

Title 5: The Impact on Real Estate Transactions and Investment Decisions

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I. PREAMBLE

Many real estate licenses may have attended a course on Title 5 as an on-site disposal system. These courses educate the real estate practitioner not only how a septic system is designed and operated but the MA regulations that surround on-site disposal systems. In MA, our regulation is known as Title 5 that stipulates a septic system testing requirement for residential and commercial properties prior to the sale of real estate. For a real estate licensee, the impact of Title 5 has a requirement to a seller is important information for a seller along with understanding the costs and possible credits.

However, beyond having the knowledge of the Title 5 regulation as it pertains to a real estate transaction, the on-site disposal system plays a major role and influence on real estate development, expansion, a property's highest and best use and ultimate impact on value.

Course Objective: This course will expose important factors that a real estate licensee should understand in order to counsel his/her client on valuation impact and the real estate business decisions prior to submitting an offer to purchase or lease.

II. DEFINING TITLE 5: Starting with the Basics (instructor give a succinct review)

1.
 - a. Regulation administered by MA DEP, governing septic systems
 - b. Complex regulations govern the design, construction, operation and inspection of septic systems
 - c. Nearly 650,000 residential and commercial systems in MA
 - d. There are no federal regulations governing septic systems
2. Definition of systems/components
 - a. Septic system – “on-site wastewater disposal system that treats wastewater usually under 10,000 gallons per day” (MA DEP)
 - b. Septic system components:
 - i. holding tank
 - ii. distribution box
 - iii. soil absorption systems
 - iv. tank baffles
 - c. Cesspool - A pit which acts both as a settling chamber for solids and a leaching system for liquids
 - d. Tight tank – an enclosed tank, similar to septic tanks, but does not have an outlet
3. History of Title 5 regulations
 - a. 1975 – MA DEP adopted Title 5 regulation 310 CMR 15.00

- b. DEP's goal: to provide sufficient information to make a determination as to whether or not the on-site disposal system is adequate to protect public health and the environment
- c. Regulations revised in: 1994, 1995, 1996, 2006, 2007, 2016, 2023
- d. City/town Board of Health responsible for enforcing Title 5 in residential and commercial capacities (with certain exceptions including properties owned by state or federal government, and systems with over 10,000 gallons per day-that falls under the purview of DEP).
- e. Cities/towns may have independent Title 5 regulations that may be more stringent than the state code and regulations. However, they must be in compliance with M.G.L. c. 111, & 31.
- f. A business tax credit may be available for the repair or replacement of a system.
- g. Ultimately, the agent wants to understand the need to insert a Title 5 contingency in an offer when representing a commercial buyer. A selling agent may want to include a disclaimer in his/her marketing package that the commercial property may be subject to a Title 5 inspection.
- h. Not all clients/customers will be familiar with Title 5. They may be from out-of-state or may be from an area in which municipal sewerage is a way of life.
- i. But what is the business impact on real estate? This module will review some possible issues.

For reference on Title 5 and forms for NSA, see <https://www.mass.gov/regulations/310-CMR-15000-septic-systems-title-5>.

III. The Impact of Title 5 on Real Estate Decisions

1. Impacts the number of people/employees in a commercial building.
2. The land area may allow for a large commercial building but the number of people/employees allowed will impact the "highest and best use"
3. For the purpose of this module, the definition of "**highest and best use**" is the following: what is legally permitted; what is physically possible; what is financially feasible and what has the highest net value over all alternative uses.
4. Percolation tests are critical in due diligence of land development
5. Board of Health and/or MA DEP will determine the number of occupants allowed in a commercial building
6. The highest and best use is impacted which then impacts the final valuation of a property
7. This only applies to on-site disposal systems which is why municipal sewer systems are preferred.
8. There are also maintenance issues: pumping and repairs
9. Most new systems need to be pumped every two years. **Resource:** pumping records are available to inspect at the Board of Health.

IV. Nitrogen Sensitive Areas: NSA

1. Some sections of MA have other ground issues such as “nitrogen sensitive areas”
2. Coastal areas including Cape Cod would be one of those NSA areas.
3. **What is NSA and what is the problem?**
4. There is a problem with too much nitrogen pollution in estuaries and embayments. Septic systems contribute significantly to this nitrogen load. For example, on Cape Cod 85% of the wastewater disposal is through septic systems.
5. In Buzzards Bay the single largest source of nitrogen is septic systems.
6. Other sources include lawn and garden fertilizers, agricultural runoff, and stormwater runoff. This excess nitrogen pollution in coastal waters, like estuaries and embayments, causes a problem known as **eutrophication**.
7. **Eutrophication** results from excess nitrogen causing accelerated growth of algae and invasive plants and weeds.
8. The invasive aquatic plants thrive on the excess nitrogen; they grow, die and decay rapidly, depriving the existing plants and animals of the diverse and healthy environment they need to survive.
9. This overgrowth deprives many aquatic plants and animals of oxygen and the sunlight they need to live—their environment is essentially smothered by the accelerated and dominant growth of nuisance and invasive plants, weeds, and algae.
10. Fish and shellfish populations have declined significantly, along with aquatic plants in their ecosystems, like eelgrass.
11. The eutrophication also causes some coastal waters to become cloudy and murky and smell bad, including some harmful algal blooms which can be toxic when inhaled.
12. Nitrogen is one type of nutrient that causes eutrophication. Another kind is phosphorus, which is mostly associated with causing eutrophication in freshwater.
13. The MassDEP has recently promulgated new regulations amending Title 5 for new NSAs in Barnstable County. The new regulations are designed by MassDEP to enhance protection of embayments and estuaries on Cape Cod from nitrogen pollution originating primarily from wastewater.
14. Both Chapter 93A and the new Title 5 Regulations require disclosure of the property in a NSA for those affected properties.
15. As per MA state regulations, the disclosure requirement may read as follows: *"Prior to any transfer of title for property where the facility is located, the transferor shall disclose to the transferee and Board of Health whether the facility is subject to an upgrade requiring Best Available Nitrogen Reducing Technology."*
16. For more information see: 310 CMR 15.215 (4) for Disclosure of Nitrogen Sensitive Area Upgrade Requirements.
17. For all properties that are in the newly designated NSAs, you need to disclose prior to closing that the property is within the area - even for properties already under contract.

V. Testing for Possible Expansion or New Construction

1. Land development valuation
2. Zoning may allow for a large commercial building
3. Land area physically may accommodate a large commercial building
4. Without municipal sewerage, the question is whether the soils will accommodate the maximum number of people that the developer anticipates plus an extra reserve factor

VI. Percolation and Deep Hole Testing

1. Be cognizant that these tests may be only official conducted during one part of the year
2. Many towns only allow official testing on a seasonal basis such as the month of April and May. It could be in the fall. Be aware that cities/towns may limit when testing is permissible.
3. The town wants deep hole testing when the water table is at its highest point and the town will determine when that time of year is.
4. The time of year to sell when septic system contingencies are inserted in an offer could delay permitting for over a year. If testing is allowed in April and you place the property on the market in June, a buyer or the landowner may have to wait until the following year to conduct the testing. Contingencies drafted by a real estate agent in a LOI is critical.
5. The appropriate soil composition is critical to achieve adequate percolation results. The more employees anticipated in a building, then the more water effluence will be generated from the building (restrooms, sinks, etc.).
6. Some towns only allow a percolation rate to be as slow as 30 minutes per inch. However, that rate may only allow 5 or 6 people in a 100,000 sf building. Thus, impacting the highest and best use to be warehouse at a lower rental rate and thus a lower investment value.
7. The highest and best use will impact vacant land value as well.
8. If the percolation rate at various test pits are consistently at 2 or 3 minutes per inch, then the same building size might accommodate 200 people as a for instance. That may allow for an office building at a higher rental rate and lead to a higher investment value.
9. The date of the actual testings can be critical as these tests are only valid for a certain time frame. If two years has passed and if permitting for a development stalls or the market collapses, then retesting may be necessary. That can also take time depending on seasonal stipulations.
10. Scheduling testings with the Board of Health Inspector is necessary as a witness to the testings. Scheduling can take time.

VII. Deep Hole Testing

1. Deep hole (DH) testing is necessary to determine the depth of the water table to the bottom of the leaching field.
2. You need an adequate buffer, usually 4 feet but a town may require 5 feet.

3. The DH testing is to be conducted at the water table's highest level and that time of year may be seasonal. Official testing may be in the spring and/or fall depending on the town's regulations. Time costs money and can hinder the timely sale of a development.
4. Anyone, however, can conduct unofficial or off-season testing for guidance and understanding of the soil composition and probable official testing results.

VIII. Location of Septic Field

1. The geographical area of the leaching field is critical to land value and development options. The commercial building may have a proposed location in the middle of a site. But the leaching field might only percolate satisfactorily in the middle of the site. The building cannot be developed over the leaching field. A leaching field under a parking lot or driveway may not be allowed. These factors can reduce the allowed land area to locate building square footage or its floor area ratio (FAR).
2. If there is an existing commercial building, then the expansion of the septic field will have zoning setbacks as well as setbacks due to wetland locations, aquifers, easements, etc. The building size may be hindered due to these setbacks. Thus a smaller commercial building might only be accommodated on a large tract of land thus reducing the land value. Again, the impact on the FAR.
3. A town may impose a reserve area as well and limit development over the reserve area.
4. The leaching field location may restrict the location and number of parking spaces thus limiting the highest and best use.
5. If there is an old septic system or cesspool on the site, it may have to be removed prior to a new system being installed thus creating more development costs.
6. Ultimately the septic system can impact the floor area ratio of a commercial development.
7. The size of a leaching field and soil composition can also impact the type of commercial tenants allowed in a building. For instance, leasing a commercial building can be restricted from drycleaners, restaurants or industrial users.
8. Again a real estate agent should be meeting with the Board of Health agent to discuss what restrictions may be imposed on the type of end-users allowed prior to selling a property or submitting an offer.

IX. Resources

- A real estate licensee can access public information to investigate. Ultimately an environmental and site planner should be recommended by the real estate agent. If a past owner has ever conducted official testings, the deep hole and percolation tests will be on file at the Board of Health.
- **Resource:** Visit the Board of Health as they will have septic plans of the most recent approved septic system. The plans will include: soil composition, past deep hole testings and percolation testings. The plan will offer some insight to development hurdles.

1. Test results from years ago can still give guidance as to the soil composition and percolation results. Deep hole testing results are also on file but in all cases these tests will need to be redone.
2. Official testing is not only driven by seasonal times but the Board of Health inspector will need to be scheduled to physically observe the testings and may ask for a number of test pits to be conducted. Again, the timing will impact the sales transaction.
3. The size of the septic tank will be driven by code and use. A minimum tank size is by code (1500 gals). The usage of the property and the number of employees will impact the final size as determined by the Board of Health.
4. The town files will also include recorded septic plans, the maximum number of occupants allowed. That information is critical to a consumer contemplating a purchase or expansion of an existing commercial property.
5. The maximum allowed occupants may be dictated by the number of toilets and water usage. See CMR 310 15.203.
6. As per 310 CMR: Definitions 15.002, residential single-family dwellings (including condos/co-ops), septic systems are presumed to be designed for a minimum of 3 bedrooms unless the local approving authority grants a deed restriction limiting the property use to 2 bedrooms. If a house has more than 8 rooms then the total number of bedroom is calculated by taking the total number of rooms and dividing by two.
7. These factors ultimately determine the maximum effluence allowed, the number of toilets, sinks, etc. and the maximum number of occupants allowed in the commercial building.
8. A commercial building may have a divided number of allowed people. For instance, an industrial warehouse building may have office space. The septic plans may indicate 8 employees allowed in the office and 4 allowed in the warehouse. And yet, your building size may be 80,000 square feet which physically could accommodate more people. Now the real estate agent, in leasing or selling the property, is limited to the potential buying market. An industrial buyer with 50 people cannot use this building. The agent would need to probe the potential buying market on showings to establish if the property could accommodate the end-user's needs.
9. MA tax credits may be available to the owner for repairing or replacing any old systems and to be compliant with Title 5. (Note to instructor to reference most recent credits available)
10. If a building is to be demolished for a higher and better use, it may not be relevant if the existing building passes Title 5 unless the new commercial building can be accommodated by the old system. For the most part, new development will need to be designed with a new septic system and to be approved by the Board of Health.
11. Therefore, a Title 5 contingency may not be necessary if demolition is the next action plan.
12. As another factor, some towns may require that a building being served by a septic system must pay to connect to municipal sewer. The requirement may be triggered upon any failed system or may be triggered upon a sale transaction.

13. Large commercial systems may also be required to be inspected frequently or may require issuance of a groundwater discharge permit.
14. Additionally, the agent should discuss with industrial users what type of effluence they may discharge into drains or sinks to a regulated system that may be prohibited.

X. Additional Guidance on Resources

1. In all cases, the real estate agent is not the Title 5 expert. This module is to provide a first filter of information that an agent can discuss with a seller or buyer prior to any offer or transaction so that the proper experts are engaged and the property contingencies are including in any written offer.
2. The agent should have information on the maintenance and required regs on pumping a commercial system.
3. The Board of Health will have pumping records on file for inspection.
4. The agent can be strategic having conducted some preliminary research as exposed in this module
5. Ultimately, the agent is to recommend environmental, legal and other Title 5 and/or development experts.
6. Also see, RE63RC10-Environmental Issues and RE23RC12-Wetlands Protection Act

GLOSSARY: (obtained from MA 310 CMR 15.000)

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.

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.

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; (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.

Best Available Nitrogen Reducing Technology (a) An alternative system(s) which has a Total Nitrogen effluent performance value of 10 mg/L or less and is certified by the Department for general use pursuant to 310 CMR 15.288 when the Disposal System Construction Permit application is filed and has been approved for the type and design flow of the facility where it is to be used; or (b) If no such alternative system(s) meeting 10 mg/L or less has received general use approval at the time the Disposal System Construction Permit application is filed, then an alternative system(s) with the lowest Total Nitrogen effluent performance value certified by the Department for general use when the Disposal System Construction Permit application is filed and has been approved for the type and design flow of the facility where it is to be used; or (c) An alternative system(s) granted provisional approval by the Department pursuant to 310 CMR 15.286 or an alternative system(s) approved by the Department for piloting pursuant to 310 CMR 15.285; provided that for an alternative system(s) granted provisional approval or an alternative system(s) approved for piloting such system(s) is approved for the type and design flow of the facility and has a Total Nitrogen performance value less than or equal to 10 mg/L; or, if no

system(s) with a Total Nitrogen performance value less than or equal to 10 mg/L has received general use approval, then a system(s) with a Total Nitrogen effluent performance value less than or equal to the lowest alternative system(s) certified by the Department for general use pursuant to 310 CMR 15.288 when the Disposal System Construction Permit application is filed.

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.

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.

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.

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.

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

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.

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.

Groundwater - Water found in cracks, fissures and pore spaces in the saturated zone below the ground surface, including but not limited to perched groundwater. **High Groundwater Elevation** - As determined in accordance with 310 CMR 15.101, 15.102 and 15.103.

Impervious Material - Soils with a percolation rate greater than 60 minutes per inch.

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.

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.

Nitrogen Sensitive Area - An area of land and/or natural resource area so designated by the Department in accordance with 310 CMR 15.214.

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.

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.

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.

Pervious Soil - Soil with a percolation rate of 60 minutes per inch or less found in the B and C horizons. 310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION 15.002:

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.

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.

Nutrient threshold concentrations that must be achieved to comply with 314 CMR 4.00: Massachusetts Surface Water Quality Standards to support the ecosystem and restore and maintain indicator habitats, such as eel grass and benthic species, associated with nitrogen impacts; 4. analyses of watershed nutrient loading reductions that will be necessary to achieve at least the minimum nutrient threshold concentrations in the waterbody and restore and maintain the indicator habitats; and 5. site-specific, calibrated, watershed-waterbody model(s) that can be used to simulate the efficacy of strategies towards restoration and maintenance of the waterbodies. A TMDL is not required to complete the Scientific Evaluation.

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.

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.

Tight Tank - A watertight 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

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

Working Level - The level between the pump “off” elevation and the high level alarm elevation. 310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION 15.002:

Additional References: 314 CMR 5.00: Ground Water Discharge Permit Program, Title 5 310 CMR 15.000, Nitrogen Sensitive Areas