



Wastewater System Requirements

Minimum Standards for Design and Construction of On-Site Wastewater Systems.

Regulations concerning wastewater systems are somewhat complex. Both the State and the County have established guidelines for the construction and maintenance of wastewater systems. In addition, the Conservation District also has regulations for cost-share for failing systems. The guide to regulations that follows consists of only the most common information dealing with these systems. Not all situations you may encounter are addressed in this publication. If you are unsure of your situation, please contact the Ford County Planning, Zoning, and Environmental Health for clarification.

In this section, you will learn what the minimum requirements of the State and the County are for wastewater systems. If you install the minimum system this is not a guarantee it will perform satisfactorily. Family size, soils and construction techniques differ. What may work for your neighbor may not work for you. We highly recommend that you consider the minimums for what they are, the bare minimum. A wastewater system installed right the first time may be far cheaper than one that is upgraded whenever trouble strikes.

Permit

As of January 1988, new regulations governing sewage handling and disposal in this county and the State of Kansas took effect. These regulations are intended to guide local citizens in installation of on-site sewage disposal systems and private water wells. These regulations help protect the groundwater from further pollution and subsequently the public health. Adherence will also reduce the legal liability between neighbors.

A permit to install, alter, or extend a sewage system must be obtained from your local environmental sanitarian (Ford County Planning, Zoning, and Environmental Health) in counties with an environmental sanitary code. It is unlawful to construct or repair a septic system without an approved permit. A homeowner can be prosecuted for failing to comply with current regulations. The Kansas Department of Health and Environment (KDHE) has updated their guidance for wastewater systems entitled: Minimum Design Standards for Onsite Wastewater Systems, also known as Bulletin 4- 2. This bulletin replaces the previous version of March 1984. The State's minimum requirements for a wastewater system are outlined in this bulletin. The various county codes are still in effect, but in cases where Bulletin 4-2 are more restrictive, it supersedes the code. The county code can be more restrictive, but cannot be less restrictive than Bulletin 4-2.

Permitting Procedures

Ford County Planning, Zoning, and Environmental Health requires all systems permitted after February 1, 1997 to meet the standards of Bulletin 4-2. Our ability to require these changes is authorized by both Kansas Statutes and Section 2-5.1 in the county sanitary code.

No construction, other than soil evaluations will be performed on a system until there exists a valid permit, and the system has been given a permit number by Ford County Planning, Zoning, and Environmental Health office staff.

The contractor or homeowner will have in their possession a copy of the permit while performing any work at the site. Trench profiling of the soil horizons will not be required for Site and Soil Evaluations as required in Bulletin 4-2, page 3. This requirement is being waived because of the lack of trained soil scientists available for this purpose in the Ford County Planning, Zoning, and Environmental Health service area.

Septic Tanks

The minimum capacity for a septic tank is 1000 U.S. gallons. This is based on a 3 bedroom minimum. Tanks larger than the minimum have the advantage of more solids separation, scum and sludge, and solids storage. The larger capacity permits less carryover for solids, resulting in prolonged life of the soil absorption unit. Larger tanks also require less frequent cleaning and allow for future expansion of the home. Larger tanks have a good cost-benefit return. For each additional bedroom, add 250 gallons to the minimum value.

Septic tanks should be located where they will not cause contamination of any well, spring, or other source of water supply. The septic tank should not be located closer than 10 feet from any public building. The tank should not be located in swampy areas, nor on areas subject to flooding. There must be no permanent cover (patio, building, driveway, etc.) placed over the septic tank or lateral lines.

If abandoned septic tanks are to be crushed on site, it will first be pumped out, filled with a solution of 1% chlorine bleach and water, then allowed to sit for 24 hours, and then finally crushed and backfilled. The water-bleach mixture may be pumped onto the ground surface. For example, a 1000-gallon septic tank would have 10 gallons of bleach added to it and then filled with water after it is pumped out.

Septic tanks will have the appropriate baffles or T pipes installed. All the access ports will be removed prior to inspection, to ease inspections. A 6" PVC, Schedule 40, access pipe, with end cap, will be installed to provide access to the septic tank for inspection purposes. This pipe will be flush with the finished ground surface. It will be installed only in the location of the center manhole port. Individual tank designs may vary. Please consult Ford County Planning, Zoning, and Environmental Health if you wish to construct the clean-out in a different manner.

Two-piece cement septic tanks will have the seam between the top and bottom sections sealed with tar, epoxy, cement, or another sealing material approved for use by this office. The tank must be water tight, constructed of durable material and not subject to excessive corrosion, decay, frost damage or cracking. Steel septic tanks have a short life because of corrosion and are not acceptable.

This is a typical concrete septic tank. The design of concrete tanks vary by manufacturer, but all have several facets in common. First, all tank outlets are lower than the inlet. Second, all tanks should have a manhole for access. Some may have more than one. Finally, all tanks should be longer than they are wide, to help drop out the solids.

If the property owner desires to upgrade a wastewater system that is not on file at the Ford County Planning, Zoning, and Environmental Health office, and continue the use of the existing

septic tank, it must be made available for inspection and meet the same minimum standards of a new tank. The top must be uncovered for this inspection. If the tank is a two-piece design, the seam between the top and bottom will be uncovered for this inspection. Two-piece tanks will be sealed before construction is complete.

Septic Tank and Lateral Field Location

Low areas likely to flood should be avoided. Slopes greater than 25% will cause considerable difficulty in construction, and may slide once they become saturated with effluent.

Rock outcroppings warn of shallow soils and may suggest the probable direction of groundwater flow. Examination of the soil profile on the site should assure that at least four feet of suitable soil is available above restrictions such as bedrock, unsuitable soil, high groundwater table, or perched water table. If four feet is not available beneath the treatment laterals an alternative design is required. Specified separation distances from property lines, foundations, and other objects must be maintained. Required and recommended separation distances are addressed later.

Assuming that soil and site conditions are acceptable, care should be taken to prevent future home improvements from interfering with the operation of the absorption field. Driveways, walkways, parts of the building, swimming pools, or other improvements should never be built over the absorption fields. Surface waters should be diverted from the vicinity of the subsurface disposal system. Avoid utility easements since future installation or repairs of the utility may damage the field.

Lateral Sizing

Designs of wastewater systems are based upon the maximum capacity of a home rather than its number of inhabitants at any particular time. See the section on the percolation tests for more information on how laterals are sized. The maximum trench length should not exceed 100 feet and preferably should be less than 60 feet. The absorption trench width will be either 24 or 36 inches wide.

Laterals Construction in General

The absorption trench width should be no deeper than 36 inches. No lateral line will be installed deeper than 3 feet deep at any point along its length. An approved lift pump will be required on all systems where the site does not allow the laterals to meet the 3 feet maximum depth requirement. Many times the requirement for a lift pump can be avoided by careful design of the wastewater system.

A 5% discount on the required area of the absorption field is available if the septic tank has an approved filter installed. The filter will have an appropriate device installed to allow access, inspection, and easy removal. Flow dividers will be made available for inspection before the system is covered.

Pipe and Rock Laterals

All pipe and rock lateral lines will have an end cap tightly cemented to the end of each lateral line. No holes will be drilled in the end caps. Bricks are not a suitable substitute for this requirement. All lateral lines that use pipe and rock will have an inspection pipe installed at the

end of each lateral line (4-2). This pipe will be with a removable cap. It may be placed level with the finished ground surface, but it will never be placed below ground level without a variance.

Brick will not be used in lateral systems as an absorption material. It may be used to level pipes in pipe and rock systems. Pipe and rock laterals are required to be covered before backfilling with either straw or a geotextile. The geotextile is the preferred material because of its resistance to decay and its ability to allow oxygen to pass through the membrane. Never use hay. The granular materials that come with hay will penetrate the spaces between the rock and swell when wet. This blocks off the passage of oxygen.

We recommend that pipe and rock laterals have risers added to the end of each line if root problems are anticipated. This will facilitate snaking of the lines.

Chamber Systems

Chambers are a plastic lateral system that do not require the addition of rock. The advantages to chambers are many. Chambers have a higher capacity for surge usage. Chambers allow a bio mat to develop on the chamber floor. This treats the effluent more efficiently. Chambers, when placed shallow, allow for greater oxygen exchange. Chambers are also rugged and easy to install. The principle disadvantage to chambers is they are more costly than rock and pipe, on average.

Chamber systems will have a bed of 2" rock installed for half the length of the first chamber of each lateral line to a depth of 3". A splash plate provided by the manufacturer may be installed instead of rock. Homemade plastic or fiberglass splash plates are acceptable if they cover the first 3' of the first chamber and are of sufficient rigidity and strength. A 20% reduction in lateral field size is allowed if the percolation rate is 15 minutes per inch or greater and chamber systems are used. Inspection ports will be installed at the end of each run of chamber.

Chambers are manufactured by a variety of firms. In the Ford County Planning, Zoning, and Environmental Health area, however, one brand tends to dominate the market. This brand is the infiltrator. If you can find another brand for your system please contact Ford County Planning, Zoning, and Environmental Health before installing or purchasing it. We need to look over the load rate and dimension before sizing your system.

Chambers are an excellent choice for the do-it-yourselfer. Installation is less labor intense than pipe and rock systems. Chambers are also more forgiving of leveling errors common to novice installers.

If you consider installing chambers, we suggest you shop around because the price of this item varies considerably from retailer to retailer. Plumbing supply houses will sell directly to contractors. This is where you may find the best price. The contractor has affixed a collect to allow for the placement of a riser on the final length of chamber. Notice the sidewalls of the chamber have been packed with fill soil before the majority of the overburden is placed in the trench. The riser will be cut off level with the finished ground surface, and then capped. The owner can get an idea of the activity of their laterals (unavailable to pipe and rock system owners) by looking into the riser.

Separation Distances

Separation is required to maintain system performance, to permit repairs, and to reduce undesirable effects or underground wastewater flow and dispersion. Structures to consider include buildings, property lines, utilities, wells, and components of the wastewater disposal system.

Minimum Horizontal Separation Distances Between Septic Absorption Field And:

- Building Foundations 20 Ft.
- Property Lines 10 Ft.
- Basements 20 Ft.
- Water Wells 50 Ft.
- Lakes, Streams, Ponds 50 Ft.

Minimum Water Well Distance To:

- Subsurface absorption field for septic tank effluent 50 Ft.
- Pit privy 50 Ft.
- Septic tank 50 Ft.
- Barnyards, stables, manure piles, animal pens, etc. 50Ft.
- Streams, lakes and ponds 50 Ft.
- Sewer lines, not constructed of cast iron or other equally watertight construction 50 Ft.
- Property Lines 25 Ft.

The above indicates the minimum distances. We recommend that you try your best to increase the distance between your well and septic system to the maximum possible. Do not forget about your neighbors' systems either. You must take into account the features and activities adjacent to your land as well as those on your land.

Alternative Systems

Sites where a conventional system is impractical require an alternative system. The initial cost of an alternative system may be higher, but they save you money in the end. It is common in some counties to see people constantly upgrading their laterals. Their total cost after several upgrades may be more than putting an alternative system in to start.

Aerated Septic Tanks

This system uses a two or three compartment septic tank. It has a motorized device that circulates and oxygenates the effluent in the second compartment of the tank. This has the beneficial effect of reducing the organic load in the discharged wastewater. An aerated system can get by with a significant reduction in lateral field size (up to 50%).

Bed (Chambers)

This system uses chambers that have been laid close together for lots that are very small. It has the beneficial effect of putting the maximum absorption area in the smallest space available.

Holding Tank

When laterals are not possible, a large holding tank may be installed. However, the tank must be pumped out regularly. This can be very expensive over time.

Lagoon

Where the clay content of the soil is very high, and the property is relatively large, a lagoon may be the best solution. A properly designed and maintained lagoon works by evaporating the liquids waste. A well-maintained lagoon is relatively free of odor.

Mound System

Where the clay content of the soil is high, or the groundwater is close to the surface, a mound system may be the answer. These systems work by placing the absorption laterals upon the ground surface and covering them with a highly permeable soil. Thus, most of the wastewater effluent is lost to evaporation and evapotranspiration.

Sand Filter

Where very little area is available for the placement of laterals, or the bedrock is at or near the surface, a sand filter is a good choice. Sand filters work by forcing a measured dose of effluent through a bed of special sand, collecting the clear, odorless effluent, and then discharging it into a reduced size lateral or bed system. Many manufacturers provide prefabricated kits that may be installed by a very mechanically oriented homeowner. Sand filters can be very expensive and require professional maintenance.

Soil Conditioning

Where the soil is poor, but not pure clay, a good portion of the soil can be removed, and replaced by a lighter silty loam soil. The laterals are then installed on top of and under this improved soil.

Constructed Wetlands

A constructed wetland uses a lined pool, similar to a lagoon but shallower, filled with wetland vegetation to treat the effluent. They require maintenance and a good knowledge of wetland botany. If you have one of these systems in mind, we have more detailed information on these alternatives.

Variances

If a contractor or a homeowner/tenant wishes to request a variance on any design aspect of a wastewater system, they must do so in writing. This request will be decided upon, and the landowner/tenant notified within 5 working days of receipt. A variance request form is available from Ford County Planning, Zoning, and Environmental Health. A copy of the notarized "Permission/Easement" document must be provided to Ford County Planning, Zoning, and Environmental Health prior to construction on any system where it is necessary to install any portion of the system within 25 feet of adjoining property or on adjacent property.

Inspections

All portions of the wastewater system will be exposed and available for inspection. The only exception to this requirement is that the majority of each lateral line may be covered with rock and barrier material if the site is small and this is necessary to construct the adjoining lateral lines. This option requires prior notification of Ford County Planning, Zoning, and Environmental

Health. If portions of the lateral lines are covered, the last 10' of each line must remain uncovered.

An appointment for the inspection of a wastewater system will be made at least 48 hours before the anticipated completion of the system. The contractor or their designated representative will be present at the site for the scheduled inspection. All work, except for final dirt fill work, will be completed before the inspection.

It is important for the homeowner to verify who is to notify the county environmental sanitarian of installation and completion so a closure inspection may be done. If the system is covered without being inspected, it is the sanitarians option to either have it excavated or a new system installed.

KEEP A MAP OF YOUR SEPTIC SYSTEM AND TAKE SEVERAL PICTURES TO HELP WITH FUTURE MAINTENANCE!!

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