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WATER WELLS, SEPTIC, AND SEWAGE SYSTEMS

A White Paper Report

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INTRODUCTION

One of the major factors in determining the safety and value of both residential and commercial property is the presence of onsite water wells and septic/wastewater systems. While most Americans get their water from water systems run by a municipal authority, a substantial number are serviced by onsite wells. A substantial number also rely on onsite septic/wastewater systems.

This white paper will explore the advantages and disadvantages of public or city water versus onsite water systems, and will also look at the various different types of onsite well and wastewater systems. We will discuss federal and state laws and regulations and the implications that these laws and regulations have had on the utilization of these onsite systems. We will consider some of the various programs that have been established to seek the end goal of safe water from onsite systems. Finally, we will evaluate the impacts that onsite well and septic system usage has on real estate, and close with some commentary on REALTOR® involvement in onsite well and septic challenges.

WATER, SEWER & SEPTIC SYSTEMS IN THE UNITED STATES

Public Water Systems

In most states, public water systems outnumber private water systems. These public systems also serve an overwhelming majority of a given state's population.[1] The rates charged for water by a public system are determined by a governing board, which is usually a non-profit corporation overseen by the municipal or state government.

[1] Kopaskie, A., *Public Vs Private: A National Overview of Water Systems.* UNC Environmental Finance Blog. https://efc.web.unc.edu/2016/10/19/public-vs-private-a-national-overview-of-water-systems/ (Oct. 19, 2016).

It is estimated that 90% of Americans get their drinking water from public drinking water systems regulated by the U.S. Environmental Protection Agency (EPA) and by states and tribes that have had enforcement authority delegated to them.[2] A public water system is defined as one that either supplies water for human consumption to at least 15 service connections, or that serves an average of at least 25 persons for at least 60 days per year through pipes or other built conveyances. A public water system might be owned by the government or by a private company. In the United States, there are around 148,000 public water systems. The EPA divides these water systems into three categories based on the number of people they serve, the source of their water, and whether they serve the same clients year after year or only on occasion.[3] The systems are defined as:

- *Community Water System* (CWS): A public water system that supplies water to the same population year-round.
- *Non-Transient Non-Community Water System* (NTNCWS): A public water system that regularly supplies water to at least 25 of the same people at least six months per year. Some examples are schools, factories, office buildings, and hospitals which have their own water systems.
- *Transient Non-Community Water System* (TNCWS): A public water system that provides water in a place such as a gas station or campground where people do not remain for long periods of time.

The public water infrastructure in the U.S. is a robust distribution system that consists of a series of interconnected components that include pipes, storage tanks and facilities, and pumps and valves that move the drinking water. These systems can be under a lot of stress due to the ever-increasing demand for water, and they are not without issues. Corrosion, material erosion, and

[2] Information About Public Water Systems. (2015, September 21). US EPA. https://www.epa.gov/dwreginfo/information-about-public-water-systems.
[3] *Id.*

external stresses can all cause damage as water systems age. Water distribution systems that are deteriorating might lead to a variety of problems, such as breaches in pipes and storage facilities, intrusion due to water pressure fluctuations, and commonly, water main breaks.[4]

Private Water Systems

Private water systems can be for-profit businesses run by investors or shareholders. Although a state's public utilities commission is usually authorized to monitor water rates, private systems are not necessarily subject to this oversight. The distinction between public and private is not always clear, as many privately-run systems are officially designated as public-private partnerships.[5]

Sewer and Septic Systems

Dealing with wastewater is a necessary adjunct to any type of water system. Wastewater systems are either septic systems or sewer systems. Although the two terms may sometimes be used interchangeably, they are not the same thing. The fundamental difference between a septic system and a sewer system is that a septic system treats wastewater on site while a sewage system does not. A septic system is usually buried beneath the ground near the building served by the system. Sewer systems, on the other hand, transport wastewater away from the building to a treatment plant. Sewer systems are often provided and operated by local government, but are not available everywhere residential buildings are developed. When there is no sewer system available, private septic systems are the best, if not the only, option. Both techniques accomplish the same goal: to clean wastewater while preventing toxins from entering the groundwater.

Wastewater drains are designed to connect to a single large pipe that transports wastewater

[4] US EPA, Drinking Water Distribution Systems (Aug. 19, 2015). https://www.epa.gov/dwsixyearreview/drinking-water-distribution-systems.
[5] Kopaskie, *supra.*

underground. If a building is served by a sewer system, this main drain pipe links to a network of even larger pipes, which leads straight to a sewage treatment plant.

With a private septic system, all wastewater treatment is performed at the location of the individual property served by the system. Septic systems, in general, function by separating and breaking down the contents of the wastewater. The septic system's initial job is to keep this wastewater contained. The technology will then separate and break down the pollutants into more natural elements using biology and natural science. Finally, the environmentally friendly water will be returned to the site's soil.

WATER RIGHTS

The right to have access to water is a point that is at once fundamental and overlooked. In the areas served by municipal water systems, it is understood that there is a way for any property owner or occupant to obtain some of that water. If there is no such system, understanding the law behind the right to water is essential. Water law can be broadly separated into two substantive areas: rights to utilize water, and limits on water pollution. Specifically, water law addresses: (1) the balance between public and private rights to use water; (2) individual water users' relative rights; and (3) water quality and regulation of discharges to water. Water law disputes usually fall into two categories: allocation rights, and land use that has a negative impact on water quality.[6] While federal laws regarding water pollution are implicated in disputes based on an impact on water quality, the states are largely in charge of water allocation. Each state has its own regulatory structure for water allocation with little federal involvement.[7] Certain water uses, such as water

[6] *Water Law: An Overview,* The Nat'l Agric. Law Ctr., https://nationalaglawcenter.org/overview/water-law/ (last visited Oct. 8, 2021).
[7] For a listing of state water offices, *see* https://nationalaglawcenter.org/wp-content/uploads/assets/readingrooms/waterlaw-offices.pdf.

transfers from one watershed to another, groundwater withdrawal from overused aquifers, water impoundment, and well development are governed by state regulations and regulatory regimes.[8]

Surface Water

Surface water is defined as the water that is on the surface of the earth, or that has not penetrated very far underground. The right to the use of surface waters, whether for irrigation, manufacturing, or some other use, is generally governed by state law. Three alternative use allocation schemes have emerged to assess the water rights of private persons. The riparian doctrine, which arose in the eastern states with ample groundwater, is the first such scheme. The second is the prior appropriation method, sometimes known as "first-in-time, first-in-right," which predominates in the western United States. Finally, a few states have implemented a hybrid system that incorporates elements of both the prior appropriation and riparian systems concepts.[9]

Riparian Doctrine

Under the riparianism doctrine, only those who own riparian land can use the surface water. To be recognized as a riparian landowner, the property owner must own land adjacent to a watercourse, such as a river, stream, lake, or pond, from which the water will be used. The water can be used only in a reasonable way, and only by the riparian landowner. The courts may issue injunctions against landowners who use the water in an unreasonable manner.[10] The right to make "reasonable use" of the watercourse means that the riparian landowner may use the water in a reasonable manner that does not interfere with another riparian landowner's reasonable usage. The proposed use is compared to the uses of other riparian landowners to establish its reasonableness. As a rule, water usage such as drinking water or watering a garden are considered reasonable.

[8] *Water Law: An Overview, supra.*
[9] *Id.*
[10] *Id.*

Artificial uses, such as crop irrigation or industrial use, are considered reasonable under the laws of many jurisdictions.[11] Riparian rights are tied to the land, so a landowner who does not use the water to which they are entitled does not lose the riparian rights.[12]

Permitting Systems

Almost all riparian states now allocate water through a permit system. These systems are known as "controlled riparian" systems. Under a controlled riparian system, a central governmental agency governs who may use the water, how much they can use, and when they can use it. Regulated riparianism differs from common law riparianism in that it considers the projected use of water before it is actually used. The state agencies evaluate whether a new use is appropriate using the same "reasonable use" principles as are used regarding common law riparian rights. Before granting permission for a new use, the state can consider both the potential benefits to society from the new use and the new use's compatibility with current uses. Non-consumptive uses, or uses that do not require a diversion or removal of water from the watercourse, are frequently exempt from the permission requirement.[13]

Prior Appropriation Theory

The prior appropriation theory of water rights dates back to the days when miners in the west needed water to establish their mining claims. The riparian system proved impractical, since the required area was not next to a watercourse. Instead, the miners adopted the "first in time, first in right" method, which became the prior appropriation doctrine. This doctrine states that the first user had the right to continue using the water to the exclusion of successive users.[14]

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[11] *Id.*
[12] Water Law: An Overview, The Nat'l Agric. Law Ctr., https://nationalaglawcenter.org/overview/water-law/ (last visited Oct. 8, 2021).
[13] *Id.*
[14] *Id.*

The details of the doctrine of prior appropriation differ from state to state, but there are usually three common requirements for a perfected water right: (1) the appropriator must seek to put the water to a beneficial use, (2) the water must be appropriated, and (3) the appropriated water must be put to a beneficial use within a reasonable time period.[15] Any use of water that the state recognizes as being a legitimate, beneficial use of water, such as irrigation, livestock, fish and wildlife, drinking water, industrial uses, or recreational uses, is considered a beneficial use.[16] When water is put to good use, the right to it is perfected and that right takes precedence over later appropriators. Even if a "better" use appears later, the senior appropriator has the right to use their original right.[17]

ONSITE SEPTIC & WELL SYSTEMS

Onsite well and septic systems range from relatively simple to more complex and robust systems.

Onsite Well Systems

In the United States, about 42 million people rely on unregulated drinking water, largely from private wells. In some states, such as Alaska, Maine, New Hampshire, and North Carolina, over 30% of the population is served by some type of unregulated water system. In addition, over 2 million people in California, Michigan, New York, North Carolina, Pennsylvania, and Texas consume unregulated water on a regular basis.[18] Wells provide a steady and adequate supply of water for domestic consumption, agriculture, and industry in many regions.

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[15] Sea Grant Law Center, *Overview of Prior Appropriation Water Rights,* http://nsglc.olemiss.edu/projects/waterresources/files/overview-of-prior-appropriation-water-rights.pdf (accessed Oct. 19, 2021).
[16] *Id.*
[17] *Id.*
[18] Doug Farquhar, Regulating Private Water Wells (Nat'l Conference of State Legislatures 2020), https://www.ncsl.org/research/environment-and-natural-resources/regulating-private-water-wells.aspx.

A ground well is designed to access the water table or aquifers underground. The water table is the location underground where all spaces between rocks and soil are full of water. An aquifer is a water-bearing rock that readily transports water to wells and springs.[19] Water can be extracted out of the aquifers by drilling wells into the aquifers. Precipitation ultimately replenishes the aquifer's permeable rock with water, in a process known as "recharge." However, not all aquifers recharge at the same rate, and this must be taken into account when pumping water from a well.

Types of Onsite Water Wells

There are three types of onsite private drinking wells. The first, are *dug/bored wells* that are holes dug in the ground with a shovel or backhoe.

The second type is a *pipe-driven well*. These wells get water from nearby aquifers.

The third type of onsite private well is a *drilled well*. Percussion or rotary-drilling machines are used to create this type of well, which extend hundreds of feet deep into the ground.[20]

Because of the lack of protection from surface water, dug wells pose the greatest risk of contamination to the water supply. A dug well's shallow depth and an absence of continuous casing make it vulnerable to pollution from neighboring surface sources. Dug wells can also run dry during droughts if the water table descends below the well bottom. Similarly, pipe driven wells can only tap into shallow water, and since the source of the water is so close to the surface, contamination from surface pollutants can occur.[21]

Well System Components

[19] Aquifers and Groundwater (U.S. Geological Survey 2021), https://www.usgs.gov/special-topic/water-science-school/science/aquifers-and-groundwater?qt-science_center_objects=0#qt-science_center_objects.
[20] Learn About Private Water Wells (U.S. Envtl. Prot. Agency 2021), https://www.epa.gov/privatewells/learn-about-private-water-wells.
[21] Groundwater Wells (U.S. Geological Survey 2021), https://www.usgs.gov/special-topic/water-science-school/science/groundwater-wells?qt-science_center_objects=0#qt-science_center_objects.

Most private well systems have core basic components. The basic components are as follows:[22]

- Casing: Casing is a tubular framework that is inserted into a drilled well to keep it open. The casing prevents potentially contaminated surface water from reaching the aquifer zone underneath and contaminants from mixing with the water. The casing also keeps unstable earth materials out of the well, preventing those materials from collapsing into it.
- Well Caps: A well cap is a cover installed on top of the casing. It can help prevent trash, insects, or small animals from entering the well system. Well caps are typically made of aluminum or thermoplastic and have a vented screen to equalize the pressure difference between the interior and exterior of the well casing when water is pumped from it.
- Well Screens: Well screens are sediment-filtering devices that keep excess silt out of the well. They attach underneath the casing or to water-bearing zones allowing water to flow through the well while keeping most gravel and sand out.
- Pumps: For shallow wells, jet pumps are the most typically used pumps (depth of 25 feet or less). The water is drawn from the well by jet pumps, which are positioned above ground and utilize suction to do so. The most widely utilized pumps for deep private wells are submersible pumps. Inside the well casing, the pumping machine is connected to a power source on the surface.

Private Well Maintenance

Private wells, although generally less complex than public systems, still require regular maintenance.[23] Regular maintenance checks should include a flow test, to evaluate system output

[22] *Id. see also* Well System Components, Nat'l Ground Water Assoc., http://wellowner.org/resources/basics/well-system-components/ (last visited Oct. 10, 2021).
[23] Cliff Treyens, *What's a Private Well Owner to Do? Eight Tips for Maintaining Your Well* (Nat'l Ground Water, Assoc. 2008), https://www.publichealthmdc.com/documents/WhatsAWellOwnertoDo.pdf.

the performance of the components of the well, and overall water quality (odor, cloudiness, etc.). The well equipment should then be inspected to ensure that it is sanitary and meets local code standards. Finally, a test for coliform bacteria and nitrates, as well as anything else of local relevance, should be performed on the water.[24]

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CESSPOOL & SEPTIC SYSTEMS

Cesspools

Prior to the development of the modern septic system, cesspools were commonly used to dispose of waste water. A cesspool is a shallow, underground sanitary waste disposal system. Most cesspools are made up of a concrete cylinder with an open bottom and/or perforated sides, though the structures vary. Cesspools are designed to collect sanitary waste but are not designed to treat it.[26] The cesspool sludge must be pumped on a regular basis to preserve water flow, and the cesspool must frequently be relocated when the surrounding soil becomes saturated to the point where wastewater pools at the ground surface. Any cesspool that has outlived its usefulness today will almost certainly be replaced with a modern septic system. Importantly, cesspools are inadequate, obsolete wastewater systems that have been outlawed in all 50 states and Puerto Rico for new development.[27]

The regulatory authority over cesspool use depends on the size of the cesspool system. The EPA provides some guidance in order to determine whether a cesspool system is regulated by

[24] *Id.*

[26] US EPA, *Large-Capacity Cesspools*, (n.d.) https://www.epa.gov/uic/large-capacity-cesspools#why_ban.
[27] Caroline Gleason, *Cesspools*, July 27, 2021, online at http://www.beachapedia.org/Cesspools.

federal, state or local authorities.[28] Large capacity cesspools are prohibited by EPA regulations, and their use is being phased out. The criteria EPA uses for identifying large-capacity cesspools include: "Multiple dwelling, community or regional cesspools, or other devices that receive sanitary wastes, containing human excreta, which have an open bottom and sometimes perforated sides. The UIC requirements do not apply to single family residential cesspools nor to non-residential cesspools which receive solely sanitary waste and have the capacity to serve fewer than 20 persons a day. (see 40 CFR 144.81(2))."[29]

A small-capacity cesspool is one that is attached primarily to a single-family dwelling, does not service any other structure, and receives no waste other than residential sanitary waste. It is not regulated by the federal government. State and local government authorities oversee small-capacity cesspools.[30]

Septic Systems

Unlike cesspools, septic systems are used to both treat and dispose of relatively small volumes of wastewater, typically from homes and businesses in suburban and rural areas where a centralized public sewage system is not available. According to the EPA, more than one out of every five residences in the United States uses onsite or small community cluster septic systems to clean their wastewater.[31] In simple terms, septic systems treat wastewater from residential plumbing fixtures (toilet, shower, laundry, etc.) using both natural and technological processes, with particles settling in a septic tank and wastewater treatment in the soil via a drainfield. The systems may also be referred to as:[32]

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[28] *See* US EPA, *Primary Enforcement Authority for the Underground Injection Control Program*, (n.d.). https://www.epa.gov/uic/primary-enforcement-authority-underground-injection-control-program.
[29] *Id.*
[30] *Id.*
[31] US EPA, *Septic Systems Overview*, (June 9, 2015), https://www.epa.gov/septic/septic-systems-overview.
[32] *Id.*

- onsite wastewater treatment systems
- decentralized wastewater treatment systems,
- cluster systems,
- package plants,
- on-lot systems,
- individual sewage disposal systems, and
- private sewage systems.

When used correctly, decentralized systems lower the danger of disease transmission and human exposure to pathogens, which can occur through contaminated drinking water, surface water, and shellfish beds, resulting in a public benefit. Wastewater treatment benefits the environment by removing contaminants from surface water, recharging groundwater, and replenishing aquifers. Decentralized wastewater systems allow communities to save money on infrastructure and energy by collecting and treating wastewater locally.[33]

Septic System Types: Commercial vs. Residential

Every property, whether commercial or residential, requires a system to treat the wastewater generated by the facility. Many residences are connected to a public sewer system that transports waste to a sewage treatment plant. With others, sewage is treated in a private septic system. Commercial septic systems work similarly to residential septic systems, with a few notable exceptions.

An important distinction between commercial and residential septic systems is the *volume* of water handled. For example, an apartment building housing more than three families, although considered a residential property in most states, would need to use a commercial septic system.

[33] *Id.*

Septic System Operation

Any septic system, whether residential or commercial, has the same basic design. Each empties the building's wastewater into a holding tank, where the solids settle and begin to break down. The effluent runs through a secondary treatment system, where it is filtered until it is clean enough to be released back into the ground. Commercial septic systems have the same fundamental architecture as residential septic systems. Commercial systems, on the other hand, often require a considerably larger system to treat the higher volume of wastewater, and in certain circumstances, may require additional pre-treatment of the effluent to assist in breaking it down more quickly.

As with private water well systems, any septic system, whether commercial or residential, requires regular maintenance during its efficient working lifespan. Commercial septic systems require more frequent maintenance visits because of the much higher volume of wastewater they treat. More frequent tank pumpings may be required in some situations, and the larger drainfield of a commercial septic system will need to be inspected on a regular basis to assure proper operation.[34]

Contrary to common perception, not all of the septic functions occur within the tank. A lot of the actual water treatment happens in a system's drainfield. Microbes in the soil literally eat up potentially harmful material like germs and viruses after effluent falls out of these hidden pipelines and into the soil. The location of the drainfield on the property is determined by the property location and the nature of the property at issue. If the land backs up to a stream or wetlands, the state or local authorities having jurisdiction may have specific regulations for where a drain field should be placed as contaminated groundwater is always a risk with septic systems.

Common Types of Septic Systems

[34] Stephanie Booth, *How Does a Septic System Work? Everything You Never Wanted to Know—but Should* , https://www.realtor.com/advice/home-improvement/how-does-a-septic-system-work/ (last visited Oct. 11, 2021).

A septic system is a waste treatment system that is installed underground. There are various types of systems, whether centralized, decentralized and cluster as well as residential versus commercial systems. Due to a variety of circumstances, septic system design and size can vary greatly from neighborhood to neighborhood and even across the country. Household size, soil type, site slope, lot size, closeness to sensitive water bodies, weather conditions, and even local ordinances are all aspects to consider.

Residential Systems

The EPA provides useful information regarding the most commonly used septic systems:[35]

Traditional

- Septic Tank: A buried, watertight tank designated and constructed to receive and partially treat raw domestic sanitary wastewater.
- Conventional System: A decentralized wastewater treatment system consisting of a septic tank and a trench or bed subsurface wastewater infiltration system (drainfield), which is made of gravel or stone. Effluent filters through the stone and is then further treated by microbes once it reaches the soil below the gravel/stone trench.

Alternative Septic Systems

- Chamber System: The chamber system serves as an alternative design to the gravel/stone system. This type of system consists of a series of connected chambers. The area around and above the chambers is filled with soil. Pipes carry wastewater from the septic tank to the chambers. In the chambers, the wastewater comes into contact with the soil. Microbes on or near the soil treat the effluent.

[35] US EPA, *Types of Septic Systems* (Nov. 15, 2018). US EPA. https://www.epa.gov/septic/types-septic-systems#conventional.

- Drip Distribution System: The drip distribution system pumps wastewater to a soil treatment site. The wastewater is used to provide nutrients and moisture for vegetation.
- Aerobic Treatment Units ("ATU"): An aerobic system injects oxygen into the treatment tank. The additional oxygen increases natural bacterial activity within the system that then provides additional treatment for nutrients in the effluent. This is similar to the processes used at a municipal sewage plant, but on a smaller scale.
- Mound Systems: Mound systems use a constructed sand mound that contains a drainfield trench. Effluent from the septic tank flows to a pump chamber where it is pumped to the mound in prescribed doses. Treatment of the effluent occurs as it discharges to the trench and filters through the sand, and then disperses into the native soil.
- Recirculating Sand Filter System: In a sand filter system, effluent flows from the septic tank to a pump chamber. It is then pumped to a sand filter. The effluent leaves the pipes and is treated as it filters through the sand. The treated wastewater is then discharged to the drainfield.
- Evapotranspiration System: Evapotranspiration systems have unique drainfields. The base of the evapotranspiration system drainfield is lined with a watertight material. After the effluent enters the drainfield, it evaporates into the air. Unlike other septic system designs, the effluent never filters to the soil and never reaches groundwater.
- Constructed Wetland System: A constructed wetland mimics the treatment processes that occur in natural wetlands. Wastewater flows from the septic tank and enters the wetland cell. The wastewater then passes through the media and is treated by microbes, plants, and other media that remove pathogens and nutrients.
- Tight Tanks: Tight tanks are similar to septic tanks, except they do not have an outlet and

must be pumped out on a regular basis. Tight tank usage is severely discouraged, although they may be permitted in cases where a current system has failed and there is no other viable option.

Cluster/Community Septic System

- Cluster/Community System: A decentralized wastewater treatment system under some form of common ownership that collects wastewater from two or more dwellings or buildings and conveys it to a treatment and dispersal system located on a suitable site near the dwellings or buildings.

Commercial (Large) Septic Systems

According to the EPA, a "septic system is considered a large capacity septic system (LCSS) if it receives solely sanitary waste either from multiple dwellings or from a non-residential establishment and the system has the capacity to serve 20 or more persons per day."[36] Facilities that often utilize a LCSS include apartment complexes, trailer parks, schools, religious organizations, office buildings, industrial facilities, commercial occupancies, shopping malls, large parks and campgrounds, highway rest areas, transportation facilities, hotels, and restaurants.[37]

FEDERAL REGULATIONS FOR WATER & SEPTIC SYSTEMS

Federal Agencies

At the federal level in the United States, drinking water is regulated by the U.S. Environmental Protection Agency ("EPA"). Within the EPA is the Office of Water which, among

[36] US EPA, *Large-Capacity Septic Systems* (June 1, 2015). https://www.epa.gov/uic/large-capacity-septic-systems#epalcss.
[37] *Id.*

other duties, is tasked with ensuring that drinking water is safe.[38] Further within the Office of Water is the Office of Ground Water and Drinking Water ("OGWDW"). The OGWDW has the focused responsibility of protecting groundwater and ensuring that our drinking water is safe. As part of their operations, the OGWDW develops and implements national drinking water standards, monitors and assists funding of drinking water and water protection programs, assists small drinking water systems, protects underground drinking water sources, and engages in public outreach about water quality.

Clean Water Act

The Clean Water Act[39] (CWA) was enacted in 1972 to protect the chemical, biological, and physical integrity of the navigable waters of the United States. Unless a permit is secured, it is illegal to discharge any pollutant from a point source into navigable waters under the CWA. Under the CWA, "water" can be characterized as "navigable waters, tributaries to navigable waters, interstate waters, the oceans out to 200 miles, and intrastate waters which are used by interstate travelers for recreation or other purposes, as a source of fish or shellfish sold in interstate commerce, or for industrial purposes by industries engaged in interstate commerce."[40]

To further protect these navigable waters, the National Pollutant Discharge Elimination System[41] (NPDES) permit program of the Environmental Protection Agency (EPA) was established to regulate certain pollutant discharges. Although individual residences and properties that are connected to a municipal system, use a septic system, or that do not have a surface discharge are not required to obtain an NPDES permit, industrial, municipal, and other entities that discharge directly into surface waters must obtain these permits. Limits on what can be discharged,

[38] US EPA, *About the Office of Water* (n.d.) https://www.epa.gov/aboutepa/about-office-water
[39] 33 U.S.C. §1251 *et seq*.
[40] US EPA, *NPDES Permit Basics* https://www.epa.gov/npdes/npdes-permit-basics (accessed Oct. 6, 2021).
[41] 33 U.S.C. § 1342

monitoring and reporting requirements, and other provisions are included in the permit to ensure that the discharge does not harm water quality or people's health. The permit, in essence, converts fundamental Clean Water Act obligations into particular terms suited to the operations of each person emitting pollutants.

The term pollutant is defined broadly in the Clean Water Act. Virtually any sort of industrial, municipal, or agricultural waste that is dumped into water is included. A NPDES permit is required to release water from a point source into US waters. A permit is not necessary for a discharge of pollutants into a municipal sanitary sewer system, but an inquiry should be made about the municipality's permit requirements.

Safe Drinking Water Act

At the forefront of drinking water standards in the U.S. is the Safe Drinking Water Act of 1974 ("SDWA").[42] Amended and reauthorized in 1986 and 1996, the legislation authorizes the EPA to set the national standards for drinking water. These standards are enforced to protect against adverse health effects from exposure to both naturally occurring and manmade contaminants in water.

The caveat with these laws is that these federal standards only apply to public water systems, not to individual private wells. In addition, these standards only apply to public water systems that have at least 15 service connections or that serve at least 25 people for at least 60 days per year. Public water systems could be "Community Water Systems" that provide year-round water to the same population, "Non-Transient Non-Community Water Systems" that provide water to the same population for at least six months out of the year, but not year-round, and "Transient Non-Community Water Systems" that provide water to locations where people do not stay for

[42] 42 U.S.C. §300f *et seq*.

extended periods of time.

As noted above, the EPA estimates that approximately 90% of Americans obtain their drinking water from a public drinking water system. Interestingly, more than 97% of the nation's 156,000 public water systems are small water systems that serve populations of fewer than 10,000 people.[43] These smaller water systems usually face financial and operational challenges. With that in mind, the EPA "is committed to helping small water systems provide safe drinking water through publications, training, and technical and financial assistance."[44]

Due to the high number of public water systems, the EPA cannot effectively enforce their regulations in every jurisdiction. This has led the EPA and the states to develop a productive partnership. The EPA uses programs to help states achieve the overall objectives of the SDWA of protecting health. Under the Drinking Water State Revolving Loan Fund ("DWSRF")[45] program, the EPA awards capitalization grants to each state based on a Drinking Water Infrastructure Needs Survey and Assessment. With each grant, the state matches 20 percent. In addition, states can take up to 31% of their capitalization grants as a set aside for states to provide programs and activities to promote safer drinking water. The states then take the funds that remain after the set-asides and place them in a revolving loan fund. This dedicated fund allows public water systems to obtain loans and other assistance to make eligible infrastructure improvements to their water systems.

An important aspect of the DWSRF is that it acts as a "revolving" loan. The states operate and control their own DWSRF program. The programs work similarly to infrastructure banks in that they provide low-interest loans to eligible applicants for drinking water infrastructure projects. As money is repaid into the state's revolving loan pool, new loans are made to other water agencies.

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[43] US EPA, *Learn about Capacity Development* (n.d.), https://www.epa.gov/dwcapacity/learn-about-capacity-development.
[44] *Id.*
[45] 42 U.S.C. §300j-12

The state's DWSRF can "revolve" over time thanks to these recycled repayments of loan principle and interest earnings.

The EPA and Private Water Systems

Despite this exceptional federal and state partnership, a significant portion of US citizens, almost 42 million, must rely on unregulated drinking water they receive, mostly from private wells.[46] As mentioned previously, unregulated water systems have fewer than 15 service connections or serve fewer than 25 people and are not subject to the federal SDWA. In this situation, the owners of these wells are responsible for maintaining their water systems and ensuring that they are safe for water consumption. The "EPA does not regulate private wells nor does it provide recommended criteria or standards for individual wells. EPA offers information regarding the importance of testing private wells and guidance on technologies that may be used to treat or remove any contaminants."[47] EPA resources include guidance about protecting water wells, testing information, preventing pollution, and identifying potential contaminants. There are also lessons about groundwater, aquifers, and the water in rural areas, as well as private well basics, private well systems, and private well safety. The EPA also directs citizens to other resources within federal government such as the Centers for Disease Control and Prevention's ("CDC") information and resources on Private Water Systems,[48] the U.S. Geological Survey ("USGS") in the Department of the Interior,[49] as well as links to individual state resources.

Federal laws, rules and regulations provide national baseline standards pertaining to

[46] Farquhar, D., 2020. *Regulating Private Water Wells online at* https://www.ncsl.org/research/environment-and-natural-resources/regulating-private-water-wells.aspx.
[47] US EPA, *About the Office of Water, online at* https://www.epa.gov/aboutepa/about-office-water (accessed Oct. 1, 2021)
[48] US Centers for Disease Control and Prevention, *Private Water Systems, online at* https://www.cdc.gov/healthywater/drinking/private/index.html (accessed Oct. 5, 2021)
[49] US Geological Survey, *Water Resources – Science, online at* https://www.usgs.gov/mission-areas/water-resources/science (accessed Oct. 5, 2021)

drinking water and wastewater. Although the federal government leaves the regulation of smaller water and septic systems to state and local governments, certain standards, such as EPA regulations, still have an impact where local standards do not exist. It is necessary that real estate professionals be cognizant of the broad regulations that affect these systems at all levels of government.

STATE PRIVATE WELL & SEPTIC SYSTEM REGULATION

As with individual private well systems, local health authorities in most states are tasked with regulating septic systems. These state and local authorities issue construction and operation permits for septic systems as part of laws and rules that govern public health and nuisance abatement. Because of the potential effects of nitrogen and phosphorus on the environment, some states may also include water resource protection restrictions in their septic system rules.

The local permitting agency conducts a site assessment under most regulatory programs to assess whether the soils can provide adequate treatment. These programs ensure that groundwater deposits are not jeopardized and establish suitable setback distances from structures, driveways, property lines, and surface water sources. If conventional soil-based systems aren't feasible, several states authorize alternate systems. Only a few permitting bodies monitor septic systems after they are installed.[50]

Different regulatory authorities provide guidance and enforcement. Which authority will regulate a particular system depends on the type and size of the system. States, tribes, and local governments all regulate individual onsite systems. Large capacity septic systems are governed by the EPA's Safe Drinking Water Act's ("SDWA") Underground Injection Control ("UIC")

[50] *Id.*

program, which includes standards for large capacity septic systems.[51] The EPA's Clean Water Act National Pollutant Discharge Elimination System[52] program regulates systems that discharge to surface waters. The EPA's sewage sludge rule[53] governs the disposal of sewage sludge (biosolids) and household septage.

State Private Well Regulations

As noted above, private well systems are regulated by state and local governments, rather than by the federal government. While every state regulates some aspect of private well usage,[54] the degree of regulation varies.

Regulation of wells is the responsibility of various state agencies. In sixteen states, the responsibility lies with the Department of Natural Resources, which may also be known as the Department of Water Resources, Department of Land and Natural Resources, Water Resources Commission, Department of Conservation and Natural Resources, Department of Environment and Natural Resources, or the Department of Ecology.[55] In thirteen states, the responsible agency is the Department of Health.[56] A few states have a specialized agency that deals with wells. In New Hampshire, the Water Well Board, a division of the state Department of Environmental Services, was established to "regulate the construction of water wells and the installation of well pumps; to license water well contractors and well pump installers; [and] to provide well records".[57] In Texas, the primary authority for regulating wells rests with the Department of Licensing and

[51] US EPA, Underground Injection Control Regulations and Safe Drinking Water Act Provisions, *online at* https://www.epa.gov/uic/underground-injection-control-regulations-and-safe-drinking-water-act-provisions.
[52] US EPA, National Pollutant Discharge Elimination System (Aug. 6, 2014), *online at* https://www.epa.gov/npdes.
[53] US EPA, Biosolids Laws and Regulations (Mar. 2, 2020), *online at* www.epa.gov/biosolids/biosolids-laws-and-regulations.
[54] Bowen, *et al*., *State-Level Policies Concerning Private Wells in the United States*, Water Policy, April 2019, *online at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6656387/.
[55] *Id.*
[56] *Id.*
[57] N.H. Rev. Stat. § 482-B:1

Regulation,[58] but the Commission on Environmental Quality[59] and the Alliance of Groundwater Districts (through its member districts)[60] also have some regulatory authority over the operation of water wells.

State Septic System Regulations

Septic systems are also regulated by the states, although the U.S. EPA has issued voluntary national guidelines for the management of septic wastewater systems.[61] In most states, septic systems are regulated by the state Department of Health or the Department of Environmental Quality; however, local authorities retain or have been granted the authority to regulate the construction and operation of septic systems.[62] For example, in California, the Water Resources Control Board has implemented a statewide policy for the construction and operation of onsite septic systems.[63] At the same time, the licensing and regulation of the business of cleaning and maintaining septic systems is delegated by state law to "city, town, county, or city and county" health officers.[64]

State laws regarding septic systems go into different degrees of detail regarding maintenance and use standards. For example, North Dakota regulations set different flow requirements for private sewage systems that depend on the type of building served by the system.[65] The regulations also impose general requirements for septic tank pumpers,[66] but do not

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[58] Tex. Occ. Code § 1901.051, *et seq.*
[59] Tex. Loc. Gov't Code § 240.042
[60] Tex. Water Code ch. 36
[61] U.S. EPA, *Septic Systems Guidance, Policy, and Regulations*, *online at* https://www.epa.gov/septic/septic-systems-guidance-policy-and-regulations (last accessed Oct. 26, 2021).
[62] InspectAPedia, *Septic System Design and Repair Regulations in the U.S.*, *online at* https://inspectapedia.com/septic/Septic_Design_Regulations_U.S.A.php (last accessed Oct. 26, 2021)
[63] California Water Resources Control Board, *Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems (OWTS) Policy*, *online at* https://www.waterboards.ca.gov/water_issues/programs/owts/ (last accessed Oct. 26, 2021).
[64] Cal. Health & Safety Code §§ 11740 – 11750.
[65] N.D. Admin. Code § 62-03.1-03-03.
[66] N.D. Admin. Code § 62-03.1-03-15.

require pumping on any particular timeline. Georgia regulations state that the owner of a private sewage system may not use or maintain the system "in such a manner as to allow the seepage or discharge of effluent from such system to the ground surface, to a water course, drainage ditch, open trench, canal, storm drain or storm sewer, water well, abandoned well, lake, stream, river, estuary, groundwater, or other body of water."[67] Maintenance of the system must be done in accordance with the criteria in the *Manual for On-Site Sewage Management Systems*, published by the Georgia Department of Public Health.[68] The Manual recommends pumping a septic tank every three to five years.[69] Georgia also requires that the manufacturer or authorized representative of the manufacturer of a system provide for six inspections of the system over the first three years the system is in use.[70]

Advanced Technologies

While state laws vary in the level of detail used to regulate onsite sewage systems, local governments are often able to adopt new technical standards that allow for the use of advanced technologies. These technologies allow for the further treatment to diminish the "strength" of wastewater before it is dispersed into the soil.[71] Advanced technologies include aerobic treatment units. Aerobic treatment uses technology that removes nitrogen from onsite sewage disposal systems. The treatment system may use multiple chambers, each of which has a specific function including solids settling, nitrification and denitrification, and clarification.[72] Many local authorities

[67] Ga. Comp. R. & Regs. r. 511-3-1-.17.
[68] *Id.* The Manual is available online at https://dph.georgia.gov/document/document/manual-site-sewage-management-systems-rules/download.
[69] *Manual for On-Site Sewage Management Systems* p. 35.
[70] *Id.* p. 110.
[71] Univ. of Rhode Island New England Onsite Wastewater Training Program, *Advanced Treatment Systems*, online at https://web.uri.edu/owt/advanced-treatment-systems/ (last accessed Oct. 27, 2021)
[72] Univ. of Maryland Extension, *Septic Systems and Best Available Technologies*, Sept. 2020, p. 3, *online at* https://extension.umd.edu/sites/default/files/publications/Septic%20Systems%20and%20Best%20Available%20Technologies%20-%20FS-%201110%20Final.pdf.

allow such systems. For example, Johnson County, Kansas, allows aerobic systems that "meet the standards prescribed in Standard No. 40 of the National Sanitation Foundation and the American National Standards Institute."[73] A permit is required for the installation of an aerobic system,[74] and systems must be "installed, operated, and maintained in accordance with the manufacturer's instructions and the requirements of the Johnson County Environmental Department."[75]

The process of obtaining a permit requires approval of the design of the proposed system. One part of the design to be approved is the size of the proposed drainfield. The optimum or minimum drainfield size is dictated by the soil conditions. Nebraska regulations make the size of the drainfield for a residential property a function of the number of bedrooms in the home and of the mid-range percolation rate of the soil.[76] For other buildings, the size is determined by the percolation rate of the soil and the daily design flow of the building.[77]

Disclosure Requirements

The presence of a private system on a property, and the type of system used, is a matter of concern to potential buyers. Many states require disclosure of a septic system to a buyer as a part of the property condition disclosure. The New York Property Condition Disclosure Statement asks property sellers about the type of system used, and, if the system is a septic system or cesspool, how old it is, when it was last pumped, how often it has been pumped, and whether there are any know defects in the system.[78] Minnesota law requires disclosure of a septic system in writing

[73] Johnson County, Kansas Environmental Sanitary Code Art. 5, § 1.
[74] *Id.* § 2.
[75] *Id.* § 5.
[76] Neb. Admin. R. & Regs. 124-14-017. "Percolation rate" is defined as the rate obtained from soil percolation tests conducted to help determine the amount of soil absorption area required for a soil absorption system. The rate is usually expressed in minutes per inch, or mpi. Neb. Admin. R. & Regs. 124-1-062.
[77] "Design flow" is defined as the maximum volume of wastewater estimated to be generated by a facility in a 24-hour period. Neb. Admin. R. & Regs. 124-1-019.
[78] N.Y. Div. of Licensing Services, *Property Condition Disclosure Statement* (rev. Aug. 2017), *online at* https://video.dos.ny.gov/forms/licensing/2018/1614-f.pdf.

before the agreement to sell or transfer property is signed. The disclosure must include a description of the system in use, including the legal description of the property, and a map drawn from available information showing the location of the system on the property. The seller or transferor must also his or her knowledge relative to the compliance status of the system, and whether a straight-pipe system exists. Failure to make a disclosure by a seller who knew or had reason to know of the existence or known status of the system makes the seller liable to the buyer or transferee for costs relating to bringing the system into compliance with the applicable rules and for reasonable attorney fees for collection of costs.[79]

In Virginia, the law imposes no obligation to disclose the presence of a septic system or a well. A property seller's disclosure must include the express statement that the seller "makes no representations with respect to the presence of any wastewater system, including the type or size of the wastewater system".[80] Buyers are advised to exercise "whatever due diligence they deem necessary to determine the presence of any wastewater system on the property and the costs associated with maintaining, repairing, or inspecting any wastewater system".[81] The buyer may make the sales contract contingent on an inspection of a well or septic system. An Addendum prepared by the Northern Virginia Association of Realtors® sets out sample contractual provisions relating to the inspection, and the consequences of no or an unsatisfactory inspection.[82] If, however, the seller had obtained a waiver from State Board of Health to repair a failing septic system, the seller must inform the buyer before ratification of the sale contract that the waiver is "null and void" as of the time of transfer or sale of the property. The regulatory requirements for

[79] Minn. Stat. § 115.55 subd. 6. An example of a form that meets the statutory requirements may be found at https://septic.umn.edu/sites/septic.umn.edu/files/mpca_septic_system_disclosure_form.pdf.
[80] Va. Code § 55.1-703(B)(7).
[81] *Id.*
[82] Northern Virginia Association of Realtors®, *Private Well and/or Septic Inspection Contingency Addendum,* Sept. 2018, *online at* https://www.nvar.com/docs/default-source/pdfs/well-and-septic-add---k1360ed.pdf?sfvrsn=62dba50d_2.

additional treatment or pressure dosing must be met by the new owner before an operating permit may be reinstated.[83] Failure to make the disclosure prior to the acceptance of a real estate contract will allow the buyer to terminate the contract.[84]

Environmental Impact Regulations

Even a septic or private sewage system that is in compliance with all of the applicable rules poses a risk of environmental damage. When there are several such systems grouped closely together, the risk is only magnified. Some states have responded to this risk by strictly limiting private sewage or septic systems in new developments. In Maryland, the Sustainable Growth and Agricultural Preservation Act of 2012,[85] also known as the "Septics Law," puts limits on the use of septic systems in new residential developments in order to protect the Chesapeake Bay watershed. Local jurisdictions are directed to classify land in their boundaries in one of four "tiers." Land in tiers I and II is either currently served by a sewerage system, or a sewerage system is planned. Land in tier III is not planned for a sewerage system, and septic systems may be used (Tier IV land is set aside for conservation or preservation, and no "major" residential subdivisions, as defined by local law, may be built). In Tier III, community systems, shared facilities and individual on-site sewage disposal systems are permitted for residential subdivisions; however, such systems are best suited for large lot development or for communities that are too small to support a larger public sewerage system financially. Thus, tier III areas should be areas that are planned for large lot development, or are existing communities without public sewerage systems.[86]

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[83] Va. Code § 32.1-164.1:1

[84] *Id. See also* Virginia Real Estate Board, *Disclosure Regarding Validity of Septic System Operating Permit*, Oct. 2019, *online at* https://www.dpor.virginia.gov/sites/default/files/Consumer/REB%20Septic%20Waiver%20Disclosure%20Form.pdf

[85] 2012 Md. Laws 149. The law is codified in various parts of the Land Use and Environment Laws.

[86] Md. Dept. of Planning, *Implementation Guidance for the Sustainable Growth & Agricultural Preservation Act of 2012 (V 2.0)*, Aug. 1, 2012, *online at* https://planning.maryland.gov/Documents/OurWork/septicsbill/SB236ImplementationGuidanceV2.pdf.

In Hawaii, the state has taken the step of prohibiting cesspools not just in new construction, but in existing construction.[87] Cesspools must be converted to other wastewater systems by 2050. The state offers grants for the costs of conversion.[88]

Attempts in Michigan to regulate and upgrade septic systems have not met with similar success. Two bills introduced in the Legislature in 2018, HB 5752 and HB 5753, would have imposed statewide standards on septic systems. The bills would also have required regular inspections of the systems. The bills did not pass out of committee, largely because of disagreements over what events would trigger inspection requirements: would inspections be required periodically, would there be a point-of-sale inspection requirement, or could it be triggered by a public health situation.[89]

The failure of the Michigan statewide measure does not mean that there is no regulation of septic systems in the state. Regulation is left to local governments. Some of these local governments have imposed their own point-of-sale requirements relating to septic systems that go beyond requiring merely disclosure of the presence of a system. In Washtenaw County, for example, septic systems and wells must be inspected before residential property changes ownership. The inspection must be performed by a certified inspector, and the inspectors report must include a description of the water supply and septic system construction, a summary of the systems functional status, and recommendations for corrective action. The County will then issue a written notice either authorizing the transfer of the property or requiring corrections. Authorization must be issued before the property may be transferred. Corrective action plans to be

[87] 2017 Haw. Sess. Laws 125.
[88] *Id.*
[89] Natasha Blakely, *In Fight for Statewide Septic Code, Michigan Property Rights a Big Barrier*, Michigan Bridge, Mar. 2, 2021, *online at* https://www.bridgemi.com/michigan-environment-watch/fight-statewide-septic-code-michigan-property-rights-big-barrier.

submitted within 30 days in cases of non-conformance, and all necessary corrections to be completed within 180 days.[90]

Local governments in other states have imposed similar requirements. Cayuga County, New York, requires periodic inspection of septic systems, with the frequency of the inspections varying in different communities,[91] but also requires that the system be inspected and the tank pumped before the property is transferred.[92] If the septic system does not pass the inspection, repairs must be made before the property is transferred.

State Private Well System Regulations

State regulation of wells is far less comprehensive that the regulation of septic systems. While every state regulates the construction or drilling of wells, only 29 states have inspection requirements for wells, and only 25 have maintenance requirements.[93] Only eleven states have any laws or regulations regarding real estate transactions involving wells.[94] The well requirements rely on the seller of property to make an accurate disclosure. The Delaware Seller's Disclosure of Real Property Condition Report[95] asks when the well was constructed, when the water from the well was last tested, and what the results of the test were. The Connecticut Disclosure Report[96] asks if the seller is aware of any "problem" with the well or water system, and if the well water was tested for contaminants or volatile organic compounds. Sellers in Wisconsin are not required by law to have their wells inspected, but if they do, the inspection must be done by a licensed water well

[90] Washtenaw County, MI, *Well & Septic – Time of Sale Program FAQs*, *online at* https://www.washtenaw.org/Faq.aspx?QID=382 (last accessed Oct. 27, 2021)
[91] Cayuga County, N.Y. Sanitary Code § IV.
[92] *Id.*
[93] Bowen, *et al.*, *supra.*
[94] *Id.*
[95] https://dprfiles.delaware.gov/realestate/DREC_Property_Disclosure_Condition_Report.pdf.
[96] https://portal.ct.gov/-/media/DCP/pdf/realestate_licensing_forms/2015RealEstatePropertyConditionDisclosurecleanpdf.pdf?la=en.

driller or licensed pump installer.[97] The inspection must cover the criteria set out in the regulation, and the inspector must indicate on the inspection form whether the well and pressure system complies with state regulations or complies with the exception of needing a more comprehensive search or additional research, or does not comply with the regulations.[98]

STATE PROGRAMS AND RESOURCES

There are numerous programs available to assist both owners or buyers with education, training, grants, and funding as they relate to private wells and septic systems. One of the largest programs that provides assistance at the local level is the Rural Community Assistance Partnership (RCAP). RCAP is a nationwide network of non-profit organizations that provide technical help, training, resources, and support to rural communities in the United States, tribal lands, and US territories. The national office in Washington, D.C. manages federal programs and organizational interests, while six regional offices manage state and regional programs and field activities.[99] With regards to training, RCAP offers water operators, utility board members, financial officers, and community members training to assist them manage their own water systems and achieve financial sustainability.

Cesspool & Septic System Upgrade or Replacement Programs

Some states also have programs that directly assist with the replacement of individual, private cesspool, and septic systems. New York State operates the Septic System Replacement Fund Program which funds counties to help homeowners replace cesspools and septic systems.[100]

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[97] Wis. Admin. Code NR 812.44.
[98] *Id.*
[99] Rural Community Assistance Partnership, https://www.rcap.org/.
[100] https://efc.ny.gov/septic-replacement#:~:text=The%20State%20Septic%20System%20Replacement,from%20cesspools%20and%20septic%20systems. *See also,* https://efc.ny.gov/system/files/documents/2021/10/septic-replacement-fund-outline-2021101865_1.pdf

Under the program, participating counties provide grants to reimburse property owners for up to 50% of the costs (up to a maximum of $10,000) of their eligible septic system projects. Currently, 39 of the state's 62 counties are eligible to participate in the program. Under the program, the New York State Department of Environmental Conservation and the Department of Health determine priority geographic areas in which property owners are eligible to participate based on several factors: the presence of a sole-source aquifer used for drinking water; known water quality impairment linked to failing septic systems, or the ability for septic system upgrades to mitigate water quality impairments. Over time, the DEC and DOH will re-evaluate priority water bodies in future rounds of funding, this can change the geographic areas where funding will be available. Importantly, the local county jurisdiction having authority (JHA) is responsible for reviewing and evaluating the applications and determining financial assistance awards based on the program criteria. When considering whether a grant will be awarded, the JHA will evaluate the property's location in relation to a waterbody, impacts to groundwater used as drinking water, and the condition of the property owner's current septic system. The grants can help homeowners with the replacement of a cesspool with a septic system; or installation, replacement or upgrade of a septic system or septic system components; or installation of enhanced treatment technologies, including an advanced nitrogen removal system.[101]

Another program within New York State is the Catskill Watershed Corporation Septic System Rehabilitation and Replacement Program.[102] This "voluntary program reimburses primary (full-time) residents of the West-of-Hudson (WOH) NYC Watershed 100 percent of eligible costs

[101]Environmental Facilities Corporation, *Septic System Replacement Fund* (n.d.), https://efc.ny.gov/septic-replacement#:~:text=The%20State%20Septic%20System%20Replacement,from%20cesspools%20and%20septic%20systems..

[102] Catskill Watershed Corporation, Residential Septic Rehabilitation and Replacement Program (Mar. 8, 2017), https://cwconline.org/residential-septic-rehabilitation-and-replacement-program/.

of designing and repairing or replacing a failed septic system that is at least 20 years of age. Owners of non-primary residences are reimbursed 60 percent of eligible costs."[103] The program is also limited to "[o]wners of septic systems anywhere in the West-of-Hudson (WOH) NYC Watershed, which serve one- or two-family residences, or home-business combinations, and treat less than 1,000 gallons per day."[104]

In Kentucky, the Kentucky PRIDE Homeowner Septic System Grant Program provides support to low-income homeowners to replace straight pipes, outhouses, or failing septic systems with sanitary wastewater treatment systems.[105] The Commonwealth of Massachusetts provides loans through the Massachusetts Water Pollution Abatement Trust to homeowners to fix failing septic systems. Three programs assist on-site septic system owners with wastewater management problems: the Community Septic Management Program, the Homeowner Septic Loan Program, and a tax credit program.[106] The Pennsylvania Infrastructure Investment Authority (PENNVEST): Community Septic Management Program offers low-interest loans to homeowners to repair or replace their individual on-lot sewage disposal system or with help to connect to a public sewer system.[107]

Native tribes and Alaskan native villages that are located throughout the United States also have wastewater infrastructure issues. The Clean Water Indian Set-Aside Grant Program (CWISA) provides funding to Native tribes and Alaska Native Villages for wastewater infrastructure improvements.[108] The CWISA program is administered in cooperation with the Indian Health

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[103] *Id.*
[104] *Id.*
[105] Eastern Kentucky PRIDE, *Programs* (n.d.) https://kypride.org/programs/.
[106] The Community Septic Management Program. (n.d.). Mass.gov. https://www.mass.gov/guides/the-community-septic-management-program.
[107] *PENNVEST Homeowner Septic Program* and *PHFA Home Improvement & Repair Loans,* https://www.phfa.org/programs/pennvest.aspx.
[108] US EPA, *Clean Water Indian Set-Aside Program*, (Jan. 27, 2015), www.epa.gov/small-and-rural-wastewater-systems/clean-water-indian-set-aside-program.

Service. The CWISA program does include funding, with certain limitations, for decentralized, onsite wastewater treatment systems. In fact, under the CWISA program, "onsite decentralized septic systems are often the most common type of infrastructure funded."[109]

State Partnerships

Although these local programs are successful, the main issue remains the lack of consistent permitting, regulatory, and safety standards state-to-state due to the innumerable amounts of decentralized wastewater systems in the United States. There are many national organizations, with state affiliates, that play an important role in the individual and decentralized water infrastructure industry in addressing the inconsistency. The National Onsite Wastewater Recycling Association (NOWRA) was established "to educate and serve its members and the public by promoting sound federal, state, and local policies, to improve standards of practice, and increase public recognition of the need for and benefits of onsite and decentralized wastewater infrastructure."[110] NOWRA collaborates with educators, regulators, engineers, contractors, manufacturers, suppliers, service providers, and other parties for the protection of water resources and the environment.

One significant contribution NOWRA has made to improve unsewered wastewater infrastructure is their Model Framework.[111] The framework "is based on performance of all components affecting the onsite wastewater treatment system; performance of the treatment system, system owners, system practitioners (site evaluators, designers, installers, pumpers, operators, and regulators), and system regulatory agencies."[112] The Model Framework consists of

[109] US EPA, Clean Water Indian Set-Aside Program Guidance (n.d.), www.epa.gov/sites/default/files/2015-11/documents/cw_indian_set-aside_program_guidance.pdf.
[110] About the National Onsite Wastewater Recycling Association (n.d.), www.nowra.org/about/.
[111] National Onsite Wastewater Recycling Association, *Strategic Framework for Unsewered Wastewater Infrastructure* (n.d.), www.nowra.org/about/strategic-framework-for-unsewered-wastewater-infrastructure/.
[112] *Id.*

seven components:

1. Performance requirements that protect human health and the environment;
2. System management to maintain performance within the established performance requirements;
3. Compliance monitoring and enforcement to ensure system performance is achieved and maintained;
4. Technical guidelines for site evaluation, design, construction, operation and acceptable prescriptive designs for specific site conditions and use;
5. Education/training for all practitioners, planners, and owners;
6. Certification/licensing for all practitioners to maintain standards of competence and conduct; and
7. Program reviews to identify knowledge gaps, implementation shortcomings and necessary corrective actions.

Another influential organization is the State Onsite Regulators Association (SORA).[113] SORA conducts an annual conference for state, regional, and federal regulators along with industry representatives to discuss the latest in research, regulations, and decentralized wastewater treatment technology. SORA is able to accomplish its goals by working with state and local regulators to incorporate the use of proven technologies into regulations. In addition, SORA encourages state and local regulators to introduce science-based research and information into regulatory development, policies, and practices.

[113] http://www.soraus.com/.

IMPACTS ON REAL ESTATE

Well and septic system issues are an important consideration, especially in real estate transactions in rural or exurban areas not served by municipal water or sewer. The state of these systems affects property values and desirability, and can create contract implications as well. Besides the industry standard system inspections, local jurisdiction requirements may call for certain other seller disclosure requirements relating to the well and septic systems. Last, it is important to note that during the financing and appraisal phases, contingencies will arise when lending institutions place restrictions on mortgage or other financing loans.

Septic System Condition

Some of the most significant problems with wells or septic systems come from the deterioration of systems, either due to age or to poor maintenance. Deterioration issues impact planning, zoning, property development and permitting. Deteriorated systems generate additional risks to public and environmental health, most of which remain hidden to homeowners and environmental regulators. Compromised wells cannot protect users from contamination and can pollute groundwater. Septic systems that have been abandoned may fail to treat wastewater, may release partially treated wastewater into ground and surface water, and may introduce pathogens into the environment. The problems are not limited to the property that the faulty septic system is located on, but contamination of adjacent or other properties not involved in the transaction. Contamination from compromised wells and septic systems does not linger on the source site, resulting in non-point source pollution, which is notoriously difficult to identify and manage. These situations can delay or worse, prove fatal to a real estate transaction.

Type of System

The type of water, sewer or septic systems, if any, that are in place must be considered during real estate planning and development. Whether public or private systems are options can

have varying impacts on real estate valuations. In 2019, the Mt. Pleasant Township, Pennsylvania conducted a study of the "Impact of Sewers on Property Values."[114] The goal of the study was to determine the impact on real estate values when a public sewer system is installed. The real estate appraisal study "analyzed residential sales (i.e. single family dwellings), raw land, and other information in order to determine the impact of sewers on overall property value."[115] As a result of their research, the appraisers found that "the presence of sewers clearly has a positive impact on single family residential properties, larger estate lots, and acreage."[116] The study noted that "[w]hen the comparable sales were analyzed, adjusted for differences to isolate the value of public as compared to private sewer and in all seven cases, the market value of properties with public sewer were higher than those with private sewer."[117] Their study of matched pair analysis determined that "[t]he percentage difference between public sewer sales and private sewer sales is 5.7% to 13% with the average at 8%"[118] noting that a "public sewer enhances marketability and increases value."[119] The study lends credibility to increased real estate valuations based on the presence or potential availability of public sewer services.

Knowledge of Regional and Local Regulations Required

All of the parties in a real estate transaction must be fully familiar with the local and regional water well and septic system regulations and requirements as well. In addition, both buyers and sellers must be informed of the nuances of the applicable zoning laws when contemplating the purchase of property for a particular use. Failure to fully comprehend zoning laws can have a devastating effect because of misinformed planning. Current and even newly

[114] Churchill, S. E., & Kulzer, P. R. *Impact of Sewers on Property Values* (n.d.), Mt. Pleasant Township, PA. *https:/Online at* www.mpt-pa.com/sites/g/files/vyhlif4746/f/uploads/final-report-7-2-19-1_0.pdf.
[115] *Id.*
[116] *Id.*
[117] *Id.*
[118] *Id.*
[119] *Id.*

enacted zoning laws, which often affect well and septic system size, can have serious implications on land use. The Texas Supreme Court, in *Mayhew v. Town of Sunnyvale*,[120] discussed the implications when zoning regulations collide with development plans. The plaintiffs in *Mayhew* owned approximately 1196 acres of land in the Town of Sunnyvale, Texas. They sought permission from the Town to proceed with a planned development with a density in excess of that allowed by the then-applicable zoning laws. "Previously, in 1973, in response to septic tank failures, the Town modified its zoning ordinance and enacted a one-acre minimum lot size requirement. However, when sanitary sewer facilities were later made available to the Town, the Town did not repeal its one-acre minimum lot requirement. The plaintiffs expended over $500,000 to conduct studies, prepare reports, and submit their proposal to the Town. Ultimately, the Town denied the development application, noting that, among other things, "the development would severely impact the ability of the Town to provide adequate municipal services."[121]

The Mayhews brought suit, alleging that the refusal to approve the planned development violated their state and federal constitutional rights to procedural due process, substantive due process, and equal protection. They also alleged that the Town's decision was a taking of their property without payment of just or adequate compensation. The lower court found that "[p]rior to the Town Council's action to deny the application for [the] planned development ..., the [Mayhews'] property had a fair market value of at least $9,700,000.00."[122] The court also found that "[t]he value of the [Mayhews'] property on January 13, 1987, with development approval ... and without the application of the one-acre zoning requirement, would have been greater than $15,000,000.00."[123] Last, the district court found that [a]s a result of the Town Council's denial of

[120] *Mayhew v. Town of Sunnyvale*, 964 S.W.2d 922 (Tex. 1998)
[121] *Id.* at 926.
[122] *Id.* at 927.
[123] *Id.*

the application for [the] planned development ..., and the continued application of the one-acre zoning, the fair market value of the [Mayhews'] property was reduced to $2,400,000.00."[124]

The Texas Court of Appeals reversed, finding that none of the plaintiff's claims were ripe for review. The Texas Supreme Court ultimately rendered a "take-nothing" judgment against the plaintiffs and held that, as a matter of law, they did not prevail on any of their claims under the federal and state constitutions.[125] Thus, although there may be a demonstrable adjustment in value based on contemplated or planned development, zoning and land use regulations must be fully analyzed when contemplating real property purchase and development.

Implications for Real Estate Brokers and Agents

Well and septic system problems can also implicate real estate brokers and agents. Over the past few years, a new breed of real estate malpractice litigation has surfaced: septic system permitting and inspection disputes. Due to increased septic system regulations, several states and municipalities have passed transfer-of-title mandatory septic system inspections and permitting requirements. The related malpractice claims all follow a similar fact pattern: a home with an existing septic system is sold to a new purchaser. The purchaser moves in and has a septic system backup, or the purchaser seeks to update or fix the existing system. The purchaser then discovers that the system has not been permitted or inspected prior to sale. Due to the cost of permitting, inspection, and repair, the purchaser files suit against all parties, including the agents and brokers, involved in the transaction.

Another Texas case is an example. In *Murphey v. Old Dollar Props,*[126] Old Dollar, the buyer of a mobile home park sued the seller, alleging that the seller failed to disclose various issues

[124] *Id.*
[125] *Id.* at 940.
[126] *Murphey v. Old Dollar Prop*s, 13-19-00530-CV (Tex. App. – Corpus Christi 2021)

with the septic system, including that "that the septic system serving the subject property lacked sufficient capacity to accommodate the mobile homes and feed store...".[127] The jury awarded Old Dollar $24,500 in past damages "to address the septic system problems." The jury also awarded Old Dollar $171,000 in future damages "to address the septic system problems[.]" The jury did not award any damages for the property's diminished market value as a result of the septic system problems.

Well and Septic Education & Training

As the old adage teaches us, an ounce of prevention is worth a pound of cure. Education and training on well and septic issues will help prevent problems from occurring. The Northern Virginia Association of Realtors® (NVAR) has recognized that the building booms in their area from the 1970s and 1990s left a legacy of well and septic issues to be dealt with today.[128] To respond to these issues, NVAR has developed extensive course material for continuing education classes relating to wells and septic systems.[129] The NVAR, in conjunction with the Dulles Area Association of Realtors®, has also prepared an extensive guide to well and septic issues.[130] This guide discusses the technical matters regarding septic systems, as well as the federal and Virginia requirements regarding such systems. The guide also reviews inspections, and offers tips for selecting an inspector, as well as the criteria for an inspection of a well or septic system.[131]

Transaction Scrutiny

For a broker or agent to protect themselves and their clients, it is important to be aware of

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[127] *Id.*
[128] Mike Lynn, *Realtor's® Guide to Well & Septic Part One*, NVAR Legal Blog Sept. 16, 2016, https://www.nvar.com/realtors/laws-ethics/legal-blog/realtor-s-guide-to-well-septic-part-one.
[129] *CE - Understanding Septic Systems & Wells for RE Professional,* July 18, 2018, https://dullesportal.ramcoams.net/Education/Registration/Details.aspx?cid=c0a0f0db-deae-4952-9714-668e218c7021.
[130] Dulles Area Association of Realtors®, *Understanding Septic Systems and Wells for Real Estate Professional,* Mar. 23, 2017.
[131] *Id.*

potential issues, through examining the public record, reviewing the transaction paperwork, or exercising their own diligence by looking at the physical condition of the property itself.[132] Often, with well and septic systems, the homeowner, and not the homebuyer, chooses and hires time-of-sale inspectors. In addition, time-of-sale inspections differ from the standard inspection required to obtain a mortgage. Septic system and well inspections are required by some mortgage lenders as a condition of obtaining a loan. Absent a time-of-sale law, this does not indicate that time-of-sale compliance is a precondition for sales of mortgaged properties with wells or septic systems. In two important respects, mortgage inspections differ from time-of-sale inspections.[133] For starters, mortgage inspections aren't as thorough as time-of-sale examinations. Second, mortgage inspection results aren't regulated, administered, or reported to local governments. This implies that public health experts do not set the requirements for the inspections, the results are not made public, and the outcomes are not recorded. As a result, the nature of the information sharing differs depending on whether the inspecting institution is a mortgage lender or a public health department.

Disclosure Statement Ramifications

While the importance of the buyer's inspection of the property is emphasized, it is equally important to emphasize also the seller's obligation (in most jurisdictions), to disclose any flaws that the home sellers, as well as their agents, are aware of that could negatively affect the property's value. Most buyers will receive property disclosure statements after their offer has been accepted, though this varies by area. This is yet another opportunity for the buyer and their agent to determine whether an issue might be present with one of these systems that needs to be addressed. Buyer's will bring legal action against the seller as well as the broker, as seen in a Moon Township,

[132] When the Septic Hits the Fan. (2017, April 12). CRES A Gallagher Affinity Division. https://www.cresinsurance.com/septic-hits-fan/.
[133] *Id.*

Pennsylvania matter. In that case, in 2020, a new homeowner sued the seller and the broker for misrepresentation relating to the septic system. The buyer claimed that his home was no longer affordable due to a misidentified "septic tank."[134] Apparently, the property had a "holding tank" only, and no septic system, and the buyer claimed that the seller and broker's disclosures misrepresented the system to the buyer.

The party responsible for arranging an inspection is determined by the law where the property is located. Unless otherwise agreed upon, buyers in jurisdictions like South Carolina and Texas are responsible for handling inspections throughout their option period as part of their due diligence. However, the typical purchase agreement contract in Central Virginia stipulates that the home seller is responsible for having the septic system inspected within 30 days of the closing date.[135] Real estate agents must be ready to facilitate property inspections and understand all the ramifications on the transaction with regards to inspection results.

Land Valuation Impact

Examining water wells and water quality can also have impact land valuations. An EPA study conducted in Florida examined how groundwater contamination of private wells from agricultural runoff impacts property valuations.[136] The results of the study "suggest[ed] that groundwater pollution in a private potable well does impact the value of a home, generally leading to a 2% to 6% depreciation. This price impact is not permanent, however, and seems to diminish

[134] Moon Homeowner Suing, Says House Unaffordable With Misidentified "Septic Tank," Pittsburgh Post-Gazette, July 13, 2020, *online at* https://www.post-gazette.com/news/crime-courts/2020/07/13/Moon-home-Richard-OShea-septic-tank-lawsuit-Howard-Hanna-Merakey-Allegheny/stories/202007090184. The current status of the case is not reported.

[135] Heidenry, M. *A Septic System Inspection Should be Done How Often?! Costs, Precautions, and More.* https://www.realtor.com/advice/sell/is-the-seller-obligated-to-get-a-septic-system-inspection-on-a-home/ (May 17, 2018).

[136] Working Paper: The Property Value Impacts Of Groundwater Contamination: Agricultural Runoff And Private Wells | US EPA. (2016, March 16). US EPA. https://www.epa.gov/environmental-economics/working-paper-property-value-impacts-groundwater-contamination-agricultural.

a few years after the contamination issue is resolved."[137] In a sense, this environmental issue of contaminated agricultural runoff affects water quality, which can affect not only the real estate transaction itself, but, creates a diminution in property value unless the pollutant condition is resolved, which can also be either a local remediation need or, worse, a larger scale regional issue.

Federal Programs, Loans & Refinancing

Federal standards also affect individual private water and septic systems during the lending approval process when certain federally backed loans are involved. Although private water wells may not be directly regulated by federal authorities, private well owners face indirect private well scrutiny when applying for certain federally subsidized loans through the Department of Veterans Affairs ("VA"), Federal Housing Authority ("FHA"), and the U.S. Department of Agriculture Rural Development ("USDA"). For financing and refinancing through these programs, certain inspections or water tests are required if the property is served by a private well. For example, for properties that are served by private wells, FHA loan rules indicate that "the Mortgagee must ensure that the water quality meets the requirements of the health authority with jurisdiction. If there are no local (or state) water quality standards, then water quality must meet the standards set by the EPA, as presented in the National Primary Drinking Water regulations in 40 CFR 141 and 142."[138] In the case of private well water, the VA does not have a specific list of contaminants or regulations. Well testing typically looks for nitrates, nitrites, coliform, and lead, but the specific contaminants looked for may vary, depending on the location of the property. The fact that the well water meets local health regulations for safe drinking water is important to the VA and lenders. Water must fulfill the federal criteria specified by the Environmental Protection Agency

[137] *Id.*
[138] US HUD, *Where Can I Find FHA's Water Quality Testing Requirements for Individual Water Supply Systems?*, *online at* https://hudgov.dynamics365portals.us/knowledge-details/?code=KA-03963, (accessed Oct. 5, 2021)

if there is no local body with set requirements for drinking water.

The requisite rules for USDA Rural Development loan underwriting mandate that "[t]he lender must ensure the subject property meets the Agency's site guidelines. In particular, sites must be located in eligible rural areas; meet community standards regarding utilities, including water and wastewater systems; meet street and road access and maintenance requirements. . ."[139] Rural Development regulations require that the property "must be supported by adequate utilities and water and wastewater disposal systems. If the property being financed has a well as its supply of water, the USDA Rural Development requires a water quality analysis, with the results having to "meet" or "exceed" the EPA's minimal limits for lead, nitrates, nitrites, and coliform. Certain water and wastewater systems that are privately-owned may be acceptable if the lender determines that the systems are adequate, safe, compliant with applicable codes and requirements, and the cost or feasibility to connect to a public or community system is not reasonable. Community-owned water and wastewater systems may be acceptable if the lender determines that the systems are adequate, safe, and compliance with applicable codes and requirements.[140]

With regards to wastewater systems, lenders are required to obtain a septic system evaluation from a qualified inspector.[141] Importantly, septic inspections have implications as they relate to private water systems. Water system proximity to septic waste systems is an issue for lending approval. The USDA utilizes the FHA's policy as the baseline for its appraisal guidelines.

FHA sourced lending also sets forth the FHA's policy regarding utility inspections as prerequisites to loan funding. An FHA loan appraiser is required to provide analysis and details

[139] USDA Rural Development, *Property and Appraisal Requirements*. USDA Rural Development; 2021:HB-1 3555 Ch. 12.2

[140] 7 CFR § 3555.201(b)(4)

[141] USDA Rural Development, *Property and Appraisal Requirements*. USDA Rural Development; 2021:HB-1 3555 Ch. 12.6(B)(1)

with regards to public water supply systems, community water systems, individual water supply systems, shared wells, and individual residential water purification systems. Under FHA's policy, the greatest scrutiny is required for an Individual Water Supply System, defined as "a potable water source providing water to an individual Property." The standard applied to Individual Water Systems in the FHA lending realm is that "water quality must meet the requirements of the health authority with jurisdiction. If there are no local (or state) water quality standards, then water quality must meet the standards set by the EPA, as presented in the National Primary Drinking Water regulations".

The VA provides guidance related to their loan processing and individual water supply testing through their periodically issued "circulars" as well. Circular 26-17-19, issued July 19, 2017, clarified the guidance regarding water supply type of testing.[142] The VA has always "allowed properties with individual water supply systems to be eligible for VA backed loans. However, potable water is a health and safety issue and as a part of VA Minimum Property Requirements (MPR) require that water used for drinking, washing, and other uses inside the home be safe for consumption. VA has always enforced requirements for safe potable water." Just as the other Federal loan agencies, the VA requires that "[t]he water supply must meet the requirements established by the local health authority. If the local health authority has not established specific requirements, then requirements established by the State health authority will be used. In the case where there are no state requirements, then requirements established by the Environmental Protection Agency (EPA) will be used."

Federal to State Drinking Water Appropriations

[142] U.S. Veterans Administration, Clarification of Individual Water Supply System Testing (July 19, 2017) *online at* https://www.benefits.va.gov/HOMELOANS/documents/circulars/26_17_19.pdf.

The Federal government has also been a main source of funding to states to support the development and improvement of public water systems. Since 1976, the EPA has received an annual appropriation from Congress under section 1443(a) of the Safe Drinking Water Act (SDWA)[143] to help states, territories, and tribes carry out Public Water System Supervision (PWSS) programs.[144] These grants assist with developing and implementing a program capable of enforcing the SDWA's requirements and ensuring compliance with the National Primary Drinking Water Regulations. Key activities carried out under a PWSS program include:[145]

- developing and maintaining state drinking water regulations;
- developing and maintaining an inventory of public water systems throughout the state;
- developing and maintaining a database to hold compliance information on public water systems;
- conducting sanitary surveys of public water systems;
- reviewing public water system plans and specifications;
- providing technical assistance to managers and operators of public water systems;
- carrying out a program to ensure that the public water systems regularly inform their consumers about the quality of the water that they are providing;
- certifying laboratories that can perform the analysis of drinking water that will be used to determine compliance with the regulations; and
- carrying out an enforcement program to ensure that the public water systems comply with all of the state's requirements.

[143] 42 U.S.C. §300j-2
[144] US EPA, Public Water System Supervision (PWSS) Grant Program (Sept. 21, 2015, September 21).. https://www.epa.gov/dwreginfo/public-water-system-supervision-pwss-grant-program.
[145] *Id.*

REALTOR® ADVOCACY

Both well and septic systems face regulators at the local, state and federal levels that are responsible for permitting, inspection, enforcement, and technical assistance. When dealing with well and septic issues related to these areas, REALTORS® can be assured that NAR and state and local REALTOR® Associations have been proactive in advocating for national or local positions as they relate to the various issues well and septic systems present since state and local regulations vary from state to state. By creating resources, instituting Calls for Action (CFA), conducting Land Use Initiative Analyses (LUI), and developing the Rural Outreach Grant program, NAR has been at the forefront of helping REALTORS® learn and adapt to ever-changing laws and regulations.

Case Study – Northern Virginia

In Virginia, the Northern Virginia Association of REALTORS® (NVAR) continues to update their contract addendums to conform with their current Residential Sales Contract.[146] The NVAR's contract addendum, titled the *"Private Well and/or Septic Inspection Contingency Addendum,"*[147] sets forth provisions pertaining to both water and / or septic systems. With regards to water and well systems the addendum addresses water potability testing, well and well water inspection contingencies, deficiency negotiations, and buyer's election. Turning to septic systems, the addendum delineates provisions for septic maintenance contracts, septic system inspection contingencies, deficiency negotiation period, and a buyer's election.

This form was updated most recently in 2018[148] to allow the parties to name the buyer or seller as the party responsible for the septic inspection once again. The form was also updated to

[146] Northern Virginia Realtors®: Form Changes. (n.d.). Northern Virginia Realtors®: Form Changes. https://www.nvar.com/realtors/laws-ethics/forms-revisions/form-changes.
[147] Northern Virginia Realtors®: Private Well and/or Septic Inspection Contingency Addendum. Northern Virginia Realtors: Form Changes. (n.d.). Northern Virginia Realtors®: Form Changes. https://www.nvar.com/docs/default-source/pdfs/well-and-septic-add---k1360ed.pdf?sfvrsn=62dba50d_2.
[148] Special Forms Update: September 15, 2018 Form Changes. (n.d.).. https://www.nvar.com/realtors/news/blogs-multimedia/default-blog-page/form-changes/2018/08/30/special-forms-update-september-15-2018-form-changes.

provide extra safeguards to the buyer in the event that the seller is obligated for such septic inspection but fails to perform it or provide the septic inspection report on time. Some of the addendum wording was also modified to meet regulatory requirements. An enhancement was also adopted providing that, during contract negotiations, the parties can mutually identify the septic inspector using the updated form. Finally, the 2018 changes made it clear that the seller is responsible for removing any obstacles to the septic inspection.

Calls for Action

NAR has also provided advocacy assistance to state and local REALTOR® Associations through Calls For Action (CFA), issued at the request of the association. A CFA describes a local issue that impacts the real estate profession, and makes member REALTORS® aware of the issue. The CFA will also suggest officials to contact to share the members' concerns.

Two recent CFAs addressed water and septic concerns. In January of 2020, the Whatcom County Association of REALTORS® in Washington State requested a call for action to counter a new regulation[149] to limit the amount of water that could be taken by a permit-exempt household to 500 gallons per day. In Marin County, California, REALTORS® were concerned when the Las Gallinas Valley Sanitation District proposed an ordinance to require inspection of the sewer lateral (the pipe that connects the private home to the public sewer) when a home in the district is sold or when there is a remodel of $15,000 or more. Despite the association efforts, both proposals were adopted.

Land Use Initiative

NAR's Land Use Initiative (LUI)[150] helps state and local REALTOR® associations

[149] Wash. Admin. Code § 173-501-065.
[150] Land Use Initiative & Technical Assistance. (n.d.). Land Use Initiative & Technical Assistance. https://realtorparty.realtor/community-outreach/land-use.

advocate for land-use concerns in public policy. NAR will analyze proposed legislative and regulatory land-use policies that affect the transfer of real property, such as comprehensive plans, amendments, laws, ordinances, or regulations. The Land Use Initiative Database (log-in required) provides past analyses of proposed measures. You can review any analyses regarding well, septic and/or sewer measures including the following:

- Proposed Septic Pump-Out Amendments - Loudoun County, Virginia: A septic pump-out regulation was proposed as amendments to Chapter 1066 of the Codified Ordinances of Loudoun County, Virginia (the "Proposed Septic Pump-Out Amendments" or "Proposed Ordinance"). If adopted, the Proposed Amendments would require septic tanks to be pumped out at least once every five years. Owners of Alternative Onsite Sewage Systems would have the option of submitting documentation that the AOSS has been inspected, is functioning properly, and does not need to be pumped out.
- Howard County, Indiana - Onsite Sewage Ordinance – An ordinance was proposed to regulate the location, installation, construction, maintenance, replacement and repair of onsite wastewater disposal systems in Howard County, Indiana. ("Proposed Ordinance") The Proposed Ordinance was said to "provide minimum standards for the prevention and suppression of disease and health risks" associated with septic system use and "to otherwise promote public safety and welfare and protection of the environment." We understand that local REALTORS® are principally concerned about the cost impact of the Proposed Ordinance and the perceived arbitrary nature of some of its provisions.
- Shrewsbury Township, Pennsylvania – Proposed Subdivision Ordinances Concerning Biosolids - Proposed amendments to the Shrewsbury Township Subdivision and Land Development Ordinance ("SALDO") dealing with land on which "biosolids1" ("Proposed

Amendments") were before the Township Board of Supervisors ("Board") for approval. NAR was asked to evaluate the pros and cons of the Proposed Amendments from the standpoint of property owners, and raise issues that the Association can consider in commenting on the Proposed Amendments.

- Sustainable Growth and Agricultural Preservation Act of 2011 - Maryland - Two bills, House Bill 1107, and the companion Senate Bill 846, were known as the "Sustainable Growth and Agricultural Preservation Act of 2011." The bills would have prohibited, with certain limited exceptions, state or local authorities from approving a subdivision that will be served by on-site sewage disposal systems. This bill did not pass.

Rural Outreach Resources

NAR offers additional sewer, well, and septic information for REALTORS®, including current news, legislation information, informational websites, and webinars, as part of its rural outreach resources.[151] NAR's Rural Outreach Grant[152] helps further fund advocacy and education efforts for associations serving communities with populations under 30,000. The Rural Outreach Grant supports state and local REALTOR® Associations' advocacy initiatives and activities addressing challenges and opportunities related to well/septic/sewer regulations, among other issues. A new grant is now available to help rural communities solve difficulties they face with land use and other real estate issues. The grant will help fund advocacy initiatives and activities addressing challenges and opportunities related well/septic/sewer regulation, among other issues.

Other Rural Outreach Resources include links to current news, legislation information, informational websites, and webinars. In addition, they provide links to other organizations that

[151] Sewer/Well/Septic. (n.d.). Sewer/Well/Septic. https://realtorparty.realtor/community-outreach/rural-outreach-initiative/sewer-well.
[152] Rural Outreach Grant. (n.d.). Rural Outreach Grant. https://realtorparty.realtor/community-outreach/rural-outreach-initiative/rural-outreach-grant.

also provide helpful information.

CONCLUSION

"When the well's dry, we know the worth of water." – Benjamin Franklin

Throughout human history, there have been two vital concerns: where to get water, and what to do with the waste. This was true when people were hunter/gatherers, it remained true when people started to cluster in cities, and it remains true today. A reliable source of safe drinking water, and a way to dispose of waste in a sanitary manner, remain priorities. Factors such as development and environmental concerns put new and increased pressure to find ways of addressing those priorities.

APPENDIX A – GLOSSARY OF TERMINOLOGY

AEROBIC SEWAGE TREATMENT UNIT: A system that treats sewage by injecting oxygen into the treatment tank to increase natural bacterial activity within the system that then provides additional treatment.

ANAEROBIC: A system of treating sewage that relies on microorganisms to break down biodegradable material.

AQUIFER: Permeable rock, sand, or gravel that holds water.

CASING: A tubular framework inserted into a drilled well to keep it open.

CESSPOOL: An underground tank or pit that contains liquid waste, but that does not treat it. Septic tanks are generally unlawful in the U.S.

CHAMBER SEPTIC SYSTEM: A septic system that consists of a series of connected chambers surrounded by soil. Pipes carry wastewater from the septic tank to the chambers, where the wastewater comes into contact with the soil to be treated by microbes.

CISTERN: A tank or vat used to store water for later use, such as an open tank used to catch rainwater.

CLEAN WATER ACT: A federal law (33 U.S.C. §1251 *et seq*.) that makes it unlawful to discharge any pollutant from a point source into navigable waters of the United States without a permit.

CLUSTER/COMMUNITY SEPTIC SYSTEM: A decentralized wastewater treatment system under a form of common ownership that collects wastewater from two or more dwellings or buildings and conveys it to a treatment and dispersal system.

COMMUNITY WATER SYSTEM: A public water system that supplies water to the same population year-round.

CONSTRUCTED WETLAND SEPTIC SYSTEM: A system that mimics the treatment processes that occur in natural wetlands. Wastewater flows from the septic tank and through media where it is treated by microbes, plants, and other media.

CONVENTIONAL SEPTIC SYSTEM: A decentralized wastewater treatment system consisting of a septic tank and a trench or bed subsurface wastewater infiltration system (drainfield). Effluent filters through the drain field and is then further treated by microbes once it reaches the soil.

DRAINFIELD: A subsurface wastewater disposal facility that removes contaminants and impurities after anaerobic treatment of wastewater.

DRILLED WELL: A well drilled by percussion or rotary-drilling machines, which may extend hundreds of feet deep into the ground.

DRINKING WATER STATE REVOLVING LOAN FUND: A program that authorizes the EPA to award capitalization grants to each state to improve drinking water infrastructure.

DRIP DISTRIBUTION SEPTIC SYSTEM: A system that pumps wastewater to a soil treatment site, where it is used to provide nutrients and moisture for vegetation.

DUG/BORED WELL: A well that is, in essence, a hole dug in the ground with a shovel or backhoe.

EVAPOTRANSPIRATION SYSTEM: A system in which the effluent enters the drainfield, where it evaporates into the air. The effluent never filters to the soil and never reaches groundwater.

GROUNDWATER: Water at or near the earth's surface, or water that has infiltrated the ground to fill the spaces between sediments and cracks in rock.

HOLDING TANK: A container that holds waste temporarily, until the waste is removed for disposal.

INDIVIDUAL WATER SUPPLY SYSTEM: A potable water source providing water to an individual property.

LARGE CAPACITY SEPTIC SYSTEM: A system that receives sanitary waste either from multiple dwellings or from a non-residential establishment and that has the capacity to serve 20 or more persons per day.

MOUND SEPTIC SYSTEM: A constructed sand mound that contains a drainfield trench. Effluent is pumped to the mound, and the effluent is treated as it is discharged to the trench and filtered through sand, and then dispersed into the native soil.

NON-TRANSIENT NON-COMMUNITY WATER SYSTEM: A public water system that regularly supplies water to at least 25 of the same people at least six months per year.

PIPE-DRIVEN WELL: A well that gets water from nearby aquifers

PUBLIC WATER SYSTEM: A system for delivering water that either supplies water for human consumption to at least 15 service connections, or that serves an average of at least 25 persons for at least 60 days per year through pipes or other built conveyances.

PRIOR APPROPRIATION DOCTRINE: A water use doctrine that states that the first user of water has the right to continue using the water to the exclusion of successive users

RECHARGE: The replenishment or augmentation of water in the aquifer by precipitation.

RECIRCULATING SAND FILTER SEPTIC SYSTEM: A system in which effluent flows from the septic tank to a pump chamber, and is then pumped to a sand filter. The effluent is treated as it filters through the sand and then discharged to the drainfield.

RIPARIAN: Situated on a lakeshore or a riverbank. The term "riparian rights" refers to a system of allocating water by allowing riparian landowners equal access to the water in the adjoining watercourse.

SAFE DRINKING WATER ACT: A federal law (42 U.S.C. §300f *et seq*.) that authorizes the EPA to set the national standards for drinking water from public water systems.

SEEPAGE: The slow escape of liquids through porous material or holes.

SEPTIC TANK: An underground container through which wastewater passes before it is treated.

SEWER: A system for carrying wastewater for disposal or treatment.

TIGHT TANKS: Tanks that do not have an outlet and that must be pumped out on a regular basis. Tight tank usage is severely discouraged, although they may be permitted when there is no other viable option.

TRANSIENT NON-COMMUNITY WATER SYSTEM: A public water system that provides water in a place where people do not remain for long periods of time. such as a gas station or campground.

WATER TABLE: The upper limit of the zone of saturation. Below the water table, spaces within rock or between sediments are filled with water.

WELL: An excavation into the ground that gives access to water.

WELL CAP: A cover installed on top of a casing to prevent foreign objects, such as trash, insects, or small animals, from entering the well system.

WELL SCREENS: Sediment-filtering devices attached underneath the casing or to water-bearing zones that keep excess silt out of the well.

APPENDIX B – 51 JURISDICTION SNAPSHOT

Alabama

- **Sewage.**

  - Septage Management General Requirements. Ala. Code §420-3-6-.06.

    - Septage and other permitted waste shall be treated and disposed of by means of a publicly or privately-owned sewage treatment plant, but if access to a sewage treatment plant is not feasible, property owners may apply for a land application facility so long as it is located within 30 miles of a proposed land application site.

  - Onsite Sewage Disposal (OSS). Ala. Code § 420-3-1-.26.

    - Regulations apply to cluster wastewater systems (discharges to land or groundwater), small-flow cluster wastewater system (serving four or fewer dwellings), and community wastewater systems.

    - All buildings to be occupied as a single or multifamily dwelling, establishment, business, office, or place of employment must have an approved sewage disposal system and the appropriate toilet facilities in accordance with the local plumbing code. If there is no local plumbing code, the provisions of the International Plumbing Code (IPC) or the International Residential Code (IRC) shall apply.

      - Cesspools are prohibited.

      - Permits. Permits are required for installation or repair of an onsite sewage disposal plant. Large-Flow systems (discharging waste from occupancies of 12 bedrooms or more) must receive approval from the Alabama Department of Public Health (ADHP), must be designed by an engineer, and may require an additional performance permit (in addition to a use permit) to ensure protections with public health or the environment.

- The prospective buyer is responsible for first investigating a site that has no approved OSS to ensure it is feasible, or the buyer will not be eligible for a variance.

- Sewage disposal plants must not create an actual or potential public health hazard or nuisance, attract flies, mosquitoes, rats, or other wild or domestic animals, or endanger or contaminate a water of the State.

- Acceptability of a lot or site to support an OSS of a type and size permitted shall be determined by a site evaluation and ADPH evaluation.

- The owner of an OSS is responsible for knowing what should not go into a system and must not take any action that would adversely impact the system.

- A typical residential OSS should be pumped every three years and maintained according to manufacturer's recommendations.

- **Septic.**

  - Septic Tanks. Ala. Code § 420-3-1-.28-35.

    - Permits: Homeowners must obtain a permit from the local health department before putting in a new septic tank system, or before repairing an existing system, all of which would be followed by an inspection. Permits must be renewed annually. Septic holding tanks or grease traps must be installed according to the requirements in Ala. Code § 420-3-1-.28.

    - Inspections. Septic tanks with a capacity of 1,500 gallons or less are subject to periodic ADPH inspections to determine compliance with installation and environmental rules.

    - Temporary holding tanks: The ADPH may approve a permit for a temporary holding tank until another approved means of sewage treatment is available if certain conditions are met pursuant to Ala. Code § 420-3-1-.34. Permanent use of holding tanks is prohibited. Abandoned holding tanks must be pumped out by a licensed pumper.

    - Abandoned Tanks: An empty septic tank may be removed at the property owner's option, or to make room for new system components. If no replacement component is intended, the hole left by the removal of a tank must be filled with sand or soil.

- **Wells.**

- Construction, Location, and Compliance. Ala. Code § 335-9-1-.01-.06.

    - Wells can be constructed by a licensed driller with two years' experience and construction must comply with the materials, location standards, and construction standards in Ala. Code § 335-9-1-.01-.06.

    - Well water must conform to the quality standards in Ala. Code 33.7-5.15-.23.

    - Location. Ala. Code § 335-9-1.04. Wells must be above the 100-year flood plain and not subject to contamination or sink-hole well-water subsidence. It is recommended that wells be located at least 150 feet from cesspools or sewage lagoons, 150 feet from septic tanks, and 75 feet from primary electrical services.

- Abandoned wells. Ala. Code § 335-7-5-.14. Owner must fill and seal any abandon well, with neat cement where feasible, to prevent contamination of ground water formations. Other wells shall be sealed in accordance with the most recent American Water Works Association (AWWA) Standards, except that the sealing material for the top 20 feet of fill must be neat cement, and no material that could impart taste, odor, or toxic components to water may be used in the sealing process and bore holes.

Alaska

- **Sewage.**

    - Domestic wastewater collection, treatment, and disposal systems. 18 AAC §§ 72.005-72.070.

    - A person who disposes of domestic wastewater must have a permit from the Department of Environmental Conservation (DEC) under 18 AAC § 72.215 and a DEC approved plan conforming to the requirements of 18 AAC § 72.205.

        - Flows to a domestic wastewater disposal system are required to be pretreated and equalized to prevent overloading to existing disposal systems or pollution of receiving waters.

        - To qualify for a permit, a private sewer line, onsite system, or domestic wastewater treatment system must be at least 100 feet away from the high level mean annual high-water level of a lake, river, stream, spring, or slough, or the mean higher high water level of coastal waters. Additionally, they must comply with the following minimum separation distances from a private drinking water source as outlined in 18 AAC § 72.020.

            - Private sewer lines, petroleum lines or storage, or any drinking water treatment wastes (including backwash water

from filters and water softeners and reject water from reverse osmosis units): 25 feet away from a private drinking water source;

- Domestic wastewater treatment works, onsite disposal system, pit privy, or sewer cleanout: 100 feet from a private drinking water system;

- The Department may require greater distances if deemed necessary to protect surface water, groundwater, or drinking water.

- Cesspools are prohibited.

- Holding tanks. Permitted if it is an approved tank under 18 AAC § 72.200 and if the Department finds that permafrost prevents a homeowner from using a subsurface domestic wastewater disposal system. Additionally, the tank must:

  - Hold at least 1,000 gallons, plus 250 gallons per bedroom over three served by the tank;

  - Must be regularly pumped to prevent overflow; and

  - Must be equipped with a high-water alarm that will alert the home's occupants that pumping is required.

  - Waivers or modifications: May be granted if the Department determines that a waiver will be protective of public health, public and private water systems, and the environment, and will not violate the Alaska Pollutant Discharge Elimination System Program, 18 AAC §§ 83.005-83.990.

- **Septic and Conventional Onsite Systems.**

  - Installation and Modification. 18 AAC § 72-015, 18 AAC § 72-035.

    - A homeowner does not need to seek plan approval before the installation of a septic tank so long as the installation is completed by a qualified engineer. Written approval is also not required for emergency repair or routine maintenance.

    - The septic tank must conform to the requirements outlined in 18 AAC § 72-035.

- **Wells.**

  - Wells Serving Public Water Systems. 18 AAC §§ 80.015-81.055.

- Installation and maintenance of wells serving public water systems must conform to the minimum requirements in 18 AAC § 80.015.
- Installation must also include adequate protection against flooding.
- Well pits are prohibited unless a registered engineer demonstrates that the pit is adequately protected from flooding.
- Drain pipes from a well house must not be connected to a sewer system.
- Wells must be maintained in accordance with the minimum distance requirements from potential sources of contamination as outlined in 18 AAC § 80.020, as measured from the from the nearest edge of the drinking water source to the nearest edge of the potential source of contamination.
- Abandoned wells or a well feeding a public water system that is not in use must be properly sealed, protected, or filled.

Arizona

- **Sewage and Septic.**

  - Sewage Treatment Facilities. AAC § 18-9-B201.

    - On-site Wastewater Treatment Facilities. AAC § 18-9-A309.

      - Property owners are prohibited from discharging untreated sewage or wastewater without first obtaining an Aquifer Protection Permit under AAC §18-9-A301(B).
      - Additionally, one may not allow to be installed maintained a connection between any part of an on-site wastewater treatment facility and a drinking water system or supply so that sewage or wastewater contaminates the drinking water.
      - Construction/Repairs. Construction of new on-site wastewater treatment sites for fewer than 3000 gallons a day must apply for a general permit and must seek a Notice of Intent to Discharge under AAC § 18-9-E323. The new construction site must also meet the requirements set forth in AAC § 18-9-E302. A Notice of Intent to Discharge is also required for modifications/ conversions to existing systems but not for routine work.

- Conversions to sewage system. An owner seeking to replace the treatment works for an existing septic system may connect to a sewage collection system if certain conditions apply, including the availability of service line extension at the property boundary and the service connection fee is not more than $6000 for a dwelling.

- Cesspools for sewage disposal are prohibited.

- AAC§ 18-9-316.

- Transfer of ownership of properties served by conventional septic tank systems. Seller must retain a qualified inspector and the inspection must be performed within six months of the property transfer. Seller must then provide buyer with the inspection report. Buyer must then provide the Department of Environmental Quality (ADEQ) with a Notice of Transfer from within 15 calendar days after the transfer of property.

- Inspection not required if the Department issued a Discharge Authorization for the onsite wastewater treatment facility but the facility was not put into service before the property transfer.

- **Wells.**

- AAC §12-15-819.

- Wells may not be used as a storage or disposal site for sewage, toxic industrial waste, or other materials that may pollute the groundwater.

- AAC § 12-15-1301-08. Proposed and Existing Wells.

- New wells or modifications to existing wells require a Notice of Intent (NOI) to drill or a permit. See A.R.S. § 45-591(2). No new wells may be drilled within 100 feet any septic tank system, sewage disposal area, landfill, hazardous waste facility. If water from the proposed well, or existing well (not abandoned or sealed) being modified or deepened, will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 on the NOI to drill within one year before submission to the Department of Water Resources. A site plan must also be attached. A.R.S. § 45-596(F).

- Replacement wells in approximately the same location must be located no greater than 660 feet from original well and may not withdraw an amount of water in excess of the maximum capacity of original well.

- Reasonable use of groundwater required. The use of groundwater must be "reasonable" and "piping must be "constructed and maintained so as to prevent the waste of groundwater." A.R.S. 45-602.

- Pumping. Outside of areas requiring active management of water the Department of Water Resources has no statutory authority to regulate the impact of one landowner's pumping on their neighbors unless groundwater is being transferred between basins or sub-basins. However, the Department can investigate and inspect wells to ensure that they are properly constructed and that the associated well records are accurate. A.R.S. § 45-633(A).

- Open Wells/Abandonment. A.A.C. § 12-15-822. Owners of an open well (not equipped with a cap or a pump) shall either install a cap on the well or abandon the well in accordance with A.A.C. § 12-15-816. Well abandonment is accomplished "through filling or sealing the well so as to prevent the well, including the annular space outside the casing, from being a channel allowing the vertical movement of water." Wells that are capped and not in use are not considered abandoned.

Arkansas

- **Sewage.**

  - Ark. Code §§ 14-236-101-119.

    - Municipal rules which afford greater health protections prevail over the Code.

    - Permits. Owner must obtain a permit for any construction repair, modification, extension of an existing sewage system from the Division of Environmental Health Protection of the Department of Health, except emergency repairs permitted so long as permit is obtained 10 days after the commencement of the repairs. An owner wishing to construct a private sewage system must first submit a proposal to the Division. An owner may not construct a private sewage system if there is a feasible community sewage system available.

    - Property owners' associations that construct and maintain sewage disposal facilities have jurisdiction over the disposal of sewage within and for the subdivided area.

- **Septic.**

- Act 402 of 1977 (Amended, 2014).

    - Bans privies, onsite wastewater systems or other receptacles within 300 feet of available sewage disposal system when connection can be made without crossing another person's property.

    - Permits construction, alteration, repair, or construction of an on-site wastewater management system, followed by an inspection.

    - All facilities used for the collection, treatment, and renovation of wastewater must adhere to the minimum horizonal distances for public water supplies, natural bodies of water, and domestic water supplies. Additionally, the facilities must be located at least ten feet from all property lines and buildings.

    - Minimum lot size and soil criteria considerations. All lots must have suitable primary and secondary absorption areas, sized according to natural soil data. Where soils on a property are not suitable for subsurface renovation, a wastewater system will not be approved.

    - Holding tanks will not be approved for residential use, but may be approved for commercial use.

    - Wells and onsite water systems. *See also,* **Wells**, *infra*. If an individual water well supply and an onsite wastewater system is proposed, the lot size must be such that the well may be located at least 50 feet from any lot line, and at least 100 feet from any part of the wastewater absorption area proposed on the same lot and wastewater absorption areas proposed on any adjacent lots.

    - Inactive septic tanks. Septic tanks no longer in use must be pumped out by a licensed septic tank cleaner, collapsed, and filled with clean material at the time of abandonment.

- **Wells**.

    - Construction of new wells. 096-00-16-001 Ark. Code R. § 1.

        - Wells must conform to minimal lateral distances from common sources of contamination.

        - Wells must be located 10 feet away from power lines or buildings.

        - Common sources of flooding should be avoided.

- Every new well, or existing water supply system that has been disrupted for service or repair, should be disinfected before it is returned to use.

- Abandonment. Owner must fill the well or place a sturdy cover over a well that has been permanently discontinued to prevent animals and persons from falling into the well. Ark. Code § 5-60-115. Dry holes are not deemed abandoned. If no water is encountered and the landowner does not wish to abandon the well in the event that he might plan further development of the well at a later date, the contractor shall complete the well according to the rules and regulations, including casing, sealing, and capping the well. 096-00-16-001 Ark. Code R. § 1.

California

- **Sewage and Septic**.

  - Cal. Health & Safety Code § 5411. Prohibits the discharge sewage or other waste, or the effluent of treated sewage or other waste, in any manner which will result in contamination, pollution or a nuisance.

  - Sewage disposal is regulated by individual county and municipal codes or health codes.

    - Onsite Wastewater Treatment Systems (OWTS) Policy, June 2019. The state delegates local municipalities with authority to manage OWTS, recognizing that responsible local agencies can provide the most effective means to manage OWTS on a routine basis. Local agencies may submit management programs (Land Management Programs) for approval, and then manage the installation of new and replacement OWTS submitted under that program.

    - Requirement that dwellings connect to sewers unless there is not one available. Most local governments and counties will require that dwellings connect to public sewers where there is one available. However, where there is no public sewer intended to serve any lot or premises, available in any thoroughfare or right of way abutting such lot or premises, drainage piping from any building, dwelling or works may be connected to an approved on-site sewage disposal system. These are subject to approval by local land use management programs.

    - Restrictions on construction and location: May include restrictions on drainfield slope including easements dedicated for or surface or subsurface improvement, paved areas and driveways, and areas occupied by other structures.

    - Minimum horizontal distances for on-site waste management systems. Local counties will set forth minimum distances for OWTS between

other structures, including buildings, public water supplies and wells, property lines, seepage pits, and trees.

- **Wells.**

  - Cal. Water Code §§ 13750.5 - 13755. Well owners need to obtain permits before construction, modification, or destruction of a well. Additionally, any water well construction activities must be performed only by a licensed C-57 water well contractor.

  - Construction of New Wells.

    - Bulletin 74-90, California Well Standards, June 1991. Wells must meet all applicable local and state well standards. Enforcement agency may grant exemptions from if compliance with local requirements is impractical.

    - Minimum horizontal setback requirements. Wells must be located 50 feet from any sewer, 100 feet from any septic tank or leach field, 100 feet from a cesspool, and 100 feet from animal or fowl enclosure. Local conditions/regulations may require greater separation distances to ensure groundwater quality protection.

    - Accessibility. Wells must be located an adequate distance from buildings to enable repairs, modification or maintenance unless otherwise approved by the enforcing agency.

    - Wells should also be located outside areas of flooding.

  - Abandoned/permanently inactive wells. Well owners must destroy abandoned wells. A well is considered abandoned or permanently inactive if it has not been used for one year. Cal. Health & Safety Code § 115700.

  - If the owner intends to use the well again, regulatory agencies may require that it be properly maintained in such a way as to not allow impairment of the quality of water in the well and the surrounding groundwater, fitted with a watertight cover if it is inactive for more than five years, and easily visible.

Colorado

- **Sewage and Septic.**

  - No person shall construct or maintain any dwelling or other occupied structure that is not equipped with adequate facilities for the sanitary disposal of sewage. Colo. Rev. Stat. § 25-10-112.

- On-Site Waste-Water Treatment Systems (OWTS). Colo. Rev. S. § 25-10.101-113.

  - Local rules govern all aspects of the location, design, construction, performance, alteration, installation, and use of on-site wastewater treatment systems.

  - Construction and use of OWTS must also comply with minimum standards established by the Colorado Water Control Commission.

  - Permits and Restrictions. Applications for permits for installation or modification of OWTS shall be reviewed by the local health boards and may be denied if it is determined that the construction and use of additional on-site wastewater treatment systems may constitute a hazard to public health or water quality.

    - Property owner seeking to construct or remodel a building or structure that is not serviced by a sewage treatment work must first obtain a permit from a local public health agency

    - Property owner may not connect more than one dwelling, commercial, business, institutional, or industrial unit to the same on-site wastewater treatment system unless such multiple connection was specified in the application submitted and in the permit issued for the system.

    - Local board of health may grant variances if certain criteria are met.

  - Compliance With Minimum Distance Requirements. Location of OWTS must comply with minimum separation requirements from wells, structures, sewers as identified in Table 7 of 5 Colo. Code Regs §1002-43.7. All distance setback modifications must be analyzed and approved by the local board of health. Where soil, geological or other conditions warrant, greater distances may be required by the local board of health or by the Colorado Water Control Commission.

  - Construction of new cesspools is prohibited.

- **Wells**.

  - Construction, repair, modification, replacement, or modification of a well requires a permit from the State Engineer. 2 Colo. Code Regs. § 402-2-6.

  - Wells must be constructed, maintained, or repaired in such a manner that will maintain existing natural protection against contamination of aquifers.

- Owner must comply with applicable construction standards for wells.

- Limitations. Wells are limited to 15 gallons of water per minute. Some wells are further limited to in-house use only when lot sizes are smaller than 35 acres.

- Discontinued/Abandoned Wells. Owners are required to employ licensed contractors to plug or seal wells that are no longer intended for use to prevent contamination of groundwater and the migration of water through the borehole. 2 Colo. Code Regs. § 402-2-16.

Connecticut

- **Sewage, Septic, Wells**

  - An estimated 40% of Connecticut residents, close to 1.5 million people, live in homes served by on-site sewage systems. The vast majority of these sewage systems are conventional septic systems that are under the jurisdiction of the Local Directors of Health.

    - Septic systems on sites with design flows of 7,500 gallons per day (GPD) and less are permitted by the local director of health. Additionally, plans for large septic systems serving buildings with design flows of 2,000 to 7,500 GPD must be approved by the Department of Public Health.

  - Conn. Public Health Code §19-13-B103.

    - General requirements. Owner must construct and maintain sewers, subsurface sewage disposal systems, privies and toilet or sewage plumbing systems so as to prevent the escape of odors and to exclude animals and insects.

    - Permits. Owner must obtain prior approval/permits from the Local Director of Health before constructing, repairing, modifying or disposing of waste from any existing subsurface sewage disposal systems. Approval is subject to a site investigation. Permits are valid for one year.

      - Restrictions: No permit shall be issued for a septic system designed to discharge or overflow any sewage or treated effluent to any watercourse. Additionally, the local director of health must first determine that there is a public water supply available or a satisfactory location for a water supply well which complies with Conn. Public Health Code §19-13-B51.

- Owner requirements for disposal of septic/sewage.

  - Owner must apply for a permit before disposing of sewage waste.

  - If the contents are to be disposed of on owner's land, owner must bury waste or dispose of it in a manner which does not present a health hazard or nuisance. If the contents are to be disposed of on land other than the owner's, the disposal must be accomplished by a licensed cleaner. However, the local health director may grant exceptions if (1) the central subsurface sewage disposal system serves more than one building and is technically preferable for reasons of site limitations or (2) the subsurface sewage disposal system is not located on the same lot as the building served but is the system is located on an attached and recorded easement.

- Sewer and septic systems must comply with minimum separation distances from wells or springs as identified in Conn. Public Health Code § 19-13- B51(d).

- Building conversions and change in use of existing systems where public sewers are not available. Conn. Public Health Code § 19-13-B100a.

  - Owner may not convert or alter any building or change the use of the existing septic/sewer system before the local director of health first determines that after the conversion or change in use, there will exist a code-complying area on the owner's lot with subsurface sewage disposal. This includes modifications to attached and detached garages and below and above-ground swimming pools. Once a code-complying area is identified, portions of the property outside this designated area may be utilized for further development of the property.

- **Wells.**

  - Conn. Well Drilling Code § 25-128.

    - Regulates the construction, repair, abandonment of wells.

    - Private water wells must be of adequate diameter and depth to be capable of yielding the quantity of water required by the user.

    - Maintenance and repair work must be performed by registered well driller, who must first obtain a permit from local director of health. Permits are issued only after the director determines a public sewer is available or a code-compliant subsurface sewage disposal system can be installed on the lot. Conn. Public Health Code §19-13-B103.

        - The construction must be carried out in a manner to guard against waste and contamination of ground water resources.

- Newly constructed wells must also comply with the separation distance requirements for the construction of new wells in Conn. Public Health § 19-13- B51(a)-(m).

- Siting and approval determined by Local Directors of Health.

- Private well owners are responsible for testing the quality of their own drinking water and maintaining their own wells.

Delaware.

- **Sewage and Septic.**

    - 7 Del. Admin. Code § 7105-1.0-80.

        - Responsibilities of owners of on-site wastewater treatment or disposal systems. Each and every owner of real property is jointly and severally responsible for disposing of wastewater in conformance with all applicable regulations; connecting plumbing fixtures on the property from which wastewater is or may be discharged to a central wastewater system or on-site wastewater treatment and approved disposal; and maintaining, repairing, and/or replacing the system as necessary to assure proper operation of the system.

        - Permits. Required for installation, construction, and repairs. May be issued by the state only after prior approval by the county or municipality. May be denied if the proposed activity would cause a public health or pollution hazard.

            - Compliance with state and local regulations.

                - A recorded utility easement is required whenever a system crosses a property line separating property under different ownership.

                - Owners of single-family dwellings within 200 feet of a central wastewater system must connect to that system.

                - Owners may not connect a dwelling or commercial facility to a system if the total projected wastewater flow would be greater than that allowed under the original system construction permit.

- Compliance with the Occupational Safety and Health Act (OSHA), State, and local regulations. On-site wastewater treatment and disposal systems may also need to comply with local municipal health and environmental statutes if these have regulatory authority over the disposal systems and all phases of installation and inspection must comply with OSHA.

- Owners must also comply with all approved mechanisms set by the State and local counties for wastewater disposal. 7 Del. C.§ 6003(d). Owners must not discharge untreated or partially treated wastewater or septic tank directly or indirectly onto the ground surface or into groundwater and/or surface waters of the State, unless authorized by a permit.

- All cesspools and seepage pits are prohibited.

- **Wells.**

  - Del. C. § 7301.1.0-15.

    - Permits. Permits required for construction of new well, but not for repair of existing well unless there has been a modification to the physical dimensions of the well.

    - Construction Standards. Wells must comply with siting criteria in Del. C. § 7301.01, which identifies the minimum separation distance requirements from potential or existing sources of contamination such as septic tanks, sewers, heat pumps, property lines and agricultural preservation districts.

      - The Department of Natural Resources and Environmental Resources may require special location for a proposed water supply well to minimize its exposure to identifiable potential or existing sources of contamination or interference with other water supply wells.

      - All wells must be located so as to be accessible for cleaning, treatment, repair, testing, inspection, and any other work and protected from surface water run-off and flooding.

  - Property Owner's Responsibilities. Must maintain the well in accordance with the Code and in compliance with all applicable permit

conditions and must repair any damage to the well by a licensed well driller.

- Abandonment/Replacement of Existing Wells. The property owner must properly seal by a licensed well driller a well that is abandoned, determined to have no beneficial use, a source of contamination, or that interferes with the withdrawal of prior water. An owner may replace a well if the Department of Natural Resources and Environmental Control approves the continued use or reclassification of the well pursuant to subsections 3.10 and 3.11. If the owner seeks to replace the well, the well must be sealed within 15 days of construction of a replacement well.

District of Columbia

- **Sewage and Septic.**

  - The District of Columbia is a 100% sewered community, which means there are no private septic systems within the District.

  - However, where no public sewer was, within a reasonable time, reasonably available while a septic tank was legitimately constructed, the septic tank may continue to be used so long as the use and the maintenance of the tank complies with both the D.C. Plumbing Code and the Wastewater System Regulation Amendment Act of 1985. The District will determine whether a public sewer is or will, within a reasonable time, be reasonably available to the property. D.C. Mun. Regs. 21 § 901.

    - Exceptions: the local soil conditions will prevent the sanitary operation of the system; the water supply is not adequate to permit the sanitary operation of the system; the operation of the system will pollute a stream, pond, lake, or other body of water or contaminate a water supply, pool, or bathing place; the operation of the system will endanger the public health or otherwise create a nuisance.

- Permits. Required for construction and maintenance of septic tank or subsoil sewage. D.C. Mun. Regs. 21§ 903. However, before a permit can be issued, the District must determine that a public sewer is not and will not be available within a reasonable amount of time and that the proposed septic tank and subsoil sewage disposal system complies with the D.C. Plumbing Code.

- Owner must properly maintain any system of waste disposal that is not connected to sewerage system in accordance with requirements set forth in D.C. Mun. Regs. § 21-9.

- **Wells**.

  - D.C. Mun. Regs. § 21-18.

    - Construction, use, and maintenance requirements.

      - Permits issued by the Department of Consumer and Regulatory Affairs (DCRA) are required for the construction of new well unless the well meets the physical standards set forth in D.C. Mun. Regs. § 21-1802. The owner will then need to register the new well with the Department. A well construction building permit is not required for the maintenance of a registered well, provided that the maintenance does not include a modification or material change in the original permitted design, specifications, or construction of the well.

      - Well owners must ensure that the construction, use, or maintenance of any well conform with the requirements in D.C. Mun. Regs. § 21-1809, including that the construction, use, and maintenance, and of the well be performed by a licensed driller.

      - Wells cannot be constructed, maintained, or abandoned in a manner that may create a point source or non-point source of pollutants to waters of the District or pose a hazard to public health and safety or the environment.

      - Wells cannot be constructed or maintained in a manner that interferes with utility lines, long-term combined sewer control shafts, diversion sewers, diversion tunnels, and Washington Metropolitan Area Transit Authority (WMATA) transit tunnels.

      - Wells may not be constructed within or under any building other than a separate structure constructed specifically for the housing of pumping equipment, unless otherwise approved in writing and noted in the well construction work plan.

      - Wells must be more than 25 feet from any body of water.

      - Wells must be constructed so that they are accessible for cleaning, treatment, repair, testing, inspection, abandonment, and any other work that may be necessary.

      - Buildings or other structures cannot be constructed on top of a registered and permitted well, unless the well has been abandoned or unless otherwise approved by the Department.

- Owners are responsible for the sanitary protection of the well, and must ensure that the well waters are free of contaminants of any source, including surface water drainage.

- Change of owner or well use. Upon transfer of ownership of a well, the new owner must register the well with his information by March 31 of the calendar year following the transfer of well ownership. The new owner may not change the use of the well specified in the construction permit unless the owner has first applied in writing for the proposed change.

- Abandonment.

  - Permits are required to abandon a well. Additionally, owners seeking to abandon a well must submit a work plan for approval from the Department 30 days prior to the abandonment. D.C. Mun. Regs. § 21-1830. However, a well abandonment permit is not required if the well is abandoned within thirty days following the completion of construction of the well and a well abandonment work plan has been submitted with the initial well construction permit application.

  - Owner must abandon the well in accordance with the requirements set forth in D.C. Mun. Regs. § 21-1830.

Florida.

- **Sewage and Septic.**

  - Onsite-waste Treatment Disposal Systems (OSTDS).

    - Regulated by Florida Department of Health and U.S. Environmental Protection Agency (EPA) when an OSTDS or an OSTDS drain field is installed in a wetland, or when the failure (leaking) of an OSTDS would threaten the quality of groundwater and/or surface water with contamination and make public well water unsafe for human consumption.

    - Permits, Installations, Conditions. Fla. Stat. § 381.0065; Fl. Admin. Code § 64E-6.003; Fl. Admin. Code § 64E-6.015.

      - Permit is required for installations, maintenance, modifications, repairs, and abandonment of OSTDS serving an owner-occupied single-family residence.

      - A permit will only be issued where a public sewer is not available.

- Qualifying lot must have a minimum area of at least one-half acre and must be 100 feet of the side bordering the street and must not produce a flow greater than 1,500 gallons per day.

- Florida Springs and Aquifer Protection Act prohibits the installation of new septic tanks within the areas related to the Outstanding Florida Springs (referred to as Priority Focus Areas) on lots of less than one acre, if the septic tank conflicts with Basin Management Action plans intended to protect springs water quality.

- Location Requirements. Fl. Admin. Code § 64E-6.005.

  - 75 feet from private potable wells, 100 feet from public drinking wells, 50 feet from any non-potable wells, 10 feet from any storm sewer pipe, 5 feet from any buildings or property lines, 75 feet from any surface water bodies.

- Responsibilities of owner of OSTDS: Property owners are responsible for maintenance and upkeep of the system and may not make any changes to the structure/system or increase sewage flow without approval from the local health department. Under Health Department rules, the owner should have the level of the tank checked a minimum of once every three years by a licensed septic tank contractor and perform any necessary maintenance to the system.

- Use of Alternative Systems by Homeowner. Fla. Admin. Code § 64E-6.009. When approved by the Health Department and the county health department, alternative systems may be used in circumstances where standard subsurface systems are unsuitable or where alternative systems are more feasible. Any approvals of alternative systems must comply with applicable rules and laws.

- Abandonment of OSTDS. Fla. Admin. Code § 64E-6.011. Property owner must obtain a system abandonment permit and then pump out the tank. This is followed by an inspection by the Health Department or by the local utility or plumbing authority.

- **Wells**.

  - Construction and Permits. Fla. Admin. Code § 62-532.

- Permits must be obtained from the five Water Management Districts (districts) which oversee water supply and water quality.

- Exceptions:

  - Manatee County: a permit application must be obtained from the Environmental Action Commission.
  - Sarasota County: the Environmental Engineering Section within the Health Department will issue the permit.

- Wells must be constructed by a licensed water well contractor. Fla. Stat. § 373.342, Fla. Admin. Code § 40D-3.041.

  - Exception: a well that will be two inches or less in diameter can be constructed by an individual (and not a licensed contractor) for his/her own private use on his/her owned or leased property intended for use only in a single-family house. Fla. Stat. § 373.326**.**

- Wells must adhere to construction requirements established by county health departments, local agencies, and the Florida Department of Environmental Protection.

- Location of wells. Fla. Admin. Code § 64E-6.005. Wells should be located in an area that will not pose a threat of contamination to the water resource, and will provide protection for the health, safety and welfare of the user. Domestic wells must be located a minimum of 75 feet away from any septic tank system and a recommended 25 feet from a termite treated building slab.

- Abandonment. Fla. Admin. Code §§ 64E-6.011, 40D-3.531. Permit required from local district prior to abandonment of wells. The property owner must have the well/hole sealed with grout by a licensed contractor.

Georgia

- **Sewage.**

  - Georgia Admin. Code § 511-3-1.

    - One may not sell, lease, rent, or begin construction of a lot in a subdivision or mobile home park until he or she has received written approval of plans for water supply and sewage disposal in the subdivision or park from the County Board of Health.

    - If a public or community sewage treatment system is not available, the property owner must provide an approved on-site sewage management

system sufficient for the number of persons normally expected to use or frequent the building, residence, or other property for two hours or more.

- Connection of the on-site system must be made to a public or community sewage treatment system if such system is available within two hundred feet of the owner's property line.

- A residential on-site sewage systems of less than 2,000 gallons per day that is failing may be exempted from connecting to sewer if the repair or replacement of the system will meet the criteria set forth in the *Manual for Onsite Sewage Management Systems*.

- Permits are required prior to the construction of any on-site sewage system.

- The Georgia Department of Public Health may approve requests for alternative on-site sewage management systems so long as they designed and constructed in accordance with the *Manual for Onsite Sewage Management Systems*.

- Absorption field separation requirements. Absorption fields for on-site sewage systems must be at least 100 feet from existing or proposed wells, springs, or sinkholes; at least 10 feet from water supply lines and buildings with basements and at least 5 feet from buildings without basements, other structures, drives, hardscape, and property lines; at least 15 feet from an embankment, swimming pool foundation, drainage ditch or trash pits; and at least 50 feet from geothermal boreholes and bodies of water.

- Removal. A removal permit issued by the County Board of Health is required for the disposal of sewage waste. A property owner may not dispose of sewage or allow seepage to the ground surface, to a water course, drainage ditch, open trench, canal, storm drain or storm sewer, water well, abandoned well, lake, stream, river, estuary, groundwater, or other body of water.

- **Septic.**

  - Location requirements. Ga. Comp. R. & Regs. § 511-3-1-04. Septic tanks must be installed at least 50 feet from existing or proposed wells, springs, sink holes, or suction water lines; at least 25 feet from geothermal boreholes, lakes, ponds, streams, water courses, and other impoundments, at least 10 feet away from pressure water supply lines, and at least 15 feet from drainage ditches. Additionally, they must be at least 10 feet away from a neighboring property line (including hardscapes, drives, swimming pools and business foundations).

    - The County Board of Health, after site inspection, may allow lesser separation distances or require greater distances than cited herein due to

unusual conditions of topography, site configuration, subsurface soil characteristics, or groundwater interference.

- Capacities determined by size of dwelling. Septic tanks must have a liquid capacity of 1,000 gallons for single family dwellings for one, two, three or four bedrooms and 250 additional gallons for each bedroom over four. Septic tank capacities must be increased by 50% if the home uses a garbage disposal.

- Removal permits required. A removal permit issued by the County Board of Health is required for disposal of septic waste. Property owners may not dispose of septic waste or allow waste to seep to the ground surface, to a water course, drainage ditch, open trench, canal, storm drain or storm sewer, water well, abandoned well, lake, stream, river, estuary, groundwater, or other body of water.

- Disclosure requirements. Seller must provide written, detailed specification of septic system to buyer.

- Maintenance/installation requirements of owner. Septic tanks must be installed so as to provide ready access for necessary maintenance.

- Property owners should inspect and pump their septic systems every three to five years.

- Abandonment of a septic tank. If the use of a septic tank is discontinued, or if the tank cannot be made to comply with the Rules and its further use is prohibited, then the property owner shall either have the abandoned tank pumped out by a certified pumper and fill the empty tank with sand, soil, or rock to prevent entrapment, or have the empty tank removed to make room for a new system component.

- **Wells**.

  - Construction must be done by a licensed contractor. Ga. Code § 12-5-125.

  - Location requirements. Ga. Comp. R. & Regs. § 511-3-1-04§ 12-5-134.

    - Owners must place wells as far removed as possible and in a direction opposite to the ground-water flow and from known or potential sources of pollutants. A well may not be placed in an area subject to flooding unless the well casing extends at least two feet above the level of the highest known flood of record. Additionally, all new wells must be located at least 10 feet from a sewer line, 100 feet from a septic tank absorption field, 150 feet from a cesspool or seepage pit, and at least 100 feet from an animal or fowl enclosure.

      - Property owners may apply to the health department for a variance of the distances due to extenuating circumstances.

- Owner's responsibilities. Property owners must protect the well against surface runoff. Property owners must also ensure that the well is accessible for cleaning, treatment, repair, testing, inspection, and such other maintenance as may be necessary.

- **Well abandonment:** Any existing abandoned well or borehole shall be filled, sealed, and plugged by a licensed well driller. An abandoned well is one that is no longer in use. Generally, "temporarily abandoned" means those wells unused for a minimum of 365 days, and "permanently abandoned" are those wells unused for three years.

Hawai'i

- **Sewage.**

  - Cesspools.

    - Used throughout Hawai'i for the disposal of untreated sanitary waste. Most cesspools in Hawai'i serve only single-family residences and are not regulated by the U.S. Environmental Protection Agency (EPA). The creation of new cesspools is not permitted.

    - New Hawai'i legislation mandates the replacement of all cesspools in Hawai'i by 2050. The new rules also provide for up to $10,000 of tax credits to homeowners whose cesspools are located within 200 feet of the ocean, streams, or drinking water sources for upgrading their cesspool to sewer or septic systems.

- **Septic.**

  - Haw. Adm. Code § 11-62.

    - General requirements for dwellings and on-site wastewater systems. Haw. Adm. Code § 11-62-31.1.

      - Individual wastewater systems may be used as a temporary on-site means of wastewater disposal for dwellings if:
        (1) There is 10,000 square feet of land area for each individual wastewater system;
        (2) The total development does not exceed 50 single family residential lots; and
        (3) The area of the lot shall not be less than 10,000 square feet, except for lots created and recorded before August 30, 1991. For lots less than 10,000 square feet which were created and recorded before August 30, 1991, only one individual wastewater system is permitted.
      - The total wastewater flow into one individual wastewater system cannot exceed 1,000 gallons, and one individual wastewater system shall not serve more than five bedrooms, whether they are in one dwelling unit or two.

- An individual wastewater system can serve two dwelling units whether they are in the same building or not provided that both of the dwelling units are located on the same single family residential lot. However, a building may not use more than one individual wastewater system where each individual wastewater system connects to a single dwelling unit.

- Permits/approval are required for installation/modifications of wastewater treatment systems. Additionally, an owner seeking to install a new system must submit an operation and maintenance manual for approval.

- Buyers/new owners are bound to the pre-approved maintenance and use requirements of the wastewater system.

- Owner may not use a cesspool as a wastewater system for any new building.

- Owners should have their septic tanks inspected annually and pumped every three to five years.

- **Wells**.

  - About 50% of Hawai'i's water supply comes from ground-water sources.

  - Minimum standards for the construction, modification, repair/maintenance, and sealing/abandonment of wells are set by the Hawai'i Commission on Water Resource Management.

  - Wells must be located 1,000 feet from any septic tanks or cesspools.

  - Hawai'i Well Construction & Pump Installation Standards §§ 1.1-4.5 (2004).

    - Identify construction, maintenance, location, and operational standards for wells.

    - Permits are required for any work involving a well and work must be performed by a licensed well driller.

    - When avoidable, wells should not be located in flood zones.

    - Wells must also be placed at an adequate distance from buildings and other structures to allow permanent access for well modification, maintenance, repair, and abandonment/sealing.

    - Well testing is required for all new wells or when existing wells are modified and have not been previously tested in accordance with the provisions the Standards.

- Abandoned wells.

  - An owner will be deemed to have abandoned a well on his property if the use of the well has been permanently discontinued, the well is not being properly maintained, the physical condition of the well is causing a waste of ground water or is impairing or threatens to impair the quality of the ground-water resources, or the well is in such a state of disrepair that its continued use is impractical or it is a hazard to public health or safety.

  - Owners must permanently seal abandoned wells to prevent contamination of ground water.

  - Owners must obtain a permit before sealing the well, and the work must be done by a licensed driller.

Idaho

- **Sewage and Septic.**

  - Idaho Admin. Code § 58.01.03.

    - Applies to individual land and homeowners who wish to install or operate individual septic systems to treat and dispose of sewage via a subsurface sewage disposal system.

      - Permit/use requirements. Homeowners may not construct, modify, repair, or clean any individual or subsurface sewage disposal system without obtaining approval from the Idaho Department of Environmental Quality. Local planning and zoning authorities may also need to approve a plan to dispose of domestic septage waste. A site inspection of the owner's land will usually follow. Additionally, the homeowner must maintain and use the system only as specifically authorized in the permit.

      - Owner's responsibilities. Every owner of real property is jointly and individually responsible for storing, treating, and disposing of blackwater and wastewater generated on that property, connecting all plumbing fixtures on that property that discharge wastewaters to an approved wastewater system or facility, and properly abandoning the subsurface disposal system.

      - Abandonment of septic system. Idaho Admin. Code § 58.01.03. A system which has ceased to receive blackwater and wastewater due to diversion of those wastes to another treatment system or due to termination of waste flow must be pumped by owner or be physically removed from the ground in accordance with the requirements set forth in this section.

- Alternative systems. An owner may apply for an alternative septic system in the event it is determined that the owner's land is not suitable for a standard septic system due to oil composition, height of the water table, or both.

- **Wells.**

  - The Idaho Department of Water Resources (IDWR) has statutory authority for the state-wide administration of the rules governing well construction.

  - Permits. Idaho Admin. Code § 42-227. A well owner must obtain a permit for construction and approval for the modification of a well. However, no permit is required if the proposed well is a domestic well, but such wells are subject to inspection by the Department of Water Resources and the Department of Environmental Quality, and the work must be done by a licensed well driller. New wells must be constructed at a depth of over 200 feet.

  - However, there may be considerations involving competing water rights from other property owners.

  - Separation requirements. All wells must comply with minimum separation requirements set forth in Idaho Admin. Code § 37.03.09, including 25 feet from a separately owned well, 100 feet from a septic drain field, 50 feet from a septage tank, and 100 feet from a pressurized sewage line.

  - Responsibilities of owners of artesian (free-flowing) wells. Idaho Admin. Code § 42-1601. The owner of a land on which an artesian well is located is deemed to own the well unless a deed, covenant, contract, or easement indicates otherwise. The owner is responsible for any nuisance caused by the well including for waste caused by unnecessary discharge flow of well water.

  - Abandonment of wells. Owners of wells that have been decommissioned must properly seal a well in accordance with the standards laid out in Idaho Admin. Code § 42-1601.025.

Illinois

- **Sewage and Septic.**

  - Ill. Admin. Code § 905.

    - Requirements/restrictions for private sewage disposal systems.

      - Owners need to obtain a permit for installation, repair, or renovation of private sewage disposal or septic systems.

- Owner must sign permit as an acknowledgement that he or she intends to properly use and maintain a private sewer or septic tank system. Owner is required to maintain all operational records of the sewage disposal system and transfer them to a successive owner.

- New homebuyers whose homes are not serviced by municipal or sanitary district sewers may install an onsite wastewater (septic) system.

- Owner may not install a private sewage disposal system where a sanitary sewer is available (within 300 feet of a residential property).

- Owner may not allow his private sewage system to serve more than one property unless it is a common property under joint ownership of the users.

- A private sewer must be installed at least 10 feet horizontally from any existing or proposed water line. An owner may not place a private sewage disposal system in areas where surface water will accumulate.

- The area to be used for a private sewage disposal system must be selected and maintained so that it is free from encroachment by driveways, accessory buildings, swimming pools, or parking areas.

- Owners may seek a variance from the Illinois Department of Public Health if compliance with this section is impractical or impossible.

- Special requirements for septic tank owners.

    - Owner may not discharge household waste-water outside his property lines and must discharge the waste-water into the septic tank.

    - Separation requirements for septic tanks. Requirements vary from local health departments and different counties may have additional requirements. Typically, owners with private wells must place their septic system a minimum of 50 feet between the tank and well and the septic tank drain field must be at least 100 feet from the well.

    - A residential owner of a septic tank to a subsurface seepage system serving residential properties must evaluate his septic tank prior to or within three years after the date of installation of the system. After the first evaluation, owners must evaluate the system a minimum of once every five years.

- Septic tanks, cesspools, pit privies, aerobic treatment plants and seepage pits that are no longer in use must be completely pumped.

- **Wells.**
  - Ill. Admin. Code § 920.
    - Requirements for new construction. Owners seeking to construct new wells must apply for a permit and the wells must be constructed by a licensed contractor in accordance with this section. An owner may make modifications to an existing well to ensure it complies with local and state requirements, so long as the well does not become a well pit.
      - Variance available. If conditions exist that preclude compliance (i.e., the well would be too close to a septic, sewer, or barnyard), the owner may apply for a variance with the Illinois Department of Health.
      - Responsibilities of well owners. The owner of a new well is primarily responsible for testing the well water for potential contaminants. Additionally, the Groundwater Protection Act mandates that where an abandoned well is found to contaminate another potable water well, the owner of the abandoned well is responsible for providing a safe and sufficient supply of water to the owner of the well that has been contaminated.
      - Separation requirements. Ill. Admin. Code §920, Table C. A well must be no closer than 10 feet to sewers with water, 100 feet to leeching pits, 50 feet to septic tanks and barnyard or animal confinement lots, and 75 feet to septic fields and manure piles.
      - Abandoned wells. Ill. Admin. Code § 920.120. Owners are required to properly seal an abandoned well by a licensed well driller within 30 days of abandonment. A homeowner may seal his or her own well if a written request is made to the local health department or to the Illinois Department of Public Health describing procedures and materials, all of which must comply with this section.

Indiana

- **Sewage and Septic.**
  - Home sewage disposal is regulated by the Indiana State Department of Health.
  - Permits from local health departments are required for installation, repair or modification of a sewage disposal system.
  - Prohibitions. If a sanitary sewer is available within a reasonable distance to the proposed facility, installation of an onsite sewage disposal system is prohibited, and a connection must be made to the sewer.

- 410 Ind. Admin. Code § 6-8.3. Applies to all equipment and devices necessary for proper conduction, collection, storage, treatment, and on-site disposal of sewage from a one- or two-family dwelling; a residential outbuilding; or two single-family dwellings on the same property with a combined design daily flow (DDF) of less than or equal to 750 gallons per day.

    - Minimum separation requirements of on-site sewage/disposal systems. 410 Ind. Admin. Code § 6-8.3-57. All septic tanks, dosing tanks, lift stations, and soil absorption systems must comply with minimum distance separation requirements including 50 feet from a private well, 200 feet from a public supply well, 50 feet from lakes, 10 feet from buildings, foundations, patios, swimming pools, and roads, and 50 feet from water supply lines.

    - Requirements. 410 Ind. Admin. Code § 6-8.3-70. A homeowner must have at least a half-acre lot for the installation of a new sewage or septic disposal system. Feasibility of any on-site sewage system feasibility will be determined by a variety of factors including site evaluation and soil information. If site conditions are acceptable, subsurface trench soil absorption systems are the systems of choice.

        - Septic Tank Capacity Requirements. 410 Ind. Admin. Code § 6-8.3-60. Septic tanks must comply with minimum capacity requirements for dwellings with two, three, four, or five or more bedrooms.

    - Temporary sewage holding tanks. 410 Ind. Admin. Code § 6-8.3-52. Where a homeowner has a failing sewage system, and has obtained a permit for the installation of a new sewage system but the soil conditions on the property prevent the prompt construction of the new system and the homeowner must continue to reside in the home during the construction of the sewage system, the homeowner may apply for approval for a temporary residential sewage holding tank from the Health Department. The Department will also approve the request for a holding tank where the holding tank is operated by a sewer district as part of its sewage disposal plan and it will take no more than a year for the sewer connection to be secured to the property owner's dwelling.

- **Wells.**

    - Permits. Local health departments may require that property owner obtain a permit prior to construction of a residential water supply well or well pump. A disposal well must be approved by the Indiana Department of Environmental Management prior to construction.

    - Property owner's responsibilities. The landowner installing the well must take measures to promote the maintenance of the well and its surrounds and to protect the quantity and quality of ground water encountered during the construction of the well.

- Location of wells and minimum distance separation requirements. 312 Ind. Admin. Code §§13-3-2, 13-3-3.

    - The center line of a well located outside and adjacent to a building must be at least 5 feet away from the building.

    - A well must be placed as far away possible from any high capacity well (exceeds 100,000 gallons of water flow daily) and known contamination source.

        - The Indiana Department of Health Guidelines for Private Well Systems recommends that wells be placed 10 feet from septic tanks and water drains, 15 feet from property lines, 20 feet from streams, 50 feet from sanitary or storm sewers, and 500 feet from septage.

- Small-capacity well property owner's ground water rights. Ind. Code § 14-25-4. The owners of small-capacity water wells may file complaints against the owners of high-capacity water withdrawal facilities (withdrawing in excess of 100,000 gallons daily) if the high-capacity water facility causes the failure of the complainant's small-capacity water well or if it interferes with its water supply. The small-capacity well owner must (1) operate a properly functioning domestic well; (2) the well must have been constructed prior to January 1, 1986; and (3) the well must have been constructed in accordance with rules set forth in 312 Ind. Admin. Code §§ 12-1-1 - 12-3-2. Indiana law does not protect one small-capacity well owner from another small-capacity well owner.

- Abandoned and discontinued wells. Ind. Admin. Code §§13-10-1, 10-2. A well which has not been used for more than 3 months without being permanently abandoned must be sealed at or above the ground surface by a welded, threaded, or mechanically attached watertight cap. If the original purpose and use of the well has been discontinued for more than 5 years, or if it is in such a state of disrepair that using it to obtain ground water is impractical or a health hazard the well is considered abandoned and must also be disconnected from the water system. Sealing of pre-1988 abandonments does not have to be done by a licensed well driller or pump installer and may be done by the property owner.

Iowa

- **Sewer and Septic.**

    - Iowa Admin. Code § 567-69.

        - Restrictions for private sewage disposal systems.

            - Connection to a publicly owned treatment works (POTW) must not be available (more than 200 feet from the lot) and there must not be a local ordinance requiring a connection to a POTW. When a POTW becomes available within 200 feet, any building

then served by a private sewage disposal system must then be connected to the POTW within a time frame and under conditions set by the administrative authority.

- Requirements for private sewage disposal systems.

  - Permits. Construction permits are required for installation of new private sewage disposal system and modifications (any changes that affect the treatment of disposal of waste) of any sewage disposal systems constructed after March 18, 2009. The local health department is also required to perform a site evaluation of the property prior to issuance of a construction permit. Repair of existing components that does not change the treatment or disposal of the waste is exempt from the permit requirement.

  - Septic tanks must be the system's primary treatment unit and be located on the same property or lot upon which the wastewater originates unless there is a recorded and approved easement.

  - Minimum separation requirements distances. All private sewage disposal systems are required to be at least 50 feet away from a private water supply well, 200 feet from a public water, 50 feet from a lake or reservoir, 25 feet from a lake or pond, and 10 feet from a dwelling or property line.

- Transfer of Ownership.

  - Time of transfer inspection law. Every home or building served by a septic system must be inspected by certified inspector prior to the sale or deed transfer of the home or building unless the system was installed less than two years prior and the transfer of ownership is pursuant to a court order, the execution of a judgment, a foreclosure, a transfer by a trustee in bankruptcy, a transfer by eminent domain, a transfer between joint tenants or tenants in common, or a transfer made to a spouse.

  - Sale of properties with failing sewage disposal systems. Private sewage disposal systems that are improperly functioning must be renovated to meet current construction standards, either by the seller or, by agreement and within a reasonable time period as determined by the administrative authority, by the buyer.

- Experimental private sewage disposal systems must be designed and operated in accordance with approved standards and operating procedures established by individual administrative authorities.

        - Abandonment. Owners of private sewage disposal systems that are no longer in use (either because of a tank system upgrade or connection to public sewer) must have the septic tank pumped, the tank lid crushed into the tank, and the tank filled with sand or soil.

- **Wells**.

    - No drinking water standards established under Iowa law. With a private water supply (connects to fewer than 15 individual connections and provides water for less than 25 individuals a day), all parts of the system including water distribution and water treatment, are managed by the water user/well owner.

        - Iowa Admin. Code § 567-49.27. The owner of a new, reconstructed, or rehabilitated well is responsible for submitting a water sample to a certified laboratory at least 10 days and not more than 30 days after a well is put into service following the construction, reconstruction, or rehabilitation. The owner must then submit the results to the local administrative authority.

    - Permits. A well owner seeking to construct or modify a well that pumps fewer than 25,000 gallons daily must obtain a well construction permit. The work must be performed by a certified well contractor. If the proposed well will exceed 25,000 gallons per day, the owner will additionally need to acquire a Water Allocation and Use Permit from Iowa Department of Natural Resources Water Supply Engineering.

    - Construction standards for wells must conform to Iowa Admin. Code § 567-49.

    - Location requirements for wells. Iowa Admin. Code § 567-49.6.

        - Wells cannot be located in basements.

        - The well must be located reasonably far away from buildings so that it can properly be cleaned, maintained repaired tested and inspected.

        - Easements. Wells may not be located on a property not owned by the well owner unless an easement allowing such placement is reviewed and approved by the administrative authority and the easement is legally recorded.

        - Minimum separation distance requirements from sources of contamination. Wells must be at least 400 feet away from public water supply wells and domestic wastewater lagoons, 100 feet from sanitation landfills and drainage wells, 10 feet from sewage treatment systems with an open discharge line, 50 feet from septic tanks, 10 feet from hydrants, 25 feet from ditches, streams ponds or lakes, and 4 feet from property lines.

- Transfers of Property. The liability for all wells on a property is transferred with the property title, even if the buyer is not aware a well exists. Buyers will be responsible for maintaining or properly plugging an abandoned well.

- Abandoned wells.

    - Applies to wells that are no longer in use in such a state of disrepair that continued use of the well for the purpose of accessing water is unsafe or impractical.

    - Abandoned wells can reduce the value of a property and are considered liabilities that raise suspicions with potential buyers and lending institutions.

    - Options/requirements. Well owners may properly plug or seal the well, adequately renovate or reconstructed it, or service and repair it to good operational condition. A properly repaired well may qualify to be in "standby" status for future operational service.

Kansas

- **Sewers and Septic.**

    - Applicable regulations. Sanitary codes regulating sewage and septic are administered by local county health departments. Landowner must operate and maintain and operate a private sewage disposal system in accordance with standards set forth in county sanitary codes.

    - Variance approval for alternative systems. If there is no local code, landowners are required to comply with Kan. Admin. Regs. § 28-5 and Kan. Dept. of Health & Environment Bulletin 4-2, but the landowner may qualify for a variance pursuant to Kan. Admin. Regs. § 28-5-9 and may seek to install an alternative approved disposal system.

    - Kan. Admin. Regs. § 28-5.

        - Discharge of domestic wastes. Owner must discharge all domestic wastewater from the home into a properly designed and maintained septic tank soil-absorption field or wastewater pond, an approved sewage location, or approved alternative system. Additionally, wastewater disposal cannot drain into a stream, ditch, or the ground surface.

        - Seepage pits, cesspools and drywells are not permitted.

        - Location of wastewater disposal systems. Wastewater disposal systems may not be constructed or maintained within 50 feet of any water well or spring or water source supply.

- Kan. Dept. of Health & Environment Bulletin 4-2.

    - Required minimum separation distances for on-site wastewater disposal systems. Septic tanks must be at least 10 feet away from the foundation of a house or other buildings. A soil absorption system must be at least 20 feet away from a dwelling foundation. Additionally, any part of a wastewater system must be at least 25 feet away from public potable water lines, at least 10 feet away from private potable water lines, at least 10 feet away from a property, at least 100 feet away from a public supply well, at least 50 feet from a private supply well, and at least 50 feet from a surface water course.

        - However, Table 5 of the Bulletin recommends greater separation distances for some of the above structures.

- Maintenance. Owner is required to pump the septic tank every three to five years.

- Abandoned and unused septic tanks must be emptied and plugged.

- **Wells**.

    - Kansas does not regulate well water quality. Private well owners are responsible for the quality of the water from their wells.

    - General Requirements. Well owner must hire a licensed well contractor to construct or treat a private well. However, the well owner can do work on his or her own well so long as he or she files a report with the Kansas Department of Health and Environment.

    - Minimum required separation distances from pollution sources.

        - The location of a well locations must be approved by municipal and county governments to ensure compliance with local regulations.
        - Kan. Admin. Regs. § 28-30-8. A well must be located at least 50 feet away from potential sources of contamination, including sewer lines, septic tanks, feed lots or barn yards and at least 25 feet away from the nearest property line. However, a well used only for irrigation or cooling purposes may be located closer than 25 feet to an adjoining property where: (1) such adjoining property is served by a sanitary sewer and does not contain a septic tank system, disposal well, or other source of contamination or pollution; and (2) the property to be provided with the proposed well is served by both a sanitary sewer and a public water supply.

        - If there is a septic tank on the owner's property, it is recommended that the well be placed at least 200 feet from the septic tank (which requires a lot of at least one-half acre to achieve).

- Abandoned wells. Kan. Admin. Regs. § 28-30-7. All water wells abandoned by the landowner on or after July 1, 1979, and all water wells that were abandoned prior to July 1, 1979 which pose a threat to groundwater supplies, must be plugged by the landowner in accordance with the minimum requirements for plugging abandoned wells.

Kentucky

- **Sewage and Septic.**

  - Regulation. Onsite sewage disposal is regulated by local health departments.

  - Permit requirements. 902 Ky. Admin. Regs. § 10:110. A homeowner who wishes to construct a new on-site sewage disposal system or alter and existing system must first obtain a sewage disposal permit. The local health department will then perform a site inspection to determine if the site and soil conditions are suitable for an onsite wastewater system. Further, any system modified or constructed will be inspected by a certified inspector.
  - 902 Ky. Admin. Regs. § 10:085.

    - Site classification and system restrictions. Approval for any on-site sewage disposal system is contingent on suitability of the site and soil conditions determined by an on-site inspection. Restrictions may be placed upon on-site sewage systems approved for use due to site limitations or daily waste load volume and a modified or alternative system listed may be considered as the minimum acceptable.

    - Minimum setback distances for installation on-site sewage disposal systems. An on-site sewage disposal system must be placed at least 5 feet from property lines, 10 feet from building foundations, 10 feet from driveways, 10 feet from swimming pools, 20 feet from basements and cemeteries, 50 feet from wells, and 25 feet from lakes, streams, and springs.

    - Commercial restrictions. An on-site sewage disposal system may not be approved for laundromats, car washes, kill room wastes from livestock slaughterhouses, embalming wastes from funeral parlors or mortuaries, and industrial or process wastes from factories.

    - Minimum working liquid capacities for septic tanks. A septic tank in a single-family residence on-site sewage disposal system must meet minimum working liquid capacities based on the number of bedrooms involved.

    - Use of temporary holding tanks. A property owner may apply for a permit for a temporary holding tank for onsite sewage disposal if connection to a municipal sewer system can be made within a two year period; if a commercial or public facility has a daily waste flow of less than 200 gallons per day; during a one-year waiting period for soil to settle in an area that has been filled with

topsoil; to repair an existing septic system if no other means of repair is available; or to expand an existing system for a single family residence if no other means of expanding the system is available.

- **Wells.**

  - 401 Ky. Admin. Regs. § 6:310.

    - General requirements. Water supply wells can only be constructed, modified or abandoned by certified well drillers. The well driller must construct the well in a location that protects groundwater quality and public health and safety and that takes into account local or site-specific geologic formations and groundwater conditions. Additionally, the well must be constructed to optimize yield while maintaining the safe functioning and integrity of the aquifer. A well cannot be constructed in a pit or a basement.

    - Minimum setback distances. The well must be located at least five (5) feet from any building projections, such as roofs or other overhangs, 100 feet from a leeching pit, 75 feet from a grave or cemetery or animal waste storage, 70 feet from a side wall of lateral trench, 50 feet from a water supply well, septic tank, sewer line or livestock pen, 25 feet from a surface water body, and 10 feet from property lines.

    - Well modification requirements and restrictions. When a well is being modified, the owner must eliminate the existing well pit. Owners may not create new well pits or make modifications to existing well pits. A water supply well being modified must be brought into compliance with the regulations.

    - Abandoned wells. An owner must abandon a well that is no longer suitable for its intended use within thirty (30) days from the date it is determined that the well is no longer suitable for its intended use. The well must then be plugged by a Kentucky certified well driller (from a minimum of 20 feet below the ground surface) in a way that prevents surface water or contaminants from infiltrating the aquifer.

Louisiana

- **Sewage and Septic.**

  - La. Admin. Code tit. 51 § XIII

    - Installation subject to approval.

- Homeowners may install an approved on-site sewage disposal system after a determination that connection to a public sewer system would not be feasible and the proposed system would not create a nuisance or public health hazard. A system will not be approved by the Louisiana Board of Health if it is determined that contamination of ground water will occur.

- The homeowner may not discharge sewage waste onto any road, street, gutter, ditch, water course, body of water, or onto the surface of the ground.

  - Septic tanks. La. Admin. Code tit. 51 § XIII-715.

    - The minimum size tank permitted for a one-bedroom homes is a 500-gallon tank, regardless of the estimated daily flow.

    - Septic tanks should be pumped out by a licensed sewage hauler at least every eight years and inspected every six years.

- La. Admin. Code tit. 51 § XII-327; La. Admin. Code tit. 56 § I-315. Minimum separation distances from private potable water wells. *See also,* Wells, *infra*.

  - Septic tanks and sewers must be at least 50 feet from potable water wells.

- **Wells.**

  - In Louisiana, individual well owners are responsible for testing their private wells.

  - Water wells must be installed by a licensed water well drilling contractor.

  - La. Admin. Code tit. 56, §§ I-101-713.

    - La. Admin. Code tit. 56 § I-323. Construction requirements.

    - Location restrictions. Wells may not be placed below ground surface, such as in pits and basements, or within the foundation of a building, except a building may be constructed solely to house pumping and water system equipment.

- La. Admin. Code tit. 56 § I-315; La. Admin. Code tit. 51 § XII-327. Distance requirements for wells from contamination sources and other structures. *See also,* Sewers and Septic, *supra*.

    - A water well must be at least 50 feet from septic tanks and sewers, at least 100 feet from a cesspool, outdoor privy, and a subsurface absorption field, 25 feet from another private water well, 100 feet from a sanitary landfill, and fifty feet from a drainage canal.

    - Special requirements in relation to levees. A well must be at least 250 feet from the land side toe of the levee. When wells are to be drilled within 1,500 feet of any state or federal flood control levee or structure, the owner or driller must first obtain permission from the appropriate levee board.

    - Flood zones. Locations subject to flooding should be avoided, if possible. If a reasonable alternate site does not exist, the well may be constructed in flood-prone areas provided the top of the casing is at least 2 feet above the highest flood level which may have occurred in a 10-year period but in no case less than 2 feet above the ground surface, except when located in coastal areas along the Gulf of Mexico prone to direct impact of storm surge events.

Maine

- **Sewage and Septic.**

    - Generally. Owner may not construct any home that requires a subsurface wastewater disposal system until the owner has provided documentation to the local county that the disposal system can be constructed in compliance with the Rules. 10-144-241 Me. Code Regs, Maine Subsurface Wastewater Disposal Rules.

    - Permits/restrictions. A sewage disposal permit from a plumbing inspector is required for all work for new and replacement systems, but not for minor repairs. Work must be commenced within 24 months of permit issuance. If there is an available connection to a public sewer system within 200 feet or if a connection is required by a municipal ordinance, the permit for a new system will not be approved.

    - Owner's responsibilities. The property owner is responsible for the safe and sanitary maintenance of new and existing systems.

    - 10-144-241 Me. Code Regs. Maine Subsurface Wastewater Disposal Rules.
        - First-time and replacement systems. All first-time system designs must meet the minimum standards, even advanced treatment units.
            - Site inspection and approval will be required prior to the installation and replacement of a system.

- Septic tanks required. Wastewater must be treated by an approved septic tank prior to being discharged into a disposal field.
- 10-144-241 Me. Code R. § 7. Setback requirements. Disposal systems and septic tanks must comply with minimum setback requirements for waterbody and potable wells setbacks.
  - Disposal systems. Must be at least 300 feet from a public well, 100 feet from a major water body and private wells, 50 feet from a minor water body,10 feet from a water supply line, and 25 feet from drainage ditches and wetlands.
  - Septic tanks. Must be at least 8 feet from a full basement or slab. (Both can be reduced to 5 feet for replacement systems). Additionally, they must be at least 25 feet from a private well and 150 feet from a public well. (Both can be reduced to 25 feet for Private Wells, but there is no reduction for public wells.)
- If a site evaluator determines that it is impractical to install a first-time disposal system in accordance with Table 7B, the Department of Health and Human Services may authorize additional setback reductions.
- A homeowner may apply for a variance from these requirements, provided the proposed modification or system would not endanger public health, safety, and welfare.
- Holding tanks. Holding tanks are allowed for first-time systems under limited conditions, so long as the local ordinance permits a holding tank. A homeowner may also seek approval to use a temporary holding tank during alteration or repair of an existing system, so long as it does not exceed 90 days.
  - Must be pumped at least once a year.
  - They must also meet the minimum setback requirements for treatment tanks.
  - Not permitted if the first-time system is located within the shoreland zoned area of a major water course.

- Existing systems**.** A disposal permit is not required for minor repairs or replacements, as needed for the replacement of pumps or leaks. However, excavations to modify, repair or alter a disposal area, other than the addition of fill, require a permit. Additionally, the modification, repair or alteration must comply with the Disposal Rules.

- Liquid capacity requirements for dwellings. 10-144-241 Me. Code R. § 6. The minimum liquid capacity of an individual septic tank must be 750 gallons for any use. However, the minimum liquid capacity of septic tank(s) serving 1 to 3-family dwelling units must meet the capacity requirements of Table 6A for each dwelling unit.

- Abandoned septic tanks: The property owner or property owner's agent is responsible for seeing to it that the contents of all abandoned septic tanks are pumped and disposed of properly.

- Cesspools, clay agricultural drainage tiles and vee-notched plank trenches. Still legal to operate as long as they are not malfunctioning.

- **Wells.**

  - No permit is required to drill a new well, although all well drillers must be licensed.

  - 10-144-232 Me. Code R. § 4.

    - Provides construction standards for drilled wells.

    - Minimum setback requirements. Wells must be at least 100 feet away from a wastewater disposal field (less than 2,000 gallons per day), 300 feet from a disposal field designed to treat more than 2,000 a day, and at least 60 feet from septic tanks, lift stations, and holding tanks is 60 feet.

      - Setback reductions. 10-144-232 Me. Code R. § 4-400.0. A homeowner may apply for a setback reduction if:

        - The size of the property is not sufficient to allow for the required setback;

        - Sufficient setbacks from other potential sources of contamination cannot be met;

        - Excessive slopes prohibit access;

        - The location of permanent structures would result in unreasonable impacts or damage to the structures;

        - The location of lakes, ponds, streams, or wetlands prohibits meeting the required setback; or the presence of bedrock at or within three vertical feet the surface would result in unreasonable trenching requirements.

      - All other reasons for reducing the setback from a bedrock well to a disposal field require a Specialty Well application approved by the Commission prior to drilling.

      - No setback reduction allowances for septic tanks and wells without the written approval of a Specialty Well application.

Maryland

- **Sewers and Septic**.

  - Regulation. The Maryland Department of the Environment (DOE) standardizes all sewage disposal systems in Maryland.

  - Conventional on-site sewage disposal systems. Md. Code, Envir. § 9-216. On-site convention sewage disposal systems include a septic tank or aerobic treatment system, standard trench or deep trench subsurface irrigation, a seepage pit, a sand mound disposal system; and any other on-site sewage disposal system that the DOE in its regulations states is conventional.

  - Code of Maryland Regulations (COMAR) §§ 26.01-26.10.

    - Permits. COMAR § 26.03.02.02; *see also*, Md. Code, Envir. § 9-204.1. Permits are required for the installation of a new water supply system, sewerage system, or refuse disposal system as well as the material modification or extension of an existing system. Homeowner must submit plans for the on-site system to the proper local or municipal authority for approval.

    - Use and installation restrictions. COMAR § 24.02.02; *see also*, Md. Code, Envir. § 9-223.

      - Homeowner seeking to install a new onsite disposal system limited to lots recorded and approved by the DOE on or before November 17, 1988 and having a 10,000 square foot or greater disposal area.

      - Homeowner may install a system if the dwelling is owner occupied, the dwelling unit is legally situated on a property and legally occupied and the on-site sewage disposal system would be a reasonable solution to sewage problems on the property and would not be an undue risk to the environment or to public health, safety, or welfare.

      - Homeowner may be required to connect to the property to a public sewage system if there is one available. If there is a public sewerage system directly available to a water supply system to service any property containing a spring, well, cesspool, privy, sink drain, or private sewage disposal system that is or could become prejudicial to health or the environment, the homeowner may be ordered to connect the

property with the water supply system or sewage disposal system and abandon the private sewage disposal system.

- This restriction does not apply to the construction of a new dwelling or to any addition to or renovation of an existing dwelling.

- Location requirements for on-site systems. COMAR § 26.04.02.05.
  - The sewage disposal system must be at least 100 feet removed from any water well system in unconfined aquifers and 50 feet from any water well system in confined aquifers.
  - The on-site sewage disposal system must be located downgrade from a private water supply. A variance to this requirement may be granted by the DOE after consideration of hydrogeologic conditions and recommendations of the local approving authority.
  - Minimum septic tank capacities must comply with the criteria set forth in Table A.
- Variances. COMAR § 26.04.02.10. Homeowner may apply for a variance on well siting, distances and slope requirements to the DOE provided that the public health is protected.
- Non-Conventional On-Site Sewage Disposal Systems. COMAR § 26.04.02.06.
  - Use of experimental systems may be approved for system failures or for new construction. A homeowner may apply for approval of an alternative or experimental (non-conventional) on-site system on a recorded lot with new construction on a case-by-case basis. Additionally, if a public sewer is not available and a conventional on-site sewage disposal system design cannot alleviate the problem or does not provide the best method of correction, the owner may apply for the approval of new technology or an experimental system based on site conditions, soil properties and ground water condition at the proposed site.

- Transfers of property. Md. Code, Envir. § 9-217.1. Transfers of property with on-site sewage disposal systems require an inspection by an approved inspector from the DOE . Maryland also requires the homeowner/occupant to fill out a questionnaire or submit to an interview regarding the on-site disposal system.

- **Wells**.

- COMAR § 26.04.04. Establishes standards and regulations for all wells and pre-empts all local ordinances.

    - Permit requirements, exceptions, transfers. Wells may not be constructed without a construction permit from the DOE. Work needs to be performed by a licensed well driller. Additionally, if a well or water supply system will be used for human consumption, the landowner must also obtain a Certificate of Potability.

        - Repairs. A permit is not required if a well requires repairs or reworking, unless the well needs to be deepened in known areas of water quality problems.

        - Exceptions. The Department may permit the emergency construction of a monitoring well at pollution spill sites to control the spread of the pollution or a geothermal well if a loss of heating or cooling poses a health threat or significant loss of goods or livestock.

        - Transfer of permit. A well permittee may transfer a permit to another licensed well driller provided the work has not been completed, the permit has not expired and the transfer is approved.

    - Relocation of well during construction. If it is necessary to relocate a well under construction in order to obtain sufficient yield or potable water or because of a well construction problem, the well driller may relocate the well construction site under authority of the original permit if the new site meets the requirements of COMAR § 26.04.04 and the relocation is approved.

    - Minimum yield requirements for wells. A domestic well or double well combination must produce a minimum yield of 1 gallon per minute for 6 hours, unless the well is a replacement well servicing an existing dwelling.

    - Water supply restrictions. A spring or dug well may not be used as a water supply for a new homesite; a cistern may not be used as a potable water supply.

    - Minimum setback requirements. A proposed well location for a water supply must be at least 10 feet from a property line; 15 feet from a road or dedicated right-of-way; 30 feet from a building foundation; 100 feet from identifiable sources of contamination and designated subsurface sewage disposal areas if the proposed well will utilize an unconfined aquifer as a water supply source; 50 feet from identifiable sources of contamination and designated subsurface sewage disposal areas if the proposed well will utilize a confined aquifer as a water supply source.

- Variance required for deviation from these setback requirements.

- Abandonment. A well is considered abandoned when: (1) the well is in such a state of disrepair that continued use for its intended purpose is impracticable; (2) the well has been permanently disconnected from any water supply system or irrigation system; or (3) the well was constructed prior to April 1, 1969 and is not in use. Additionally, the Department may require a well owner to abandon and seal a well if it is producing water that is polluted; does not have an Interim Certificate of Potability, if required; or is no longer needed for its intended purpose. An abandoned must be filled and sealed in accordance with COMAR § 26.04.04.34.

Massachusetts

- **Sewer and Septic.**

- Regulations of on-site sewage disposal systems are enforced by local boards of health.

- Permits required. Mass. Gen. Laws §§ 21A:13, 21A:18. Homeowner is required to obtain permits from the local board of health for installation, modification or repairs of on-site system. The new system must comply with Title 5 regulations, 310 CMR §15.000 and local health codes which may be more stringent. An inspection of the site by a licensed inspector is required prior to approval. The homeowner must also obtain a Certificate of Compliance for the system prior to use.

- Plans. A registered sanitarian or a professional engineer may prepare plans for installation of an on-site sewage disposal system. However, the homeowner him/herself may submit plans for approval of the repair of an existing system that disposes of less than two thousand gallons per day provided that the plans are reviewed and approved by the local health authority and by a licensed sanitarian.

- Restrictions. Local Boards of Health have the authority to require any landowner whose land abuts a public sewer system and whose system threatens groundwater quality to hook into the public system at his or her own expense.

- 310 CMR §15.000.

  - Requirements for constructing and maintain on-site sewage disposal systems. The design flow generated by the system must be less than 10,000 gallons per day (GPD). Additionally, an on-site disposal will only be approved if it is not feasible to connect the facility to a sanitary sewer, except under certain limited exceptions, or if the owner has obtained a variance.

  - Transfer of ownership of two or more on-site sewage disposal facilities. 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 must 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 must have the system inspected.

- Alternative systems. Require approval from the Massachusetts Department of Environmental Protection (DEP). Additionally, a homeowner may obtain rapid approval for an alternative system for remedial use purposes, i.e., if the system will improve the existing conditions at a particular facility or facilities currently served by a failed, failing, or nonconforming system.

- Types of systems. 310 CMR §15.201. On-site subsurface sewage disposal system approved must consist of a septic tank unless an alternative system is approved.

- Design flow requirements. On-site sewage disposal treatment systems must comply with design flow requirements set forth in 310 § CMR § 15.203 based on the number of bedrooms of an individual dwelling or a commercial establishment.

- Minimum setback distance requirements. 310 CMR § 15.211. Septic tanks must be at least 10 feet from property lines, swimming pools, water supply lines, 25 feet from surface waters and inland coastal banks, 200 feet from water supplies, 400 feet from reservoirs, and 50 feet from private wells.

- Flood zones. Owner may not place a septic tank or humus/composting toilet in a floodway on a coastal beach, barrier beach, or dune, except if the septic tank is replacing a damaged or destroyed tank in existence on the site as of March 31, 1995 and placement of the tank outside of the velocity zone or regulatory floodway, is not feasible.

- Nitrogen sensitive area limitations. 310 CMR §15.215. If the system is to service a home determined to be in a nitrogen sensitive area including Interim Wellhead Protection Areas (IWPA) pursuant to (aggregate flows) or 310 CMR § 15.217, it cannot receive more than 440 gallons of flow per day per acre. It is the owner's duty to determine if the system is located in a nitrogen sensitive area.

- **Wells.**

  - Construction of new wells. 310 CMR § 46.00. Only Massachusetts registered well drillers are permitted to install wells in the Commonwealth. An application for a well construction permit must be filed by the certified well driller installing the well and with the local Board of Health on a form furnished by the Board.

  - Permits. Mass. Gen. Laws ch. 40, § 54. A permit for the construction of the new well will only be issued when there is an available supply of water from a public or

private water source. Additionally, if the well owner intends to use the well as a drinking source, a private well certificate must be obtained.

- Regulation. Mass. Gen. Laws ch. 111, § 122. Local boards of health have jurisdiction to regulate private water well construction, siting, and water quality which take into consideration local geology, land uses, and zoning regulations. They use Mass. DEP's Private Well Guidelines as a resource.

- Well location.

  - Landowner must first identify all potential sources of contamination which exist within 200 feet of the site. The well must be located upgradient of potential sources of contamination.

  - The well must be located so that it will be reasonably accessible with proper equipment for repair, maintenance, testing, and inspection.

  - It should also be completed in a water bearing formation that will produce the required quantity of water under normal operating conditions without adversely impacting adjacent wells.

- Setback requirements for private wells. Private water wells must be at least 10 feet from the edge of a homeowner's property, at least 10 feet from a building sewer, 15 feet from a gas line or overhead electrical distribution, at least 25 feet from the high-water mark of all lakes, streams, rivers, ponds, ditches, at least 100 feet from the edge of the floodplain where possible, at least 50 feet from a septic tank, and at least 100 feet from a leaching field, and from a privy.

  - Lesser setback distances may be applied for if the well is non-potable.

  - Variances available. Homeowner may apply for a variance with the local board of health if circumstances warrant; however, the Mass. Department of Protection has authority to overrule the Board's decision.

- Transfers of Property.

  - Water testing required. Prior to selling, conveying, or transferring title to real property, the owner should have tested the water of every private drinking water well serving that property not more than one year prior to the property transfer. The owner must then submit the water sample from each well should be submitted to a Massachusetts certified laboratory for testing. The results of the water quality testing should be submitted to the local Board of Health prior to property transfer.

- Rental property owners. The owner of a rental property should make results of all water quality tests available to all tenants of the property and the Board of Health. In cases where the well water does not meet the water quality standards, the Board may require the property owner to provide an alternative source of drinking water approved by the Board for the tenants.

- Buyers. Persons intending to purchase a home served by a private well should request the results of available water quality analyses and/or have the well sampled and tested for the parameters listed in Tables 11 and 12 of the Guidelines. For all wells, a raw water sample should be taken to ensure that the well water is of good quality. For wells with a treatment system, a sample from a household tap should also be taken to ensure that the system is functioning properly.

  - Abandoned wells. Applies to private water supply wells which are removed from service, including due to construction of a replacement well, failure of the well to produce safe water, extension of a municipal water system to an area formerly served by individual private wells, or destruction of the building being served. All abandoned private water supply wells, test holes, and dry or inadequate borings must be sealed.

Michigan

- **Sewers and Septic**.

  - Michigan is the only state without a statewide sanitary code. Septic and sewage regulations are set through local ordinances. The Michigan Criteria for Subsurface Sewage Disposal (2013) provides guidance for local health departments regarding on-site sewage disposal systems:

    - Permits, plan approval, and site evaluation required prior to construction or modification of on-site sewage system. In addition, landowner must give notification to any utility prior to any site excavations, borings, or tunneling to determine the location of nearby underground utilities.

    - Preliminary site evaluation. Will include existing and proposed buildings or improvements on the lot or site, the existence of buried on-site utilities, if available, easements or deed restrictions, current and proposed property or boundary lines. Additionally, there must be a substantiation that groundwater quality of usable aquifers is protected for existing or future use.

    - Connection to a public sanitary sewer system. Required when available and when the local governmental entity having jurisdiction requires connection.

- Variances. Property owner may apply for variances from the local departments of health where the provisions contained within the Criteria cannot be met or where other more acceptable alternatives are not available so long as the variance does not create a nuisance or health hazard.

- Minimum setback requirements. Soil dispersal field and septic tank must be at least 200 feet from public wells, 50 feet from a private well, 100 feet from surface waters, 10 feet from basement walls or a building foundation, 10 feet from property lines, and 25 feet from a footing drain with a connection to surface waters.

- Community on-site wastewater systems that serve multi-residential homes should comply with the daily gallon per day per bedroom flow suggestions in Table 6.1 of the Criteria.

- Time of sale/transfer septic ordinances. Local counties now require the inspection of existing septic systems prior to the sale of property.

- **Wells.**

- Permit requirements. Well owner must seek approval from local department of health prior to constructing a new well. Work must be performed by a registered well driller with a permit from the health department.

    - Hand pump wells. Permits for hand pump wells to serve rustic cabin structures not equipped with internal plumbing can be granted under special circumstances.

- Mich. Admin. Code R. 325-1601-1676.

    - Construction/operation requirements. Wells must be constructed to maintain existing natural protection against the contamination of aquifers, exclude all known sources of contamination from the well, and operated to prevent unnecessary discharge from flowing wells.

    - Location restrictions; distances from contamination sources. Mich. Admin. Code R. 325.1622. Wells must be at least 300 feet from a municipal wastewater treatment facility, 800 feet from a landfill or active septage waste, 150 feet from a storage facility for fertilizers, 50 feet from a septic tank, dry well, subsurface disposal field, and seepage pit, 10 feet from a surface water body. The well owner is responsible for maintaining these separation distances.

- Mich. Admin. Code R. 325.1625. Flood areas. A well cannot be located in an area that is subject to flooding unless the well is protected.

- Non-compliance. Mich. Admin. Code R. 325.1674. If a water supply is non-compliant with these provisions, it may not be connected to a public water supply.

- Abandoned wells. An abandoned well that is located on property which has a well that serves the public or a residence other than the well owner's residence, must be plugged by a registered well drilling contractor. A well owner is responsible for properly sealing an abandoned well.

Minnesota

- **Sewage and Septic**.

  - Subsurface sewage treatment is regulated by Minn. R. 7080-7083 and Minn. Stat. § 115.55.

    - Requirements.

      - Field evaluation required prior to construction. A field evaluation of the site must be performed before the construction of an individualized subsurface sewage disposal system, including establishing lot lines to the satisfaction of the property owner and identifying required setbacks and easements water supply wells within 100 feet of the proposed system; noncommunity transient public water supply wells within 200 feet of the proposed system if alternative local standards are in effect; and buried water supply pipes within 50 feet.

      - Tank Capacities. Minn. R. 7080.1930. Subsurface sewage treatment systems must comply with minimum tank requirements for dwelling based on number of bedrooms in the home.

      - Location requirements.

        - Sewage tanks must be set back as specified in Table VII in Minn. R. 7080.2150, subpart 2, item F.

        - For new dwellings, the top of sewage tanks must not be buried deeper than four feet from final grade unless a local ordinance allows for burial at a greater depth.

      - Floodways. Sewage tanks must not be placed in floodways, drainageways, or swales. The allowed use of systems in floodplains must be according to state and local floodplain requirements.

- Owner's responsibility. Owner must properly maintain the system, including pumping the system at least every three years and assessing for leaks.

- Abandonment. Owner must properly abandon a septic tank if he or she does not intend to use the system in the future. Tank abandonment procedures for sewage tanks, cesspools, leaching pits, drywells, seepage pits, vault privies, and pit privies must meet the requirements of Minn. R. 7080.2500.

- Local jurisdictions. All counties in Minnesota are required to adopt and implement their own subsurface sewage treatment system (SSTS) ordinances. These can be more restrictive than the state standards

  - Inspection requirements/property transfers. No state-wide septic inspection point-of-sale requirement; however, some local counties may have one.

    - As of 2018, 166 of the approximately 220 local units of government running subsurface sewage treatment systems (SSTS) programs required compliance inspections prior to property transfers. However, some local governments also have inspection exemptions, for example if a Certificate of Compliance for a New-Replacement System has been issued within the last 10 years, Certificate of Compliance Existing System has been issued within the last three (3) years, and a valid Notice of Non-Conforming is on file and has been issued within the last three (3) years.

    - Compliance-inspection jurisdictions. Homeowner is required to empty the tank prior to completing the compliance inspection.

    - Compliance inspections are valid for up to three years prior to the time the property is listed.

    - System found to be noncompliant. If an existing system is inspected and found to be noncompliant or an imminent threat to public health, it must be replaced prior to property transfer or an escrow account is required.

  - Upgrades to existing systems. Required if homeowner adds bedrooms to the home.

- **Wells.**

  - All wells must be installed by contractors licensed by the Minnesota Department of Health (MDH), except that an individual may construct a well for personal use on land owned or leased by that individual, and used by the individual for farming or agricultural purposes or for the individual's place of abode.

- In all cases, the well must be constructed according to the requirements of Minn. Stat. ch. 103I and Minn. R. 4725.

  - Location and distance requirements. Minn. R. 725.4500. A well must comply with the minimum horizontal setback requirements prescribed, even if the contamination source is no longer in use. An isolation distance is not required if the contamination source and any related contaminated soil have been removed.

  - Water-supply wells must be located where there is optimum surface drainage and at the highest practical elevation.

    - Buildings. A well may not be constructed inside a building, and a building may not be built over a well, except for a wellhouse that is exclusively used to protect the well, pump, and associated water treatment equipment. Additionally, wells must be located at least 3 feet horizontally from any other building or building projection, including decks, porches, and roof overhangs.

  - Flowing wells. Minn. R. 4725.3450. A well or boring with flows above the ground surface must be constructed to prevent erosion of the aquifer.

  - Unused wells. Must be properly sealed by a licensed well contractor to prevent direct contamination of groundwater.

- Property transfers and wells.

  - Disclosure requirements. Minn. Stat. § 103I.235. Seller must disclose the number and the status of all wells on the property and provide a sketch map showing the location of each well. The status of a well can be "in use," "not in use," or "sealed." The buyer must then file a well disclosure certificate containing this information in order to record the deed.

    - "In-use wells." An "in use" well includes a well that operates for the purpose of domestic use, irrigation, fire protection, washing, or emergency pumping. By indicating on a well disclosure that a well is in use, the seller is NOT providing a guarantee that the well is suitable in terms of water quality or yield (available volume) for any given purpose.

    - "Not in-use wells." The seller represents that the well is not functional, cannot readily pump water, or has not been operated on a daily, regular, or seasonal basis. A "not in use" well has not been sealed by a licensed well contractor. A well that is "not in use" (i.e., "abandoned") must be repaired and put back into use, permanently sealed by a licensed well contractor, or the owner must obtain a

maintenance permit for the well until the well is sealed or placed back into use.

- "Sealed well." The seller represents that a licensed well contractor has completely filled the well by pumping an approved grout material under pressure throughout the entire well after removal of all pumping equipment and any obstructions or debris from inside the well. A Well and Boring Sealing Record must be on file with the MDH for a well to be considered legally "sealed."

- If there is known to be a well on the property, but the well location is not known, a reasonable effort must be made to find the well.

- Additional disclosure requirements, Washington County. Minn. Stat. 103I.236. If the seller's property is not served by a municipal water system, the seller must state in writing to the buyer whether, to the seller's knowledge, the property is located within a special well construction area designated by the commissioner of health under Minn. R. 4725.3650. If the seller discloses that there is an unsealed well on the property, he or she must make the disclosure under this clause regardless of whether the property is served by a municipal water system.

- Water testing. Minnesota does not require testing private well water at the time of property transfer. However, in Dakota County, a local ordinance requires wells to be tested at the time of property transfer.

- Well inspections. Minnesota does not require that wells be inspected at property transfer.

Mississippi

- **Sewer and Septic.**

  - Miss. Code Ann. §§ 41-67-1-41-67-41; Miss. State Dept. of Health (DOH), Part 18, Subpart 77, On-site Wastewater Regulations. Apply to individual on-site wastewater systems.

    - Requirements, generally. An owner wishing to install an on-site wastewater system must first file a Notice of Intent with the Mississippi State Department of Health (MSDH)which must then conduct a site approval evaluation.

    - Distance from private water supplies. Any private water supply in the vicinity of the on-site system must be at a higher elevation, at least fifty (50) feet away from the on-site system, and at least one hundred (100) feet from the disposal field of the system.

- Connections to public sewer. The owner will not be able to make any connection from his dwelling to an existing public sewer system until the MSDH has approved the on-site sewage treatment plan (although it may approve a connection to a water utility during construction so long as the owner of the property agrees to have the system inspected before occupying the property).

- Approval Exemptions. Any lot or tract that is two acres or larger does not need approval from MSDH provided that (a) all wastewater is contained on the lot or tract; (b) no watercourse of Mississippi or the United States is impacted; and (c) the person who installed the individual on-site wastewater disposal system provides the department with a signed affidavit attesting that the requirements of (a) and (b) are met.

- Grandfathering in of existing on-site wastewater systems. All existing individual on-site wastewater disposal systems as of July 1, 2014, are grandfathered in and are considered acceptable provided it meets requirements of Miss. State DOH, Part 18, Subpart 77, On-site Wastewater Regulations. Additionally, there must beno evidence that insufficiently treated effluent is leaving the property, a centralized wastewater treatment systems must not be available, and any well must located at a higher elevation than the wastewater system.

- Commercial Developments/Subdivisions.

  - Connection to a public sewer system is recommended when a proposed development has access to an existing sewer system.

  - Ten or more lots for residential use. Developer must submit a Subdivision Application to the MSDH for approval of the on-site sewage disposal system.

    - Feasibility study required for disposal system to serve a multi-dwelling site. This may be waived if the proposed development is for fewer than 35 building sites but more than 10 lots and no centralized wastewater treatment facility is available (or within a mile of a city sewage facility) unless an analysis reflects that the soil conditions may not be suitable for an on-site sewage disposal system.

  - If the mere sale, lease, or rental of land does not take place in conjunction with building development, it will not be considered as a "subdivision."

- Deeded easements. Where all or part of the treatment and disposal system is proposed to be installed on property other than the owner's, a deeded easement in perpetuity must be legally recorded in the appropriate county. The deeded easement includes a sufficient area to permit access, construction and maintenance.

- **Wells.**

  - Groundwater quality regulated by the Mississippi Department of Environmental Quality (MDEQ).

  - 11 Miss. Code R. § 11-7-2.

    - Construction requirements. Work must be performed by licensed well driller.

      - Exceptions. The owner or lessee of property or one who has a property interest in allowing the drilling of the water well on the property may drill a water well on that property without having a water well contractor's license if the well will be used only to supply water for domestic use to the owner's single family dwelling (which is the owner's or lessee's permanent residence) and/or to water livestock on the owners or lessees farm and/or to supply water for irrigating crops on the owner's or lessee's farm.

        The owner or lessee must comply with applicable well construction standards contained in this § 11-7-2.12 and the regulations promulgated by the MSDH.

    - Abandoned wells/requirements. A water well may be considered by MDEQ to have been abandoned if its use has been permanently discontinued, if the well has not been used in the preceding 12 months if the pumping equipment has been removed (except for established rotations of pumping equipment between wells related to crop irrigation), or if the well cannot be repaired. The MDEQ must first decommission the well and then the owner has 180 days to properly plug and seal the well in accordance with 11 Miss. Code R. § 7-2.14.

Missouri

- **Sewage and Septic.**

  - Mo. Rev. Stat. §§ 701.025-701.059, 19 Mo. Code Regs. § 20-3.020, 19 Mo. Code Regs. § 20-3.060.

    - Set statewide standards for construction and operation on-site sewage disposal systems treating waste from systems producing less than 3,000 gallons per day. Local municipalities may adopt more restrictive standards.

    - Exclusions. Mo. Rev. Stat. §701.031. These Regulations do not apply to on-site sewage systems for (1) for single-family residence lots

consisting of three acres or more or (2) residential lots consisting of ten acres or more (where there is no more than one single family residence per 10 acres) and where the system is more than 360 feet of any other on-site sewage disposal system. Additionally, all points of the on-line system must be more than 10 feet from any adjoining property line.

- Requirements and restrictions.

  - Permits required prior to construction of new systems and modification of existing systems. The property owner is required to first notify the city, county or Department of Health and Human Services (DHHS) and then complete an application prior to a site inspection. Modifications must comply with these Regulations. Permits are not required to clean existing systems.

  - Mo. Rev. Stat. § 701.029. Owner may not operate an on-site sewage disposal system or transport and dispose of waste removed therefrom in such a manner that may result in the contamination of surface waters or groundwater.

  - Liquid waste and washwater must discharged into a sewage tank, with certain exceptions. See 19 Mo. Code Regs. § 20-3.060. Drainage from roofs, garages, footings and surface water; cooling water discharges; and hazardous wastes should be excluded from sewage tanks. Backwash from water softeners and swimming pool filtration systems may be excluded from the sewage tank to reduce overloading.

  - Location requirements-easements. The entire sanitary sewage system must be on the property owned or controlled by the person owning or controlling the system and an owner is required to obtain any necessary easements to allow for the use of the system and unlimited access for inspection and maintenance of all portions of the system to which the owner does not hold undisputed title.

  - Tank capacity requirements for dwellings. size for a newly constructed system should be 1,000 gallons for a three-bedroom home, based on a flow of 120 gallons per day per bedroom. A four-bedroom home would have a minimum tank size of 1,250 gallons, and a five-bedroom home a minimum of 1,500 gallons.

  - Minimum setback distance requirements. Sewage tanks and disposal areas must comply with the minimum setback requirements from water supply lines and water sources as set forth in Table 1, 19 Mo. Code Regs. § 20-3.060 State and local regulations regarding separation distances may vary.

- Holding tanks. May be used in temporary situations, such as when the owner is awaiting a new system hookup.

- Alternative systems. If soil or site conditions are not suitable for a conventional drainfield, an alternative system might be used.

- **Wells.**

  - Regulated by the Department of Health and Senior Services (DHSS).

  - Applicable laws: Mo. Rev. Stat. §§ 256.600 to 256.640. (Applies to all wells except operational wells in existence on September 28, 1985 that are not determined to present a threat to groundwater); 10 Mo. Code Regs. §§ 23-3.10-3.110 (Water Well Construction Code).

    - Permits. Permits required for the construction, modification, major repair, and abandonment of wells.

      - Exception: No permit required for landowner or land lessee seeking to build a new well on his own or leased property that is intended for use only in a single-family house which is his permanent residence, or intended for use only for farming purposes on his farm, and where the waters to be produced are not intended for use by the public or in any residence other than his own.

    - Construction and maintenance requirements. Wells must be constructed and maintained in a manner that will protect groundwater resources and prevent contamination by surface and groundwater.

    - Incomplete wells/boreholes. Must be plugged or complete the well as directed by the department.

    - Restrictions. A well previously used for storage or injection of gas, chemical, or any liquid may not be converted to a well used for water supply.

    - Location requirements. 10 Mo. Code Regs. § 23-3.010. Site must have sufficient surface drainage to prevent the accumulation or ponding of surface water within ten feet of the well and, if possible, at a higher elevation than possible sources of contamination. Additionally, the well must comply with the minimum setback distance from potential pollution sources, as set forth in Table 3.1.

    - Construction standards. Wells must comply with construction standards in 10 Mo. Code Regs. § 23-3.030 and § 23-3.090.

- Abandoned wells. Wells abandoned by the landowner after August 28, 1991, must be disconnected from the water system and plugged by the landowner within 30 days. If the DHSS finds that certain unusual conditions exist at a well (i.e., the well is contaminated), it require that the same be plugged by a permitted well driller.

- Water quality standards. 19 Mo. Code Regs. § 20-3.050. There are no standards for individual water supplies, such as wells or cisterns. Well owners must test their samples at least annually.

Montana

- **Sewage and Septic.**

  - Regulated by the Montana Department of Environmental Quality (DEQ) and county departments/boards of health.

  - ARM 17.36.9. Establishes minimum standards for the disposal of sewage waste, but municipalities may have more stringent requirements.

    - Permits. Permits required from local counties for the construction, alteration, repair, and extension of wastewater treatment and disposal systems.

    - Requirements and restrictions.

      - Landowner may not construct, alter, extend, or utilize a wastewater treatment or disposal system that may contaminate any actual or potential drinking water supply or cause a public health hazard as a result of access to insects, rodents, or other possible carriers of disease to humans.

      - Connections to new source of waste-water treatment systems. Owner of on-site treatment waste treatment system or failed system must dispose wastewater to public approved collection and treatment system if one exists within 200 feet from the property line unless the connection is "physically or economically impractical" or easements cannot be obtained.

      - Wastewater treatment systems may not be located in drainage ways.

      - Seepage pits. ARM 17.36.916. May be used for replacement systems only, and only when no other means of treatment and disposal is available and must have a minimum vertical separation of 25 feet between the bottom of the pit and ground water.

- Holding tank systems. A property owner may apply for a permit if the holding tank will only be for seasonal use (not more than a total of four months during any calendar year).

- Minimum setback requirements. All on-site sewage disposal system components and absorption fields must comply with the minimum horizontal distance requirements from property lines, public and private water supplies, surface waters and springs, floodplains set forth in ARM 17.36.918. Local authorities may require greater horizontal separation distances than those specified, if it determines that site conditions or water quality requirements indicate a need for the greater distance.

- Graywater reuse. The treatment and disposal of gray water must be by means of a wastewater treatment system that meets all of the requirements of ARM 17.36.9 and applicable department circulars. Graywater that is collected separately from sewage flow and that does not contain industrial chemicals, hazardous wastes, or wastewater from toilets may be used for irrigation, if the requirements pursuant to ARM 17.36.19 are met.

- Variances. Landowner may apply for a variance of these requirements to the local health board.

- Subdivisions.

  - Permits. Septic systems on newly created lots that are less than 20 acres and that will serve fewer than 25 people require approval by the DEQ or counties contracted to do this work prior to recording a Plat or Certificate of Survey. If the lots will serve less than 25 people, a permit is only required from the local health board. Applications for permits for wastewater treatment systems described must include a demonstration that no other alternatives to wastewater disposal are feasible.

  - Requirements. ARM 17.36.3. The commercial subdivision proposing to have an on-site sewage disposal treatment system serving the subdivision must comply with sewage treatment, operation, setback, and maintenance requirements identified.

- **Wells.**

  - Permits. Required for all water wells, except for small wells that draw less than 35 gallons a minute and 10 acre-feet a year. However, a "combined appropriation" of water by two or more of those small wells that exceeds the limit must receive a permit.

- Ground water regulations. ARM 82-2.5.

  - Waste and contamination of groundwater prohibited. ARM 85-2-505. Wells owners must construct and maintain wells to prevent the waste, contamination, or pollution of ground water. They are required to plug and cap all wells producing waters that contaminate other waters. Likewise, both flowing and nonflowing wells must be so constructed and maintained as to prevent the waste, contamination, or pollution of ground water through leaky casings, pipes, fittings, valves, or pumps either above or below the land surface.

    - Exceptions, act will not be construed as waste if:
      (a) The withdrawal of reasonable quantities of ground water in connection with the construction, development, testing, or repair of a well or other means of withdrawal of ground water;
      (b) The loss of ground water is inadvertent, such as due to breakage of a pump, valve, pipe, or fitting, if reasonable diligence is shown by the person in effecting the necessary repair.

- Flowing wells not in use on landowner's property. MCA § 85-2-505 . Must be capped or equipped with valves to prevent waste or contamination.

- ARM 36.21.6. Establishes minimum standards for well water construction and setback requirements.

  - Location of wells. ARM 36.21.638. At a minimum, unless contamination risk is evident, water wells shall not be located within:

    (a) 50 feet of septic tanks, and underground storage tanks and associated lines; or
    (b) 100 feet of drainfields, seepage pits or cesspools, unregulated sewage lagoons, or other site treatment systems; or
    (c) 1,000 feet of regulated sewage lagoons; wells less than 1,000 feet setback must be in compliance with ARM 17.30.1702.
    (d) 10 feet of property lines unless properly protected by easement or agreement;
    (e) 10 feet of sewer lines with permanent watertight joints; or
    (f) 50 feet of other sewer lines.

  - More stringent setback distances may be required by the county.

  - Abandoned Wells.

    - Responsibilities. ARM 36.21.669A. Well owner is responsible for sealing and plugging a well whose use has been permanently discontinued, which is in such disrepair that its continued use for obtaining groundwater is impractical or may

be a health hazard, or which will cause waters to intermixing and result in a deleterious effects upon temperatures, qualities, or pressures.

- ARM 36.21.810. Wells which have not been monitored for more than three years are considered abandoned unless written permission is obtained to maintain the well. A properly abandoned well must not produce water nor serve as a channel for movement of water. Well owner must comply with requirements in this Section to properly "abandon" the well. The well owner must then file a report fully describing all abandonment procedures, shall be submitted to the Ground Water Information Center (GWIC) of the Montana Bureau of Mines and Geology within 60 days of abandoning the well.

Nebraska

- **Sewage and Septic.**
  - 124 NAC.
    - Requirements and compliance.
      - Lot requirements. No minimum lot requirements set by the State. However, some local jurisdictions may have requirements that include lot size limits or more restrictive requirements.
      - Permits. Both a construction and operating permit must be obtained by the homeowner prior to the construction, alteration, or modification of an on-site sewage disposal system from the Department of Health and Human Services (DHHS) if:
        - The domestic wastewater design flow is more than1,000 gallons per day;
        - The design flow includes wastewater other than domestic;
        - The system may endanger human health or cause pollution; and;
        - The system cannot meet all the provisions for design, setback distances and reserve area prescribed.
      - Easements. Location of system need not be on owner's property so long as there is a properly executed property easement that includes provisions for operation and maintenance of the onsite system easement.
      - Inspections. No inspections required by the State for new on-site disposal systems, although some local jurisdictions may have inspection requirements.

The State may conduct an investigation into an existing system if there is a complaint.

- Transfers of property. The State does not require inspections of septic system, but they can be requested by the lender or buyer prior to the sale of property. Local jurisdictions may have separate property transfer inspection requirements.

- Registration with the Department of Health (DOH) required for new and modified systems within 45 days.

- Design flow requirements. New systems must conform to design flow requirements for single family dwellings and non-dwelling facilities as set forth in Table 12.1.

- Minimum setback distances. The installation of a septic tank, pump tank, or holding tank is prohibited within the horizontal setback distances in Table 5.1 unless individually reviewed and a construction permit is issued by the Department.

  - Foundation exception. Encroachment of a foundation within the minimum setback distances to system components may be approved if the homeowner submits a foundation construction plan and a letter from a professional engineer stating that he or she has evaluated the proposed construction plan and the encroachment will not have any detrimental effect on the structural integrity of the foundation or system components, or on the proper function and operation of the system components, or on the ability to maintain or replace any of the system components.

- Repairs and maintenance. So long as the system is properly functioning, it will not be subject to the design requirements of these regulations.

- Restrictions. The discharge of wastewater is prohibited to the land surface from a dwelling, non-dwelling facility, building sewer, or onsite wastewater treatment system without Department approval. Additionally, the following clear water discharges are also prohibited from entering a septic system unless approved in a permit:

  - Cooling water;
  - Ground water infiltration;
  - Discharge from roof drains;
  - Discharge from foundation drain tiles; and
  - Swimming pool wastewater.

- Exception: Pursuant to 119 NAC § 001.08, water from single family household non-recirculating geothermal heat pumps and swimming pools may be discharged to the land surface provided certain conditions are met and the discharge does not create a threat to public health or safety, a nuisance or unlawful pollution of waters of the state.

- Abandonment of septic tanks systems. An onsite wastewater treatment system must be properly closed whenever use of the system is discontinued following connection to a sanitary sewer or following condemnation or demolition of a building or property or due to the construction of another onsite wastewater treatment system. The tank must then be pumped by a certified engineer.

- **Wells.**
  - 178 NAC 12. Sets minimum requirements for the construction, location, and decommissioning of water wells and the collection of water samples from water wells, and the inspection of installed water well equipment and chemigation regulation devices.

    - Local requirements may be more stringent.
    - Variances. May be granted in regard to construction of a water well upon proof by a licensed water well contractor or well owner that the enforcement of the rule, regulation, or standard would create an unreasonable hardship or be unreasonable, impractical, or not feasible under the circumstances. Limited to the construction of a water well to replace an existing water well.

    - Construction of new wells. All work must be done by a Nebraska-licensed water well contractor or supervisor, or a person working directly under the supervision of a licensed contractor or supervisor.

    - Location and minimum setback distances requirements. 178 NAC 12-003.

      - A well may not be located in a well pit.

      - All water wells must be filled and sealed in a manner that protects the water bearing formations from contamination from surface runoff and from subsurface contaminants.

      - Any well must be located at least 50 feet from any septic tank and at least 100 feet from any drainfield, cesspool, privy, or other subsurface disposal system, 10 feet from any depression, well pit, sewer lines or frost-proof hydrants. Additionally, the well must be located at least 100 feet from any other known source of contamination or pollution.

        - Irrigation wells. NRS § 46-651. Must be spaced at least 600 feet from neighboring registered irrigation wells, and at least 1,000

feet from neighboring registered industrial and municipal wells. There is no spacing protection for domestic or stock wells.

- Municipal regulation of wellhead protection and groundwater management. Local counties/departments may have different requirements for wellhead protection and groundwater management.

Nevada

- **Sewage and Septic.**
  - NAC 445A.950-445A.9606. Apply to the design, construction, maintenance, and operation of on-site sewage disposal systems.
  - Local counties may have more stringent regulations.
  - Requirements and prohibitions, generally.
    - Permits.
      - Homeowner must apply for letter of to construct, alter or expand an on-site sewage disposal system.
      - Restrictions.
        (1) Permits will not be issued if the operation of the on-site disposal system will pollute waters or create a public health hazard. In this case, the administrative authority may require the owner to meet additional requirements.

        (2) Permits will not be issued if the operation of the on-site disposal system will pollute waters or create a public health hazard. In this case, the administrative authority may require the owner to meet additional requirements.

        (3) Designated Nitrogen Management Areas. Standard septic tank and absorption area systems will not be permitted in these areas, and any new construction of an on-site sewage disposal system will require installation of a nitrogen removal treatment system.
      - Transfer of permits. Permits may be transferred to a new owner upon application to the administrative authority, which must approve the transfer. Until it does, the owner named in the most recently issued permit will be responsible for complying with this Code.
    - Domestic sewage flowing to an on-site sewage disposal system must be by a septic tank or aerobic wastewater treatment, or nitrogen removal wastewater treatment.

- Minimum land area requirements. The minimum land area required for an on-site sewage disposal system is 43.5 square feet per gallon of projected daily sewage flow per day.

- Setbacks. The on-site system must comply with minimum horizontal distance requirements from buildings, property lines, water supply wells, streams, and disposal fields set forth in NAC 445A.965.

- Untreated wastewater.

  - Owner may not discharge untreated or partially treated wastewater or septic tank effluent directly or indirectly onto the ground surface or into a deep pit, mine shaft, abandoned well or other waters of the State.

  - Owner may not discharge into any on-site sewage disposal system cooling water, air-conditioning water, water softener brine, swimming pool or hot tub water, or other aqueous or nonaqueous substances that are detrimental to the performance of the system or to groundwater.

  - Connections to commercial facilities. An owner may not connect the system to commercial facility to an on-site sewage disposal system if the additional flow would result in a greater projected daily sewage flow than that allowed under the permit for the system, unless expressly permitted.

- Holding Tanks. Homeowner may apply for a permit for the installation of a holding tank system for domestic sewage only so long as the projected daily sewage flow is not more than 500 gallons. A permit may be issued if (1) the site cannot be approved for installation of a standard subsurface disposal system or (2) a public or community sewerage system is not available or expected to be available within 5 years after completion of the site. Holding tanks must comply with setback requirements in NAC 445A.965.

- Alternative Systems. A homeowner may submit an alternative on-site sewage disposal system to be approved by the administrative authority provided the owner demonstrates that any new or innovative technologies, materials or designs for a proposed on-site sewage disposal system or a proposed component of such a system achieves equal or greater performance than a system that meets the requirements of this Code.

- **Wells.**

  - Domestic wells.

- Permits not required for domestic use. NRS 534.180. All manners of use of water right permit from the Nevada Division of Water Resources. A water right application and permit are not required in order to drill a domestic well. However, the well driller is required to file a well log with the State within 30 days of drilling the domestic well.

- The maximum daily draught is limited to 1,800 gallons (2.02 acre-feet) per year.

- Water Rights Statutes. NRS 533.005-533.387.

  - Generally. In Nevada, landowners have statutory water rights if the well water is to be used for beneficial use (irrigation, mining, stock watering, recreation, commercial, industrial, and municipal uses). A water right is considered real property and can be owned separate from the landowner's property. Property owners may "supplement" (use two or more rights together) or comingle their water rights (using more than one source or effluent simultaneously for an intended use).

  - Conveyances of property.

    - Water rights are an appurtenance to the property and are passed from seller to buyer unless the rights are specifically excluded or reserved on the deed. Should a specific amount of water be designated in the deed and the remainder is not reserved, the entire amount remaining is included as an appurtenance.

    - Requirements. Report of conveyance of the water right from the permittee to the current owner must be filed with the State engineer along with the property deed. The confirmation of water right ownership does not occur automatically when the deed is recorded.

  - Legal rights of domestic well owners.

    - Domestic well owners have the right to protest any water right application.

    - NRS 533.360(3). Applicants for a proposed groundwater use for municipal, quasi-municipal or industrial purposes with an expected withdrawal rate of 0.5 cubic feet per second (CFS) or more (in all counties except Clark County), must notify all domestic well owners within 2,500 feet of the proposed well.

    - Domestic well owners have the right to file complaints if they believe they are being impacted by existing permitted water uses.

  - Development of subdivisions.

- NRS 278.320(1). Defines subdivisions as "any land, vacant or improved, which is divided or proposed to be divided into five or more lots, parcels, sites, units or plots, for the purpose of any transfer, development or any proposed transfer or development." The State Engineer has the authority to require water rights for subdivisions.

- Approval required by the State Engineer. The State Engineer has the authority to require water rights for subdivisions including preferred uses of water where the groundwater is being depleted. However, the State Engineer has no review authority for land divided under the "parceling map. NRS 278.

- Well construction, design, abandonment requirements. NAC 534.010-534.450.
  - NAC 534.390. Wells constructed near rivers lake or streams must adhere to additional requirements.

  - Mandatory plugging of certain wells. NAC 534.420, 534.427. Domestic wells must be plugged in the manner if (1) the State determines it is defective or it was improperly drilled; (2) it is contaminating a groundwater aquifer (2) it is found to existing rights or the safety and welfare of the residents of this State; (3) there is no evidence of impending use of the well for any legal purpose or that no legal use of the well is allowed; or (4) the well tends to cause water to be wasted above or below the surface of the well.

  - Monitoring wells. A monitoring well must be only by a well driller who is licensed by the State Engineer. The owner of a monitoring well must ensure that the well: (a) does not cause contamination of groundwater during its use; and (b) is plugged upon abandonment. A permit to appropriate water or a waiver from the State Engineer is not required to drill and collect data from a monitoring well.

  - Boreholes. NAC 534.4371, 534.4373. A borehole must be plugged within 60 days after it is drilled. The owner and lessor of the land on which a borehole is located, the operator of the exploration project and the plugging contractor for the project are jointly and severally responsible for plugging the borehole pursuant to this chapter.

New Hampshire

- **Sewage and Septic.**

  - Applicable State Statutes. RSA 485-A (Water Pollution and Waste Disposal), N.H. Admin. R., Env-Wq 1000-1025 (Individual Sewage Disposal).

    - Approval/Permits.

- Construction of new individualized on-site disposal systems (ISDS). Before any new ISDS is installed, written approval must be granted by the Department of Environmental Services (DES) Subsurface Systems Bureau. Some local jurisdictions require that the health officer witness test pits and percolation tests, and sign off on septic plans. The permit holder is responsible for installing the subsurface sewage or waste disposal system in strict accordance with the approved plan.

- Repair or replacement of existing ISDS. The ISDS owner must work through a permitted designer to obtain (1) a permit and (2) a construction approval and approval to operate.
  - Exception. RSA 485-A:35, II. Homeowner may prepare and submit the application if the replacement ISDS will serve the individual's own domicile. An individual may also install the replacement ISDS if it will serve the individual's own domicile.

- Expansion of existing use, including conversion to full-time occupancy. RSA 485-A:38, II-a. Owner of a structure must apply for approval of an ISDS to serve the structure prior to expanding, changing use, or occupying a structure on a full-time basis such that the load would be increased.

- Expansion, relocation, remodeling or replacement of existing structure. RSA 485-A:38. No construction approval/approval to operate permit if (1) the work does not increase the load on the ISDS; (2) ISDS received construction approval/approval to operate within 20 years or the date of issuance of a building permit for the proposed change and the lot is 5 acres or more in size and served by an off-lot effluent plan; and (3) the property is nonresidential.

- Minimum setback requirements. The ISDS must comply with minimum horizontal setback requirements from structures and water supplies identified in N.H. Admin. R., Env-Wq 1008.04.

- Waterfront properties sales, site assessment study. Prior to the purchase of any developed waterfront property which uses a septic disposal system, the owner of the property (at the owner's expense), must hire a permitted subsurface sewer or waste disposal system designer to perform a site assessment study to determine if the site meets the current standards for septic disposal systems.

  - The site assessment study must include an on-site inspection and the resulting form from the inspection will become a part of the purchase and sale agreement.

- Local Jurisdictions and Regulations. RSA 147:1.

- The health officers of towns may make regulations for the prevention and removal of nuisances, and such other regulations relating to public health.

- Owner may not construct a privy, toilet, sink, drain, cesspool, septic tank, or the discharges from such facilities shall be erected or continued in such a place or condition as to be a nuisance or injurious to public health.

- Failed systems. When a residential septic system is in failure or creating a nuisance and health hazard, the health officer has the authority to order the system replaced in accordance with N.H. Admin. R., Env-Wq 1003.10. These requirements apply to both rental units and privately owned homes.

- **Wells.**

  - The Water Well Board provides well construction records, adopts and enforces standards for the construction of wells and the installation of pumps.

  - N.H. Admin. R., We. 601-04. Applies to construction, maintenance, and sealing of wells.

    - Construction requirements.

      - N.H. Admin. R., We. 602.19. A private well cannot be constructed on a lot served by a public water system.

      - Setbacks/location requirements. N.H. Admin. R. 602.07, 602.09. Wells must comply with minimum setback distances from contamination sources identified, including at least 75 feet from an effluent disposal area or tank of a septic system, 50 feet from a state highway or surface water, 75 feet from property boundaries, 75 feet from livestock pens. Additionally, they cannot be located in areas prone to flooding.

      - Wells constructed on properties with septic systems. A water well contractor is required to review the state-approved septic plan to confirm the approved well location.

        - If a well cannot be installed in the location shown on the approved plan, a water well contractor must consult with the property owner but the well must be constructed in accordance with RSA 485-A:30-b.

          The alternate well location that maximizes setback distances to the greatest extent possible.

- Approval of setback reductions. Permitted due to the size, geography, or location of existing structures and if there is no practicable alternative location that complies with the required setbacks.

- Maintenance. Well owner must properly maintain the well in accordance RSA 482-B:15, including ensuring to conserve and protect groundwater resources and prevent it from being a source contamination or pollution to nearby water supplies.

- Inactive and abandoned wells. Well owner must seal any well above ground inactive well on his property or well whose use has been discontinued.

- Sales of property. Homeowners must keep records of all work done on wells. Seller must disclose any malfunctions or problems with the water system as well as the date of the most recent water test.

New Jersey

- **Sewage and Septic**.

  - N.J. Admin. Code § 7:9A. Standards for individual subsurface sewage disposal systems.

    - Permits, Restrictions, Requirements.

      - Homeowner must obtain approval from a local boards of health before the locating, design, construction, installation, alteration, and operation of an on-site sewage disposal system to treat less than 2,000 gpd from a local dwelling. Sewage capacity treatment restrictions.

      - The system will not be approved if it treats over 2,000 gallons per day of sewage from a dwelling.

        - Exception, residential developments on subdivisions. This restriction will not apply to residential developments where each individual private residence is served by a system that serves only that individual private residential source and both the individual private residential source and the system are located on the same individual lot.

      - Permits for construction/alteration of individual subsurface sewage disposal systems will not be granted if there is another or means of private sewage disposal where a sanitary sewer line is available within 100 feet of the property to be served.

- "Available" defined. 1. Connection of the facility to the sanitary sewer line may be accomplished without installing a pump station, blasting bedrock, acquiring an easement or right-of-way to cross an adjoining property, and 2. The property to be served is located within the designated sewer service area of the sewage treatment plant to which the sanitary sewer line is connected.

- Location/Distance requirements for on-site sewage disposal systems.

  - The system must be located on the owner's property only and the local authority must have received a copy of the owner's recorded deed.

  - Must be located or installed in an area where it can be reasonably maintained and not create a nuisance or adversely affect the quality of groundwater or nearby coastal areas.

  - The disposal field or seepage pit must be located in an area where the slope of the existing ground surface is greater than 25 percent.

  - Flooding. The site cannot be subjected to surface flooding.

  - Encroachments. The area used for sewage disposal must be selected and maintained so that it is free from encroachments by driveways, accessory buildings, additions to the main building, patios, decks and trees or shrubbery whose roots may cause clogging of any part of the system.

  - Minimum separation distance requirements. The sewage disposal system must comply with the minimum separation distance requirements identified in § 7.9A-4.3 .

    - Homeowner may not deviate from the minimum separation distance requirements, and local municipalities may have more stringent requirements. are separation distances requirements listed in the Table 4.3 below.

- Fifty or More Realty Improvement Developments. When proposing 50 or more housing units for a major subdivision with septic systems, the Department of Environmental Protection must review the plan of development and certify that the proposed project will comply with the applicable standards, particularly that the building lot density will comply with the Ground Water Quality Standards, N.J.A.C. 7:9C for nitrate.

- Prohibitions. § 7:9A-1.6.

- Homeowner may not discharge from a septic tank to a watercourse, or to any other type of soak away system other than a drainage field.

- Homeowner may not discharge of sanitary sewage or the effluent from any individual subsurface sewage disposal system into any abandoned well or any well constructed for the purpose of sanitary sewage disposal.

- The homeowner must use the individual subsurface sewage disposal only for the disposal of wastes of the type and origin provided for in the approved engineering design.

- Property transfers.

  - Cesspools, privies, outhouses and latrines no longer allowed. § 7:9A-1.6(g); § 7:9A-3.16 a,b. Effective June of 2012, properties serviced by a cesspool, privy, outhouse, latrine, or pit toilet may not be transferred without upgrading to a septic system. The homeowner is no longer permitted to make repairs or upgrades to cesspools, privies, or outhouses.

    - Requirements of homeowner. If the property is serviced by a cesspool or similar system, the owner must hire an engineer to verify that a septic system is unfeasible, and that the cesspool or similar system is or may be adapted in a manner that is protective of human health and the environment.

    - If the local board of health discovers that such a system is in need of repair, the system must be abandoned and replaced with a properly engineered and approved septic system.

    - Upon transfer of the property, the parties must clearly document which party is responsible for compliance with the applicable NJDEP regulations.

    - Exceptions. A cesspool that is not malfunctioning may continue to serve the structure after a real property transfer only under limited circumstances, including if property is being conveyed as the result of a foreclosure, for a consideration of less than $ 100.00 or between family members.

    - Options. If the local health board cannot approve the system, the homeowner may apply for approval to utilize a holding tank.

  - Inspections of onsite wastewater treatment disposal systems. The State does not mandate inspections during property transfers, but it does require that if an inspection is done, the inspector must follow

procedures identified in § 7:9A-12.6 and report the results to the municipal health department.

- Abandoned systems. § 7:9A-12.8. When it is necessary to abandon a system for any reason other than connection to a sanitary sewer line, the septic tanks, dry wells and cesspool must be emptied and filled. In cases where the individual subsurface sewage disposal system is being abandoned due to the connection of the facility to a sanitary sewer line, a local plumbing inspector must certify that the system has been properly abandoned.

- **Wells.**

  - New Jersey Admin. C. § 7:9D. Construction Requirements and Regulatory Standards for wells.

    - Permits.

      - Homeowner must obtain a well permit from the Department of Environmental Protection (DEP) prior to drilling, constructing, installing, physically altering, or redesignating the use of any well.

      - Well permits are not transferable.

      - Permits issued for domestic use are valid for a period of two years.

      - Emergency permits. § 7:9D-1.12. The DEP may issue an emergency well permit to minimize actual or avert potential harm to human health, the environment, or property.

      - Denials. The DEP may deny a permit for construction of a well if the site is in an area where wells may not be constructed, including, but not limited to, contaminated aquifers, areas of salt water intrusion, and other areas where environmental remediation may be adversely affected by the well's construction and/or operation of wells.

    - Requirements.

      - Well development or well redevelopment must be performed so as not to damage the natural barriers which prevent the movement of poor quality water or contaminants.

      - Minimum Distance Requirements. § 7:9D-2.7. Wells need to be located at least 150 feet from a seepage pit, 100 feet from a disposal field, 50 feet from a septic tank, and 25 feet from a building sewer.

- Well testing required. Homeowner must test the water of the newly constructed well.

- Decommissioned Wells. The Department of Environmental Protection may order the decommissioning of any well or borehole, or any appurtenances which is abandoned (not in use; not properly maintained; or threatens or endangers subsurface water), has been replaced by another well, is contaminated or unfit for the intended purpose.

  - Well owner is responsible for properly decommissioning an abandoned well under these circumstances.

  - However, the well driller is responsible for decommissioning a well that is abandoned during construction or cannot be completed in accordance to requirements of New Jersey Admin. C. § 7:9D.

- Sales of property containing wells.

  - New Jersey has a state-wide private well testing program, promulgated by the Private Well Treatment Act (PWTA), N. J.S.A. 58:12A-26 et seq. Well water must be tested prior to a property transfer and the results must conform to standards in the Act. Local counties additionally impose water sampling parameters.

    - The cost of testing can be borne by the buyer, the seller, or both (the PWTA is silent on this issue).

    - Closing of title. Cannot occur unless both the buyer and seller certify in writing that they have received and reviewed the test results.

New Mexico

- **Sewage and Septic**.
- Regulated by NM Admin. C. § 27-.7.3. Note: Bernalillo County is the only county in New Mexico that has its own onsite wastewater ordinance.

- NM Admin. C. § 27-.7.3.

  - Applies to on-site liquid waste systems, and effluent from such systems, that receive 5,000 gallons or less of liquid waste per day. Existing and new systems must meet the requirements of this section.

  - The State may impose more stringent requirements if necessary.

  - Procedures, General Requirements, Restrictions. §20.7.3.201.

- Permits required for the installation of a new waste disposal treatment and the modifications of existing systems.

- Owner of on-site waste liquid must ensure that the liquid waste system on that property and any excavation related to the liquid waste system does pose a public safety hazard or degrade any body of water.

- The owner may not discharge effluent from a liquid waste treatment unit to a cesspool or effluent disposal well.

- Must connect to a public sewer if available. A public sewer shall be deemed available when the public sewer has capacity and is located in any thoroughfare, right-of-way or easement abutting the lot on which the residential or commercial unit is located.

    - Once available, the owner must properly abandon the liquid waste system in accordance with § 20.7.3.307 within 30 days of connection to the public sewer.

- System must be located on the same lot of the site of the source served by the on-site liquid waste system. An on-site liquid waste system shall be located wholly on the same lot, which is the site of the source or sources served by the on-site liquid waste system

- Minimum lot requirements. § 27.7.3.301. A new system cannot be installed on a lot sized smaller than 0.75 acre. The design flow for a conventional treatment system cannot exceed 500 gallons per day per acre.

- Setback Requirements. § 20.7.3.302. On-site liquid waste systems must conform to minimum setback distance requirements identified in Table 302.1 from property lines, buildings, disposal fields, and seepage pits, public and private wells, and watercourses. Setback distances apply to any part of the on-site liquid waste system.

- Graywater discharges from residential units. § 20.7.3.810 . Defined as wastewater from bathtubs, showers, washbasins, clothes washing machines and laundry tubs. Graywater discharge of less than 250 gallons per day of private residential graywater originating from a residence for the resident's household flower gardening, composting or landscaping irrigation may be allowed under certain circumstances.

- Variances. A homeowner may apply for a variance of the requirements in § 27-.7.3 from local health department.

- Transfers of property. § 20.7.3.902. Seller is required to have the on-site system inspected and provide a report to the buyer unless the system had previously been evaluated 180 days prior to the transfer of property. The buyer will become responsible for remediating a failed system if the remediation did not occur prior to the sale of the property.

    - Alternative systems. At the time of transfer of ownership, the new owner must submit an amendment of permit updating the ownership change and also provide the department a copy of the valid maintenance and sampling contract in the name of the new owner.

- **Wells.**

    - Water rights regulations. New Mexico. C. R. § 19.27.1; NM Stat § § 72; NM Stat. § 75-5-5.

        - Generally. All the water in the state belongs to the public. Only those with water rights may legally use water, and those rights are considered private property. The water rights are considered private property that may be sold or leased, with permission from the State Engineer.

            - Regulatory authority. The State Engineer's Office administers the state's water resources and enforces water law. However, local municipalities can enforce more stringent regulations on water access and usage.

            - New Mexico is a prior appropriation state (first in time, first in use). The senior water right has priority over the junior water right.

            - Water bodies running adjacent to land. Landowner whose land borders navigable lakes or rivers and streams has the right to use the water as long as such use does not harm upstream or downstream neighbors. Additionally, the landowner will not be permitted to pump or otherwise remove the water. In the event the water is a non-navigable waterway, the landowner generally owns the land beneath the water to the exact center of the waterway

    - Well construction.

        - Permits required from State Engineer. NMAC § 19.27.1.9. A person seeking to install a well must first receive a water rights permit pursuant to NMS 72-5-5.1. The applicant may go through the local District Office for the permit. The permit may be granted for less than the amount of the application.

            - Water must be put to beneficial use. Beneficial use defined as irrigation, domestic, commercial and industrial uses. Water-right holders can change the purpose of use or divert water only by applying for a permit for the intended water use

- Publication requirement. The applicant must also publish the application in a local newspaper and provide anyone with a legitimate objection the opportunity to protest the application.

- Forfeiture of water rights. Owners can forfeit their water rights for non-use, under certain conditions, or for wasting water.

- Construction Requirements. The well must be constructed in full compliance with the terms of the permit.

- Change of well location and/or purpose of use. NMAC §§ 19.27.1.24; 1.25. The owner of a water right within a declared underground water basin cannot change the location of his well and the purpose of his water use without the approval of the state engineer.

    - Change in well location. If approval is granted, the replacement well must be within 100 feet of original well. The owner of a water right may drill and use the replacement well within one hundred (100) feet of the original well prior to application, publication, and hearing, if: (1) the owner of a water right cannot change the location of his well (2) the same amount of water use allowed by the original will be appropriated.

    - Change in purpose of water use. Granted only after a determination that that the water right is available, that the appropriation will not impair existing rights, that the intended use meets state conservation efforts and is not detrimental to the public. When a permit to change the place of use is granted, the owner must cease his use of water from that location.

- Retention of old well for domestic use, requirements. § 19.27.1.22. If water rights have been transferred from a well but the owner thereof desires to retain the well, the owner must file an application with the State to determine whether the well can be retained in use without causing waste.

- Well plugging**.** Wells from which all water rights have been removed must be plugged in accordance with NMAC § 19.27.4.

New York

- **Sewage and Septic.**

- The New York Department of Health maintains and enforces the rules and regulations pertaining to on-site wastewater treatment systems (OWTS) throughout the state. In addition, septic systems within the New York City Watershed (southeastern New York

State) must also be approved by the city's Department of Environmental Protection, Division of Water Resources.

- Approval is required for the installation, remediation or modification of any on-site sewage disposal system from local health departments. A field evaluation of the site and soil character will also be required.

- 10 CRR-NY 128-3.8. All new individual sewage treatment systems discharging sewage less than 1,000 gallons per day from year round and seasonal dwellings must comply with the requirements of 10 NYCRR Appendix § 75-A.

    - Local health departments and other agencies such as the New York City Department of Environmental Protection (NYCDEP) and the Adirondack Park Agency (APA) may establish more stringent standards.

    - Requirements/Waivers. 10 NYCRR § 75.3(d) ; 10 NYCR Appendix § 75-A.11.

        - New systems must comply with construction requirements, including daily flow requirements based on number of bedrooms, except jurisdictional health departments may issue specific waivers for an individual situation because a hardship or other circumstance makes it impractical to comply with a design standard(s).

        - An owner must subsurface sewage treatment systems shall be designed, operated and maintained to prevent the exposure of sewage to the surface of the ground or the discharge of sewage to groundwater.

        - All toilet, bathroom, kitchen, and laundry wastes from a household shall be discharged into the septic tank.

        - Location; minimum separation distance requirements. § 75-A.4; § 75-A.5. Wastewater system components must comply with minimum separation distance requirements from wells, streams dwellings and property lines.

            - Floodzones. Low areas likely to be flooded every ten (10) years or more frequently, (10-year flood plains) must be avoided.

            - House sewer drains. Must be ten (10) feet away from any water line.

        - Maintenance requirements. Septic tanks should be inspected annually to determine scum and sludge accumulation. Most tanks should be pumped out every two (2) to three (3) years.

    - Absorption field location restrictions. § 75.A-8; 10 CRR-NY 128-3.8.

- Absorption systems should be located far from wells and watercourses to minimize the chance of contamination.

- Absorption field cannot be located under driveways, parts of buildings or under above-ground swimming pools or other areas subject to heavy loading. Additionally, no part of any absorption field can be located within 100 feet of a watercourse or wetland or 300 feet of a reservoir, reservoir stem or controlled lake. It must be more than 10 feet from any water service supply line.

- Consideration should also be given to prevent future home improvements from interfering with the operation of the absorption system.

- Ulster County. The county may impose a greater limiting distance from an absorption field to a watercourse, wetland, reservoir, reservoir stem or controlled lake.

- Failing systems. If an on-site waste disposal system meets state and local approvals and but does not comply with 10 CRR-NY 128-3.8 and is failing, the owner must get approval to remediate the system and remediate as quickly as possible.

- Alternative systems. § 75.A-9; 10 CRR-NY 128-3.8. Raised systems are allowed on undeveloped lots not located in a subdivision or on undeveloped residential lots located in a subdivision where site conditions are not suitable for a conventional system provided that the system is at least 250 feet from any watercourse or wetland and 500 feet from any reservoir.

- Abandoned septic tanks. There are no State regulations for abandoning/decommissioning septic system tanks. If a septic tanks or other system components are to be abandoned/decommissioned because public sewers are being installed or replacing a tank(s), the homeowner should consult with the local health board to determine decommissioning/abandonment procedures.

- **Wells**

  - NYS DOH Appendix § 5-B. Regulates construction standards for all new and replacement individual water systems.

    - Approvals for deviations (e.g., "specific waivers") from the standards can only be granted by local health departments (LHD) having jurisdiction. Additionally, these LHD's may have their own requirements and approvals for construction and replacement of wells.

- New wells. Must be installed by a registered water well contractor (driller) and have groundwater as the water source. Some may have their own requirement for approvals of new and replacement wells.

- Well Location and Separation Distances:

  - Wells must be located an appropriate distance from known sources of contamination and not subject to flooding or surface water contamination.

  - A well shall be located so that adequate access to the well for inspection, maintenance, repair, renovation, treatment, and testing is provided.

  - Additionally, the new well must comply with minimum distance requirements identified in Table 1 in Appendix 5-B. Deviations from these separation distances need approval from the local health department.

  - Separation distances from contaminant sources need to be significantly increased if the contaminant source is located upgradient from a well or if aquifer water enters the well at less than 50-feet below grade.

- Well Abandonment. 10 NYCRR § 5-2.11. Owner must first file an application of notification to abandon the well. The owner must then properly seal or closed a well that has been discontinued so as to protect the aquifer from pollution and to prevent a hazard to life or property.

North Carolina

- **Sewage and Septic.**

  - Sewage disposal generally. 15A NCAC 18A .2407. Sewage must be disposed of in a public sewer system or, in the absence of a public sewer system, by an approved, properly operating sanitary sewage system.

  - 15A NCAC 02T .0607. If a public or community sewage system is or becomes available, the subject wastewater treatment facilities must be closed and all wastewater shall be discharged into the public or community sewage system.

  - 15A NCAC 18A .1901-1933

    - Requirements for sewage treatment and disposal.

      - Permits. Any person owning or controlling a residence containing water-using fixtures connected to a water supply must discharge all wastewater directly to an approved wastewater system permitted for that specific use from the local

board of health. An improvement permit is required if the homeowner intends to make improvements to his dwelling that will increase wastewater flow or alter wastewater characteristics.

- Lot requirements. The proposed site must have sufficient lot allowance for the proper functioning of ground absorption of sewage and for a separate area for repair of the system.

- Tank capacity requirements. 15A NCAC 18A .1949. Septic tanks must conform to required tank capacity requirements for dwellings based on the number of bedrooms and the numbers of persons occupying the bedrooms. A home with three bedrooms or fewer requires at least a 900-gallon tank, a home with four bedrooms requires at least a 1,000 gallon tank, and a home with five bedrooms requires at least a 1,250 gallon tank.

- Location requirements. 15A NCAC 18A .1950. Every sanitary sewage treatment and disposal system must conform to the minimum horizontal distance requirements identified. They must be at least 100 feet away from private or public water supplies, streams, and reservoirs, at least 50 feet away from coastal waters, canals, marshes, storm water retention ponds, lakes, and ponds, 15 feet between septic basements, embankments, drainage system side-slopes, and swimming pools, 10 feet away from property lines. Additionally, a sewage treatment system cannot be placed where there may be flooding every 10 years or less, unless they can stay watertight during a storm.

    - Owners of single-family residences with four bedrooms or less may qualify for certain setback requirement exemptions if the lot has insufficient size to satisfy the requirements and there is no public sewer available at the start of construction.

- Maintenance of sewage treatment systems. Owners is responsible for properly maintaining the system and preventing a discharge of sewage or effluent to any ground surface, water surface, or directly into groundwater, and preventing a back-up of sewage or effluent into the facility, building drains, and collection system.

- Alternative systems. 15A NCAC 18A.1957.; 18A. 1958. Include low pressure systems and non-ground absorption sewage treatment systems. May be permitted if they meet certain criteria.

    - Holding tanks. Holding tanks not permitted. However, an Authorization to Construct may be issued for a holding tank for pumping and hauling of wastewater effluent to an approved wastewater system when the owner has provided a showing that a malfunctioning system cannot otherwise be repaired by connection to a system considered as an acceptable sewage treatment and disposal system.

- Sewage recycling systems. Recycled sewage and cannot be used for body contact or human consumption. Sewage systems which discharge treated wastewater meeting the state drinking water standards may be used only for toilet flushing and. Such systems must be approved by the state or local health department.

- Privies. The construction of privies is permitted so long as the approved privy meets requirements in 15 A NCAC 18A.1959.

- Maintenance of sewage treatment systems. Owners is responsible for properly maintaining the system and preventing a discharge of sewage or effluent to any ground surface, water surface, or directly into groundwater, and preventing a back-up of sewage or effluent into the facility, building drains, and collection system.

- **Wells.**
  - North Carolina General Statute 87-97. Requires counties to have programs for permitting, inspecting, and testing of private drinking water wells, which are constructed, repaired, or abandoned, on or after July 1, 2008.
  - Permits from local health department required for the construction or repair of a water well. NCGS § 87-97; 15A NCAC 02C .0300.

  - Well construction. 15A NCAC 02C.

    - Well location. 15A NCAC 02C .0107. A water supply well cannot be located in any area where surface water or runoff will accumulate around the well due to depressions, drainage ways, and other landscapes that will concentrate water around the well. Additionally, the well must be placed: at least 50 feet away from a single family dwelling with a septic tank and drainfield, 100 feet away from a subsurface ground absorption field system and animal barns, 100 feet from a facility containing a septic tank, 25 feet away from a residential sewer line, 500 feet away from a landfill, 100 feet away from a cesspool, 25 feet away from buildings, 50 feet from ponds, lakes and reservoirs, and 25 feet away from brooks, creeks, streams, rivers, sounds, bays, and tidal estuaries.
      - Local municipalities may have greater setback distance requirements.

    - Well abandonment. 15A NCAC 02C .0113. Requires a well abandonment permit. A well that is temporarily removed from service must be sealed with a water-tight cap or well seal, so that it cannot be removed without the use of hand tools or power tools. The owner must maintain the well to prevent it from becoming a source of contamination during temporary abandonment. If a well is to be permanently abandoned, the owner is required to seal the entire well with cement or bentonite grout.

North Dakota

- **Sewage and Septic.**

- Regulation. The North Dakota Department of Health is the governing body in charge of septic tank regulations. The local or district health units are responsible for the administration and granting of permits. No sewer system may be installed, repaired, or altered without applying for and receiving written permission.

- ND Admin. Code § 62-03. Applies to private sewage disposal systems. Local departments of health or counties may impose more stringent requirements.

  - New developments. Property owner must notify the adopting authority when a property that is proposing to install an on-site waste treatment system on the property.

  - Requirements and restrictions, generally. § 62.03.1.

    - Availability of public sewer system. Where there is an available public sewer system (located within 200 feet of homeowner's dwelling), the homeowner will be required to discharge sewage into the public sewer system. If there is not one available, the homeowner may apply for a permit for the construction of a private sewage disposal system though the local health board.

    - Septic tanks required for on-site sewage disposal systems. Water-carried sewage from bathrooms, kitchens, laundry fixtures, and other household plumbing must go through a septic or other approved sedimentation tank prior to its discharge into the soil or into an alternative system.

    - Discharge prohibitions. Homeowner may not discharge domestic sewage or sewage effluent in any manner that will cause pollution of the ground surface, ground water, bathing area, lake, pond, watercourse, or create a nuisance. Additionally, the homeowner may not discharge sewage into any abandoned or unused well, or into any crevice, sink hole, or other opening either natural or artificial in a rock formation.

    - Property improvement restrictions. Homeowner may not improve his dwelling or home to the point where it will exceed the system's capacity to absorb domestic sewage.

- Minimum tank capacity requirements for individual dwellings. A dwelling with up to three bedrooms must have the capacity to treat at least 1,000 gallons of domestic sewage a day.

- Location, separation distances, and minimum lot requirements. ND Admin. Code § 62-03.1-04.

    - Minimum lot requirements. One acre is the minimum lot size in which a private treatment system may be installed. Smaller lot sizes may be approved by the administrative authority if a centralized sewage treatment system is provided or if soil conditions allow for the installation of a second treatment area. A system cannot be installed in a floodway.

    - Separation distance requirements. The components of the on-site disposal system must be located in accordance with the minimum separation requirements from wells, property lines, and buildings identified.

- Cesspools are prohibited.

- Privies/chemical toilets. The installation or construction of privies must be approved by the local administrative authority.

- Abandoned systems. Abandoned disposal systems, septic tanks, pumping and other chambers, and seepage beds must be disconnected from the buildings. The owner must have all tanks and chambers pumped out and filled with earth.

- **Wells.**

- Water use permits required if water use from well will not be for beneficial use. NDCC § 61-04. A property owner seeking to commence any construction of a well that will draw less than 12.5 acre per foot (4,073,000 gallons) of water per year, must secure a water use permit from the Department of Water Resources unless the use will be beneficial (includes domestic use, livestock use, or use of water for more than 5 acres of land) must first secure a water permit from the Department of Water Resources.

    - Domestic use defined. N.D.C.C. §61-04-01.1(4) "Domestic use" refers to the use of water by an individual, or by a family unit, or household, for personal needs and for household purposes, including heating, drinking, washing, sanitary, and culinary uses; irrigation of land not exceeding five acres for noncommercial gardens, orchards, lawns, trees, or shrubbery; and for household pets and domestic animals kept for household sustenance and not for sale or commercial use, when the water is supplied by the individual or family unit.

    - Optional permits (for appropriations of less than 12.5 acre per foot of water per year). The property owner may wish to apply for a permit to establish a priority water right.

- Wells that will appropriate more than 12.5 acres per foot of water per year. Regardless of the use, however, if the construction of a well will appropriate more than twelve and one-half acre-feet of water per year, the property owner needs to apply for a permit.

- Recording. A water permit may be recorded as any other instrument affecting the title to real property without acknowledgment or further proof.

- Cancellation of water rights. When the appropriator fails to apply it to the beneficial use cited in the permit or ceases to use it for the beneficial use cited in the permit for three successive years (unless the failure or cessation of use has been due to the unavailability of water) the Department of Water Resources may cancel the water permit or right.

- *North Dakota does not regulate private well placement or water quality.*

- NDAC § 33.1-18.01; Water Well Construction Requirements.

  - Generally. All wells must be constructed in manner which provides maximum protections to groundwater sources.

  - New wells, location requirements. Private well sites must on high ground and at least 50 feet away from privy pits, cesspools, septic tanks, absorption fields, barnyards, feedlots, high water marks of lakes, streams, sloughs, ponds; at least 30 feet sewer lines; at least ten feet from basements or pits; and at least 20 feet from overhead powerlines and other hazardous devices.

    - Relation to buildings. When a well must be located adjacent to a building, it must be located so that the centerline of the well extended vertically will clear any projection from the building by not less than 2 feet.

  - Existing wells. The Department of Environmental Quality must be consulted for requirements concerning the reconstruction of existing wells.

  - Abandoned wells. Any abandoned water wells, including test wells, uncompleted wells, and completed wells shall be sealed by restoring, as far as possible, the controlling geological conditions which existed before the wells were drilled.

Ohio

- **Sewage and Septic**.

  - OAC 3701-29. Codifies state standards for household sewage disposal systems.
  - Some local counties/jurisdictions have more stringent requirements regarding sewage treatment systems**.**

- Variances. OAC 37-29-22. Local boards of health may grant a variance from the requirements of OAC 3701-29 upon written application for a variance from a specified rule or rules and upon a showing that because of practical difficulties, or other special conditions, compliance will cause unusual and unnecessary hardship.

  - Household sewage treatment system, defined. OAC 37-29-01. A household sewage treatment system is defined as any sewage treatment system, or part of such a system, that receives sewage from a single-family, two-family, or three-family dwelling, including:

    (a) A dwelling and related structure, such as a barn or personal garage, when the users of the structure are only the residents of the dwelling, and provided the related structure is not used as a dwelling.

    (b) A dwelling with a home business when the nature of the home business is such that it does not produce sewage.

    (c) Vacation rental cabins, provided there is a separate household treatment system for each cabin.

    (d) A bed and breakfast, residential facility.

  - General provisions and prohibitions. OAC 3701-29-06.

    - New systems, no available connection to a sanitary sewerage system. A sewage treatment system not permitted where a sanitary sewerage system is accessible. Additionally, whenever a sanitary sewerage system becomes accessible to a dwelling or structure served by a sanitary sewerage system, the owner must connect the dwelling and/or structures to the sanitary sewerage system and abandoned the sewerage system.

      - Connection considerations. A local board of health may consider the availability of connection, local or state ordinances or rules prohibiting or requiring connection, the technical feasibility of connection, the ability of the sanitary sewerage system and associated treatment facility to accept additional flows, and the distance from the foundation originating the sewage to the nearest boundary of the right-of-way within which the sewer is located.

    - Permits requirements. A permit to install or alter a system must be obtained from the local health district before beginning any construction or repair activities on a system. Additionally, all homeowners are also required to obtain an operation permit for septic systems.

    - Soil absorption requirements. A sewage treatment system must use soil absorption as the means for final treatment and/or dispersal. Exemptions allowed under certain conditions.

    - Wastewater discharge restrictions.

- Owner of system permitted for installation, replacement, or update on or after January 1, 2007 may not discharge sewage or effluent to any ditch, stream, pond, lake, natural or artificial waterway, drain tile, other surface water conveyance or to the surface of the ground unless authorized by the State.

- No sewage or effluent can be discharged to an abandoned well, drainage well, a dry well or cesspool, a sink hole or other connection to ground water.

- Dwelling requirements. A household sewage treatment system may serve only a one family, two-family, or three-family dwelling. A small flow on-site treatment system (a system which treats fewer than 1,000 gallons of sewage a day) may serve multiple dwellings or structures. In the case where two or more dwellings or structures are served by a small flow on-site treatment system, the entire small flow on-site treatment system must be owned and operated by one person.
- Graywater. Wastewater discharged from lavatories, bathtubs, showers, clothes washers, and laundry sinks from the dwelling or building may be conveyed to an approved gray water recycling system installed.

  - Location and minimum setback distance requirements. The proposed system must be located on same parcel as the structures or dwelling it serves.

  - Private water systems. If owner intends to also install a private water system, the site must provide sufficient horizonal isolation from both the proposed sewage treatment system and the area intended for any system relocation or replacement on the owner's or adjacent sites.

  - Horizontal distance requirements. The sewage treatment system must be at least 10 feet away from any utility service line, roadway or road surface, driveway or other hardscape, property line or right-of-way boundary, properly sealed well, building or other structure, areas with recorded easements, and intermittent streams and at least 50 feet away from any surface water impoundment (lakes, streams, rivers).

- Existing systems.

  - Repairs, replacement. Owner must obtain a permit from the Ohio EPA prior to any replacement or update of the system.

  - Replacement of existing systems not on same parcel. Owner is required to submit to the board of health a permanent, recorded, legal easement for any portion of a sewage treatment system not sited on the same. If both parcels

have a common owner, the parcels must be merged or otherwise reconfigured, or recorded on the property deed.

- Abandonment of sewage treatment systems.

  - Conditions. Applies to sewage treatment systems that are no longer in use due to connection to sanitary sewer, system replacement, the existence of a physical hazard or public health nuisance, change in the use of the lot, or as otherwise ordered by a board of health.

  - Requirements. The owner is required to disconnect the system and all applicable component from the dwelling and pump applicable components, seal the tank with compacted inert material, and secure all access points to the abandoned tank.

    - However, the board of health may allow the discontinued system to remain on the lot, provided the system is disconnected from the dwelling, and determined to not create a physical hazard or public health nuisance when:
      (1) The use of a lot changes and the owner of the system wishes to retain the system for future use; or
      (2) The owner of a system wishes to retain the system for uses other than sewage treatment.

- **Wells.**
  - OAC 3701-28. Regulates wells and private water systems (systems providing water to fewer than 25 people a day). Systems that regularly serve an average of at least 25 individuals daily at least 60 days each year are regulated by the Ohio EPA.

    - Requirements, generally.

      - Permits. Permits required for the construction, alteration, decommissioning or sealing of a well. An alteration permit can be converted into a new construction permit, if during the commencement of an alteration it is determined by a registered contractor that the construction of a new water source will be required.

      - Water sample collection required after completion. The owner of a new or altered private water system has 30 days from the time work has been completed to contact the board of health for an inspection and the collection of water samples.

- Location, operation, and maintenance of private water systems.
  - Ownership of water systems. Where two or more dwellings are serviced by a private water system, the entire private water system must be owned and maintained equally by all parties owning service connections served by the system. Where a private water system, or portion thereof, is not located on the same parcel as the service connection it serves, there needs to be a legally

recorded easement to allow access to the system by all parties for the purposes of maintenance, sampling, and repairs.

- Location of water systems.

  - Free of contamination sources.
    (1) A private water system must be placed and maintained in an area surface and subsurface conditions will not permit contamination of the private water system or aquifer.
    (2) Separation distance requirements. The location of the well must conform to the minimum separation distance requirements identified in OAC 3701-28-07 from potential sources of contamination.

    - Structures. A well must be located at least 10 feet away from the foundation of a building or dwelling, at least than five feet from the edge of a deck or porch that is not part of the building foundation, five feet from the edge of a private driveway or parking lot, 10 feet from the established road right of way10 feet from building sewers and drains.
    - Floodplains. A new private water system cannot be placed in a floodplain, unless the system is replacing an existing water system in a floodplain, and no other sites outside the floodplain are available. In such a case, the owner must take steps to minimize the entrance of contaminants into the well.

- The property owner is responsible for maintaining these minimum distances

- Local counties may impose greater separation distance requirements.

- Connections to public water system. ORC § 6109.13. Approval from the Ohio EPA required before a private water system may enter a public water supply.

Oklahoma

- **Sewers and Septic.**

  - 252 OAC § 641.

    - Sewage treatment. Only aerobic treatment systems (system that provides digestion of organic matter though oxidation) are permitted. Additionally, if the average daily flow is less than one hundred (100) gallons per day or greater than one thousand five hundred (1,500) gallons per day, aerobic system treatments are unsuitable and an alternative system is required.

- Responsibilities for maintenance. The installer is responsible for maintaining the sewage treatment system for the first two years, then the owner assumes responsibility.

- On-site sewage treatment systems, general requirements.

  - Permits and inspections. Permits from local Department of Environmental Quality offices in the State are required for the installation, alteration, and modification of an on-site waste treatment system.

  - Minimum lot size. As a general rule, at least 10,000 square feet must be allocated for the septic system in the area where it will be installed. In addition, the area should be accessible to the installer and the equipment needed in earth-working activities related to the installation.

    - Lot serviced by public water system. If public water (water from city or rural water district) is used, the minimum lot size requirement for a house needing a septic system is ½ acre for most systems.

    - Lot serviced by private well. If an individual drinking water well is used, then a minimum lot size of ¾ acre is required for most systems.

    - Repair area requirement. The lot should be sufficient to accommodate a repair area for the septic system (area where dispersal lines of the septic system to be installed in case the first system installed fails).

    - Ownership. An on-site sewage treatment system must be located on property that is: (a) owned by the owner of the on-site sewage treatment system; and/or (b) dedicated in a recorded easement for the installation and operation of the on-site sewage system to the owner of the on-site sewage treatment system.

  - Location requirements.

    (1) The on-site waste treatment system cannot be placed in the "toe slope" of a sloping area. As rule of thumb, areas with a slope greater than 10 percent are undesirable areas for the installation of the system.

    (2) The system cannot be placed in a floodplain.

    (3) The effluent disposal site must not be placed in an area where surface runoff is likely to accumulate.

- Liquid capacity requirements for dwellings. A septic tank used in an individual on-site sewage treatment system for a residential unit with four (4) or fewer bedrooms

must have a liquid capacity of at least one thousand (1,000) gallons. An additional two hundred and fifty (250) gallons of capacity must be added for each additional bedroom.

- Separation distances. The on-site sewage treatment system must comply with the minimum horizonal separation distance requirements from private and public wells, property lines, buildings, streams.

- Operation, repairs and maintenance. The owner of a system must ensure that the system is maintained and operated properly so that: 1) sewage or effluent from the system is properly treated and does not surface, pool, flow across the ground or worse, discharge to surface waters, (2) all components of the system including lagoons are maintained and do not leak or overflow and (3) the required security measures are intact (e.g. required fences are intact, septic tank lids are intact and properly secured), (4) promptly repair any malfunctioning system.

    - Modifications to existing systems. Septic system modifications may be needed as a result of the following: a) malfunctioning septic systems, b) home renovation leading to an increase in the number of bedrooms, c) increase in water use due to change in use of a house or building and d) relocation of any component of a septic system.

- Water Body Protection Areas. Applies to constructions of new systems and modifications to existing systems. Areas within Water Body Protection Areas (WBPA) are designated by the State to be specially protected from pollution. If the chosen effluent dispersal area is in Zone 1 (660 feet) or Zone 2 (1,320 feet) from a streambed, river or lake, advanced systems with a nitrate-reduction component would be required.

- **Wells.**

- Domestic wells/permit exception. 82 Okla. Stat. § 1020.3. In Oklahoma, groundwater is owned by the property owner. Thus, property owners are allowed domestic use of the water without a water permit. However, water well applications are required for all projects with private water systems. Additionally, if the well is located within a municipality, the landowner may be required to obtain a municipal permit.

    - Domestic use, definition, and restrictions. Defined as water used for household purposes, watering for domestic animals and gardens/orchards of no more than 3 acres in size, and that does not exceed 2 acre-feet (651,702 gallons) of water per year. Use of water in excess of 2 acre-feet per year or on property more than 3 acres in size requires a permit.

    - Wells for domestic use are not subject to well spacing orders but are subject to sanctions against waste.

- Exception: Property owners in sensitive aquifer (Arbuckle-Simpson) areas require a permit for water use.

- The Oklahoma Water Resources Board regulates groundwater use and issues permits for municipal, industrial, agricultural, irrigation and recreation wells, but does not permit domestic wells.

- Well regulations. 785 OAC § 35.

  - Construction and maintenance requirements, generally.

    - .Owner must ensure that well is constructed in a manner to prevent waste and to maintained so as to prevent contamination of groundwater.

    - New wells must conform to minimum separation distances from pollution sources identified in § 35-7-1.

    - Groundwater wells which will not be used for drinking may be placed closer to pollution sources (unless prohibited by municipality) under certain conditions.

    - Unused wells on property. Property owner must make sure unused well on property are properly capped or plugged.

  - Variances. Variances from any of the minimum standards for construction of wells may be granted if the owner can demonstrate that the construction proposed will protect the quantity and quality of the groundwater from contamination and waste.

- Groundwater regulation. Oklahoma's water quality standards are regulated by the Oklahoma Water Resources Board.

Oregon

- **Sewage and Septic**.

  - ORS § 454, Sewage Treatment and Disposal Systems; OAR 340.071. Onsite Wastewater Treatment Systems.

    - Requirements, generally. OAR 340-071-0130.

      - Permits. A permit is required to install to install, construct or repair an onsite system for a home or a commercial system with a projected sewage flow less than 2,500 gallons per day. A proposed system will not be allowed if there is a physically and legally available (within 300 feet of a single-family dwelling) community sewerage system.

- Onsite agents for sewage disposal treatments. In some counties, the Oregon Department of Environmental Quality acts as the local onsite agent providing septic system inspections, site evaluations and issuing permits. In other counties, other governments provide this service.

- Permit exception, emergency repairs to system. ORS § 454.655. An owner may make emergency repairs without first obtaining a permit if a repair permit application is submitted to the agent within three working days after the emergency repairs are begun.

- Encumbrances. Before a permit waste treatment system a new system may be issued, the site for the new system must be approved under OAR 340-071-0150 and be free of encumbrances, such as easements or deed restrictions, that could prevent the installation or operation of the system from conforming with the rules of this division.

- Minimum lot size requirements. The lot or parcel must have sufficient usable area available to accommodate an initial and replacement system. A replacement area is not required if the area will be serviced by a public sewerage system within 5 years.

- Property lines crossed: All or part of an onsite system, including areas for future repair or replacement, may be located on one or more lots or parcels different from the lot or parcel on which the facility the system serves is located. The lots and parcels may be under the same or different ownership:

    (a) For each lot or parcel different from and under different ownership than the lot or parcel served, the owner of the lot or parcel served must have a recorded utility easement and covenant against conflicting uses.

    (b) The easements and covenants must accommodate the parts of the system, including a 10-foot setback surrounding the areas for future repair or replacement, that lie beyond the property line of the facility served and must allow entry by the grantee, successor, or assigns to install, maintain, and repair the system;)

    (c) For each lot or parcel different from, but under the same ownership as, the lot or parcel served, the owner of the property must execute and record in the county land title records, on a DEQ-approved form.

- Minimum separation distance requirements. The proposed sewage disposal system must conform to minimum separation distance requirements from

groundwater supplies, wells, and surface public waters as identified in Table 1 of OAR 340-071-0220.

- Restrictions.
  - Approved treatment and dispersal required. All wastewater must be treated and dispersed in a manner approved under these rules.
  - Prohibited discharges of wastewater. A person may not discharge untreated or partially treated wastewater or septic tank effluent directly or indirectly onto the ground surface or into public waters
  - Increased flows prohibited. Owner may not connect a dwelling or commercial facility to a system if the total projected sewage flow would be greater than that allowed under the original system construction-installation permit.

- Operation and maintenance. Owners of onsite systems must operate and maintain their systems in compliance with all permit conditions and applicable requirements in this division and must not create a public health hazard or pollute public waters.

- Future connection to sewerage system. DEQ encourages placing plumbing in buildings to facilitate connection to a sewerage system in areas where a district has been formed to provide sewerage facilities.

- **Authorization to Use Existing Systems.** Property owner person may not place into service, reconnect to, change the use of, or increase the projected daily sewage flow into, an existing onsite system without first obtaining an approval.

- Changed use of system. A construction-installation permit is required to place into service or change the use of a system when projected daily sewage flows would increase by more than 300 gallons above the design capacity or by more than 50 percent of the design capacity of the system.

- Alternative systems. OAC 340-071-0135**.** The Department of Environmental Quality may approve new or innovative technologies, materials, or designs for onsite systems pursuant to this rule if it determines they will protect public health, safety, and waters of the state as effectively as systems authorized in this division. DEQ must base approval on one or more of the following:

- Decommissioning of systems. An owner must decommission a system when: (a) a sewerage system becomes available and the facility the system serves has been connected to that sewerage system; or (b) the source of sewage has been permanently eliminated.

- Requirements. The owner must have all tanks, cesspools, and seepage pits must be pumped by a licensed sewage disposal service to remove all septage and then fill those areas with sand or gravel.

- Variances. ORS § 454.657. Homeowner may apply for a specific variance from the particular requirements of rules relating to subsurface sewage disposal systems if strict compliance with the rule or standard is inappropriate for cause or because special physical conditions render strict compliance unreasonable, burdensome or impractical.

- **Wells**.
    - Permits, domestic wells, and exempt uses. Pumping groundwater under the exemption carries the same weight as a water right and has a priority date. ORS 537.545. Under Oregon law, all water within the state from all sources of water supply belongs to the public and a landowner must obtain a water right permit. However, if the water will be for beneficial use, the landowner will not need to obtain a permit.

        - Exempt uses, defined. Single or group domestic uses up to 15,000 gallons per day; stock watering; irrigation of any lawn or noncommercial garden of ½-acre or less, down-hole heat exchangers, single industrial or commercial development up to 5,000 gallons per day, irrigation of school property up to 10 acres in critical groundwater areas.

        - An exempt use is subject to the same privileges and restrictions as any water right permit or certificate and is subject to state water law.

        - Pumping groundwater under the exemption carries the same weight as a water right and has a priority date.

        - Exempted uses are on a per-property or per-development basis. Adding additional wells does not increase an exempt limitation (for example, adding a second well does not increase the irrigation exemption to more than ½-acre).

        - Exceeding the limit or changing to non-exempt uses requires a permit.

        - The Oregon Water Resources Department (OWRD) has the authority to regulate, reduce or stop groundwater withdrawals when they interfere with prior or "senior" water rights.

- Well Requirements.

    - Water supply well construction, standards. OAC 690-205-0005. Property owner must hire a licensed and bonded well contractor or obtain a landowner well permit to prior to constructing, altering, or abandoning a well.

- Wells must conform to construction, location and setback requirements of OAR 690-210.

  - Location requirements. A new water supply well may be constructed at the site of an abandoned septic tank or drain field one year after the septic tank or drain field is taken out of use.

  - Minimum separation distance requirements. OAR 690-210-0030. Wells must be placed at least 50 feet away from of a septic tank; at least 100 feet of a septic drainline or sewage disposal structure or facility, at least 50 feet away from a closed sewage or storm drainage system, at least 50 feet away from an animal feeding or holding area, at least 100 feet away from of any sewage sludge disposal area, at least 5 feet away from a permanent structure or the roof, eaves, or overhangs of a permanent structure.

- Post construction requirements.

  - Water well testing. Owner must test well water after completion by bailing, pumping, or air testing for a period of not less than one hour.

  - Recording requirements. New wells constructed in Oregon that do not require a water right must be recorded. Landowners are also required to submit a map showing the well location on the tax lot.

- Shared wells. The Oregon Health Authority's Drinking Water Services requires regular water quality testing on wells that serve more than three households.

Pennsylvania

Sewage and Septic.

- Regulation. In Pennsylvania, local municipalities are responsible for making sure sewage/ septic systems of (10,000 gallons or less) meet DEP requirements**.**

- 25 Pa. Code § 73**.** Standards For On-Site Sewage Facilities.

  - Requirements, restrictions generally.

    - Approval required. Any sewage treatment must be inspected, approved and covered by local sewage enforcement officer.

    - Prohibited discharges.

- Discharge from roof gutters, foundation drainage, floor drains not from sewage generating connections and surface runoff may not be discharged to a treatment tank; nor may the discharges be permitted to flow over an absorption area or spray fields.

- A sewage system may not discharge untreated or partially treated sewage to the surface of the ground or into the waters

- Liquid wastes, including kitchen and laundry wastes must be discharged to a treatment tank, except as specifically permitted.

➢ Site location/absorption area and septic tank requirements. §§ 73.12; 73.16; 73.31.

- Site location. A proposed absorption area or spray is considered unsuitable if (1) the slope of the proposed absorption area or spray field must greater than 25%; (2) it is in a floodway.

- Absorption areas and septic tank requirements for single family dwellings. Absorption areas and septic tank capacities for single family dwellings not served by a community sewage system must be based on a minimum flow of 400 gallons per day (gpd) for all dwellings having three bedrooms or less. The minimum flow of 400 gpd must be increased by 100 gpd for each bedroom over three.

➢ Minimum horizontal isolation distances. § 73.13. The onsite sewage disposal system and absorption field must conform to minimum horizonal distance requirements from property lines, streams, private water supplies and buildings. However, if conditions warrant, greater isolation distances may be required.

▪ Holding tanks. Must meet the requirements for septic tanks in § 73.31. Additionally, the minimum capacity of a holding tank is 1,000 gallons or a volume equal to the quantity of waste generated in 3 days, whichever is larger.

- Privies. Must be located at least 50 feet away from buildings or water supplies.

- Experimental and Alternative Systems for individual or community systems. § § 73.71; 73.72. May be considered to overcome specific site suitability deficiencies, or as a substitute for systems described in this chapter on suitable lots.

- **Wells.**

- Regulation, construction of water wells. Established by local counties and townships. Other than a few county or local ordinances, there are no statewide construction standards for private water wells in Pennsylvania.
- Monitoring wells and groundwater monitoring. PA uses "monitoring wells" to keep an eye on the quality of groundwater. Private well owners are responsible for the safety of their water.
- 17 Pa. Code § 47. Sets general requirements for drilling water wells.
  - Licensing Requirement exception for farmers and residential drillers. Work must be performed by licensed well driller unless the driller is a farmer or person drilling on his or her own residence.
  - Abandonment of well. § 47.8. When a well is to be abandoned, the water well owner must sent a notice of intent to abandon shall be sent to the Department of Environmental Protection at least 10 days before the well is sealed or filled.

Rhode Island

- **Sewage and Septic.**

- 250-RICR-150-10-6. Establishes Minimum Standards Relating to Location, Design, Construction and Maintenance of Onsite Wastewater Treatment Systems.

  - Requirements and restrictions, generally.

- Property owner must seek approval for any construction, modification, change in use, or repair of an onsite wastewater treatment facility.

  - Compliance with local regulations. Property owner must make sure he or she complies with applicable state and local regulations ordinances regarding the location construction, maintenance and design prior to submission to the Department of Environmental Management.

- Connections to public sewage system. §10-6.15. If a public wastewater system is available and reasonably accessible, an on-site wastewater system may not be installed and the property owner must connect to the public system.

  - Connections, when required. Additionally, an owner is required to connect their structure to a public wastewater system within a specified period of time if any of the following occur: (1) the on-site waste treatment system is failing; (2) the public wastewater system is reasonably accessible (3) the owner has permission to connect to the public wastewater system from the municipal authority.

  - Connections to existing sanitary sewer lines from facilities across city and town lines**.** R.I. Gen. Law § 45-24.5.6. Certain properties that rely on-site wastewater treatment systems that do not have existing connections to disposal facilities in their cities may construct a connection to sewer systems in nearby cities or towns if the operation in lieu of continuing to utilize their existing on-site wastewater treatment and disposal and maintenance complies with state regulations, the nearby town is closer than the than city or town sanitary sewer system where the property is located, the nearby municipality can handle the increased capacity, and there is no environmental detriment.

    -Exception: Exemption to this requirement may be granted for a system serving more than one (1) unit in a proposed subdivision or for any system requiring repair.

- Suitability determination of existing onsite treatment system. Required if: (1) Construction of a dwelling will result in increase in number of bedrooms beyond the number in the original State approval; (2) The sewage treatment facility is located within the Salt Pond or Narrow River Critical Resource Areas and installed prior to February 6, 2002, and does not utilize nitrogen reducing technology at the time of application and the applicant proposes building construction or renovation.

- Location requirements. All of the components of an on-site waste disposal treatment must be within the boundary of the property upon which the building or dwelling served by the system is located. Additionally, (1) applicant must own property or (2) have title to easement that is the subject of the application, or it must be the person who holds a valid purchase and sales agreement for said property.

- Capacity Requirements. An on-site waste water treatment system must be designed to dispose of the estimated maximum daily flow from the building(s) it serves in accordance with § 6.22.

- Minimum Setback Distance Requirements. The on-site treatment sewage facility must comply with minimum setback distances from water bodies, private wells and property lines identified in § 6.23.

- Cesspools. Not an approved method of wastewater disposal under these rules, and all existing cesspools are considered to be substandard.

- **Wells.**
  - Regulation. R.I. Gen. Laws §§23-1-5.3. The State regulates private drinking water systems and establishes specific guidelines through the Office of Private Well Water Contamination.
  - Compliance. Private wells must comply with the state standards for well potability. Rule 216-RICR-50-05 § 2.11.
    - Local communities may apply more stringent requirements.
  - New Private Water Systems. Rule 216-RICR-50-05 § 2.12.
    - Prior to being placed into service, the local building official shall classify all new private water systems or existing systems with new

sources as commercial/mixed use, multi-family residential, single/duplex residential rental, or individual.

- Owner is required to test well water:
  (1) when a new well is installed that would serve as a new source to a building.
  (2) before receiving a Certificate of Occupancy for the building it is intended to serve;
  (3) before receiving a local well record permit.

- Well construction requirements, restrictions.

  - Well drillers and pump installers must be licensed by the state. 440-RICR-10-00-6.6.

  - New wells must comply with the Rhode Island Plumbing Code and Contractors' Board well construction regulations.

    - New wells can only be installed in areas that are not already served by a public water system.

    - Minimum setback distances. New wells must comply with the minimum setback distances from pollution sources identified in 510-RICR-00-00-3.5 §603.2.

    - Potable water service pipes shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields, or seepage pits.

- Sales of property serviced by private wells.

  - Disclosure Requirements. R.I. Gen. Laws § §23-1-5.3. Private well owners are required to disclose the results of any previous well water testing prior to sale or lease of a property upon which the well(s) are located or serviced.

  - Testing Requirements. 216 RICR-50-2.12; R.I. Gen. Laws § 5-20.8-12. Buyers have 10 days to conduct testing of a water well subject to the sale of property. The prospective buyer shall pay for the

collection and analysis of the water samples and a qualified opinion relating to the portability of the water, unless otherwise agreed in writing. The purchase and sale contract must specify this testing provision.

- Remedies. Failure to include the testing provision or failure to provide results of any previous testing will not create a defect in title; however, the purchaser may void the purchase and sale agreement by providing notice, in writing, to the seller prior to the transfer of the title at the closing. The purchaser is also allowed to void the purchase agreement if contaminant levels in excess of minimum standards are found in the water well.

South Carolina

- **Sewage and Septic.**

- Regulation. Sewage and septic regulated by the Department of Health and Environmental Control (DHEC).

- SC Code § 44-55-610 (2018), Water Sewage, Waste Disposal; R 61-56, Regulation of On-Site Wastewater Treatment Systems.

  - Requirements, restrictions, generally.

    - Permits. § 44-55-40; R. 61-56 § 103.2(1) Permits required from the DHEC to construct, upgrade, expand, or operate an OWS. The system must be constructed and operated in congruence with the specifications and requirements set out in the regulation.

      - Change in use of existing system. Additions or alterations to a dwelling that will result in increased wastewater flow to an existing system also require a permit. If the use of a dwelling or facility is changed such that additions or alterations are proposed which increase wastewater flow, change wastewater characteristics, or compromise the integrity or function of the system, a permit is required.

- License requirement exemption for personal use of an onsite sewage treatment and disposal system. R. 61-56.1 § III. A professional installer must be licensed by the DHEC, but a landowner may construct or repair his or her own system for personal use without a license.

- Connections to a public sewerage system must be unavailable. R. 61-56 § 300. The construction of a new on-site waste disposal system or the repairs to a failing system not permitted where there is an available connection to a public wastewater treatment facility.

  - Systems serving more than one (1) piece of deeded property. Permit for sewage treatment must comply with a plan or plan amendment approved under section 208(b) of the Clean Water Act.

  - Lot not accessible to a sewer line. If a lot or parcel of land on which an owner intends to construct a dwelling is not accessible to a sewer line and the lot is also unsuitable to accommodate a septic tank or other individual sewage disposal system, the owner of the property is entitled to notice of corrective measures taken to remedy the sewage problem.

- Electricity may not be furnished to the to the dwelling unless the sewage disposal method has been approved. SC Code §44-55-820.

- Site conditions, setback requirements. R. 61-56 §103(3). The area of the lot or plot of ground where the onsite wastewater system is to be installed must be of sufficient size so that no part of the system, excluding solid pipes will be (a) within five (5) linear feet of a building, or under a driveway or parking area; (b) within seventy-five (75) linear feet of a private well; (c) within one hundred (100) linear feet of a public well; within 75 feet of tidal waters; within 5 feet of property lines.

  - Repair area required. The lot must be of sufficient size to accommodate a repair area for the disposal system.

- Discharge of waste to ground surface or water prohibited.

- Privies. SC Code §44-55-230. Privies must be maintained in sanitary manner.

- **Wells.**

  - Regulation. The South Carolina Department of Health & Environmental Control ("DHEC") and the Bureau of Water ("BOW"), regulates private wells.

  - DHEC Reg. 61-44. Individual Residential Well & Irrigation Well Permitting; DHEC 61-71; Well Standards.

    - Construction Requirements, generally.

      - Licensed well driller required to drill, construct, or close up an abandoned well.

      - Permits. Permits required for the construction and replacement of all wells.

        - Exception, emergency well replacement. A well driller may replace an existing individual residential well immediately when an emergency exists. An emergency is deemed to exist when an existing individual residential well has suddenly been rendered useless or the water quality is not fit for human consumption and a replacement well is needed to provide a potable water supply.

      - Identification requirement. All wells must be properly labeled with an identification plate immediately upon well completion.

      - Water well record. After construction, a water well record form must be submitted to the BOW.

    - Location, setback requirements. R. 61-71 § E. The location of wells must conform to minimum setback requirements from pollution sources and water bodies including sewer lines and septic tanks.

Wells must be placed at least 75 feet away from septic tanks, 50 feet from lakes and streams, and 20 feet from sewer lines.

- Operation and maintenance requirements.

  - All wells must be operated and maintained so as to protect underground sources of drinking water from contamination and to protect public health.

  - The well owner is responsible for routine maintenance and operation of the well and to ensure that the groundwater source is protected from contamination. This includes when conducting repairs on the well or well pumps.

  - Once the well driller has provided a properly constructed well to the well owner, the well driller is not responsible for normal wear of the well.

- Well Abandonment. R. 61-71 §F.14. When any well is removed from service or prior to putting in service, the well shall be sealed with a watertight cap or seal. The well must be maintained such that it is not a source or channel of contamination while it is not in service.

- Bored individual residential and irrigation wells. R. 61-71 § G. Water used in the drilling process shall be obtained from a source that will not result in chemical or biological contamination of any aquifer. Water taken directly from ponds, lakes, streams, or other surface water sources shall not be used.

South Dakota

- **Sewage and Septic.**

  - Sewers on private property. Section 9-48 §§ 4, 16, 18.

    - Municipality may construct, maintain, or authorize the construction and maintenance of sewer pipes on private property so long as it can be done without creating any foul or noxious odors in the air over or along such stream.

- Municipality may also purchase, lease from the owners any sewer main or mains laid in, on or under any street or alley or otherwise located in any municipality.

- Private sewers. If any person has constructed within any street or alley a private sewer that is wholly or partly within any district the municipality, they may purchase the sewer or any part of the sewer and assess the cost to the property fronting or abutting upon the property.

- Property owner's rights. If the owners of a majority of the real property fronting or abutting on a sewer prior to such resolution becoming effective file a written protest against such purchase, the municipality will not have power to purchase the same.

- SDAD § 74:53. Individual and small on-site wastewater treatment systems.

  - Compliance. §74:53:01:06**.** All on on-site wastewater treatment systems constructed after February 28, 1975 must comply with these regulations.

    - On-site wastewater treatment systems constructed prior to February 28, 1975. Exempt from these regulations unless the systems are changed, the systems cause the groundwater to become polluted, or the systems are allowing wastewater to surface.

  - Acceptable types of water-carriage wastewater systems. §§ 74:53:01:09; 74.53:01:10. An individual or small on-site water-carriage wastewater system may use (1) a conventional system consisting of a septic tank, (2) an aerobic system, (3) a holding tank, (4) a septic tank with a graywater system, or (5) stabilization ponds, provided plans and specifications are approved.

    - Unconventional systems to be used when water or electrical systems unavailable. Vault privies, chemical toilets, incinerator toilets, or composting units shall be used when a water or electrical system is not available. With the exception of vault privies, all unconventional systems are considered experimental systems, and

plans and specifications shall be submitted to the secretary for approval as an experimental system prior to installation.

- Approval and review of plans by the Department of Agriculture and Natural Resources. Not required for the installation and design of conventional on-site wastewater systems unless the system will deviate from requirements in SDAD § 74:53.

- On-site wastewater systems prohibited when public wastewater systems are available. § 74:53:01:07. An owner may not construct, install, or operate an on-site wastewater system where a public wastewater system is available.

  - Available defined: (1) the structure or wastewater system is located within the jurisdictional boundaries of a municipality or sanitary district; (2) the sewer collection system of the public entity exists within 400 feet of the home; and (3) the municipality or sanitary district requests to provide service to the premises.

- Minimum lot requirements. § 74:53:01:16.

  - A water-carriage wastewater system may not be installed or operated on a lot which is smaller than 20,000 square feet in surface area.

  - Potable water on lot. A water-carriage wastewater system may not be installed or operated on a lot which is smaller than 43,560 square feet (1 acre) when potable water is supplied by a private water supply system located on the lot.

  - A water-carriage wastewater treatment system may be installed and operated on a lot which is 20,000 square feet in surface area or larger if the minimum separation distance requirements are met and the premises are supplied by a public water supply system, a private water supply system not located on the lot, or by hauling and storage of potable water in a cistern.

  - Exception. § 74:53:01:05. Existing subdivisions and developments exempted from lot size requirements. Housing subdivisions and housing developments platted before February

28, 1975, are exempt from the lot size requirements provided they comply with other provisions of SDAD § 74:53.

- Location, separation distance requirements. § 74:53:01:19. An on-site wastewater treatment system must comply with the minimum separation distance requirements from potential sources of contamination, wells and water bodies.

- Prohibited discharges.

  - Landowner may not discharge wastewater on ground water surfaces unless the system is a greywater system.

  - Landowner may not discharge treated or untreated, wastewater into any abandoned or unused well.

- Abandoned wastewater systems. § 74:53:01:11. Abandoned wastewater systems must be disconnected from buildings or facilities, pipes plugged, and receptacles dismantled or removed; and any void space in which such receptacles were contained shall be filled with soil.

- Property transfers, disclosure requirements. S.D. Codified Laws § 43-4-44. If the property has a septic tank, the seller must report any drainage/leakage/runoff from it. Additionally, if there is a septic/leaching field, the seller must report if it is working or not and the age of the system if known.

- **Wells**
  - Groundwater, Water Rights, and Wells. S.D. Codified Laws § 46-5, Appropriation of Water; S.D. Codified Laws § 46-6, Groundwater and Wells.

    - Permits not required to construct domestic wells. § § 5-8.0; 8.2. A landowner wishing to make reasonable domestic use of water from any source may do so without obtaining a permit from the Water Management Board, unless the water use will exceeds either 25,920 gallons per day or a peak pump rate of 25 gallons per minute.

- Domestic use, defined. Examples of domestic water uses are: 1) drinking, washing, sanitary, and culinary uses by an individual or household, 2) irrigation of a noncommercial garden, trees, etc. not exceeding one acre in size, 3) stock watering, and 4) 18 gallons per minute for use in schools, parks, and public recreation areas.

- Well registration. Landowner may then register a domestic well with the board to document the location and output of their water supply and the quality of its water.

- Priority of water rights. The first in time is the first in right. The priority of the appropriation will date from the time of filing of the application therefor in the office of the Water Management Board.

- Transfer of water rights; approvals, consequences. § 46-5-34.1.

  - Irrigation rights may be transferred or leased, in whole or in part, apart from the land to which they are appurtenant if they are transferred for domestic use.

  - No transfer, however, may be approved by the Water Management Board unless the transfer can be made without detriment to existing rights having a priority date before July 1, 1978, or to individual domestic users.

  - No land which has had an irrigation right transferred from it pursuant to this section, may qualify for another irrigation right from any water source.

- Forfeiture of water rights for failure to make beneficial use. § 46-5-37. If the landowner fails to use beneficially any part of the water for the purpose for which it was appropriated for a period of three years, the unused water shall revert to the public and shall be regarded as unappropriated public water.

- Property condition disclosure statement. S.D. Codified Laws § 43-4-44. If the property has a well and pump, the seller must report whether it is working or not and age of system if known.

- Well construction standards. SDAR 74:02:04.
  - Apply to all wells constructed, rehabilitated, or rebuilt after July 16, 1992.
  - Construction restrictions and general prohibitions.
    - Well may not draw from more than one aquifer, unless approved. No well may be constructed to allow production from more than one aquifer unless approved by the chief engineer or the water management board.
    - Whitewood Creek and sections of Belle Fourche River, geographical floodplain restriction. § 74:02:04:26. No well may be constructed in the 100-year flood plain of Whitewood Creek from the Crook City Bridge and the Belle Fourche River, Butte County, in the northeast quarter of the northeast quarter of section 24.
      - A variance may be granted from this section if it is shown that a well in this location will not be contaminated from tailings deposits and will not cause groundwater pollution.
  - Well locations. § 74:02:24.
    - Wells less than 100 feet deep. Must be placed at least 150 feet horizontally from a pollution source, 75 feet horizontally from wastewater system components, or 30 feet horizontally from sewer lines.
    - Wells over than 100 feet deep. Must be placed at least 100 feet horizontally from a pollution source, 50 feet horizontally from wastewater system components, or 30 feet horizontally from sewer lines as defined.
    - All wells. Must be located a minimum of 10 feet horizontally from permanent structures and overhead projections of the structure and 10 feet horizontally from overhead power lines.

They must also be easily accessible for cleaning, repair, disinfection, acidizing, and inspection.

- Well owner's responsibilities. The owner or equitable property holder must keep the well capped or covered, in good repair, and in a sanitary condition. If the well is flowing, the owner or equitable property holder must control the flow to the amount necessary for reasonable domestic use or to the amount authorized by the water permit or right.

Tennessee

- **Sewage and Septic.**

  - Regulations. Tenn. Comp. R. & Regs. 0400-48-01**.** Regulations To Govern Subsurface Sewage Disposal Systems; Tenn. Code Ann. § 68-221-401-419. Subsurface sewage disposal system (SSDS).

    - Requirements and restrictions, generally.

      - Permits. Tenn. Code § 68-221-406; Tenn. Comp. R. and Regs. § 0400-48-01-.06. Property owner may not construct, alter, extend or repair subsurface sewage disposal systems without first acquiring a valid construction permit issued by the Office of Environment and Conservation. The permit is valid for three years from the date of issuance.

        - Connections to public sewers. § 68-221-409. A permit for a subsurface sewage disposal system will not be denied solely because a public sewer system is accessible if property owner cannot make additional connections to the public sewer system or the applicant has been delayed from connecting (placed on a waiting list) to the public sewer system.

        - Home construction, electrical inspector notification requirement. Any person who intends to construct or a house or establishment, mobile or permanent must provide proof to the official electrical inspector that he or she has applied for a

subsurface sewage disposal system construction permit has been made or that the house or establishment is served by a public sewer system.

- Exception. Farm buildings or other buildings which are not connected to a public sewerage system or a subsurface sewage disposal system.

- Septic Tank Capacities. For residences, the liquid capacity of the septic tank must be based on the number of bedrooms as identified in § 0400-48-01-.08. For a four-bedroom home, the minimum septic tank capacity required is 1000 gallons. Each additional bedroom requires an additional 250 gallons.

- Location, setback requirements. § 0400-48-01-.11. The location of septic tanks and disposal fields must comply with minimum horizonal distance requirements from water supply sources, easements, property lines and dwellings.

- Maintenance requirements, system failures. § 0400-48-01-.13. It is the property owner's responsibility to maintain the system in a safe and sanitary manner. Should the system malfunction, the property owner has 30 days to repair or replace the system.

  - Access to property. § 68-221-405. Property serviced by subsurface sewage disposal system must provide free access to the property at reasonable times by State inspectors to determine if the system is in compliance with these regulations.

- Subdivisions.

  - Approval of plans, variances. § 68-221-410; § 0400-48-01-.03. Subsurface sewage disposal require approval. Any person whose subdivision plan has been disapproved or whose application for a subsurface sewage disposal system permit has been denied under this part and the rules and regulations promulgated pursuant to this part, may request in writing that a variance be granted by the commissioner.

- Lot Size - Lots must be large enough to construct the original subsurface sewage disposal system and to provide an area for duplication of that system. Suitability of the site must also be demonstrated.

- Transfers of property/disclosure requirements.

  - Potential future connections to public sewage system. § 68-221-409. In any transfer by sale, exchange, contract, or lease with option to buy residential real property consisting of not less than one nor more than four dwelling units, including site-built and nonsite-built homes, which is serviced by a subsurface sewage disposal system installed, the Seller must disclose potential future obligation to connect to the public sewer system to the Buyer.

    - Improvements. Tenn. Code § 68-221-418 . The Seller is required to disclose any improvements made to the pre-existing subsurface sewage disposal system on the residential property to the buyer.

- Experimental systems. § 48-01-.16. Experimental methods of treatment and disposal of sewage must be approved by the Department of Environment and Conservation.

- Pit privies, composting toilets. § 0400-48-01-.17.

  - When permitted. Not permitted for a facility which has running water available unless there is an acceptable means to dispose of wastewater.

  - Location. Pit privies must be located at least fifty 50 feet from a water supply and 10 feet from any habitable building or property line.

- **Wells.**

- Well construction requirements. Tenn. Code Ann. § 69-10-111; Tenn. Comp. R. & Regs. 0400-45-09-.10. Water Well Licensing Regulations and Well Construction Standards.

    - Well construction requirements, generally.

        - Notification of intent to drill. Tenn. Comp. R. & Regs. 0400-45-09-.10. Property owner must notify the Department of Environment and Conservation (DEC) of intent to drill a well and payment of a fee is required.

        - Work must be performed by a licensed contractor.

        - Source of Water Supply. The source of water for any well must be at least nineteen (19) feet below the surface of the ground. In the event that no other ground water source is available, a source of less than nineteen (19) feet deep may be developed provided that the well owner/driller notify the Division of Water Resources Central prior to the construction of the well.

        - Source of water, restrictions. Tenn. Comp. R. & Regs. 0400-45-09-.10. Water used during the construction of a water well must be from a public water supply, water well or protected spring box. Well owner may not use water ponds, lakes, streams or other surface sources shall not be used as source of well water.

        - Location, minimum setback requirements for wells. Tenn. Comp. R. & Regs. 0400-45-09-.10.

            - Location. The well site should not be subject to flooding. If site conditions make it necessary to construct a well in an area subject to flooding, the watertight casing should extend at least two (2) feet above the 100-year flood elevation. The well should not be constructed in pits, basements or in areas where future construction may take place.

            - Setback requirements. The well must be situated at least 10 feet from a property line; 100 feet from sewage lagoons and

leaching pits, 100 feet from animal pens and septage disposal sites; 75 feet from pit privies, 50 feet from sewer lines and septic tanks and drain fields; and 10 feet from the septic tank connection tightline to the home.

- Registration requirement for new wells. The owner must register the well after construction. Tenn. Comp. R. and Regs. 0400-45-09-.14.

- Well abandonment. Existing wells on property no longer in service or those that which may pose a threat to ground water must be properly backfilled and abandoned in accordance with the requirements identified in Tenn. Comp. R. & Regs. 0400-45-09-.16.

- Property transfers, no State water testing requirement for water wells on property. The State of Tennessee does not have requirements for sampling and analysis of private water supplies. Buyers may be required to test well water pursuant to individual lender requirements.

Texas

- **Sewage and Septic.**

- 30 Tex. Admin. Code § § 285. All on-site sewage treatment facilities (OSSF) must comply with permitting, operation, design, inspection requirements set forth in these Regulations.

  - Compliance Exceptions. 30 Tex. Admin. Code § 285.7(c).

    - Lots of land ten acres or larger. No planning materials, permit, or inspection are required for an OSSF for a single-family dwelling located on a tract of land that is ten acres or larger and (1) the OSSF is not causing a nuisance or polluting groundwater; (2) all parts of the OSSF are at least 100 feet from the property line; (3) the effluent is disposed of on the property; (4) the single family dwelling is the only dwelling located on that tract of land.

    - Systems installed prior to September 1, 1989. An owner of an OSSF will not be required to comply with the permitting,

operation, and installation requirements if the OSSF is not creating a nuisance and: (1) The OSSF was installed before September 1, 1989; (2) The system has not been altered and is not in need of repair; (3) the owner received authorization to construct from a local government authority before June 13, 2001.

- Requirements and restrictions, generally.

  - Permits. § 285.3. Local governmental authority must approve all plans for the construction, alteration, repair, extension, or operation of an on-site sewage facility (OSSF). A site evaluation of the proposed plan is also required.

  - Unauthorized systems. Boreholes, cesspools, and seepage pits are prohibited for installation or use. Additionally, boreholes, cesspools, and seepage pits that treat or dispose of less than 5,000 gallons of sewage per day must be closed in accordance with the proper abandonment requirements specified in § 285.36. *See* Abandonment, *infra*.

  - Maintenance contract requirements. 30 Tex. Admin. Code § 285.7. A maintenance contract is required for all on-site sewage facilities for a period of two years. The owner or owner's agent must provide the permitting authority with a copy of the executed initial two-year service policy before the OSSF is approved for use.

    - Newly constructed dwelling. The maintenance contract begins from the date of sale by the builder.

    - Newly installed or repaired systems on an existing single family dwelling. The maintenance contract begins on the date the notice of approval is issued by the permitting authority.

    - Termination of maintenance contract. At the end of the initial two-year service policy, the owner of an OSSF of a single-family residence must either maintain the system personally or obtain a new maintenance contract.

- Sales of property prior to expiration of maintenance contract. 30 Tex. Admin. Code § 285.7(d)(4)(A). If the residence is sold before the end of the initial 2-year service policy period, the initial service policy applies to the subsequent owner.

- Location requirements for sewage disposal systems. § 285.39. Owners may not build driveways, storage buildings, or other structures over the treatment or disposal systems.

- Minimum horizonal setback distance requirements. All on-site sewage treatment disposal systems must conform to the minimum setback distance requirements identified in Table X of § 285.5(a). (setbacks from private water lines, wells, property lines, easements, streams, foundations).

- Emergency repairs of existing OSSFs. §285.35. An emergency repair may be made to an on-site sewage facility (OSSF) providing that the repair: (1) is made for the abatement of an immediate, serious, and dangerous health hazard; and (2) does not constitute an alteration of that OSSF system's planning materials and function. Owners must notify the permitting authority, in writing, within 72 hours after starting the emergency repairs.

- Abandonment. § 285.35. A tank that is not to be used again for holding sewage must be abandoned by the owner.

  - Abandonment requirements. To properly abandon, the owner must pump all tanks, boreholes, cesspools, seepage pits, holding tanks, and have the water removed by a waste transporter.

- Subdivisions located on the Recharge Zone of the Edwards Aquifer, special requirements for OSSFs. § 285.40.

  - Minimum lot sizes. Each lot or tract of land on the recharge zone on which OSSFs are to be located must have an area of at least one acre (43,560 square feet) per single family dwelling.

    - Exceptions. Lots platted and recorded with the following counties in their official plat record, deed, or tax records

before the date indicated in this subsection, are exempted from the one-acre minimum lot size requirement:

(1) Kinney, Uvalde, Medina, Bexar, and Comal Counties--March 26, 1974;
(2) Hays County--June 21, 1984;
(3) Travis County--November 21, 1983; and
(4) Williamson County--May 21, 1985.

- Notice to buyers. Any owner who divides his or her property into two or more residential lots, on which any part of the OSSF will be on the recharge zone, must inform, in writing, each prospective purchaser, lessee, or renter (1) which lots within the regulated development are subject to the terms and conditions of this section; (2) that an authorization to construct is required before an OSSF can be constructed in the subdivision; (3) that a notice of approval is also required for the operation of an OSSF; and (4) whether an application for a water pollution abatement plan as defined in 30 TAC 213 (applies to 5 acres or more subdivisions) has been made or approved.

- **Wells.**

  - Regulation of underground water. Tex. Water Code § 28.011. The Texas Natural Resource Conservation Commission regulates and enforces rules and regulations for protecting and preserving the quality of underground water.

  - 16 Tex. Admin. Code § 76. Establishes regulations and standards for construction, operation, and abandonment of water wells.

    - Wells drilled prior to June 1, 1983. § 76.105. Unless abandoned, these wells shall be grandfathered from these Regulations without further modification unless the well is found to be a threat to public health and safety or to groundwater quality.

    - Construction of wells, general requirements.

- Location and minimum setback requirements. 16 Tex. Admin. Code § 76.100 .

  - Flooding. A well shall be located at a site not generally subject to flooding. If a well must be placed in a flood-prone area, it must be completed with a watertight sanitary well seal.

  - Minimum setback requirements. Wells must be located a minimum of 150 feet from any concentrated sources of potential contamination (e.g., livestock/poultry yards, cemeteries, and privies), a minimum of 100 feet from an existing or proposed septic system absorption field, septic system spray area, poultry facility, and 50 feet from any adjacent property line "provided the well is located at the minimum horizontal distance from the sources of potential contamination."

    Exception to minimum setback requirement for property lines. A well driller is not required to adhere to the property line if (A) the well is located in a groundwater conservation district and district rules regulate the spacing of wells; (B) the well is on property with restrictions regulating spacing of wells and on-site sewage systems; or (C) public wastewater treatment is provided and used by property owner.

- Well owner's responsibility. 16 Tex. Admin. Code § 76.103. The well owner shall have the continuing responsibility of ensuring that a well does not allow the commingling of injurious water with fresh water through the wellbore to other porous strata.

- Plugging and casing of water well, when required. Tex. Water Code § 28.012; 16 Tex. Admin. Code § 76.104. Owner of a water well which encounters salt water or water containing mineral or other substances injurious to vegetation or agriculture must plug or case the well to prevent contaminated water from escaping.

- Variances. 16 Tex. Admin. Code § 76.109. A well owner may apply for a variance of these Regulations when landowner or well driller cannot meet any requirements set forth.

Utah

- **Sewage and Septic.**

  - Utah Admin. Code § 317-4. Regulations applicable to on-site wastewater systems.

    - General standards, prohibitions, requirements. Utah Admin. Code § 317-4-3.

      - Construction of on-site systems. Require plan approval from the Utah Division of Water Quality or the local health department.

      - Feasibility. If property characteristics indicate conditions that may fail in any way to meet the requirements specified in these Regulations, the use of onsite wastewater systems is prohibited. prohibited.

      - No connection to public sewer system, onsite wastewater system required. When a public sewer connection is not available to receive wastewater from a dwelling, the dwelling must be connected to an adequate onsite wastewater

      - Prohibited flows and discharges.

        - Flows that will impair the system. Property owners may not discharge ground water drainage, drainage from roofs, roads, yards, or other similar sources into any portion of the onsite wastewater system, and must disposed of them so as to not affect the system. Non- domestic wastes such as chemicals, paints, or other substances that are detrimental to the proper functioning of an onsite wastewater system may not be disposed of in such systems.

- Increased flows prohibited. An owner may not connect or expand the use of a single-family dwelling or nonresidential facility connected to an existing onsite wastewater system if the projected wastewater flows would be greater than the original design flow unless the owner has received approval from the Utah Division of Water Quality or the local health department.

- Discharge to surface waters or ground surface. Effluent from any onsite wastewater system may not be discharged to surface waters or upon the surface of the ground. Wastewater may not be discharged into any abandoned or unused well, or into any crevice, sinkhole, or similar opening, either natural or artificial.

- Repair of a malfunctioning system. If a local health department determines that a malfunctioning system creates or contributes to any dangerous or unsanitary condition that may involve a public health hazard, or noncompliance with this rule, the owner must take remedial measures.

- Location requirements, easements. Systems, including replacement areas, must be located on the same lot as the building served unless the owner has an approved perpetual utility easement and right-of-way on an adjacent or nearby lot for the construction, operation, and continued maintenance, repair, alteration, inspection, relocation, and replacement of an onsite wastewater system. The easement must:

  (1) Include all rights to ingress and egress necessary or convenient for the full or complete use, occupation, and enjoyment of the granted easement;

  (2) Be large enough to accommodate the proposed onsite wastewater system and replacement area;

  (3) The easement shall meet the setbacks specified in Section R317-4-13 Table 2. *See* Minimum setback requirements, *infra*.

- Minimum setback requirements. Building sewers, septic pumps and absorption field areas must conform to the minimum setback distances identified in § 317-4-13, Table 2.

- Maintenance of conventional systems. Utah Admin. Code 317-4-11. All conventional systems should be assessed after the first year of operation, and thereafter at the following minimum frequency:

  (1) Systems with daily flows between 1 and 3,000 gallons: every three years;

  (2) Systems with daily flows between 3,001 and 5,000 gallons: every two years.

- Multiple Dwelling Units. Utah Admin. Code § 317-4-3. Multiple dwelling units under individual ownership, except condominiums, may not be served by a single onsite wastewater system except unless the system is under the sponsorship of a state or its agencies or any political subdivision of the state.

- Experimental Systems. Utah Admin. Code § 317-4-9. Where unusual conditions exist, an owner may employ an experimental methods of onsite wastewater treatment and dispersal may be employed it is acceptable to the Utah Division of Water Quality or the local health department.

- Holding tanks. § 317-4-10. Permitted when:

  - An absorption system for an existing dwelling has failed and installation of a replacement absorption system is not practicable;

  - As a temporary, not to exceed one year, wastewater system for a new dwelling until a connection is made to an approved sewage collection system.

  - As a temporary, not to exceed one year, wastewater system that may include construction sites, labor camps, temporary mass gatherings, or emergency refuge sheltering; or

- For other essential and unusual situations where both the Utah Division of Water Quality or the local health department concur that the proposed holding tank will be designed, installed and maintained in a manner that provides long term protection of the waters of the state.

- Abandonment of on-site sewage disposal system.

  - Requirements, circumstances.

    (1) Connections to public sewer. When a dwelling served by an onsite wastewater system is connected to a public sewer, the septic tank must be abandoned and be disconnected.

    (2) Discontinuation of use. Whenever the use of an onsite wastewater system has been abandoned or discontinued, the owner of the real property on which such wastewater system is located must render it safe by having the septic tank, any other tanks, hollow seepage pit, or cesspool wastes pumped out or otherwise disposed of in an approved manner within 30 days.

- **Wells.**

  - Regulation. Utah Admin. Code R655-4; Water Wells; Utah Division of Water Rights.

    - Exclusions: Wells constructed at a depth of 30 feet or less are excluded from the Regulations.

  - Water rights and wells, generally. Utah Code §§ 73-3-2; 73-3-8. Utah's water law is premised on the concept that water is the property of the public and a right to use the water should only be maintained if the water is put to beneficial use. All landowners wishing to will a well on their property must first file an application to appropriate water from the State engineer.

- Water appropriation applications, considerations, requirements.

  - The landowner area must be open, restricted or closed to new water rights.

  - Prospective well owner must apply for approval for diversion/use of beneficial use of water.

    - Approvals. 73-3-8. Applications to appropriate water for the construction of wells will be approved if there is reason to believe that there is unappropriated water in the proposed source and the proposed use will not impair existing rights or interfere with the more beneficial use of the water.

    - Between appropriators, the one first in time is first in rights.

  - Forfeiture of water rights. Water rights which have not been exercised for a 7-year period are subject to forfeiture.

- Construction and permit requirements, generally. Utah Code § 73-3-25.

  - Drilling, construction, deepening, repair, renovation, replacement, or abandonment of wells. Must be permitted by the Utah Division of Water Rights and work must completed by a licensed well driller.

  - Cleaning, development, testing, and disinfection. Does not require a permit although work must be performed by completed by a licensed well driller or a licensed pump installer.

  - The installation and repair of pumps. Do not require a permit although work must be performed by completed by a licensed pump installer.

        - Repair or pump installation of property owner's own well. Utah Code § 73-3-25-2. A person who installs or repairs a pump in a well on the person's own property for the person's own use is not required to obtain a license under this section.

        - Local/municipal construction standards applicable. Many of the State's local health departments have also promulgated rules and requirements regarding well construction requirements.

    - Minimum separation distance requirements from contamination sources. Generally regulated at the local health department level or by another state agency.

    - Replacement Wells. Utah Code § 73-3-28. Refers to a new well drilled for the sole purpose of replacing an existing well which is impaired or made useless by structural difficulties and no new right in the use of water accrues An existing well may be replaced with a replacement well within a radius of 150 feet from the existing well without the filing of a change application under § 73-3-3, once approval is obtained. Upon completion of the new well, the old well must be plugged by the applicant in a manner satisfactory to the state engineer.

Vermont

- **Sewage and Septic.**

    - Regulation. The Wastewater Management Program of the Vermont Department of Environmental Conservation regulates the installation and maintenance of on-site wastewater treatment facilities.

    - Code Vt. R. 12-033-001; Applies to wastewater systems.

        - Requirements and restrictions, generally.

- Variances. Homeowner may apply for variances from these rules under certain conditions.

- Permits. § 1-301. Property owners need to obtain a permit from the Agency of Natural Resources to construct new wastewater treatment system or to repair a failing wastewater treatment system or water supply. A permit is also required when there is an existing wastewater system but there will be an increase in design flow or water or wastewater design flows due to either a modification to, or a change in use of, a connected building.

  - Increase in design flow of wastewater or potable supply systems. The following actions are presumed to not increase the design flow of any component of the potable water supply or wastewater system or modify other operational requirements of a potable water supply or wastewater system:

    (1) The addition of a home occupation to a living unit;

    (2) The construction of a new building or structure used solely for a home occupation conducted by the occupants of a living unit that is located on the same lot.

    (3) The addition of plumbing fixtures in a single-family residence.

    (4) The addition of a water storage tank for a single-family residence that is served by a potable water source that serves no other buildings or structures and no campground;

    (5) The addition of one or more bedrooms to a single-family residence with 3 or more bedrooms, that is served by a water service line that serves no other buildings or structures, and that is served by a sanitary sewer service line that serves no other buildings or structures,

- Notification requirement to adjacent property owners. Proposed projects may need to provide notification to adjacent property

owners when the water supply or wastewater system overshadows onto property not owned by the applicant.

- Permit conditions. A permit for a wastewater system may be conditioned on the completion of a groundwater sampling, effluent sampling, water metering, and water quality sampling program when determined that it is necessary to detect potential contamination and degradation of groundwater or surface water.

- Permits, sanitary sewer service lines. A permit that approves a sanitary sewer service line to discharge wastewater to a wastewater treatment facility must consider the capacity of the system to treat the wastewater conveyed by each building or structure to be served by the sanitary sewer service line.

- Clean Slate Permit Exemption**.** All buildings or structures, campgrounds, and their associated potable water supplies and waste-water systems that were substantially completed before January 1, 2007 and all improved and unimproved lots that were in existence before January 1, 2007 are exempt from permit requirements of this Section.

- Septic tank requirements. A wastewater treatment system must include a septic tank and a replacement area large enough to service repair the septic tank.

- Location requirements. The wastewater system must be physically connected to the building or structure it serves. However, the wastewater system serving a building or structure may be a wastewater system that is *not* physically connected to the building or structure provided the wastewater system is physically connected to a separate building or structure and the buildings or structures are on the same lot and not more than 500 feet apart.

- Floodways. No portion of a wastewater system, except a sanitary sewer service line or sanitary sewer collection line, may be located in a floodway.

- Location restrictions, sanitary sewer collection lines and sanitary sewer service lines. Sanitary sewer collection lines and sanitary sewer

service lines must be designed to avoid stream crossings when possible.

- Holding Tanks. § 1-928. May be approved when: (1) the building or structure is served by an existing wastewater system that has failed, or is expected to fail; (2) there is no other cost feasible alternative; and (3) a variance is sought and granted pursuant to § 1-802.

- Separation Distance Requirements. Wastewater systems and replacement areas must comply with the minimum separation distance requirements identified in 1-912. These requirements vary depending on whether the wastewater system contains an at grade or mound leach field.

- Alternative systems. § 1-405. When site limitations that would otherwise not allow for the construction of a wastewater system on the property or to decrease the size of a wastewater system, the property owner may apply for approval of an alternative/innovative system. These systems have specific permit conditions associated with their installation and operation.

- Discontinued systems. § 1-930. A wastewater system that is no longer serving a building or structure or campground, may remain in place, provided all tanks, including the septic tanks, pump stations, and dosing siphons, are: (1) pumped; and (2) broken in-place or filled with soil.

- Septic tanks and property transfer requirements. 10 Vt. Stat. 10 §§ 1921-1936; Underground Storage Tank Regulation.

  - Notice to buyers of septic tanks on property. 10 Vt. Stat. Ann. 1925. Septic tank owners are required to record the existence and location of the underground storage tank in local land records so future purchasers will know of its existence.

  - Septic tank closures, responsibilities. 10 Vt. Stat. Ann. 1926(b)(1). Previous owner of septic tank (Seller) is responsible for the closure of septic tank before its use was discontinued, unless Buyer of the property where tank is located knew or had reason to know that the tank existed, prior to the purchase of the property.

- Unknown owners. If the persons set forth are unknown or cannot be contacted, or if the person who owns the land cannot access the tank, "the person owning the land on which the tank is located, upon direction of the Secretary, shall close the tank."

- "Diligent and appropriate investigation." If the person owning the land establishes that there was a "diligent and appropriate investigation" that he or she did not know of the existence of the tank; gives "all reasonable assistance" in closing the tank; and the Agency of Natural Resources directs the landowner, in writing, to close the tank and the person does so.

- **Wells.**

  - Regulation. Code Vt. R. 12-033-001; Applies to Potable Wells; 10 Vt. Stat. § § 1416-1418; Groundwater Withdrawal Program.

    - Permits. 10 Vt. Stat. § 1418. No groundwater withdrawal permit required for the withdrawal of groundwater for domestic, residential or agricultural use.

      - However, property owners need to obtain a permit from the Agency of Natural Resources to construct a new water supply, or if there will be an increased flow of water to an existing potable water supply.

      - Water sampling requirement. § 1-1113. When a permit authorizes the construction, modification, or results in increase in flow of potable water, the well owner must sample the potable water for contaminants prior to using water from the well.

        - Seeking new potable water source recommended if contaminants are detected. The owner of a potable supply source serving only *one single-family residence* is not required to seek a new potable water source when contamination is identified, but it is recommended that the owner do so.

- Requirements and restrictions, generally. Code Vt. R. 12-033-001, § 1102.

  - Well may only serve single family residence. A surface water potable water source may serve only one building or structure that is a single-family residence occupied by the owner of record.

  - Well must not interfere with other water sources. The well must not have sufficient yield to meet the design rate without adversely interfering with existing or permitted public water sources or potable water sources.

  - Location, source siting requirements. § 1-1103. A potable water source cannot be located:

  (1) In a floodway;

  (2) In Zone 1 of a Public Community Water System Source Protection Area.

  - Flood hazard areas. If a well is located in a flood hazard area, it must be designed and constructed in a manner that avoids impairment to the source and contamination of the source during flooding.

  - Well must maintain minimum setback distances from potential sources of contamination. All components of the potable water source must comply with the minimum setback requirements identified in Tables 11-1 and 11-2 § 1-1104 from potential sources of contamination and other structures, unless a reduction to the isolation distance has been approved.

    - Setback reduction considerations. In determining whether to authorize the use of a reduced isolation distance or isolation zone between a potable water source and a potential source of contamination, the Agency of Natural Resources may consider the following factors:

(1) the constituents of the potential contamination; (2) the expected soil treatment; and (3) site specific conditions.

- Cross connection restrictions. § 1-1112. There may be no connection between: a potable water source and any component of a public water system; a potable water and an irrigation well; a potable water source and a geothermal system; or a potable water source and any pipes, pumps, or tanks that would allow non-potable water or contaminants to be discharged or drawn into the well.

- Closure of Potable Water Sources. § 1-1115. Potable water sources that are no longer serving a building may be required to be sealed to prevent possible contamination of the aquifer or to otherwise protect human health and the environment.

  - When licensed driller is required. If the well is 20 or more feet deep, the closure of the well must be performed by a well driller.

Virginia

- **Sewage and Septic.**

  - Regulation. On-site sewage disposal systems are regulated by the Virginia Board of Health.

  - Va. Code § 32.1-163. Environmental Regulations Applicable to the Handling and Disposal of On-site Sewage; 12 VAC 5-610. Sewage Handling and Disposal Regulations.

    - Requirements and prohibitions, generally.

      - Permits, site evaluations. 12 VAC 5-610-75; 12 VAC 5-610-240; Va. Code § § 32.1-163.5; 32.1-164.1:3. An owner wishing to construct, modify or alter an on-site sewage disposal system is required to obtain a sewage disposal permit. Permits are valid for 18 months. Owner for a sewage disposal system who does not

intend to build within 18 months of application must apply for a certification letter.

- Systems using subsurface soil absorption systems. 12VAC5-610-600. Permits for sewage disposal system permits for private residential systems utilizing subsurface soil absorption will be granted whenever such permits can be granted without endangering public health.

- Grandfathered lots may be issued conditional permits. Any lot upon which no permit has been issued and which is in a subdivision approved by the local health department prior to July 1, 2000, in accordance with a local subdivision ordinance is considered "grandfathered" and may be issued a conditional permit even if it does not substantially comply with provisions of 12VAC5-610.

- Sewers, location requirements. 12 VAC 5-610-770. Sewers passing within 50 feet of a nonpublic drinking water supply well or other nonpublic drinking water supply source shall have special construction and pipe materials to provide adequate protection. The sewer may not come within 10 feet of a nonpublic drinking water supply source.

  - Certain discharges prohibited. 12 VAC 5-610-80. An owner may not discharge of untreated sewage onto the land or into surface waters.

  - Tank capacity. 12 VAC 5-610-815. In no case shall the septic tank capacity be less than 750 gallons for one- or two-bedroom dwellings. For three bedrooms, the minimum tank capacity required is 900 gallons; for four bedrooms, 1200 gallons; for five bedrooms, 1500 gallons.

  - Minimum setback distance requirements. 12 VAC 5-610-592. The components of an on-site wastewater treatment system must maintain the minimum setback distances identified from pollution sources, water courses and structures. They must be located at least

25 feet away from public potable water lines, 10 feet away from private potable water lines, 10 feet from property lines, 10 feet from property lines, and 50 feet from surface water courses. A septic tank must also be placed a minimum of 10 feet from the foundation of a house.

- Upgrades to Existing Systems. Va. Code. § 32.1-164.1:3. An order may upgrade a system by first securing a permit from the Board of Health.

  - Waivers to upgrade systems. When an owner has elected to voluntarily upgrade a legally permitted onsite sewage system (whether it is a voluntary upgrade or a failing system) where the system serves real property consisting of not less than one nor more than four dwelling units and the Board imposes additional treatment or dosing requirements, the owner may request a waiver from such requirements. If the owner has obtained such a waiver and voluntarily upgraded the system, he or she shall receive an upgrade waiver.

    - Sales of property served by failing systems that have been granted dosing and treatment waivers. Waivers are not transferable when property (consisting of not less than one nor more than four dwelling units) is sold and are null and void upon the sale of property. Additional treatment or pressure dosing requirements will be imposed in such instances when the property is transferred or sold.

      -Disclosure required by seller. The Seller must prepare a written disclosure statement delivered to buyer prior to the acceptance of the purchase contract explicitly stating that the waiver acquired is null and void and that additional treatment or dosing shall be required before the Buyer may obtain a permit to reinstate the system.

      -Buyer's remedies. The seller's failure to deliver the disclosure statement prior to the acceptance of the real

estate contract will entitle the Buyer to terminate the real estate contract through several actions the earliest of 3 days of the disclosure in person, five days after the postmark if delivered by US mail, settlement upon purchase, occupancy by the purchaser.

- Pit privies. 12 VAC 5-610-980.
  - When acceptable. Pit privies are an acceptable means of sewage disposal at isolated areas such as primitive camping areas, public boat launching areas, recreation areas, state parks, and wilderness areas where pressurized water systems are not provided.
  - Abandonment. Pit privies utilized at existing dwellings should be abandoned within one year of the availability of sanitary sewers. Proper abandonment consists of removing the structure and covering the pit with at least two feet of soil.
  - Prohibited in newly constructed homes. May not be constructed at new homes.
- Alternative (unconventional) on-site sewage disposal systems. § 32.1-164. Permits must be issued by State Water Control Board.

- **Wells.**
  - Regulation. 12 VAC 5-630-350-480; Wells, General Requirements; *see also*, Va. Code § 32.1-176.5.
  - Private wells, general requirements and restrictions. 12 VAC 5-630-360. Must be constructed as a source of drinking water. Drilled wells must be at least 20 feet deep.
    - Permits, post-construction inspection. Va. Code § 32.1-176.5. Permits from Department of Health required prior to the construction of new well. Inspection of the well to follow after construction to assure that the construction standards are met.

- Well location. 12 VAC 5-630-380.

  - Flooding and flood plains. Wells may not be located in an area subject to flooding. If a well is located in a flood plain, then it must be adequately constructed so as to preclude the entrance of surface water during flood conditions.

  - Minimum setback distance requirements. Private wells must be situated to comply with minimum separation distance requirements from structures, topographic features, or sources of pollution identified in Table 3.1. They must be at least 10 feet from building foundations, 50 feet from house sewer lines, 100 feet from a sewage disposal system or other contaminant source.

    - Property lines, utility easements. No minimum setback distances required. Exception, wells may not be within 50 feet of adjacent agricultural properties. *See* adjacent agricultural property location restrictions, *infra*.

  - Adjacent agricultural property location restrictions. Va. Code § 32.1-176.5:2. A private well may not be constructed within 50 feet of the property line with an adjacent property of three acres or larger that is used for an agricultural operation.

    - Agricultural operation, defined. Va. Code § 3.2-300. Any operation devoted to the bona fide production of crops, or animals, or fowl including the production of fruits and vegetables of all kinds; meat, dairy, and poultry products; nuts, tobacco, nursery, and floral products; and the production and harvest of products from silviculture activity.

    - Exemptions. The owner of the adjacent property that is used for an agricultural operation may grant written permission for construction within 50 feet of the property line; or the owner wishing to construct the well must certify that no other site on the property complies with the Board's regulations for the construction of a private well.

- A permit will be issued only if the construction site complies with applicable construction standards.

  - Site protection. 12 VAC 5-630-390. No objects, articles, or materials of any kind which are not essential to the operation of the well can be placed or stored in a well house, on the well head or well pump or water treatment system, or within close proximity to them.

- Water sampling requirements, some local municipalities. The following counties may impose regulatory requirements for well-water testing for applicants proposing to use private ground water as primary water source prior to the issuance of permits: Albemarle, Bedford, Chesterfield, Clarke, Culpeper, Fairfax, Fauquier, Goochland, James City, Loudoun, Orange, Powhatan, Prince William, Rappahannock, Stafford, Warren, and York, and the Cities of Manassas, Manassas Park, Suffolk, and Virginia Beach.

- Private well within 1.5 miles of coal ash pond, water well test required. Va. Code § 32.1-176.8:1. For a private well located within 1.5 of a coal ash pond, the owner of the pond is required to conduct a well water test annually for five years following the closure of the pond by the DEQ.

- Well abandonment. 12 VAC 5-630-450.

  - Temporary abandonment. A temporarily abandoned well must be sealed with a water-tight cap and maintained so that it will not be a source or channel for contamination to ground water during temporary abandonment.

  - Permanent abandonment. A permanently abandoned well must be free of obstructions before it is plugged (sealed) and thoroughly chlorinated prior to plugging.

Washington

- Regulations. Wash. Admin. Code ch. 246-272A, On-site sewage systems (OSS); *See also* Wash. Admin. Code ch. 272B, applies to Large On-site Sewage Systems.

  - Requirements and restrictions, generally.

    - Permits. Wash. Admin. Code § 246-272A-0200. Prior to beginning the construction process, a person proposing the installation, repair, modification, connection to, or expansion of an OSS, must obtain a permit from the local county health department.

      - Permit may be denied if there is an available connection to public sewer service. § 246-272A-0025. When adequate public sewer services are available within two hundred feet of the residence or facility, the local health officer may (1) require hook-up to a public sewer system or (2) permit the repair or replacement of the on-site sewage system only if a conforming system can be designed and installed.

    - Location. The on-site sewage disposal system must comply with minimum setback distance requirements from water sources, property lines, potable water supplies and structures identified in Table IV of § 246-272A-0210.

      - Local health board may increase these minimum horizontal setback requirements if conditions warrant, including unconfined aquifers, shallow or saturated soils, dug wells, and improperly abandoned wells.

      - Setback reductions. The local health board may allow a reduced horizontal separation to not less than two feet where the property line, easement line, in-ground swimming pool, or building foundation is up-gradient. The horizontal separation between an OSS dispersal component and an individual water well, individual spring, or surface water that is not a public water source can be reduced to a minimum of seventy-five feet if the applicant demonstrates adequate protective site-specific conditions.

- Septic tank capacity requirements. § 246-272A-0232. The required septic tank capacity for a single-family dwelling with fewer than 3 bedrooms is 900 gallons; 4 bedrooms is 1000 gallons. Each additional bedroom requires an additional 250 gallons of capacity.

- Maintenance requirements. Wash. Admin. Code § 246-272A-0270. The OSS owner is responsible for operating, monitoring, and maintaining the OSS to minimize the risk of failure, including obtaining new operation permits if required and obtaining needed repairs.

  - Seller's requirements, property transfers. At the time of property transfer, the Seller must provide to the buyer, maintenance records, if available.

- Repairs of systems. § 246-272A-0280. When an OSS failure occurs, the OSS owner must repair or replace the OSS with a conforming system or component either on the property served or nearby or adjacent property if easements are obtained. The owner is also required to connect the residence or facility to a publicly owned Large On-site Sewage System (LOSS) or public sewer.

- Holding tanks. Holding tank sewage systems may be approved (1) for permanent uses limited to controlled, part-time, commercial usage situations, such as recreational vehicle parks and trailer dump stations; (2) for interim uses limited to handling of emergency situations; or (3) for repairs of on-site sewage disposal system.

- Abandonment. § 246-272A-0300. An owner permanently abandoning a septic tank, seepage pit, cesspool, or other sewage container must (1) have the septage removed by an approved pumper (2) move or destroy the lid; and (3) Fill the void with soil or gravel.

- **Wells**

  - Regulations. Wash. Rev. Code § 18.104; Water well construction; Wash. Admin. Code ch. 173-160; Minimum standards for constructions and maintenance of all wells.

- Local counties may have delegated authority over well construction, inspection and decommissioning.

  - Requirements and restrictions, generally.

  - Variances available from the Department of Ecology when strict compliance of well construction requirements and standards of this chapter are impractical. Wash. Admin. Code § 173-160-106.

  - Permits. Wash. Admin. Code §173-160-121. Unless a groundwater withdrawal is exempt from the permit requirements, a well cannot be drilled without the well owner first obtaining a water right permit from the Department of Ecology authorizing the use of water from the well.

    - Permit exemption, domestic use. Wash. Rev. Code § 90.44.050. A landowner is exempt from obtaining a permit for the use of groundwater is the groundwater will be put to domestic use:

      (1) Providing water for livestock (no gallon per day limit or acre restriction);

      (2) Watering a non-commercial lawn or garden one-half acre in size or less (no gallon per day limit);

      (3) Providing water for a single home or groups of homes (limited to 5,000 gallons per day);

      (4) Providing water for industrial purposes, including irrigation (limited to 5,000 gallons per day but no acre limit).

    - Notice required. Wash. Rev. Code §18.104.048. A property owner must notify the Department of Ecology his or her intent to begin well construction, reconstruction, or decommissioning procedures at least seventy-two hours in advance of commencing work.

    - Well reports. A well owner is required to submit a well report after the construction or decommissioning of a well to the Department of Ecology within 30 days of the construction/decommissioning of the well.

- Well owner's responsibilities. Wash. Admin. Code §173-160-101. It is the responsibility the property owner to take whatever measures are necessary to guard against waste and contamination of the groundwater resources.

- Construction requirements. Wash. Admin. Code § 173-160-161. Every well must be planned and constructed so that it (1) is adapted to those geologic and groundwater conditions known to insure utilization of any natural protection available; (2) will not contaminate the groundwater or surface water nor a means of wasting water; (3) is capable of yielding, where obtainable, the quantity of water necessary to satisfy the requirements the user has stated are needed and for which the well water is intended to be used.

  - Location/minimum setback requirements. Wash. Admin. Code § 173-160-171.

    - Location requirements. The proposed water well must not be subject to ponding and is not in the floodway. It must also be protected from a one-hundred-year flood and from any surface or subsurface drainage capable of impairing the quality of the groundwater supply.

    - Setback distances. All wells must comply with the minimum distances of known or potential sources of contamination identified, including 50 feet from septic tanks and building sewers and 100 feet from the edge of a drainfield.

- Decommissioned wells. Wash. Admin. Code § 173-160-381. Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard must be decommissioned by properly sealing the well with grout or concrete.

West Virginia

- **Sewage and Septic.**

  - Regulation. W. Va. Code § 64-09; Sewage Systems; W. Va. Code R. § 64-47-61; Construction and Design Standards for all Individual and On-Site Sewage Systems.

- Requirements and restrictions, generally.

  - Connections to sewers. Property owners of a lot or parcel serviced by private sewage system may be required to connect to a municipal sewer within 30 days of notice to connect by the local board of health. W. Va. Code § 8-18-22.

  - Permits. W. Va. Code § 64-9-4; W. Va. Code R. § 64-47-3. A sewage permit is required prior to constructing a sewage disposal system.

    - Access to property required for site inspection. The owner or occupant of a dwelling, establishment, or land where a sewer system is located shall provide the director access to all parts of the property for a site inspection.

    - Individual subdivisions. § 64-9-8. If a subdivision is to be serviced by an individual sewer system, a permit for each individual sewer system within the subdivision must also obtained.

  - Location requirements. W. Va. Code R. § 64-47-61.

    - Flooding and draining restrictions. The location of an individual sewage system shall not be in a poorly drained or filled area, or in any area where seasonal flooding occurs.

    - Minimum setback requirements. No part of an individual sewage system location shall be within ten (10) feet of a building, foundation, or property line; within twenty-five (25) feet of a public water supply line; or within ten (10) feet of a private water supply line. The location of a septic tank, home aeration unit, vault privy, or other sewage must be least fifty (50) feet from a private water well or groundwater supply.

  - Minimum tank capacity requirements. The liquid capacities for tanks serving single-family dwellings for four (4) or less bedrooms or less shall be one thousand (1,000) gallons. For each additional

bedroom, the minimum tank capacity shall be two hundred fifty (250) gallons per bedroom.

- Holding Tanks. May be approved only for construction of a private sewage collection serve the proposed new construction. The holding tank must conform to minimum setback requirements identified in W. Va. Code R. § 64-47-61

- Composting Toilets. W. Va. Code R. § 64-47-61. The use composting toilets may be only in conjunction with an approved grey water treatment and disposal system.

- Privies. May not be placed within twenty (20) feet of any dwelling, roadside cut, stream, establishment, or within ten (10) feet of any property line.

- Alternative and Experimental Systems. May be permitted if there not a suitable layer of soil, sufficient area and the natural slope is not excessive and the proposed construction will service 2 or more lots.

- **Wells**.

  - Regulation. W. Va. Code R. series 64-19; Water Well Regulations; W. Va. Code R. series 64-46; Water Well Design Standards.

    - Requirements and restrictions, generally. W. Va. Code R. § 64-19-4.1 Permits required for the drilling, construction, alteration, or abandonment of a well. Work must be done by a license well driller. Permits must be jointly obtained by the property owner and well driller. Application for the permit shall be made at least fifteen calendar days prior to work on the well.

      - Permit exemptions. The West Virginia Bureau for Public Health may issue an emergency water well permit to minimize actual or potential harm to human health, the environment or property.

      - Inspections and water sampling. The West Virginia Bureau for Public Health may make as many inspections as necessary, during

the construction, installation, modification or operation of a water well, pump and may also require water sampling of the well water.

- Location, minimum setback requirements. W. Va. Code R. § 64-46-4.

  - Location. A water well shall be located at least ten (10) feet from a property line to allow access without encroaching on property owned by others. All water wells shall be located to be accessible for cleaning, treatment, repair, testing, abandonment, and other maintenance.

  - Flooding. A well located in an area subject to seasonal flooding or surface water contamination, shall be constructed in such a manner that seasonal floodwater cannot enter the well.

  - Setback requirements. The location of the well location must conform to minimum horizontal setback distance requirements between the groundwater and potential sources of contamination identified in Table 64-46.

- Disinfection. W. Va. Code R. § 64-46-8. New wells are required to be disinfected prior to their use.

- Well abandonment. W. Va. Code R. § 64-46-8. An abandoned well must be completely filled with grout to prevent contamination from entering the subsurface water bearing formations and ground water mixing with one aquifer to another. The work must be performed by a licensed well driller.

- Water wells must be drilled or changes made in accordance with W. Va. Code R. series 64-46.

- Well completion reports. W. Va. Code R. § 64-19-5. Within thirty (30) calendar days after the water well has been constructed, altered, or abandoned, a completion report must be submitted to the West Virginia Bureau for Public Health.

Wisconsin

- **Sewage and Septic.**

  - Regulation. Regulation of private sewage and septic systems is done by the Wisconsin Department of Safety and Professional Services. Wis. Admin. Code ch. SPS 383.

    - Requirements and restrictions, generally.

      - Permits. Wis. Rev. Stat. § 145.19; Wis. Admin. Code § 383.21. Septic system permits are required for the installation, repair or replacement of individual or commercial sewage disposal systems that treat less than 2,000 gallons of domestic sewage per day.

        - Wis. Admin. Code § 383.22. Plans for a system which is to serve more than one structure or building, other than two one- or 2-family dwellings and their accessory buildings located on a single parcel of land, shall be accompanied by information that: Describes the legal entity, public or private, that has responsibility for the operation and maintenance of the system; and that includes a copy of a recorded legal document that identifies all the parties that have ownership rights and are responsible for the operation and maintenance of the system.
        - A determination on an application for approval of a plan must be made within 15 business days.

      - Location requirements. Wis. Admin. Code § 383.43.

        - Treatment, holding and dispersal components shall be located so as to provide the minimum horizontal setback distances as outlined in Table 383.43-1 as safety factors for public health, waters of the state and structures in the event of component failure.

        - Placement. The orientation of a treatment or dispersal component consisting in part of in situ soil shall take into account landscape variations in elevation, slope orientation, and

other conditions that could affect component performance relative to dispersal or aeration.

- Frost Protection. All components shall be protected from freezing temperatures that could detrimentally affect component operation to provide wastewater conveyance, treatment or dispersal.

- Minimum Depth. The top of the effluent lines and forcemains shall be covered by a minimum of 12 inches of soil. Wis. Admin. Code § 383.45.
- Minimum capacity. The estimated daily wastewater flow from a dwelling shall be based on either the following equation: 100 gallons x B = F, where B = number of bedrooms, based on 2 persons per bedroom, unless otherwise approved by the Department and F = Estimated daily wastewater flow per dwelling per day (in gallons), excluding storm water discharges; or a detailed estimate of wastewater flow based upon per capita occupancy or usage of the dwelling or per function occurrence within the dwelling. Wis. Admin. Code § 383.43.

- Holding Tanks. A municipality may by ordinance prohibit or limit the installation and use of holding tanks. Wis. Admin. Code § 383.32.

- Composting Toilets. Wis. Admin. Code § 391.10.The materials, design, construction and performance of a composting toilet system shall conform to NSF Standard 41 - Non-Liquid Saturated Treatment Systems. The disposal of the compost shall be in accordance with 40 CFR part 503.

- Privies. Wis. Admin. Code § 391.12. The storage chamber of a vault privy must have a minimum storage capacity of 200 gallons or one cubic yard. A privy may not be installed in a floodway, but may be installed in the floodfringe provided that the area is filled to remove it from the floodfringe designation or the vault is flood-proofed.

- Alternative and Experimental Systems. Wis. Admin. Code § 383.27. The design and use of an innovative method or concept for the treatment or dispersal of domestic wastewater which is not specifically addressed by the regulations may be allowed, provided the experiment has been first approved by the Department.

- **Wells**.

  - Regulation. Wis. Admin. Code ch. NR 812, Well Construction and Pump Installation; Wis. Admin. Code ch. NR 845, County Administration of Ch. NR 812, Private Well Code.

    - Requirements and restrictions, generally. Wis. Admin. Code §§ 845.05, -.09 Permits for the construction of a well with a capacity of less than 100,000 gallons per day are issued by the county, if the county has received approval from the Department of Natural Resources to administer the well regulations.

      - Exceptions. The Department of Natural Resources may issue a permit for the installation of water treatment devices or chemical addition to a well or water system, the development of surface water for use as a potable water supply, or the reconstruction of a well that does not comply with the location requirements of the regulations. Wis. Admin. Code § 812.09.

      - Inspections and water sampling. The county administrator shall inspect private water systems upon completion or during installation using the procedures set forth in the uniform private water systems guidance manual and record the inspections on forms provided by the Department of Natural Resources. Wis. Admin. Code § 845.06.

      - Location. Wis. Admin. Code § 812.08.

        - Location. Any potable well must be located so the well and its surroundings can be kept in a sanitary condition, so that it is protected from surface water flow and flooding, and located at

the highest point on the property consistent with the general layout and surroundings if reasonably possible, as far away from any known or possible contaminant source as the general layout of the premises and the surroundings allow, such that any potential contaminant source is a minimum of 8 feet from the well, and so that it is reasonably accessible with proper equipment for cleaning, treatment, repair, testing, inspection and any other maintenance that may be necessary.

- Flooding. A well may be constructed, reconstructed or replaced in a floodfringe provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site. The regional flood elevation is determined by the city, village, or county floodplain zoning ordinance. A well may be reconstructed or replaced in a floodway provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site. A new well may not be constructed in a floodway unless allowed by state regulation and city, village, or county ordinance.

- Separation requirements. A well driller or well constructor may not construct or reconstruct a well that is less than the minimum separation distance from a possible contaminant source as specified in Table A.

➢ Water Samples. Wis. Admin. Code § 812.46. The water from a well must be sampled and tested for coliform bacteria and nitrate after well drilling, well construction, or pump installation.

▪ Well abandonment. Wis. Admin. Code § 812.26. The filling and sealing of an abandoned well must be performed by a licensed well driller or a licensed pump installer.

- A well location or pump installation permit is valid for one year or until construction or installation is completed, whichever occurs first. If the permit expires, a new application must be submitted. Wis. Admin. Code § 845.09.

- Well reports. Wis. Admin. Code § 845.06. The county must submit a summary report to the Department of Natural Resources, upon request, by the 60th day following the end of the calendar year. The summary report shall include:
    - Number of permits issued or denied;
    - Number of inspections completed;
    - Number of compliance orders issued;
    - Number of compliance orders complied with;
    - Number of complaints investigated; and
    - Any other information requested by the Department.

Wyoming

- **Sewage and Septic.**

    - Regulation. Regulations for private sewage and septic systems (small wastewater systems) have been promulgated by the Wyoming Department of Environmental Quality. 020.0011.25 Wyo. Code R. §§ 1 - 19.

        - Requirements and restrictions, generally.

            - Permits. Wyo. Stat. §§ 35-11-301, -304. No person may construct, install, modify or operate any sewerage system or disposal system or other facility capable of causing or contributing to pollution without a permit. The Department of Environmental Quality may delegate all permitting authority to municipalities, water and sewer districts or counties. Department-issued permits are required in Carbon, Crook, Niobrara, Platte, and Weston Counties, and for commercial systems in Campbell County.

                - 020.0011.3 Wyo. Code R. § 6. An application for a permit to construct, install or modify a small wastewater system must be accompanied by three copies of plans, specifications, design data or other pertinent information covering the project, and any additional information required by the Administrator. All plans, specifications and reports submitted under this chapter shall be

sealed, signed, and dated by a licensed professional engineer and/or by a licensed professional geologist. Plans and specifications must conform to common and accepted engineering practices as determined by the Administrator or as defined by applicable Water Quality Division regulations.

- Location requirements. 020.0011.25 Wyo. Code R. § 7.

  - Small wastewater systems must be located where the surface drainage is sufficient to allow proper operation of the small wastewater system. Avoid depressions and bases of slopes and areas in the path of runoff from roofs, patios, driveways, or other paved areas unless surface drainage is provided. Small wastewater systems shall not be located beneath buildings, parking lots, roadways, driveways, irrigated landscaping, or compacted areas.

  - The site must include area for both the proposed soil absorption system and a future replacement soil absorption system.

  - The regulation sets out the minimum setbacks from wells, property lines, foundation walls, potable water pipes, septic tanks, surface water, and cisterns.

- Minimum Depth. Septic tanks shall not be buried deeper than the tank manufacturer's maximum designed depth for the tank. The minimum depth of soil cover over the top of the tank is six (6) inches. 020.0011.25 Wyo. Code R. § 10.

- Minimum capacity. The minimum liquid volume of a septic tank shall be 1000 gallons for residences up to a four (4) bedroom capacity. Additional capacity of 150 gallons per bedroom shall be provided for each bedroom over four (4). 020.0011.25 Wyo. Code R. § 10.

- Holding Tanks. Holding tanks shall not be used for residential systems when other alternative systems are available, except on a temporary, seasonal or intermittent basis, or when used to correct a failed soil absorption system when other alternatives are

unavailable. Holding tanks shall meet the same material requirements as septic tanks. 020.0011.25 Wyo. Code R. § 10.

- Composting Toilets. 020.0011.25 Wyo. Code R. § 18. Composting or non-discharging toilets, where permitted, shall have their waste disposed of at a permitted wastewater treatment facility or landfill, or in a manner approved by the Division of Water Quality or delegated authority.

- Privies. 020.0011.25 Wyo. Code R. § 18. Pre-fabricated privies or outhouses must be sealed, water-tight vaults. The horizontal setback distance requirements for sealed privies or outhouses shall comply with the requirements for septic tanks. The vault must have sufficient capacity for the dwelling served, and must have at least 27 cubic feet or 200 gallons of capacity. Privies or outhouses shall not be constructed within the 100-year floodplain. The owner must submit his or her name, address, phone number, legal description of privy or outhouse (address, latitude/longitude, or ¼¼ section), and the date construction or installation will begin to the Department of Environmental Quality.

- Alternative and Experimental Systems. 020.0011.25 Wyo. Code R. § 6. The Rules encourage new technology and equipment and provide a process for evaluating and permitting designs that deviate from the rules. The proposed construction of facilities and processes not in compliance with this rule may be permitted provided that the facility, when constructed and operated, meets the objective of the rules.

    - Each application for a permit to construct shall include an engineering design report, detailed construction plans, and technical specifications for all piping, tanks, and equipment. All of the documents shall have a suitable title showing the owner's name and the Wyoming registration number, seal, and signature of the engineer.

    - Each application for a permit to construct will be evaluated on a case-by-case basis using the best available technology..

- **Wells**.

  - Regulation. Wyo. Stat. 41-3 Art. 9, Underground Water; 037.0009.2 Wyo. Code R. §§ 1-1 – 4-5, Water Well Minimum Construction Standards.

    - Requirements and restrictions, generally. Wyo. Stat. § 41-3-930. Any person who intends to acquire the right to beneficial use of any underground water in the state of Wyoming, shall, before commencing construction of any well or other means of obtaining underground water or performing any work in connection with construction or proposed appropriation of underground water or any manner utilizing the water for beneficial purposes, file with the State Engineer an application for a permit to make the appropriation and shall not proceed with any construction or work until a permit is granted.

      - An application for a permit for a well in any areas not designated as a critical area shall be granted as a matter of course, if the proposed use is beneficial and, if the State Engineer finds that the proposed means of diversion and construction are adequate. Wyo. Stat. § 41-3-931.

      - Location. 037.0009.3 Wyo. Code R. § 1.

        - Location. All wells shall be sited and constructed in such a manner that the well does not act as a conduit for the transmission of contaminants from either above or below ground to the ground water resource.

        - Water wells shall be located such that there is adequate surface drainage away from the well and situated such that the well is easily accessed for repairs, maintenance, and inspection. For all wells, the top of the casing shall extend at least 18 inches above the finished land surface grade. Well casing may not be

terminated at or near the base of underground well vaults or placed in basements.

- Every well shall be located at least 10 lateral feet from any property line or boundary.

- When a well is proposed to be located adjacent to a building or any other standing structure, it shall be placed to be as accessible as may be necessary. The well shall be placed such that the building or any overhead projection from the building will not be within a 10-foot radius of the surface casing.

- Setback requirements. Water wells must be located at least 50 lateral feet from any sewer, septic tank, livestock containment pen, or livestock sewage lagoon. Wells must be located at least 100 lateral feet from any disposal (leach) field.

➢ Disinfected. 037.0009.4 Wyo. Code R. § 1. All wells used for drinking or sanitary use shall be disinfected after construction, reconditioning, or repair (e.g., submersible pump replacement) and before the well is placed into, or returned to, service.

➢ Sampling. 037.0009.4 Wyo. Code R. § 5.The State Engineer recommends that a water quality sample be collected after well construction and aquifer testing is complete.

- Well abandonment. 037.0009.4 Wyo. Code R. § 4. The well owner is responsible to ensure that any well (including any test well or replaced well) which is permanently abandoned or removed from service shall be entirely plugged to prevent contamination from the surface or any other source and to remove any further hazard potential that an unused well or abandoned drill hole might pose. All pumps, pipe, wiring, caps, and other obstructions/debris that may interfere with adequate plugging operations shall be removed from the well. Suitable cement-based mixtures or bentonite mixtures shall be used for grouting material.

- Suspension or cancellation. Wyo. Stat. § 41-3-937. Whenever, after notice to and opportunity to be heard, the State Engineer finds that the holder of any permit is willfully violating or has willfully violated any provision of such permit or any provision of this act or of any order issued pursuant to this act, the state engineer may cancel or suspend such permit or impose conditions on the future use thereof to prevent such violation.