

# THE NRG REPORT

## PERCOLATION RATE UPDATES

*On December 13, 2002, the Massachusetts Department of Environmental Protection revised the State Environmental Code Title 5 (310 CMR 15.000) to allow new septic systems to be installed in soils with percolation rates between 30 and 60 minutes per inch.*

The following is a list of the towns located within Plymouth county and their by-law concerning the update to the Massachusetts Title 5 percolation regulation.

Municipality	By-Law	Municipality	By-Law
Abington	30 to 60 minutes per inch	Marshfield	over 20 minutes per inch deemed unsuitable
Bridgewater	30 minutes per inch	Mattapoisset	no more than 20 minutes per inch
Brockton	30 to 60 minutes per inch	Middleborough	not reviewed by the Board of Health
Carver	30 to 60 minutes per inch	Norwell	additional setback requirements (lot size)
Duxbury	30 to 60 minutes per inch	Pembroke	30 to 60 minutes per inch
East Bridgewater	30 to 60 minutes per inch	Plymouth	30 to 60 minutes per inch
Halifax	imposing additional setback requirements	Plympton	30 minutes per inch
Hanover	imposing additional setback requirements	Rochester	30 minutes per inch
Hanson	30 minutes per inch	Rockland	N/A - sewers
Hingham	30 to 60 minutes per inch	Scituate	30 to 60 minutes per inch
Hull	30 to 60 minutes per inch	Wareham	not reviewed by the Board of Health
Kingston	not reviewed by the Board of Health	West Bridgewater	30 to 60 minutes per inch
Lakeville	20 minutes per inch	Whitman	30 to 60 minutes per inch
Marion	30 minutes per inch		

Massachusetts state regulations regarding the installation of septic systems have historically limited the percolation rates for new systems to a maximum of 30 minutes per inch. The only exception to this rule involved septic system upgrades performed in accordance with 310 CMR 15.405, as well as variances associated with 310 CMR 15.417. In December of 2002, the Massachusetts Department of Environmental Protection (DEP) issued a revision to the State Environmental Code Title 5 (310 CMR 15.000), which allowed new systems to be installed in soils exhibiting percolation rates between 30 and 60 minutes per inch. This revision became effective on January 1, 2004. As a note, *Long Term Acceptance Rates (LTAR) for soils with percolation rates between 30 and 60 minutes per inch may be increased 16-30% if a pressure distribution system is installed.*

The revised state regulation issued by the Massachusetts DEP will increase the amount of developable

land. In short, developers will now be permitted to install septic systems in soils that take as long as 60 minutes to absorb and release one inch of wastewater. Proponents of this revision claim that *septic systems can sufficiently treat wastewater and release it into soils that drain more slowly.* Opponents claim that *these soils are incapable of filtering wastewater properly,* and fail more often.

The table provided above offers a sampling of the opinions of 27 municipalities located in one county within the state of Massachusetts. If you would like to know more about the recent Title 5 regulation changes, you can contact Norfolk Ram Group's Michael Clark, P.E. at (508) 747-7900, extension 193, or via email at [mclark@norfolkram.com](mailto:mclark@norfolkram.com). Norfolk can also be visited on the web at [www.norfolkram.com](http://www.norfolkram.com). For specific municipal adaptations to this regulation, please contact the individual town offices, and ask to speak with someone from the Board of Health.



## QUESTIONS AND ANSWERS

**QUESTION:** What are some of the causes of septic leaching field failure?

**ANSWER:** Septic system leaching field failure is typically a result of one of five common problems:

- *hydraulic overloading;*
- *excessive biomat formation;*
- *poor site evaluation & improper septic system design or installation;*
- *soil compaction; or*
- *soil-mineral bonding.*

### **Hydraulic Overloading:**

Hydraulic overloading is a condition where the soil in the leaching system located below the drainpipe becomes saturated with wastewater. As the ability of the wastewater to flow through the drainfield becomes restricted, alternate flow routes are often found, resulting in surface ponding, or sewage backup into toilets, bathtubs or sinks.

Some of the easiest ways to prevent hydraulic overloading are to, reduce the volume of water being used in your home, divert any obvious stormwater runoff away from your drainfield and make sure that certified or licensed individuals design and install your septic system.

### **Excessive Biomat Formation:**

Over time, septic system leaching areas can fall victim to the accumulation of suspended solids, and/or the formation of excess bacterial growth (*i.e.*, excessive “biomat”), which can result in a “clogging layer.” Although critical to the breakdown of pathogens and viruses, biomats also, over time, can restrict the flow of wastewater through the drainfield, resulting in a backup of sewage to the ground’s surface above the leaching field.

Biomat formation is normal and desirable for a properly functioning septic system. However, excessive biomat formation is not healthy or desirable. Excessive biomat formation can be limited through proper maintenance (*i.e.*, pumping and inspecting of the system), limiting the amount of organic matter discharged to the septic system (*i.e.*, removing kitchen garbage grinders), and installing septic tank effluent filters, which can limit and control the amount of solids discharged to the leaching system.

Other options available for correcting excessive biomat formation include:

- *water conservation;*
- *the use of Department of Environmental Protection approved chemical & biological treatments; and*
- *removal/replacement of clogged leaching facility soils.*

### **Poor Site Evaluation & Improper Septic System Design or Installation:**

These are two preventable causes of septic leaching field failure. Site evaluations and system designs/installations must be approved by the appropriate permit agencies before being placed into the ground. Doing your homework and hiring qualified firms to complete the work is the best preventable defense against septic leaching field failures.

### **Soil Compaction:**

*Compaction occurs when a compressive force is placed upon the soil, thereby decreasing the pore spacing between the soil particles, and restricting water flow through the soil.* Also a preventable cause of system failure, compaction can be avoided by never driving over any portion of the drainfield, as well as never placing anything of significant weight over the area (*i.e.*, parking lots, patios, tennis courts, *etc.*).

### **Soil-Mineral Bonding:**

The least understood cause of septic leaching field failure, soil mineral bonding occurs when *native soil cations are replaced with other cations, causing changes in the soil’s chemical properties, and resulting in the formation of impermeable slime layers, or hard, impenetrable mineral crusts.*

Some possible suggestions for preventing soil mineral bonding are:

- *provide a separate discharge line from your water softener; and*
- *use liquid detergents.*

If you wish to learn more about how to properly maintain and service your septic leaching field, please contact Norfolk Ram Group, LLC’s Mark S. Bartlett, P.E. at (508) 747-7900, extension 131, or via email at [mbartlett@norfolkram.com](mailto:mbartlett@norfolkram.com). Norfolk can also be accessed on the web at [www.norfolkram.com](http://www.norfolkram.com).

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