

What's this? A potable water line in manhole? This photo was taken several years ago by KRWA; it shows that some water mains do interconnect with sewer lines and in this case, a potable water main was found running through a sewer system manhole.

Minimum Required Separations of Potable Water and Sewer System Lines

Cities, rural water districts and other utility companies frequently inquire of KRWA staff, “What is the required separation distance between water and sewer lines?”

Generally, the answer is fairly simple. It's “ten feet”. That's the suggested distance if a potable water line and a sewer line are parallel to each other; the distance is measured horizontal from edge to edge. Where this distance is not practical because of construction issues, the Kansas Department of Health and Environment (KDHE) may approve other spacing. Many cities have water and sewer mains installed in alleys; some of those are very narrow, and the required distance is difficult to achieve when

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other utilities such as gas lines and communications cables are installed in the same alley or on the same easement.

When a potable water line crosses a sewer line, the requirement is to provide two feet or more of clearance. When the sewer line is at least two feet below the water line, no special limitations are required. If the water

and sewer lines cross and the vertical separation is less than two feet, a 6-inch concrete encasement of the sewer main is required for a distance of ten feet on each side of the crossing. Water and sewer lines must be a minimum of ten feet apart; they are not to be laid in the same trench.

Both of the requirements (ten feet horizontal and two feet vertical) are the same for pressure sewer force mains. The distance for water mains and sanitary sewer manholes is also ten feet of separation. These distances and more detail can be found in KDHE's [Minimum Design Standards For Public Water Systems, Chapter VIII, Distribution Systems, Section B – Protection Considerations, Subsection](#)

1 – Separation of Water Mains and Sewers, General Considerations and Design Requirements for Public Water Supply Systems in Kansas. These standards are a mere 324 pages in length, so if you plan to print the entire Minimum Design standards, make sure your printer has a new ream of paper! This file is 32 megabytes in size. KRWA has also posted it on its Web site in reduced file size. The pdf is not searchable.

The separation distances that have been mentioned apply to water and sewer mains owned and operated public systems. It does not include those connected to private wells or private septic systems. Concerning separation of private systems and public system (be it private sewer and public water or private water and public sewer), KDHE’s specifications for separation can be found in *Chapter VIII, Distribution Systems, Section B – Protection Considerations, Subsection 2: Separation of Water Mains and other Pollution Sources*. This section pertains to septic tanks, septic tank absorption fields, wastewater stabilization ponds, feedlots, or other

sources of pollution. Paragraph A of this subsection states that a minimum of 25 feet shall be maintained between all potable water lines and all pollution sources. In Paragraph B it states that under no circumstances shall a water line be extended through an area that is a real or potential source of contamination to the water line or water supply.

KDHE’s Minimum Standards of Design for Water Pollution Control Facilities requires that sewer lines, i.e., house connections, laterals, trunk lines, interceptors, force mains, etc., shall not be constructed within a 100-foot radius of a public water supply well. In paragraph 2 it states that “sewer lines constructed of cast iron or solvent welded plastic pipe material may be constructed within ten feet of a



Flush tanks, such as that shown above, are no longer installed in sewer lines. These are potential direct cross connections. For those that remain in some municipal wastewater system, the water lines should be removed from them to make sure there is no possibility of contamination in case of a water line break and there is a sewer back up at same time!

WHATEVER IT TAKES!



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Minimum Required and Minimum Recommended Separation Distances for Onsite Wastewater Systems

Separation Distances	Minimum Distance (ft.)	
	Required	Recommended ⁷
Septic Tank to foundation or other buildings	10	10
Soil Absorption System to dwelling foundation	20	50
Any part of a wastewater system to:		
public potable waterline	25 ⁸	25
private potable water line	10	25
property line	10	50
public water supply well or suction line	100 ⁹	200
private water supply well or suction line	50 ⁹	100
surface water course	50	100
Wastewater Lagoons to:		
property line	50 ¹⁰	200
dwelling foundation	50 ¹⁰	200

7: These recommended separation distances help assure a minimum of problems, but are no assurance that problems will not result.

8: The minimum distance specified by KDHE guidelines for public water supplies.

9: The minimum distance required by KAR 28-30-8(a).

10: When lot dimension, topography, or soil conditions make maintaining the require 50 feet separation distance impossible, a written variance from the affected property owners shall be obtained and filed with deeds.

private water supply well. Sewer lines constructed of non-water tight materials must be at least 50 feet from a private water supply well.” These standards have the same separation requirements as in the public water supply design requirements.

KDHE’s Bulletin 4-2, *Minimum Standards for Design and Construction of Onsite Wastewater Systems* lists standards for private sewer systems such as septic tanks and waste stabilization ponds. This is the standard that most counties have adopted and use as part of their sewer use ordinances. The table on page 4 of Bulletin 4-2 lists the minimum required and minimum recommended separation distances for onsite wastewater systems. The table is reprinted above.

Remember, these are minimum distances. Certainly the separations can be greater than those that are recommended.

Water and/or wastewater operators who are working to become certified operators or who are working to upgrade their level of certification will

Where to find the standards . . .

Here are links to publications mentioned in this article:

Separation of Water Mains and other Pollution Sources: This document can be downloaded from the KDHE Web site at http://www.kdheks.gov/pws/mds/Minimum_Design_Standards_Complete.pdf. See especially Chapter VIII, Section B, subsection 2. This file is 32 megabytes in size. Please note that this pdf is not searchable.

Minimum Standards of Design for Water Pollution Control Facilities: Download from KDHE Web site at http://www.kdheks.gov/water/download/minimum_standards_of_design.pdf. See Chapter VI, Sanitary Sewer Design, Section H, Protection of Water Supplies, Paragraph 2,

Bulletin 4-2, Minimum Standards for Design and Construction of Onsite Wastewater Systems: Download from <http://www.kdheks.gov/nps/resources/mf2214.pdf>. This bulletin lists standards for private sewer systems such as septic tanks and waste stabilization ponds.

benefit by being familiar with requirements for the separation of potable water, sewer and private water and septic lines or systems. The KDHE standards include sewer, sanitary sewer design, pumping stations, mechanical biological treatment, waste stabilization ponds, disinfection and sludge application and laboratory requirements. For water systems, the standards address laws and regulations, documentation requirements, surface and well water development, disinfection, taste and odor, water

storage tanks, pumping facilities, distribution systems as well as appendixes for disinfection of water mains and calculating the disinfection of the water mains using chlorine.

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