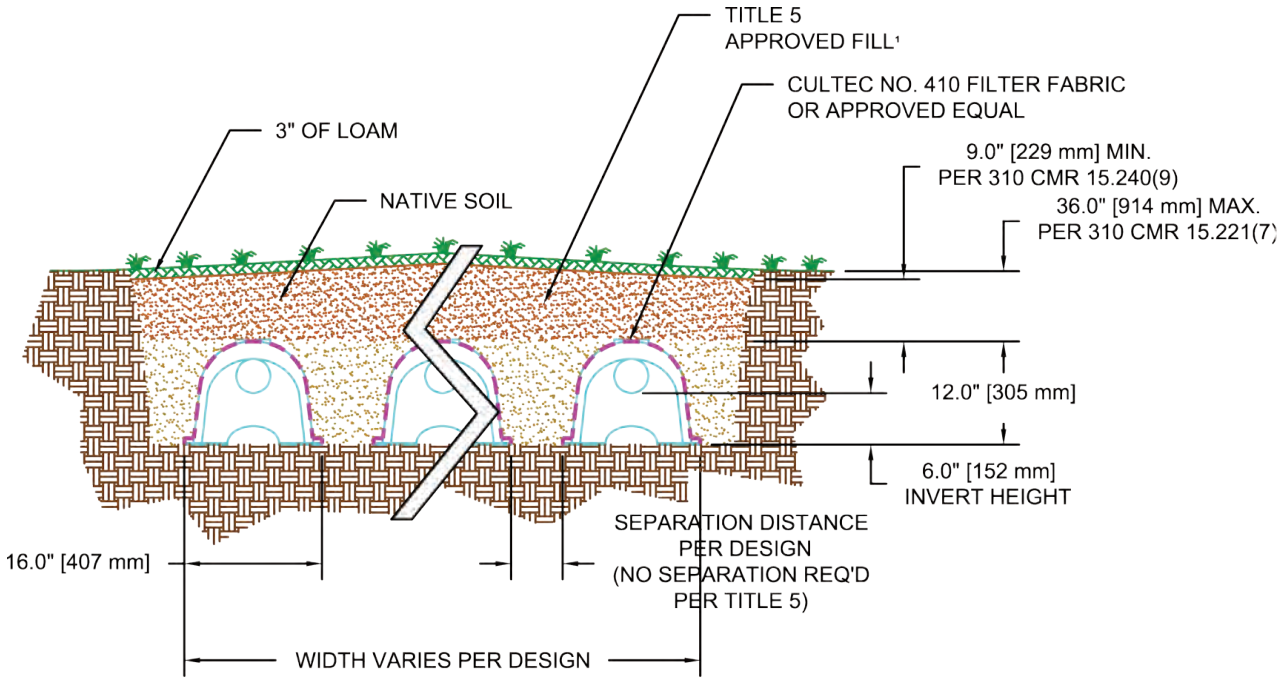
Invert Height = 6.0”

Effective leaching area is equal to 1.67 times bottom area only

No separation between chamber rows required (Per Title 5)

The use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field (310 CMR 15.252(1))

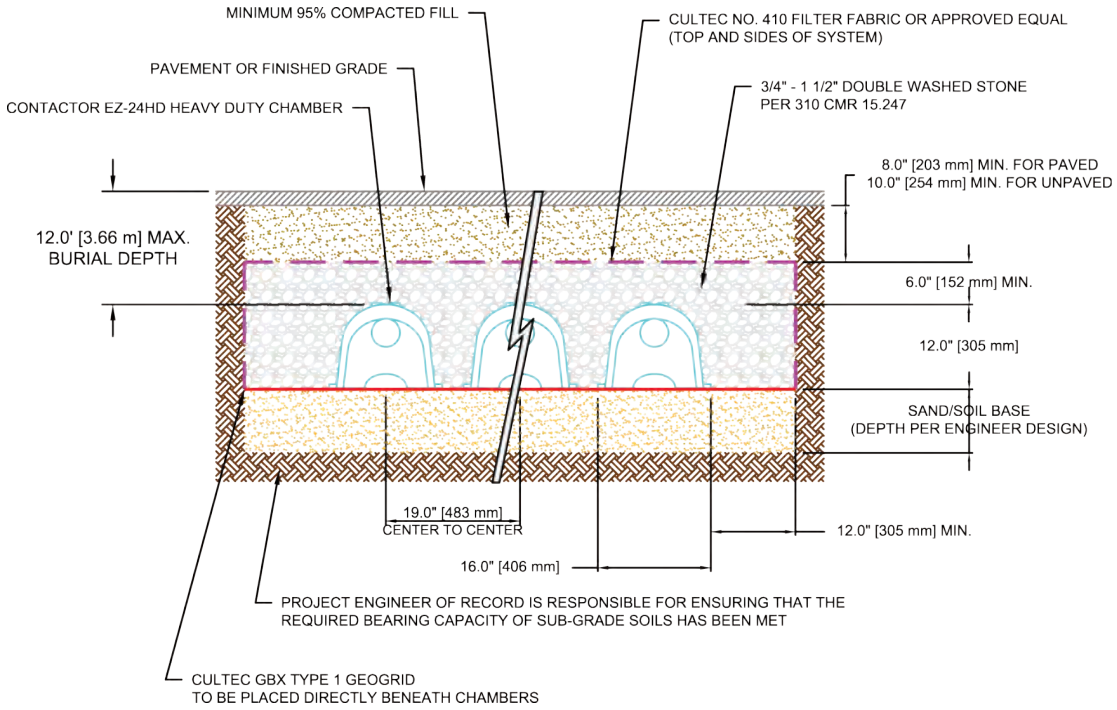
Separation distance between adjacent beds/fields shall be 10 feet (310 CMR 15.252(2)(f))



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Contactor EZ-24HD - Traffic Application

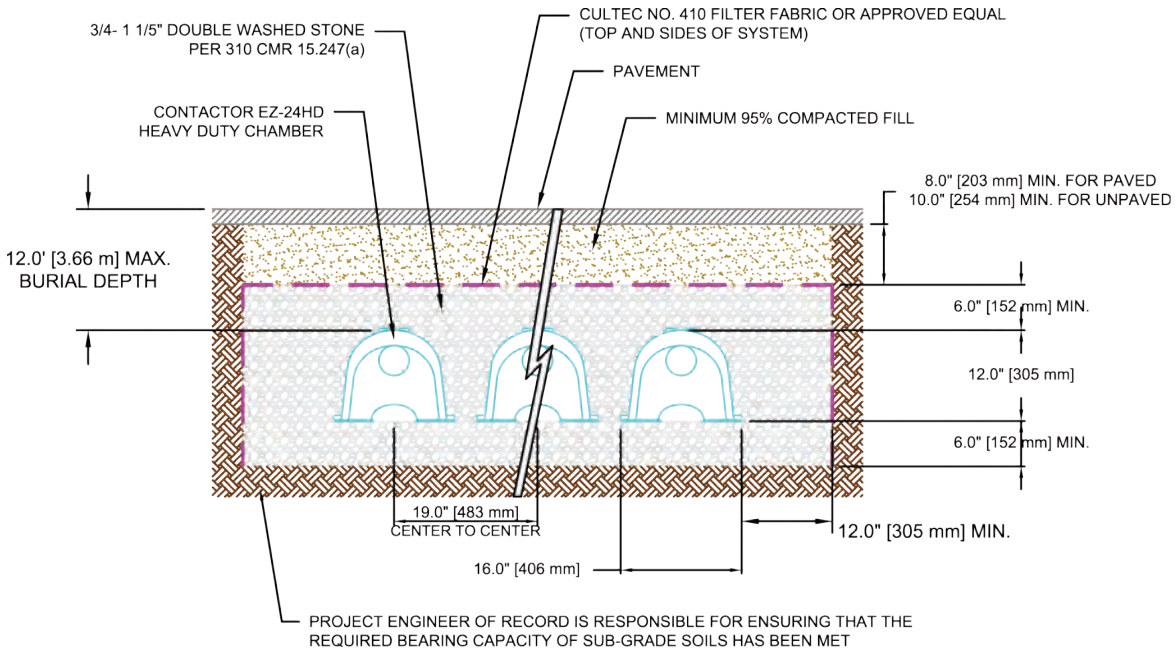
Effective Leaching Area Rating = **2.2 sf / lf**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems

Contactor EZ-24HD - Traffic Application with aggregate

Effective Leaching Area Rating = **Bottom Area of Bed / Field**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems
Note: If a system is installed with a stone aggregate base, Table 3 Effective Leaching Area is not applicable. Refer to CULTEC MA Title 5 approval letter.

Bed/Field Configurations

Contactor 100 and 100HD

Effective Leaching Area Rating = **5.0 sf / lf**

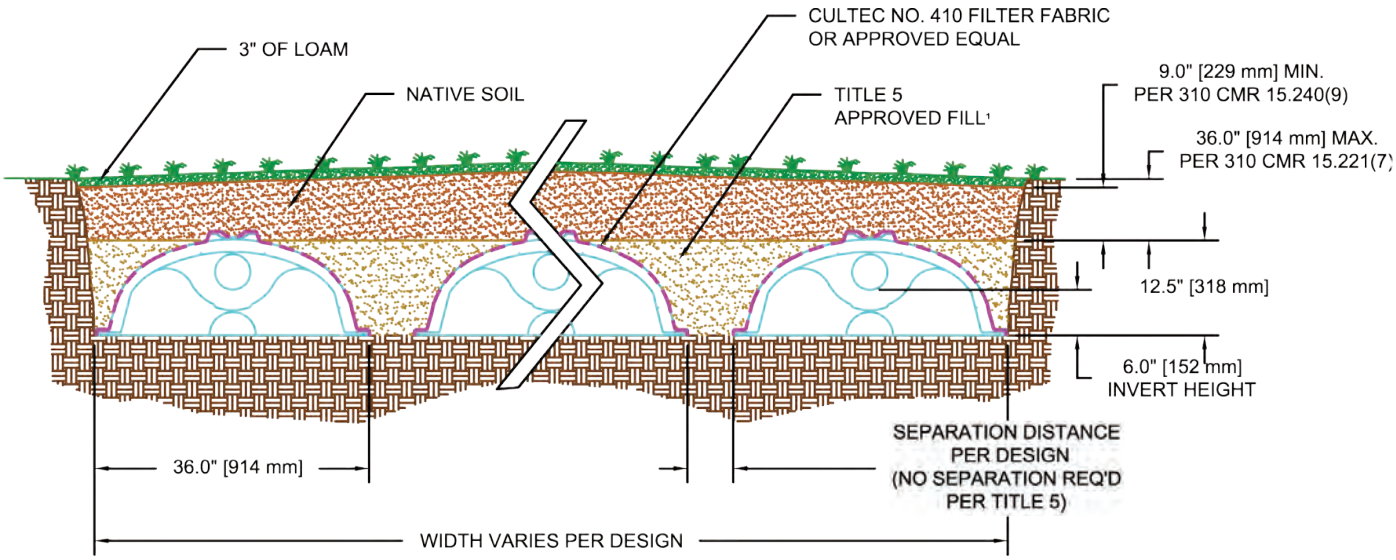
Invert Height = 6.0”

Effective leaching area is equal to 1.67 times bottom area only

No separation between chamber rows required (Per Title 5)

The use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field (310 CMR 15.252(1))

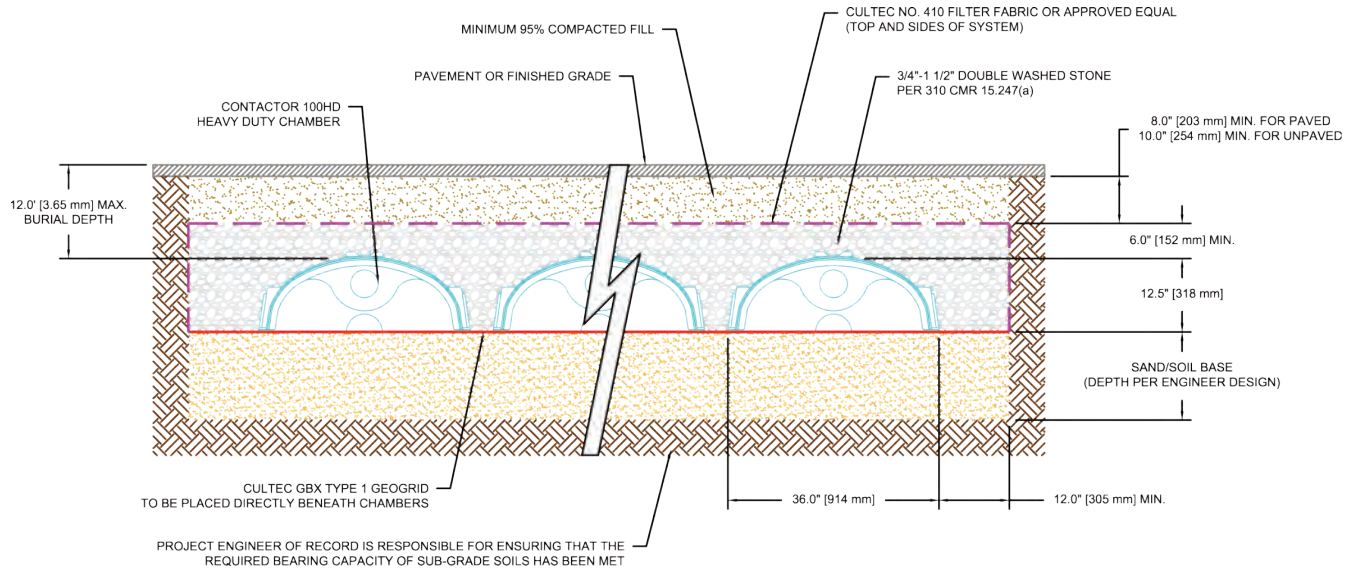
Separation distance between adjacent beds/fields shall be 10 feet (310 CMR 15.252(2)(f))



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Contactor 100HD - Traffic Application

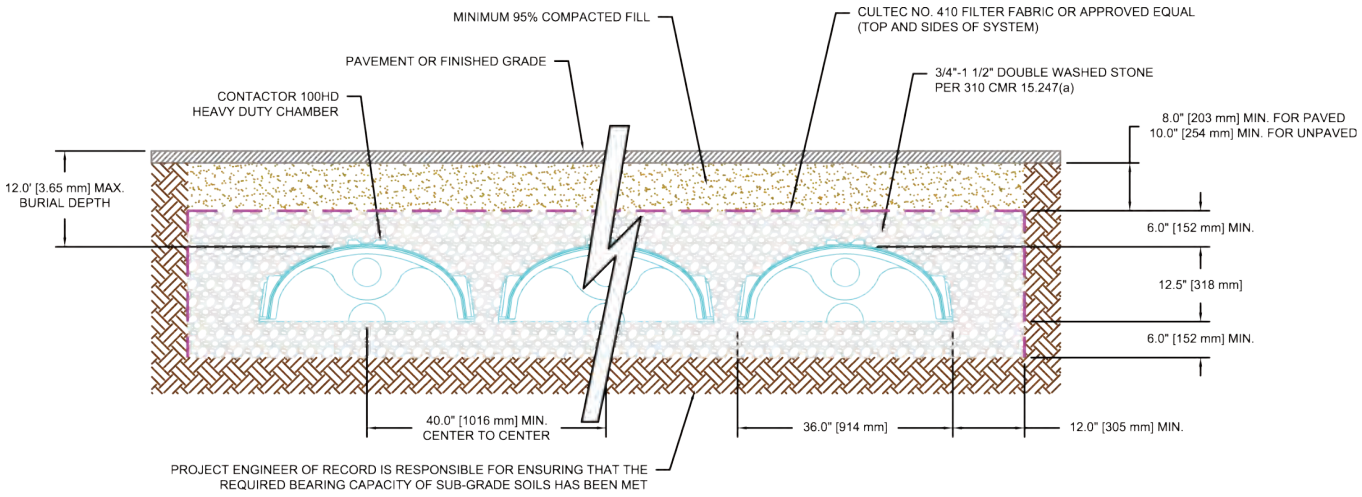
Effective Leaching Area Rating = **5.0 sf / lf**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems

Contactor 100HD - Traffic Application with aggregate

Effective Leaching Area Rating = **Bottom Area of Bed / Field**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems
Note: If a system is installed with a stone aggregate base, Table 3 Effective Leaching Area is not applicable. Refer to CULTEC MA Title 5 approval letter.

Bed/Field Configurations

Contactor 202

Effective Leaching Area Rating = **3.3 sf / lf**

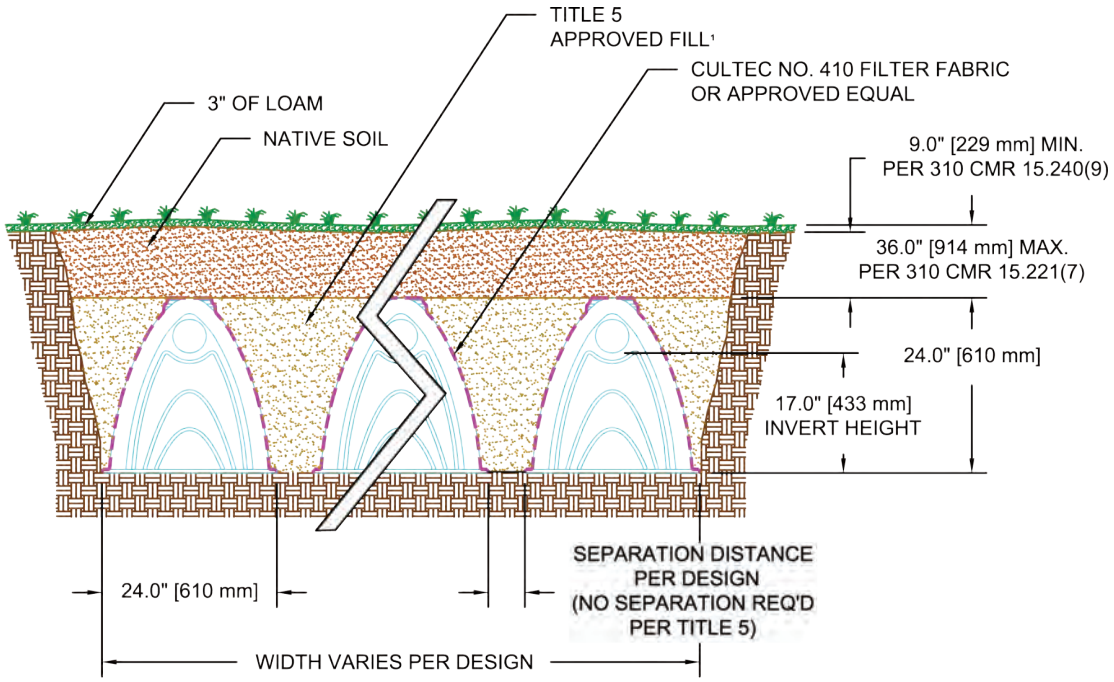
Invert Height = 17.0”

Effective leaching area is equal to 1.67 times bottom area only

No separation between chamber rows required (Per Title 5)

The use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field (310 CMR 15.252(1))

Separation distance between adjacent beds/fields shall be 10 feet (310 CMR 15.252(2)(f))



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Contactor 202 - Traffic Application

NOT AVAILABLE IN HEAVY DUTY (HD) FOR TRAFFIC APPLICATIONS

Contactor 202 - Traffic Application with aggregate

NOT AVAILABLE IN HEAVY DUTY (HD) FOR TRAFFIC APPLICATIONS

Bed/Field Configurations

Recharger 180HD

Effective Leaching Area Rating = **5.0 sf / lf**

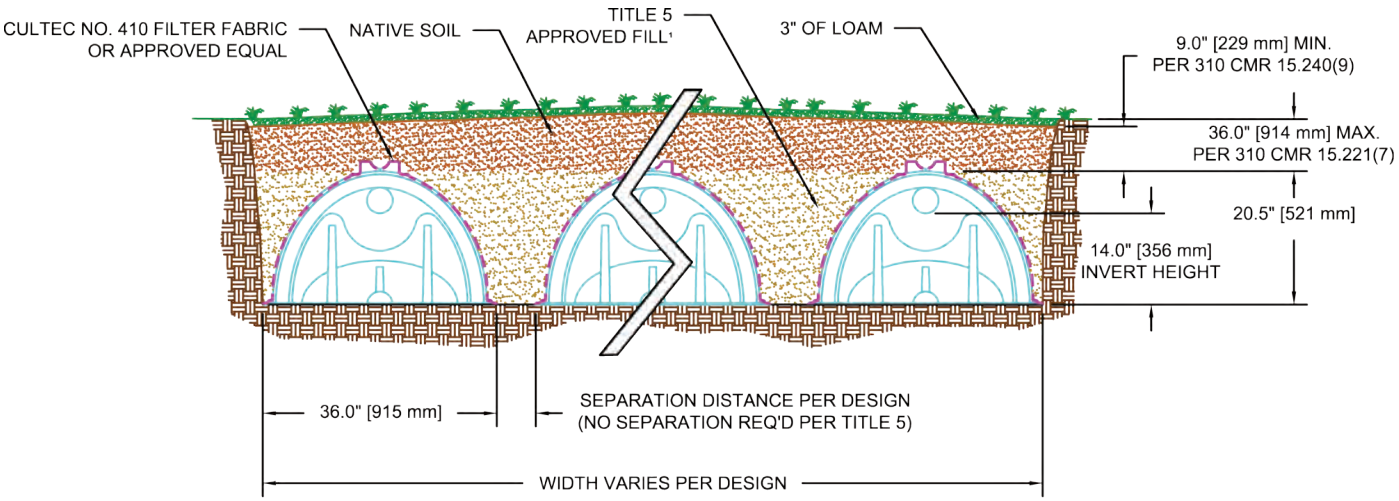
Invert Height = 14.0”

Effective leaching area is equal to 1.67 times bottom area only

No separation between chamber rows required (Per Title 5)

The use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field (310 CMR 15.252(1))

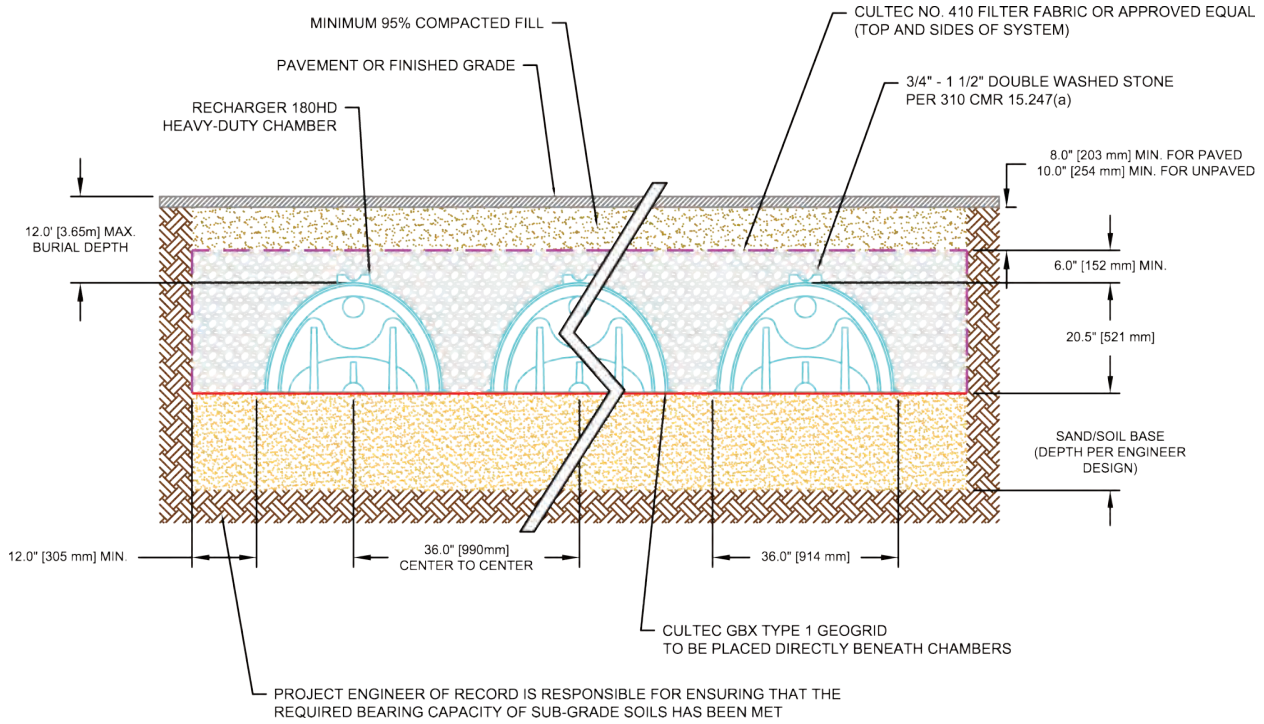
Separation distance between adjacent beds/fields shall be 10 feet (310 CMR 15.252(2)(f))



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Recharger 180HD- Traffic Application

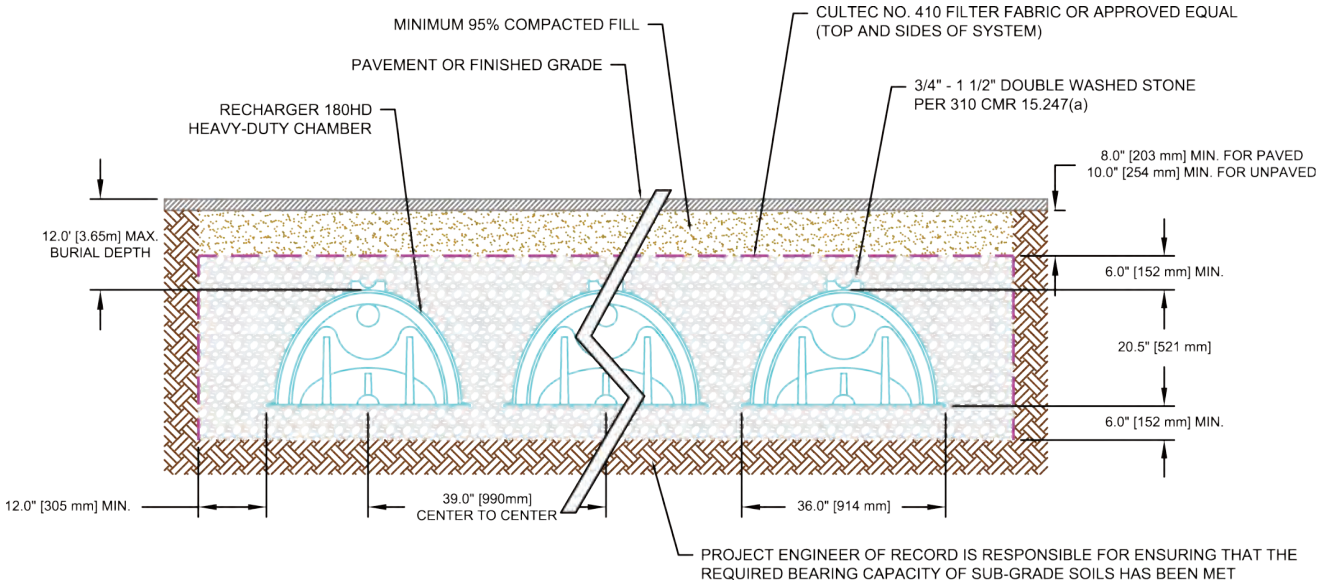
Effective Leaching Area Rating = **5.0 sf / lf**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems

Recharger 180HD - Traffic Application with aggregate

Effective Leaching Area Rating = **Bottom Area of Bed / Field**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems
Note: If a system is installed with a stone aggregate base, Table 3 Effective Leaching Area is not applicable. Refer to CULTEC MA Title 5 approval letter.

Bed/Field Configurations

Recharger 280HD

Effective Leaching Area Rating = **6.4 sf / lf**

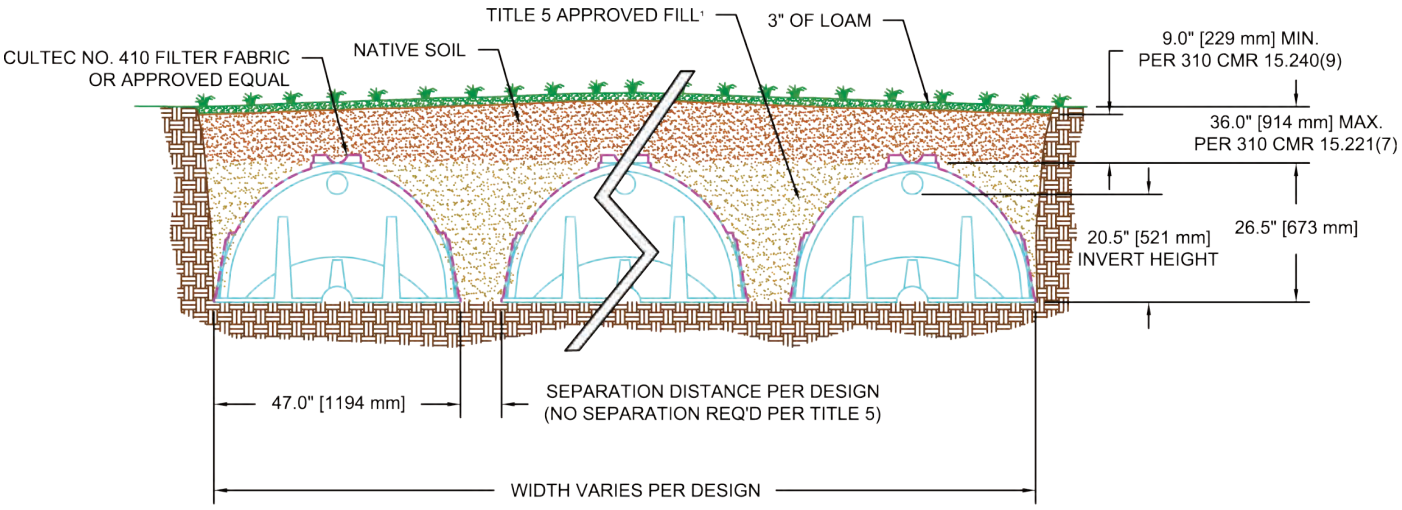
Invert Height = 20.5”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

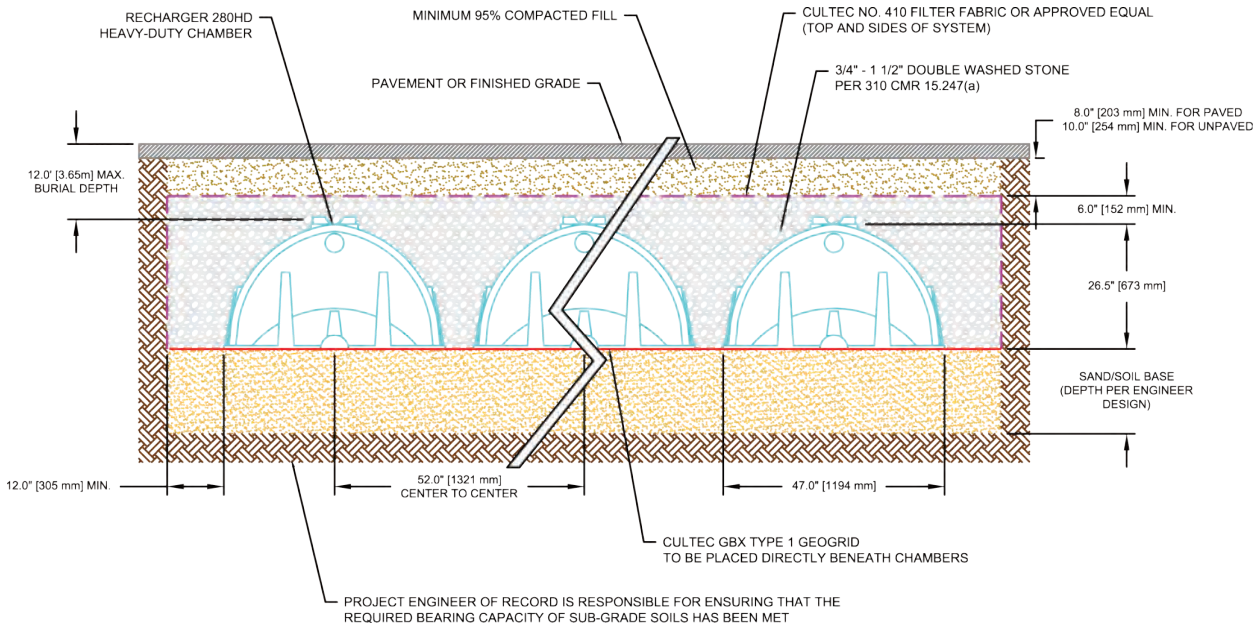
Minimum separation distance between trenches = 7.83’ (11.75’ if reserve area)



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Recharger 280HD - Traffic Application

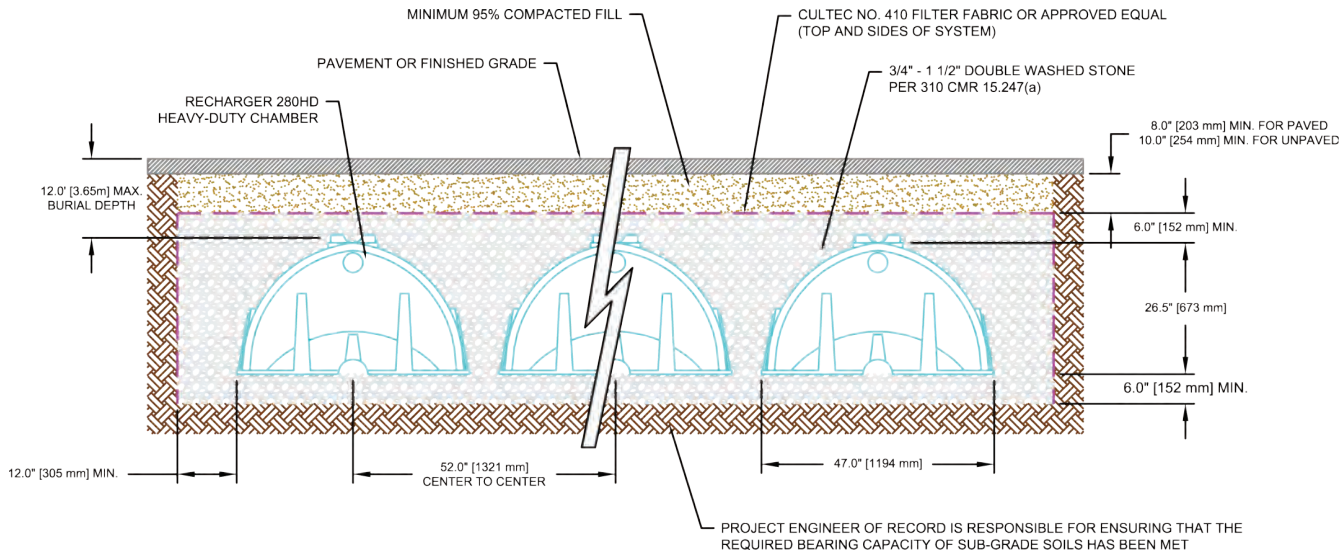
Effective Leaching Area Rating = **6.4 sf / lf**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems

Recharger 280HD - Traffic Application with aggregate

Effective Leaching Area Rating = **Bottom Area of Bed / Field**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems
Note: If a system is installed with a stone aggregate base, Table 3 Effective Leaching Area is not applicable. Refer to CULTEC MA Title 5 approval letter.

Bed/Field Configurations

Recharger 330XLHD

Effective Leaching Area Rating = **7.0 sf / lf**

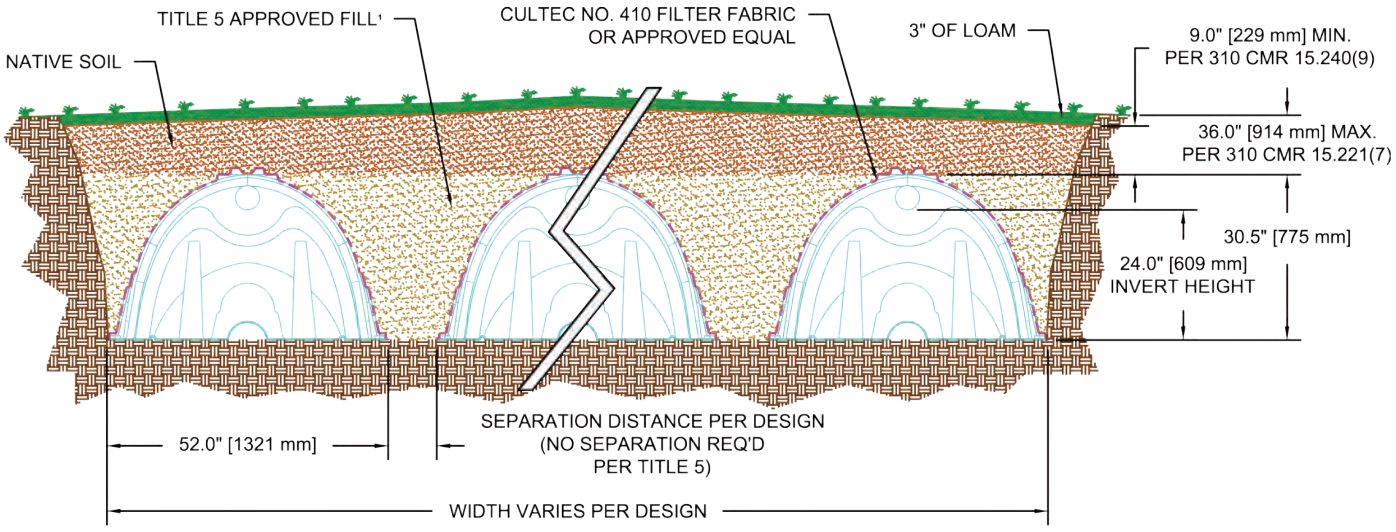
Invert Height = 24.0”

Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.

Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width

Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.

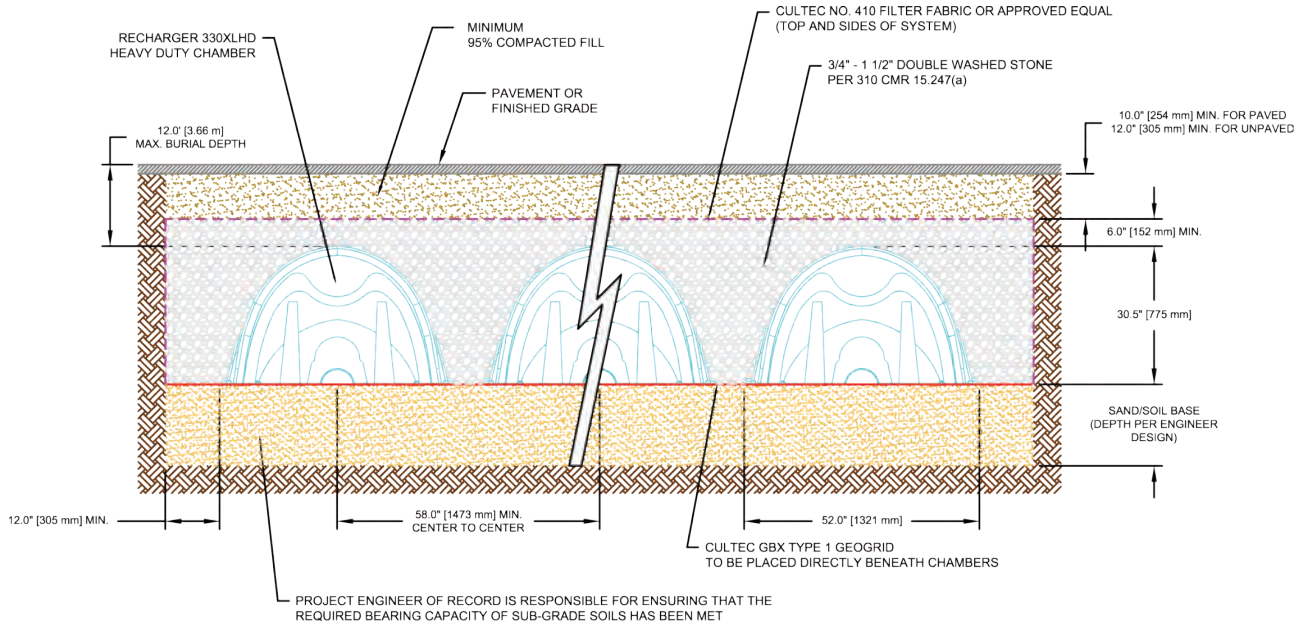
Minimum separation distance between trenches = 8.67’ (13.0’ if reserve area)



[1]SEE 310 CMR 15.255(3) FOR APPROVED FILL

Recharger 330XLHD- Traffic Application

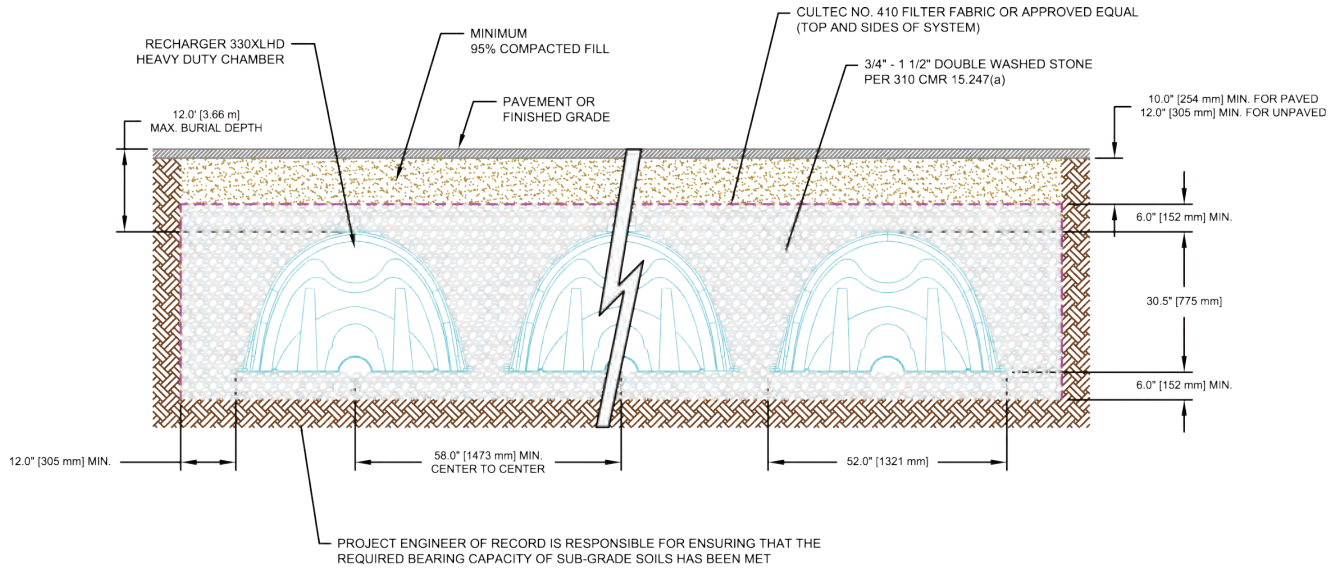
Effective Leaching Area Rating = **7.0 sf / lf**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems

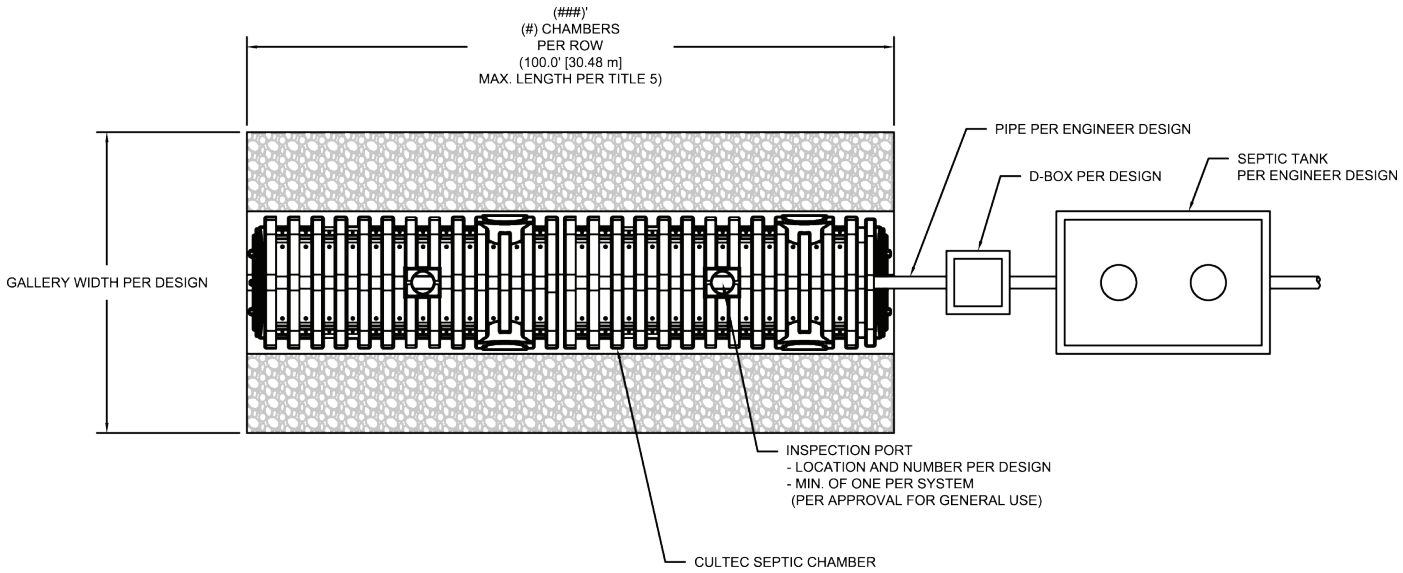
Recharger 330XLHD - Traffic Application with aggregate

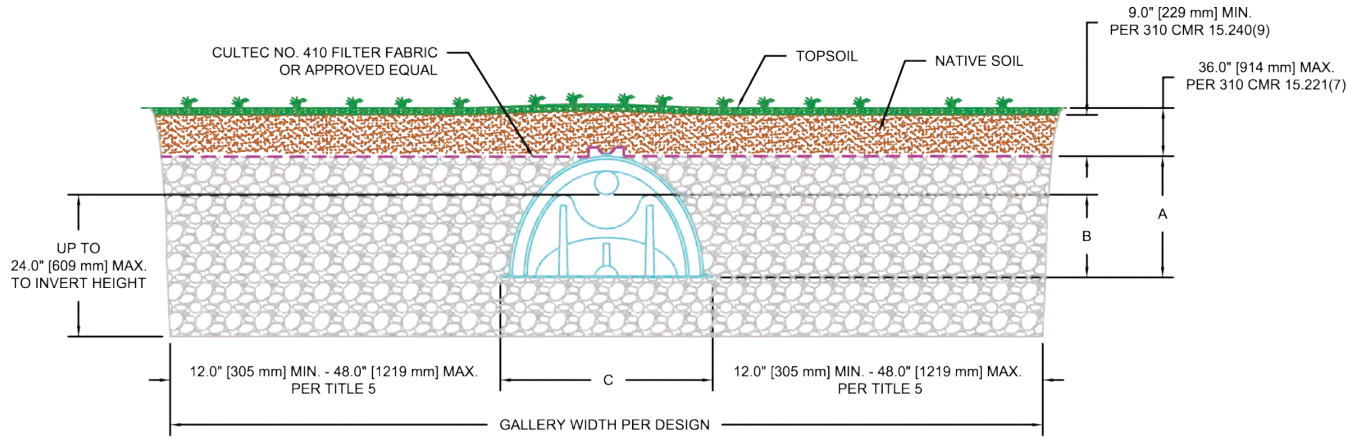
Effective Leaching Area Rating = **Bottom Area of Bed / Field**



For system specifications, see 310 CMR 15.249: Design Criteria for Soil Absorption Systems
Note: If a system is installed with a stone aggregate base, Table 3 Effective Leaching Area is not applicable. Refer to CULTEC MA Title 5 approval letter.

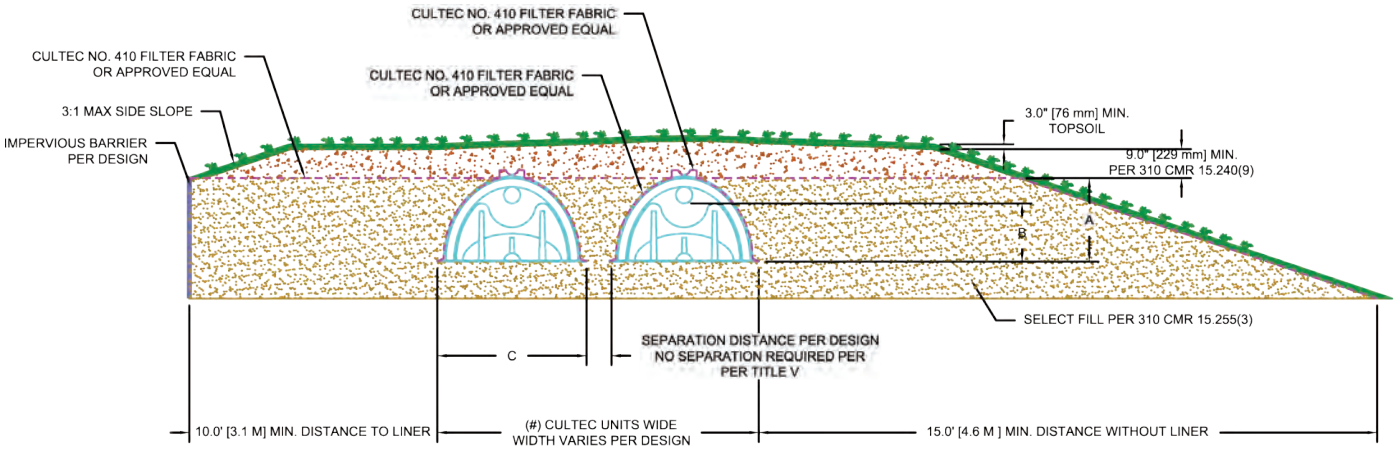
Gallery Equivalent Configurations





CULTEC Chamber Model								
	Description	**Contactor Field Drain C-4**	**Contactor EZ-24**	**Contactor 100**	**Recharger 180HD**	**Contactor 202**	**Recharger 280HD**	**Recharger 330XLHD**
A	Chamber Height	8.5"	12"	12.5"	20.5"	24"	26.5"	30.5"
B	Invert Height	3"	6"	6"	14"	17"	20.5"	24"
C	Chamber Width	48"	16"	36"	36"	24"	47"	52"

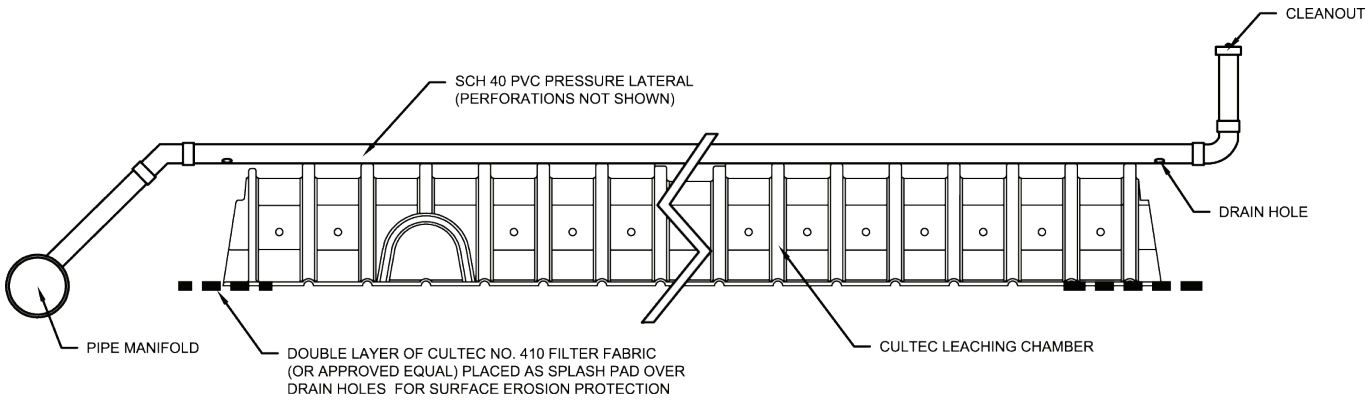
Constructed In Fill Configurations



CULTEC Chamber Model								
	Description	**Contactor Field Drain C-4**	**Contactor EZ-24**	**Contactor 100**	**Recharger 180HD**	**Contactor 202**	**Recharger 280HD**	**Recharger 330XLHD**
A	Chamber Height	8.5"	12"	12.5"	20.5"	24"	26.5"	30.5"
B	Invert Height	3"	6"	6"	14"	17"	20.5"	24"
C	Chamber Width	48"	16"	36"	36"	24"	47"	52"

Pressure Dosing Configurations

Option A: Lateral Pipe at Chamber Cradle



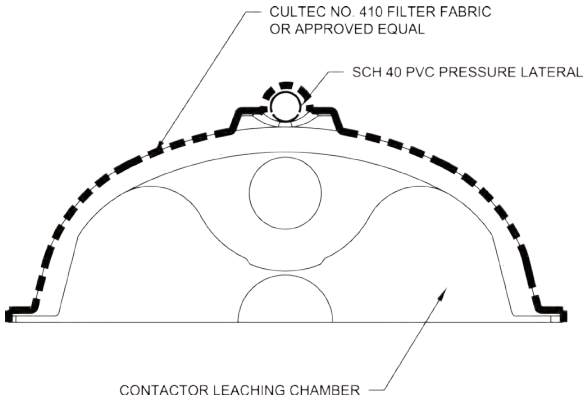
NOTES

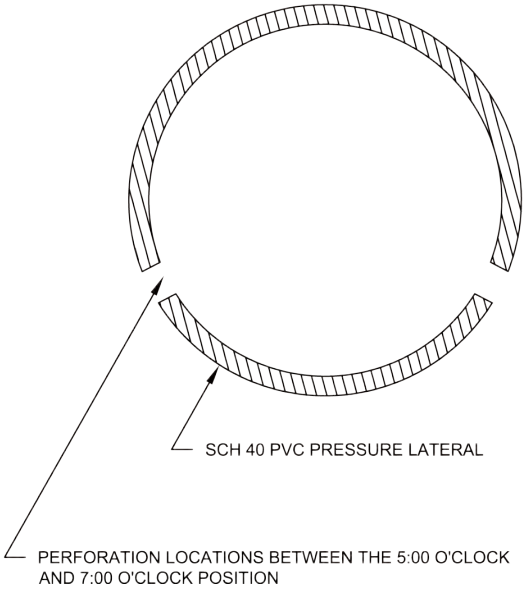
Lateral Pipe

- Pressure lateral to be perforated 1/8" min. to 5/8" max.
- Perforations directed downward shall be located between 5 o'clock and 7 o'clock position
- Spacing between the perforations shall not exceed 5 feet
- For self-draining, place a hole at 6 o'clock at the beginning of the lateral and at the end of the lateral

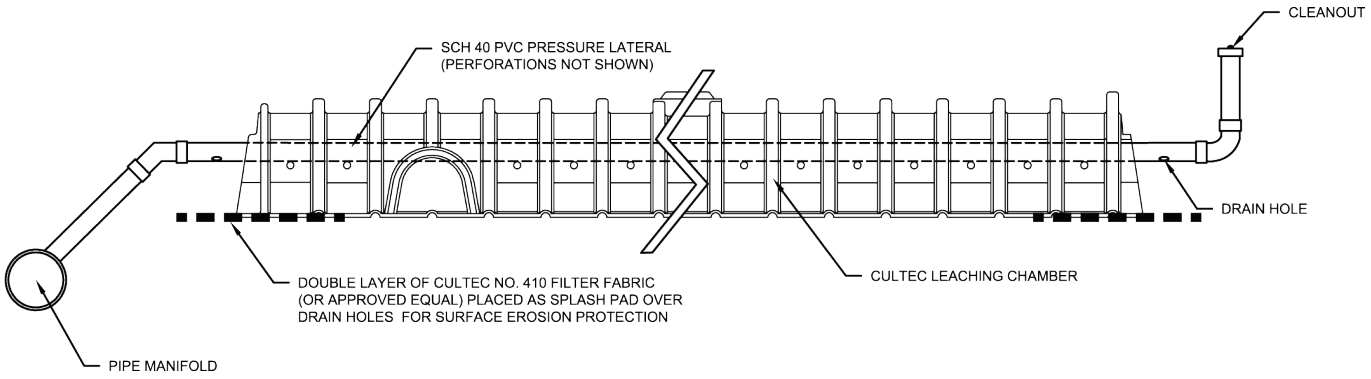
Lateral Pipe Installation

- Secure pressure lateral on chamber cradle (top of chamber), strapping and fasteners recommended
- Place lateral pipe along top of the chamber with the perforations placed downward
- CULTEC No. 410 Non-Woven Geotextile (or approved equal) to be placed over lateral pipe and down chamber sidewalls
- Complete backfill with approved soil to determined elevation





Option B: Lateral Pipe at Chamber Invert



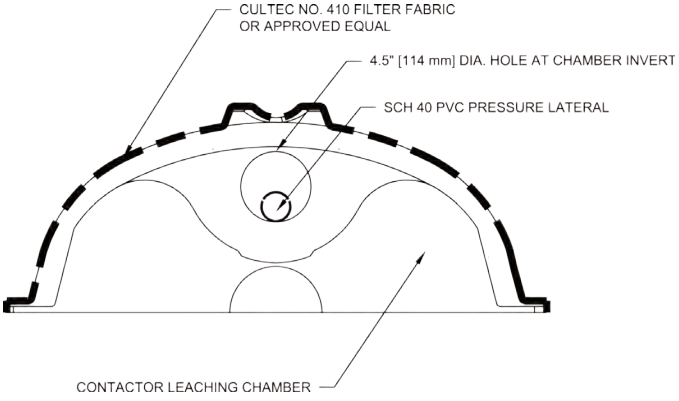
NOTES

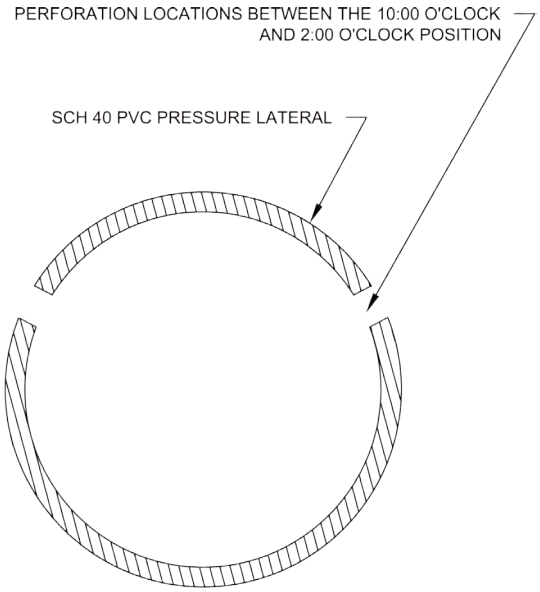
Lateral Pipe

- Pressure lateral to be perforated 1/8" min. to 5/8" max.
- Perforations directed downward shall be located between 10 o'clock and 2 o'clock position
- Spacing between the perforations shall not exceed 5 feet
- For self-draining, place a hole at 6 o'clock at the beginning of the lateral and at the end of the lateral

Lateral Pipe Installation

- Secure pressure lateral at chamber invert (4" dia. invert hole provided at chamber end wall)
- Place lateral pipe along the chambers with the perforations placed upward
- CULTEC No. 410 Non-Woven Geotextile (or approved equal) to be placed over chamber sidewalls
- Complete backfill with approved soil to determined elevation



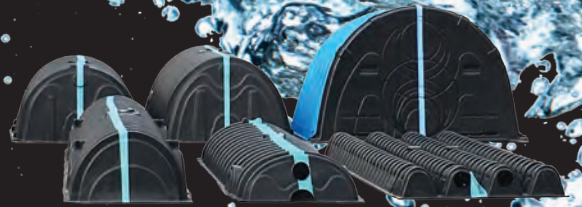


CULTEC®

The Founder of Plastic Chamber Technology

www.cultec.com | 1(800) 4-CULTEC |

878 Federal Road | P.O. Box 280 | Brookfield , CT 06804 USA



Contactor® & Recharger®
Plastic Septic Chamber Systems

CULTEC No. 410™ Filter Fabric and Approved Equals

CULTEC, Inc. has determined the following non-woven geotextile fabrics may be used as an approved equal for CULTEC No. 410™ Filter Fabric for septic use:

Manufacturer	Fabric Equivalent
American Engineering Fabrics	480HS
Carthage Mills	FX-35HS & FX-40HS
Contech	C35NW & C40NW
Linq Industrial Fabrics	130EX & 140EX
Propex	Geotex 351 & 401
SI Geosolutions	351 & 401
Skaps Industries	GT135 & GT140
Tencate	Mirafi 140NL
TNS Advanced Technologies	TNS R040
US Fabrics	US90NW
Webtec, Inc.	TerraTex N04

The use of these fabrics will not void the limited 10-year warranty.

The Chamber with the Stripe®

CULTEC, Inc.
878 Federal Road • P.O. Box 280 • Brookfield, CT 06804
Phone: 203-775-4416 • Toll Free: 800-4-CULTEC • Fax: 203-775-1462 • Web: www.cultec.com

CULTEC™

Contactor® & Recharger®

Plastic Chambers for Septic Leachfields *Since 1986*

Massachusetts DEP Approval for General Use Pursuant to Title 5, 310 CMR 15.000

		Contactor Field Drain C-4	Contactor EZ-24	Contactor 100	Contactor 100HD	Contactor 202	Recharger 180HD	Recharger 280HD	Recharger 330XLHD
Length	feet	8.5	8.5	8	8	8.33	7.33	8	8.5
Installed Length	feet	8	8	7.4	7.5	7.00	6.33	7	7
Length Adjustment	feet	0.50	0.50	0.60	0.50	1.33	1.00	1.00	1.50
Width	inches	48	16	36	36	24	36	47	52
Height	inches	8.5	12	12.5	12.5	24	20.5	26.5	30.5
Bare Chamber Storage	ft^3/ft	1.692	0.819	1.961	1.866	2.18	3.45	6.079	7.459
Invert Height	inches	3	6	6	6	17	14	20.5	24
Effective Leaching Area for Trench Configuration for New Construction and Remedial Sites[1]									
Effective Leaching[2] Area for Trench Configuration	SF/LF	NA	3.9	6.7	6.7	8.1	8.9	NA	NA
Effective Leaching[3] Area for Trench Configuration	SF/LF	3.5	NA	NA	NA	NA	NA	6.4	7
Effective Leaching Area for Bed or Field Configuration for New Construction and Remedial Sites[1]									
Effective Leaching[4] Area for Bed or Field Configuration	SF/LF	6.7	2.2	5.0	5.0	3.3	5.0	6.5	7.2

[1] Effective April 21, 2006, 310 CMR 15.251(1)(b) maximum trench width is 3 feet.
[2] Effective leaching area is equal to 1.67 (bottom width + (2x invert height)) for Systems 3 feet or less in width.
[3] Effective leaching area is equal to 1.00 (3 + (2x invert height)) for Systems with a width greater than 3 feet.
[4] Effective Leaching area is equal to 1.67 times bottom width only.

CULTEC, Inc.
878 Federal Road • P.O. Box 280 • Brookfield, CT 06804 USA
P: 203-775-4416 • Toll Free: 1(800)4-CULTEC • F: 203-775-1462 • www.cultec.com •

The Founder of Plastic Chamber Technology

CULTEC®

CULG094 10-17

310 CMR 15.000: THE STATE ENVIRONMENTAL CODE, TITLE 5: STANDARD REQUIREMENTS FOR THE SITING, CONSTRUCTION, INSPECTION, UPGRADE AND EXPANSION OF ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS AND FOR THE TRANSPORT AND DISPOSAL OF SEPTAGE

SUBPART A: GENERAL PROVISIONS AND ENFORCEMENT

15.001: Purpose, Authority and Related Provisions
15.002: Definitions
15.003: Coordination with Local Approving Authorities
15.004: Applicability
15.006: Facilities with a Design Flow of 10,000 gpd or Greater but Less than 15,000 gpd
15.007: Campgrounds
15.010: Division and Aggregation of Facilities
15.011: Criteria to Assess Whether Facilities are in Separate Ownership or Control
15.017: Approval of Soil Evaluators
15.018: Function of Soil Evaluators
15.019: Disposal System Installer's Permit
15.020: Disposal System Construction Permits
15.021: Certificates of Compliance
15.022: Duty of Compliance
15.023: Approving Authority Access
15.024: Violations of 310 CMR 15.000
15.025: Enforcement by Approving Authorities
15.026: Orders
15.027: Prohibition of Septic System Additives
15.028: Soil Absorption System Restoration
15.029: Construction of Wells Near Existing Systems
15.030: Records
15.040: Advisory Committee
15.050: Severability

SUBPART B: SITING OF SYSTEMS

15.100: General Provisions
15.101: Site Evaluation Criteria
15.102: Deep Observation Hole Test
15.103: Soil Profile
15.104: Percolation Testing
15.105: Procedure for Performing a Percolation Test
15.106: Landscape Position
15.107: Hydrogeologic Properties

SUBPART C: DESIGN, CONSTRUCTION, REPAIR, AND REPLACEMENT OF ON-SITE SEWAGE DISPOSAL SYSTEMS

15.201: Type of System
15.202: Use of Recirculating Sand Filters
15.203: System Sewage Flow Design Criteria
15.204: Increases in Design Flow to System
15.211: Minimum Setback Distances
15.212: Depth to Groundwater
15.213: Construction in Velocity Zones and Floodways
15.214: Nitrogen Loading Limitations
15.215: Designation of Nitrogen Sensitive Areas
15.216: Aggregate Determinations of Flows and Nitrogen Loadings
15.217: Systems with Enhanced Nitrogen Removal
15.220: Preparation of Plans and Specifications

Section: continued

15.221: General Construction Requirements for All System Components
15.222: Building Sewers
15.223: Septic Tanks
15.224: Multiple Compartment Tanks
15.225: Tanks in Series
15.226: Construction of Septic Tanks
15.227: Placement and Construction of Tees
15.228: Placement and Accessibility of Septic Tank
15.229: Pumping to Septic Tanks
15.230: Pretreatment Units - Grease Traps
15.231: Dosing Chambers and Pumps
15.232: Distribution Boxes
15.233: Siphons
15.240: Soil Absorption Systems
15.241: System Venting
15.242: LTAR - Effluent Loading Rates
15.243: Types of Soil Textural Classes
15.244: Types of Soils
15.245: Soil Absorption System Siting Requirements
15.246: Excavation and Flagging of Soil Absorption System
15.247: Aggregate
15.248: Reserve Area
15.249: Design Criteria for Soil Absorption Systems
15.251: Trenches
15.252: Beds or Fields
15.253: Pits, Galleries, or Chambers
15.254: Pressure Dosing and Pressure Distribution
15.255: Construction in Fill
15.260: Tight Tanks
15.262: Greywater Systems
15.280: Approval of Alternative Systems
15.281: Purpose
15.282: Types of Alternative Systems
15.283: Process for Review of Alternative System Proposals
15.284: Approval for Remedial Use
15.285: Approval for Piloting
15.286: Provisional Approval of Alternative System
15.287: General Conditions for Use of Alternative Systems Pursuant to 310 CMR 15.284 through 15.286
15.288: Certification of Alternative Systems for General Use
15.289: Humus/Composting Toilets
15.290: Shared Systems
15.291: Division of a Facility and Upgrades Using Shared Systems
15.292: New Construction or Increased Flow to Existing Systems and Division of a Facility Using Shared Systems

SUBPART D: INSPECTION AND MAINTENANCE OF SYSTEMS

15.300: Purpose and General Provisions
15.301: System Inspection
15.302: Criteria for Inspection
15.303: Systems Failing to Protect Public Health and Safety and the Environment
15.304: Large Systems which Fail to Protect or which Threaten Public Health and Safety and the Environment
15.305: Deadlines for Completion of Upgrades
15.340: Approval of System Inspectors
15.351: System Pumping and Routine Maintenance
15.353: Emergency Repair
15.354: Abandonment of Systems

Section: continued

SUBPART E: PROCEDURES FOR SEEKING AND RECEIVING LOCAL UPGRADE APPROVALS AND VARIANCES FROM THE PROVISIONS OF SUBPARTS B AND C OF 310 CMR 15.000

15.401: General Provisions
15.402: Use of Local Upgrade Approvals or Variances
15.403: Local Upgrade Approvals
15.404: Maximum Feasible Compliance - Approvals for Upgrades
15.405: Contents of Local Upgrade Approval
15.410: Variances - Standard of Review
15.411: Process for Seeking a Variance from Local Approving Authorities
15.413: Conditioning of Variances
15.414: Variances for Increased Flow to Existing System
15.415: Provisions from Which No Variance May be Granted
15.416: Variances for Schools
15.421: Appeals from Determinations by Local Approving Authority
15.422: Appeals of Departmental Determinations

SUBPART F: TRANSPORTATION AND DISPOSAL OF SEPTAGE

15.500: Purpose
15.501: Regional Abatement Districts
15.502: Transportation
15.503: Transfer Locations
15.504: Disposal
15.505: Equipment

Appendix 1: Model Grant of Title 5, Covenant and Easement

SUBPART A: GENERAL PROVISIONS AND ENFORCEMENT

15.001: Purpose, Authority and Related Provisions

(1) The purpose of Title 5, 310 CMR 15.000, of the State Environmental Code is to provide for the protection of public health, safety, welfare and the environment by requiring the proper siting, construction, upgrade, and maintenance of on-site sewage disposal systems and appropriate means for the transport and disposal of septage.

(2) 310 CMR 15.000 is promulgated pursuant to the authority of M.G.L. c. 21A, § 13.

(3) The provisions of 310 CMR 15.000 should be read together with 314 CMR 5.00: *Ground Water Discharge Permit Program* which applies to all discharges to ground of sanitary sewage.

(4) Title 5, 310 CMR 15.000, should be read together with M.G.L. c. 21A, §§ 13 and 13A, M.G.L c. 21 §§ 26 through 53, M.G.L. c. 111, §§ 17, 27, 27A, 27B, 27C, 30, 31, 31A, 31B, 31C, 31D, 31E, 122, 124, 125, 125A, 127, 127A, 127P, 127B and 129; M.G.L. c. 83, § 11; M.G.L. c. 131, § 40; St. 1996, c. 204, § 148; and St. 2002, c.176; St. 2004, c. 149, § 39.

15.002: Definitions

For the purposes of 310 CMR 15.000, the following terms shall have the following meanings, unless the context clearly requires otherwise. Terms expressed in the singular shall be construed to incorporate the plural, and vice versa, unless the context otherwise requires.

1978 Code - Title 5 of the State Environmental Code, 310 CMR 15.000, as revised and in effect as of 1978.

15.002: continued

Acre - a unit of land measure equal to 40,000 square feet which is considered a building acre in accordance with standard real estate practices.

Agency - an agency, department, board, commission or authority of the Commonwealth or of the federal government and any authority of any political subdivision, which is specifically created as an authority under special or general law. The term shall not include housing authorities permitted pursuant to M.G.L. c. 40A.

Alternative Systems - Systems designed to provide or enhance on site sewage disposal which either do not contain all of the components of an on site disposal system constructed in accordance with 310 CMR 15.100 through 15.255 or which contain components in addition to those specified in 310 CMR 15.100 through 15.255 and which are proposed to the Local Approving Authority and/or the Department, or an agent authorized by the Department, for remedial, pilot, provisional, or general use approval pursuant to 310 CMR 15.280 through 15.289.

Approved Capacity – The capacity of a 1978 Code system reflected by the sewage flow as shown on the Disposal Works Construction Permit Application or as shown on the Certificate of Compliance, whichever is less for that system and not the calculated capacity based on 1978 Code loading rates which may account for overdesign or safety factors. For a system designed in accordance with 310 CMR 15.000, the approved calculated capacity is based on the loading rates found at 310 CMR 15.242.

Approving Authority - A Local Approving Authority as defined in 310 CMR 15.002; or the Department, with regard to systems owned or operated by an agency of the Commonwealth or of the federal government, systems serving a facility with a design flow of 10,000 gallons per day or greater, systems subject to a variance granted under 310 CMR 15.416, or on a case by case basis as determined by the Department to be necessary to carry out the purposes of 310 CMR 15.000; or the Department with regard to alternative systems proposed in compliance with 310 CMR 15.280 through 15.289.

ASTM - The American Society of Testing and Materials.

Authorized Agent - A person or entity authorized in writing by the Department to act on its behalf in the implementation and oversight of responsibilities, as identified in 310 CMR 15.000.

Bank (Coastal) - Any land or surface area so defined by the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40 and 310 CMR 10.30(2). Generally, the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland.

Bank (Inland) - Any land or surface area so defined by the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40 and 310 CMR 10.54(2). Generally, a portion of the land surface which normally abuts and confines a water body.

Barrier Beach - Any land or surface area so defined by the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40 and 310 CMR 10.29(2). Generally, a narrow low-lying strip of land generally consisting of coastal beaches and coastal dunes extending roughly parallel to the trend of the coast, separated from the mainland by a narrow body of fresh, brackish, or saline water or a marsh system.

Bedrock - Solid rock exposed at the surface or overlain by unconsolidated gravel, sand, silt and/or clay. Bedrock includes weathered or saprolitic components thereof. Bedrock types are defined and most of their areal extent are described in the "Bedrock Geologic Map of Massachusetts" published by the Massachusetts Department of Public Works (1983).

Bedroom - A room providing privacy, intended primarily for sleeping and consisting of all of the following:

(a) floor space of no less than 70 square feet;
(b) for new construction, a ceiling height of no less than seven feet three inches;

15.002: continued

(c) for existing houses and for mobile homes, a ceiling height of no less than seven feet zero inches;
(d) an electrical service and ventilation; and
(e) at least one window.

Living rooms, dining rooms, kitchens, halls, bathrooms, unfinished cellars and unheated storage areas over garages are not considered bedrooms. Single family dwellings shall be presumed to have at least three bedrooms. Where the total number of rooms for single family dwellings exceeds eight, not including bathrooms, hallways, unfinished cellars and unheated storage areas, the number of bedrooms presumed shall be calculated by dividing the total number of rooms by two then rounding down to the next lowest whole number. The applicant may design a system using design flows for a smaller number of bedrooms than are presumed in this definition by granting to the Approving Authority a deed restriction limiting the number of bedrooms to the smaller number.

Biological Mat - A layer composed of microorganisms and organic material located below a soil absorption system which forms on the infiltrative surface of soil and which provides biological treatment of septic tank effluent.

Blackwater - Wastewater from toilets, urinals, and any drains equipped with garbage grinders.

Bordering Vegetated Wetland - Any land or surface area so defined by the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40 and 310 CMR 10.55(2).

Building - A structure enclosed within exterior walls or firewalls, built, erected, or framed of any materials, whether portable or fixed, having a roof, to form a structure for the shelter of persons, animals or property.

Building Sewer - A pipe which begins outside the inner face of a building wall and extends to an on-site system or municipal or private sewer.

Campground - A facility regulated pursuant to 105 CMR 430.00: *Minimum Standards for Recreational Camps for Children (State Sanitary Code: Chapter IV*) or 105 CMR 440.00: *Minimum Standards for Developed Family Type Campgrounds (State Sanitary Code: Chapter VI*) and any campground operated by the Department of Conservation and Recreation in a State Park.

Cellar Wall - That portion of the outside surface of the foundation wall enclosing a full basement which is above the cellar floor and below the ground surface.

Certificate of Compliance or Certificate - A certificate issued by the Approving Authority to the owner or operator of a system in accordance with 310 CMR 15.021 indicating that an on-site system has been constructed or upgraded, and inspected, as necessary in compliance with 310 CMR 15.000.

Certified System - An alternative system which has been approved by the Department for specified uses or site conditions pursuant to 310 CMR 15.288. Systems which have been certified may be approved for use by approving authorities without further Departmental review but subject to any limitations on their use imposed by the Department pursuant to 310 CMR 15.000.

Certified Vernal Pool - A surface water body that has been certified by the Massachusetts Division of Fisheries and Wildlife as a vernal pool in accordance with the "Vernal Pool Certification Guidelines" pursuant to the Massachusetts Natural Heritage and Endangered Species Program administered by the Massachusetts Department of Fish and Game at the time a permit application is submitted to the Approving Authority.

Cesspool - A pit with open-jointed linings or holes in the bottom and/or sidewalls into which raw sewage is discharged, the liquid portion of the sewage being disposed of by seeping or leaching into the surrounding soils, and the solids or sludge being retained in the pit. Cesspools are nonconforming systems.

15.002: continued

Cluster Development – A cluster development as allowed by local zoning ordinances or by-laws in accordance with M.G.L. c. 40 A § 9. Where no local cluster development zoning ordinances or by-laws have been enacted in accordance with M.G.L. c. 40 A, § 9, a cluster development means a residential development design that preserves a minimum of 50% open space which may include wetlands. For these latter developments, the percentage of open space that can be wetland shall not exceed the percentage of wetland for the entire site under existing conditions as shown on a plan, but in no case may the wetland portion of the required open space exceed 50% of the open space. The open space shall be subject to a deed restriction that provides for a common area and limits its use to passive recreation.

Coastal Beach - Shall mean any land or surface area so defined by the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40 and 310 CMR 10.27(2): *Definitions*. Generally, unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats.

Commercial Sewage Waste - Non-toxic, non-hazardous wastewater from commercial facilities, including but not limited to institutional and commercial food operations, and animal holding facilities.

Cover Material - The soils placed on top of a soil absorption system to bring the area to finish grade.

Crown - The top of the internal cross section of a pipe or fitting.

Deep Observation Hole - An open pit dug to permit examination of the soils and to obtain data relative to the mean annual high groundwater elevation.

Department - The Massachusetts Department of Environmental Protection.

Design Flow - The quantity of sanitary sewage, expressed in gallons per day (gpd), for which a system must be designed in accordance with 310 CMR 15.203.

Designer - A registered sanitarian or a professional engineer registered in the Commonwealth of Massachusetts who has either designed the system and/or has witnessed all phases of the system installation for the purpose of making the certification required of the Designer under 310 CMR 15.021(3).

Disposal Area - The subsurface environment in which a soil absorption system or reserve area is located.

Disposal System - *see* On-site System.

Disposal System Construction Permit or Permit - Written approval issued by the Approving Authority in accordance with 310 CMR 15.020 authorizing the construction, upgrade or expansion of an on-site system.

Disposal System Installer - A person, licensed in accordance with 310 CMR 15.019, who constructs, repairs, or replaces an on-site subsurface sewage disposal system.

Disposal System Installer Permit - A permit issued in accordance with 310 CMR 15.019.

Distribution Box - A level, watertight structure which receives septic tank effluent and distributes it in substantially equal portions to distribution lines in a soil absorption system.

Distribution Line - A pipe which provides dispersion of septic tank effluent within a soil absorption system.

Dosing – the pumping of septic tank effluent at a prescribed rate to a distribution box for gravity distribution to a soil absorption system.

15.002: continued

Dosing Chamber – A watertight structure placed between a septic tank and either a distribution box or soil absorption system which is equipped with a pump designed to discharge septic tank effluent at a predetermined rate to a soil absorption system.

Dry Well - A pit with open-jointed lining or holes through which storm-water drainage from roofs, basement floors, foundations or other areas seeps into the surrounding soil.

Dune - A coastal dune, as defined in M.G.L. c. 131, § 40 and 310 CMR 10.28(2): *Definition*.

Dwelling - A building which is used, intended, or designed for human habitation, including but not limited, to houses, hotels, motels, apartments, mobile and modular homes and condominiums and cooperatives.

Effective Capacity - The volume of a tank below the design discharge point, liquid level line.

Effluent - Sanitary sewage discharged into the environment, whether or not treated.

Emergency Repair - The repair of a system which is necessary to prevent sewage backup into a building, surface breakout of sewage, or to alleviate an imminent danger to public health, safety or the environment in accordance with 310 CMR 15.353.

Equalization Basin – A watertight tank or basin of sufficient size that has the capacity to store at a minimum the proposed daily design flows for the facility.

Facility - Any real property (including any abutting real property) and any buildings thereon, which is served, is proposed to be served, or could in the future be served, by a system or systems, where:

(a) legal title is held or controlled by the same owner or owners; or

(b) the local Approving Authority or the Department otherwise determines such real property is in single ownership or control pursuant to 310 CMR 15.011 (aggregation).

Failed Subsurface Sewage Disposal System or Failed System - A system which fails to protect public health and safety or the environment as set forth at 310 CMR 15.303 or 15.304.

Family Mobile Home Park - A facility upon which two or more mobile homes are located on a continual or seasonal non-recreational basis, regardless of whether a charge is made therefor.

Fill - The clean, uncontaminated, nonindigenous soil placed beneath, above, and/or around a soil absorption system, as specified in 310 CMR 15.201 through 15.293.

Foundation Drain – A drain around a foundation, usually located at the footing, and consisting of perforated pipe surrounded by crushed stone and filter fabric.

Geotextile Fabric – A porous material suitable to prevent fines from migrating down through the soil absorption system while still letting air circulate.

Grease Trap - A watertight structure located on a building sewer before a septic tank in which grease and oils are separated from other solid and liquid constituents of sewage and accumulated in accordance with 310 CMR 15.230.

Greywater - Any putrescible wastewater discharged from domestic activities including but not limited to washing machines, sinks, showers, bath tubs, dishwashers, or other source except toilets, urinals and any drains equipped with garbage grinders.

Groundwater - Water found in cracks, fissures and pore spaces in the saturated zone below the ground surface, including but not limited to perched groundwater.

15.002: continued

High Groundwater Elevation - As determined in accordance with 310 CMR 15.101, 15.102 and 15.103.

Housing for the Elderly - A facility restricted to use by adults over 55 years of age (in accordance with 42 USC 3601 *et seq.* as referenced in M.G.L. c. 151B, § 4, paragraph 7.).

H-10 Loading - Standard H-10 truck loading as specified by the American Association of State Highway and Transportation Officials.

H-20 Loading - Standard H-20 truck loading as specified by the American Association of State Highway and Transportation Officials.

Humus/Composting Toilet - A self-contained system consisting of a composter with a separate toilet fixture from which no liquid or solid waste materials are discharged to the surface or subsurface environment and from which a humus/compost-like end product is produced. Such systems may be used in accordance with the provisions of 310 CMR 15.289.

Impervious Material - Soils with a percolation rate greater than 60 minutes per inch. (*See*, also, the definition of unsuitable material.)

Individual – A single or specific person (*See* definition of Person)

Industrial Waste - Any water-carried or liquid waste resulting from any process or industry, manufacture, trade, business, or activity listed in 310 CMR 15.004.

Interim Wellhead Protection Area (IWPA) - An interim well-head protection area, as defined in Massachusetts drinking water regulations, 310 CMR 22.02. Generally, this is a ½-mile radius for sources whose approved pumping rate is 100,000 gallons per day or greater. For smaller sources, the radius in feet is determined by multiplying the approved pumping rate in gallons per minute by 32, and adding 400.

Invert - The lowest portion of the internal cross section of a pipe or fitting.

Irrigation Well - Any on-site source of groundwater not certified as a potable water supply by the local Board of Health or the Department in accordance with M.G.L. c.111, § 122A and 160 or 310 CMR 22.00.

Local Approving Authority - The board of health or its authorized agent or an agent of a health district constituted pursuant to M.G.L. c. 111, § 27 acting on behalf of the applicable board of health.

Local Upgrade Approval - An approval granted by the Approving Authority allowing the owner or operator of a nonconforming system to perform an upgrade of the nonconforming system to the maximum feasible extent, all in accordance with the provisions of 310 CMR 15.401 through 15.405.

Long-term Acceptance Rate (LTAR) - The stable rate of effluent acceptance through the biological mat of a soil absorption system measured in gallons per day per square foot (gpd/sf) or centimeters per day (cm/d).

Maintenance - All activities required to assure the effective and continuous operation and performance of an on-site system including, but not limited to, solids and scum removal from the septic tank, grease trap, dosing chamber or pump chamber and, re-leveling the distribution box, but not including a system upgrade.

Mobile Home - A single transportable structure on a chassis designed to be used, with or without a permanent foundation, as a dwelling. The support system of a mobile home is constructed so that the mobile home may be moved from time to time.

15.002: continued

Modular Home - A prefabricated building designed and constructed to be used as a dwelling and to be transported in two or more sections to a site where the sections are permanently connected and installed on a permanent foundation.

Mottling Due to Wetness (Redoximorphic Features) - A color pattern in soil consisting of blotches or spots of contrasting high or low chroma colors which may be an indication of the upper extent of soil saturation by groundwater.

Multiple Compartment Tank - A septic tank containing more than one settling compartment in series.

Munsell System - The system of classifying soil color consisting of an alpha-numeric designation for hue, value and chroma together with a descriptive color name accepted by the USDA/Natural Resources Conservation Service (NRCS) used as a standard procedure in soil classification.

Naturally Occurring Pervious Material - Naturally occurring soil exhibiting a percolation rate of 60 minutes or less per inch which was deposited on a site by natural causes and not by human action.

New Construction - The construction of a new building for which an occupancy permit is required or an increase in the actual or design flow to any system or an increase in the actual or design flow to any nonconforming system or an increase in the design flow to any system above the existing approved capacity. New construction shall not include replacement or repair of a building in existence as of March 31, 1995 that has been totally or partially destroyed or demolished, provided there is no increase in design flow, no increase in design flow above the existing approved capacity to any system, no increase in the number of dwellings or dwelling units or no increase in the number of bedrooms in any dwelling or dwelling unit.

Nitrogen Sensitive Area - An area of land and/or natural resource area so designated by the Department in accordance with 310 CMR 15.215.

Nonconforming System - Any system which is not in full compliance with the standards and requirements of 310 CMR 15.000 and for which a variance or local upgrade approval has not been obtained. Nonconforming systems include, but are not limited to, cesspools, privies, failed systems, and systems with a design flow above 10,000 gpd.

Observed Ground-Water Elevation - That elevation below the ground surface at which water is observed weeping, flowing from the walls of, or standing in a deep observation hole.

On-site System or Disposal System or On-site Subsurface Sewage Disposal System or System - A system or series of systems for the treatment and disposal of sanitary sewage below the ground surface on a facility.

(a) The standard components of a system are: a building sewer; a septic tank to retain solids and scum; a distribution system; a soil absorption system containing effluent distribution lines to distribute and treat septic tank effluent prior to discharge to appropriate subsurface soils; and a reserve area.

(b) These terms also include tight tanks, shared systems and alternative systems. Unless the text of 310 CMR 15.000 indicates otherwise, these terms also include nonconforming systems.

Open Drain - Any uncovered ditch or culvert used for the conveyance of surface water runoff or groundwater. A culvert that carries a water course or intermittent stream is not a surface drain.

Operate - To use or occupy a facility served by an on-site system or to own a facility where such use or occupation exists.

Operator - A person who alone or together with other persons has charge or control of any system.

15.002: continued

Owner - A person who, alone or together with other persons, has legal title to any facility served by a system or control of the facility, including but not limited to any agent, executor, administrator, trustee, lessee, or guardian of the estate for the holder of legal title.

Percolation Test - A field test to assess the suitability of soils in a defined area for the subsurface disposal of sewage as described at 310 CMR 15.104 and 15.105.

Person - Any individual, partnership, corporation, firm, association, authority, trust or group, including, but not limited to, a city, town, county, the Commonwealth and its agencies, and the federal government.

Pervious Soil - Soil with a percolation rate of 60 minutes per inch or less found in the B and C horizons.

Pressure Distribution – The application under pressure of septic tank or treatment unit effluent to the entire soil absorption system at a prescribed rate.

Privy - A structure used for the disposal of human wastes without water transport consisting of a shelter built over an unlined pit or vault in the ground into which waste is deposited. A privy is a nonconforming system.

Pump Chamber - A watertight structure equipped with a pump designed to discharge effluent at a predetermined rate. (*See* definition of Dosing Chamber)

Recirculating Sand Filter (RSF) - A biological and physical treatment unit consisting of a bed of sand to which septic tank effluent is distributed and then collected in a recirculating tank prior to recirculating a portion through the sand bed filter and discharging a portion of the filtrate to the soil absorption system.

Regulatory Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height (typically one foot), the boundary of which is the area designated as floodway on the most recently available flood profile data prepared for the community within which the site is located under the National Flood Emergency Program (NFIP, currently administered by the Federal Emergency Management Agency, successor to the U.S. Department of Housing and Urban Development). Within this area flooding characterized by a significant velocity of flow is likely to occur.

Reserve Area - An area of land with demonstrated capacity for subsurface sewage disposal upon which no permanent structure shall be constructed and which is intended for replacement of the primary disposal area should it fail.

Retirement Mobile Home Park - A facility upon which two or more mobile homes, restricted to use by adults over 55 years of age (in accordance with 42 USC 3601 *et seq.*), are located on a continual or seasonal non-recreational basis, regardless of whether a charge is made therefore.

Salt Marsh - A coastal wetland as defined in the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40, and the regulations promulgated pursuant thereto at 310 CMR 10.32(2).

Sanitary Sewage or Sewage - Either greywater or blackwater or a combination of greywater and blackwater from domestic, commercial and other non-industrial sources. Sanitary sewage does not include stabilized waste.

Sanitary Sewer - Any system of pipes, conduits, pumping stations, force mains and all other structures and devices used for collecting and conveying wastewater to a public or private treatment works.

Saturated Zone - Any portion of the earth below the land surface where available openings (pore, fissure, joint or solution cavity) are filled with water.

15.002: continued

Scum - A mass of light solids, such as hair, grease, oils and soaps, floating on the surface of the wastewater in a septic tank.

Separation Distance - The clear distance between system components.

Septage - Material physically removed from any part of an on-site system, including, but not limited to, the solids, semi-solids, scum, sludge and liquid contents of a septic tank, privy, chemical toilet, cesspool, holding tank, or other sewage waste receptacle. It does not include any material which is hazardous waste.

Septage Hauler - A person licensed by an Approving Authority to remove septage from on-site sewage disposal systems and transport it to an approved disposal location in accordance with 310 CMR 15.500.

Septage Hauler Permit - A permit issued pursuant to the authority of M.G.L. c. 111, § 31 and 310 CMR 15.500 entitling a person to transport septage within the Commonwealth.

Septic System Additive - Any solid or liquid material or biological agent intended or used primarily for cleaning, treating, degreasing, unclogging, disinfecting, deodorizing or otherwise affecting the performance of any component of an on-site system.

Septic Tank - A watertight receptacle to receive sewage from a building sewer which is designed and constructed to allow for the separation of scum and sludge and the partial digestion of organic matter before discharge of the liquid portion to a soil absorption system or other intermediate structure in the treatment sequence.

Septic Tank Effluent - The liquid portion of settled sewage which is discharged from the outlet of a septic tank.

Shared System - A system sited and designed in accordance with 310 CMR 15.100 through 15.293 which serves, or is proposed to serve, more than one facility and which has been approved in accordance with 310 CMR 15.290 through 15.293. A system serving a condominium located on the same facility is not a shared system.

Soil Absorption System - A system of trenches, galleries, chambers, pits, field(s) or bed(s) together with effluent distribution lines and aggregate which receives effluent from a septic tank or treatment system.

Soil Evaluator - A person approved by the Department pursuant to 310 CMR 15.017 as capable of evaluating the suitability of a specific site for the use of an on-site subsurface sewage disposal system in compliance with 310 CMR 15.000.

Soil Texture - The relative proportions of sand, silt and clay in a given soil medium as defined by the USDA/NRCS.

Stabilized Waste – Any waste chemically fixated for the control of odors or whereby biological decomposition is affected.

Structural Component – A tangible, removable item that is part of the on-site system. A soil absorption system is not a structural component.

Subsurface Drain - Any underground conduit used for the conveyance of surface or groundwater, including, but not limited to, stormwater culverts, curtain drains and French drains.

Supermarket – A retail market selling foods and household goods that also consists of a bakery, deli, or on-site meal preparation.

Surface Water - All waters other than groundwaters within the jurisdiction of the Commonwealth, including without limitation, rivers, streams, lakes, ponds, springs, reservoirs, impoundments, estuaries, wetlands, coastal waters and certified vernal pools.

15.002: continued

Surface Water Supply - Any lake, pond, reservoir, or impoundment designated as a public water supply in 314 CMR 4.00: *Massachusetts Surface Water Quality Standards*.

System - *see* on-site system.

System Inspector - A person approved by the Department pursuant to 310 CMR 15.340 as capable of appropriately assessing the condition of systems in accordance with 310 CMR 15.000.

Temporary - A single time period or an accumulation of time periods not exceeding 180 total days in any 365-day period.

Tight Tank - A water tight vessel having an inlet to receive raw sewage but no outlet and which is designed and used to collect and store sewage until it is removed for disposal.

Title 5 of the State Environmental Code, 310 CMR 15.000 - The Department's regulation for the siting, construction, inspection, upgrade and expansion of on-site sewage treatment and disposal systems and for the transport and disposal of septage.

Training Contact Hours (TCH) – The hours of training a person has had prior to the renewal of either a soil evaluator or system inspector approval. Each seminar, workshop, training course, or college course will have a specific training hour value as rated by the Department or an agent authorized by the Department.

Treatment Works - Any and all devices, processes, and properties, real or personal, used in the collection, pumping, transmission, storage, treatment, disposal, recycling, reclamation or reuse of waterborne pollutants, including septage receiving facilities but not including any works receiving a hazardous waste from off the site of the works for the purpose of treatment, storage or disposal. Treatment works must be permitted by the Department pursuant to the authority of M.G.L. c. 21, §§ 27 through 52 and regulations thereunder.

Tributary to Surface Water Supply - Any body of running water, including a river, stream, brook or creek, which moves in a definite channel in the ground due to a hydraulic gradient, and which is designated as a tributary to a public water supply in 314 CMR 4.00: *Massachusetts Surface Water Quality Standards*, provided that such water supply is a surface water supply as defined in 310 CMR 15.000. The exact location and extent of tributaries to surface water supplies shall be determined by reference to the most current U.S.G.S. and/or GIS maps and in consultation with the Department's Division of Watershed Management and the Drinking Water Program.

Underground Injection Control Program or UIC Program – The Underground Injection Control Program under Part C of the federal Safe Drinking Water Act, 42 U.S.C. §§ 300f *et seq*., which is implemented and enforced by the Department in Massachusetts pursuant to its UIC regulations at 310 CMR 27.00: *Underground Injection Control Regulations*.

Unsuitable Material – All impervious material, all organic sediments, and all material found in the following horizons: O (organic), A (topsoil), and E (mineral). All bedrock, including saprolite or weathered bedrock, schist, and ledge. (*see*, also, the definition of impervious material).

Upgrade - The modification of one or more components of an on-site system or the design and construction of a new on-site system which is intended to bring a nonconforming system into conformance with 310 CMR 15.000. An emergency repair is not an upgrade.

USDA/NRCS - The United States Department of Agriculture, Natural Resources Conservation Service.

USGS - The United States Geological Survey, within the United States Department of the Interior.

15.002: continued

Velocity Zone or V-zone, also known as the Coastal High Hazard Area - An area within the Special Flood Hazard Area that is subject to high velocity wave action or seismic sources. The Velocity Zone Boundaries are determined by reference to the currently effective or preliminary Flood Insurance Rate Map (FIRM) map whichever is more recent, prepared by the Federal Emergency Management Agency or at a minimum to the inland limit of the primary frontal dune, whichever is further landward.

Vernal Pool - *see* Certified Vernal Pool.

Waters of the Commonwealth or Waters or Water Bodies - All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, wetlands, estuaries, coastal waters, groundwaters, and vernal pools.

Watershed - Any region or area measured in a horizontal topographic divide which directs water runoff from precipitation, normally by gravity, into a stream, a body of impounded surface water, or a coastal embayment, or any region or area measured by a groundwater divide which directs groundwater into a stream, a body of impounded surface water, or a coastal embayment.

Water Supply Well - Any public or private source of groundwater used for human consumption, including but not limited to, a source approved for such use by the local Board of Health or the Department in accordance with M.G.L. c. 111, § 122A or 310 CMR 22.00: *Drinking Water*.

Wetland - Any land area or surface area so defined by the Massachusetts Wetlands Protection Act, M.G.L. c. 131, § 40 and regulations promulgated pursuant thereto at 310 CMR 10.00: *Wetlands Protection* or pursuant to § 404 of the Federal Water Pollution Control Act, 33 U.S.C. 1341.

Working Level – The level between the pump "off" elevation and the high level alarm elevation.

Zone I - The protective radius required around a public water supply well or wellfield, as defined in Massachusetts Drinking Water Regulations, 310 CMR 22.02: *Definitions*. For public water supply system wells with approved yields of 100,000 gpd or greater, the protective radius is 400 feet. Tubular well fields require a 250-foot protective radius. Protective radii for all other public water system wells are determined by the following equation: Zone I radius in feet = [150 x log of pumping rate in gpd] - 350.

Zone II - That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can realistically be anticipated, as defined in Massachusetts Drinking Water Regulations, 310 CMR 22.02: *Definitions*.

Zone A - As defined in Massachusetts Drinking Water Regulations, 310 CMR 22.02: *Definitions*:

(a) the land area between the surface water source and the upper boundary of the bank;

(b) the land area within a 400 foot lateral distance from the upper boundary of the bank of a Class A surface water used as a drinking water source, as defined in the 314 CMR 4.00: *Massachusetts Surface Water Quality Standards*; and

(c) the land area within a 200 foot lateral distance from the upper boundary of the bank of a tributary or associated surface water body.

15.003: Coordination with Local Approving Authorities

(1) In general, full compliance with the provisions of 310 CMR 15.000 is presumed by the Department to be protective of the public health, safety, welfare and the environment. Specific site or design conditions, however, may require that additional criteria be met in order to achieve the purpose or intent of 310 CMR 15.000.

15.003: continued

(2) The approval of any system, including the issuance of Disposal System Construction Permits, Local Upgrade Approvals, and Certificates of Compliance, shall be by the Local Approving Authority, except that the Department shall be the Approving Authority for systems owned or operated by an agency of the Commonwealth or of the federal government, for systems serving a facility with a design flow of 10,000 gallons per day or greater, and for variances granted in accordance with 310 CMR 15.416. Unless otherwise specified herein, the following systems or circumstances are approved by the Department only:

(a) alternative systems which are proposed in compliance with 310 CMR 15.280 through 15.289;

(b) upgrade or expansion of systems with a design flow of 10,000 gpd or greater but less than 15,000 gpd, or continued use of systems subject to 310 CMR 15.304(2); and

(c) any system or proposed system which the Department determines requires its review for the purposes of protection of public health, safety, welfare and the environment, or determining consistency with 310 CMR 15.000.

(3) Local approving authorities may enact more stringent regulations to protect public health, safety, welfare and the environment only in accordance with M.G.L. c. 111, § 31.

(4) Local requirements, or portions thereof, which were in effect prior to March 31, 1995 and which are less stringent than 310 CMR 15.000 shall not be applied to new construction, upgrade or expansion of existing systems.

(5) Local regulations adopted under M.G.L. c. 111, § 31 shall be filed with the Department's Boston Office in accordance with M.G.L. c. 21A, § 13.

15.004: Applicability

(1) The Approving Authority shall not approve the construction, upgrade, or expansion of an on-site subsurface sewage disposal system unless it is:

(a) a system serving or designed to receive only sanitary sewage from a facility where the total design flow generated on the facility, is less than 10,000 gallons per day;

(b) a system upgrade approvable in accordance with 310 CMR 15.403 or 310 CMR 15.404; or

(c) a facility for which subdivision approval has been obtained, to construct dwellings with a cumulative total design flow of 10,000 gpd or greater provided that a disposal system construction permit to construct a system in compliance with 310 CMR 15.000 on each of the subdivision lots to be served by a system is obtained and such separate subdivision lots are to be conveyed to independent owners.

(2) No system shall serve more than one facility except as explicitly allowed pursuant to 310 CMR 15.010 (division and aggregation) or 310 CMR 15.290 through 15.292 (shared systems).

(3) No new system shall be constructed, and no system shall be upgraded or expanded, if it is feasible to connect the facility, or any portion of the facility for which system approval is sought, to a sanitary sewer, except in the following circumstances and particularly to promote recharge of stressed basins, improve low stream flow, or address other local water resource needs:

(a) the system is an alternative system approved for use pursuant to 310 CMR 15.280 through 15.288 and the Department has made the determination that any person using such alternative system need not connect the facility to such sanitary sewer;

(b) the system fully complies with 310 CMR 15.000 and does not require:

1. a local upgrade approval, unless issued pursuant to 310 CMR 15.405(1)(a) or (b); or
2. a variance; or

(c) the owner of an existing system has obtained a variance from this requirement pursuant to 310 CMR 15.410 through 15.415.

15.004: continued

(4) The provisions of 310 CMR 15.000 apply only to the on site collection, treatment and disposal of sanitary sewage, and to the transport and disposal of associated septage and grease, and do not apply to the wastewater containing wastes from any other activity including, but not limited to, activities under the Standard Industrial Classification (SIC) Codes set forth at 310 CMR 15.004(5). SIC Codes are established by the U.S. Office of Management and Budget and may be determined by referring to the publication *Standard Industrial Classification Manual*. Systems designed to dispose of only sanitary sewage from facilities subject to the following SIC codes may be approved under 310 CMR 15.000. Facilities discharging wastewater that contains wastes from activities under the SIC codes listed below may request a determination from the Department that the wastewater's constituents are substantially similar to sanitary sewage and may be discharged to an on-site septic system.

(5) SIC CODE(S)	INDUSTRY CATEGORY
753-7549	Automotive Repairs and Services
7231,7241	Beauty Shops, Barber Shops
7211-7219	Laundry Cleaning and Garment Services
4911,4925,4931,4939	Electric, Gas Services (Power Generation Gas Production Only)
4011 - 4581	Transportation (Maintenance Only)
8062 - 8069	Hospitals
2000 - 3999	Manufacturing
2000 - 2099	Food Products
2100 - 2199	Tobacco Products
2200 - 2299	Textile Mill Products
2300 - 2399	Apparel and Other Finished Products Made from Fabrics and Similar Materials
2400 - 2499	Lumber and Wood Products, Except Furniture
2500 - 2599	Furniture and Fixtures
2600 - 2699	Paper and Allied Products
2700 - 2799	Printing, Publishing and Allied Industries
2800 - 2899	Chemicals and Allied Products
2900 - 2999	Petroleum Refining and Related Industries
3000 - 3099	Rubber and Miscellaneous Plastics
3100 - 3199	Leather Tanning and Finishing
3200 - 3299	Stone, Clay, Glass and Concrete Products
3300 - 3399	Primary Metal Industries
3400 - 3499	Fabricated Metal Products (Except Machinery and Transportation Equipment)
3500 - 3599	Industrial and Commercial Machinery and Computer Equipment
3600 - 3699	Electronic and Other Electrical Equipment and Components, Except Computer Equipment
3700 - 3799	Transportation Equipment
3800 - 3899	Measuring, Analyzing and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks
3900 - 3900	Miscellaneous Manufacturing Industries

15.004: continued

(6) No person shall discharge or allow the discharge of wastes from the industry categories listed in 310 CMR 15.004(5) to any system regulated under 310 CMR 15.000. No system shall receive oil, hazardous materials or waste, medical wastes or radioactive wastes.

(7) No person shall discharge or allow the discharge of stabilized recreational vehicle wastes, stabilized boat wastes, stabilized motorcoach/bus wastes, stabilized portable toilet wastes, wastes from funeral homes, or vehicles washes to any system regulated under 310 CMR 15.000.

(8) 310 CMR 15.000 prohibits the discharge of sewage to a dry well or open drain. Discharges to dry wells shall be in compliance with the Department's Underground Injection Control regulations at 310 CMR 27.00: *Underground Injection Control Regulations*. Backwash of water purification or filtration devices shall not be discharged to an on-site system. The owner of the dry well shall register the dry well in accordance with 310 CMR 27.00: *Underground Injection Control Regulations*.

15.006: Facilities with a Design Flow of 10,000 gpd or Greater but Less than 15,000 gpd

(1) It shall be the duty of each owner or operator of systems with a design flow of 10,000 gpd or greater to ascertain the actual design flow of their system or systems.

(2) The Department may require the issuance of a groundwater discharge permit pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program* and the installation of technology capable of discharging effluent which meets groundwater standards pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program* for any system with design flow of 10,000 gpd or greater but less than 15,000 gpd unless the Department determines after consideration of the factors set forth in 310 CMR 15.304(3) that this requirement would be manifestly unjust, considering all the relevant facts and circumstances of the individual case, and the owner or operator has established that a level of environmental protection that is at least equivalent to that provided by 314 CMR 5.00: *Ground Water Discharge Permit Program* can be achieved without strict application of 310 CMR 15.006.

(3) There shall be no increased flow to an existing system which results in a design flow of 10,000 gpd or greater except in accordance with a variance issued by the Department pursuant to 310 CMR 15.414.

15.007: Campgrounds

(1) For the purposes of 310 CMR 15.000, a campground is any facility which is regulated pursuant to 105 CMR 430.00: *Minimum Standards for Recreational Camps for Children (State Sanitary Code: Chapter* IV) or 440.00: *Minimum Standards for Developed Family Type Campgrounds (State Sanitary Code: Chapter* VI) and/or is a campground operated by the Department of Conservation and Recreation in a State Park.

(2) Except as otherwise set forth in 310 CMR 15.007(3) and (4), a campground in existence on December 1, 1993 with design flows in excess of 10,000 gpd but less than 15,000 gpd and which receives only temporary use is in compliance with 310 CMR 15.000 provided that all of the following conditions are met:

(a) the campground is not subject to an existing enforcement order issued by the local Approving Authority, the Department or court;

(b) the campground is not failing to protect public health or safety or the environment pursuant to 310 CMR 15.304(2);

(c) each system serving the facility is in compliance with 310 CMR 15.000;

(d) no single system on the facility has a design flow in excess of 10,000 gpd;

(e) no system is less than 100 feet from another system;

(f) systems on the campground are inspected and maintained in accordance with 310 CMR 15.300 through 15.354, including necessary upgrade of systems or components;

(g) no sewage from mobile home tight tanks which has been fixated or treated with chemical additives, except as approved by the Department, is disposed of at the campground; and

(h) no additional flows of sewage are added over the approved design flow of the system as of March 1, 1995.

15.007: continued

(3) Campgrounds in existence as of December 1, 1993 and which receive more than temporary use are in compliance with 310 CMR 15.000 provided:

(a) the provisions of 310 CMR 15.007(2) are complied with; and

(b) the volume of sewage flow generated from all systems on the facility from non-temporary use does not exceed 10% of the design flow generated during peak seasonal use.

(4) All new construction at campgrounds shall be in accordance with the provisions of 310 CMR 15.000.

15.010: Division and Aggregation of Facilities

(1) Ownership of a facility and the design flow of the facility shall be determined whenever application is made for a Disposal System Construction Permit.

(2) Prior to dividing a facility all existing systems shall be inspected in accordance with 310 CMR 15.301(8). The division of a facility shall not be approved unless the Approving Authority has determined that the division will not put existing systems in noncompliance with the Title 5 and the applicant has demonstrated to the satisfaction of the Approving Authority that the division of property will not prevent the upgrade of existing systems in accordance with Title 5. Failed systems shall be upgraded in accordance with 310 CMR 15.305. Existing systems shall be altered as required by the Approving Authority for each new facility divided out of the original facility. Prior to the division of a facility, any shared systems to be created as a result of the division shall comply with 310 CMR 15.290, and the owner(s) or operator(s) shall obtain a shared system approval if the system will serve more than one facility after division of the facility.

(3) If two or more facilities in separate ownership are later joined into single ownership control after construction of systems to serve the separate facilities, the owner or operator of the new combined facility shall obtain a Certificate of Compliance from the Approving Authority for the new, combined facility within one year. If the total design flow from the facility is 10,000 gpd or greater, the owner shall have an inspection of all of the systems pursuant to 310 CMR 15.301(6) and 15.302 completed within one year.

(4) Whenever the Department or the local Approving Authority determines, based upon consideration of one or more of the factors in 310 CMR 15.011, that facilities asserted to be in separate ownership or control shall be regulated as a single facility, the Department or the local Approving Authority, based on the total design flow from the single facility, may order the single facility to comply with the requirements of 310 CMR 15.202 (Recirculating Sand Filters) or the Department may order the single facility to comply with the requirements of 314 CMR 5.00: *Ground Water Discharge Permit Program* by obtaining a groundwater discharge permit.

15.011: Criteria to Assess Whether Facilities are in Separate Ownership or Control

(1) In assessing whether facilities are in single ownership for purposes of determining whether the total design flow exceeds the 2,000 gpd threshhold of 310 CMR 15.202 (recirculating sand filters) or the permitting, treatment and effluent standard requirements of 314 CMR 5.00: *Ground Water Discharge Permit Program*, the Approving Authority may consider one or more of the following factors:

(a) whether the owner or operator of facilities asserted to be in separate ownership operate the facilities independently, including whether there are any common or related beneficiaries among the separate ownership entities, and whether each owner acts with due regard for the independent financial interests of the owner, operator and any beneficiaries of the assertedly separate facilities;

(b) whether, and the extent to which, legal agreements exist which provide the owner or operator of facilities asserted to be in separate ownership the right to access each other's facilities and/or to use and share financial responsibility for common buildings, infrastructure, or services;

15.011: continued

(c) the existence of some evidence that ownership or control of the facilities asserted to be in separate ownership or control was arranged to circumvent the requirements of 310 CMR 15.202 (Recirculating Sand Filters), or 314 CMR 5.00: *Ground Water Discharge Permit Program*, including evidence that two or more facility owners have acted in concert to acquire or dispose of adjacent properties to avoid the above regulatory requirements;
(d) the effect of the facilities on the public health and environment, including an evaluation of whether the facilities provide local groundwater recharge and/or are cluster developments that preserve open space.

(2) In the event the Approving Authority determines, using the criteria set forth at 310 CMR 15.011(1) that facilities asserted to be in separate ownership or control should be treated as a single facility for the purposes of 310 CMR 15.000, that determination may be appealed in accordance with 310 CMR 15.422 (appeals).

15.017: Approval of Soil Evaluators

(1) Any person who meets the criteria of 310 CMR 15.017(2) and who passes a standardized examination prepared and administered by the Department or an agent of the Department shall be approved as a Soil Evaluator by the Department.

(2) Eligibility for the examination described in 310 CMR 15.017(6) may be demonstrated to the Department, or an agent authorized by the Department, by people with the following qualifications:
(a) Massachusetts Registered Sanitarians;
(b) Massachusetts Registered Professional Engineers;
(c) Engineers in Training (EIT certificate) with a concentration in civil, sanitary or environmental engineering;
(d) Massachusetts Registered Land Surveyors;
(e) Certified Health Officers;
(f) Board of Health Members or Agents;
(g) Employees of the Department involved in the administration of 310 CMR 15.000;
(h) Those with a Bachelor of Arts or Sciences degree, or more advanced degree in Soil or Geological Sciences from an accredited college or university; or
(i) Those successfully completing a minimum of 15 semester credits in soil science courses from an accredited institution. At least three of the 15 credits must be in Soil Genesis, Classification, Morphology and Mapping. The remaining soil science credits must be in at least three of the following six categories: Introductory Soil Science; Soil Chemistry/ Fertility; Soil Physics; Soil Microbiology/Biochemistry; Soil Survey Interpretations/Soils and Land-use/Soils and the Environment; and Independent Study/Seminar/Geology.

(3) The Department or an agent authorized by the Department shall maintain a list of approved Soil Evaluators. Any person who is denied approval as a Soil Evaluator based on failure to pass the examination required in 310 CMR 15.017(6) may request, within 90 days of receiving the results of the examination, and is entitled to receive from the Department or its agent, a written statement of the Department's basis for denial.

(4) The Department may revoke or suspend the approval and/or listing of a Soil Evaluator approved pursuant to 310 CMR 15.017, for a time specified by the Department, during which time the Soil Evaluator may not reapply to become a Soil Evaluator, after opportunity for a hearing conducted pursuant to M.G.L. c. 30A, when it determines that the Soil Evaluator has failed to comply with 310 CMR 15.000 with respect to one or more soil evaluations or has violated the provisions of 310 CMR 15.018 or has falsified, substantially misinterpreted or misrepresented a soil evaluation in the evaluator's certification, or has failed to perform a soil evaluation as required pursuant to 310 CMR 15.100 through 15.107. Reinstatement following revocation shall be by written and field examination only. Based on a Soil Evaluator's non-compliance with 310 CMR 15.000, the Department, by issuance of an order, may require the Soil Evaluator to, among other things, attend or repeat the training course referred to in 310 CMR 15.017(5) and/or to retake the examination referred to in 310 CMR 15.017(1).

15.017: continued

(5) A training course provided by the Department or an agent authorized by the Department is highly recommended for any person meeting the criteria of 310 CMR 15.017(2) in order to prepare for the standardized examination required pursuant to 310 CMR 15.017(6).

(6) A standardized written and field examination shall be prepared and administered by the Department or an agent authorized by the Department to the applicant meeting the criteria of 310 CMR 15.017(2). The examination shall consist of at least the following elements:

(a) principles of on-site sewage treatment and disposal;
(b) geology and soils of Massachusetts;
(c) soil profile descriptions;
(d) estimating high ground-water elevations using soil morphology;
(e) principles of ground-water hydrology;
(f) methods for documenting site conditions;
(g) important reference materials; and
(h) field training in soil evaluation and logging.

The passing score shall be correctly answering 70% of all the questions on the written examination and successful completion of the field examination.

(7) Soil Evaluators initially approved by the Department prior to January 1, 2005, shall apply to the Department to renew their approval by January 1, 2007. Soil Evaluators initially approved after January 1, 2005, shall apply to the Department or an agent authorized by the Department to renew their approval at least 90 days prior to the expiration of the three years following their initial approval date. Provided that a Soil Evaluator timely files a complete renewal application, the Soil Evaluator's approval shall not expire until the Department issues a final determination on the renewal application. A fee established by the Department shall accompany each renewal application; any application that does not include payment of the fee shall be deemed incomplete. The approval of a renewal application shall expire three years from the date of its issuance. Each Soil Evaluator thereafter shall file a complete renewal application at least 90 days prior to the expiration date of his/her most recent approval.

(8) Beginning in 2010, at the time of filing any subsequent renewal application in accordance with 310 CMR 15.017(7), a Soil Evaluator shall demonstrate that he or she has earned ten Training Contact Hours in the previous three years that improve the Soil Evaluator's abilities in the following areas:

(a) safely and accurately conducting soil evaluations according to the requirements of 310 CMR 15.000;
(b) the principles of on-site sewage treatment and disposal;
(c) the geology and soils of Massachusetts;
(d) soil profile descriptions;
(e) accurately estimating high groundwater elevations using soil morphology;
(f) the methods of documenting site conditions; and
(g) field training in soil evaluation and logging.

15.018: Function of Soil Evaluators

(1) The function of the Soil Evaluator is to enhance the review and approval of proposed systems by ensuring that appropriate expertise in soil identification, groundwater hydrology, and topography is available when the characteristics of the proposed disposal area are determined for purposes of applying the siting and design criteria set forth in 310 CMR 15.000. Soil Evaluators may perform the site evaluation required by 310 CMR 15.100 while acting either as an agent of an Approving Authority (a fee may be assessed pursuant to M.G.L. c. 40, § 22F), or as an independent agent of the owner in the presence of the Approving Authority. If the evaluator is an agent or member of the Approving Authority having jurisdiction over the system, he or she shall not act as an agent for the owner.

(2) Based upon an evaluation of the suitability of the proposed disposal area for a proposed, upgraded or expanded system in accordance with 310 CMR 15.100 through 15.107, the Soil Evaluator shall certify to the Approving Authority and the Designer as to the accuracy of the soil evaluation in conformance with 310 CMR 15.100 through 15.107. The certification shall contain a recitation of the facts and rationale underlying the soil evaluation and a copy of the soil evaluation form. The soil evaluator shall submit the results to the Approving Authority with the following statement:

15.018: continued

> I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated on the attached soil evaluation form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Any certifications shall be forwarded to the Approving Authority, the Designer and the property owner. Failure to forward certifications to the Approving Authority within 60 days of the date of the field testing shall be cause for revocation of the Soil Evaluator's approval.

15.019: Disposal System Installer's Permit

No individual shall engage in the construction, upgrade, modification, emergency repair, or expansion of any on-site system without first obtaining a Disposal System Installer's Permit from the Approving Authority. Disposal System Installer Permits shall be issued for a period of not more than two years. The Local Approving Authority shall issue Disposal System Installer Permits only to those individuals who have demonstrated knowledge of and experience with the proper construction and installation of systems in accordance with 310 CMR 15.000. The Approving Authority, by issuance of an order, may suspend or revoke a Disposal System Installer's Permit, for a time specified in the order, when it determines that the Installer has failed to comply with 310 CMR 15.000 with respect to the installation of one or more systems, including, without limitation, the Installer's failure to provide the certification required by 310 CMR 15.021(3), or the Installer's installation or certification of a system that fails to comply with the Disposal System Construction Permit.

15.020: Disposal System Construction Permits

(1) No person shall construct, upgrade, modify or expand a system without a Disposal System Construction Permit which has been issued by the Approving Authority after the site evaluation set forth in 310 CMR 15.100 through 15.107 has been completed. In the event it is discovered during installation of the system that site conditions differ from those contained in the site evaluation and/or the approved design plans, the originally issued Disposal System Construction Permit is void, installation shall stop, and the applicant shall reapply for a new Disposal System Construction Permit. Except for subdivisions entitled to M.G.L. c. 111, § 127P protection, M.G.L. c. 40B comprehensive permit land, and large systems with approved plans or pursuant to a variance issued by the Department in accordance with 310 CMR 15.414, a Disposal System Construction Permit shall not authorize increased design flow which would bring the total design flow to 10,000 gpd or greater. Disposal System Construction Permits shall be in a form approved by the Department.

(2) Construction of all systems for which a Disposal System Construction Permit application has been approved by the local Approving Authority and/or the Department shall be completed, and the Certificate of Compliance obtained within three years of issuance of the final approval. Unless an extension pursuant to 310 CMR 15.020(3) is issued, the permit, and any variances or local upgrade approvals from 310 CMR 15.000 allowed therewith, shall expire if the work authorized by it is not completed within the three-year period.

(3) The local Approving Authority or the Department may issue a written one year extension to the Disposal System Construction Permit required by 310 CMR 15.020(1) upon written request of the permittee, filed before the expiration date, and documenting the facts that prevent completion of the approved system within the time of the original permit. Only one extension may be granted.

(4) The local Approving Authority shall not issue a Disposal System Construction Permit until any approval(s) required by the Department pursuant to 310 CMR 15.000 have been issued.

15.020: continued

(5) Any person required to obtain a permit pursuant to 310 CMR 15.000 shall complete and submit the appropriate application forms to the Approving Authority. As part of an application for a permit or approval, the Approving Authority may require the applicant to provide information and analyses as it may reasonably require to determine whether such applicant meets the requirements of 310 CMR 15.000.

15.021: Certificates of Compliance

(1) No person shall discharge sewage to a new, upgraded or expanded system without first obtaining a Certificate of Compliance from the Approving Authority in accordance with 310 CMR 15.021(2) through (5). Certificates of Compliance shall be in a form approved by the Department. The Approving Authority shall provide the owner or operator a copy of the Department's operation and maintenance guide, or inform him or her where a copy can be obtained.

(2) Subsurface components of a system shall not be backfilled or otherwise concealed from view until a final inspection has been conducted by the Approving Authority and permission has been granted by the Approving Authority to backfill the system. The Designer shall inspect the construction after the initial excavation, prior to backfilling, and during backfilling. In addition, the final inspection of the system shall be conducted by the Approving Authority, the system installer and the Designer prior to the issuance of a Certificate of Compliance pursuant to 310 CMR 15.021(3). Any component of the system which has been covered without such permission shall be uncovered upon the request of the Approving Authority or the Department.

(3) Upon availability, the designer shall file an electronic registration for the system with the Department or an agent authorized by the Department, prior to signing the Certificate of Compliance in accordance with 310 CMR 15.021(4). Documentation of the registration must be provided to the Approving Authority and the system owner.

(4) Within 30 days of the final inspection of the system and prior to the issuance of a Certificate of Compliance, the Disposal System Installer and the Designer shall certify in writing on a form approved by the Department that the system has been constructed in compliance with 310 CMR 15.000, the approved design plans and all local requirements, and 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 prior to the issuance of a Certificate of Compliance. The as-built plans shall be prepared in accordance with 310 CMR 15.220 and, at a minimum, shall reflect any changes to the approved design plans and show the exact location and elevation of all system components. As-built plans are required to be submitted to the Approving Authority only when changes have been made to the approved plans. If no changes have been made to the approved plans, the approved plan showing the distances from a known structure to the system components shall be submitted to the Approving Authority in place of an as-built plan. Prior to the issuance of a Certificate of Compliance for a system, the Approving Authority shall make sufficient inspections of the system in accordance with 310 CMR 15.021(2) to determine that the work has been completed in compliance with the requirements of 310 CMR 15.000, the Disposal System Construction Permit, the approved design plans, and any local requirements.

(5) A Certificate of Compliance does not constitute a statement that the system will function as designed nor shall it in any way limit the powers or responsibilities of the local Approving Authority or the Department to enforce any requirement, or to take any other action to protect public health, safety, welfare or the environment.

(6) The Approving Authority shall give to the building inspector or other official of the municipality responsible for the issuance of a Certificate of Occupancy pursuant to 780 CMR 100 a copy of the Certificate of Compliance. No person shall apply for a Certificate of Occupancy to inhabit or use new construction until a Certificate of Compliance has been issued by the Approving Authority.

15.022: Duty of Compliance

Except as otherwise specified, the duty to comply with the provisions of 310 CMR 15.000 with regard to any system shall be upon the owner(s) and the operator(s) of a facility served by a system, jointly and severally.

15.023: Approving Authority Access

The local Approving Authority or the Department may at any reasonable time examine facilities served by systems in order to determine compliance with 310 CMR 15.000 and any permits, approvals or orders issued under 310 CMR 15.000 or under local authority. If access to a facility is denied or restricted, the local Approving Authority or the Department may seek a warrant in order to obtain access. The filing of an application for a Disposal System Construction Permit or other approval under 310 CMR 15.000 shall constitute the applicant's consent for entry at reasonable times for these purposes.

15.024: Violations of 310 CMR 15.000

Violations of Title 5 shall include but not be limited to the following:

(1) construction or use of a system in any manner that is not in compliance with an applicable Disposal System Construction Permit, Certificate of Compliance, or the terms and conditions of any other approval or order issued by the Approving Authority or the Department;

(2) construction or use of a system prior to obtaining the applicable Disposal System Construction Permit, Certificate of Compliance, or any other approval or order issued by the Approving Authority or the Department;

(3) use, modification, or alteration of a facility in such a way that a larger system is required under 310 CMR 15.000 using the design flows at 310 CMR 15.203 without the approval of the Approving Authority in accordance with 310 CMR 15.000;

(4) aggregation of facilities or division of a facility into separate facilities without complying with the provisions of 310 CMR 15.010;

(5) construction, upgrade, or expansion of a system without the prior approval of the Approving Authority or the Department in the form of a Disposal System Construction Permit or approval of an emergency repair;

(6) failure to upgrade systems or to take other necessary corrective actions as ordered or otherwise directed by the Approving Authority or the Department in accordance with 310 CMR 15.000;

(7) failure to obtain an inspection in accordance with 310 CMR 15.000 when and as required by 310 CMR 15.301;

(8) discharge of effluent directly or indirectly to the surface of the ground through ponding or surface breakout above the disposal area or to a surface water of the Commonwealth;

(9) violation of any other provision of 310 CMR 15.000;

(10) violation of the terms and conditions of a deed restriction, covenant or easement recorded or imposed pursuant to 310 CMR 15.000;

(11) failure to submit a soil evaluation to the Approving Authority as required by 310 CMR 15.018(2);

(12) failure to submit an inspection form to the Approving Authority as required by 310 CMR 15.301(10);

(13) making any false, inaccurate, incomplete or misleading statement in any submission required by 310 CMR 15.000;

(14) making any false, inaccurate, incomplete or misleading statement in any record, report, plan, file, log, register, or other document required to be kept pursuant to 310 CMR 15.000; or

(15) failure to provide any information required by the Approving Authority under 310 CMR 15.000.

15.025: Enforcement by Approving Authorities

(1) The provisions of 310 CMR 15.000 shall be implemented and enforced by the Approving Authority with oversight and assistance by the Department as necessary or as set forth in 310 CMR 15.000.

(2) Local Approving Authorities may enforce the provisions of 310 CMR 15.000 in the same manner in which local health rules and regulations are enforced.

(3) The Department may enforce the provisions of 310 CMR 15.000 under applicable provisions of M.G.L. c. 21, §§ 26 through 53; M.G.L. c. 21A, §§ 13, 13A and 16 and any other applicable law. In addition, the Department may require any person to provide information as the Department may reasonably require to determine whether that person is subject to or in violation of M.G.L. c. 21A, §§ 13, 13A and 16, 310 CMR 15.000, and/or M.G.L. c. 21, §§ 26 through 53 and the Department regulations promulgated thereunder.

(4) The local Approving Authority or the Department may document the noncompliance of an owner or operator of a system through the issuance of a notice of noncompliance which requests the recipient to perform actions necessary to come into compliance with 310 CMR 15.000. Such letter is not an order and is not appealable pursuant to 310 CMR 15.420 through 15.422.

(5) Whenever a Local Approving Authority fails to enforce 310 CMR 15.000 within a reasonable time, the Department may act to affect compliance with 310 CMR 15.000. Nothing in 310 CMR 15.025 shall be construed to limit the authority of the Department to take any action pursuant to M.G.L. c. 21 or other applicable law.

15.026: Orders

(1) The Local Approving Authority or the Department may issue orders requiring the owner or operator of a facility, or a system inspector, system installer, designers, soil evaluator, or the holder of a permit, approval or certification issued pursuant to 310 CMR 15.000 to come into compliance with the provisions of 310 CMR 15.000 or to take any other action necessary to protect public health, safety, welfare or the environment. Any person aggrieved by such orders may appeal to any court of competent jurisdiction pursuant to 310 CMR 15.421 if such order is issued by the local Approving Authority. Any person who is subject to an order issued by the Department may request an adjudicatory hearing pursuant to 310 CMR 15.422.

(2) Unless otherwise stated in 310 CMR 15.000, orders may be served on any person responsible for a violation of 310 CMR 15.000 in accordance with the following procedure:

(a) personally, by any person authorized to serve civil process, or

(b) by any person authorized to serve civil process by leaving a copy of the order at his or her last and usual place of abode, or

(c) by sending him or her a copy of the order by registered or certified mail, return receipt requested, if his or her last and usual place of abode can be determined based on a review of the local tax assessor's records, or

(d) if his or her last and usual place of abode is unknown, by posting a copy of the order in a conspicuous place on or about the facility and by advertising it for at least three out of five consecutive days in one or more newspapers of general circulation within the municipality wherein the affected facility is situated.

(3) Whenever an imminent threat to public health, safety, welfare or the environment exists, or could result during the pendency of a hearing on the order, the local Approving Authority or the Department may issue the order reciting the existence of the emergency and requiring that such action be taken as they may deem necessary.

(4) Notwithstanding any other provision of 310 CMR 15.000, any person to whom an order is directed shall comply therewith within the time specified in the order. Each day's failure to comply with the order shall constitute a separate offense and may result in penalties. Any person who is subject to an order issued by the Department may seek review pursuant to 310 CMR 15.421 or 15.422 (Appeals).

15.027: Prohibition of Septic System Additives

(1) It shall be a violation of 310 CMR 15.000 for any approved System Inspector, Soil Evaluator, Permitted System Installer or Septage Hauler to add, place, introduce or recommend the addition, placement or introduction of septic system additives to any system without the prior written determination of the Department that the additive has met the criteria set forth in 310 CMR 15.027(3). The Department shall maintain and publish a list of allowed septic system additives.

(2) It shall be a violation of 310 CMR 15.000 for any person to add, place or introduce septic system additives to any system without the prior written determination of the Department that the additive has met the criteria set forth in 310 CMR 15.027(3).

(3) The Department may allow a septic system additive when it is demonstrated to the Department's satisfaction that the additive will not:

(a) harm the components of the system;
(b) adversely affect the functioning of the system; or
(c) adversely affect the environment.

(4) A Department determination that an additive has met the criteria contained in 310 CMR 15.027 shall not constitute an endorsement or approval with respect to the effectiveness or performance of the additive. Representation by any person that such Department determination constitutes such endorsement or approval shall be a violation of 310 CMR 15.000.

15.028: Soil Absorption System Restoration

(1) It shall be a violation of 310 CMR 15.000 for any person or any approved System Inspector, Soil Evaluator, Permitted Installer or Septage Hauler to introduce, recommend the use of, or market for sale any physical, chemical or biological treatment process to restore or condition a soil absorption system that has not been approved by the Department for use as an alternative system pursuant to 310 CMR 15.280 through 15.288. Physical treatment includes a physical application to or alteration of the leaching field within the soil absorption system, but is not intended to include pumping, flushing, and routing of pipes or any mechanical methods of repairing existing components. The Department shall maintain and publish a list of allowed treatment processes.

(2) It shall be a violation of 310 CMR 15.000 for any person to use any physical, chemical or biological treatment process to restore or condition a soil absorption system that has not been approved by the Department for use as an alternative system pursuant to 310 CMR 15.280 through 15.288.

(3) A Department approval of the treatment process use as an alternative system pursuant to 310 CMR 15.280 through 15.288 shall not constitute an endorsement or approval with respect to the effectiveness or performance of the treatment process. Representation by any person that such Department determination constitutes such endorsement or approval shall be a violation of 310 CMR 15.000.

15.029: Construction of Wells Near Existing Systems

It is a violation of 310 CMR 15.000 for any person to construct or install a water supply well closer to a system component than the relevant setbacks set forth in 310 CMR 15.211.

15.030: Records

(1) The Approving Authority shall maintain records for each system within its jurisdiction and shall keep on file copies of the following documents:

(a) applications, plans and specifications for the construction, upgrade or expansion of on-site subsurface sewage disposal systems, including all forms and data submitted by the applicant and Soil Evaluator;
(b) disposal system construction permits;

15.030: continued

(c) as-built plans indicating all modifications to the approved plans subsequent to the issuance of a Disposal System Construction Permit;
(d) reports of construction inspections made prior to issuance of a Certificate of Compliance;
(e) Certificates of Compliance issued or denied;
(f) inspection forms and plans and specifications for the upgrade or expansion of failing or nonconforming on-site subsurface sewage disposal systems in compliance with 310 CMR 15.300 through 15.354;
(g) system pumping records;
(h) Letters of Non-compliance issued;
(i) local enforcement actions taken; and
(j) disposal system installers permits.

(2) The records listed in 310 CMR 15.030(1) shall be available for review upon request.

(3) The Approving Authority shall maintain the records set forth in 310 CMR 15.030(1) until such time as the system is abandoned in accordance with 310 CMR 15.000 or an approved connection is made to a sewer in accordance with 314 CMR 7.00: *Sewer System Extension and Connection Permit*.

15.040: Advisory Committee

An Advisory Committee shall be appointed by the Commissioner of the Department to consult with the Department regarding the implementation of 310 CMR 15.000 and to make recommendations regarding regulatory revisions as appropriate. The advisory committee shall at a minimum consist of representatives from health boards, environmental, real estate, and homebuilders organizations and a concerned citizen. The advisory committee shall meet at least quarterly and the members shall serve without compensation. The Commissioner may invite the heads of other state agencies to delegate representatives to the Advisory Committee.

15.050: Severability

The provisions of 310 CMR 15.000 are severable. If any provision of 310 CMR 15.000 is declared to be invalid or inapplicable to any particular circumstance, that invalidity or inapplicability will not effect the enforceability of the remainder of 310 CMR 15.000.

SUBPART B: SITING OF SYSTEMS

15.100: General Provisions

(1) Every location proposed for the construction, upgrade, or expansion of an on-site subsurface sewage disposal system shall be evaluated based upon an analysis of all site characteristics which may affect system function and performance in accordance with the evaluation criteria specified in 310 CMR 15.101 through 15.107.

(2) Each location shall be field evaluated for suitability for subsurface sewage disposal consistent with 310 CMR 15.000 by a Soil Evaluator approved by the Department in accordance with 310 CMR 15.017 prior to the commencement of final system design pursuant to Subpart C of 310 CMR 15.000 and application for a Disposal System Construction Permit. The evaluation shall include a soil profile on every proposed disposal area for which a Disposal System Construction Permit has not yet been issued.

15.101: Site Evaluation Criteria

(1) Every proposed disposal area shall be examined by a Soil Evaluator and the Approving Authority to determine if the disposal area is compatible with the proposed sewage disposal system in relation to the design flow set forth in 310 CMR 15.203 and system location criteria set forth in 310 CMR 15.106.

15.101: continued

(2) Every proposed disposal area shall be assessed based on the following field test and analysis criteria:

(a) deep observation hole testing;
(b) soil profile determination;
(c) percolation testing;
(d) landscape position; and
(e) hydrogeologic properties

(3) Site evaluation may be conducted at any time of the calendar year, provided that the Soil Evaluator makes and records on the site evaluation form proper consideration of the hydrogeologic properties of the specific site as required in 310 CMR 15.107 for the period of the water year within which the evaluation is performed.

15.102: Deep Observation Hole Test

(1) The purpose of the deep observation hole test is to determine in accordance with 310 CMR 15.103 the soil profile in the proposed disposal area, the depth of overburden above ledge, bedrock or impervious layer(s), and to determine the observed ground-water elevation at the time of testing and to gather evidence to determine the adjusted ground-water elevation.

(2) A minimum of two deep observation hole tests shall be performed in the presence of the Approving Authority at every proposed disposal area, two in the primary area and two in the reserve area. Additional testing shall be required if, in the opinion of the Soil Evaluator or the Approving Authority, there is evidence of inconsistent soil characteristics, the presence of ledge, or additional testing is necessary to properly assess site conditions within the proposed location to ensure that it can be installed entirely on soils and slopes in conformance with the requirements of 310 CMR 15.000. When a trench system is to be designed with the reserve area between the trenches, the Approving Authority may allow two deep hole observations if in the opinion of the Approving Authority the two deep holes adequately characterize the soils in both the primary and reserve areas.

(3) Deep observation holes shall be excavated in two adjoining segments, the first ending at approximately the five-foot level to allow detailed examination by the Soil Evaluator without need for shoring, and an adjoining segment which shall extend to a minimum depth of four feet below the bottom elevation of the proposed soil absorption system but in no case less than ten feet below existing/natural grade unless such depth is unattainable due to bedrock or refusal or high groundwater, or where human safety may be in jeopardy.

(4) Every deep observation hole shall be located from known and recoverable reference points or benchmarks so that it may be located on the system design plan with an accuracy of one foot. The location of the hole shall be defined as being half way between the side walls of the excavation at the point where the five foot deep segment adjoins the deeper segment.

(5) It shall be the responsibility of the owner or agent to ensure that every deep observation hole is secured to prevent accidents whenever work is not in progress.

15.103: Soil Profile

(1) The Soil Evaluator shall prepare a soil log using a form approved by the Department, in accordance with the Department's most recent manual for Soil Evaluators.

(2) The following characteristics of each recognizable soil horizon or substratum in the deep observation hole testing shall be determined and recorded on the form:

(a) depth and thickness of horizon;
(b) estimated soil textural class, using the USDA/NRCS system of classification;
(c) estimated volume percentage of coarse fragments;
(d) abundance, size and contrast of redoximorphic features, if present;
(e) soil structure (soil profile pits only); and
(f) soil consistence.

15.103: continued

(3) High ground-water elevation shall be determined by:

(a) soil color using the Munsell system, the abundance, size and contrast of redoximorphic features, if present;

(b) one or more of the following methods may be used to supplement the method in 310 CMR 15.103(3)(a) and shall be used when no redoximorphic features are present:

1. observation of actual water table during times of annual high water table;

2. the use of USGS wells for correlating comparisons in water tables during times when the water table is not at the annual high range;

3. a Department-approved method for determining inland high ground-water elevation as contained in Frimpter, M.H. “Probable High Groundwater Levels in Massachusetts,” Open File Report 80-1205, USGS or Frimpter, M.H. and G.C. Belfit, 1992, “Estimating highest ground-water levels for construction and land use planning, Cape Cod, Massachusetts,” updated, Barnstable, MA Cape Cod Commission Technical Bulletin 92-001”; or

4. a Department-approved method for determining coastal high groundwater elevation which incorporates tidal fluctuation information into the use of historical high groundwater data as contained in Frimpter, M.H. and G.C. Belfit, 1992, "Estimating highest ground-water levels for construction and land use planning, Cape Cod, Massachusetts," updated, Barnstable, MA, Cape Cod Commission Technical Bulletin 92-001 or, if the location of the system is affected by tidal cycle typically within 300 feet of mean high water of the ocean, monitoring the high groundwater elevation over a tidal cycle during a full moon high tide.

(4) The Soil Evaluator shall indicate on the soil log whether four feet of naturally occurring pervious materials exist in all areas observed throughout the area proposed for the soil absorption system.

15.104: Percolation Testing

(1) The standard percolation test is intended to give an approximate measure of the soil's percolating capacity. Unsaturated hydraulic conductivities vary dramatically from the saturated hydraulic conductivity with changes in soil characteristics and moisture content. Percolation testing may be conducted at any time of the year and the data obtained in accordance with the procedures specified by 310 CMR 15.000 may be deemed valid for an indefinite period provided the soils within the site evaluated remain undisturbed and unaltered. All percolation testing shall be performed in the presence of the Approving Authority.

(2) A percolation test shall provide data necessary to assess the suitability of the soil to transmit water from the soil absorption system and to a depth of four feet below this elevation. Where the soil varies with depth as indicated by the results of the deep observation hole testing performed pursuant to 310 CMR 15.102, percolation tests shall be conducted in the soil which is identified to be the most restrictive by the Soil Evaluator with the concurrence of the Approving Authority.

(3) Percolation tests shall be performed by a Massachusetts Registered Professional Engineer, Massachusetts Registered Sanitarian, a Soil Evaluator, or a person who:

(a) in the opinion of the Approving Authority is qualified to perform such tests;

(b) has one year of documented experience in satisfactorily performing such tests; and

(c) has used or gained skills that demonstrate sufficient competence to perform such tests.

(4) At least one percolation test shall be performed at every proposed disposal area, one in the primary area in which the soil absorption system is to be located and one in the proposed reserve area. Additional tests shall be required where soil conditions vary or as determined by the Approving Authority or where system design exceeds 2,000 gpd. In such instances, a minimum of three percolation tests, spaced uniformly over the proposed soil absorption area, shall be performed in addition to the test in the proposed reserve area.

(5) Where 310 CMR 15.104(4) or the Approving Authority requires multiple percolation tests, the results of the test providing the slowest rate shall be used for system design. Averaging of percolation test rates across the site is prohibited.

15.104: continued

(6) Percolation tests may be performed at any time of the year provided the soil to be tested is below the frozen soil layer.

(7) Percolation tests shall not be performed in holes that have remained open to the atmosphere for more than three consecutive days.

(8) Percolation tests shall not be performed in filled or disturbed ground.

15.105: Procedure for Performing a Percolation Test

A percolation test shall be conducted by performing the following steps in sequence:

(1) Prepare a test hole located within the proposed disposal area which, in the judgment of the Soil Evaluator and the Approving Authority, is the most limiting. The test hole shall have a diameter of 12 inches, as precisely as possible, with vertical sides 18 inches deep not including any allowable liners or filter layers on either the bottom or sides.

(2) Establish a fixed point at the top or bottom of the test hole from which all measurements will be taken.

(3) Scratch the bottom and sides of the test hole to remove any smeared soil surfaces, taking care not to significantly change the hole dimensions. Add two inches of coarse sand to protect the bottom from scouring, or insert a board or other impervious object in the hole so that water may be poured down or on it during the filling operation. A mesh or perforated liner designed to maintain the test hole dimensions in extremely loose soils while allowing essentially unrestricted flow of water may be used with permission of the Approving Authority.

(4) Carefully fill the hole with clear water to a minimum depth of 12 inches from the bottom of the hole. Maintain this minimum 12 inch or greater water level by adding water as necessary in order to saturate surrounding soils for a period of no less than 15 minutes after first filling the hole.

(5) After saturation, let the water level drop to a depth of nine inches and then measure the length of time in minutes for it to drop from a depth of nine inches to a depth of six inches. If the rate is erratic in the opinion of the Approving Authority, the hole shall be refilled and soaked until the drop per increment of time is steady. The time for the level to drop from a depth of nine inches to a depth of six inches, divided by three, is the percolation rate in minutes per inch.

(6) In certain soils, particularly coarse sands, the soil may be so pervious as to make a percolation test difficult, impractical, and meaningless. At the discretion of the Soil Evaluator and with the concurrence of the Approving Authority, the percolation test may be discontinued and a rate of two minutes per inch or less can be assumed provided that at least 24 gallons of water has been added to the percolation hole within 15 minutes and it is impossible to obtain a liquid depth of nine inches.

15.106: Landscape Position

(1) The topography of the proposed disposal area shall be identified and recorded on the evaluation form. Particular attention shall be given to recording features which may adversely affect the functioning of an on-site system. These include:

(a) bedrock outcrops or areas with many stones and/or boulders;

(b) steep slopes (greater than 3:1, horizontal to vertical) exhibiting signs of unstable soil such as landslide scars, slump blocks, tree trunks or shrubs bending downslope;

(c) highly disturbed ground as indicated by such features as remnants of foundations or pavements or buried construction debris;

(d) low-lying coastal areas exhibiting signs of tidal inundation or tidal marsh vegetation;

(e) low-lying inland areas exhibiting signs of influence of surface water runoff, ponding or freshwater wetland vegetation;

(f) flat low-lying areas adjacent to surface water bodies and streams; and

(g) the boundary of a velocity zone.

15.107: Hydrogeologic Properties

(1) The hydrogeologic properties of the proposed disposal area shall be identified and recorded on the evaluation form with respect to the following:

(a) estimated direction of ground-water flow;

(b) high ground-water elevation;

(c) estimated depth to bedrock if a factor in design of proposed system, or actual depth if encountered during deep observation hole tests;

(d) depth of unsaturated zone, including any perched water tables;

(e) drainage classification of dominant soil type as defined by NRCS;

(f) lateral distance to surface water and wetland delineation;

(g) location of every water supply, public and private,

1. within 400 feet of the proposed system location in the case of surface water supplies and gravel packed public water supply wells,

2. within 250 feet of the proposed system location in the case of tubular public water supply wells, and

3. within 150 feet of the proposed system location in the case of private water supply wells;

(h) approximate safe yield or design capacity of every public water supply, if information is available; and

(i) identification of proposed disposal area in relation to the location of nitrogen sensitive areas designated pursuant to 310 CMR 15.215.

(2) When observation wells are appropriate or necessary to determine the hydrogeologic properties of a site or region, such as direction of ground-water flow, perched ground-water tables and seasonal ground-water elevation fluctuations, the general guide for the proper use and installation of ground-water observation wells provided in Department guidance shall be followed.

SUBPART C: DESIGN, CONSTRUCTION, REPAIR, AND REPLACEMENT OF ON-SITE SEWAGE DISPOSAL SYSTEMS

15.201: Type of System

Each on-site subsurface sewage disposal system approved pursuant to 310 CMR 15.000 shall consist of a septic tank which discharges liquid effluent through a gravity distribution, dosing or pressure distribution network to a soil absorption system as hereinafter described. No modifications or alterations to the design criteria shall be allowed except pursuant to the alternative system and shared systems provisions of 310 CMR 15.280 through 15.293, or the local upgrade approval or variance procedures of 310 CMR 15.400.

15.202: Use of Recirculating Sand Filters

(1) A recirculating sand filter ("RSF") or equivalent alternative technology approved by the Department in accordance with 310 CMR 15.280 through 15.288 is a required component of all systems designed to serve a facility or facilities with a design flow of 2,000 gpd or more to be located in a Nitrogen Sensitive Area, provided that such RSF shall not be required for a facility for which subdivision approval has been obtained to construct dwellings with a cumulative total design flow of 2,000 gpd or greater if a disposal system construction permit to construct a system with a total design flow of less than 2,000 gpd in full compliance with 310 CMR 15.000 on each of the subdivision lots to be served by a system is obtained and such separate subdivision lots are to be conveyed to independent owners.

(2) A recirculating sand filter or equivalent alternative technology approved by the Department in accordance with 310 CMR 15.280 through 15.288, may be used to enhance nitrogen removal in systems in accordance with 310 CMR 15.217 (Systems with Enhanced Nitrogen Removal).

(3) Recirculating sand filters designed and approved in accordance with Department guidance are certified for general use.

15.202: continued

(4) Recirculating sand filters or equivalent alternative technology shall meet the following requirements:

(a) effluent discharge concentrations shall meet or exceed secondary treatment standards of 30 mg/L BOD_5 and 30 mg/L TSS. The effluent pH range shall be 6.0 to 9.0.

(b) total nitrogen concentration in the effluent shall not exceed 25 mg/L.

(c) system owners shall have effluent quality monitored quarterly for systems serving a facility with a design flow of less than 2,000 gallons per day, and both influent and effluent quality monitored quarterly for systems serving a facility with a design flow of 2,000 gallons per day or greater, for BOD_5, TSS, pH and total nitrogen, unless otherwise required or approved by the Department. Unless otherwise required by the Department, the system owner shall submit all monitoring results to the local Approving Authority and the Department by January 31st of each year for monitoring conducted during the previous calendar year.

(d) recirculating sand filter systems shall contain all components of a standard on-site system and be capable of functioning as a conventional system. Any departures from this provision require written approval from the Department.

(e) the system owner shall notify the local Approving Authority of any system failure within 24 hours of detection of such failure.

(f) pressure distribution, in accordance with 310 CMR 15.254, is required for all systems serving a facility with a design flow of 2,000 gallons per day or greater. Pressure distribution systems shall be designed in accordance with Department guidance.

(g) for systems serving a facility with a design flow of 2,000 gpd or greater, the separation from high groundwater as required under 310 CMR 15.212 shall be calculated after adding the effect of groundwater mounding to the high groundwater elevation as determined pursuant to 310 CMR 15.103(3).

(h) by January 31st of each year, unless otherwise determined by the Department, the system must be inspected at least annually by a Massachusetts certified operator of an appropriate grade to operate the system, unless the Department has approved in writing a reduction in frequency of inspection or the facility is subject to a Department approved comprehensive local plan of on-site system inspection, the system owner shall submit a certification by the system operator to the local Approving Authority and the Department for the previous calendar year stating that the system and its components are functioning as designed and were inspected in accordance with the Department's approval.

(i) an operation and maintenance manual shall be prepared by the system designer or a Massachusetts Registered Professional Engineer and submitted as part of the application.

15.203: System Sewage Flow Design Criteria

(1) Each component of an on-site subsurface sewage disposal system shall be designed to treat sanitary sewage discharged from all buildings to be served by the system using the System Sewage Flow Design flows set forth at 310 CMR 15.203(2) through (5), except as provided in 310 CMR 15.203(6). Actual water meter data shall not be substituted for the design flow criteria for the activities listed in 310 CMR 15.203(2) through (5) unless pursuant to 310 CMR 15.416. Design flow is equivalent to estimated generated flow for the proposed use plus a factor representing flow variations.

15.203: continued

TYPE OF ESTABLISHMENT	UNIT	GALLONS PER DAY	MINIMUM ALLOWABLE GPD FOR SYSTEM DESIGN
(2) RESIDENTIAL			
Bed & Breakfast	per bedroom	110	440
Bed & Breakfast with restaurant open to public add	per bedroom per seat	110 35	1000
Camp, resident, mess hall, washroom and toilets	per person*	35	
Camp, day, washroom and toilets	per person	10	
Camp, day, mess hall, washroom and toilets	per person	13	
Campground, showers and toilets	per site	90	
Family Dwelling, Single including, but not limited to, single family condominiums & cooperatives	per bedroom	110	330**
Family Dwelling, Multiple	per bedroom	110	***
Family Mobile Home Park	per mobile home	300	
Motel, Hotel, Boarding House	per bedroom	110	
Retirement Mobile Home Park	per site	150	
Housing for the Elderly	per two bedroom unit	150****	
Work or Construction Camp	per person	50	

* Person in the context of 310 CMR 15.203 means an individual.

** A system may be designed for flows of not less than 220 gpd, if a deed restriction essentially identical to the model Grant of Title 5 Bedroom Count Deed Restriction developed by the Department, is provided that limits the dwelling to two bed rooms as the term "bedroom" is defined in 310 CMR 15.002. A home office or home retail business whose only employees reside in the home, where no additional wastewater is generated other than toilet and hand washing waste, is not considered a change in the type of establishment and does not require the addition of flow for the purpose of designing the system.

*** The number of bedrooms in a condominium shall be as specified in the Master Deed. Establishment of bedrooms in excess of the specified number shall be considered an increase in design flow. A home office or home retail business whose only employees reside in the home, where no additional wastewater is generated other than toilet and hand washing waste, is not considered a change in the type of establishment and does not require the addition of flow for the purpose of designing the system.

**** One bedroom unit Housing for the Elderly, and units with more than two bedrooms shall be designed based on 110 gallons per day per bedroom.

(3) COMMERCIAL			
Airport	per passenger	5	150
Barber Shop/Beauty Salon	per chair	100	
Bowling Alley	per alley	100	
Country Club, dining room	per seat	10	
Country Club, snack bar or lunch room	per seat	10	
Country Club, lockers and showers	per locker	20	
Doctor Office	per doctor	250	
Dentist Office	per dentist	200	

15.203: continued

TYPE OF ESTABLISHMENT	UNIT	GALLONS PER DAY	MINIMUM ALLOWABLE GPD FOR SYSTEM DESIGN
(3) COMMERCIAL (continued)			
Factory, Industrial Plant, Warehouse or Dry Storage Space without cafeteria	per person	15	
Factory, Industrial Plant, Warehouse or Dry Storage Space with cafeteria	per person	20	
Gasoline Station	per island*****	75	300
with service bays	per bay	125	
***** Plus flows for bays, if any			
Kennel/Veterinary Office	per kennel	50	
Lounge, Tavern	per seat	20	
Marina	per slip	10	500
Movie Theater	per seat	5	
Non-single family/ automatic clothes washer	per washing machine	400	
Office building	per 1000 sq.ft.	75	200
Retail Store (except supermarkets)	per 1000 sq.ft.	50	200
Restaurant	per seat	35	1000
Restaurant, thruway service area	per seat	150	1000
Restaurant, Fast Food	per seat	20	1000
Restaurant, kitchen flow [for sizing of grease trap only]	per seat	15	
Service Station [no gas]	per bay	150	450
Skating Rink	per seat	5	3000
Supermarkets	per 1000 sq.ft.	97	
Swimming Pool	per person	10	
Tennis Club	per court	250	
Theater, Auditorium	per seat	3	
Trailer, dump station	per trailer	75	
(4) INSTITUTIONAL			
Place of worship without kitchen	per seat	3	
with kitchen	per seat	6	
Correctional Facility	per bed	200	
Function Hall	per seat	15	
Gymnasium	per participant	25	
Gymnasium	per spectator	3	
Hospital	per bed	200	
Nursing Home/Rest Home	per bed	150	
Assisted Living Facilities	per bed	150	
Public Park, toilet waste only	per person	5	

15.203: continued

TYPE OF ESTABLISHMENT	GALLONS UNIT	MINIMUM ALLOWABLE GPD FOR SYSTEM PER DAY	DESIGN
(4) INSTITUTIONAL (continued)			
Public Park, bathhouse, showers and flush toilets	per person	10	
Day Care Facility	per person	10	
(5) SCHOOLS******			
Elementary School, without cafeteria, gymnasium or showers	per person	5	
Elementary School, with cafeteria but no gymnasium with showers	per person	8	
Elementary School, with cafeteria, gymnasium and showers	per person	10	
Secondary/Middle School, without cafeteria, gymnasium or showers	per person	10	
Secondary/Middle School, with cafeteria but no gymnasium or showers	per person	15	
Secondary/Middle School, with cafeteria, gymnasium and showers	per person	20	
Boarding Schools, Colleges	per person	65	

****** All schools to be served by an alternative technology approved pursuant to 310 CMR 15.280 through 15.288 shall have an equalization basin as part of the system design and have it installed prior to the treatment device.

(6) Facilities other than those listed in 310 CMR 15.203(2) through (5), and nonresidential facilities with unique design features that result in significantly different design flows than those listed above may apply to the Department for a determination of design flow using actual meter readings of established flows from existing or similar installations without the need for a variance pursuant to 310 CMR 15.410 or 15.416. Prior to making a determination the Department will consult with the local Approving Authority. For state and federal facilities, the Department may also establish system design flows other than those listed above using actual meter readings of established flows from existing or similar installations. Any design flow established by the Department pursuant to 310 CMR 15.203(6), shall be based on 200% of average water meter readings in order to assimilate maximum daily flows or on other methods determined to be appropriate by the Department.

(7) In schools, flows generated from sinks or other drains receiving wastes from science laboratories, graphics arts classrooms, or vocational school activities, including, but not limited to, automotive repair painting, or metal fabrication are classified industrial wastes and shall be directed pursuant to an appropriate permit, to a sewer, if a sewer connection is feasible and, if not, then to an industrial waste holding tank in accordance with 314 CMR 18.000: *Industrial Wastewater Holding Tank and Container Construction, Operation, and Record Keeping Requirements* or an approved hazardous waste collection receptacle.

15.204: Increases in Design Flow to System

No person shall increase the actual or design flow to any cesspool or to any other system above the existing approved capacity, or change the type of establishment of a facility served by a cesspool, unless the cesspool or system is upgraded first. Upgrades to accept increased design flow shall be performed in full compliance with the requirements applicable to new construction unless a variance is allowed pursuant to 310 CMR 15.414. For purposes of 310 CMR 15.204, the approved design flow shall be the flow listed in the most recent Disposal Works Construction Permit.

15.211: Minimum Setback Distances

(1) All systems must conform to the minimum setback distance for septic tanks, holding tanks, pump chambers, treatment units and soil absorption systems, including reserve area, measured in feet and as set forth below. Where more than one setback applies, all setback requirements shall be satisfied.

	Septic Tank Holding Tank Pump Chamber Treatment Unit Grease Traps	Soil Absorption System
Property Line	10[5]	10[5]
Cellar or Crawl Space Wall, Swimming Pool (inground), foundation drain	10	20
Slab Foundation	10	10
Water Supply Line (pressure)	10[1]	10[1]
Surface Waters (except wetlands)	25	50
Bordering Vegetated Wetland (BVW), Salt Marshes, Inland and Coastal Banks	25	50
Surface Water Supply - Reservoirs and Impoundments	400	400
Tributaries to Surface Water Supplies	200	200
Wetlands bordering Surface Water Supply or Tributary thereto	100	100
Certified Vernal Pools	50	100[2]
Private Water Supply Well or Suction Line	50	100
Public Water Supply Well	(2)	(2)
Irrigation Well	10	25
Open, Surface or Subsurface Drains which discharge to Surface Water Supplies or tributaries thereto	50	100
Other Open, Surface or Subsurface Drains (excluding foundation drains) which intercept seasonal high groundwater table [3]	25	50
Other Open, Surface or Subsurface Drains (excluding foundation drains)	5	10
Leaching Catch Basins & Dry Wells	10	25
Downhill Slope	not applicable	15[4]

[1] Disposal facilities shall be at least 18 inches below water supply lines. Wherever sewer lines must cross water supply lines, both pipes shall be constructed of class 150 pressure pipe and shall be pressure tested to assure watertightness.

[2] The required setback shall be 50 feet where the applicant has provided hydrogeologic data acceptable to the Approving Authority demonstrating that the location of the soil absorption system is hydraulically downgradient of the vernal pool. Surface topography alone is not determinative.

15.211: continued

[3] Surface or subsurface drains which will regularly or periodically intercept the seasonal high groundwater table and carry that groundwater away from an area must meet the specified setbacks.

[4] The setback distance shall be measured from a naturally-occurring downhill slope which is not steeper than 3:1 (horizontal:vertical). A minimum 15 foot horizontal separation distance shall be provided between the top of the two inch layer of ⅛ to ½ inch washed stone above the pipe, or the geotextile material above the pipe or the top of the chamber and the adjacent downhill slope. For a system located in an area with any adjacent naturally occurring downhill slope steeper than 3:1, slope stabilization shall be provided in accordance with best engineering practice which may include construction of a retaining wall designed by a Massachusetts Registered Professional Engineer.

[5] Locating a system component or any part thereof beyond a property line of the facility, whether pursuant to an easement or otherwise, requires a variance issued in accordance with 310 CMR 15.410, except that the placement of fill or grading material beyond the property line of the facility, pursuant to an easement or otherwise, shall not require a variance under 310 CMR 15.410.

(2) No system shall be constructed within a Zone I of a public water supply well or wellfield. No system shall be upgraded or expanded within a Zone I of a public water supply well or wellfield unless a variance is granted pursuant to 310 CMR 15.410 through 15.415.

(3) All setback distances from water bodies shall be measured from the bank of the water body. All setback distances from wetlands shall be measured in accordance with the criteria of the Wetlands Protection Act and 310 CMR 10.00: *Wetlands Protection*, from the most landward edge of the following features: bordering vegetated wetland as defined in 310 CMR 10.55(2): *Definition, Critical Characteristics and Boundary*; salt marsh as defined in 310 CMR 10.32(2): *Definitions*; top of inland bank as defined in 310 CMR 10.54(2): *Definition, Critical Characteristics and Boundary*; or top of coastal bank as defined in 310 CMR 10.30(2): *Definition*. In the event of disputes concerning landward boundary of resources subject to the Wetlands Protection Act, the boundary shall be as delineated by the municipal Conservation Commission or the Department in accordance with 310 CMR 10.00: *Wetlands Protection*, and relevant interpretive guidance documents.

15.212: Depth to Groundwater

(1) The minimum vertical separation distance between the bottom of the stone underlying the soil absorption system above the high ground-water elevation shall be

(a) four feet in soils with a recorded percolation rate of more than two minutes per inch;

(b) five feet in soils with a recorded percolation rate of two minutes or less per inch.

(2) For systems with a design flow of 2,000 gpd or greater, the separation from high groundwater as required by 310 CMR 15.212(1) shall be calculated after adding the effect of groundwater mounding to the high groundwater elevation as determined pursuant to 310 CMR 15.103(3).

15.213: Construction in Velocity Zones and Floodways

(1) No septic tank or humus/composting toilet shall be constructed in a velocity zone on a coastal beach, barrier beach, or dune, or in a regulatory floodway, except a septic tank that replaces a tank in existence on the site as of March 31, 1995 that has been damaged, removed or destroyed, where placement of the tank outside of the velocity zone or regulatory floodway, either horizontally or vertically, is not feasible. Where reconstruction of a system in existence on March 31, 1995 occurs or reconstruction of a building or buildings is allowed in accordance with the Wetlands Protection Act and 310 CMR 10.00: *Wetlands Protection*, it shall be presumed to be feasible to elevate the tank if the building is elevated above the velocity zone or regulatory floodway.

(2) No soil absorption system shall be constructed in a velocity zone on a coastal beach, barrier beach, or dune, or in a regulatory floodway, unless

(a) the system is to serve a building or buildings that were in existence on March 31, 1995 or reconstruction of such building or buildings where allowed in accordance with the Wetlands Protection Act, M.G.L. c. 140, § 131 and its implementing regulations as 310 CMR 10.00: *Wetlands Protection*;

15.213: continued

(b) there is no increase in design flow from such building or buildings;
(c) no connection to a public sewer or shared system is available;
(d) the owner or applicant cannot site the system elsewhere;
(e) the septic tank or humus/composting toilet is sited outside of the velocity zone or regulatory floodway, either horizontally or vertically;
(f) the system achieves separation from high groundwater elevation as required by 310 CMR 15.212; and
(g) any portion of the soil absorption system that is within the velocity zone or regulatory floodway is a leaching bed or trench system or any other system constructed in accordance with the Wetlands Protection Act and 310 CMR 10.00: *Wetlands Protection*.

15.214: Nitrogen Loading Limitations

(1) No system serving new construction in Nitrogen Sensitive Areas designated in 310 CMR 15.215 shall be designed to receive or shall receive more than 440 gallons of design flow per day per acre except as set forth at 310 CMR 15.216 (aggregate flows) or 15.217 (enhanced nitrogen removal).

(2) No system serving new construction in areas where the use of both on-site systems and drinking water supply wells is proposed to serve the facility shall be designed to receive or shall receive more than 440 gallons of design flow per day per acre from residential uses except as set forth at 310 CMR 15.216 (aggregate flows) or 15.217 (enhanced nitrogen removal).

(3) It shall be the duty of the owner of the system or proposed system to ascertain whether or not the facility to be constructed will be in a nitrogen sensitive area. The Department will prepare and make available at locations generally accessible to the public maps portraying designated nitrogen sensitive areas within the Commonwealth.

15.215: Designation of Nitrogen Sensitive Areas

The following areas have been determined by the Department to be particularly sensitive to the discharge of pollutants from on-site sewage disposal systems and are therefore designated nitrogen sensitive. The necessity of providing increased treatment of pollutants and reduction in nutrients discharged from on-site sewage disposal systems, including nitrogen, nitrogen as nitrate, phosphorous and pathogens in these areas warrants the imposition of the loading restrictions set forth in 310 CMR 15.214.

(1) Interim Wellhead Protection Areas and Department approved Zone IIs of public water supplies;

(2) Nitrogen sensitive embayments or other areas which are designated as nitrogen sensitive for purposes of 310 CMR 15.000 shall be mapped based on scientific evaluations of the affected water body and adopted through parallel public processes pursuant to both 310 CMR 15.000 and 314 CMR 4.00: *Massachusetts Surface Water Quality Standards*.

15.216: Aggregate Determinations of Flows and Nitrogen Loadings

(1) The 440 gallons per day per acre nitrogen loading limitation imposed by 310 CMR 15.214 may be calculated in the aggregate by using nitrogen credit land in accordance with an approved Facility Aggregation Plan or Community Aggregation Plan. Applicants proposing systems to be located within a community or region covered by a Community Aggregation Plan approved by the Department shall calculate aggregate determinations of flows and nitrogen loadings in accordance with the Plan and the Department's *Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading*. All other applicants seeking aggregate determination of flows and nitrogen loading shall prepare a Facility Aggregation Plan in accordance with 310 CMR 15.216 and the Department's *Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading*.

15.216: continued

(2) To qualify as Nitrogen Credit Land, the land must:

(a) be within the same Nitrogen Sensitive Area as the facility if the facility is in a Nitrogen Sensitive Area;

(b) be within the same subdivision in an area where the use of both on-site systems and drinking water wells are proposed to serve the facility;

(c) not have any manmade sources of nitrogen, including, but not limited to, wastewater discharges and nitrogen based fertilizer located thereon;

(d) not be used for raising, breeding or keeping of animals;

(e) be pervious;

(f) be outside of Zone As, Velocity Zones and Regulatory Floodways;

(g) not be covered by any surface water body including, but not limited to, a river, stream, lake, pond, or ocean;

(h) not be currently designated as nitrogen credit land; and

(i) meet the criteria set forth in the Department's *Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading*.

(3) Land located within a Zone I of a public water supply well may be used as nitrogen credit land unless the well is determined to be at risk in accordance with the Department's "Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading" or the proposed design flow is 2,000 gallons per day or greater.

(4) Community Aggregation Plans.

(a) A city or town may seek Department approval for aggregate determination of flows and nitrogen loading across a region wide area such as, but not limited to, a Zone II of a public water supply well. Department approval of a Community Aggregation Plan may authorize the local Approving Authority to approve site specific facility aggregation plans in accordance with the approved Community Aggregation Plan.

(b) The Department may approve a Community Aggregation Plan provided that the following conditions are met:

1. the local Approving Authority has approved the Plan;
2. the Plan contains a mechanism to protect surface and ground water supplies within the community or region from pollutant and nitrogen loading and a proposed mechanism for implementing the Plan;
3. the Plan meets the criteria in the Department's "Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading;"
4. for areas that include a Zone II, the Plan includes a nitrate loading analysis and nitrate management plan as specified in 310 CMR 22.21(2)(d); and
5. any other conditions that the Department deems appropriate.

(5) Facility Aggregation Plans. The Approving Authority may approve a Facility Aggregation Plan provided that the following conditions are met:

(a) The proposed facility meets the criteria in the Department's *Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading*,

(b) the design flow of 440 gallons per day per acre equivalency across the facility and other land areas for which nitrogen credit is sought, but not necessarily on every individual acre, will be met through recorded land use restrictions that restrict nitrogen loading on facility land and nitrogen credit land. These land use restrictions must be substantially identical to those contained in the Department's *Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading*, run in perpetuity, be approved by the respective land owners, run to the benefit of the municipality acting by and through the Local Approving Authority and, in the case of nitrogen credit land, also run to the benefit of the facility land. The applicant shall record or register such restrictions and easements in the appropriate Registry of Deeds or Land Registration Office within 30 days of approval of the plan; and

(c) any other conditions that the Approving Authority deems appropriate.

15.217: Systems with Enhanced Nitrogen Removal

(1) The nitrogen loading limitations established in 310 CMR 15.214 shall not apply to discharge of an effluent meeting the federal Safe Drinking Water Act nitrate standard of 10 ppm through either an approved alternative system or a treatment works with a groundwater discharge permit issued pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*.

(2) An increase in calculated allowable nutrient loading per acre may be allowed with the use of a technology approved for enhanced nutrient removal pursuant to either the piloting, provisional or general use certification provisions in 310 CMR 15.281 through 15.288 as illustrated by the following example:

Recirculating Sand Filter	550 gpd/acre

In the event that the Department determines that a system approved for enhanced nutrient removal using a technology approved by the Department on a piloting or provisional basis pursuant to 310 CMR 15.285 and 15.286 respectively is not performing in accordance with the approval, the Department or the Local Approving Authority may require the system owner to instead use an enhanced nutrient removal technology that has been certified for general use by the Department. The increased design flow allowed reflects the nutrient removal performance of the approved technology compared to a standard system otherwise described in 310 CMR 15.100 through 15.255. A system receiving a design flow credit for enhanced nutrient removal pursuant to 310 CMR 15.217 must still comply with the requirements of 310 CMR 15.100 through 15.293 with respect to system siting and design; the credit does not affect any other siting or design requirement.

15.220: Preparation of Plans and Specifications

The plans and specifications for every on-site system shall be prepared as follows:

(1) Every system shall be designed by a Massachusetts Registered Professional Engineer or a Massachusetts Registered Sanitarian provided that a Registered Sanitarian shall not design a system to discharge more than 2,000 gallons per day pursuant to 310 CMR 15.203. Any other agent of the owner may prepare plans for the repair of one or more components, excluding the soil absorption system, of a system designed to discharge not more than 2,000 gallons per day pursuant to 310 CMR 15.203 provided the plans are reviewed and stamped by a Massachusetts Registered Sanitarian or Massachusetts Registered Professional Engineer and approved by the Approving Authority.

(2) Every plan submitted for approval must be dated and bear the stamp and signature of the designer. At least one copy submitted shall bear the original stamp and signature of the designer.

(3) Every plan for a new system or plan for the upgrade or expansion of an existing system which requires a variance to a property line setback distance, must also reference a plan which bears the stamp and signature of a Massachusetts Licensed Land Surveyor in accordance with M.G.L. c. 112, § 81D;

(4) Every plan for a system shall be of suitable scale (one inch = 40 feet or fewer for plot plans and one inch = 20 feet or fewer for details of system components) and shall include depiction of:

(a) the legal boundaries of the facility to be served;

(b) the holder and location of any easements appurtenant to or which could impact the system;

(c) the location of all dwelling(s) and building(s) existing and proposed on the facility and identification of those to be served by the system;

(d) the location of existing or proposed impervious areas, including driveways and parking areas;

(e) location and dimensions of the system (including reserve area);

(f) system design calculations, including design daily sewage flow, septic tank capacity (required and provided); soil absorption system capacity (required and provided); and whether system is designed for garbage grinder;

(g) North arrow and existing and proposed contours;

15.220: continued

(h) location and log of deep observation hole tests including the date of test, existing grade elevations marked on each test, and the names of the representative of the Approving Authority and soil evaluator;
(i) location and results of percolation tests including the date of test and the names of the representative of the Approving Authority and soil evaluator;
(j) name and approval date of the Soil Evaluator of record;
(k) location of every water supply, public and private,
1. within 400 feet of the proposed system location in the case of surface water supplies and gravel packed public water supply wells,
2. within 250 feet of the proposed system location in the case of tubular public water supply wells, and
3. within 150 feet of the proposed system location in the case of private water supply wells;
(l) any surface waters of the Commonwealth, Zone As, rivers, bordering vegetated wetlands, salt marshes, inland or coastal banks, regulatory floodway, velocity zone, surface water supplies, tributaries to surface water supplies, certified vernal pools, private water supplies or suction lines, gravel packed or tubular public water supply wells, and subsurface drains located up to 100 feet beyond the setback distances in 310 CMR 15.211, any leaching catch basins and dry wells located up to 25 feet beyond the setback distances in 310 CMR 15.211; and the location of any nitrogen sensitive area identified in 310 CMR 15.215 within which any portion of the facility or the proposed system is located as well as any nitrogen sensitive area up to 100 feet beyond any property line of the facility.
(m) location of water lines and other subsurface utilities on the facility;
(n) observed and adjusted ground-water elevation in the vicinity of the system;
(o) a complete profile of the system;
(p) a note on the plan listing all variances to the provisions of 310 CMR 15.000 sought in conjunction with the plan;
(q) the location and elevation of one benchmark within 50 to 75 feet of the system components which is not subject to dislocation or loss during construction on the facility;
(r) when pressure distribution or dosing is proposed, complete design and specifications of the distribution system proposed including but not limited to dosing chamber capacity (required and provided), pump curves and specifications, number of dosing cycles and depth per cycle;
(s) when a Recirculating Sand Filter or equivalent alternative technology is required or proposed, a complete plan and specifications for the system, including a hydraulic profile;
(t) a locus plan to show the location of the facility including the nearest existing street;
(u) the street number and lot number, if any, and the tax map number and lot number, if any, of the facility; and
(v) the materials of construction and the specifications of the system.

15.221: General Construction Requirements for All System Components

(1) All tanks, including septic tanks, distribution boxes, pump chambers, dosing chambers and grease traps, shall be either:
(a) watertight through manufacturer's specification and warranty; or
(b) made watertight by the manufacturer, equipment supplier or installer using asphalt or synthetic polymer sealer specified by the concrete or synthetic material manufacturer.

(2) Septic tanks, grease traps, pump chambers, dosing chambers and distribution boxes shall be constructed or set level and true to grade on a level stable base which has been mechanically compacted. If the component is placed in fill, proper compaction is required to ensure stability and to prevent settling; native ground with a six inch aggregate base is otherwise adequate.

(3) Septic tanks, grease traps, pump chambers and dosing chambers shall be equipped with a watertight access manhole(s) with a minimum diameter of 20 inches and constructed of durable material.

(4) All system components shall be constructed of corrosion resistant materials.

15.221: continued

(5) All piping shall be a minimum of SDR 35 PVC in areas not subject to automobile or heavy equipment traffic. In areas where such traffic exists or is anticipated, Schedule 40 PVC, or an equivalent standard approved by the Department, shall be used.

(6) All pressurized pipes shall be designed and installed to meet the following requirements:
(a) to prevent freezing by being installed below the frost line, by being adequately insulated if installed above the frost line, or be self-draining;
(b) to specify the appropriate class or schedule of pipe to withstand maximum pressure and/or anticipated vehicular loads; and
(c) to specify appropriate thrust blocking at all angles, bends, branches, plugs and wherever else necessary to prevent disruption of proper functioning of the line.

(7) The top of all system components, including the septic tank, distribution box, pump chamber, dosing chamber and soil absorption system, shall be installed no more than 36" below finish grade.

(8) Where any portion of any component is to be placed at or below the ground-water table, all system tankage, including the septic tank, distribution box, pump chamber or grease trap, shall be designed with counter weights, anchors or ballast and a buoyancy calculation for the entire volume of each component, when empty, shall be performed and submitted with the system plans and specifications.

(9) Recirculating sand filters or equivalent technology shall be used in accordance with the provisions of 310 CMR 15.202 and Department guidance.

(10) Except as provided in 310 CMR 15.232(3), all pipes connecting system components shall be designed to provide a minimum flow velocity of two feet per second when flowing full.

(11) All septic tanks, tight tanks, pump chambers, dosing chambers and grease traps shall be watertight.

(12) All system components shall be marked with magnetic marking tape or a comparable means in order to locate them once buried.

(13) For septic tanks and d-boxes equipped with risers, the risers shall be no deeper than six inches below ground surface.

15.222: Building Sewers

(1) The building sewer shall be sufficient to serve the connected fixtures. In no case shall the building sewer be less than four inches in diameter.

(2) The minimum distance between a building sewer, and a private water supply well or suction line shall be ten feet.

(3) The building sewer shall be constructed of corrosion resistant material and equipped with water tight joints; cast-iron, schedule 40 PVC pipe or the equivalent.

(4) All pipe joints of the building sewer shall be made water-tight and protected against damage by roots. Poured-type joints shall be properly wiped on the inside to eliminate obstruction of flow.

(5) The building sewer shall be laid on a compacted firm base.

(6) The building sewer shall be designed to provide a minimum velocity of sewage flow of two feet per second when flowing full. This requirement is met when a four-inch building sewer is laid at a slope of not less than 0.01 (⅛ inch per foot). A slope of 0.02 (¼ inch per foot) is preferable.

15.222: continued

(7) The building sewer shall be laid on a continuous grade and as nearly as possible in a straight line in accordance with accepted engineering practice.

(8) Manholes, with metal frames and covers at grade, sweeping bends, or a cleanout accessible at the surface of the ground, shall be provided at the junction of two or more sewers, at all changes in direction or a change in grade of the sewers, and at intervals no greater than 100 feet. All gravity sewer manholes shall have an open channel depth equal to or greater than the diameter of the inlet sewer and the change of direction in each manhole shall not exceed 90°. (Change of direction is the interior angle between the new direction of flow and the projected extension of the original direction of flow.)

(9) The building sewer shall be vented through the vent stack or main vent of the building served by it. No trap shall be installed in the building sewer or building drain.

(10) All building sewers shall be constructed in accordance with the State Plumbing Code, 248 CMR 2.00.

15.223: Septic Tanks

(1) Septic tanks shall have the following capacities:

(a) For a single family dwelling unit with a design flow of less than 1,000 gallons per day, a minimum effective liquid capacity of 200% of the design flow or a minimum hydraulic detention flow of 48 hours, whichever is greater, shall be required. In no case shall the effective liquid capacity of the tank as measured below the outlet invert elevation be less than 1,500 gallons.

(b) When designed to serve facilities other than a single family dwelling unit or whenever the calculated design flow is 1,000 gallons per day or greater, a two compartment tank or two tanks in series are required. The design of the tanks shall be in accordance with 310 CMR 15.224 for multiple compartment tanks and 310 CMR 15.225 for tanks in series. At a minimum, the total, combined effective liquid capacity of both tanks in series or of the multiple compartment tank shall not be less than 1,500 gallons.

(c) When a domestic garbage grinder is proposed or installed, the minimum liquid capacity of the septic tank shall be 200% of the design flow with a minimum tank size of 1,500 gallons and a two compartment tank or two tanks in series shall be required which meet the design criteria specified in 310 CMR 15.223(1)(b). Domestic garbage grinders are prohibited in facilities which include an elevated septic tank constructed in accordance with 310 CMR 15.213 (construction in V-zones).

(2) The liquid depth of the tank, measured from the outlet tee invert to the tank bottom, shall be a minimum of four feet. A tank with a minimum depth of three feet below the outlet tee invert may be permitted only for upgrade of existing nonconforming or failed systems, pursuant to 310 CMR 15.405 (local upgrade approvals), where installation of a tank with a four foot liquid depth is not feasible and shall be pumped on an annual basis with the results submitted to the Approving Authority.

(3) Tanks which are rectangular in cross-section shall have a minimum inside length to width ratio of no less than 1.5 to 1. Round tanks may be allowed. The inside length of all tanks, measured from the inlet tee to the outlet tee, shall be a minimum of six feet. The inside width of the tank shall be a minimum of three feet. Larger length to width ratios are preferred.

(4) Vertical cylindrical tanks shall have a minimum diameter of five feet.

(5) Horizontal cylindrical tanks shall have a minimum length of six feet and a minimum width at the liquid surface of three feet.

15.224: Multiple Compartment Tanks

Tanks with multiple compartments shall be required as specified in 310 CMR 15.223(1). When multiple compartment tanks are used the following shall be required:

15.224: continued

(1) The number of compartments shall not exceed two;

(2) The first compartment shall be sized for a minimum hydraulic detention time of 48 hours based on the design flow;

(3) The second compartment shall be sized for a minimum hydraulic detention time of 24 hours based on the design flow;

(4) The compartments shall be interconnected by a minimum four inch vented, inverted U-shaped pipe which extends below the bottom of the scum layer; and

(5) The outlet tee of each compartment shall be equipped with a corrosion resistant gas baffle or a Department approved effluent tee filter.

15.225: Tanks in Series

Tanks in series may be approved to satisfy the requirements of 310 CMR 15.224 provided that:

(a) the number of tanks does not exceed two; and

(b) the design criteria of each tank corresponds to the requirements for compartmental tanks in 310 CMR 15.224.

15.226: Construction of Septic Tanks

(1) Septic tanks shall be constructed of sound and durable watertight materials not subject to excessive corrosion, decay, or frost damage, or cracking or buckling due to settlement or backfilling. Septic tanks may be constructed of the following materials:

(a) poured-in-place concrete;
(b) precast reinforced concrete;
(c) fiberglass reinforced plastic;
(d) polyethylene; or
(e) other materials as approved in writing by the Department.
(f) metal septic tanks are prohibited.

(2) Tank construction materials shall meet the following minimum specifications or an ASTM equivalent standard:

(a) Concrete
1. Concrete Strength f'c 4,000 PSI @ 28 days. Density 140 PCF
2. Cement, Portland Type I or III per ASTM C150-96
3. Admixtures per ASTM C233-95
4. Reinforcing per ASTM A615 for wire fabric. Grade 40/60 R'd or equivalent.
5. Design loading H-10
6. Minimum wall thickness: four inches; three inch thickness is allowable if reinforced.
7. The tank shall be watertight.

(b) Fiberglass Reinforced Plastic.

1. Unless otherwise indicated, plastics terminology is in accordance with the definitions given in the most recent edition of ASTM D 883 or equivalent method.

2. Fiberglass reinforced plastic (FRP) tanks shall be made of a chemical resistant grade of polyester resin reinforced with a suitable grade of glass fiber (E glass) treated with a coupling agent that will provide a compatible bond between the resin and the glass. Glass fiber surfacing materials, if used, shall be of a chemical resistant glass (C glass) bonded with a suitable binder.

3. The resins shall not contain fillers except as required for viscosity control. Up to 2% by weight of the total resin content of thixotropic agent that will not interfere with visual inspection may be added to the resin for viscosity control.

4. The tank shall be constructed as a laminate consisting of the following:

a. Primary chemical resistant surface between 0.13 and 0.30 mm of a reinforced resin rich surface.

15.226: continued

b. Internal wicking barrier shall be not less than 2.5 mm of chemical resistant laminate next to the inner surface and reinforced by not less than 20% and not more than 30% by weight of mat and chopped strand.

c. Structural layer of chemically resistant construction of minimum ¼ inch thickness meeting a tensile strength of a minimum of 12,000 psi when tested in accordance with the most recent edition of ASTM D-638. It shall meet a flexural strength minimum of 19,000 psi and flexural modulus of elasticity of 800,000 psi both of which tested in accordance with the most recent edition of D-790.

d. External wicking barrier as in 310 CMR 15.226(2)(b)4.b.

e. Exterior surface layer between 0.13 and 0.30 inch thick consisting of resin. No glass fibers are allowed in this layer.

5. All cut edges shall be treated and shall be coated with resin so that no glass fibers are exposed and all voids are filled. Structural elements having edges exposed to the chemical environment shall be made with chopped strand glass reinforcement only.

6. The tank laminate shall have a Barcol Hardness of at least the manufacturers minimum specified hardness for cured resins when tested in accordance with the most recent edition of ASTM D-2583.

7. The tank shall be free from visual defects. The most recent edition of ASTM D-2563 visual acceptance level 3 shall be the minimum standard for acceptance.

8. The tank shall be watertight.

(c) Polyethylene.

1. The polyethylene used shall be Type II or III and category three per the most recent edition of ASTM D-1248, Class B (requiring an ultraviolet stabilizer) or Class C (requiring a minimum of 1% carbon black), and shall have a stress crack resistance of 150 hours, Condition C (20% failure rate) when measured in accordance with the most recent edition of ASTM D-1693 and ASTM-638 with a value of equal to or greater than 2400 psi; ASTM-790, with a flexural modulus of elasticity equal to or greater than 85,000 psi.

2. Wall thickness of the sides, top and bottom shall be a minimum of ¼ inch. The thickness of the inlet and outlet ends shall be at least ¼ inch and the thickness of internal walls shall be at least 3/16 inches.

3. The tank shall be watertight.

(3) Tanks, covers, connections and piping shall be designed and constructed so as to withstand an anticipated minimum H-10 loading. Any tank installed in a location where there is the potential for vehicles or heavy equipment to pass over it shall be designed to withstand an H-20 loading.

(4) Septic tanks shall be manufactured in accordance with a quality control/quality assurance program. The program for concrete tanks shall be in conformity with ASTM standard C 1227-96 or an ASTM equivalent standard. Concrete tanks shall be embossed with a seal stating that this ASTM standard has been met.

15.227: Placement and Construction of Tees

(1) Inlet and outlet tees shall be Schedule 40 PVC and shall extend a minimum of six inches above the flow line of the septic tank and be on the center line of the septic tank located directly under the clean-out manhole. Tranverse flow baffles shall not be used as substitutes for inlet or outlet tees.

(2) The minimum separation between inlet and outlet tees shall be no less than the liquid depth of the septic tank and shall be the longest direction (which shall not include the diagonal distance) across the tank in plan view.

(3) Inlet and outlet tees to rectangular tanks shall be set in the end walls or into a side wall within 12 inches of the end wall. For circular tanks, the inlet and outlet tees shall be set and stabilized on opposite ends of a diameter of the tank.

15.227: continued

(4) There shall be an air space of at least three inches between the tops of the tees and the inside of the tank cover. The tops of the tees shall be left open to provide ventilation or separate ventilation shall be provided. All outlet tees shall be equipped with a gas baffle or a Department approved effluent tee filter.

(5) The inlet pipe elevation shall be no less than two inches nor more than three inches above the invert elevation of the outlet pipe. The inlet and outlet invert elevations shall be at least 12 inches above the high groundwater elevation. If high groundwater (redoximorphic features) is determined by soil evaluation in accordance with 310 CMR 15.100 through 15.107 at the proposed location of the septic tank, the Approving Authority may reduce the 12 inch required separation, but in no cases shall it be reduced to less than one inch above high groundwater as determined by redoximorphic features.

(6) The inlet tee shall extend a minimum of ten inches below the flow line. The outlet shall be provided with a tee extending below the flow line in accordance with the following table:

Liquid Depth in Septic Tank	Depth of Outlet Tee below Flow Line
4 feet	14 inches
5 feet	19 inches
6 feet	24 inches
7 feet	29 inches
8 feet	34 inches

(7) Effluent tee filters may be installed in *lieu* of outlet tees provided that they are installed in accordance with the manufacturer's specifications, include an appropriate outlet cover at grade, and are inspected and cleaned at least on an annual basis.

15.228: Placement and Accessibility of Septic Tank

(1) Septic tanks shall be installed level and true to grade on a level stable base that has been mechanically compacted and on to which six inches of crushed stone has been placed to minimize uneven settling. If the septic tank is placed in fill, proper compaction is required to ensure stability and to prevent settling. Septic tanks shall have a minimum cover of nine inches. Systems buried greater than nine inches below grade must be equipped with risers on all tank top openings and the distribution box.

(2) At least three manholes with readily removable impermeable covers of durable material shall be provided. The manholes over the inlet and outlet tees shall have a minimum opening of 20 inches and the center manhole shall have a minimum opening of eight inches. By July 1, 2007, manufacturers of fiberglass and polyethylene tanks shall comply with the center hole requirement. Access ports shall be placed at the center and over each inlet and outlet tee. For compartmental tanks, the center manhole shall be placed as access to the compartment connection. Inlet and outlet tees shall be made accessible for inspection and maintenance by providing precast concrete or equivalent watertight risers (with steps where appropriate) with covers over the access ports to within six inches of finish grade for system designs in excess of 1,000 gpd. For system designs of 1,000 gpd or less, at least one access port shall be accessible within six inches of final grade. Manholes brought to final grade shall be secured to prevent unauthorized access.

(3) Septic tanks shall be accessible for inspection and maintenance. No structures shall be located directly upon or above the septic tank access locations which interfere with performance, access, inspection, pumping, or repair.

(4) Septic tanks shall be inspected and maintained in accordance with 310 CMR 15.300 and applicable local requirements.

15.229: Pumping to Septic Tanks

(1) System designs specifying pumping of sewage to a septic tank may be approved by the Approving Authority for a single family dwelling provided that the volume of sewage pumped is less than 25% of the design flow of the system, the pump discharge pipe is connected to the building sewer and:

(a) where a sewage ejector pump (non-grinder pump) is used, the discharge flow rate shall be fewer than 60 gallons per minute at the design total dynamic head (TDH) and capable of passing a two-inch diameter solid, and the septic tank shall have a minimum effective volume of 1,500 gallons; or

(b) where a grinder pump is used, the discharge flow rate shall comply with the discharge capacity specified in the State Plumbing Code for sump and ejector pumps in sanitary drainage systems, and the septic tank shall either be a multi-compartment tank or two tanks in series.

(2) It is not recommended to pump greater than 25% of the design flow of the system to a septic tank; however, when necessary system designs specifying pumping of sewage to a septic tank may be approved by the Approving Authority for a single family dwelling discharging a volume of sewage greater than 25% of the design flow of the system, provided the pump discharge pipe is connected to the building sewer and:

(a) the requirements of 310 CMR 15.229(1)(a) or 15.229(1)(b) are met;

(b) the building sewer discharges to a multi-compartment septic tank or two tanks in series designed in accordance with 310 CMR 15.223 and 15.224; and

(c) standby power, a hookup for standby power or storage capacity in the pump chamber equal to at least the volume of the design flow for one day is provided.

Non-grinder pumps are the preferred alternative.

(3) All other uses of sewage pumps prior to the septic tank without the prior written approval of the Approving Authority are prohibited.

15.230: Pretreatment Units - Grease Traps

(1) Grease traps shall be provided for kitchen flows at restaurants, nursing homes, schools, hospitals and other facilities from which grease can be expected to be discharged.

(2) Grease traps shall be installed on a separate building sewer serving kitchen flows into which the grease will be discharged. The discharge from the grease trap must flow to a properly designed septic tank or to a building sewer prior to the septic tank.

(3) Grease traps shall have a minimum depth of four feet and a minimum capacity of 1,000 gallons, and shall have sufficient capacity to provide at least a 24-hour detention period for the kitchen flow. Kitchen flow shall be calculated in accordance with 310 CMR 15.203.

(4) Grease traps shall be watertight and constructed of the materials specified in 310 CMR 15.221 and 15.226(1) and (2).

(5) The inlet tee shall extend to the mid depth of the tank. The outlet tee shall extend to within 12 inches of the bottom of the tank. Tees shall be Schedule 40 PVC and properly supported by a hanger, strap or other device.

(6) Grease traps shall be installed on a level stable base that has been mechanically compacted and onto which six inches of crushed stone has been placed to minimize uneven settling.

(7) Grease traps shall be provided with a minimum 20-inch diameter manhole frame and cover to grade over the inlet and outlet tees.

(8) Grease traps shall be accessible for inspection and maintenance. No structures shall be constructed directly upon or above the grease trap access locations.

(9) The invert elevation of the inlet of a grease trap shall be at least two inches above the invert elevation of the outlet. The inlet and outlet shall be located at the center line of the tank, and at least 12 inches above the high groundwater elevation.

15.230: continued

(10) Backfill around the grease trap shall be placed in such a manner as to prevent damage to the tank.

(11) Grease traps shall be maintained in accordance with 310 CMR 15.351.

(12) Grease removal by other devices located within the building as part of the internal plumbing are not within the jurisdiction of 310 CMR 15.000, shall not be considered for compliance with 310 CMR 15.230 and shall comply with the State Plumbing Code. Grease removal devices located outside of the building, other than those in compliance with 310 CMR 15.230, require the prior written approval of the Department.

(13) The Approving Authority may require that alarms and/or remote monitoring devices be installed and connected to grease traps.

15.231: Dosing Chambers and Pumps

(1) A dosing chamber shall be required for any system that is not designed to discharge by gravity to the soil absorption system, for any system that is designed for the intermittent discharge of septic tank or recirculating sand filter effluent, and in conjunction with pressure distribution pursuant to 310 CMR 15.254(2) for any system with either a design flow of 2,000 gpd or greater, or where multiple soil absorption systems are proposed.

(2) All dosing chambers shall have an emergency storage capacity above the working level equal to the daily design flow of the system, or standby power, and shall be equipped with sensors and alarms to protect against high water due to failure of the pump or pump controls. It is advisable to provide some emergency storage even if an on-site emergency generator is provided. The volume below the working level shall include an allowance for the volume of all drainage which may flow back to the chamber when pumping has ceased.

(3) The volume of the dosing chamber between pump operating levels shall be adequate to assure the entire soil absorption system is dosed each cycle in accordance with the required number of cycles per day.

(4) Construction and materials of dosing chambers shall be in accordance with 310 CMR 15.221 and 15.226.

(5) All dosing chambers shall be designed and constructed to withstand a minimum H-10 loading. Any dosing chamber installed where there is the potential for vehicles or heavy equipment to pass over it shall be designed to withstand an H-20 loading. Dosing chambers shall be equipped with one manhole with a minimum opening of 20 inches with a readily removable watertight cover of durable material. The access cover shall be located at final grade.

(6) Every dosing chamber, except for systems serving two dwelling units or less, shall be equipped with two pumps the discharge lines of which shall be valved to allow dosing of the entire soil absorption system by either pump.

(7) Pumps shall be installed in accordance with the manufacturers and the designer's specifications.

(8) Pumps shall operate in the following sequence:
- (a) pumps off
- (b) primary (lead) pump on
- (c) backup (lag) pump on and alarm on
- (d) pumps must alternate.

(9) All pumps must be equipped with a high water level alarm located in the building served which is powered by a circuit separate from the circuit to the pumps.

15.231: continued

(10) An effluent tee filter or equivalent technology approved by the Department is required prior to or within a dosing chamber.

(11) All dosing chambers shall be watertight.

(12) All dosing chambers proposed to provide standby power instead of emergency storage capacity shall include a permanently installed on-site emergency generator that shall automatically switch on in the event of power failure.

15.232: Distribution Boxes

(1) For all gravity flow distribution systems, a water tight distribution box designed to provide equal distribution of septic tank effluent to the distribution lines of the soil absorption system shall be provided between the septic tank and soil absorption system.

(2) Construction of the distribution box shall be in conformance with the provisions of 310 CMR 15.221 (general construction requirements) and 15.226 (septic tank construction), with the following exceptions:

(a) The distribution box may be constructed of plastic or other materials approved by the Department if it is installed level and true to grade on a level stable base that has been mechanically compacted and onto which six inches of crushed stone has been placed to minimize uneven settling or on a concrete pad which is at least six inches in thickness and 1.5 times the bottom surface area of the distribution box.

(b) The minimum inside dimension of the distribution box, regardless of material, shall be 12 inches.

(c) The minimum wall thickness for reinforced concrete shall be two inches.

(3) The distribution box shall conform to the following design specifications:

(a) When the soil absorption system is to be dosed or the slope of the inlet pipe exceeds 0.08 feet per foot, an inlet tee, baffle or splash plate extending to one inch above the outlet invert elevation shall be provided to dissipate the velocity of the influent.

(b) The invert elevation of all outlets shall be equal to each other and located at least two inches below the invert elevation of the inlet. The distribution lines leading from the distribution box shall all have the same invert elevation as determined by flooding the distribution box to the height of the distribution line invert after all lines have been sealed in place. If all inverts are not the same elevation, they shall be adjusted by filling with durable and non-deformable material permanently fastened to the line or reconstructing the lines until all inverts are at the same elevation.

(c) Outlet distribution lines shall be level for a minimum of the first two feet of their length. There shall be at least one outlet for each effluent distribution line.

(d) Every distribution box shall have a water tight cover or in the case of systems with a design flow greater than 2,000 gpd, water tight manhole with cover.

(e) Every distribution box shall have a minimum sump of six inches as measured below the outlet invert elevation.

(f) Distribution boxes buried greater than nine inches below grade shall be equipped with risers.

15.233: Siphons

The use of siphons for on-site systems, including shared systems, is prohibited.

15.240: Soil Absorption Systems

(1) On-site subsurface sewage disposal systems shall be located in an area where there is at least a four foot depth of naturally occurring pervious soil below the entire area of the soil absorption area and reserve area unless a variance is issued in accordance with the provisions of 310 CMR 15.415(2). The four foot stratum must be free of impervious and unsuitable materials.

15.240: continued

(2) Effluent from any component of an on-site sewage disposal system shall not be disposed of by direct discharge to any waters of the Commonwealth, unless in compliance with a permit issued pursuant to 314 CMR 3.00 (surface water permitting) or 314 CMR 5.00 (groundwater permitting).

(3) Soil absorption systems shall be designed as an integral part of the system. Septic tank effluent is to be distributed throughout the soil absorption system by means of effluent distribution lines so that the effluent can migrate through the underlying soil column under unsaturated flow conditions. All soil absorption systems shall achieve the following objectives of the soil treatment process:

(a) maximum stabilization of organic wastes in the effluent;

(b) removal of pathogenic organisms, nutrients, and particulates;

(c) recharge of the ground-water table with adequately treated effluent with minimal attendant pollution of the groundwater; and

(d) disposal of the effluent without discharge to the ground surface or the creation of any nuisance.

(4) The minimum area for the design of a soil absorption system shall be determined by the results of the site evaluation set forth in 310 CMR 15.100 through 15.107 and in accordance with the appropriate long-term acceptance rate criteria specified in 310 CMR 15.242 (effluent loading rates). Area requirements increase by 50% when garbage grinders are installed and the system shall be upgraded to meet such requirements prior to the installation of a garbage grinder.

(5) All soil absorption systems designed to serve single family dwellings, including but not limited to single family condominiums and cooperatives, shall be designed to serve a minimum of three bedrooms, unless a deed restriction limiting use to two bedrooms is granted to the local Approving Authority.

(6) Absorption trenches should be used whenever possible.

(7) No driveway, parking or turning area or other impervious area shall be located above a soil absorption system, except where restrictions on the use of the land make it unavoidable. In such cases, the soil absorption system shall be vented to the atmosphere in accordance with 310 CMR 15.241.

(8) The bottom of each soil absorption system shall be excavated to a level grade. If the removal of stones or boulders is required, creating localized depressions, filling to grade with the excavated naturally occurring pervious soil or material in compliance with 310 CMR 15.255 is acceptable.

(9) The soil placed as backfill over the soil absorption system shall be a minimum of nine inches, excluding topsoil, placed in lifts and sufficiently compacted to prevent depressions due to settling which may intercept or collect surface water runoff above the system. Backfill must be clean and free of stones and boulders greater than six inches in size. Tailings, clay or similar materials are prohibited.

(10) Final cover above the system shall be stabilized and graded to reduce infiltration of surface water and minimize erosion. Finish grade shall have a minimum slope of 0.02 feet per foot.

(11) Surface drainage shall be directed away from the soil absorption system.

(12) For systems with a design flow of 2,000 gpd or greater, the separation distance to the high groundwater elevation required by 310 CMR 15.212 shall be determined by adding the effect of groundwater mounding to the high groundwater elevation as determined pursuant to 310 CMR 15.103(3).

15.240: continued

(13) All soil absorption systems shall have a minimum of one inspection port 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.

15.241: System Venting

Systems to be located either in whole or in part under driveways, parking or turning areas or other areas of impervious material shall be designed to achieve proper venting of the system according to the following criteria:

(a) the disposal area distribution system shall be piped to the atmosphere using the same diameter pipe as the distribution system;

(b) the vent pipe shall be designed to prevent entrance of animals or precipitation and shall be backfilled tightly to prevent seepage of surface water into the system;

(c) the vent pipe shall be located beyond the limit of the impervious area subject to vehicular traffic;

(d) where trenches, fields or beds are used, the end of each distribution lateral shall be connected to one or more vent(s);

(e) where pits are used, the vent shall extend under the cover of the pit; and

(f) the riser and above ground components of the vent shall be constructed of durable, non-corrosive materials.

15.242: LTAR - Effluent Loading Rates

(1) The effluent loading rates set forth below are adjusted to account for the long term acceptance rate (LTAR) of the proposed soil absorption system. The LTAR is limited in large part by both the texture of the most hydraulically restrictive soil layer included within the four-foot zone beneath the proposed soil absorption system and the formation of a biomat based on the strength of effluent applied to the soil. As such the effluent loading rates have been based on the strength of typical settled sanitary sewage and may be adjusted proportionately downward if the proposed effluent strength is determined by the local Approving Authority or the Department to exceed that of typical sanitary sewage. Soil textural classes and soil types comprising the classes are defined in 310 CMR 15.243 and 310 CMR 15.244 based upon the general soil classification used by the U.S. Department of Agriculture.

(a) The following effluent loading rates apply:

EFFLUENT LOADING RATE gpd/sq.ft (cm/day)

PERC. RATE	SOIL CLASS			
(min./inch)	CLASS I	CLASS II	CLASS III	CLASS IV
≤5	.74 (3.0)	0.60 (2.5)	-	-
6	0.70 (2.9)	0.60 (2.5)	-	-
7	0.68 (2.8)	0.60 (2.5)	-	-
8	0.66 (2.7)	0.60 (2.5)	-	-
10	-	0.60 (2.5)	-	-
15	-	0.56 (2.3)	0.37 (1.5)	-
20	-	0.53 (2.2)	0.34 (1.4)	-
25	-	0.40 (1.6)	0.33 (1.3)	-
30	-	0.33 (1.3)	0.29 (1.2)	-
40	-	-	0.25 (1.0)	-
50	-	-	0.20 (0.8)	0.20 (0.8)
60	-	-	0.15 (0.6)	0.15 (0.6)

(b) The effluent loading rates set forth below may be used in place of those listed above at 310 CMR 15.242(1)(a) when the effluent from a septic tank, installed in compliance with 310 CMR 15.223, is distributed over the soil absorption system using pressure distribution designed in compliance with 310 CMR 15.254(2). However, the effluent loading rates set forth below cannot be used in conjunction with reductions to the soil absorption system approved under 310 CMR 15.280 through 15.289 or 310 CMR 15.404 through 15.405.

15.242: continued

SEPTIC TANK EFFLUENT LOADING RATE WITH PRESSURE DISTRIBUTION
gpd/sq.ft (cm/day)

PERC. RATE (min./inch)	SOIL CLASS CLASS I	CLASS II	CLASS III	CLASS IV
10	-	0.63(2.6)		
15	-	0.61(2.5)	0.41(1.7)	
20	-	0.58(2.4)	0.37(1.5)	
25	-	0.44(1.8)	0.36(1.4)	
30	-	0.38(1.6)	0.33(1.3)	
40	-	-	0.29 (1.2)	
50	-	-	0.25 (1.0)	0.25 (1.0)
60	-	-	0.20 (0.8)	0.20 (0.8)

15.243: Types of Soil Textural Classes

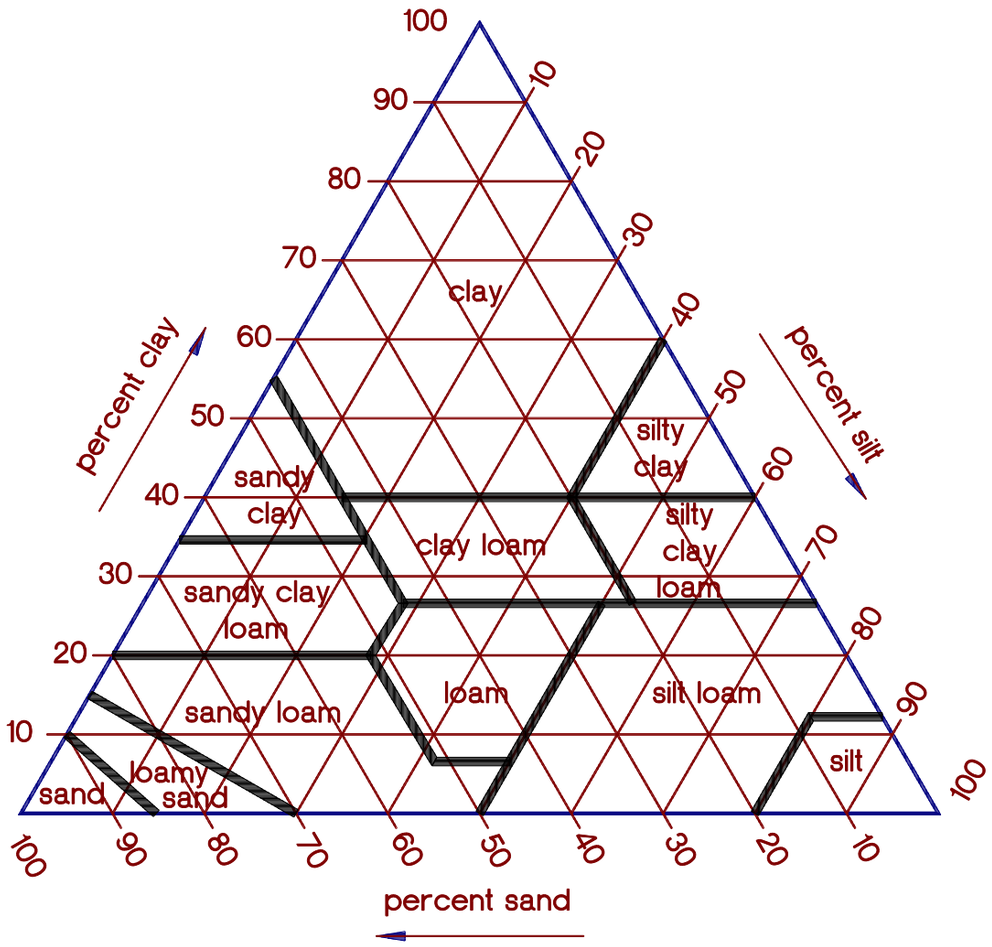
(1) The following soil textural classes apply to soil types of which they are composed:

CLASS I Sands, Loamy Sands
CLASS II Sandy Loams, Loams
CLASS III Silt Loams, Sandy Clay Loams with less than 27% clay, Silt
CLASS IV Clays, Silty Clay Loams, Sandy Clay Loams with 27% or more Clay, Clay Loams and Silty Clays

15.243: continued

(2) Textural Classifications are made based on the relative proportion of sand, silt and clay in the soils and in accordance with the following textural triangle:

SOIL TEXTURAL TRIANGLE



15.244: Types of Soils

Sands:	Soil is 85% or more sand and the percentage of silt plus 1.5 times the percentage of clay is 15 or less.
Loamy sands:	At the upper limit soil is 85 to 90% sand and the percentage of silt plus 1.5 times the percentage of clay is 15 or less; at the lower limit, soil is 70 to 85% sand and the percentage of silt plus twice the percentage of clay is 30 or less.
Sandy loams:	Soil is 20% or less clay and 52% or more sand and the percentage of silt plus twice the percentage of clay exceeds 30; or soil is less than 7% clay, less than 50% silt, and between 43 and 52% sand.
Loam:	Soil is 7 to 27% clay, 28 to 50% silt, and less than 52% sand.
Silt loam:	Soil is 50% or more silt and 12 to 27% clay; or 50 to 80% silt and less than 12% clay.
Silty clay loam:	Soil is 27 to 40% clay and less than 20% sand.
Clay:	40% or more clay, less than 45% sand, and less than 40% silt.
Silt:	80% or more silt and less than 12% clay.
Sandy clay loam:	20 to 35% clay, less than 28% silt, and more than 45% sand.
Clay loam:	27 to 40% clay and 20 to 46% sand.
Sandy clay:	35% or more clay and 45% or more sand.

15.245: Soil Absorption System Siting Requirements

(1) Systems serving new construction shall not be sited in areas with percolation rates slower than 60 minutes per inch.

(2) When recorded percolation rates are between those listed in 310 CMR 15.242, the next slower rate shall be used for design purposes.

(3) Surface and subsurface drainage shall be directed away from the soil absorption system.

(4) Approval of a soil absorption system in soils with a recorded percolation rate of between 60 and 90 minutes per inch may be granted only for upgrades of existing systems with no increase in design flow. In such cases, the soil absorption system design shall be based on a maximum effluent loading rate of 0.15 gpd/square foot.

15.246: Excavation and Flagging of Soil Absorption System

(1) Excavation for construction of a soil absorption system may be by mechanical means, provided care is taken to assure that the soil at the bottom of the excavation is not compacted or smeared. The bottom and sides of the excavation shall be level and scarified. Vehicular traffic and parking of vehicles or equipment in or on the area of the soil absorption system should be avoided at all times prior, during and after construction of the system.

(2) Prior to the installation of the soil absorption system and until receipt of a Certificate of Compliance from the Approving Authority in accordance with 310 CMR 15.021, the perimeter of the soil absorption system shall be staked and flagged to identify the location of the soil absorption system and prevent the use of such area for all activities which might damage the soil absorption system. Such flagging is not intended to preclude the final grading and landscaping of the area of the soil absorption system. Stockpiling of materials or equipment within the area is prohibited.

15.247: Aggregate

Aggregate shall be required for all soil absorption systems, unless otherwise approved in writing by the Department in accordance with 310 CMR 15.280 through 15.288, according to the following specifications:

(a) Base aggregate for leaching structures shall be provided from below the elevation of the crown of the distribution line(s) to the bottom elevation of the soil absorption system and shall consist of double washed stone ranging from ¾ to 1½ inches in diameter and shall be free of iron particles, fines and dust in place;

(b) A minimum of a two-inch layer of double washed stone ranging from ⅛ to ½ inch diameter and free of iron particles, fines and dust in place shall cover the base aggregate to prevent intrusion of fine textured soils to the system. Geotextile fabric may be substituted for the minimum two-inch layer of double washed stone.

15.248: Reserve Area

(1) Systems for new construction or increased flow designed and approved in accordance with 310 CMR 15.000 shall include a reserve area sufficient to replace the primary soil absorption system. The area required for the reserve area shall be calculated in accordance with 310 CMR 15.242 (effluent loading rates), based on the percolation rate in the reserve area.

(2) No permanent buildings or other structures shall be constructed on the reserve area.

15.249: Design Criteria for Soil Absorption Systems

(1) Every soil absorption system shall consist of one or more trenches, beds, fields, pits, galleries or chambers.

(2) Effluent disposal area requirements shall be determined in accordance with 310 CMR 15.242.

(3) System designs employing equipment designed to distribute effluent without the use of aggregate (*i.e.*, "gravelless systems") are prohibited except in accordance with the procedures set forth at 310 CMR 15.280 through 15.288.

(4) Soil absorption systems for Class III and IV soils with percolation rates greater than 60 minutes per inch shall not include beds or fields except in accordance with 310 CMR 15.245(4).

15.251: Trenches

(1) Trench Design Specifications:

(a) Length (each trench)	100 feet maximum
(b) Width (each trench)	2 feet minimum
	3 feet maximum

(c) Effective Depth: shall be equal to the depth of the trench below the invert of the distribution pipe with a minimum of six inches up to a maximum of two feet.

(d) The minimum separation distance between any two trenches shall be two times the effective width or depth of each trench, whichever is greater, or where the area between trenches is designated as reserve area, three times the effective width or depth of each trench, whichever is greater.

(e) The effective leaching area shall be calculated using the bottom area and a maximum of two feet (per side) of side wall area for each trench.

(2) Trenches shall be situated, where possible, with their long dimension perpendicular to the slope of the natural soil. Where possible they shall follow the contour lines.

(3) Trenches constructed at different elevations shall be designed to prevent effluent from the higher trench(es) flowing into the lower trench(es).

(4) The area between trenches may be designated as system reserve area only where the separation distance between the excavation sidewalls of the primary trenches is at least three times the effective width or depth of each trench, whichever is greater.

(5) Distribution lines for soil absorption systems shall be constructed of either polyvinyl chloride (PVC), acrylonitrile-butadiene-styrene (ABS), or high density polyethylene (HDPE). PVC pipe shall be schedule 40 General Purpose Sewer Pipe (ASTM D 1785), schedule 40 Drain, Waste and Vent Pipe (ASTM D 2665) or SDR 35 PVC Gravity Sewer Pipe and Drain Pipe (ASTM D 3034). ABS pipe shall be schedule 40 (ASTM F 628). HDPE pipe shall meet ASTM F 810 for Smoothwall Polyethylene Pipe for use in Drainage and Waste Disposal Fields. A material that meets an equivalent ASTM standard as a material specified in 310 CMR 15.251(5) may be substituted for that material.

(6) All connections and joints shall be mechanically sound and tight.

(7) Minimum diameter of each gravity distribution line shall be three inches.

(8) Gravitiy effluent distribution line outlet orifices shall be evenly spaced along two rows running the length of the line, on each side, midway between the invert and center-line which separates the upper and lower halves of the pipe, and orifices shall be no smaller than ⅜ inch and no larger than ⅝ inch in diameter.

(9) Gravity effluent distribution lines shall have a slope of 0.005 feet per foot along a straight line without bends and shall have ends capped or connected together by unperforated pipe of the same materials specifications.

15.251: continued

(10) Distribution lines connecting the distribution box or pump chamber to the soil absorption system distribution lines shall be unperforated with water tight connections and joints.

(11) Effluent distribution lines exceeding 50 feet in length shall be connected and venting provided in accordance with 310 CMR 15.241.

15.252: Beds or Fields

(1) The use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field.

(2) Bed or field specifications:
(a) Minimum number of distribution lines = 2.
(b) Length - 100 feet maximum.
(c) Slope of distribution lines - 0.005 feet per foot.
(d) Separation distance between lines - six feet maximum.
(e) Lateral separation distance between lines and edge of the bed - four feet maximum.
(f) Separation distance between adjacent beds/fields - ten feet.
(g) Aggregate depth (below the invert of the distribution lines) - six inches minimum, 12 inches maximum.
(h) Distribution lines - refer to 310 CMR 15.251(5) through (10) (Trenches).
(i) Effective leaching area - shall include only the bottom area, not the sidewalls.

15.253: Pits, Galleries, or Chambers

(1) Pit, Gallery or Chamber design specifications:
(a) Effective Depth - A maximum of two feet of sidewall depth below the invert of the inlet per unit shall be used when calculating the effective leaching area.
(b) Surrounding Aggregate - 1 foot minimum per side.
4 feet maximum per side.
(c) Separation Distance Between Units - two times the effective width or depth, whichever is greater.

(2) Construction shall be of precast perforated concrete or interlocking concrete blocks laid dry with open joints in a manner to prevent displacement or as otherwise approved by the Department.

(3) Each pit, gallery or chamber shall have a minimum of one inspection access cover per unit. For systems with a design flow greater than 2,000 gpd, the manholes shall be at least 24 inches in diameter with metal frames and covers to finished grade.

(4) When two or more pits are used, the system shall be designed so that all pits function in parallel.

(5) Two or more chambers or galleries connected in series shall constitute a chamber or gallery system. The application of 310 CMR 15.253(1)(c) (separation distance) shall be applied to adjacent chamber or gallery systems as a unit rather than to the individually connected chambers or galleries.

(6) Inlets to chamber and gallery systems installed in trench configuration shall be provided at intervals not to exceed 20 feet. Chamber or gallery systems in bed configuration shall be provided with at least one inlet for every 40-foot square section.

(7) when using pits, galleries, or chambers in a leaching bed or field configuration, the effective leaching area shall include only the bottom area, not the side walls.

15.254: Pressure Dosing and Pressure Distribution

(1) Gravity Distribution.

(a) Dosing systems employing gravity distribution to the soil absorption system shall be restricted to systems designed to accept less than 2,000 gpd.

(b) The dosing chamber and pumps shall be designed in accordance with 310 CMR 15.231.

(c) Distribution lines to the soil absorption system shall have a minimum diameter of two inches and shall otherwise be in conformance with the provisions of 310 CMR 15.251(Trenches).

(d) Septic tank effluent shall be dosed to the soil absorption system at a rate based on volume and number of doses that prevent the ponding of the effluent in the soil absorption system.

(2) Pressure Distribution.

(a) Pressure distribution of septic tank/recirculating sand filter effluent to the soil absorption system shall be required for: a system to serve a facility with a design flow of 2,000 gpd or greater; a system that is not designed to discharge by gravity either from the septic tank or to the soil absorption system; a system designed for intermittent discharge of effluent to the soil absorption system; and a system with a multiple soil absorption system, unless otherwise determined in writing by the Approving Authority.

(b) The pumping chamber and pumps shall be designed in accordance with 310 CMR 15.231.

(c) The pressure distribution system shall be designed in accordance with Department guidance.

(d) Pumps, alarms and other equipment requiring periodic or routine inspection and maintenance shall be operated, inspected and maintained in accordance with the manufacturer's and the designer's specifications. In no instance shall inspection be performed less frequently than once every three months for a system serving a facility with a design flow of 2,000 gallons per day or greater and annually for a system serving a facility with a design flow of less than 2,000 gallons per day. The system owner shall submit the results of such inspections to the Approving Authority annually by January 31st of each year for the previous calendar year.

15.255: Construction in Fill

(1) Any system where fill is required to replace topsoil, peat or other unsuitable or impervious soil layer above the requisite four feet of naturally occurring pervious material is a system constructed in fill. Any system constructed in fill which extends either wholly or partially above natural grade for the purpose of complying with 310 CMR 15.212 (depth to groundwater) is a mounded system. All soil absorption systems constructed in fill shall be sized using the soil class of the underlying naturally occurring pervious material.

(2) The finished side slopes of a mounded system shall not be steeper than 3:1 (horizontal:vertical). A minimum 15 foot horizontal separation distance shall be provided between the soil absorption area and the adjacent side slope as measured from the edge of the top of the two inch layer of ⅛ to ½ inch washed stone aggregate or geotextile fabric cover. The toe of the slope shall be a minimum of five feet from any property line, or a swale or other drainage system directing runoff away from the adjacent property shall be installed. Adjustments to the above horizontal separation may be allowed if a suitable impervious barrier is installed to prevent potential sewage breakout. The impervious barrier shall meet the following requirements:

(a) the impervious barrier shall be designed by a Massachusetts Registered Sanitarian or a Massachusetts Registered Professional Engineer.

(b) construction of the impervious barrier shall be supervised by the designer.

(c) prior to issuance of a Certificate of Compliance, the applicant shall submit to the Approving Authority an as-built plan prepared and certified by the designer that the impervious barrier has been constructed in accordance with the approved design plan.

(d) the elevation of the top of the impervious barrier shall be no lower than the "breakout" elevation, which is the elevation of the top of the two inch layer of ⅛ inch to ½ inch washed stone aggregate cover.

(e) the recommended distance from the impervious barrier to the edge of the soil absorption system closest to the barrier should be at least ten feet.

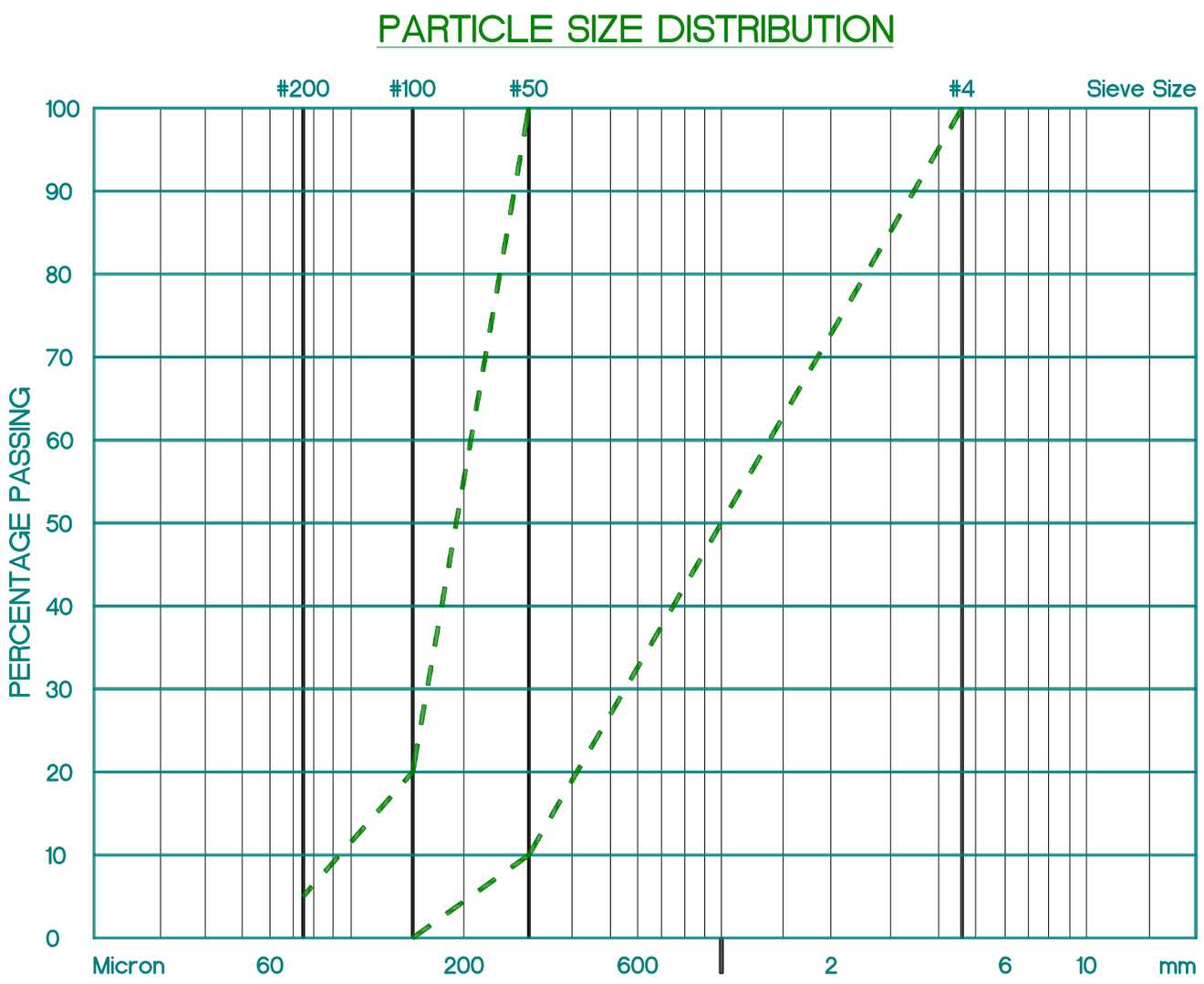
15.255: continued

(f) where a retaining wall to stabilize the slope is required and also is proposed as an impervious barrier, in addition to meeting the requirements in 310 CMR 15.255(2), it shall be constructed of suitable structural material and be designed by a Massachusetts Registered Professional Engineer.

(3) Fill material for systems constructed in fill shall consist of select on-site or imported soil material. The fill shall be comprised of clean granular sand, be free from organic matter and deleterious substances, and shall not contain Remediation Waste as that term is defined in 310 CMR 40.0000. Mixtures and layers of different classes of soil shall not be used. The fill shall not contain any material larger than two inches. A sieve analysis, using a #4 sieve, shall be performed on a representative sample of the fill. Up to 45% by weight of the fill sample may be retained on the #4 sieve. Sieve analyses also shall be performed on the fraction of the fill sample passing the #4 sieve, such analyses must demonstrate that the material meets each of the following specifications:

SIEVE SIZE	EFFECTIVE PARTICLE SIZE	% THAT MUST PASS SIEVE
# 4	4.75 mm	100%
# 50	0.30 mm	10% - 100%
#100	0.15 mm	0% - 20%
#200	0.075 mm	0% - 5%

A plot of the sieve analyses of the portion of the sample passing the #4 sieve shall fall on or between the lines on the following graph:



15.255: continued

(4) If required by the Approving Authority, a minimum of one representative sample shall be taken from the in-place fill for a system serving a single family residence and tested for compliance with the grain size distribution specification. One soil test per pit per removal day shall be required for systems with design flows of 2,000 gpd or more.

(5) Where fill is required to replace unsuitable or impermeable soils, the excavation of the unsuitable material shall extend a minimum of five feet laterally in all directions beyond the outer perimeter of the soil absorption system to the depth of naturally occurring pervious material as required by 310 CMR 15.240 (soil absorption systems) and replaced with fill material meeting the specifications of 310 CMR 15.255(3).

(6) Prior to placement of the fill, which shall be stockpiled at the edge of the excavation and filled in gradually, the bottom surface of the excavation shall be scarified and relatively dry. Fill shall not be placed during rain or snow storms. If the groundwater elevation is above the elevation of the bottom of the excavation, the excavation shall be dewatered prior to placement of the fill.

15.260: Tight Tanks

(1) Approval of a tight tank may be granted only to eliminate a failed on-site system when no other feasible alternative to upgrade the system in accordance with 310 CMR 15.201 through 15.293 exists, except as provided in 310 CMR 15.260(8). Tight tanks shall not be approved for new construction or for increased flow to existing systems except as approved by the Approving Authority for:

(a) boat waste pump-out facilities where no other feasible alternative exists; or

(b) to serve buildings necessary for the operation of a public water supply where it is not feasible to connect to a sewer or to construct a system in compliance with 310 CMR 15.000;

(c) to serve publicly owned and operated seasonal structures where it is not feasible to connect to a sewer or to construct a system in compliance with 310 CMR 15.000.

(2) The design of a tight tank shall conform to the following criteria:

(a) The tight tank shall be sized at a minimum of 500% of the system sewage design flow established by 310 CMR 15.203, but in no case less than 2,000 gallons;

(b) plans for the tank shall be prepared, stamped and signed by a Massachusetts Registered Professional Engineer or Registered Sanitarian and submitted to the Approving Authority by the applicant for approval;

(c) audio and visual alarms shall be set to activate at 3/5 tank capacity in a suitably convenient location. Transmission of the alarm signal to a locus manned 24 hours per day may be required;

(d) the application for approval shall indicate the method and frequency of removal of the contents;

(e) the specific location and method of disposal of the contents shall be indicated and be in accordance with 310 CMR 15.501 through 15.505;

(f) the tight tank shall have at least one 24-inch diameter cast iron frame and cover at finished grade constructed so as to eliminate entrance of surface waters. Permanent suction piping may also be required;

(g) the tight tank shall be located so as to provide year round access for pumping;

(h) a permit to install the tank shall be obtained from the Approving Authority;

(i) an operation and maintenance plan, acceptable to the Approving Authority, shall be implemented which requires monitoring of the system to ensure proper operation and maintenance;

(j) the tight tank shall be waterproof and watertight and shall not be located below the water table without extensive testing to prove the integrity of the tank and design against uplift;

(k) aeration or other method of odor control may be required; and

(l) the tight tank shall be designed in compliance with the requirements for the construction of septic tanks in 310 CMR 15.226(1) through (4).

(3) The Approving Authority may require the submission of monthly or less frequent reports concerning operation and maintenance of the tank.

15.260: continued

(4) No tight tank shall be utilized until written certification by a Massachusetts Registered Professional Engineer or Registered Sanitarian that the tight tank has been constructed and installed in accordance with the approved plan has been submitted to the Approving Authority.

(5) When a sewer system becomes available, any person owning a tight tank shall connect to the sewer within 30 days and the tight tank system shall be abandoned in accordance with 310 CMR 15.354.

(6) Prior to the issuance of the Disposal System Construction permit for a tight tank, the facility owner shall record or register in the chain of title for the property served by the tight tank at the Registry of Deeds or the Land Registration Office, as applicable, a copy of the Approving Authority's written approval.

(7) No tight tank shall be constructed in a velocity zone on a coastal beach, barrier beach, or dune, or in a regulatory floodway, unless it replaces a tank in existence on the site as of March 31, 1995, that has been damaged or destroyed, and placement of the tank outside of the velocity zone or regulatory floodway, either horizontally or vertically, is not feasible.

(8) The Approving Authority may allow the use of a tight tank at an existing, seasonal-use residential facility as remedial upgrade of the failed system serving such facility. For the purposes of 310 CMR 15.260(8), a seasonal-use residential facility means a residential facility that is used six months or less during the calendar year. This approval may be renewed upon transfer of the property. The tight tank must comply with the provisions of 310 CMR 15.260. Prior to the issuance of the Certificate of Compliance by the Approving Authority the facility owner shall record or register in the chain of title for the property served by the tight tank at the Registry of Deeds or the Land Registration Office, as applicable, a deed restriction limiting the facility to seasonal residential use and to the approved design flow.

15.262: Greywater Systems

(1) Greywater from residential, commercial and public facilities may be discharged or reused in accordance with the provisions of 310 CMR 15.262. For purposes of 310 CMR 15.262, public facilities shall include facilities owned or operated by a local political subdivision of the Commonwealth or an agency of the Commonwealth or federal government.

(2) Soil Absorption System for Greywater. When the total discharge to an on-site subsurface sewage disposal consists entirely of greywater as defined in 310 CMR 15.002 (Greywater), the following shall apply:

(a) the minimum soil absorption area for residential systems, as determined by the results of the site evaluation set forth in 310 CMR 15.100 through 15.107 and in accordance with the appropriate long-term acceptance rate criteria specified in 310 CMR 15.242, for design of a soil absorption system for new construction of a facility, or for upgrades to existing systems may be reduced by no more than 50%, provided, however, that for new construction, the owners of residential facilities shall demonstrate that a system in full compliance with 310 CMR 15.000 can be installed on the facility to serve the proposed design flow. Reductions for commercial and public facility systems shall be determined on a case-by-case basis as approved by the Department in accordance with 310 CMR 15.203(6).

(b) the depth of soil placed as backfill over the system shall be at least nine inches, placed in lifts and sufficiently compacted to prevent depression due to settling which may intercept surface runoff above the system. Backfill must be clean and free of stones greater than two inches in size. Tailings, clay, or similar material is prohibited.

(c) in a remedial upgrade of an existing system with no increase in flow, the required separation between the bottom of the soil absorption system and the high groundwater elevation may be reduced to a minimum of two feet in soils with a recorded percolation rate of more than two minutes per inch or a minimum of three feet in soils with a recorded percolation rate of two minutes or less per inch.

15.262: continued

(3) Septic Tanks or Filter for a Greywater System. Greywater systems may include either a septic tank or a filter, provided the filter has been approved by the Board of State Examiners of Plumbers and Gas Fitters and/or the Department in accordance with 310 CMR 15.289(1)(b).

(a) The septic tank shall have a minimum effective liquid capacity of 1000 gallons and shall be designed in accordance with 310 CMR 15.223 through 15.226.

(b) Septic tanks for commercial and public facilities shall be at least two thirds the size of a septic tank based on the design flows presented in 310 CMR 15.203.

(c) When 310 CMR 15.203 does not provide design flows the design flow shall be based on historical flows (one year or more) of the facility or similar facilities if historical flows are not available and shall be 200% of average water meter readings or 125% of the recorded peak flow, whichever is greater.

(4) Greywater may be discharged using an alternative to a soil absorption system approved by the Department pursuant to 310 CMR 15.280 through 15.288.

(5) Greywater from commercial or public facilities may be approved by the Department on a case-by-case basis for reuse in accordance with 314 CMR 20.00: *Reclaimed Water Permit Program and Standards*, and applicable policies and guidance of the Department pertaining to wastewater reuse.

(6) Greywater systems shall be operated, maintained, and inspected in accordance with 310 CMR 15.300.

(7) For residential facilities utilizing composting toilets and greywater systems in nitrogen sensitive areas an allowable loading rate of 660 gpd/acre may be used provided that there is no discharge of blackwater at the facility and the compost is disposed off-site. Annual inspections shall be conducted in accordance with 310 CMR 15.300(5).

(8) For commercial and public facilities utilizing composting toilets and greywater systems in nitrogen sensitive areas, an allowable loading rate up to 770 gpd/acre shall be determined by the Department on a case-by-case basis provided that there is no discharge of blackwater at the facility and the compost is disposed off-site. Annual inspections shall be conducted in accordance with 310 CMR 15.300(5).

(9) Greywater systems for new construction or increases in flows to existing systems within nitrogen sensitive areas as defined in 310 CMR 15.215 must comply with the nitrogen loading limitations in accordance with 310 CMR 15.214.

15.280: Approval of Alternative Systems

15.281: Purpose

(1) Alternative systems, when properly designed, constructed, operated and maintained, may provide enhanced protection of public health, safety, welfare and the environment. The purposes of 310 CMR 15.281 through 15.288 are: to provide an orderly system to facilitate review of proposed alternative systems; to encourage development of alternative systems with performance superior to conventional systems; and to ensure that alternative systems are approved with appropriate conditions to protect public health, safety, welfare and the environment.

(2) The provisions of 310 CMR 15.281 through 15.288 shall apply to all proposals to construct, upgrade, or replace on-site systems using alternative systems.

15.281: continued

(3) Any proposed system which is designed or constructed in any manner other than as described in 310 CMR 15.100 through 15.262 shall be considered an alternative system, unless a groundwater discharge permit is obtained pursuant to 314 CMR 5.00 (groundwater discharge permit program). Alternative systems may include substitutes or alternatives for one or more components of a conventional system as described in 310 CMR 15.100 through 15.262, or may be fundamentally different approaches intended to eliminate the need for a conventional system. The use of an alternative system in accordance with conditions established pursuant to 310 CMR 15.281 through 15.289 may be authorized without a variance. It shall be a violation of 310 CMR 15.000 for any person to sell or install an alternative system which has not been approved by the Department.

(4) The review processes established in 310 CMR 15.280 through 15.288 are intended to provide two different mechanisms for approval of alternative systems. Approval for remedial use (310 CMR 15.284) is intended to provide a mechanism for system owners to improve existing conditions at particular sites (including upgrade or replacement of failed or nonconforming systems) through the use of an alternative system. The sequence of approval for piloting (310 CMR 15.285), provisional approval (310 CMR 15.286), and certification for general use (310 CMR 15.288), is intended to provide a process through which proponents of an alternative system may have that system approved for general usage in the Commonwealth, including use for new construction. This sequence is intended to develop information on the performance of the alternative system; if adequate information from other jurisdictions or from systems in remedial use is available, it is unnecessary to proceed separately through all three steps of this sequence.

15.282: Types of Alternative Systems

Alternative systems proposed may include, but shall not be limited to, any of the following:

(1) humus or other composting toilets;

(2) alternative mounded systems (such as the "Wisconsin mound") designed to overcome limiting site conditions;

(3) any system designed to chemically or mechanically aerate, filter, separate or pump the liquid, semi-solid or solid constituents in the system; or

(4) any system designed specifically to reduce, convert, or remove nitrogenous compounds, phosphorus, or pathogenic organisms (including bacteria and viruses) by biological, chemical, or physical means.

15.283: Process for Review of Alternative System Proposals

(1) A person seeking approval of an alternative system shall prepare and submit a formal application to the Department, or an agent authorized by the Department. No application to the Department is required for use of an alternative system that has been certified for general use pursuant to 310 CMR 15.288, provided that such use is consistent with any conditions established in the certification.

(2) For site specific piloting use approval pursuant to 310 CMR 15.285, the applicant shall obtain the approval of the Local Approving Authority prior to seeking approval by the Department.

(3) Any proposal to construct, upgrade or expand any existing system using an alternative system of any type shall be subject to the permitting requirements set forth at 314 CMR 5.00 (discharges of pollutants to groundwater) unless the applicant complies with the terms and conditions of 310 CMR 15.281 through 15.288.

15.283: continued

(4) The Department or an agent authorized by the Department may request additional information regarding alternative system proposals in the course of its application review, pursuant to 310 CMR 4.00: *Timely Action Schedule and Fee Provisions*, and may consider any such information submitted when acting on the application.

(5) When using alternative systems designed under 310 CMR 15.280 through 15.288, if the facility design and operation will result in flows significantly different from the values listed in 310 CMR 15.203(1) through (5), the alternative technology shall reflect the actual range of flows and loadings that the facility is expected to generate rather than the peak flow values listed in 310 CMR 15.203(1) through (5). The applicant, with the approval of the Department, may request to demonstrate a more appropriate design flow in accordance with 310 CMR 15.203(6). Notwithstanding the requirements of 310 CMR 15.203(6), the Department may establish a design flow thereunder that is based on the actual range of flows rather than based on 200% of average water meter readings. The soil absorption system and other units shall still be designed in accordance with 310 CMR 15.203(1) through (5) and 15.242.

15.284: Approval for Remedial Use

(1) The purpose of approval for remedial use is to allow for the rapid approval of an alternative system that is likely to improve existing conditions at a particular facility or facilities currently served by a failed, failing or nonconforming system.

(2) Remedial use of an alternative system shall be allowed where the Department finds that all of the following conditions are met:

(a) the proposed use of the alternative system is for upgrade of a failed, failing or nonconforming existing system(s);

(b) the design flow is less than 10,000 gallons per day, and there is no increase in design flow to be served by the proposed alternative system;

(c) the applicant has established, through evidence of effective past performance of the alternative system over a period of at least one year of general usage in other states where relevant physical and climatological conditions are similar to those in Massachusetts, that the alternative system will provide a level of environmental protection

1. at least equivalent to that of a system designed and constructed in accordance with 310 CMR 15.100 through 15.255, for use where connection to a sewer system is not feasible, or
2. at least equivalent to a sewer system, for use where connection to a sewer system is feasible.

The Department may waive this requirement in situations where such evidence is already on file with the Department for that system. When relying on system performance in other states, all available information including but not limited to a copy of the other state's written approval, testing and performance data shall be provided.

(d) the Local Approving Authority has found that that conditions of 310 CMR 15.284(2)(a) through (c) are satisfied; and

(e) the applicant has made arrangements through contract with a vendor or in another manner acceptable to the local Approving Authority and the Department to ensure that necessary operation and maintenance of the alternative system will be performed appropriately.

(3) The provisions of 310 CMR 15.287 apply to any remedial use of an alternative system.

(4) If at any time the Local Approving Authority or the Department determines that a system that has been installed pursuant to an approval for remedial use is failing or has failed, enforcement action may be taken.

(5) Unless an environmental and performance monitoring and reporting program has been approved by the Department and implemented at facilities approved for remedial use, the record of performance of an alternative system at such facilities shall not constitute a basis to approve that alternative system for provisional use or to certify the system for general use. Approval for remedial use is not intended to provide the sole means for demonstrating that an alternative system is acceptable for provisional approval or certification for general use.

15.284: continued

(6) In approving remedial use of an alternative system, the Department shall determine whether any person wishing to use such system must connect the facility to a sanitary sewer if such connection is or becomes feasible.

15.285: Approval for Piloting

(1) Approval for piloting is intended to provide field testing and technical demonstration that a particular alternative system can or cannot function effectively under relevant physical and climatological conditions at one or more pilot facilities. Although information obtained during piloting is likely to be relevant to long term operation and maintenance concerns about a particular alternative system, approval for piloting is not intended, in and by itself, to provide a full evaluation of these issues. Approvals for site-specific piloting may be issued to technology proponents or to individuals seeking to use an alternative system at a particular Facility.

(2) The Department shall approve a number of pilot facilities, not greater than 15, at which piloting may be conducted for an alternative system, and shall approve each individual proposed piloting facility prior to use of the alternative system on that facility. The use of multiple piloting sites is strongly encouraged and may be required by the Department. Piloting facilities must comply with one or more of the following conditions:

(a) the proposed use of the alternative system will modify or replace an existing system provided there is no increase in design flow to the system;

(b) the proposed use of the alternative system is for new construction or increased flow to serve a facility for which an on-site sewage disposal system in compliance with 310 CMR 15.000 exists on site, or for which a site evaluation for an on-site system in compliance with 310 CMR 15.100 through 15.255 has been approved by the Approving Authority;

(c) the proposed use of the alternative system is for new construction or increased flow to serve a facility which has access to a municipal sewer, as evidenced by a local connection or discharge permit, to which any discharge from the proposed system will be made should the alternative system fail; or

(d) the site is owned or controlled by an agency of the Commonwealth or of the federal government and has been approved by the Department.

A local Approving Authority may impose additional conditions on the use of alternative systems approved for piloting under 310 CMR 15.000 only in accordance with regulations adopted pursuant to 310 CMR 15.003(3).

(3) The Department shall approve an alternative system for piloting when all of the following conditions are met:

(a) the Department has determined, based upon relevant technical data including without limitation actual field performance of the proposed alternative system in other states or data obtained by independent testing organizations, that the proposed alternative system is likely to be capable of providing a level of environmental protection at least equivalent to that of a system designed and constructed in accordance with 310 CMR 15.100 through 15.255. When relying on system performance in other states, all available information including but not limited to a copy of the other state's written approval, testing and performance data shall be provided;

(b) the applicant has proposed an environmental monitoring and reporting plan covering no less than 18 months of operation at each pilot facility that will produce a timely and full technical evaluation of the performance of the alternative system at the pilot facilities, including prompt identification of performance difficulties and the effectiveness of any corrective actions or adjustments to the alternative system; and

(c) the applicant has made arrangements through contract with a vendor or in another manner acceptable to the Department and the local Approving Authority to ensure that necessary operation and maintenance activities will be performed appropriately.

(4) The Department may establish special conditions, as it deems necessary, to ensure protection of public health, safety, welfare and the environment in its approval for piloting.

(5) The provisions of 310 CMR 15.287 apply to any piloting of an alternative system.

15.285: continued

(6) If at any time the Department or the local Approving Authority determines that an alternative system installed pursuant to an approval for piloting is failing or has failed, enforcement action may be taken.

(7) Upon completion of piloting in compliance with 310 CMR 15.285, the Department may: grant provisional approval of the alternative system pursuant to 310 CMR 15.286; determine that additional piloting in accordance with this 310 CMR 15.285 is required; or disapprove use of the alternative system. The Department may determine that successful site-specific pilots may remain in place at an individual Facility on a long-term basis consistent with the terms and conditions of the system approval.

(8) If the Department determines that additional piloting is necessary, it may require an additional number of piloting facilities, not greater than five, and may require any modifications or adjustments to the alternative system, or impose such other requirements, as the Department deems necessary to ensure protection of public health, safety, welfare and the environment.

(9) Should the Department disapprove use of the alternative system, any person wishing to use such an alternative system may file a permit application for use of such alternative system pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*. Denial for the use of an alternative system pursuant to 310 CMR 15.000 shall not prejudice any action on an application pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*.

(10) It shall be a violation of 310 CMR 15.000 to make a false representation that an alternative system has been approved for piloting.

15.286: Provisional Approval of Alternative System

(1) Provisional approval is intended to evaluate alternative systems that appear technically capable of providing levels of protection at least equivalent to those of standard on-site disposal systems, to determine whether, under actual field conditions in Massachusetts with broader usage than a controlled pilot setting, general use of the alternative system will provide such protection, and to determine whether any additional conditions addressing long term operation, maintenance and monitoring considerations are necessary to ensure that such protection will be provided.

(2) The Department shall grant provisional approval for use of an alternative system where connection to a sewer is not feasible if the applicant demonstrates that the alternative system is likely to provide a level of environmental protection at least equivalent to that of a system designed and constructed in accordance with 310 CMR 15.100 through 15.255. The Department shall grant provisional approval for use of an alternative system where connection to a sewer is feasible if the applicant demonstrates that the alternative system is likely to provide a level of environmental protection at least equivalent to that of a sewer in the following manner:

(a) evidence, satisfactory to the Department, of effective past performance of the alternative system over a period of at least two years of general usage in one or more states where relevant physical and climatological conditions are comparable to those in Massachusetts; or

(b) successful completion of piloting pursuant to 310 CMR 15.285, or equivalent piloting in one or more states where relevant physical and climatological conditions are comparable to those in Massachusetts. Piloting shall be considered successful when at least 75% of piloted systems have performed at the relevant level for at least 12 months.

When relying on system performance in other state's, all available information including but not limited to a copy of the other state's written approval, testing and performance data shall be provided.

15.286: continued

(3) The Department may establish any special conditions deemed necessary to ensure adequate protection of public health, safety and the environment, and to ensure appropriate evaluation and testing of the alternative system in the provisional use approval. Such conditions may include without limitation: specification of site or effluent characteristics; flow limitations; monitoring, testing, and reporting requirements; operation and maintenance contracting requirements; and financial assurance mechanisms. The Department may also specify changes or modifications of requirements otherwise applicable to conventional systems that are appropriate for use of the alternative system.

(4) The Approving Authority may allow the use of a provisionally approved system, subject to any special conditions established pursuant to 310 CMR 15.286(3), in any of the following situations:

(a) the proposed use of the alternative system is for upgrade of an existing system that has failed, is failing, or is nonconforming; provided there is no increase in design flow to the system. If connection of the facility to a sewer is feasible, provisional use shall be allowed only if the Department has determined that the alternative system is likely to provide a level of environmental protection at least equivalent to that of a sewer;

(b) the proposed use of the alternative system is for new construction or increased flow to serve a facility where access to a sewer is not feasible and for which an on site sewage disposal system in compliance with 310 CMR 15.000 exists on site, or for which a site evaluation for an on site system in compliance with 310 CMR 15.100 through 15.255 has been approved by the Approving Authority;

(c) the proposed use of the alternative system is for new construction or increased flow to serve a facility which has access to a municipal sewer, as evidenced by a local connection or discharge permit, and to which any discharge from the proposed system will be made should the alternative system fail, if the Department has determined that the alternative system is likely to provide a level of environmental protection at least equivalent to that of a sewer; or

(d) the site is owned or controlled by an agency of the Commonwealth or of the federal government and has been approved by the Department for use of the provisionally approved system.

(5) A Local Approving Authority may impose additional conditions on the use of alternative systems approved for provisional use under 310 CMR 15.000 only in accordance with regulations adopted pursuant to 310 CMR 15.003(3).

(6) Prior to making a determination on an application for provisional use approval of a technology pursuant to 310 CMR 15.286, the applicant shall publish notice of the application in the MEPA Environmental Monitor.

(7) The proponent of a provisionally approved alternative system shall conduct a performance evaluation of at least the first three years of operation of at least the first 50 systems installed pursuant to the provisional approval, and a representative sampling of additional systems installed during this period in accordance with a plan approved by the Department pursuant to 310 CMR 15.287(2). The evaluation plan shall be designed to identify promptly any failure of the alternative system to provide the expected level of environmental protection, and to identify the cause if possible. The plan shall provide for reporting to the Department or an agent authorized by the Department at periodic intervals.

(8) Upon receipt of the performance evaluation conducted pursuant to 310 CMR 15.286(7), the Department may: certify the alternative system for general use pursuant to 310 CMR 15.288; determine that additional evaluation in accordance with 310 CMR 15.286 is required; or disapprove use of the alternative system.

(9) If the Department determines that additional evaluation is required, it may require any modifications or adjustments to the alternative system, or impose such other requirements, as are necessary.

15.286: continued

(10) Should the Department disapprove general use of the alternative system which was provisionally approved, any person wishing to use such system may file a permit application for use of the alternative system pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*. Disapproval under 310 CMR 15.286 shall not prejudice any action on an application pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*.

(11) The conditions established in 310 CMR 15.287 apply to any use of a provisionally-approved alternative system.

(12) If at any time the Local Approving Authority or the Department determines that an alternative system that has been installed pursuant to a provisional approval is failing or has failed, enforcement action may be taken.

(13) It shall be a violation of 310 CMR 15.000 to make a false representation that an alternative system has been approved for provisional use.

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 or an agent authorized by the Department and approved by the Department prior to initiation of the use. Monitoring and sampling shall be performed in accordance with a plan approved by the Department. 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 written approval of the Department. 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, any agent authorized 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) Prior to the transfer of any ownership interest in an alternative system, or of any right or responsibility to operate an alternative system, the owner or operator shall provide written notice to the proposed 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. In addition, the owner shall include either a copy in full or a reference to the notice of the alternative system described in 310 CMR 15.287(10), and the recording information for that notice, in the instrument of transfer of any such ownership interest. In the event of the transfer of any such right or responsibility without a transfer of ownership interest, the owner or operator shall include a copy in full or a reference to the notice of the alternative system described in 310 CMR 15.287(10), and the recording information for that notice, in the agreement transferring such right or responsibility.

(6) The owner or operator, or the proponent of the alternative system, shall obtain and provide the Department or an agent authorized by 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.

15.287: continued

(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: *Ground Water Discharge Permit 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: *Certification of Operators of Wastewater Treatment Facilities*, 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 form of Notice approved by the Department disclosing the existence of the alternative on-site system and its approval. The system owner shall provide evidence of such recording to the Approving Authority.

15.288: Certification of Alternative Systems for General Use

(1) Certification for general use is intended to facilitate the use, under appropriate conditions, of alternative systems that have been demonstrated to provide levels of environmental protection at least equivalent to those of conventional on-site systems.

(2) The Department shall certify an alternative system for general use when the Department determines that the applicant has demonstrated that the alternative system in general usage will provide a level of environmental protection at least equivalent to that of a conventional on site system designed and constructed in accordance with 310 CMR 15.100 through 15.255. Such demonstrations shall include the evaluation of broad scale field use in Massachusetts pursuant to 310 CMR 15.286, or comparable use in one or more states where relevant physical and climatological conditions are similar to those in Massachusetts. The required demonstration of comparable use in one or more states shall include, at a minimum, system use and system monitoring, and operation and maintenance information at least as comprehensive as the in-state protocols outlined in 310 CMR 15.280 through 310 CMR 15.288. When relying on system performance in other states, all available information including but not limited to a copy of the other state's written approval, testing and performance data shall be provided. The applicant shall be considered to have demonstrated effective performance of the out of state systems when the applicant has demonstrated to the Department's satisfaction that at least 90% of the systems have performed at a level at least equivalent to that of a conventional on-site system.

(3) The Department may establish any special conditions necessary, to ensure adequate protection of public health, safety, welfare and the environment in its certification of an alternative system for general use. Such conditions may include without limitation: specification of site or effluent characteristics; flow limitations; monitoring, testing, and reporting requirements; operation and maintenance contracting requirements; a requirement that a certified operator shall operate the system; or financial assurance mechanisms. The Department may also specify changes or modifications of requirements otherwise applicable to conventional systems that are appropriate for use of the alternative system.

(4) A Local Approving Authority may impose additional conditions on the use of alternative systems certified for general use under 310 CMR 15.000 only in accordance with regulations adopted pursuant to 310 CMR 15.003(3).

(5) Systems with performance superior to conventional systems:

(a) If the Department determines that an alternative system is more effective than conventional systems in removing nitrates, the Department shall establish the nutrient removal credit which will be allowed for use of such system pursuant to 310 CMR 15.217, based on the nutrient removal performance of the approved technology.

15.288: continued

(b) In certifying an alternative system for general use, the Department may determine that any person wishing to use such system need not connect the facility to a sanitary sewer if such connection is or becomes feasible, if the performance of the alternative system will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sewer system.

(6) Prior to making a determination on an application for general use approval of a technology pursuant to 310 CMR 15.288, the Department shall publish notice of the application in the MEPA *Environmental Monitor*.

(7) Should the Department deny certification of the alternative system for general use, any person wishing to use such system may file a permit application for use of such alternative system pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*. Denial under 310 CMR 15.288 shall not prejudice any action on an application pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*.

15.289: Humus/Composting Toilets

(1) Humus/Composting Toilets are certified for general use subject to the following conditions:
(a) There shall be no liquid wastewater discharge from the humus/composting toilet. If the humus/composting toilet produces a liquid by-product that is not recycled through the toilet, the liquid by-product must be either:
1. discharged through a greywater system on the facility that includes a septic tank and leaching system; or
2. removed by a licensed septage hauler and properly disposed.
Any other disposal of a liquid by-product requires specific approval by the Department.
(b) If there is a greywater discharge designed in accordance with 310 CMR 15.262 or a discharge from a drain equipped with a garbage grinder from the facility, there shall be a septic tank and a soil absorption system designed in accordance with 310 CMR 15.262(1)(a) and 310 CMR 15.240(4). A filter system specifically approved by the Department for that purpose may be used in place of the septic tank, provided that there is no discharge of garbage grinder waste or of liquid by-product from the composting toilet to the greywater system. For publicly used state and federal facilities at which the only sources of greywater are handwashing sinks, janitorial basins and drinking water fountains, the Department may approve a design flow for the greywater system based on water meter readings from the same or similar facilities with a safety factor to assimilate maximum daily flows. An existing cesspool may serve as a leaching pit for these purposes where:
1. the cesspool is pumped and cleaned when the other components of the system are installed;
2. the bottom of the cesspool does not extend below the high groundwater elevation as determined by a Soil Evaluator in accordance with 310 CMR 15.103(3);
3. the cesspool meets the design criteria of 310 CMR 15.253 (pits, chambers, and galleries) with respect to effective depth, separation between units, and inspection access, or the cesspool is replaced by a precast concrete leaching pit meeting those requirements; and
4. the hydraulic loading requirements of 310 CMR 15.242 (effluent loading rates) are satisfied; and
(c) The system shall be designed to store compostable and composted solids for at least two years, unless otherwise approved by the Department. Residuals from the system shall be disposed of either:
a. by burial on-site or in another manner and location approved by the local Approving Authority, covered with a minimum of six inches of clean compacted earth; or
b. by a licensed septage hauler.

(2) Humus/Composting Toilets are certified for general use in new construction for residential facilities subject to the conditions set forth at 310 CMR 15.289(1)(a), where a system in full compliance with 310 CMR 15.000 could otherwise be installed on the site.

15.289: continued

(3) For commercial and public facilities or private organizations, humus/composting toilets are certified for general use subject to the conditions at 310 CMR 15.289(1)(a) without the need to demonstrate that a system in full compliance with 310 CMR 15.000 could otherwise be installed on the site.

15.290: Shared Systems

(1) An Approving Authority may allow the use of shared systems, subject to any special conditions established pursuant to 310 CMR 15.292, to serve two or more facilities that will result from division of a Facility, for upgrade of existing systems, for new construction, or for increased flow to an existing system, in accordance with 310 CMR 15.290 through 15.292.

(2) Any application for use of a shared system shall include the following:

(a) complete plans and specifications for the system as required by 310 CMR 15.201 through 15.255;

(b) a proposed operation and maintenance plan for the shared system;

(c) a description of the form of ownership which each component of the system serving more than one Facility will take, together with relevant legal documentation describing or establishing that ownership including, without limitation, easements, condominium master deed, or homeowners' association documents. All forms of private ownership of system components serving more than one Facility shall establish that each user of the system has the legal ability to accomplish any necessary maintenance, repair, or upgrade of the component;

(d) a description of the financial assurance mechanism proposed to ensure effective long-term operation and maintenance of the system. Acceptable financial assurance mechanisms may include, but are not limited to, an escrow account, letter of credit, performance bond, or insurance policy, which names the Approving Authority as beneficiary, and which provides for upgrade of the shared system in the event the shared system fails to protect public health, safety, welfare or environment pursuant to the criteria established in 310 CMR 15.303. A copy of the final financial assurance mechanism shall be provided to the Approving Authority prior to construction of the system; and

(e) a copy of a proposed Grant of Title 5 Covenant and Easement essentially identical to that contained in 310 CMR 15.000: *Appendix 1* shall be recorded and/or registered with the appropriate Registry of Deeds and/or Land Registration Office within 30 days of the Approving Authority's approval of the Covenant and Easement. The applicant shall file a certified Registry copy of this Covenant and Easement with the Approving Authority within 30 days of its date of recordation and/or registration, and prior to construction of the system.

(3) A Local Approving Authority may impose additional conditions on the use of shared systems under 310 CMR 15.000 only in accordance with 310 CMR 15.003(3).

15.291: Division of a Facility and Upgrades Using Shared Systems

(1) The Approving Authority may allow use of shared systems for upgrade of existing systems or to serve two or more facilities that will result from division of a Facility without granting a variance pursuant to 310 CMR 15.410 through 15.413 only where:

(a) the proposed shared system satisfies all technical requirements of 310 CMR 15.100 through 15.292 without the need for a variance except setbacks from property lines between facilities served by the shared system;

(b) there will be no new construction or increase in design flow from the facility or facilities to be served by the shared system;

(c) the applicant proposes institutional arrangements as described in 310 CMR 15.290(2)(c), and records a Grant of Title 5 Covenant and Easement essentially identical to that contained in 310 CMR 15.000: *Appendix 1*, in accordance with 310 CMR 15.290(2)(e); and

(d) the applicant provides the Approving Authority with the insurance policy or other comparable financial assurance mechanism required pursuant to 310 CMR 15.290(2)(d).

(2) The use of shared systems for upgrade of existing systems in any situation not described in 310 CMR 15.291(1) may only be approved through a variance.

15.291: continued

(3) A Local Approving Authority may impose additional conditions on the use of shared systems under 310 CMR 15.000 only in accordance with 310 CMR 15.003(3).

15.292: New Construction or Increased Flow to Existing Systems and Division of a Facility Using Shared Systems

(1) The Approving Authority may allow use of shared systems for new construction, increased flow to existing systems, or to serve two or more Facilities that will result from division of a Facility without granting a variance only where:

(a) the proposed shared system satisfies all technical requirements of 310 CMR 15.100 through 15.292 except setbacks from property lines between facilities served by the shared system;

(b) with the exception of a shared system serving a cluster development as defined in 310 CMR 15.002, the applicant demonstrates that the design flow from the facility or facilities to be served by the shared system does not exceed the design flow which could have been constructed in compliance with 310 CMR 15.000 without the use of a shared system;

(c) the applicant proposes institutional arrangements as described in 310 CMR 15.290(2)(c) and records a Grant of Title 5 Covenant and Easement essentially identical to that contained in 310 CMR 15.000: *Appendix 1*, in accordance with 310 CMR 15.290(2)(e); and

(d) the applicant provides the Approving Authority with the financial assurance mechanism required by 310 CMR 15.290(2)(d).

(2) The use of shared systems for new construction, for increased flow to existing systems or to serve two or more facilities that will result from division of a Facility in any situation not described in 310 CMR 15.292(1) may only be approved through a variance. An application for shared system approval of an existing system to serve two or more facilities resulting from division of a Facility is presumed to be for new construction where construction of any building served by the system was completed within the five years prior to the filing of the application.

(3) A Local Approving Authority may impose additional conditions on the use of shared systems under 310 CMR 15.000 only in accordance with regulations adopted pursuant to 310 CMR 15.003(3).

SUBPART D: INSPECTION AND MAINTENANCE OF SYSTEMS

15.300: Purpose and General Provisions

(1) The proper operation and maintenance of all systems is essential to their proper functioning, to the avoidance of public health hazards and to the protection of the environment. 310 CMR 15.300 is intended to ensure the proper operation and maintenance of all systems. The goal of system inspection is to provide sufficient information to make a determination as to whether or not the system is adequate to protect public health and the environment. If any of the criteria or conditions listed on the inspection form and specified in 310 CMR 15.303 and 15.304 are met, the system is failing to protect public health or the environment and must be repaired, replaced or upgraded.

(2) The provisions of 310 CMR 15.303 and 15.304 represent an initial effort to identify and upgrade those failed systems which pose the greatest risk to public health and safety, and to the waters of the Commonwealth.

(3) The Department shall produce educational materials suitable for distribution to the general public describing the importance of proper maintenance and operation of on-site systems and the impact of such systems on public health and the environment. In addition to its own distribution, the Department shall make such materials available to Local approving authorities and other interested persons.

(4) Any person owning or operating a facility on which an on site subsurface sewage treatment and disposal system is installed shall be responsible for the inspection and maintenance of, and any necessary upgrades to, the system.

15.300: continued

(5) Facilities with an increase in the nitrogen loading rate in accordance with 310 CMR 15.262(6) and (7) shall be inspected annually. The inspection shall document at a minimum: whether the system has been continually operated as approved; if the system consists of a greywater filter, whether it is operating properly; and whether compost and blackwater are disposed of off-site in accordance with all applicable laws and regulations. The results of each annual inspection shall be submitted to the Department and the Local Approving Authority by January 31st of the following year.

15.301: System Inspection

(1) Inspection at Time of Transfer. Except as provided in 310 CMR 15.301(2), 15.301(3), and 15.301(4), a system shall be inspected at or within two years prior to the time of transfer of title to the facility served by the system. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time. If weather conditions preclude inspection at the time of transfer, the inspection may be completed as soon as weather permits, but in no event later than six months after the transfer, provided that the seller notifies the buyer in writing of the requirements of 310 CMR 15.300 through 15.305. A copy of the complete inspection report shall be submitted to the buyer or other person acquiring title to the facility served by the system.

(2) The following transactions shall not be considered transfers of title for the purposes of 310 CMR 15.301(1):

(a) taking a security interest in a property, including but not limited to issuance of a mortgage;

(b) refinancing a mortgage or similar instrument, whether or not the identity of the lender remains the same;

(c) a change in the form of ownership among the same owners, such as placing the facility within a family trust of which the owners are the beneficiaries, or changing the proportionate interests among a group of owners or beneficiaries;

(d) adding or deleting a spouse as an owner or beneficiary; or a transfer between spouses during life, out right or in trust; or the death of a spouse;

(e) the appointment of or a change in a guardian, conservator, or trustee.

(3) Applicability to Specific Transfers of Title.

(a) Units in a Condominium or Cooperative Corporation. The cooperative corporation or condominium association shall be responsible for the inspection, maintenance, and upgrade of any system or systems serving the units, unless otherwise provided in the governing documents of the condominium association or the cooperative corporation. For a facility comprised of five or more condominium or cooperative units, each system located on the facility shall be inspected at least once every three years instead of at time of transfer of title and all existing systems shall be inspected by December 1, 1996. For a facility comprised of fewer than five condominium or cooperative units:

1. each system located on the facility shall be inspected at least once every three years and all existing systems shall be inspected by December 1, 1996, or

2. at the time of transfer of title of any unit, the system serving that unit shall be inspected in accordance with the time of transfer provisions of 310 CMR 15.301.

15.301: continued

(b) Foreclosure or Deeds in *Lieu* of Foreclosure. Inspection of the system must occur within two years before or six months after the execution of the memorandum of sale (irrespective of whether the foreclosing institution, the loan guarantor, the loan servicer, an unaffiliated third party, or any combination thereof, is/are executing such memorandum of sale) or delivery of the deed in lieu of foreclosure to the foreclosing institution or the loan servicer. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time. To the extent that foreclosing institutions or loan servicers have contractually allocated responsibility for the inspection to the unaffiliated third party or the loan guarantor acquiring the property within the specified timeframes, such foreclosing institutions or loan servicers will not be responsible for inspection of the system(s). Entities foreclosing on properties are required to notify those who acquire title of the inspection and upgrade requirements contained at 310 CMR 15.300 through 15.305, in writing, prior to or at the time of transfer.

(c) Inheritance by Will or Intestacy (Without a Will). With the exception of inheritance by a spouse or inheritance of residential real property between any of the relationships listed in 310 CMR 15.301(4)(d), the inspection of the system must occur within two years before or one year after the will being allowed by the probate court and the appointment of the executor; or within two years before or one year after the appointment of an administrator if the deceased dies intestate regardless of whether the property passes specifically or as part of the residue of the estate. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time. Executors or administrators are required to notify, in writing, those who acquire title to real property from an estate of the inspection and upgrade requirements contained at 310 CMR 15.300 through 15.305.

(d) Legal Life Estate or an Interest for Life or for a Term of Years in Trust. Inspection of the system must occur within two years before or six months of the death of the life tenant or the expiration of a present interest in trust for a term of years. If a successive life interest or an interest in trust for a term of years passes to a spouse, the inspection must occur within two years before or six months of the death of the last surviving spouse or the expiration of a present interest in trust to the spouse for a term of years. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time.

(e) Interfamily Transfers That Are Not Excluded Under 310 CMR 15.301(4)(d). Inspection of the system must occur within two years prior to transfer of title or if weather conditions prevent inspection at the time of transfer, the inspection must occur as soon as the weather permits, but in no event later than six months after the transfer. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time.

(f) Tax Taking Either by the Federal, State, or Municipal Government. Inspection of the system must occur within two years prior to transfer by governmental entity to buyer or within six months after the expiration of the right of redemption, provided that the governmental entity notifies the buyer in writing of the requirements contained at 310 CMR 15.300 through 15.305 for inspection and upgrade, if necessary. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time.

(g) Levy of Execution that Results in a Conveyance of Property. Inspection of the system must occur within two years prior to officer's deed of debtor's interest to buyer or within six months after the expiration of the right of redemption, provided that the officer notifies the buyer in writing of the requirements contained at 310 CMR 15.300 through 15.305 for inspection and upgrade, if necessary. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time.

15.301: continued

(h) Bankruptcy. Inspection of the system must occur within two years prior to transfer by bankruptcy trustee to buyer or within six months after the transfer, provided that the debtor notifies the buyer in writing of the requirements contained at 310 CMR 15.300 through 15.305 for inspection and upgrade, if necessary. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time.

(i) Change in Ownership or the Form of Ownership Where New Parties are Introduced (*e.g.*, introduction of new beneficiary/ies in a nominee trust; introduction of new joint tenant(s) or new tenant(s) in common; introduction of new parties where property is transferring from joint ownership to nominee or business trust, or where a new general partner is introduced; creation of a legal life estate or an interest for life or for a term of years in trust for a party other than the creator or his or her spouse; a change in the controlling ownership interest of a corporation, *etc*.). Inspection of the system must occur within two years prior to transfer or if weather conditions prevent inspection at the time of transfer, the inspection must occur as soon as weather permits, but in no event later than six months after the transfer, provided that the new party is notified in writing of the requirements contained at 310 CMR 15.300 through 15.305 for inspection and upgrade, if necessary. In a nominee trust situation, whoever has authority to add a new beneficiary is responsible for the inspection. An inspection conducted up to three years before the time of transfer may be used if the inspection report is accompanied by system pumping records demonstrating that the system has been pumped at least once a year during that time.

(4) Exclusions. Inspection of a system is not required at the time of transfer of title of the facility served by the system in the following circumstances:

(a) a certificate of compliance for a new system has been issued by the Approving Authority within three years prior to the time of transfer and system pumping records demonstrate that the system was pumped at least once during the third year; or

(b) the owner of the facility or the person acquiring title has signed an enforceable agreement with the Approving Authority to upgrade the system or to connect the facility to a sanitary sewer or a shared system within the next two years following the transfer of title, provided that such agreement has been disclosed to and is binding on the subsequent owner(s); or

(c) the facility is subject to a comprehensive local plan of on-site septic system inspection approved in writing by the Department and administered by a local or regional governmental entity, and the system has been inspected at the most recent time required by the plan. A comprehensive local plan may prioritize systems to be inspected on the basis of proximity to water resources, soil or geological conditions, age or size of systems, history of performance, frequency of pumping or other routine maintenance activity, or other relevant factors, and may establish different schedules and frequency of inspection on the basis of such criteria, provided that all systems are inspected at least once every seven years by a System Inspector approved by the Department; or

(d) the transfer is of residential real property between the following relationships:

1. between current spouses;
2. between parents and their children;
3. between full siblings; and
4. where the grantor transfers the real property to be held in a revocable or irrevocable trust, where at least one of the designated beneficiaries is of the first degree of relationship to the grantor.

(5) A system shall be inspected prior to any change in the type of establishment, or increase in design flow, or prior to any expansion of use of the facility served for which a building permit or occupancy permit from the local building inspector is required. If the system is a cesspool, or if the system is failing as set forth in 310 CMR 15.303 or 15.304(1) or is a significant threat to public health, safety, welfare and the environment as set forth in 310 CMR 15.304(2), then the system shall be upgraded prior to the change in the type of establishment, increase in design flow or expansion of use of the facility. Prior to an increase in the design flow to any cesspool, or to any system above the existing approved capacity, the cesspool or the system shall be upgraded in accordance with the standards applicable to new construction. Whenever an addition to an existing structure which changes the footprint of a building with no increase in

15.301: continued

design flow is proposed, the system inspection shall be an assessment to determine the location of all system components, including the reserve area. The proposed construction shall not be placed upon any of the system components or within any applicable setback distances in 310 CMR 15.211. If official records are available to make a determination regarding location of system components, an inspection is not required for footprint changes.

(6) Facilities with a total design flow of 10,000 or more gallons per day but less than 15,000 gallons per day at full build out shall be inspected by the last day of the applicable calendar year listed below in compliance with the provisions of 310 CMR 15.006, and applicable provisions of 310 CMR 15.300 through 15.354, or 314 CMR 5.00. Such systems shall, unless subject to 310 CMR 15.301(3)(a), be re-inspected during the fifth calendar year following the applicable year of initial inspection, and then during every fifth calendar year thereafter. An inspection of a system conducted within 30 days prior to the last day of the applicable year of initial inspection may be used as the initial inspection, provided that a System Inspection Form approved by the Department is submitted to the Department within 30 days of the inspection. The Department may accept a Certificate of Compliance for the entire system, issued by the Department within the two year period prior to an inspection deadline, as a substitute for a required system inspection.

Year of initial inspection	Basin in which system is located
1997	Charles, Housatonic, Hudson (Hoosic), North Coastal, Ten Mile
1998	Blackstone, Chicopee, Connecticut, Nashua
1999	Boston Harbor (Neponset), Cape Cod, French & Quinebaug, Merrimack, Narragansett Bay/Mt. Hope Bay, Parker
2000	Buzzards Bay, Deerfield, Ipswich, Islands, Millers, Shawsheen
2001	Concord (Sudbury, Assabet, Concord), South Coastal, Farmington, Taunton, Westfield

Basin boundaries shall be determined by reference to the most recent edition of the Massachusetts GIS maps. If all of the components of a system are not located in the same basin, then the system shall be inspected during the earliest of the applicable inspection years.

(7) Shared systems shall be inspected every three years.

(8) When a facility is divided or the ownership of two or more facilities is combined as specified in 310 CMR 15.010(2) or (3), all systems serving the facility or facilities shall be inspected.

(9) All systems shall be inspected when the owner or operator thereof is ordered to do so by the local Approving Authority, the Department or court.

(10) The results of any inspection(s) required by 310 CMR 15.301 shall be submitted to the Approving Authority on a current System Inspection Form approved by the Department within 30 days of the field inspection of the system components by the approved System Inspector, provided that this sentence shall not be construed to require the owner of a system or a System Inspector to submit to the Approving Authority the results of a voluntary assessment of the condition of a system that is not performed to comply with a requirement of 310 CMR 15.301. Any system determined to require upgrade pursuant to 310 CMR 15.303 or 15.304 solely as a result of a voluntary assessment shall not be subject to the deadlines for completion of upgrades in accordance with 310 CMR 15.305 unless the owner or operator of the system is ordered to do so by the local Approving Authority, the Department or court. Inspection forms for systems with design flows over 10,000 gpd, and systems serving state or federal facilities shall be submitted to the Department by the approved System Inspector and the owner. All inspections required by 310 CMR 15.301 shall be conducted by a currently approved System Inspector. For each required inspection, the System Inspector shall complete the System Inspection Form in its entirety. Failure to complete the form is a violation of 310 CMR 15.302.

15.301: continued

(11) Failure of an owner or operator of a system to have the system inspected, and use or operation of any system described in 310 CMR 15.301(1) through (10) after the dates or events set forth therein without a required inspection shall constitute violations of 310 CMR 15.000. The failure to submit the required inspection form in accordance with 310 CMR 15.301(10) shall create a rebuttable presumption that the required inspection has not been performed.

15.302: Criteria for Inspection

(1) The intent of 310 CMR 15.302 is to provide reasonable guidance for the inspection of existing systems in as non-intrusive a manner as possible, set forth the requirements for conducting an inspection, and to avoid damage to the system and any unnecessary disturbance of the surrounding soil area which is related to the treatment process. At a minimum, the septic tank and distribution box, if present, or cesspool, if present, shall be located, uncovered and inspected, and reasonable professional efforts shall be made to locate and identify other components and features, as described in 310 CMR 15.302(2) and (3). The inspection is not designed to provide information to demonstrate that the system will adequately serve the use to be placed upon it by the new owner. The inspection criteria are intended to allow for timely inspection to avoid undue delay in the transfer of property.

(2) An inspection shall consist of the collection and recording of the following information:

(a) a general description of the system components and layout;

(b) quantification of the source/type of sanitary sewage. This should include type of use (domestic or commercial/industrial) as well as the design flow and whether or not the facility being served is occupied at the time of the inspection;

(c) an analysis of the factors set forth in 310 CMR 15.303 (failure criteria) and, if the system has a design flow of 10,000 gpd or greater, 15.304 (threats to public health and environment);

(d) water use records for the previous two years for facilities served by public water supply, if available from the supplier;

(e) a description of the septic tank including:

1. approximate age, size, and condition of the tank;
2. distance between bottom of grease/scum layer and the bottom of the outlet baffle;
3. distance between the top of the scum layer and the top of the outlet tee;
4. thickness of the grease/scum layer;
5. depth of the sludge layer and distance from sludge to outlet tee;
6. physical condition of inlet and outlet tees;
7. any evidence of leakage into or out of tank; and
8. any evidence of backup of effluent.
9. a characterization of the distribution box, and of dosing tanks with pumps, if any, including:
    a. any evidence of solids carryover;
    b. leakage into or out of the distribution box;
    c. whether the flow is equally divided; and
    d. any evidence of backup.
10. a description of the condition of the soil absorption system including:
    a. any signs of hydraulic failure;
    b. condition of surface vegetation;
    c. level of ponding within disposal area;
    d. encroachments into disposal area; and
    e. other sources of hydraulic loading.
11. the location of private water supply well (if any) in relation to system components; and
12. a copy of pump-out records on file with the local Approving Authority.

15.302: continued

(3) The inspector shall make reasonable professional efforts to determine the location and condition of all system components and relevant physical features. If any component cannot be located or inspected, or any determination cannot be made, the inspector shall state on the inspection form the reasons and the steps taken to complete the inspection. At a minimum, reasonable professional efforts require compliance with the inspection requirements and protocol in 310 CMR 15.302(4) and (5). Where an inspection is conducted for the purpose of refuting or corroborating the findings of a prior inspection, reasonable professional efforts shall require, at a minimum, that the inspector employ methods to determine the location and condition of all system components and relevant physical features that are comparable to the methods employed by the prior inspector. Provided that these requirements are met, and the Approving Authority agrees with the findings in writing, the reinspection shall supersede the prior inspection unless otherwise determined in writing by the Approving Authority.

(4) Determination of High Groundwater Elevation. A deep hole observation test is not required to determine high groundwater elevation during an inspection. High groundwater elevation shall be estimated by the inspector, using best professional judgment, based on the methods described in 310 CMR 15.302(4)(a) through (c).

(a) The inspector shall review local maps and records of groundwater elevation (previous deep hole observation tests or groundwater monitoring results) on the site and nearby properties, if available.

(b) If the system includes a cesspool, the cesspool shall be pumped during the inspection and then examined to determine whether groundwater flows into the cesspool, indicating that the cesspool is below high groundwater elevation.

(c) If the system includes a septic tank and distribution box, the condition of these components and the surrounding soil shall be observed for indications that groundwater has infiltrated the system. Care should be taken not to destabilize the distribution box or the piping to or from the box.

These minimum requirements shall not prevent the use of additional methods. The elevation of nearby water bodies, or evidence of groundwater infiltration in other subsurface structures (for example, cellars), or hand augering to determine depth may aid in determining whether the system is located in the groundwater. The methods used to determine high groundwater elevation shall be described in the inspection report. A system owner may choose to have the high groundwater elevation determined by an observation well or deep hole observation test to confirm or disprove the results obtained by the minimum requirements of 310 CMR 15.302(4), or in place of the minimum requirements.

(5) Location of Soil Absorption System. The location of any cesspool must be determined. For systems with a septic tank and distribution box, excavation is not required to determine the location of the soil absorption system. Reference may be made to as-built plans of the system (if any). All components of the soil absorption system shall be located where the failure criteria specified in 310 CMR 15.303(1) are triggered. Where the failure criteria specified in 310 CMR 15.303(1) are not triggered, the location may be approximated by considering design flow, location of the distribution box and direction of outlet pipes, and physical condition of the site. The location may also be determined by running a metal snake or similar device from the outlet of the distribution box and using a metal detector, or use of similar methods. Nothing in 310 CMR 15.302(5) shall prevent an owner from choosing to establish the location of the leaching system through more intrusive methods.

(6) Compliance with Department Guidance. The inspector shall complete the system inspection in accordance with the Department's *Guidance for the Inspection of Subsurface Disposal Systems*.

15.303: Systems Failing to Protect Public Health and Safety and the Environment

(1) If one or more of the following conditions exist as documented by inspection by an approved System Inspector, or determined by the local Approving Authority or the Department, the system is failing to protect public health and safety and the environment and shall be upgraded in accordance with the timeframes of 310 CMR 15.305(1) and the standards of 310 CMR 15.404 and 15.405:

(a) Conditions applicable to all systems:

1. there is backup of sewage into the facility served by the system or any component of the system as a result of an overloaded and/or clogged soil absorption system or cesspool;

15.303: continued

2. there is a discharge of effluent directly or indirectly to the surface of the ground through ponding, surface breakout or damp soils above the disposal area or to a surface water of the Commonwealth;

3. the static liquid level in the distribution box is above the level of the outlet invert;

4. the liquid depth in a cesspool is less than six inches from the inlet pipe invert or the remaining available volume within a cesspool above the liquid depth is less than ½ of one day's design flow;

5. the septic tank or cesspool requires pumping more than four times a year;

6. the septic tank and/or the tight tank is made of metal, unless the owner or operator has provided the System Inspector with a copy of a Certificate of Compliance indicating that the tank was installed within the 20 year period prior to the date of the inspection; or the septic tank and/or the tight tank is cracked or is otherwise structurally unsound, indicating that substantial infiltration or exfiltration is occurring or is imminent;

7. a cesspool, privy or any portion of the soil absorption system extends below the high groundwater elevation;

(b) Conditions applicable to cesspools and privies:

1. A cesspool or privy is located:

a. within 100 feet of a surface water supply or tributary to a surface water supply;

b. within a Zone I of a public well;

c. within 50 feet of a private water supply well;

d. less than 100 feet but 50 feet or more from a private water supply well, unless a well water analysis, conducted at a laboratory that is certified by the Department for the parameters analyzed, indicates an absence of fecal coliform bacteria, the presence of ammonia nitrogen and nitrate nitrogen is equal to or less than five ppm. The laboratory's sampling protocols shall be followed and its chain of custody forms shall be signed and completed. If water well analysis is conducted, the System Inspector shall attach a copy of the chain of custody forms and the laboratory results to the System Inspection Form.

2. Evaluation of cesspools and privies near water resources:

A cesspool or privy is failing to protect public health and safety, welfare and the environment if any portion of it is within any of the dimensional criteria below and the local Approving Authority in its professional judgment determines the system is not functioning in a manner to protect the public health and safety, welfare and the environment:

a. within 50 feet of a surface water;

b. within 50 feet of a bordering vegetated wetland or a salt marsh.

In making a determination pursuant to 310 CMR 15.303(1)(b), the local Approving Authority shall consider:

1. the condition, design, and treatment provided by the existing system;

2. the vertical separation of the existing soil absorption system from groundwater;

3. the horizontal separation of the existing soil absorption system from the water body;

4. the soil characteristics of the site; and

5. the condition of the waterbody or wetland, including any sensitive use areas such as beaches or shellfish beds.

(c) Evaluation of systems with septic tanks and soil absorption systems near drinking water supplies:

If any portion of the soil absorption system is within any of the dimensional criteria listed in 310 CMR 15.303(1)(c), unless the Approving Authority in its professional judgment, with the concurrence of the public water supplier, if any, determines the system is functioning in a manner to protect the public health and safety, welfare and the environment.

1. within 100 feet of a surface water supply or tributary to a surface water supply;

2. within a Zone I of a public well;

3. within 50 feet of a private water supply well;

4. less than 100 feet but 50 feet or more from a private water supply well, unless a well water analysis, conducted at a laboratory that is certified by the Department for the parameters analyzed, indicates an absence of fecal coliform bacteria, and the presence of ammonia nitrogen and nitrate nitrogen is equal to or less than 5 ppm. The laboratory's sampling protocols shall be followed and its chain of custody forms shall be signed and completed. If water well analysis is conducted, the System Inspector shall attach a copy of the chain of custody forms and the laboratory results to the System Inspection Form.

(d) In making a determination pursuant to 310 CMR 15.303(1)(c), the Approving Authority shall consider:

15.303: continued

1. the condition, design, and treatment provided by the existing system;
2. the vertical separation of the existing soil absorption system from groundwater;
3. the horizontal separation of the existing soil absorption system from the water body;
4. the soil characteristics of the site; and
5. the condition of the water supply, including a water supply analysis that meets the requirements of 310 CMR 15.303(1)(c) for fecal coliform bacteria and whether the presence of ammonia nitrogen and nitrate nitrogen is equal to or less than 5 ppm. Where available, existing data may be used for this analysis.

(2) Any system shall be upgraded upon the order of the Department or the Local Approving Authority if either determines that a specific circumstance exists by which any system threatens public health, safety, welfare or the environment, causes or threatens to cause damage to property or creates a nuisance. The Local Approving Authority or the Department may require that such upgrades be completed within a shorter period of time than specified in 310 CMR 15.305. Where necessary to protect public health, safety, welfare and the environment, the Department or the Local Approving Authority may require the owner to install a recirculating sand filter or equivalent alternative technology in accordance with 310 CMR 15.202 or to obtain a groundwater discharge permit in accordance with 314 CMR 5.00: *Ground Water Discharge Permit Program.*

(3) A cesspool serving a facility with a design flow of 2000 gpd or greater but less than 10,000 gpd is failing to protect public health, safety, welfare and the environment. The owner of such Facility is required, pursuant to 310 CMR 27.04(4) to notify the Department's Underground Injection Control Program and the Local Approving Authority 30 days prior to upgrading the cesspool and to have completed the upgrade of the cesspool by April 5, 2005.

15.304: Large Systems which Fail to Protect or which Threaten Public Health and Safety and the Environment

(1) A system serving a facility with a design flow of 10,000 gpd or greater but less than 15,000 gpd is failing to protect public health, safety and the environment if any of the conditions identified in 310 CMR 15.303(1) are present, as documented by inspection by an approved System Inspector, or determined by the Local Approving Authority or the Department. Any such system shall be upgraded in accordance with the timeframes of 310 CMR 15.305(1) and the standards of 310 CMR 15.404 and 15.405; provided, that the Department shall be the Approving Authority for all such upgrades.

(2) A system serving a facility with a design flow of 10,000 gpd or greater but less than 15,000 gpd is a significant threat to public health, safety and the environment if any of the following conditions are present, as documented by inspection by an approved System Inspector, or as determined by the Local Approving Authority or the Department:

(a) the system is located within 400 feet of a surface water supply or within 200 feet of a tributary to a surface water supply; or

(b) the system is located within a nitrogen sensitive area as designated pursuant to 310 CMR 15.215;

(c) The owner or operator of any such system shall bring the system and the facility into compliance with the groundwater permit program requirements of 314 CMR 5.00: *Ground Water Discharge Permit Program*, including the obligation to obtain a groundwater discharge permit, within the time required by 310 CMR 15.305(2), unless the Department determines after consideration of the factors set forth in 310 CMR 15.304(3) that this requirement would be manifestly unjust, considering all the relevant facts and circumstances of the individual case, and the owner or operator has established that a level of environmental protection that is at least equivalent to that provided by 314 CMR 5.00: *Ground Water Discharge Permit Program* can be achieved without strict application of this requirement.

(3) (a) In determining whether enforcement of the requirement set forth at 310 CMR 15.304(2) would be manifestly unjust, the Department shall include at a minimum the following considerations:

15.304: continued

1. The owners of any such system for which permit applications were filed after May 9, 1994, or anywhere new construction occurred after March 31, 1995, shall be deemed to have had knowledge that a groundwater discharge permit would likely be required for such system pursuant to 310 CMR 15.304(2), and to have had a reasonable opportunity to make arrangements to come into compliance within the timeframes of 310 CMR 15.305(2);

2. The costs of preparing the demonstrations and implementing control measures required by 310 CMR 15.304 shall be compared to the costs of compliance with the requirement to obtain a groundwater discharge permit; and

3. Any other relevant factor.

(b) In determining whether the applicant can provide the same degree of environmental protection as required by 310 CMR 15.304(2), the Department shall require at a minimum, the following:

1. inspection reports for the system as required by 310 CMR 15.301;

2. an assessment of the groundwater flow at the site, including but not limited to direction and rate of groundwater flow, assessment of saturated flow conditions and concentrations of nitrate and other pollutants associated with the system;

3. an assessment of water quality of relevant surface water supply, groundwater supply, or nitrogen sensitive areas;

4. a proposed design and engineering plans for upgrade of the system, prepared by a Massachusetts Registered Professional Engineer, that will, at a minimum,

a. satisfy the requirements of 310 CMR 15.202 (recirculating sand filter or equivalent alternative technology);

b. satisfy the nitrogen loading requirements of 310 CMR 15.214; and

c. ensure that the standards applicable to groundwater discharge permits pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program* are met at the property line and at the point the discharge from the facility reaches any surface water or water supply well.

5. a proposed maintenance, monitoring, and reporting plan that will ensure proper functioning of the upgraded system, and detection of any malfunction or failure to attain required discharge quality before discharges from the system leave the property; and

6. if size and use of the facility is relevant to the demonstration that an equal level of environmental protection has been provided, appropriate use restrictions shall be granted and recorded in the chain of title for the property served by the system in the Registry of Deeds or Land Registration Office, as applicable, to ensure that such conditions are not changed.

(c) An applicant for a determination pursuant to 310 CMR 15.304(3) shall file a request for such determination not less than two years prior to the date by which the owner would otherwise be required to obtain the groundwater discharge permit pursuant to 310 CMR 15.305(2).

(d) In making any determination pursuant to 310 CMR 15.304(3), the Department shall impose such conditions as it determines appropriate to ensure protection of public health, safety, welfare and the environment. At a minimum, such conditions shall include upgrade of the system to the standards described in 310 CMR 15.304(3)(b)4., and a maintenance, monitoring and reporting plan as described in 310 CMR 15.304(3)(b)5.

(4) Any system serving a facility with a design flow of 10,000 gpd or greater but less than 15,000 gpd shall be upgraded upon the order of the Department or the Local Approving Authority when a specific circumstance exists by which the system threatens public health, safety, welfare or the environment or causes or threatens to cause damage to property or creates a nuisance as determined by the Local Approving Authority or the Department. Where necessary to protect public health, safety, welfare and the environment, the Department or the Local Approving Authority may require the owner to install a recirculating sand filter or equivalent alternative technology in accordance with 310 CMR 15.202 or to obtain a groundwater discharge permit in accordance with 314 CMR 5.00.

(5) A cesspool serving a facility with a design flow of 10,000 gpd or greater but less than 15,000 gpd is failing to protect public health, safety, welfare and the environment. The owner of such Facility is required, pursuant to 310 CMR 27.04(4), to notify the Department's Underground Injection Control Program 30 days prior to upgrading the cesspool and to complete the upgrade of the cesspool by April 5, 2005.

15.305: Deadlines for Completion of Upgrades

(1) If a system is failing to protect public health, safety, welfare or the environment as set forth in 310 CMR 15.303(1) or 15.304(1), the owner or operator shall upgrade the system within two years of discovery unless:

(a) a shorter period of time is set by the Local Approving Authority or the Department based upon the existence of an imminent health hazard; or

(b) the continued use of the system is permitted by the Local Approving Authority in accordance with the provisions of an enforceable schedule for upgrade. Bases for continued use include, but are not limited to, proposals to connect to a sanitary sewer or shared system. A fiscal commitment to the sewering plan or shared system plan, together with an approved facility plan where appropriate, proposing connection or replacement of the failing system within five years, and an enforceable commitment by the owner to perform interim measures (for example, regular pumping) shall accompany any such local approval. Such approval shall expire in five years or upon the failure of the applicant for such approval to meet interim deadlines set forth in the enforceable schedule for upgrade and the plan. The Department may by specific written approval authorize the Local Approving Authority to allow a longer period of time, where the municipality has provided the Department a proposed implementation schedule for design and construction and has made a demonstrated financial commitment to the construction schedule. The Department may revoke any such approval if the approved schedule is not met.

(2) If a system serving a facility with a design flow of 10,000 gpd or greater but less than 15,000 gpd is a significant threat to public health, safety, welfare or the environment as set forth in 310 CMR 15.304(2), the owner or operator shall upgrade the system within five years of discovery in accordance with the provisions of an enforceable schedule unless:

(a) a shorter period of time is set by the Department based upon the existence of an imminent health hazard;

(b) the continued use of the system is permitted by the Department because it is necessary to allow implementation of an environmentally superior solution. An enforceable commitment by the owner to perform interim measures (*e.g.*, regular pumping, addition of fill) shall accompany any such approval by the Department. Such approval shall expire in seven years or upon the failure of the applicant for such approval to meet interim deadlines set forth in the enforceable schedule for upgrade.

(3) The owner or operator shall take appropriate measures throughout the period between discovery of the condition requiring upgrade and completion of the upgrade to ensure that there is no backup or direct discharge of sewage or effluent to buildings, to the surface of the ground, or to surface waters. The local Approving Authority or the Department may order the owner or operator to take any measure necessary to ensure the protection of public health, safety, welfare and the environment during such period.

(4) Except as provided in 310 CMR 15.004(3), all systems shall be abandoned in accordance with 310 CMR 15.354 and the buildings served by the systems shall be connected to a sewer when a sewer becomes available, unless:

(a) the system is an alternative system approved for such use pursuant to 310 CMR 15.280 through 15.287;

(b) the Department has made the determination in approving either the remedial use of an alternative system pursuant to 310 CMR 15.284 or in certifying an alternative system for general use pursuant to 310 CMR 15.288 that any person using such system need not connect the facility to a sanitary sewer if such connection is feasible; or

(c) the owner of an existing system has obtained a variance from this requirement pursuant to 310 CMR 15.410 through 15.415.

All systems shall be abandoned in accordance with 310 CMR 15.354 and the buildings served by the systems shall be connected to a sewer when directed to do so by the Board of Health pursuant to M.G.L. c. 83, § 11, by the Department pursuant to 310 CMR 15.000, or by court order.

15.340: Approval of System Inspectors

(1) System Inspectors who perform inspections pursuant to 310 CMR 15.301 shall be approved by the Department and shall be limited to:

15.340: continued

(a) Massachusetts Registered Professional Engineers with a concentration in civil, sanitary or environmental engineering; Massachusetts Registered Sanitarians; or Massachusetts Certified Health Officers;
(b) Board of Health members or agents with at least one year of experience at the time of application; Engineers in Training (EIT certified) with a concentration in civil, sanitary or environmental engineering; Massachusetts licensed home inspectors and associate home inspectors as defined in St. 1999, c. 146, licensed septage haulers; dispoal system installers; or other individuals with a minimum of one year of demonstrated experience in septic system design or inspection, who have attended training provided or authorized by the Department; and who have passed an examination prepared and administered by the Department or an agent authorized by the Department to qualify as an approved System Inspector pursuant to 310 CMR 15.340(4); or
(c) Individuals certified as on-site inspectors by the National Sanitation Foundation or other certifying organizations approved by the Department.

(2) Individuals who qualify pursuant to 310 CMR 15.340(1) shall apply to the Department, or an agent authorized by the Department, for approval to perform inspections required under 310 CMR 15.000. Such application shall demonstrate satisfactorily to the Department, or an agent authorized by the Department, the qualifications of the applicant and shall be accompanied by a fee as established by the Department.

(3) No persons other than those listed at 310 CMR 15.340(1) may perform inspections required by 15.301.

(4) The Department may approve System Inspectors who attend training provided or authorized by the Department and pass a standard examination prepared and administered by the Department or an agent authorized by the Department. Said examination shall be designed to establish the fitness of the applicant for certification to assess the condition and function of on-site systems and to determine whether maintenance, including repair or replacement of system components, is necessary.

(5) The passing score for the examination shall be 75% correct answers to all questions posed. Any person who is denied approval as a System Inspector based on his or her failure to pass the examination given by the Department, or an agent authorized by the Department, may request, and is entitled to receive, a written statement of the basis for denial.

(6) The Department, or an agent authorized by the Department, shall maintain a list of all approved System Inspectors. The list shall be available for inspection or examination by any person.

(7) The Department may revoke or suspend the approval and/or listing of a System Inspector approved pursuant to 310 CMR 15.340(1) for a time specified by the Department, during which time the inspector may not reapply to become a System Inspector, after opportunity for a hearing conducted pursuant to M.G.L. c. 30A, when it determines that the System Inspector has failed to comply with 310 CMR 15.000 with respect to the inspection of one or more systems including, without limitation:
(a) the inspector has falsified or fraudulently altered a system inspection report or misrepresented the results of an inspection;
(b) the inspector has conducted a system inspection which does not comply with 310 CMR 15.000 and has incorrectly passed or failed the system;
(c) the inspector has failed to submit or accurately complete a system inspection report as required by 310 CMR 15.000; or
(d) the inspector has engaged in deceptive practices. Reinstatement following revocation shall be by written examination only.

(8) Based on a System Inspector's noncompliance with 310 CMR 15.000, the Department, by issuance of an order, may require the System Inspector, among other things, to attend or repeat the System Inspector training course and/or to take or retake the System Inspector examination described in 310 CMR 15.340(4).

15.340: continued

(9) It shall be a violation of 310 CMR 15.000 for any person to falsify, misrepresent or fraudulently alter a system inspection report or the results of an inspection.

(10) System Inspectors shall submit the results of their inspection within 30 days of completing the inspection on a System Inspection Report form approved by the Department to the Approving Authority together with the signed statement at the bottom of the form certifying that the inspection has been performed and any recommendations regarding upgrade, repair, or maintenance of the system made by the System Inspector on the form were made consistent with the Inspector's training and experience in the maintenance and proper functioning of on site systems.

(11) System Inspectors may perform system inspections required by 310 CMR 15.301 while acting as an agent of an Approving Authority (a fee may be assessed pursuant to M.G.L. c. 40, § 22F), or as an independent agent of the system owner.

(12) System Inspectors initially approved by the Department prior to January 1, 2005, shall apply to the Department, or an agent authorized by the Department, to renew their approval by January 1, 2007. System Inspectors initially approved by the Department after January 1, 2005, shall apply to the Department, or an agent authorized by the Department, to renew their approval at least 90 days prior to the expiration of the three years following their approval date. Provided that a System Inspector timely files a complete renewal application, the System Inspector's approval shall not expire until the Department issues a final determination on the renewal application. A fee established by the Department shall accompany each renewal application; any application that does not include the fee shall be deemed incomplete. The approval of a renewal application shall expire three years from the date of issuance. Each System Inspector thereafter shall file a complete renewal application at least 90 days prior to the expiration date of his/her most recent approval.

(13) Beginning in 2010, at the time of filing any subsequent renewal application in accordance with 310 CMR 15.340(12), a System Inspector shall demonstrate that he or she has earned ten Training Contact Hours in the previous three years that improve the System Inspector's abilities in the following areas:

(a) the principles of on-site sewage treatment and disposal;
(b) safely and accurately conducting system inspections according to the requirements of 310 CMR 15.000;
(c) safely and accurately identifying and locating systems;
(d) safely and accurately assessing the condition and function of systems; and
(e) safely and accurately determining whether maintenance, including repair or replacement of system components, is necessary.

15.351: System Pumping and Routine Maintenance

(1) Every septic tank, tight tank, or cesspool shall be pumped whenever necessary to ensure proper functioning of the system. Pumping is required whenever the top of the sludge or solids layer is within 12 inches or less of the bottom of the outlet tee, or the top of the scum layer is within two inches of the top of the outlet tee, or the bottom of the scum layer is within two inches of the bottom of the outlet tee. Pumping frequency is a function of use, although pumping is typically necessary at least once every three years, and is recommended annually for a system with a domestic garbage grinder. Without limiting the foregoing, a septic tank, tight tank, or cesspool shall be pumped when the owner or operator is required to do so by the Local Approving Authority or the Department. Whenever a system component including, but not limited to, a septic tank, tight tank, cesspool, grease trap, pump chamber or distribution box is pumped, its condition shall be noted by the system pumper on a system pumping form approved by the Department, and the results shall be submitted by the system pumper to the Approving Authority within 14 days from the pumping date. Such notation of the system's condition on the system pumping form shall not constitute a System Inspection Report submitted to the Approving Authority in accordance with 310 CMR 15.340.

15.351: continued

(2) Grease traps shall be inspected monthly by the owner/operator and shall be cleaned by a licensed septage hauler whenever the level of grease is 25% of the effective depth of the trap, or at least every three months, whichever is sooner. The owner/operator shall keep all inspection and pumping records.

(3) Pumps, alarms and other equipment requiring periodic or routine inspection and maintenance shall be operated, inspected and maintained in accordance with the manufacturer's and the designer's specifications. In no instance shall inspection be performed less frequently than once every three months for any system serving a facility with a design flow of 2,000 gallons per day or greater, and annually for any system serving a facility with a design flow of less than 2,000 gallons per day. The system owner shall submit the results of such inspections to the Approving Authority annually by January 31st of each year for the previous calendar year.

15.353: Emergency Repair

(1) Emergency repair or replacement of system components shall be completed within 30 days and shall be limited to the following:

(a) pumping of a septic tank, tight tank, or cesspool as frequently as necessary to prevent backup or breakout; or

(b) repair or replacement of one or more structural components of a system otherwise in compliance with 310 CMR 15.000, excluding the soil absorption system, such as a clogged building sewer or distribution line, damaged building sewer, septic tank or distribution box, or broken tee, which is determined to be the probable cause of the system failure and for which no modification or alteration of the system design is required.

(2) The emergency repair shall be limited to pumping if pumping alleviates the imminent danger to the public health, safety, welfare or the environment. If pumping does not alleviate the imminent danger to the public health, safety, welfare, or the environment, the Disposal System Installer may repair or replace one or more structural components of a system, excluding the soil absorption system, provided that:

(a) the system is otherwise in compliance with 310 CMR 15.000;

(b) any structural component that is repaired or replaced shall be in compliance with or upgraded to the requirements of 310 CMR 15.000;

(c) the Disposal System Installer has determined the structural component being repaired or replaced is the probable cause of the condition constituting an imminent danger to the public health, safety, welfare or the environment; and

(d) no modification or alteration of the system design is required.

(3) Only a Permitted Disposal System Installer may conduct an emergency repair.

(4) All emergency repairs other than pumping shall be preceded by at least 24-hour notice to the Approving Authority. All emergency repairs other than pumping shall be followed within 14 days of commencement of the emergency repair by an application for a Disposal System Construction Permit, local upgrade approval, or an application for a variance, if needed, pursuant to 310 CMR 15.411(2). The applicant may backfill any excavation required for the emergency repair unless directed otherwise by the Approving Authority. Pumping shall be reported to the Approving Authority.

(5) Any upgrade or expansion of a system which is not an emergency repair shall be designed, approved, and constructed in accordance with 310 CMR 15.000.

15.354: Abandonment of Systems

(1) Whenever the use of a system is discontinued following connection to a municipal or private sanitary sewer or shared on-site system or following condemnation or demolition of a building served by the system, the system shall be considered abandoned and any further use of the system for any purpose shall be prohibited unless, after inspection, the Approving Authority determines the system is in compliance or can be brought into compliance with 310 CMR 15.000.

15.354: continued

(2) Continued use of a septic tank where the tank is to become an integral part of a sanitary sewer system requires the prior written approval from the local municipal authority responsible for the operation of the sanitary sewer system.

(3) The following procedure shall be used to abandon a system:
(a) Within 14 days prior to discontinuance of use of a system, the facility owner shall apply to the Approving Authority to abandon the existing system citing the reason(s) abandonment is necessary, and where connection to municipal or private sanitary sewer has been made, a copy of the sewer connection permit shall be submitted with the application;
(b) Upon receipt of the Approving Authority's written approval to abandon the system, the septic tank shall be pumped of its entire contents by a licensed septage hauler; and
(c) The tank shall be excavated and removed from the site, or the bottom of the tank shall be opened or ruptured after being pumped of its content so as to prevent retainage of water and the tank shall be completely filled with clean sand or other suitable material approved in writing by the Approving Authority.

SUBPART E: PROCEDURES FOR SEEKING AND RECEIVING LOCAL UPGRADE APPROVALS AND VARIANCES FROM THE PROVISIONS OF SUBPARTS B AND C OF 310 CMR 15.000

15.401: General Provisions

(1) Except as set forth in 310 CMR 15.401 through 15.422, every application to construct, upgrade or expand a system shall be prepared, and the work therefore authorized pursuant to a Disposal System Construction Permit shall be conducted, in full compliance with the procedural and technical requirements of 310 CMR 15.100 through 15.293.

(2) In general, full compliance with the provisions of 310 CMR 15.000 is presumed to be necessary for the protection of public health, safety, welfare and the environment. Any requests to vary from the standards of 310 CMR 15.000 by means of a local upgrade approval or a variance shall be carefully reviewed by the Approving Authority and, where required, by the Department.

15.402: Use of Local Upgrade Approvals or Variances

(1) Local Upgrade Approvals may be granted by Local Approving Authorities without review by the Department for required or voluntary upgrade of failed or nonconforming systems with design flows below 10,000 gpd in accordance with the terms and provisions of 310 CMR 15.402 through 15.405. Upgrade Approvals for required or voluntary upgrade of systems with design flows of 10,000 gpd or greater but less than 15,000 gpd which are failing to protect or are a significant threat to public health, and safety, welfare and the environment as set forth in 310 CMR 15.304 shall be approved by the Department.

(2) Proposals for new construction or for increase in flow to an existing system other than in full compliance with 310 CMR 15.100 through 15.293 must seek and obtain a variance from the Approving Authority in accordance with the terms and conditions of 310 CMR 15.410 through 15.417.

15.403: Local Upgrade Approvals

(1) The owner or operator may upgrade a failed or nonconforming system with design flows below 10,000 gpd (systems which trigger failure criteria set forth at 310 CMR 15.303) or systems with design flows of 10,000 gpd or greater but less than 15,000 gpd which fail to protect public health, safety, welfare and the environment (large systems set forth at 310 CMR 15.304(1)) pursuant to a local upgrade approval in accordance with the standards and requirements of 310 CMR 15.404 and 15.405 without obtaining variances. Local upgrade approvals for any system serving a facility owned by an agency of the Commonwealth or the federal government or systems with design flows of 10,000 gpd or greater but less than 15,000 shall be granted by the Department applying the same standards. The application for a local upgrade approval shall be made using a form approved by the Department. Notification to abutters shall be provided pursuant to the process in 310 CMR 15.411(1)(b), as required by 310 CMR 15.405(2), where the application is for reduction in the setback from a property line or from a private water supply well.

15.403: continued

(2) Local Upgrade approvals shall not be granted for upgrade proposals which include the addition of new design flows to a cesspool or privy or for the addition of new design flows above the existing approved capacity of a system constructed in accordance with the provisions of 310 CMR 15.000 or the 1978 Code.

(3) System upgrades which cannot be performed in accordance with 310 CMR 15.404 and 15.405 require a variance from the provisions of 310 CMR 15.000, which shall be processed in accordance with 310 CMR 15.410 through 15.417.

15.404: Maximum Feasible Compliance - Approvals for Upgrades

(1) Goal of full compliance. Wherever feasible, a failed or nonconforming system (other than systems threatening public health, safety, welfare or the environment as described in 310 CMR 15.304(2)) shall be brought into full compliance through installation of one or more of the following:

(a) an upgraded system which is in full compliance with 310 CMR 15.100 through 15.293;
(b) an alternative system which has been approved for such use pursuant to 310 CMR 15.284 (remedial use), 15.285 (piloting), 15.286 (provisional approval), or 15.288 (certification for general use);
(c) an RSF or equivalent alternative technology where the system is located in a Nitrogen Sensitive Area and has a design flow of 2000 gpd or greater in accordance with 310 CMR 15.202(1);
(d) where proposed by the owner or operator, a shared system which has been approved for such use pursuant to 310 CMR 15.290 and 15.291; or
(e) connection to a sewer system.

(2) Where failure of the system is solely due to failure of the septic tank, distribution box, soil absorption system, piping, and/or building sewer, upgrade of that component(s) in full compliance with 310 CMR 15.000 shall be deemed to meet the goal of full compliance; provided that the upgraded component functions properly with the other system components, the system functions properly hydraulically, and the owner obtains a certificate of compliance from the Approving Authority for the component repaired or replaced. If other system failures are discovered during upgrade of that component(s), such other system failures shall be upgraded in accordance with 310 CMR 15.405.

(3) When full compliance pursuant to 310 CMR 15.404(1) is not feasible, the Approving Authority may issue a local upgrade approval authorizing upgrade of the system with the goal of maximizing protection of public health, safety, welfare and the environment to the maximum extent feasible. The following requirements shall not be varied by the Approving Authority except as explicitly set forth in 310 CMR 15.404(3)(b) and (d):

(a) a septic tank with an effective liquid capacity providing no less than 24 hours of retention time or 1000 gallons, whichever is greater, shall be provided unless the septic tank is an elevated tank constructed in accordance with 310 CMR 15.213 (construction in V-zones) in which case the effective liquid capacity may consist of a 500-gallon tank;
(b) a minimum of four feet of separation between the bottom of the soil absorption system and the high groundwater elevation shall be provided, using fill if necessary. The Approving Authority may allow a three foot separation only in full compliance with 310 CMR 15.405(1)(h).
(c) a minimum of four feet of naturally occurring pervious soil below the entire area of the soil absorption area and reserve area shall be provided;
(d) the soil absorption system shall be designed to provide as much of the required area as possible on the facility served or, if proposed by the owner or operator, on an abutting facility pursuant to a valid recorded easement. The Approving Authority may reduce the required soil absorption system area no more than 25%, as provided in 310 CMR 15.405(1). Reductions in the required subsurface disposal area in excess of 25% may only be varied by the Department, and may require the installation of a Department-approved septic tank effluent tee filter, dosing of portions of the soil absorption system on an alternating basis, and/or other measures to protect the integrity of the soil absorption system; and
(e) the soil absorption system shall not be located within 100 feet of a surface water supply or tributary to a surface water supply, within 50 feet of a private water supply well, or within the Zone I of a public water supply well.

15.405: Contents of Local Upgrade Approval

(1) In granting local upgrade approvals pursuant to 310 CMR 15.404(2) where full compliance as defined in 310 CMR 15.404(1) is not feasible, the Approving Authority shall consider the impact of the proposed system and shall vary to the least degree necessary the requirements of 310 CMR 15.100 through 15.293 so as to allow for both the best feasible upgrade within the borders of the lot, and have the least effect on public health, safety, welfare and the environment. Under a local upgrade approval, the Approving Authority is allowed to diverge from the goal of full compliance only to the extent necessary to achieve a feasible upgrade and may allow divergence only from those provisions, and to the extent, as specified in 310 CMR 15.404(2) and 15.405(1). In determining whether full compliance is feasible, the Approving Authority should appropriately consider not only physical possibility as dictated by the conditions of the site, but also the economic feasibility of the upgrade costs. The Approving Authority should emphasize protection of water resources and treatment of the sanitary sewage. Absent conditions which would result in a different outcome based on best professional judgment, the options set forth below should be considered in the order in which they appear with 310 CMR 15.405(1)(a) being the first option to be considered and rejected or adopted and 310 CMR 15.405(1)(k) being the last option to be considered and rejected or adopted:

(a) Reduction of system location setbacks otherwise established in 310 CMR 15.211 for property lines provided that the system is within the property lines, a survey of the property line is required if a component is to be placed within five feet of the property line, and no such reduction shall result in the soil absorption system being located less than ten feet from a soil absorption system on an abutting property;

(b) Reductions of system location setbacks from cellar wall, crawl space, swimming pool, or slab foundations; an increase in the maximum allowable depth of system components required by 310 CMR 15.221(7), from 36 inches to 72 inches below finish grade, provided that adequate venting and adequate access are provided and H-20 loading is provided for all system components; a decrease in the liquid depth of the septic tank required by 310 CMR 15.223(2) from four feet to three feet;

(c) Up to a 25% reduction in the required subsurface disposal area design requirements;

(d) Where upgrade is required pursuant to 310 CMR 15.303(1) because it is within Zone I of public well or within 100 feet of private well, relocation of the well. Any relocation of a public well shall be performed pursuant to 310 CMR 22.00: *Drinking Water* (water supply source approval);

(e) Reduction of system location setbacks from bordering vegetated wetlands;

(f) Reduction of system location setbacks from surface waters, salt marshes, inland and coastal banks, certified vernal pools in accordance with 310 CMR 15.211(1)[2], leaching catch basins, dry wells, or surface or subsurface drains other than those which discharge to surface water supplies or tributaries thereto;

(g) Reduction of system location setbacks from water supply lines, private water supply wells (but not within 50 feet of the well), tributaries to surface water supplies, surface water supplies, but not within 100 feet of the surface water supply or tributary thereto or open, surface or subsurface drains which discharge to surface water supplies or tributaries thereto;

(h) the Approving Authority may reduce the required four foot separation (in soils with a recorded percolation rate of more than two minutes per inch) or the required five foot separation (in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the soil absorption system and the high groundwater elevation only if all of the following conditions are met:

1. An approved Soil Evaluator who is a member or agent of the local Approving Authority determines the high groundwater elevation;
2. A minimum three foot separation (in soils with a recorded percolation rate of more than two minutes per inch) or a minimum four foot separation (in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the soil absorption system and the high groundwater elevation is maintained;
3. The system is a failed or non-conforming system serving an existing building with a design flow of less than 2,000 gpd;
4. No increase in design flow is allowed;
5. No reduction in required soil absorption system size or setbacks from public or private wells, bordering vegetated wetlands, surface waters, salt marshes, coastal banks, certified vernal pools, water supply lines, surface water supplies or tributaries to surface water supplies, or drains which discharge to surface water supplies or their tributaries, is allowed.

15.405: continued

(i) A sieve analysis may be performed in accordance with Department guidance if a percolation test in accordance with 310 CMR 15.104 and 15.105 can not be performed as determined by the Approving Authority;

(j) Reduction of the requirement of a 12 inch separation between the inlet and outlet tees and high groundwater, provided that all boots or pipe joints are sealed with hydraulic cement or installed with watertight sleeves and the tank is proven watertight. Expandable foam spray is not an acceptable alternative for sealing pipe joints; or

(k) At least one deep hole has been performed in the proposed disposal area and it has been determined by the Approving Authority that the deep hole adequately characterizes the soils for the purpose of designing the soil absorption system.

(2) No application for a local upgrade approval in which the setback from property lines or a private water supply well is reduced shall be complete until the applicant has notified all abutters whose property or well is affected by certified mail at his/her own expense at least ten days before the Board of Health meeting at which the upgrade approval will be on the agenda. The notification shall reference the standards set forth in 310 CMR 15.402 through 15.405 and indicate the date, time and place where the upgrade approval will be discussed.

(3) If the nonconforming system cannot be upgraded in accordance with 310 CMR 15.404 and 15.405(1) the owner shall:

(a) obtain a groundwater discharge permit pursuant to 314 CMR 5.00: *Ground Water Discharge Permit Program*;

(b) apply to the Approving Authority to use a tight tank in accordance with the provisions of 310 CMR 15.260;

(c) apply for a variance pursuant to 310 CMR 15.410 through 15.415; or

(d) abandon the system in compliance with 310 CMR 15.354.

(4) Nothing in 310 CMR 15.405 shall authorize violation of M.G.L. c. 131, § 40 and 310 CMR 10.00: *Wetlands Protection*, or any other applicable provision of law.

15.410: Variances - Standard of Review

(1) Local Approving Authorities and the Department may vary the application of any provisions of 310 CMR 15.000 with respect to any particular case except those listed in 310 CMR 15.415. Variances for increased flow to existing systems shall be governed by the provisions of 310 CMR 15.414. Variances for schools shall be governed by the provisions of 310 CMR 15.416. Variances shall be granted only when, in the opinion of the Approving Authority:

(a) The person requesting a variance has established that enforcement of the provision of 310 CMR 15.000 from which a variance is sought would be manifestly unjust, considering all the relevant facts and circumstances of the individual case; and

(b) The person requesting a variance has established that a level of environmental protection that is at least equivalent to that provided under 310 CMR 15.000 can be achieved without strict application of the provision of 310 CMR 15.000 from which a variance is sought.

(2) 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.

15.411: Process for Seeking a Variance from Local Approving Authorities

(1) The Local Approving Authority shall review requests for variances as follows.

(a) Every request for a variance shall be in writing, shall make reference to the specific provision of 310 CMR 15.000 for which a variance is sought, and shall include a statement demonstrating compliance with 310 CMR 15.410.

(b) No application for a variance shall be complete until the applicant has notified all abutters by certified mail at his/her own expense at least ten days before the Board of Health meeting at which the variance request will be on the agenda. The notification shall reference the specific provisions of 310 CMR 15.000 from which a variance is sought, a statement demonstrating compliance with 310 CMR 15.410, and the date, time and place where the application will be discussed.

15.411: continued

(2) Emergency repairs pursuant to 310 CMR 15.353 may be performed prior to seeking a variance. The owner of the system shall seek a variance within 14 days of commencement of the emergency repairs.

(3) Any variance allowed by the Local Approving Authority shall be in writing. Any denial of a variance shall also be in writing and shall contain a brief statement of the reasons for the denial. A copy of each variance shall be conspicuously posted for 30 days following its issuance; and shall be available to the public at all reasonable hours in the office of the city or town clerk or the office of the Board of Health while it is in effect.

(4) A request for a variance for a residential facility with four units or less, as described in M.G.L. c. 111, § 31E, shall be deemed constructively approved by the Local Approving Authority if the Local Approving Authority does not act upon it within 45 days of receipt of a complete application.

(5) With the exception of those watersheds (Ware, Quabbin and Wachusett) to which the provisions of 350 CMR 11.00: *Watershed Protection* apply, Local Approving Authorities may, after consultation with the local water supplier, issue variances for the siting of systems within the setbacks from surface water supplies, or from tributaries to surface water supplies, and may exempt tributaries consistent with the standards and procedures of 350 CMR 11.00: *Watershed Protection* without Department approval, provided that no such variance or exemption shall result in: the siting of a septic tank or soil absorption system within 200 feet of said surface water supplies or 100 feet of said tributaries; or siting of a septic tank within 25 feet or a soil absorption system within 50 feet of any surface water. Copies of all such variances and exemptions of tributaries shall be submitted to the Department by the Local Approving Authority within 30 days of issuance.

15.413: Conditioning of Variances

(1) The Local Approving Authority or the Department may issue variances subject to such conditions, including, but not limited to, monitoring and reporting requirements, deed recordation requirements, financial assurances or other qualifications on the use of the system, as it deems necessary to protect public health, safety, welfare and the environment. Any conditions shall be expressed in writing in allowing the variance.

(2) Any denial of a variance by the Local Approving Authority or the Department may direct the applicant to upgrade an existing system consistent with the requirements and standards of 310 CMR 15.404 and 15.405. Failure to do so may be the subject of enforcement action by the Local Approving Authority or the Department.

15.414: Variances for Increased Flow to Existing System

(1) Local Approving Authorities or the Department may vary the application of any provisions of 310 CMR 15.000 with respect to any particular case involving increased flow to an existing system only when in the opinion of the Department or the Local Approving Authority all of the conditions in 310 CMR 15.414(2) through (4) are met. A showing by the person requesting a variance that the proposed variance would satisfy the maximum feasible compliance provisions as set forth in 310 CMR 15.404 and 15.405 shall not presumptively entitle such person to a variance.

(2) The person requesting a variance has established that strict enforcement of the provision of 310 CMR 15.000 from which a variance is sought would be manifestly unjust, considering all the relevant facts and circumstances of the individual case including, at a minimum, the following:

(a) the owners of any such system for which permit applications were filed after March 31, 1995 shall be deemed to have had knowledge that full compliance with the requirements applicable to new construction is preferred;

(b) the costs of full compliance with the requirements applicable to new construction shall be compared to the costs of compliance with a variance; and

15.414: continued

(c) whether an upgrade in full compliance with 310 CMR 15.000 is feasible without increased flow.

(3) The system cannot be brought into full compliance through any of the following:
(a) an upgraded system which is in full compliance with 310 CMR 15.100 through 15.293;
(b) an alternative system which has been approved for such use pursuant to 310 CMR 15.284 (remedial use), 15.285 (piloting), 15.286 (provisional approval), or 15.288 (certification for general use);
(c) a shared system which has been approved for such use pursuant to 310 CMR 15.290 and 15.291; or
(d) connection to a sewer system.

(4) The upgraded system with the increased flow provides better protection of public health and safety and the environment than the existing system with no increase in flow. Increased flows not in compliance with 310 CMR 15.000 will rarely provide better protection than existing flows to a system designed and constructed in compliance with the 1978 Code or 310 CMR 15.000, but are more likely to constitute improvements over nonconforming or failed systems.

15.415: Provisions from Which No Variance May be Granted

(1) No variance from the minimum requirement of four feet of naturally occurring pervious material set forth in 310 CMR 15.240(1) shall be granted for new construction.

(2) For upgrade of systems, or increase of flow to existing systems, no variance from the minimum requirement of four feet of naturally occurring pervious material set forth in 310 CMR 15.240(1) shall be granted unless the applicant demonstrates that alternatives for siting an on-site system with four feet of naturally occurring pervious material or connection to a sanitary sewer or connection to a shared system are not feasible. Where no such alternatives are feasible, a variance to allow the repair or replacement in the disposal area with no less than two feet of naturally occurring pervious material may be considered upon the applicant's demonstration of the following:
(a) evidence, the result of deep observation hole testing, that the four feet requirement cannot be met anywhere on the site;
(b) evidence that easements to adjacent property on which a system in compliance with the four feet requirement could be installed have been requested and can not be obtained; and
(c) evidence that site testing to establish high ground-water elevation conducted in accordance with the procedures set forth in 310 CMR 15.103 has been conducted in conjunction with preparation of design plans and specifications for the repair or replacement of the system.

15.416: Variances for Schools

(1) For purposes of 310 CMR 15.416, a school means any public or privately-owned elementary, middle, or secondary school. University, college or other adult educational facilities, regardless of ownership, are not considered schools for these purposes. The provisions of 310 CMR 15.413 shall apply to such variances.

(2) The Department may vary the application of provisions of 310 CMR 15.000 as specified in 310 CMR 15.416 where a school demonstrates to the satisfaction of the Department that:
(a) the variance is necessary to accommodate an overriding community, regional, state or national public interest; and
(b) a level of environmental protection that is at least equivalent to that provided under 310 CMR 15.000 can be achieved without strict application of the provision of 310 CMR 15.000 from which a variance is sought.

(3) The Department may vary the design flow values for elementary, middle or secondary schools set forth in 310 CMR 15.203(5), where the applicant:
(a) satisfies the criteria of 310 CMR 15.416(2);
(b) demonstrates through the use of metered maximum daily water flow readings from the facility or similar facilities in the same or surrounding communities that because of water conservation techniques or other factors flows are or will be substantially different from those contained in 310 CMR 15.203(5), including consideration of occupancy and use rates; and

15.416: continued

(c) demonstrates that system design has also accounted for any anticipated pollutant loadings and greater concentration of pollutants that result from reducing flows.

If the Department grants such a variance, it shall require determination of design flows based on 200% of the average daily water meter readings when school is in session in order to assimilate maximum daily flows.

(4) If any school with a design flow of 10,000 gpd or greater but less than 15,000 gpd is threatening public health, safety, welfare and the environment pursuant to 310 CMR 15.304(2), a groundwater discharge permit will be required unless the Department determines after consideration of the factors set forth in 310 CMR 15.304(3) that this requirement would be manifestly unjust and the owner or operator of the school has established that a level of environmental protection that is at least equivalent to that provided under 310 CMR 15.000 can be achieved without strict application of this requirement.

(5) The Department may vary the prohibition on increased flows to systems with design flows between 10,000 and 15,000 gpd set forth in 310 CMR 15.006(3), where the applicant:

(a) satisfies the criteria of 310 CMR 15.416(2) and 310 CMR 15.414(3) (increases in flow to existing facilities);

(b) demonstrates that there are no reasonable conditions or alternatives that would allow the system to be expanded in compliance with the provisions of 310 CMR 15.000 or other applicable requirements; and

(c) demonstrates that the upgraded system with the increased flow provides better protection of public health, safety, welfare and the environment than the existing system with no increase in flow.

15.421: Appeals From Determinations by Local Approving Authority

Any person aggrieved by any order, variance, issuance or denial of a Disposal System Construction Permit, Local Upgrade Approval or Certificate of Compliance issued by a Local Approving Authority may appeal to any court of competent jurisdiction as provided for by the laws of the Commonwealth.

15.422: Appeals of Departmental Determinations

(1) An applicant who is aggrieved by a shared system, recirculating sand filter or equivalent alternative technology, a remedial use, a certification for general use, or variance determination by the Department may request an adjudicatory hearing on that determination in accordance with 310 CMR 1.00 and M.G.L. c. 30A.

(2) Any person subject to an order, or any person aggrieved by a commonality determination pursuant to 310 CMR 15.011, issued by the Department, may request an adjudicatory hearing in accordance with the provisions of 310 CMR 1.00 and M.G.L. c. 30A.

SUBPART F: TRANSPORTATION AND DISPOSAL OF SEPTAGE

15.500: Purpose

The provisions of 310 CMR 15.500 through 15.505 are intended to provide for safe, efficient and economical means of collecting, transporting and disposing of septage.

15.501: Regional Abatement Districts

(1) Handling of septage through regionalized authorities or districts can promote public safety, efficient regional planning, sufficient capacity and cost-savings for individuals, the Commonwealth and its political subdivisions.

(2) One or more cities and towns, pursuant to the provisions of M.G.L. c. 21, §§ 29 and 30, and M.G.L. c. 111, §§ 31 and 31D may enter into an abatement district for the purpose of arranging for the transport and disposal of septage generated within their boundaries. A model regulation for the purposes of forming a district may be obtained from the Department.

15.502: Transportation

(1) No person shall remove and/or transport septage through the streets of any city or town or via any state or federal highway located within any city or town in which the septage was first collected without first obtaining a permit from the board of health of such city or town in accordance with 310 CMR 15.000 and M.G.L. c. 111, § 31A. An application for such permit shall be in such form and contain such information, on oath, as such board shall require.

(2) All such permits shall expire at the end of the calendar year in which they are issued, but may be renewed annually on application as herein provided. No permit shall be transferred except with the written approval of the said board.

(3) All permits shall designate the treatment works, approved by the Department, where the hauler is authorized to dispose of septage and a copy of all contracts or other agreements between the hauler and the receiving facility shall be submitted to, and retained by, the Approving Authority.

(4) A duly registered septage hauler may transport septage through the streets of a city or town in which said substances were not collected provided the hauler registers with the board of health of such city or town; and, provided further, that he or she transports said substances in accordance with such reasonable rules and regulations as may be established by such board of health.

(5) Motor vehicles owned by the Commonwealth or any of its political subdivisions and motor vehicles engaged under contract with the Commonwealth in the transportation of septage shall be exempt from the provisions of 310 CMR 15.502. A city or town may recommend to the department of highways, in writing, an alternative route of travel for such motor vehicles whereby the noise or nuisance incident to such travel shall be minimized or abated and said department shall consider such alterations or changes in the travel routes of such motor vehicles as will result in the minimization of such noise or nuisance.

(6) The contents of privies, cesspools, septic tanks and tight tanks shall be transported in a manner that will not create a nuisance or a health hazard.

(7) Pumping records shall be submitted to the Approving Authority within 14 days from the pumping date in accordance with 310 CMR 15.351(1), unless the Approving Authority requires more frequent submittals.

15.503: Transfer Locations

Local Boards of Health may regulate locations for the transfer of septage from one truck, tanker or other storage container equipped with wheels sufficient for over-the-road or rail travel to another pursuant to M.G.L. c. 111, §§ 31D and 143, provided that no permanent structures for holding or storage are constructed. The Department may impose additional requirements on transfer locations pursuant to the authority of 310 CMR 15.000 and M.G.L. c. 21 §§ 26 through 53 and M.G.L. c. 83, § 6.

15.504: Disposal

(1) Cities, towns and sewerage districts may, subject to the approval of the Department, provide treatment works for the receipt and disposal of septage and may establish such charges for the use of such facilities as may be necessary for defraying the cost of construction, operating and maintaining the same.

(2) Disposal of septage shall be by discharge to a sanitary sewer or to a treatment works. All such treatment works shall be approved by the Department in accordance with M.G.L. c. 21, §§ 26 through 53, and applicable provisions of 314 CMR 3.00: *Surface Water Discharge Permit Program*, 4.00: *Massachusetts Surface Water Quality Standards*, 5.00: *Ground Water Discharge Permit Program*, 7.00: *Sewer System Extension and Connection Permit Program* and 12.00: *Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers*. If disposal is by discharge to a sanitary sewer, it shall be in a manner and at such times as may be acceptable to the authority having jurisdiction over the sewer and in accordance with any applicable regulations or permit conditions. Any other disposal is a violation of 310 CMR 15.000.

15.504: continued

(3) The Department may investigate treatment works for the receipt of septage in cities, towns and sewerage and septage districts. If the Department determines such works are inadequate for proper disposal of septage, it may recommend necessary action for the protection of the public health, safety and welfare. If after a reasonable time, the city, town or sewerage or septage district fails to act upon the Department's recommendation, the Department may issue an order requiring the provision of adequate septage receiving facilities. Nothing in 310 CMR 15.504 shall be construed to limit the authority of the Department to take any action pursuant to M.G.L. c. 21, §§ 26 through 53.

(4) Pursuant to M.G.L. c. 40, § 22F, a city, town or sewerage or septage district may establish such charges for the use of septage receiving facilities as may be necessary for defraying the cost of constructing, operating and maintaining the works.

(5) Disposal of septage at treatment works where it is dewatered and beneficially reused shall be encouraged and practiced wherever feasible.

15.505: Equipment

(1) No person shall use equipment to remove or transport the contents of privies, cesspools, septic tanks or tight tanks unless such equipment has first been inspected and approved by the Approving Authority.

(2) Mobile tanks shall be securely mounted on trucks. They shall be watertight, equipped with necessary odor controls, provided with a leak proof cover and tight discharge valves.

(3) Mobile tanks shall be provided with a vent constructed in a manner that will permit the escape of gas, but not the liquid contents of the tank.

(4) Suction or pressure hoses shall be in good repair.

(5) Pumps shall be maintained in a condition that will prevent the leakage of septage.

Appendix 1

Upon recording, mail to:
Approving Authority

GRANT OF TITLE 5 COVENANT AND EASEMENT
(property served by Shared System)
310 CMR 15.290(2)(e)

This GRANT OF TITLE 5 COVENANT AND EASEMENT made as of this __ day of _____ , 20_, by _____, of _____, _____ County, Massachusetts ("Grantor").

WITNESSETH

WHEREAS, Grantor being the owner(s) in fee simple of that [those] certain parcel(s) of [vacant] land located in _____, _____ County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed from _____ to Grantor, dated _____, and recorded with _____ County Registry of Deeds in Book ___, Page ___ [source of title other than by deed] and/or pursuant to Certificate of Title No. _____ issued by the Land Registration Office of the _____County Registry District, said parcel(s) of land being more particularly bounded and described in Exhibit A, attached hereto and made a part hereof, and being shown on a plan entitled, "_____", dated _____, prepared by _____, recorded with _____ County Registry of deeds as Plan No. __, in Plan Book _____ and/or registered as Land Court Plan No. _ _, on file with the Land Registration Office of ____ County Registry District ("Property"); and

WHEREAS, there is appurtenant to and the Property has the benefit of a Shared System, as defined in 310 CMR 15.002, said Shared System being located on a parcel(s) of [vacant] land located in _ ____, _____ County, Massachusetts, with the buildings and improvements thereon, pursuant to a deed from _____ to _____ [or Grantor], dated _____, and recorded with _____ County Registry of Deeds in Book ___, Page ___ [source of title other than by deed] and/or pursuant to Certificate of Title No. _____ issued by the Land Registration Office of the _____County Registry District, said parcel(s) of land being more particularly bounded and described in Exhibit B, attached hereto and made a part hereof, and being shown on a plan entitled, "_____", dated _____, prepared by _____, recorded with _____ County Registry of deeds as Plan No. __, in Plan Book _____ and/or registered as Land Court Plan No. ___, on file with the Land Registration Office of ____ County Registry District ("Shared System Property"); and

WHEREAS, the Property has the benefit of a Shared System Easement, being more particularly bounded and described in Exhibit C, attached hereto and made a part hereof, and being shown on a plan entitled, "_____", dated _____, prepared by _____, recorded with _____ County Registry of Deeds as Plan No. ____, in Plan Book _____ and/or registered as Land Court Plan No. ___, on file with the Land Registration Office of _____ County Registry District [or to be recorded/filed for registration herewith] ("Shared System Easement"); and

WHEREAS, the Shared System has been approved by the Local Approving Authority, as defined in 310 CMR 15.002, in accordance with Title 5, 310 CMR 15.000, as amended ("Title 5"); said approval being based upon the agreement by Grantor to incur certain obligations regarding the construction, inspection, maintenance, upgrade and expansion of the Shared System and to grant to the Local Approving Authority a perpetual easement to construct, inspect, maintain, upgrade and expand any component of the Shared System and in connection herewith a perpetual easement to pass and repass over the Property and the Shared System Property for purposes of inspecting the Shared System to insure compliance with and fulfillment of the terms of this Covenant/Easement as hereafter set forth;

Appendix 1: continued

NOW, THEREFORE, pursuant to the provisions of 310 CMR 15.290, Grantor does hereby GRANT to the Town/City of _____, a Massachusetts municipal corporation situated in _____ County, having an address at _____, Massachusetts, acting through its Board of Health ("_____"), (also referred to herein as the Local Approving Authority), for nominal, non-monetary consideration, with QUITCLAIM COVENANTS, a TITLE 5 COVENANT AND EASEMENT ("Covenant/Easement") in, on, upon, through, over and under the Shared System Easement, the terms and conditions of which are as follows:

OBLIGATIONS AND EASEMENT

1. Inspection and Pumping. Grantor agrees to have the Shared System inspected at least every three years by a System Inspector, as defined in 310 CMR 15.002, and pumped on an as needed basis, but in no event shall the Shared System be pumped less than every three years. The System Inspector shall submit the results of the inspection on a System Inspection Report (Appendix __) to the _____ [Local Approving Authority] and to the Department of Environmental Protection (DEP) within 30 days of the Shared System's inspection. Grantor shall provide the _____[Local Approving Authority] and DEP with a copy of the receipt obtained from the duly registered septage hauler upon pumping of the Shared System within 30 days of the Shared System's pumping.

2. Financial Assurance Mechanism. Grantor agrees to provide the _____ [Local Approving Authority] and DEP with the financial assurance mechanism, naming the _____ [Local Approving Authority] and DEP as additional beneficiaries, which shall provide for upgrade of the Shared System in the event the Shared System fails to protect public health and the environment pursuant to the criteria established in 310 CMR 15.303.

3. Maintenance. The Grantor agrees to construct the Shared System such that the Sanitary Sewage, as defined in 310 CMR 15.002, from any Facility, as defined in 310 CMR 15.002, owned by Grantor may be denied access to the Shared System in the event Grantor fails to pay its proportionate share of the construction, inspection, maintenance, upgrade and expansion costs incurred by said Shared System.

4. Easements. In creating this Covenant/Easement, Grantor hereby grants to the _____ [insert Local Approving Authority], its agents, contractors, subcontractors and employees, a perpetual EASEMENT to enter upon and the right to bring equipment onto the Shared System Easement to do any and all acts deemed necessary to construct, install, lay, operate, maintain, inspect, upgrade, repair, remove, excavate, replace, and expand any component of the Shared System, together with a right to pass and repass by foot and by vehicle over the Shared System Easement for said purposes, including the removal and trimming of crops, vegetation, trees, or shrubs therefrom, and for purposes of inspecting the Shared System Easement to insure compliance with and fulfillment of the terms of this Covenant/Easement.

5. Lien Authority of Local Approving Authority. For purposes of enforcing a lien against the Property and the Shared System Property, Grantor hereby agrees that the phrase "...land upon which the structure is or was located..." as used in the second paragraph of M.G.L. c. 111, § 127B shall include the Property and the Shared System Property, thereby authorizing the __ ___ [insert Local Approving Authority] to impose a lien on either or both the Property and the Shared System Property in the event the _____ [insert Local Approving Authority] has incurred debt in accordance with the provisions of M.G.L. c. 111, §127B.

6. Severability. If any court or other tribunal determines that any provision of this instrument is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court or tribunal. In the event the provision invalidated is of such a nature that it cannot be so modified, the provision 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.

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

Appendix 1: continued

(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 Shared System Easement in violation of the terms of this Covenant/Easement; and

(ii) in the assessment of penalties and enforcement action by the Local Approving Authority and DEP to enforce the terms of this Covenant/Easement, pursuant to Title 5; M.G.L. c. 111, §§ 17, 31, 122, 124, 125, 125A, 127A through 127O, and 129; and M.G.L. c. 83, § 11.

8. Provisions to Run with the Land. This Covenant/Easement sets forth rights, liabilities, agreements and obligations upon and subject to which the Shared System Easement or any portion thereof, shall be improved, held, used, occupied, leased, sold, hypothecated, encumbered, or conveyed. The rights, liabilities, agreements and obligations herein set forth shall run with the Property and the Shared System Property, as applicable thereto, and any portion thereof and shall inure to the benefit of and be binding upon Grantor and all parties claiming by, through or under the Local Approving Authority or Grantor. The rights hereby granted to the Local Approving Authority, its successors and assigns, constitute the perpetual right of the Local Approving Authority to enforce this Covenant/Easement and Grantor hereby covenants for himself/herself/itself and his/her/its executors, administrators, heirs, successors and assigns, to stand seized and hold title to the Property and the Shared System Property, as applicable thereto, and any portion thereof, subject to this Covenant/Easement, provided, however, that a violation of this Covenant/Easement shall not result in a forfeiture or reversion of Grantor's title to the Property or the Shared System Property, as applicable thereto.

9. Concurrence Presumed. It being agreed that Grantor and all parties claiming by, through or under Grantor shall be deemed to be in accord with the provisions herein set forth and to agree for and among themselves and any party claiming by, through or under them, and their respective agents, contractors, sub-contractors and employees, that the Covenant/Easement herein established shall be adhered to and not violated and that their respective interests in the Property and the Shared System Property, as applicable thereto, shall be subject to the provisions herein set forth.

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

11. Recordation. Grantor shall record and/or register this Covenant/Easement with the appropriate Registry of Deeds and/or Land Registration Office within 30 days of the latter of: receipt from the Local Approving Authority of the approved Covenant/Easement or the expiration of the 60-day constructive approval period granted to DEP pursuant to 310 CMR 15.293. Grantor shall file with the Local Approving Authority and the DEP a certified Registry copy of this Covenant/Easement as recorded and/or registered within 30 days of its date of recordation and/or registration.

12. Amendment and Release. This Covenant/Easement may be amended or released only upon approval by the Local Approving Authority and DEP. Any such amendment or release shall be recorded and/or registered with the appropriate Registry of Deeds and/or Land Registration Office.

13. Term. This Covenant/Easement shall run in perpetuity and is intended to conform to M.G.L. c. 184, § 26.

Appendix 1: continued

14. Rights Reserved. This Covenant/Easement is granted to the Local Approving Authority in connection with the approval of a Shared System pursuant to 310 CMR 15.290 through 15.293. It is expressly agreed that acceptance of this Covenant/Easement by the Local Approving Authority or constructive approval of the Shared System by DEP shall not operate to bar, diminish, or in any way affect any legal or equitable right of the Local Approving Authority or DEP to issue any future order with respect to the Property and the Shared System Property, as applicable thereto, or in any way affect any other claim, action, suit, cause of action, or demand which the Local Approving Authority or DEP may have with respect thereto. Nor shall acceptance of this Covenant/Easement serve to impose any obligations, liabilities, or any other duties upon the Local Approving Authority.

This Covenant/Easement shall become effective upon its recordation and/or registration with the appropriate Registry of Deeds and/or Land Registration Office.

WITNESS the execution hereof under seal this __ day of ____, 20_.

_____
Grantor

COMMONWEALTH OF MASSACHUSETTS

_____, §§ _____, 20_

_____Then personally appeared the above-named _____ and acknowledged the foregoing instrument to be __ free act and deed before me.

_____
_____
_____Notary Public:

My commission expires:

The _____ [insert Local Approving Authority] hereby approves this Grant of Title 5 Covenant and Easement (as to form only).

_____

Date: _____
Local Approving Authority

REGULATORY AUTHORITY

310 CMR 15.000: M.G.L. c. 21A, § 13.