RESOLUTION #924

A Resolution revising the Wilson County Sanitary Code and rescinding certain related Resolutions.

WHEREAS, the Board of County Commissioners of Wilson County, Kansas has the authority to implement sanctions for the betterment of life in Wilson County; and

WHEREAS, in order to protect the health and welfare, a sanitary code would provide for adequate and reasonable control over environmental conditions in Wilson County, establish standards to eliminate and/or prevent development of environmental conditions that are hazardous to health and safety and promote economical and planned development of land and water resources.

NOW, THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Wilson County, Kansas pursuant to K.S.A. 19-3701 et. seq., that the Sanitary Code be revised for Wilson County, Kansas. Such revised Wilson County Sanitary Code shall be incorporated into this Resolution as "Exhibit A"; and

BE IT FURTHER RESOLVED that copies of the Sanitary Code shall be available for inspection by the public at the Wilson County Health Department; and

FURTHER, should this Resolution be in conflict with any previous resolutions of the Board of County Commissioners of Wilson County, Kansas, that only the conflicting part of any previous resolutions and not the previous resolutions in total be declared void and ineffective; and

FURTHER, that the Wilson County Sanitary Code adopted April 10, 1995 be rescinded.

Adopted this 10th day of January, 2011.

BOARD OF WILSON COUNTY COMMISSIONERS

Russ Walker, Chairman

Garry Lambert, Vice Chairman

Attest:

Jim Richardson, Member

Rhonda Willard, County Clerk

The enclosed Wilson County Sanitary Code has been officially adopted by the Wilson County Board of Commissioners.

Signature
Chairman, Board of County Commissioners

01-10-11
Date

Return to:

KDHE-Watershed Management Section
1000 SW Jackson, Suite 420
Topeka, KS 66612-1367

WILSON COUNTY SANITARY CODE

APPROVED

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Kansas Department of
Health and Environment

WILSON COUNTY
SANITARY
CODE

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CHAPTER 1. POLICY, ADMINISTRATION AND ENFORCEMENT

ARTICLE 1: GENERAL PROVISIONS

Section 1. **Title.**

This Code shall be known and referred to as the Wilson County Sanitary Code.

Section 2. **Legal Authority.**

This Code is adopted under the authority granted to the Board of County Commissioners by K.S.A. 19-3701 et seq. or K.S.A. 12-3301 et seq., as amended. This Code shall be enforced pursuant to authority granted unto the Board of County Commissioners Wilson County, Kansas.

Nothing herein is intended to pre-empt nor constitutes a pre-emption of similar authority conferred upon the Kansas Department of Health and Environment, separately enforcing the Water Well Construction Act. (K.S.A. 82a-1201 et seq.)

County Sanitary Codes may contain provisions that are more restrictive than those required by the State in K.A.R. 28-5-1 through 9.

Section 3. **Declaration of Finding and Policy.**

The Commissioners find that the provisions of adequate and reasonable control over conditions in the county are necessary and desirable. A sanitary code establishes standards to minimize the development of environmental conditions that are hazardous to health and safety, and promotes the economical and planned development of the land and water resources of the county. For these reasons and objectives, it will be the policy of the Board of County Commissioners to adopt and amend a sanitary code to provide current regulation of practices that affect health and safety.

Section 4. **Purpose.**

The purpose and intent of this Code is to prescribe the administrative procedures to be followed in administering this Sanitary Code or any amendments thereto, and prescribe rules and regulations for controlling practices to minimize health and safety hazards.

To protect the integrity of water, air, soil and natural resources, and wildlife through the prevention of pollution and degradation of the environment by regulation of activities, that may affect environmental conditions.

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Section 5. **Jurisdiction and Application.**

This Code and all authorized rules, regulations, restrictions and requirements shall apply from and after effective date of adoption, to and throughout the unincorporated areas of Wilson County, Kansas and to all persons, property, establishments and business activities located or conducted, regardless of ownership and acreage, within Wilson County, Kansas and out side the municipal boundaries of any city which provides municipal wastewater treatment service.

Section 6. **Public Health Jurisdiction and Application.**

This Code and any or all rules, regulations, restrictions and requirements shall apply to and throughout all areas of Wilson County, Kansas, including those areas located within the municipal boundaries of any city, whenever authorized or required under application of the Laws of the State of Kansas or of the United States, whether by statue, contract, rule or regulation, or pursuant to the jurisdiction of the Wilson County Board of Commissioners.

Section 7. **Severability.**

If any clause, sentence, paragraph, section or subsection of this code shall for any reason be judged by any court of competent jurisdiction to be unconstitutional and invalid, such judgment shall not affect, repeal or invalidate the remainder thereof, but shall be confined to the clause, sentence, paragraph, section or subsection thereof so found unconstitutional and invalid. (K.S.A. 19-3708)

Section 8. **Disclaimer of Liability.**

This Code and other sanitary codes adopted shall not be construed or interpreted as imposing upon the county or its officials or employees:

A. any liability or responsibility for damages to any property, or
B. any warranty that any system, installation or portion thereof that is constructed or repaired under permits and inspections required by code will function properly.
C. In addition, any employee charged with the enforcement of this Code, who acts in good faith and without malice in the discharge of his or her duties, shall not thereby be personally liable and is hereby relieved from personal liability for damage which may occur to any person or property as a result of the discharge of his or her duties.

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Section 9. **Amendments and Additions.**

Changes or amendments may be proposed by the Administrative Agency for detailed construction specifications, policies and guidelines. These changes or amendments may be revised periodically to provide for the updating of standards and technology. Any change or amendment of this Sanitary Code shall be adopted by following the same procedure as set forth in K.S.A. 19-3704 which requires approval by County Commissioners and at least one (1) public hearing.

Section 10. **Repeal and Supersede Effect.**

This Code shall supersede any and all previously adopted resolutions or regulations, which are, in whole or part, in conflict with any provision of this Code, where applicable, and any rule, regulation or resolution which is or was in effect upon the effective date of this Code shall be repealed to the extent necessary to give this Code full force and effect, and in the case of any conflict of provisions, whether real or apparent, then the provisions of this Code shall govern wherever applicable.

Section 11. **Effective Date.**

This Code shall become effective on and after the final adoption.

ARTICLE 2: ADMINISTRATION

Section 1. **Administering Authority.**

Unless otherwise specifically designated within a separate and particular Chapter or Article of this Code, the Authorized Representative under the supervision of The Administrative Agency, shall have primary authority and responsibility for the administration of this Code.

The Administrative Agency may implement such administrative procedures, consistent with this Code, as deemed necessary for the effective administration of any regulations or which may be required or imposed under application of the Laws of the State of Kansas or the United States.

Section 2. **Administrative Actions and Decisions.**

It is the intent of this Code to establish regulations and standards for the protection of the public health and safety. To the extent possible, all administrative actions and decisions required or authorized for the administration of this Code shall be made solely in accordance with the standards of the Kansas Administrative Regulations (K.A.R. 28-5-6 to 9) and enumerated in this Code. Whenever, in the course of administration, it is necessary to make an administrative decision or take action for which standards are not provided, then the decision or action shall be made according to the purpose and intent of this Code so that the result will best serve the public health and safety.

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Section 3. **Interpretation of Terms or Words.**

All terms and words used in this Code shall be interpreted and given meaning according to their common understanding and to provide reasonable application of the purpose and intent of the Code. Whenever the context requires, in the application of this Code, the terms and phrases used shall be interpreted in the following manner:

A. Words appearing in the singular number shall include the plurals and those appearing in the plural shall include the singular.

B. Words used in the present tense shall include the past tense and future tense, and words in the future tense shall include the present tense and past tense.

C. Words appearing in the masculine gender shall include the feminine and neuter genders.

D. The word "shall" is mandatory; and the word "may" is permissive.

E. The phrase "this Code" shall refer to the Code and all authorized rules, regulations, restrictions and requirements and the phrase "the regulations" shall include rules, regulations, restrictions and requirements authorized by this code.

Section 4. **Definitions.**

The following words, terms and phrases appear in more than one chapter of this Code and thus have general application and usage. Words, terms and phases appropriate or applicable to specific chapters within this Code may be found in that particular chapter.

A. Administering Authority: The Authorized Representative under the supervision of The Administrative Agency.

B. Administrative Agency: The entity authorized to implement the provisions of this Code. For Wilson County it is the Wilson County Health Department.

C. Administrative Rules: Those rules and regulations of this Code which prescribe general procedures, to be followed in the administration of the Sanitary Code adopted by the County.

D. Agricultural Purpose: Shall mean any premises under one ownership which is used for the production of livestock or crops.

E. Authorized Representative: Any qualified person who is recommended by The Administrative Agency, and approved by the Wilson County Commissioners. Qualifications will be proposed by The Administrative Agency to the County Commission for approval.

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F. Board of County Commissioners: The Board of Commissioners of Wilson County, Kansas.

G. Business: Shall mean any individual that provides a sanitary service for a profit.

H. Domestic Sewage: Sewage which is normally characterized as and is similar to residential wastewater, not commercial or industrial activity, and which originates primarily from kitchen, bathroom, and laundry sources, including waste from food preparation, dishwashing, garbage grinding, toilets, baths, showers, and sinks.

I. Effluent: The liquid waste discharged from a wastewater system.

J. Floodplain: Land which is subject to inundation as a result of flooding having a one percent (1%) chance of occurrence every year.

K. Flood pool: Reservoir volume above active conservation capacity and joint use capacity that is reserved flood runoff and then evacuated as soon as possible to keep the volume in readiness for the next flood.

L. Groundwater Table: The upper surface of a groundwater in the zone of saturation of a geologic formation.

M. Hearing Committee: A group, appointed by the County Commissioners, to hear appeals from decisions relating to the administration of this Code.

N. KDHE: The Kansas Department of Health and Environment.

O. Law: Includes Federal, State and local statues, ordinances, regulations and resolutions.

P. Nuisance: Means conditions or activities which have or threaten to have a detrimental effect on the health of the public or its members.

Q. On-Site Wastewater System: Any approved domestic wastewater collection and treatment system not discharging into Kansas streams or waterways and not required to hold a Kansas Department of Health Water Pollution Control Permit.

R. Permit: The written permission to perform any act regulated by this Code, for example, install, remove, alter, repair or replace prior to commencement of any work.

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S. Person: An individual, corporation, partnership, association, state, or political subdivision thereof, federal, state agency, municipality, commission, or interstate body or other legal entity recognized by law as the subject of rights and duties.

T. Point Source: Any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, from which pollutants are or may be discharged.

U. Pollution: Any induced alteration of the physical, chemical, biological, and radiological integrity of water, air, soil (both surface and subsurface) or contamination of food or foodstuffs.

V. Private: Means each individual single household.

W. Premises: Any lot or tract of land and all buildings, structures, or facilities located thereon.

X. Schedule of Compliance: A schedule of remedial measures and times an enforceable sequence of actions or operations leading to compliance with any regulations or limitations.

Y. Sewage: A combination of liquid wastes which may include chemicals, domestic wastewater, animal or vegetable matter in suspension or solution, and other solids in suspension or solution, which is discharge from a dwelling building, or other establishment.

Z. Subdivision: Any land, vacant or improved, which is divided or proposed to be divided into two (2) or more lots, parcels, sites, units, plots, or interests for the purpose of sale, lease, or financing of development, either on the installment plan or upon any and all other plans, terms, and conditions, including re-subdivision. "Subdivision" includes the division or development of residential and nonresidential-zoned land, whether by deed, metes and bounds description, map, plat or other recorded instrument.

AA. Toilet, Composting: A biological composting unit used for the disposal of human excreta.

BB. Wastewater: Liquid or water carrying pollutants or water contaminants from industrial, municipal, agricultural or other sources.

Section 5. Technical and Scientific Term.

Unless otherwise defined, any technical or scientific term used within this Code or within any rule, regulation, restriction or requirement shall be given the meaning most commonly known and applied within the appropriate literature of manuals applicable for that science, industry or technological skill.

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Section 6. **Vested Interests.**

Nothing contained in this Code or any regulations shall be deemed or construed to grant any vested interests or protected right to any person beyond the express limited terms of any permit or ruling issued under this Code, and the Code and regulations are expressly declared to be subject to amendment, change or modification.

Section 7. **Compatibility With Other Laws:**

Nothing contained in this Code or any regulations shall be deemed to alter or modify the application of any other laws, codes, regulations which are or may be applicable to the property, use, business activity or other object or matter regulated under this Code, and any permit, approval or other condition given or acknowledged under this Code shall be limited in effect to the requirements of this Code and shall not, under any circumstances, relieve the holder from compliance with all other applicable laws, codes, regulations or requirements.

ARTICLE 3 PERMITS AND LICENSES

Section 1. **Permits and Licenses Required.**

No person shall conduct, carry-on or perform any business or activity identified in this Section without first having obtained a valid permit in conformance with the requirements of this Code.

A. Private Sewage Disposal System – Permit Required. Every person who installs, removes, alters, repairs, or replaces or causes to be installed, removed, altered, repaired or replaced any private sewage disposal system or part thereof shall, prior to commencement of any work, apply for and obtain a permit to perform such work and no private sewage disposal system shall be installed, removed, altered, repaired or replaced except pursuant to a permit issued under this Article.

B. Installer – License Required. Every person who conducts the activity of an Installer as defined in Chapter 2 of this Code, shall apply for, obtain and maintain a valid Installer's license to perform that activity.

C. Sanitary Disposal Contractor – License Required. Every person who engages in or conducts the activity of a Sanitary Disposal Contractor, as defined in Chapter 2 of this Code, shall apply for, obtain and maintain a valid license to perform that activity.

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Section 2. **Application Forms and Procedures.**

A. Content: Application for a permit or license shall be made on forms provided for that purpose. The application shall give a description of the character of the work proposed to be done, or activity to be engaged in, and, if appropriate, the locations, ownership, occupancy and use of the premises in connection therewith. The Administering Agency shall require plans, specifications or drawings and such other information as deemed necessary.

B. Filing: An application for any permit or license required under this Code shall be filed with the Wilson County Health Department, Environmental Section.

C. Verification: An application for a permit must be signed by the person for whose benefit the permit is being required or his or her authorized representatives. The Administering Agency may require proof of such authorization.

D. Compliance: The applicant shall be responsible for compliance with the permit requirements as further set out in this Code. Only a person who complies with the requirements of this Code shall be entitled to receive or retain a permit or license.

Section 3. **Permit Issuance; Investigations.**

If the Authorized Representative determines that the application complies with the requirements of this code, a permit shall be issued.

In making its determination on whether to issue a permit, the Authorized Representative shall perform or cause to be performed an investigation to determine the compliance with this Code.

After receipt of an application as required by this Code, the Authorized Representative shall begin such investigation as deemed necessary to determine whether the permit or license should be issued or denied, and shall issue or deny the permit or license within thirty (30) days of such receipt. If the permit or license is denied, The Authorized Representative shall send the applicant a written notice and state the reasons for rejection.

It shall be the duty of the person performing the work authorized by a permit to notify the Authorized Representative when work is ready for any required inspection. Such notification shall be given not less than eight (8) hours during normal office hours before the work is to be inspected.

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Section 4. **Permit Conditions.**

Every permit and license issued under this Code shall be subject to the terms and conditions specified in this Section.

A. Right of Access: Application for, and acceptance of, any permit issued under this Code shall grant to any inspector, code or law enforcement officer, and any representative of the Administrative Agency the right to enter upon any property subject to the permit, at any reasonable time during standard business hours, with or without notice, for the purpose of inspection to determine and ensure qualifications for compliance with the permit. This right of Access does not include Right of Access to buildings or vehicles. Buildings and vehicles may be examined with the owners or occupant's permission or with a properly obtained and executed search warrant pursuant to K.S.A. 22-2502, et seq., as amended.

B. Authorized Activity: Each permit or license issued under the authority of this code shall be limited to and expressly provided for the type and manner of activity permitted for the holder and shall not be used nor applied for any other purpose, type or manner of activity. The permit or license shall specifically refer to the activity description contained within the permit or license application, and any change in the type, manner, scope or location of any activity shall require application for and modification of the permit or license.

C. Permit Non-Transferable: No permit or license required by this Code shall be transferable to another person or premises, and the holder of the permit or license shall notify the Administrative Agency prior to any change in ownership or location of any permitted or licensed activity. Nor shall any fees required and paid be refundable.

D. Term Expiration: Each permit or license issued under the authority of this Code shall clearly state the date of issuance, the term of the permit or license, and the expiration date. The term of each permit or license issued under this Code, unless acted upon, shall be for a period not to exceed six (6) months to one (1) year, depending on the permit or license, unless otherwise specified.

E. Renewal: Any permit or license issued under the authority of this Code may be renewed for one or more additional terms upon application for renewal filed with the Wilson County Health Department Environmental Section on a form authorized for that purpose. No permit or license which has been expired for more than thirty (30) days or which is subject to revocation, for any reason, may be renewed, and such permits or licenses may be reissued only upon filing of a complete application for a new permit or licensee. There will be no fee for renewal of permit.

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F. Errors and Omissions: The issuance of a permit or license shall not prevent the Administrative Agency from thereafter requiring the correction of errors in plans and specifications or from preventing construction activity being carried on there under when such activity would be in violation of this Code or of any other code or resolution or from revoking any permit or license when issued in error.

The Administrative Agency may, in writing, suspend or revoke a permit issued under provisions of this Code whenever the permit is issued in error or on the basis of incorrect information provided by the applicant.

Section 5. Standard Fees.

The County Commissioners may establish a schedule of fees for all permits and licenses required by this Code, and said fees shall be paid into the Administrative Agency. The Administrative Agency shall not process any application for a permit or license until the required fee has been paid. (K.S.A. 19-3702 reference)

A. Multiple Uses or Services: Whenever any person conducts more than one activity or whenever more than one activity is conducted at a single property or establishment, the fee imposed under the schedule for each separate permitted or licensed activity shall be assed and paid as required.

B. Failure to pay: Failure to pay any fee imposed by this Code may be cause for suspension or revocation of any permit or license.

Section 6. Supplemental to State Regulations.

The Permits or license, and all fees, conditions and regulations imposed under this Code shall be supplemental to and in addition to any permits, licenses, fees or regulations imposed or required by any other law, including those administered by the Kansas Department of Health and Environment.

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Section 7. Administration of State Requirements.

In the event that any rule, regulation or requirement arising under the Laws of the State of Kansas is assumed or administered through the jurisdiction of the Board of County Commissioners of Wilson County, Kansas, and/or the Administrative Agency, acting under any lawful executive or administrative order or pursuant to a contract agreement, whereby the jurisdiction of any State authority is delegated to or administered by Wilson County, Kansas, then any permit or license issued or issuable by the State authority shall apply and shall satisfy the permit or license requirements imposed by this Code subject to the following conditions and exceptions:

A. Permit or License Fees: The permit or license fees required by this Code shall apply and be required for payment if greater than or equal to any State imposed fees. The State imposed fee shall apply whenever it is greater, but only one fee shall be imposed and required for payment.

B. Conflict in Regulations or Requirements: All rules, regulations, restrictions and requirements of this Code shall remain in effect and shall apply to any activity or condition covered by this Code except when in direct conflict with a provision of the State rules or regulations, in which case the State imposed rule or regulation shall apply. Terms and conditions, rules, requirements, regulations or limitations which are supplemental to those imposed by the State and which are not specifically or expressly excluded or prohibited, shall not be considered conflicting and shall be imposed and in effect.

C. Additional Regulations: Rules, regulations and requirements applicable to any conduct, activity, condition or standard which is not expressly regulated by the State, but which is regulated by this Code, shall be and remain in full force and effect as specifically applied under this Code for and with Wilson County, Kansas.

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ARTICLE 4: INSPECTIONS AND INVESTIGATIONS

Section 1. **Inspections Required.**

Physical site inspections shall be authorized and performed for all permitted or licensed activities under this Code.

A. Private Sewage Disposal Systems: Private sewage disposal systems shall be inspected by the Authorized Representative prior to being placed in operation to ensure compliance with this Code. Such systems shall be inspected thereafter as often as necessary to ensure compliance with this Code.

B. Repairs and Replacements: Any replacement of or repair to a private sewage disposal system regulated by this Code, other than normal maintenance, which constitutes a structurally significant alteration shall be inspected prior to undertaking and completing the repairs and replacements.

C. Minor repairs and Emergencies: All minor repairs, as defined in this Code require inspection. Minor repairs, which are conducted during normal business hours, require pre-notification to the Authorized Representative. Emergency repairs conducted during evening hours or on the weekend require notification to the Authorized Representative within twenty-four (24) hours.

Section 2. **Inspection Reports.**

An inspection report shall be made for all inspections conducted under the authority of this Code, stating the date and time of the inspection, the type of inspection and the property inspected. The report shall indicate compliance or non-compliance with the approved system design.

Whenever a private sewage disposal system is inspected after a permit is issued, the findings of the inspector shall describe any determined violations, the Code section violated and the correction to be made. A copy of the complete report shall be issued to the owner of the premises and, if different than the owner, to the holder of the permit.

Section 3. **Inspection Scheduling and Re-inspections.**

Whenever inspections are required under this Code to be scheduled for any installation, construction, initial activity or for correction of any violation or other non-conforming condition, it shall be the duty of the holder of the permit or license or the operator of the establishment to promptly notify the Authorized Representative and schedule the time and date for the inspection. If any installation, construction, initial activity or correction of any violation or other non-conforming condition was given a specific date, time or time period to be completed, an inspection shall be made before or on specific date, time or time period.

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Section 4. **Access and Right of Entry.**

Application for, and acceptance of, any permit issued under this Code shall grant to any inspector, code or law enforcement officer, and any representative of the Administrative Agency the right to enter upon any property subject to the permit, at any reasonable time during standard business hours, for the purpose of inspection to determine and ensure qualifications for compliance with the permit. This Right of Entry does not include Right of Entry to buildings or vehicles. Buildings and vehicles may be examined with the owners or occupant's permission or with a properly obtained and executed search warrant pursuant to K.S.A. 22-2502, et seq., as amended.

Section 5. **Future Inspections.**

After any installation, construction, initial activity, correction of any violations or other non-conforming condition permitted or licensed in accordance with this Code has been completed and is in compliance of this Code, future inspections may occur during the normal duties of the Authorized Representative. If during the normal duties of the Authorized Representative a violation or non-compliance of this Code is recognized, the Authorized Representative shall have the right to inspect any private sewage disposal system for the purpose of the correction of the violation or non-compliance at any future date the violation or non-compliance is noticed.

A new permit fee may be accessed if the violation or non-compliance requires a repair or system change.

Section 6. **Property Resale Inspections.**

Whenever any building or property requiring sanitation is connected to or is served by a private wastewater system, and/or water supply, and is offered for sale, including Contract for Deed, leasing or renting, the Seller shall have such system inspected by a the Authorized Representative.

The protocol for inspection of private wastewater systems shall include, but not be limited to:

A. Septic Tank with Lateral Field Systems:

Pumping and inspection of the septic tank to determine volume, tank composition, baffles or tees at the inlet and outlet and the septic tank's general structural integrity, location, measurement and mapping of the lateral lines.

B. Pump Tanks with Lateral Field Systems:

Pumping and inspection of the septic tank to determine volume, tank composition, baffles or tees at inlet and outlet and the septic tank's general structural integrity, location, measurement and mapping of the lateral lines, pump operation and high water alarms.

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C. Aerated Tanks:

Inspect Aerator operation, manufacturer and maintenance contract. Pumping and inspection of the septic tank to determine volume, tank composition, baffles or tees at inlet and outlet and the septic tank's general structural integrity, location, measurement and mapping of the lateral lines, pump operation and high water alarms.

D. Drip Irrigation System:

Inspect operation and design standards of the specific system.

E. Mound System:

Inspect design standards and operation of the individual system.

F. Waste Stabilization Pond (Lagoon):

Inspect dimensions; type of fencing; vegetation (growth such as cattails, trees and duckweed); evidence of erosion; evidence of seepage; any structure over ten (10) feet tall within fifty (50) feet of the operating level; color of water; and cleanouts just outside the house within ten (10) feet and every one hundred (100) feet or less.

G. Private Water Supply:

Identify type of water supply (drilled well, hand dug well, other). If private water supply is a well, determine whether it is properly sealed. If there is a public water supply and private supply on same property, determine if there are any cross connections.

Any sign of failures, past or present, shall be noted on the inspection form. In the event the system is found to be inadequate, failing or in need of repair, it must be corrected prior to the selling, leasing or renting of said property or arrangements made with the Authorized Representative for the required corrections. When the system is approved by the Authorized Representative, the Representative will issue an Operational Certificate.

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ARTICLE 5: ENFORCEMENT PROCEDURES

Section 1. **Emergency Orders.**

Whenever the Administrative Agency finds that an emergency exists which requires immediate action to protect the public, the Administrative Agency may issue an order reciting the existence of such an emergency. Such an order shall be effective immediately. Any person to whom such an order is directed shall comply therewith immediately.

Section 2. **Suspension of Permit or License.**

The Authorized Representative of the Administrative Agency of Wilson County, Kansas may suspend any permit or license issued if the holder thereof does not comply with the requirements of this Code. The suspension shall become effective ten (10) days after the holder of the license or permit, or the person in charge of such establishment or premises subject to the permit or license, receives written notice of such suspension. The holder or other aggrieved party may request a hearing in accordance with Article 6 of this Code. After a hearing, the Hearing Committee may uphold the suspension as originally ordered or modify it, but in no event shall the Committee enter an order of suspension for a period longer then that set out in the original order. The original order, or any order entered after an appeal, may condition the length of time of the suspension upon correction of the conditions upon which the suspension is based.

Section 3. **Revocation of Permit or License.**

The Authorized Representative of the Administrative Agency of Wilson County, Kansas may revoke a permit or license for violations of any of the requirements of this Code or for interference with the Authorized Representative in the performance of his or hers duties.

Prior to revocation, the Authorized Representative shall notify, in writing, the holder of the license or permit, or the person in charge of the establishment or premises subject to the permit or license, of the specific reason(s) for which the permit or license is to be revoked and that the permit shall be revoked at the end of the ten (10) days following service of such notice unless a written request for hearing is filed in accordance with Article 6 of this Code. If no request for hearing is filed within the ten (10) day period, the revocation of the permit or license becomes final.

Whenever a revocation of a permit has become final, the holder of the revoked permit may make a written application for a new permit and pay the fee required.

Whenever a revocation of a license has become final, the holder of the revoked license shall not be eligible for a new license unless or until the Authorized Representative is assured that such licensee is qualified to perform all duties in compliance with the requirements of this Code.

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Section 4. **Abatement of Nuisance.**

The Administering Agency may maintain a civil action by injunction, in the name of the Board of County Commissioners of Wilson County, in which this Code is applicable, to abate and enjoin a nuisance.

ARTICLE 6: APPEALS

Section 1. **Appeal for Hearing.**

Except as otherwise provided in Article 5 of this Chapter, any person aggrieved by any notice or order issued by the Administrative Agency under the provisions of this Code may request, and shall be granted, a hearing on the matter before the Hearing Committee; provided such person shall file with the Administrative Agency within ten (10) working days after the date of receipt of the notice or order, a written petition requesting a hearing and setting forth the grounds upon which the request is made. The filing of the request for hearing shall operate as a stay of the notice or order except in the case of Section 1 of Article 5 of this Code (Emergency Orders). Upon receipt of such petition, the Administrative Agency shall confer with the Hearing Committee and set a time and place for such hearing and shall give the petitioner written notice thereof. At such hearing, the petitioner shall be given an opportunity to show why such notice or order should be modified or withdrawn. The hearing shall be commenced no later than ten (10) working days after the date on which the petition was filed; provided, that upon request of the petitioner, the Administrative Agency may postpone the hearing for a reasonable time beyond such ten (10) day period, when in the Administrative Agency's judgment the petitioner has submitted justifiable reason for such postponement.

Section 2. **Hearing Committee.**

Is a group, appointed by the County Commissioners, to hear appeals from decisions relating to the administration of this Code.

Section 3. **Report of Hearing.**

Within ten (10) working days after such hearing, the Hearing Committee shall submit the findings of the hearing in writing to the Administrative Agency. The findings shall include a recommendation that the order be sustained, modified, or withdrawn. Upon the receipt of the report the Hearing Committee, the Administrative Agency shall consider the report and issue an order, confirming, modifying, or withdrawing the notice or order, and shall notify the appellant in the same manner as is provide in Article 7 Section 2 of this Code.

Section 4. **Proceedings of Hearings.**

The proceedings of all hearings, including findings and decisions of the Hearing Committee, together with a copy of every notice and order related thereto shall be filed with the Administrative Agency. Proceedings of hearings need not be transcribed unless a judicial review of the decision is sought.

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Section 5. **Variance/Exception.**

The owner of any land or the user of any on-site sewage disposal system regulated by this Code may apply a request for a Variance of Rule Exception to the Authorized Representative for any standard, specification, rule or regulation prescribed by this Code which is not otherwise discretionary under the authority of the Administrative Agency. The request for a variance/exception must be submitted prior to construction to remain in compliance with KSA 28-5-9.

The Administrative Agency shall have the authority to grant exceptions when reliable information is provided which justifies the exception, and alternative methods are available which will attain the objective of the regulations.

The Administrative Agency determines the variation from the regulations that will not adversely affect public health and safety or natural resources.

ARTICLE 7: VIOLATIONS AND PENALTIES

Section 1. **Unlawful Conduct.**

The following acts shall be unlawful:

A. Obstruction of Authorized Representative: No person shall willfully impede or obstruct an Authorized Representative in the discharge of his official duties under the provision of this Code.

B. Operation without a Permit or License: No person shall do any act or engage in any activity for which a permit or license is required by this Code unless first obtaining such permit or license.

C. Failure to Comply with Emergency Order: No person shall fail or refuse to comply with an emergency order of the Administrative Agency issued under Article 5 of this Code.

D. Failure to Comply with Permit or License: No person shall fail to comply with the specified terms or conditions of any permit or license issued under this Code nor do any act or engage in any activity or conduct regulated by this Code without a valid permit or license, nor continue activities or conduct subject to any permit or license which has expired, been suspended or been revoked under this Code.

E. Failure to Comply with Regulations: No person shall do any act or engage in any activity which is regulated by any Article, Section or Chapter of this Code except as authorized and permitted under the Code, and no person shall knowingly operate any activity regulated by this Code in any manner which does not comply with the requirements of the conditions and regulations specified in this Code.

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F. Falsification and Misrepresentation: No person shall falsify nor misrepresent any fact, information, product or data provided, required, or submitted for any application, permit, license, inspection, examination, investigation, report, record, test or other determination required under this Code.

G. Improper Discharges: no person shall cause nor permit any wastewater or sewage to be discharged to or upon the ground surface, the ground water or other natural water course which creates or causes a health hazard or unlawful pollution, and no person shall cause nor permit any effluent from any private sewage disposal system to be discharged, or to leak, seep or otherwise escape from the system such as to create or cause a health hazard or unlawful pollution.

H. Failure to Repair or Correct: no person shall fail or refuse to repair or correct any defect, deficiency or other condition, whether natural or otherwise, in any private sewage disposal system which has caused, or which an Authorized Representative has determined is likely to cause, within reasonable certainty, any improper discharge or other health hazard, unsanitary condition, or unlawful pollution.

If the violation is not corrected within the time frame set forth by an Authorized Representative, he/she in consultation with the County Attorney may issue an order requesting the property to be vacated until corrections have been made and any fines have been paid.

Section 2. Notice of Violations.

When the Administrative Agency determines that here has been a violation of any provision of this Code, notice of such violation shall be issued to the person responsible.

The notice shall:

A. be in writing;
B. include a statement of why the notice is being issued;
C. allow a reasonable period of time for performance of any work required by the notice; and
D. be properly served upon the owner or agent. Such notice shall be deemed properly served when a copy thereof has been sent by registered mail to the last known address of the owner or agent.

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Section 3. **Enforcement Procedure.**

The County Attorney shall enforce the provisions of this Code and other sanitary codes adopted by the county and is hereby authorized and directed to file appropriate actions for such enforcement, upon request of the Administrative Agency. Actions of injunction, mandamus, and quo warranto may be utilized for enforcement of these codes and shall be governed by the provisions of the Kansas Code of Civil Procedure.

Section 4. **Penalties.**

In addition to, and independently of, the Enforcement Procedures provided in Article 7, Section 3 herein, any violation of any provision of this Sanitary Code shall be deemed to be a misdemeanor and punishable by a fine not to exceed two hundred dollars ($200) for each offense. Each day's violation shall constitute a separate offense. (K.S.A. 19-3707)

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CHAPTER 2. SEWAGE DISPOSAL

ARTICLE 1: GENERAL PROVISIONS

Section 1. **Purpose and Intent.**

Sewage is a potential source of disease and a hazard to the health, safety, and welfare of the public. It is the purpose of this Chapter to provide minimum standards for the location, design, construction, maintenance, use and abandonment of on sewage disposal systems, and the removal and disposal of materials from such facilities within the legal boundaries of Wilson County, Kansas.

Section 2. **Scope.**

All sewage must be disposed of by the use of a sanitary sewer system as defined in this Article. A sanitary sewer system may be classified as either a public sewage disposal system or a private sewage disposal system.

Section 3. **Definitions.**

Unless the context requires or specifies otherwise, the following words, terms or phrases, as used in this Code, shall be given the meaning defined in the Section.

A. Absorption System: A private sewage disposal system for the treatment of sewage by means of a leaching field and adjacent soil or by other means of absorption into the ground.

B. Absorption Trenches: One or more trenches of varying length and depth and of fixed horizontal separation in which effluent is percolated into the soil.

C. Aerated Sewage Treatment System: A private sewage disposal system employing biological action, which is maintained by the addition of air or oxygen.

D. Alternative Private Wastewater System: Any private sewage disposal system, which has proven reliability and performance in field use, but differs in design or operation from conventional septic tank and absorption systems.

E. Aquifer: A subsurface water-bearing bed or stratum of sand, gravel or bedrock which stores or transmits water in recoverable quantities or is capable of yielding water to, or transmitting water contaminants or pollutants to, wells or springs.

F. Bedrock: A soil horizon, which contains greater than fifty (50%) percent consolidated material, by volume.

G. Cesspool: A drywell that receives untreated sewage and which may have an open bottom and/or perforated sides. Cesspools are prohibited by this Code.

H. Composting Toilet: A self contained toilet system that uses the process of aerobic decomposition (composting) to dispose of human excreta.

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I. Conventional Private Wastewater System: A system consisting of a septic tank and an absorption system.

J. Direct Supervision: Under instruction and periodic review of a licensed installer.

K. Distribution Box: A watertight chamber below the outlet level of a septic tank or treatment unit and from which effluent enters the absorption system.

L. Drip Irrigation Leach Field: Shallow, slow, pressure-dosed release of pretreated wastewater directly at or above the surface of the soil.

M. Drywell: A well or excavation completed above the water table so that its bottom and sides are typically dry except when receiving fluids. Use of drywells for disposal of domestic wastewater is prohibited by this Code.

N. Gray Water: Wastewater generated from sinks, showers, laundry and water treatment devices. Gray water must be treated the same as other domestic wastewater. (See Sewage)

O. Holding Tank: A watertight receptacle for the retention of sewage before, during or after treatment.

P. Industrial and Commercial Wastes/Wastewater Systems: Any wastes produced as a by-product of any industrial and commercial process or operation, other than domestic sewage. Uses involving industrial or commercial wastewater must comply with regulations involving industrial and commercial wastes as approved and permitted by the Kansas Department of Health and Environment.

Q. Installer: Any person duly licensed to construct, install and/or repair any private on-site sewage disposal systems authorized by this Code.

R. Minor Repair: When used in reference to private sewage disposal systems, the term "minor repair" shall be defined as a replacement or repair of any solid pipe component of the system or the replacement or repair of septic tank components such as tees or baffles or such similar type work as designated by the Authorized Representative.

S. Mound System: An alternative above ground system used to absorb effluents from septic tanks in cases where either, seasonably high water table zones, high bedrock considerations, slowly permeable soils, or limited land areas prevent conventional subsurface absorption systems.

T. Private: Means each individual single household.

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U. Private Wastewater Sewage Disposal System: A sanitary sewage system which retains sewage generated by each individual establishment on the same premises as the establishment that is not required to hold a Kansas Department of Health and Environment Water Pollution Control Permit and such sewage is either:

1. Treated on site by a septic tank and absorption field; or
2. Transported for treatment at another site by means other than pipes or conduits connected to a public sewage disposal system.
3. Collected in a wastewater stabilization pond (lagoon) serving less than twenty- five hundred (2500) gallons per day of domestic sewage.

V. Public Sewage Disposal System: A sanitary sewer system which collects untreated or partially treated sewage from individual establishments or premises or recreational areas and transports it from the establishment or premises by means of pipes or conduits to a plant or location for treatment, and which is available for use by any person within the geographic area served any such a system.

This includes, but is not limited to:

1. Systems built, served or operated by public sewer districts and municipal sewer systems.

2. Systems built within subdivisions that are operated, maintained and processed within the subdivision. The initial installation of these systems is financed by the developer.

W. Sanitary Disposal Contractor: Any person duly licensed to perform sanitary disposal services.

X. Sanitary Disposal Services: The pumping out and removal of sewage from private sewage disposal systems and the transportation of such material to another location for treatment or disposal.

Y. Sanitary privy: A facility with a water tight receptacle made of concrete or other material acceptable to the Code Administrator designed to receive, store, and provide for periodic removal of non-water carried wastes from the human body.

Z. Sanitary Sewage System: Any system of pipes, tanks, conduits, structures, or other devices for the collection, transportation, storage, treatment and disposal of sewage.

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AA. Seepage Pit: A subsurface excavation three which may be filled or lined with rock or gravel and receives untreated sewage. Seepage Pits are prohibited by this Code.

BB. Septic Tank: A watertight, accessible, covered receptacle designed and constructed to receive sewage in which the following processes take place; settling of the solids, and the digestion of some of the accumulated solids by anaerobic-action. All septic tanks will be consistent with State of Kansas Department of Health and Environment Bulletin 4-2 "Minimum Standards for design and Construction of Onsite Wastewater Systems" and the tank must be listed on KDHE website "Table of Certified Septic Tank Manufacturers."

CC. Sewage: Sewage which is normally characterized as, and is similar to, residential wastewater, not commercial or industrial activity, and which originates primarily from kitchen, bathroom and laundry sources, including waste from food preparation, dishwashing, garbage grinding, toilets, baths, showers and sinks.

DD. Soil Mottles: Spots or Streaks of contrasting soil colors, which may indicate the presence of a seasonal water table zone.

EE. Structurally Significant Alteration: When used in reference to private sewage disposal systems, the term "structurally significant alteration" means any of the following:

1. Replacement, repair or extension of any portion of the lateral field of the system, and/or
2. Replacement, repair or reconstruction of any one or more of the critical parts of the system, as designated by the Authorized Representative; and/or
3. Any replacement, repair or reconstruction which, upon review of the Authorized Representative, is determine to be an essential repair in order to correct or prevent an improper discharge or imminent health hazard or unlawful pollution.

FF. Trunk Line: The solid pipe from which the laterals extend in a septic tank system.

GG. Wastewater Stabilization Pond (Lagoon): A pond designed and constructed to exclude surface water and receive untreated sewage and gray water through a submerged sewer line for biological decomposition.

HH. Water Table Zone: A zone in the soil, which is either continually or seasonally saturated with water.

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Section 4. **Rules of Application.**

The provisions of Bulletin 4-2 "Minimum Standards for Design and Construction of Onsite Wastewater Systems" published by KDHE and Kansas State University Agricultural Experiment Station and Cooperative Extension Service, March 1997, and as may be amended, (included in this Code as Appendix A) is hereby adopted and incorporated into this as if set forth herein to assure protection of the public health and environment from all designed, constructed and installed onsite wastewater systems. Requirements established by KDHE, Bulletin 4-2 and the Wilson County Sanitary Code shall apply and be applicable to any and all privately owned wastewater treatment system now or hereafter installed, used or operated for any facility located within the unincorporated area of Wilson County, Kansas.

Sections of the Wilson County Sanitary Code may be more stringent than the requirements of KDHE Bulletin 4-2 and have been adopted based on available research and technology.

A. General Rule: Unless otherwise provided or excepted in accordance with this Section, from and after the effective date of this Code, no person shall design, install, replace, alter, repair, use or operate, nor cause or allow the installation, replacement, alteration, repair, use or operation of any private sewage disposal system except as permitted under and as which complies with the established requirements of this Code.

B. Existing Systems Treating Domestic Sewage: Any private domestic sewage disposal system lawfully installed prior to the effective date of this Code and used exclusively for domestic sewage and **not industrial nor commercial wastes,** (Seepage pits or Cesspools are prohibited and must be replaced), may remain in use if, and as long as, it continues to operate in accordance with the original design and location, does not experience any system failure, and does not present any hazard to the public health, safety or welfare. However, any replacement, alteration, enlargement, repair, removal, conversion, improvement or demolition shall comply with the requirements of this Code or any later amendments, revisions or versions.

C. Existing Tracts and Lots of Record: The owner of any land, which is a tract or lot of record, on or before the effective date of this Code may apply for and receive a permit under the applicable provisions of this Chapter if:

1. The tract or lot size is a least one (1) acre; and
2. The installation and use of the system shall be exclusively for private sewage disposal and will comply with all other requirements of this Code; and

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3. The lot is located in a plat which has received final plat approval on or before the effective date of this Code or the lot or tract is not platted but was duly recorded as a lot or tract of record prior to the effective date of this Code.

ARTICLE 2: PRIVATE SEWAGE DISPOSAL SYSTEM

Section 1. **Types.**

Private Sewage Disposal Systems are classified as each individual single household system and as being one of the following types:

1. Septic Tank and Absorption System
2. Aerated Septic Tank and Absorption System
3. Mound System
4. Drip Irrigation
5. Holding Tank
6. Wastewater Stabilization Pond (Lagoon)
7. Alternative System

All domestic wastewater shall be discharged to an approved sewage collection system or an approved lagoon, septic system, or alternative system.

Section 2. **Proper Maintenance and Operation.**

Wastewater from a home shall be discharged to a properly designed and maintained septic tank-soil absorption field or wastewater pond, an approved alternative treatment and disposal system, or a permitted sewage treatment plant.

All private sewage disposal systems shall be maintained in good working condition and shall not discharge onto the surface grade or into the groundwater or drain into any stream or roadside ditch or produce any offensive odors; or become a breeding place for flies, mosquitoes or rats and other disease vectors. Surfacing of effluent in pools or streams or groundwater contamination will indicate system failure. Whenever the Authorized Representative shall find any private sewage disposal system malfunctioning and causing any prohibited condition, it shall order the owner and/or user to correct the condition.

Some alternative wastewater systems may require additional maintenance in order to function properly. The installation of an aerobic septic tank as a method of pretreatment shall require a maintenance agreement for the life of the system with a qualified service provider.

Section 3. **Connections to Public Sewage Disposal Systems.**

To the extent feasible, public sewage disposal systems shall be used for the disposal of all sewage in Wilson County, Kansas, and no private sewage disposal system shall be permitted under this Chapter whenever a public sewage disposal system is within four hundred (400) feet of the property line. Any property served by a private sewage disposal system authorized under this Chapter shall connect to a public system as provided in this Section.

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A. Existing Systems: After the effective date of this code, no permit for construction or for a structurally significant alteration of a private sewage disposal system shall be issued for any lot or tract of land any part of which is located within four hundred (400) feet of a main or lateral sewer line which is part of a public sewage disposal system which serve the lot or tract, and when it is determined that connection to the public system is feasible and reasonably available to the property owner.

B. New Systems: The use of any private sewage disposal system for which permit to construct was issued prior to the effective date of this Code shall be prohibited three (3) years after a public main or lateral sewer line first becomes available for service within the four hundred (400) feet of the lot or tract served by the private sewage disposal system, and when it is determined that connection to the public system is feasible and reasonably available to the property owner.

C. Extension or Waivers. The requirement for connection to a public sewage disposal system for any particular tract or lot may be waived, or the time extended, by official action of the Board of County Commissioners, if shown that the required connection would result in undue hardship.

Section 4. Repairs and Corrections.

Any private sewage disposal system that cannot connect to a public sewage disposal system and does not function properly as designed and permitted shall be replaced or repaired. Plans and specifications for the replacement or repairs shall be submitted to and reviewed by the Authorized Representative and no repairs or replacements, other than ordinary maintenance, shall be performed without a permit and inspection as required under this Code.

Section 5. Location of Private Sewage Disposal System.

Any potion of a private sewage disposal systems installed in Wilson County, Kansas must meet the minimum separation distances required by Wilson County, Kansas. All distances must meet the minimum standards found in KDHE Bulletin 4-2 but may be of a greater distance as required by this Code. Minimum separation distances are as follows:

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Separation Distances of:	Required Distance
Septic Tank to foundation of house or other building	**10 feet**
Soil Absorption System to dwelling foundation	**20 feet**
Any part of a private sewage disposal system to:	
Public potable water line	**25 feet**
Private potable water line	**10 feet**
Property line	**25 feet**
Public water supply, well or suction line	**100 feet**
Private water supply, well or suction line	**50 feet**
Surface water course	**50 feet**
Public utility lines (not water)	**50 feet**
Wastewater Lagoons to:	
Property line	**50 feet**
Dwelling foundation	**50 feet**
Water wells, ponds or creeks	**50 feet**

A. Flood/Full Pool: No portion of a private sewage disposal system shall be located below the flood pool elevation of any reservoir or full pool elevation of any pond, lake or water supply reservoir with the potential to inundate the system.

B. 100-Year Floodplain: Except for lagoon systems, no portion of a private sewage disposal system shall be constructed within the 100-year floodplain of any stream, river or watercourse (as established by the Federal Emergency Management Agency). This does not preclude repair of existing systems, provided other requirements of this Code are met.

Section 6. General Systems Requirements.

Industrial or commercial wastewater (from shops, manufacturing, car washes, etc.) is not permitted to be discharged to any type of on-site system, so it shall not be mixed with domestic wastewater.

Surface runoff from roofs and paved areas, subsurface drainage from footing drains and sump pumps, and cooling water are not domestic wastewater and must be excluded from soil absorption systems. Such water may be used to maintain operating water level in wastewater ponds.

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The system shall be designed to consist of a building connection, treatment unit such as a septic tank and absorption field. An "absorption field" means a configuration of on-site trenches known as laterals, installed to absorb sewage effluent from a septic tank or other solids removal device. The system shall receive all domestic sewage including laundry waste. The design of the system shall ensure that the wastes discharged to the private sewage disposal systems:

A. Do not contaminate any drinking water.

B. Are not accessible to insects, rodents or other possible carriers of disease, which may come in contact with food or drinking water.

C. Do not contaminate surface water or groundwater aquifers.

D. Do not surface above ground level.

E. Is not a danger by being exposed and accessible to animals or children.

F. Do not give rise to a nuisance due to odor or unsightly appearance.

Design Flow is estimated by multiplying the number of household bedrooms by the number of people per bedroom. This Code recognizes two (2) people per bedroom at 150 gallon per day use

Adjustments should be made for water softeners, spas, hot tubs, dishwaters, garbage disposals, etc. these appliances may increase water use.

Section 7. **Application Procedure.**

The person applying for the septic system permit shall first file an application in writing on a form furnished for that purpose by the Administrative Agency. The application shall:

A. Identify and describe the activity for which permission is requested (e.g. construction, repair, etc.)

B. Identify the location of the activity for which permission is requested by legal description and street address.

C. Indicate the type of establishment, which the sanitary system will serve.

D. Have a Site and Soil Evaluation completed as specified in Section 8 of this Article.

E. Be accompanied by a system design to be done in conformance with recommendations of the site and soil evaluation. The system design shall include a legal description of the site, the required laterals, septic tank size, number of bedrooms in the home and be prepared by an installer licensed by this Code or a Registered Engineer.

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F. Be signed by owner, or his/her duly authorized representative. The representative may be required to submit evidence of such authority.

Section 8. Field Data Requirements.

Site and Soil Evaluation: Although the septic tank is important for removing solids from the wastewater, most wastewater treatment is provided by the soil. Microorganisms living in the soil profile use organic matter in the wastewater as food, thus treating and purifying the water as they grow. Four (4) feet of soil beneath the bottom of the soil absorption field is required to assure adequate treatment before wastewater reaches the water table or flows laterally due to the presence of a restricted layer. An evaluation of the soil is required to assess the ability of a site to provide proper wastewater treatment. Soil must absorb the septic tank effluent, treat the wastewater, and transmit treated wastewater away from the soil absorption areas.

The range of values for each of several properties that cause the soil to be placed in slight, moderate, and severe limitation rating for soil absorption systems and recommended loading rates based on soil texture, structure and consistence information is shown in Appendix A.

Section 9. Plans and Specifications.

Plans and specifications shall be drawn and shall include but limited to the following information:

A. Size of lot, dimensions and relative location of structures.

B. Proposed location of the private sewage disposal system.

C. Alternative systems require submittal of all design specifications and retention of one set of approved plans shall be retained by the Administrative Agency and one set of approved plans shall be returned to the applicant.

Section 10. Inspection Required for System Approval.

No private sewage disposal system shall be placed into service until the system has been inspected and approved by the Authorized Representative.

A. No inspection or system approval will be initiated until and unless the applicant or property owner has fully complied with the permit and application requirements of this Code.

B. No part of the private sewage disposal system shall be buried until an inspection of the system be made by the Authorized Representative and is approved.

C. There should be given enough of a notice for the inspection so an arranged time can be agreed upon as to accomplish the inspection during normal working hours.

D. A final follow up inspection shall be done in order to assure all requirements have been met.

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ARTICLE 3: REGULATIONS

Section 1. **Septic Systems.**

It shall be unlawful for any person, firm, or corporation to erect, construct or perform any structurally significant alteration, remove, convert or demolish any septic system regulated by this Code, without first obtaining a septic system permit from the Administrative Agency. Permits issued under this Article shall be subject to the following qualifications:

A. Property Use: Permits may be issued under this Article only for single-family residences, businesses, churches, industrial, commercial facilities or establishments generating only domestic wastewater.

B. Minimum Lot Size: A minimum lot or tract size of five (5) acres in agricultural zone and three (3) acres residential zone per living unit shall be required for any permit issued under this Article except as provide in Chapter 2, Article 1, Section 4.

C. Terms and Renewals: A permit issued under this Article shall be valid for a period of six (6) months following the date of issuance unless acted upon and may be renewed by order of the Administrative Agency.

D. Transfer: A permit issued under this Article shall not be transferable.

E. Standards: No permit shall be issued to any person, property or establishment, which does not comply with and satisfy the specified requirements of all applicable Sections of this Code.

F. General System Requirements: The system shall be designed to consist of a building connection, treatment unit, such as a septic tank and absorption field. An "absorption field" means a configuration of on-site trenches installed to absorb sewage effluent from a septic tank or other solids removal device.

G. Inspection Requirements: An inspection shall be made when a systems is installed. The tank and pipe shall be in the ground but must be uncovered for the inspector to check the following:
   1. Tank size and inside structure, including inlet and outlet baffles or tees.
   2. Connections to the house, influent and effluent side of tank.
   3. The width and depth of the trenches for lateral lines.
   4. All solid, un-perforated trunk lines on undisturbed soil and no rock material in trunk line ditch.
   5. Depth of gravel in laterals.
   6. Level of pipes and the end of each lateral line capped or unconnected.
   7. Filter material over laterals.
   8. Anticipated depth of fill over laterals.

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9. Quality of all construction materials to assure compliance with minimum standards.

A second inspection may be made after final grading has occurred, but before occupancy, when determined necessary by the inspector. The inspector will check the following:

1. Depth of soil over septic tank.
2. Depth of soil over lateral lines.
3. Contour of soil to assure allowance for water diversion around the lateral field.
4. Operation of aeration unit (when installed).

H. Construction Specifications: Plans for all septic tanks shall be submitted to the Authorized Representative for approval. Such plans shall show all dimensions, reinforcements, structural calculations, and such other pertinent data as may be required. Septic tanks shall be constructed of sound, durable materials, not subject to excessive corrosion or decay and shall be watertight, such as concrete, fiberglass or polyethylene. Each such tank shall be structurally designed to withstand all anticipated earth or other loads and shall be installed level and on a solid bed. Steel septic tanks shall not be permitted. All tanks shall meet the design and construction specifications as set forth in the State of Kansas Department of Health and Environment Bulletin 4-2 and amendments thereto.

1. Tank Requirements: Residential septic tanks shall be a minimum of one thousand (1000) gallon capacity tanks.

2. Pump Tanks: A Septic Tank Effluent Pump (STEP) involves a two-compartment septic tank with the pump assembly in the second compartment. An approved pump assembly shall be used.

A Single Compartment Pump Tank shall be pre-cast concrete, fiberglass or polyethylene. The pump tank shall have a minimum capacity of 500 gallons. All pump tanks shall be equipped with an approved manhole and lid-to-finish grade and shall also be equipped with an approved high water alarm.

3. Location: The location of the septic system shall be as to maintain not less than the stated distances as shown in Chapter 2, Article 2, Section 5.

4. Site Preparation: The area proposed to be occupied by the private sewage disposal system shall not be disturbed or compacted prior to system installations. Fencing or other appropriate barriers shall be used to designate this area. During and after installation, care shall be taken to avoid compaction or destruction of the soil profile.
Excavation for construction of the system shall not be done when soil moisture is so great that soil from the site rolled between hands will form a soil wire.

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5. Lateral Size: The linear footage required for the lateral system shall be calculated based on soil evaluation, number of bedrooms, and approved material that is used, and is determined by the Authorized Representative.

6. Lateral Trench: The acceptable absorption trench width shall be from twenty-four (24") inches with an eight (8') feet distance between center lines of each trench to thirty-six (36") inches with a nine (9') feet distance between center lines of each trench.

7. Trench Depth: Generally, the total trench depth should be as shallow as possible, but not less than eighteen (18") inches.

8. Lateral Field: An approved standard perforated trench pipe, ten (10') foot length of rigid PVC shall be used. There shall be a minimum of 1/8th inch of slope from outlet end of tank to first lateral. Individual trenches should not exceed one hundred (100') feet from end of lateral to trunk line. Drainage lines shall be installed on top of at least six (6") inches of **washed** gravel sized from ¾" inches to 2 ½" inches. The Authorized Representative shall approve the fabric material that will be placed over the gravel before backfilling. No part of the lateral field shall be covered by more than twenty-four (24") inches of backfill.

9. Connections: All pipe connected to the septic tank shall be four (4") inch solid pipe with a minimum rating of Schedule 40. Solid lines from the outlet pipe of the septic tank shall be four (4") inch solid pipe with a minimum rating of SDR35. Rigid or corrugated plastic approved by the American Society for Testing and Materials (ASTM) will be required for use as open joint or perforated distribution lines. Gravelless Chambers are an accepted material to use in the trench areas.

10. Prohibited Connections: No roof, driveway, or floor drain shall be connected to a septic tank system.

11. Other Requirements: Any additional construction specification guidelines necessary shall be approved by the Authorized Representative.

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Section 2. **Lagoons.**

It shall be unlawful for any person, firm, or corporation to erect, construct or perform any structurally significant alteration, remove, convert or demolish any lagoon regulated by this Code, without first obtaining a lagoon permit from the Administrative Agency. Permits issued under this Article shall be subject to the following qualifications:

A. Land Use: Permits may be issued under this Article only for single-family residences.

B. Minimum Lot Size: A minimum lot or tract size of five (5) acres in agricultural zone and three (3) acres residential zone per living unit shall be required for any permit issued under this Article except as provide in Chapter 2, Article 1, Section 4.

C. Standards: No permit shall be issued to any person, property or establishment, which does not comply with and satisfy the specified requirements of all applicable Sections of this Code.

D. Lagoon Design Requirements:

1. All lagoons must be designed and maintained so as not to overflow or discharge.

2. The completed construction of the facility shall conform to the plans and specifications approved by the Authorized Representative.

3. The facility shall be operated in such a manner that a public health nuisance or water pollution problem will not arise.

4. A separation distance of fifty (50') feet between the proposed water's edge of the lagoon at the normal pond water depth and the property line of another owner shall be provided.

5. When a lagoon excavation penetrates or terminates in either a rock strata or a porous (sand or gravel) strata, the excavation shall be extended a distance of one (1') foot on both the bottom and side slopes. The area of supplemental excavation shall be filled with a non-permeable earthen material to limit seepage from the pond. This normally may be accomplished by using a clay soil, which is free of rocks. If the clay soil is not available, the fill soil shall be mixed with bentonite clay at the manufacturers recommended rate and compacted.

6. Placement of a septic tank of a size no less than one thousand (1,000) gallons may be installed. Effluent from the septic tank then shall drain by sewer pipe to the lagoon.

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7. If the septic tank is used, the sewer line shall be a four (4") inch solid pipe with a minimum rating of SDR thirty-five (35) with a minimum slope of one eighth (1/8") inch per foot. A cleanout wye must be installed near the house no more than ten (10') feet from the house on the influent side and one every one hundred (100') feet on the effluent side.

8. Inflow lines to lagoons shall be constructed so that normal inflow of sewage to the full pond occurs near the center of the pond and two (2') feet above the bottom of the pond. Inflow lines must be at least four (4") inches in diameter. Schedule 40 thermoplastic sewer pipe with solvent joints is durable, easy to lay, and recommended.

9. At least two (2) cleanouts should be used, one (1) just outside the house not more than ten (10') feet, and one (1) near the pond where the ground surface is six (6") inches above embankment for access to unplug line. There shall be one (1) cleanout every one hundred (100') feet.

10. There should be two (2') feet of freeboard and five (5') feet of berm with an outside slope of 3:1.

11. After construction of the lagoon, the builder shall smooth the dike so that no clods, rocks or ruts will interfere with mowing.

12. A stand of grass shall be established on the dike. This grass should be short-rooted, perennial, such as blue, fescue or brome, and shall be mowed regularly.

13. The entire lagoon area shall be fenced with a minimum four (4') feet high woven or welded wire fencing with two-inch by four-inch (2" x 4") maximum openings. This fence is to discourage entry by unauthorized persons (especially children), pets and livestock.

14. A gate of sufficient size and location to accommodate the entrance of a mower must be provided.

15. Roof drains may not be discharged to the lagoon unless approved control arrangement is provided to readily facilitate a diversion from the sewer system.

16. Construction of the lagoon must be approved by the Authorized Representative before the pond be used.

17. Lagoon separation distances shall meet the specifications in Chapter 2, Article 2, Section 5.

18. If lagoon is located in a flood plain, a backflow preventer must be installed in lagoon supply lines.

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Section 3. **Mounds.**

It shall be unlawful for any person, firm, or corporation to erect, construct or perform any structurally significant alteration, remove, convert or demolish any mound system regulated by this Code, without first obtaining a mound system permit from the Administrative Agency. Permits issued under this Article shall be subject to the following qualifications:

A. Land Use: Permits may be issued under this Article only for single-family residences, businesses, churches, industrial, commercial facilities or establishments generating only domestic wastewater.

B. Minimum Lot Size: A minimum lot or tract size of five (5) acres in agricultural zone and three (3) acres residential zone per living unit shall be required for any permit issued under this Article except as provide in Chapter 2, Article 1, Section 4.

C. Standards: No permit shall be issued to any person, property or establishment, which does not comply with and satisfy the specified requirements of all applicable Sections of this Code.

E. General Requirements and Standards: Mound systems shall be permitted only after a thorough site evaluation has been made, and landscaping, dwelling, placement, effect on surface drainage and general topography have been considered. Mound systems shall not be utilized on soils where high groundwater level or bedrock occurs within twenty-four (24") inches of the surface.

F. Design: All mound systems shall be designed by a Registered Professional Engineer, Licensed Designer, Registered Sanitarian or Professional Soils Scientist, and approved the Authorized Representative.

Required distances from the system, as provided in Chapter 2, Article 2, Section 5, shall apply to the design of mound systems. Construction specifications of septic tanks and laterals, etc. used in a mound system shall comply with the construction standards as provided in Chapter 2, Article 3, Section 1.

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Section 4. **Holding Tanks.**

A. Scope: For the purposes of this Section, the term "Holding Tank" refers to a watertight receptacle to retain sewage on-site prior to removal from the site by a Sanitary Disposal Contractor licensed under Chapter 2, Article 3, Section 8.

B. Permit Required: It shall be unlawful for any person, firm, or corporation to erect, construct or perform any structurally significant alteration, remove, convert or demolish any holding tank regulated by this Code, without first obtaining a permit from the Administrative Agency. Prior to issuance of a permit, the owner of the holding tank shall provide a copy of the service contract with a Licensed Sanitary Disposal Contractor.

C. Authorized Usage: Holding tanks may only be used for the on-site retention of sewage before the contents are removed by a Licensed Sanitary Disposal Contractor. Prior to issuance of a permit, the owner of the holding tank shall provide a copy of the service contract with a Licensed Sanitary Disposal Contractor.

D. Minimum Lot or Tract Size: One (1) acre per occupied unit shall be required for the use, operation of any holding tank under this Section.

E. Land Use: Permits may be issued under this Article only for single-family residences, businesses, churches, industrial, commercial facilities or establishments generating only domestic wastewater.

F. Transfer: Permits are transferable only upon verification of a service contract with a Licensed Sanitary Disposal Contractor.

G. General Requirements: The system shall be designed to consist of a building connection and the holding tank. The design of the system shall ensure that waste discharged to the system:

1. Does not contaminate any groundwater, groundwater aquifers, surface water or drinking water.
2. Is not accessible to insects, rodents or other possible carriers of disease, which may come in contact with food or drinking water.
3. Is not a danger by being exposed or accessible to animals or children.
4. Does not give rise to a nuisance due to odor or unsightly appearance.

H. Standards and Specifications: Any holding tank system authorized under this Section shall be designed, constructed to the same specifications as septic tanks and operated to comply with standards and specifications approved by the Authorized Representative in accordance to this Code.

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1. Capacity Requirements: The minimum liquid capacity of a holding tank for non-commercial or non-industrial uses shall be 1500 gallons.

2. Site Location: Tanks shall be located at least ten (10') feet from any part of a building. Holding tanks shall be so located to an all weather access road or drive so that the pumper may drive pumping equipment to within ten (10') feet of the servicing manhole.

3. Warning Device: A high water warning device shall be installed so that it activates one (1') foot below the inlet pipe. This device shall be an audible or illuminated alarm.

4. Access Opening: Each tank shall have an access manhole extended to finish grade, and shall consist of a circular cast iron ring and lid or other material which meets with the approval of the Authorized Representative. When a holding tank is accessible to the general public, manholes and other lids or covers must be secured against vandalism, etc.

I. Changes in Use: The permit holder shall notify the Authorized Representative in writing within five (5) working days of any change in the use of the premises, which are serviced by the holding tank, or any change in ownership or occupancy of the premises.

J. Inspection Requirements: An inspection shall be made when a systems is installed. The tank and pipe shall be in the ground but must be uncovered for the inspector to check the following:

1. Tank size and the outside and inside of structure.
2. All connections.
3. Quality of all construction materials to assure compliance with minimum standards.
4. Distances meet requirements.
5. The High Water Warning Device is installed and working properly.
6. There is access to the opening for pumping purposes.

A second inspection may be made after final grading has occurred, but before occupancy, when determined necessary by the inspector. The inspector will check the following:

1. Depth of soil over holding tank.
2. System operation.

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Section 5. **Composting/Waterless Toilets.**

A. Permits Required: Composting toilets may be permitted for on-site sanitation in areas where no water supply is available and for such uses as seasonal cabins or camps and similar temporary activities when approved by a Special Use Permit as provided by the Zoning Regulations of Wilson County, Kansas and the Authorized Representative. The application procedures and fees shall be the same as for a septic tank system.

B. Construction Standards: Composting toilets shall be required to have a National Sanitary Foundation seal of approval and testing. The unit may be electric or non-electric and must be installed with fans in the required vent pipe.

C. Maintenance: Composting toilets shall be maintained and cleaned as per manufacturer's standards and recommendations and shall not create a nuisance or health hazard.

D. Pit Privies and Waterless Toilets: The use of privies for on-site sanitation **is prohibited.** However, the temporary use of chemical and dry toilets may be allowed in special cases including, but not limited to, public and private events, and construction/repair sites. All waste must be disposed in an approved disposal site. The installation and removal of such facilities shall be subject to the regulations for Sanitary Disposal Contractors set for in Chapter 2, Article 3, Section 8 of this Code.

J. Inspection Requirements: An inspection shall be made when a system is installed for the inspector to check the following:

1. Tank size and the outside and inside of structure.
2. All connections.
3. Quality of all construction materials to assure compliance with minimum standards.
4. Distances meet requirements.
5. There is access to the opening for pumping purposes.

A second inspection may be before occupancy, when determined necessary by the inspector. The inspector will check the following:

1. System operation.

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Section 6. **Other Systems.**

A. Approval: Alternative systems such as At-grade, Low Pressure Pipe, Intermittent Sand Filter, or similar systems, may be approved by the Authorized Representative upon submission of plans and specifications.

B. Minimum Lot Size: A minimum lot or tract size of five (5) acres in agricultural zone and three (3) acres residential zone per living unit shall be required for any permit issued under this Article except as provide in Chapter 2, Article 1, Section 4.

C. Permits Required: A permit shall be required for any alternative system authorized or approved under this Section.

D. Permit Qualifications: Any permit or approval authorized under this Section shall be issued subject to the qualifications specified:

1. Land Use: Permits may be issued under this Article only for single-family residences, businesses, churches, industrial, commercial facilities or establishments generating only domestic wastewater.

2. Standards: No permit shall be issued to any person, property or establishment, which does not comply with and satisfy the specified requirements of all applicable Sections of this Code.

E. Inspection Requirements: An inspection shall be made when a system is installed for the inspector to check the following:

1. All connections.
3. Quality of all construction materials to assure compliance with minimum standards.
4. Distances meet requirements.

A second inspection may be before occupancy, when determined necessary by the inspector. The inspector will check the following:

1. System operation.

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Section 7. **Installer:**

A. License Required: No person shall install, engage in the installation of, or repair a private wastewater system in Wilson County, Kansas, unless that person holds a valid Installer License issued by the Authorized Representative of Wilson County, Kansas. Employees of a valid licensed installer are not required to be separately licensed when under direct supervision of licensed installer.

B. License Term and Renewal: Any license issued under this Section shall be valid January 15th of the year of issuance to January 15th of the following year. Applications for licenses and renewals shall be filled on forms supplied by the Authorized Representative. All required license fees shall be paid at the time of the application for the license or renewal.

C. Standards of Performance: Prior to issuance or renewal of a license under this Section, the applicant shall be required to demonstrate adequate knowledge of the regulations pertaining to private wastewater systems and general engineering principles pertaining to such systems. The Authorized Representative may consider actual experience, education or professional licensing of the applicant in the granting or denial of an application for an initial license or renewal, including prior revocations or disciplinary action.

Satisfactory completion of a written examination administered by the Authorized Representative covering subjects related to public health concerns, sewage disposal systems, sewage disposal techniques, standards for design or construction or installation of sewage disposal systems, shall satisfy the requirements of this Section. The applicant who fails to satisfactory complete the written examination by a score of at least seventy (70%) percent may retake the examination after thirty (30) days.

D. Certificate of Insurance: A licensed Installer shall have and maintain insurance for liability and workmanship and a copy of the certificate of insurance shall be filed with the Agency.

E. Code Compliance: The installation, relocation or repair of any private sewage disposal system shall be in compliance with the provisions of this Code.

F. License Revocation: A license may be revoked for failure to comply with this Code. The revocation procedures shall comply with the provisions of Chapter 1 of this Code.

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Section 8. **Sanitary Disposal Contractors.**

A. License Required: No person or entity may engage in the pumping of holding tanks, septic tanks, pump tanks, portable toilets or grease traps or transport sewage to a disposal site unless that person holds a valid Sanitary Disposal Contractor's License for Wilson County, Kansas. Employees of a validly licensed Sanitary Disposal Contractor are not required to be separately licensed.

B. License Term and Renewal: Any license issued under this Section shall be valid January 15th of the year of issuance to January 15th of the following year. Applications for licenses and renewals shall be filled on forms supplied by the Authorized Representative. All required license fees shall be paid at the time of the application for the license or renewal.

C. Standards of Performance: Every person licensed as a Sanitary Disposal Contractor under this Section shall comply with the performance requirements specified in this Section.

1. Cleaning: A license holder, when cleaning a septic tank, shall remove the liquid, sludge and scum, leaving no more than three (3") inches depth of sewage.

2. Equipment: A license holder shall maintain his/her equipment so as to ensure that no spillage of sewage will occur during transportation and that his/her employees are not subject to undue health hazards. All sewage shall be transported in an enclosed tank.

3. Vehicles: Sewage shall be transported only in vehicles approved for that purpose by the Authorized Representative. Each such vehicle must be inspected prior to issuance or renewal of a license to a Sanitary Disposal Contractor. Each vehicle shall bear permanent identification identifying the Name of the Company, the Owner and address of the Business.

4. Disposal and Reporting: Waste materials removed from holding tanks, septic tanks, pump tanks, portable toilets or grease traps must be disposed of in a manner approved by the Administrative Agency, or by one of the following:

a) Transported to a Public Owned Treatment Works (POTW); or

b) Discharged upon agricultural cropland or grassland with the permission of landlord or tenant. The waste material shall be applied in such times that no surface runoff leaves the property. No discharge of such waste material shall be permitted:

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1) Within one-hundred (100') feet of any water well; or
2) Within fifty (50) feet of other properties; or
3) Within two-hundred (200') feet of any surface water body; or
4) Onto frozen or rain saturated ground; or
5) Within a one-hundred (100) year floodplain.
6) **If you don't know don't discharge.**

A quarterly report of all land applications will be submitted to the Authorized Representative providing:

a) Name of owner of property.
b) Legal description of property which includes Quarter Section, Section, Township, Range, County, State and directions from a town or significant landmark, etc. to be used by someone driving to the site.

All land applications must be done in compliance with the terms of 503 CFR regulations.

5. Experience: Prior to the issuance or renewal of a license the applicant shall be required to demonstrate adequate knowledge of the regulations pertaining to Sanitary Disposal Contractors. The Authorized Representative may consider prior conduct of the applicant in localities not subject to this Code in the granting or renewal of a license as well as any prior violations of this Code.

6. Compliance: The license holder shall comply with any applicable federal, state, and local laws including, but not limited to, those set forth now or hereafter adopted in Standards for the Use or Disposal of Sewage Sludge, Volume 58, Number 32, Page 9388, of the Federal Register, February 19, 1993, as amended.

7. Certificate of Insurance: A licensed Sanitary Disposal Contractor shall have and maintain insurance for liability and workmanship and a copy of the Certificate of Insurance shall be filled with the Agency.

D. License Revocation: A license may be revoked for failure to comply with this Code. The revocation procedures shall comply with the provisions of Chapter 1 of this Code.

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CHAPTER 3. WATER SUPPLY

ARTICLE 1: WATER SUPPLIES

Section 1. **Purpose and Intent.**

The provisions of this Chapter are for the purpose of controlling the siting, maintenance and use of all water supplies, other than public supplies and irrigated areas larger than two acres, used for human consumption, in Wilson County, KS, in order that public health will be protected and contamination and pollution of the water resources of the county will be prevented.

Section 2. **Area of Applicability.**

This Code shall apply to all unincorporated land located in Wilson County, Kansas.

Section 3. **Compliance Required.**

After the effective date of this Code, no person shall construct on any property subject to this Code, a private water supply that does not comply with the requirements of this Code.

Section 4. **Definitions.**

In addition to the definitions provided in Chapter 1 of this Code, the words, terms and phrases listed below, for the purpose of this Chapter, are defined as follows:

A. Abandoned Water Well: A well must meet some or all of the following:

1. Which has been permanently discontinued from use;
2. From which the pumping equipment has been permanently removed:
3. Which either is in such a state of disrepair that it cannot be used to supply water or it has the potential for transmitting surface contaminants into the aquifer or both;
4. Which posses potential health and safety hazards; or
5. Which is such a condition it cannot be placed in active or inactive status.

B. Active Well: A water well, which is an operating well used to withdraw water, monitor or observe groundwater conditions.

C. Construction of Water Wells: All acts necessary to obtain groundwater by any method for any use including, without limitation, the location of and excavation for the well.

D. Domestic Purpose: Water used by any person or family unit or household for household purposes.

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E. Groundwater: That part of the subsurface water which is in the zone of saturation.

F Inactive Status: A water well which is not presently operating but is maintained in such a way it can be put back into operation with a minimum amount of effort.

G. Potable Water: Water free from impurities in amounts sufficient to cause disease or harmful psychological effects in humans and conforming to the latest KDHE regulations.

H. Reconstructed Water Well: An existing well that has been deepened or has had the casing replaced, repaired, added to or modified in any way for the purpose of obtaining groundwater.

I. Test Hole: Any excavation constructed for the purpose of determining the geologic, hydrologic and water quality characteristics of underground formations.

J. Treatment: The stimulation of production of groundwater from a water well, through use of Hydrochloric Acid, Muritic Acid, Sulfamic Acid, Calcium or Sodium Hypochlorite, polyphosphates or other chemicals and mechanical means, for the purpose of reducing or removing Iron and Manganese Hydroxide and Oxide deposits, Calcium and Magnesium Carbonate deposits and lime deposits associated with Iron or Manganese bacterial growth which inhibit the movement of groundwater into the well.

K. Water District: Any special district authorized and empowered by the state statues to plan, construct and/or operate a public water supply system.

L. Water Supply/Private: A water supply used for domestic purposes, which serves not more than one (1) dwelling on a pipe system.

M. Water Supply/Public: A system for delivery to the public of piped water for human consumption that has at least ten (10) service connections or regularly serves at least twenty-five (25) individuals daily at least sixty (60) days of the year.

N. Water Well: Any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed, when the intended use of such excavation is for the location, diversion, artificial recharge or acquisition of groundwater.

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Section 5. **Requirements for Private Water Supplies.**

A. Permit: No person shall drill, develop or construct any private water supply well on any premises subject to the regulations of this code until he/she has obtained a permit from the Authorized Representative.

B. Approved Plans: No permit to construct or develop a private water supply on premises subject to the regulations of this Code shall be issued until the plans showing the location and construction of the supply has been approved by the Authorized Representative.

C. Use Limitation: Permits for drilling a well for private water supply for human consumption shall not be issued to any person when in the discretion of the Authorized Representative the property can be served at a reasonable cost by a public water supply or when the water supply constitutes a significant health risk. Use of surface water (lakes, ponds, or streams) as a source of water for private water supply shall not be permitted.

Section 6. **Minimum Standards for all Groundwater Supplies.**

A. Construction: All wells that are to serve as a source of private water shall be constructed in accordance with Kansas Administrative Regulations 28-30-6.

B. Location: The horizontal distance between the well and the potential sources of pollution or contamination, such as septic tanks, lateral field, pit privy, seepage pits, fuel or fertilizer storage, pesticide storage, feed lots or barnyards shall be one-hundred (100') feet. Permits for new wells shall not be granted unless any prohibited practices, i.e. cesspools, seepage pits, privies are remediate or removed.

C. Plugging of Abandoned Wells and Test Holes: 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, shall be plugged or caused to be plugged by the landowner in accordance with Kansas Administrative Regulations 28-30-7.

D. Pollution Sources: Well locations shall be approved by the Authorized Representative with respect to distances from pollution sources and compliance with wastewater and disposal regulations.

E. Water Well Disinfection for Wells Used For Human Consumption or Food Processing: Disinfection standards set for in Kansas Administrative Regulations 28-30-10 are herby adopted by Wilson County, Kansas and shall apply to all water wells used for public consumption or food processing.

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Kansas Department of
Health and Environment

APPENDIX A

STATE OF KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

BULLETIN 4-2, MARCH 1997

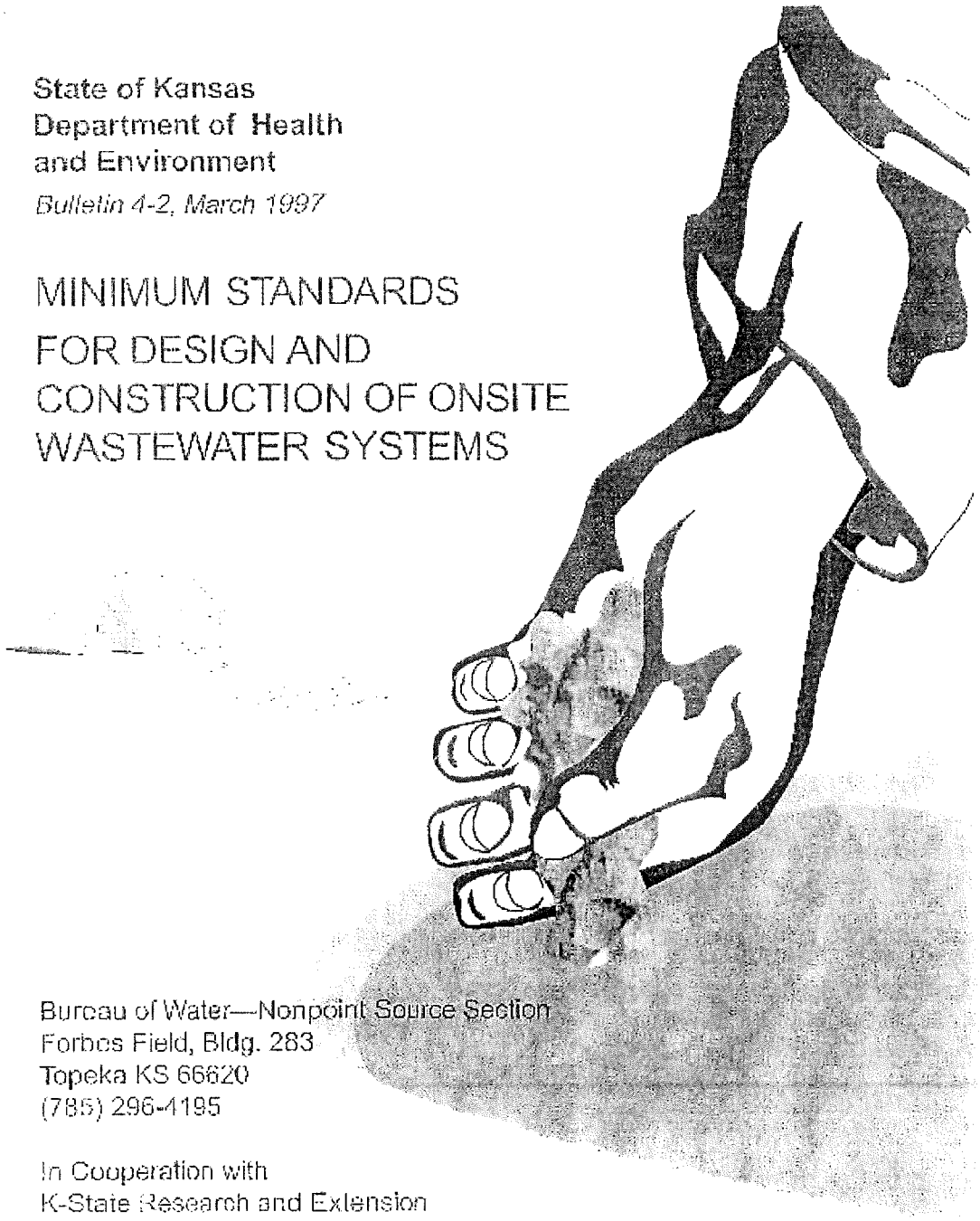
MINIMUM STANDARDS FOR DESIGN AND CONSTRUCTION OF ONSITE WASTEWATER SYSTEMS

APPROVED
NOV 18 2008

State of Kansas
Department of Health
and Environment

Bulletin 4-2, March 1997

MINIMUM STANDARDS FOR DESIGN AND CONSTRUCTION OF ONSITE WASTEWATER SYSTEMS



Bureau of Water—Nonpoint Source Section
Forbes Field, Bldg. 283
Topeka KS 66620
(785) 296-4195

In Cooperation with
K-State Research and Extension

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Introduction

Kansas Administrative Regulations (K.A.R. 28-5-6 to 9) authorize the Kansas Department of Health and Environment (KDHE) to establish minimum standards for septic tank–lateral fields. KDHE Bulletin 4-2: *Minimum Standards for Design and Construction of Onsite Wastewater Systems* fulfills that purpose. The minimum standards presented in this document are intended to ensure domestic wastewater is managed so that:

- Quality of surface and groundwater is protected for drinking water, recreation, aquatic life support, irrigation, and industrial uses.
- A breeding place or habitat will not be created for insects, rodents, and other vectors that may have contact food, people, pets, or drinking water.
- Wastewater will not be exposed on the ground surface where it can be contacted by children and/or pets, creating a significant health hazard.
- State and federal laws and local regulations governing water pollution or wastewater disposal will be met.
- Nuisance conditions or obnoxious odors and unsightliness will be avoided.

Bulletin 4-2 is not intended to provide an in-depth discussion of the rationale for these standards. For more information, see the *Environmental Health Handbook* and resources identified therein as well as other references in Appendix B (page 65). Most county health departments have a copy of this handbook, or copies are available at cost from Kansas State University, Extension Biological and Agricultural Engineering (see Appendix B).

Local governments have the authority to adopt minimum requirements (codes) for onsite wastewater management systems, to approve individual plans, to issue permits for construction, to issue permits for operation, and to grant variances. County sanitary (environmental) codes specify local design and permitting requirements. Compliance with these requirements helps prevent illness caused by environmental contamination and protects surface and groundwater.

Some local requirements, such as those in wellhead protection or sensitive groundwater areas, may be more stringent than those established in Bulletin 4-2. Often, these stricter requirements provide greater protection of public health and the environment, especially where water resources are vulnerable to contamination.

Sanitary codes are adopted and administered by local government usually through county health departments. The local administering authority should always be contacted before any time or money is invested in system design, plans, installation, or repairs.

If there is no local code, landowners are required to comply with Kansas Administrative Regulations (K.A.R.) 28-5-6 to 9 and minimum standards in this bulletin. If no assistance is available from the health department or other local authority, contact your county Extension Office or KDHE Bureau of Water, phone (785) 296-4195, or the nearest KDHE District Office (see inside back cover).

K.A.R. 28-5-6 stipulates that all domestic wastewater shall be discharged to an approved sewage collection system or an approved lagoon, septic system, or alternative system. Domestic wastewater means all waterborne wastes produced at family dwellings in connection with ordinary living including kitchen, toilet, laundry, shower, and bath tub wastewater. It also includes similar type wastewater produced at businesses, churches, industrial, and commercial facilities or establishments.

Wastewater from a home shall be discharged to a properly designed and maintained septic tank–soil absorption field or wastewater pond, an approved alternative treatment and disposal system, or a permitted sewage treatment plant. Seepage pits, cesspools, and dry wells (re: toilets) are not permitted. This bulletin provides information on conventional soil absorption fields wastewater ponds, and alternatives that may be considered when conventional absorption fields or ponds are not suitable.

Bulletin 4-2 covers five basic elements of proper septic tank–lateral field system design:

1. wastewater flow,
2. soil and site evaluation,
3. septic tank standards, for design, construction and installation,
4. lateral field design and construction, and
5. system maintenance.

This bulletin also addresses basic principles for waste water ponds.

This bulletin is intended to provide information on treatment of domestic wastewater. Domestic wastewater excludes surface runoff from roof, paved areas, or other surfaces; subsurface drainage from springs, foundation drains, and sump pumps; or cooling water. Industrial or commercial wastewater (from shops, manufacturing, car washes, etc.) is not permitted to be discharged to an onsite soil absorption system, so it shall not be mixed with domestic wastewater.

By following the standards established in Bulletin 4-2 and your county's sanitary code, you actively contribute to protecting the environment and quality of life for your family, your neighbors, your community and other Kansans. Your contribution is appreciated!

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Wastewater Flows

One major concern in the design of household wastewater systems is the quantity of wastewater generated daily. The system must have enough capacity to accommodate and treat this total flow. Normal contributions to this flow will come from bedroom, kitchen, and laundry facilities. Kansas regulations require that all domestic wastewater be treated and disposed through the onsite system. Surface runoff from roofs and paved areas, subsurface drainage from footing drains and sump pumps and cooling water are not domestic wastewater and must be excluded from soil absorption systems. Such water may be used to help maintain the operating water level in wastewater ponds.

Design flow is estimated by multiplying the number of household bedrooms by 150 gallons per day (gpd). This is based on 75 gallons per person per day for two people in each bedroom[1]. This accounts for the number of people that can occupy the home for extended periods rather than how many actually live there when the system is installed. Houses frequently experience a change in ownership or occupancy over the life of the wastewater system. When calculating wastewater flow, note that a water softener may increase water use by as much as 50 gallons per capita per day or possibly more where water is very hard.

Site and Soil Evaluation

Although the septic tank is important for removing solids from the wastewater, more of the wastewater treatment is provided by the soil. Microorganisms living in the soil profile feed on organic matter in the wastewater, treating and purifying the water as they grow. Four feet of aerated soil below the bottom of the absorption field is necessary to ensure adequate treatment of the wastewater before it reaches the water table or flows laterally due to a restrictive condition.

In sandy soil, it is recommended that as much vertical separation as possible be provided. An understanding of the soil is necessary to assess the ability of the site to provide good wastewater treatment. Soil must absorb the septic tank effluent, treat the wastewater, and transmit treated wastewater away from the soil absorption areas.

The site evaluation begins by reviewing available information such as a published soil survey and then evaluating the soil on site. County soil survey reports are usually available from the local Natural Resource Conservation Service (NRCS, formerly Soil Conservation Service). Contact your local NRCS office, county conservation district or extension office for a copy of the report.

The soil survey provides general information and serves as a guide to the soil conditions. Sites characterized by slow permeability, restrictive subsoil layer, shallow soil over rock, high groundwater, poor drainage, or steep slopes, as identified in the soil survey, have moderate to

TABLE 1—Soil Limitation Ratings Used by NRCS For Wastewater Absorption Fields

Property	LIMITS Slight	Moderate	Severe	Restriction or Feature
USDA Texture	–	–	Ice	Permafrost (not found in Kansas)
Flooding	None Protected	Rare	Common	Flood water inundates site
Depth to Bedrock (in.)	≥ 72	40–72	< 40	Bedrock or weathered bedrock restricts water movement or reduces treatment capacity
Depth to Cemented Pan (in.)	> 72	40–72	< 40	Reduces water and air movement
Depth to High Water Table, (ft. below surface)	> 6	4–6	< 4	Saturated soil, poor aeration, anaerobic soil, restricted movement
Permeability, (in./hr.)				
24-60 in. layers	2.0–6.0	0.6–2.0	< 0.6	Slow perc rate, poor drainage
less than 24 in. layers	–	–	> 6.0	Poor filter
Slope, (percent)	0–8	8–15	> 15	Difficult to construct and hold in place
Large stones greater than 3 in. (percent by wt.)	< 25	25–50	> 50	Restricted water and air movement results in reduced treatment capacity

[1]The 150 gallons per bedroom, or 75 gallons of wastewater produced daily by each person, assumes at least some water using appliances such as clothes washer, dishwasher, water softener, etc.
> means greater than
< means less than

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severe restrictions for conventional septic tank–soil absorption systems and other options may be preferred or required.

A site and soil evaluation should be completed in order to locate the area to be used for the absorption field, to verify the soil characteristics, and to size the system. Areas with slopes steeper than about 20 percent will cause considerable difficulty during construction and are not recommended for lateral field installations. Rock outcroppings warn of shallow soils and may suggest the probable direction of groundwater flow. The range of values for each of several properties that cause the soil to be placed in slight, moderate, and severe limitation rating for soil absorption systems is shown on Table 1.

The wastewater system area should be chosen prior to any construction on a site and should be an integral part of the homesite design and development. A soil profile analysis is highly recommended to ensure suitability of the area and to establish the loading rate so that adequate space is available for the absorption field and its replacement.

To perform a soil profile analysis, an excavator is usually used to open a pit, which exposes the soil profile. The soil evaluation, performed by a trained and qualified person[1], includes examining the soil profile, determining the soil texture, structure, color, consistence, measuring soil depth, and looking for evidence of a high or perched water table or other restrictions. The soil profile should be analyzed to a depth of at least 4 feet below the bottom of the absorption area or at least 5 feet below the surface.

Because OSHA regulations require shoring for trenches deeper than 5 feet for some soils, it is recommended that the pit be constructed so a person is not required to go deeper. Soil below 5 feet can be examined from cuttings, observation from a distance, and by shovel or auger without entering a deeper pit.

At least three pits should be dug surrounding the area to establish the range of soil characteristics that are present on the site, and to determine the best location for the absorption field. Sanitarians, usually through local health or environmental departments, or environmental health specialists, are available to assist in the site and soil

TABLE 2 Design Septic Tank Effluent Loading Rates for Various Soil Textures and Structures

Group	Soil Characteristics	Wastewater Loading (in/day)	(cm/day)	(gpd/ft²)
I.	Gravelly coarse sand and coarser.	Not Recommended for conventional soil absorption system[3]		
II.	Coarse sands (not cemented).	1.8	4.6	1.1
III.	Medium sand with single grain structure and loose or friable consistence (not cemented).	1.5	3.7	0.9
IV	Other sands and loamy sands with single grain or weak structure (not extremely firm or cemented consistence).	1	2.5	0.6
	Sandy loams, loams and silt loams with moderate or strong structure (except platy and loose to friable consistence).			
V.	Sandy loams, silt loams and loams with weak structure (not of extremely firm or cemented consistence).	0.7	1.7	0.4
	Sandy clay loams, clay loams and silty clay loams with moderate to strong structure (not of platy, of firm, or of cemented consistence).			
VI.	Sandy clay loams, clay loams and silty clay loams with weak structure (not massive, not of firm, or of cemented consistence).	0.4	1	0.25
	Some sandy clays, clays and silty clays with moderate and strong structure (not platy, not of firm, or of cemented consistence).			
VII	Other soils of high clay content with weak or massive structure, or namely firm or cemented consistence or platy, clay pans, fragipan, and caliche soils.	Not Recommended for conventional soil absorption system[4]		

NOTE: The above descriptions are estimates and assume that the soil does not have large amounts of swelling clays. Soils with platy structure, massive, compacted or high density should be used with extreme caution or avoided.

[1] *A trained and qualified person would include a soil scientist, such as one working for NRCS, a environmental health specialist, sanitarian, or other person who has received appropriate soil training and through experience is competent.*
[2] *Soil is not coarse for conventional soil absorption designs, use pressure distribution dosing or other alternative system to prevent too rapid infiltration.*
[3] *Soils with these conditions may be acceptable for wastewater stabilization ponds or possibly other alternative systems. (See Table 4)*

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evaluations. A few consultants, either engineers or design/installation contractors, also provide this service.

Table 2 gives the recommended loading rates based on soil texture, structure, and consistence information. These loading rates are based on research that has shown that soil characteristics provide a strong basis for wastewater system design loading rate. Results show system design should be based on the most limiting soil texture found in the first 4 feet of soil below the bottom of the proposed absorption lateral.

Once the wastewater flow (number of bedrooms) and loading rate for the soil are known, the absorption field area needed for the lateral system can be calculated. It is highly recommended that the absorption field and an equal area reserved for future use be marked and fenced so they will not be disturbed during construction. Required setback distances to property lines, wells, surface water, and buildings must be checked and included in the site plan.

Where evaporation substantially exceeds precipitation, as in central and western Kansas, a reduction in soil absorption area may be used when the soil is well suited to wastewater absorption. A well suited soil has medium to coarse texture, perc rates less than 45 minutes per inch and wastewater loading rates of 0.5 gallons per square foot per day or more. For marginal, high clay, soil that has low loading rates, no reduction should be used regardless of location in Kansas. Recommended allowable soil absorption system reductions and percent of total absorption area for central and western Kansas is shown on Table 3.

Since about 1970 considerable research about onsite wastewater systems has occurred. New information, including design procedures, operating characteristics, and many new products, has been and continues to be developed to help improve onsite wastewater systems.

The soil profile evaluation provides a comprehensive assessment of soil characteristics and is the preferred

TABLE 3—Recommended Absorption Reductions

	Western Kansas	Central Kansas	Eastern Kansas
Actual absorption area (in percent)	65	80	100
Recommended reduction (in percent)	35	20	0

TABLE 4—Soil Absorption Field Loading Rate and Area Recommendation for Septic Tank Effluent Based on Perc

Perc Rate (minutes/inch)	Recommended Absorption Area (ft^2/bedroom)	Loading Rate (gpd/ft^2)
Less than 5 minutes	Not recommended for conventional soil absorption system[2]	
5–10 minutes	165	0.80
11–15 minutes	190	0.70
16–30 minutes	250	0.5
31–45 minutes	300	0.5
46–60 minutes	330	0.45
Greater than 60 minutes	Not recommended for conventional soil absorption system[1]	

TABLE 5—Minimum Required and Minimum Recommended Separation Distances for Onsite Wastewater Systems

Separation Distances	Minimum Distance (ft.)	
	Required	Recommended[3]
Septic Tank to foundation of house or other buildings	10	10
Soil Absorption System to dwelling foundation	20	50
Any part of a wastewater system to:		
public potable water line	25[4]	25
private potable water line	10	25
property line	10	50
public water supply well or suction line	100[4]	200
private water supply well or suction line	50[5]	100
surface water course	50	100
Wastewater Lagoons to:		
property line	50[6]	200
dwelling foundation	50[6]	200

[1]Soil is too coarse for conventional soil absorption designs, use pressure distribution dosing or other alternative system to prevent too rapid infiltration.
[2]Soils with these conditions may be acceptable for wastewater stabilization ponds or possible other alternative systems. (See Table 6).
[3]These recommended separation distances help assure a minimum of problems, but are no guarantee that problems will not result.
[4]The minimum distance specified by KDHE guidelines for public water supplies.
[5]The minimum distance required by K.A.R. 28-[illegible].
[6]When an excavation, topography, or soil condition make maintaining the required 50 foot separation distance impossible, a written variance from the affected property owners shall be obtained and filed with deeds.

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method for determining the suitability of the soil to accept and treat wastewater and establish the design loading.

Some local sanitary codes require the perc test and other codes require both a perc test and a soil profile evaluation. "Perc" is short for percolation and has become the preferred term for this test to evaluate soil suitability to accept wastewater. Percolation means water movement through a soil. Since the driving force is gravity, most of the movement will be downward. The perc test really measures an infiltration rate for water into a wet but unsaturated soil at the depth of expected system placement. The procedure for doing a perc test is described in Appendix A (page 14). Once the perc rate is known, refer to Table 4 to determine the loading rate and absorption field area, or use another method specified by the local sanitary code.

Separation of the soil absorption field from buildings, structures, and boundaries is essential to maintain system performance, to permit repairs, to maintain required separation from wells, and to reduce undesirable effects of underground wastewater flow and dispersion. The structures and boundaries to consider include easements, buildings, property lines, utilities, wells, and components of the wastewater disposal system. Minimum required and recommended separation distances for private wastewater systems are given in Table 5.

Many soils, especially in eastern Kansas, have properties that restrict their suitability for soil absorption fields. When limiting properties occur in the soil profile, a variation of conventional laterals, wastewater ponds or alternative treatment systems may be used to compensate for the limiting condition. Variations and alternatives that may be considered are summarized in Table 6. When possible, sites with these restrictive conditions should be avoided due to higher cost, larger land area, and greater maintenance requirements for the alternative systems.

TABLE 6—General Alternative Option Guide for Moderate or Severe Limiting Soil Conditions

I. Shallow Permanent, Perched or Seasonal Groundwater
- Subsurface drainage system at least 30 feet from the soil absorption area to lower the water table—suitable for moderate or more permeable soil conditions. This alternative creates drainage that must be discharged away from the area.
- Variation of conventional lateral trench
  - Shallow in-ground trench—suitable for groundwater at 48 inches or deeper
  - At-grade lateral system—suitable for groundwater at 6 feet or deeper
- Enhanced wastewater treatment[a] by rock-plant filter[b], sand filter[c], or aerated tank[d] or other equivalent system[e] followed by shallow soil absorption or wastewater pond
- Wisconsin (engineered) mound—suitable for a limiting soil or other restriction at 12 feet or deeper
- Rock-plant filter[b]—suitable for ground water at 1 foot or deeper followed by soil absorption

II. Shallow Bedrock
- Wastewater pond—suitable for sites with bedrock at any depth when overexcavated and at least 1½ feet of compacted clay lining is installed.
- Variation of conventional lateral trench
  - Shallow in-ground trench system—suitable for bedrock at 48 inches or deeper
  - At-grade lateral system—suitable for bedrock at 4 feet or deeper
- Enhanced wastewater treatment[a] options (see I above) followed by shallow soil absorption
- Wisconsin (engineered) mound—suitable for bedrock at 2 feet or deeper

III. Rapid Perc Rate (< 5 mpi) or very permeable soil (> 30 in/hr)
- Pressurized distribution dosing system to uniformly distribute wastewater throughout the absorption field
- One foot lining using loam soil to bottom and sides of trench to limit water absorption rate

IV. Slow Perc Rate (60 to 120 mpi) or "slow" soil permeability (0.2-0.6 in/hr)
- Dual shallow lateral systems in permeable surface soils (each with 60% to 80% of conventional lateral area) with a diversion valve and alternating use of systems
- Wastewater pond provided sufficient site area is available to meet all setback requirements
- Wisconsin (engineered) mound—suitable for nearly level sites with some permeable surface soil
- Enhanced wastewater treatment[a] options (see I above) followed by shallow soil absorption into permeable surface soil

V. Very Slow Perc Rate Soil (> 120 mpi), "very slow" soil permeability (< 0.2 in/hr)
- Wastewater pond—suitable for sites with enough site area to meet all setback requirements
- Wisconsin (engineered) mound—suitable for level sites with permeable surface soil
- Enhanced wastewater treatment[a] options (see I above) followed by shallow soil absorption into permeable surface soil

[a]Enhanced treatment is higher quality, treated tank effluent and may be equivalent to secondary treatment in wastewater treatment technology, or in some cases even higher quality, comparable to advanced wastewater treatment.
[b]Rock-plant filter provides a higher level of treatment than septic tanks. Due to higher quality effluent, the soil absorption field size may be smaller than for a conventional absorption field system.
[c]Sand filters provide a very high level of treatment. Due to this high quality effluent, the soil absorption field may be smaller than that required for a conventional absorption field.
[d]Aerobic units have poor operating records so an operation/maintenance agreement with a reliable supplier is strongly recommended to ensure system performance.
[e]Promising technology is considered relevant that may meet enhanced treatment requirements.

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Septic Tank

The septic tank separates the settleable and floatable solids, contains an anaerobic environment where bacteria partially decompose the solids, and provides storage for the accumulated sludge and scum. The septic tank is sized so that wastewater flow through the tank takes at least 24 hours even with sludge and scum accumulation. This detention time permits the settling of solids heavier than water and allows scum, grease and other materials lighter than water to float to the surface before the water is discharged to the absorption field.

Septic tanks are designed to handle all the daily flow a household will normally produce and must have sufficient capacity for the minimum recommended volume of at least two times the daily wastewater flow. Larger capacity tanks usually mean less carryover of solids, resulting in prolonged life of the soil absorption field. Larger tanks require less frequent cleaning and allow for future expansion of the home or times when guests visit. They also have a good cost-benefit return. Table 7 gives minimum and recommended capacities for sizing septic tanks.

Less solids exiting the septic tank helps extend the life of the soil absorption field because less clogging of the soil pores will occur. Septic tank effluent filters are effective in reducing solids and providing an added measure of protection for the soil absorption field so their use is highly recommended.

TABLE 7—Minimum and Recommended Septic Tank Capacities Based on the Number of Household Bedrooms.[a]

Number of Bedrooms	Septic Tank Capacity (gallons)[b]	
150 gpd/bedroom	Minimum	Recommended
1-3	1,000[c]	1,350
4	1,200	1,800
5	1,500	2,250

[a] For each additional bedroom, add 500 gallons to the minimum value and 450 gallons to the recommended value.
[b] Volume held by the tank below the invert level (bottom of the outlet pipe).
[c] Minimum tank size is 1,000 gallons.

Two compartment tanks or two tanks in series also may help. If a multiple compartment tank is used, the first compartment shall be sized to contain from one-half to two-thirds of the total tank capacity. The total tank capacity is important and should be sized to retain at least two to three times the total daily wastewater flow as shown in Table 7. Figure 1 shows a design concept for a two compartment septic tank.

Tanks shall never be closer than 50 feet from any water supply and greater distances are preferred if possible. However, a 100-foot separation is required if the water source serves a public water supply. The septic tank shall not be located closer than 10 feet from any building, in swampy areas, or in areas located within the 100 year flood plain. Table 5 gives minimum required and recommended separation distances for onsite wastewater systems.

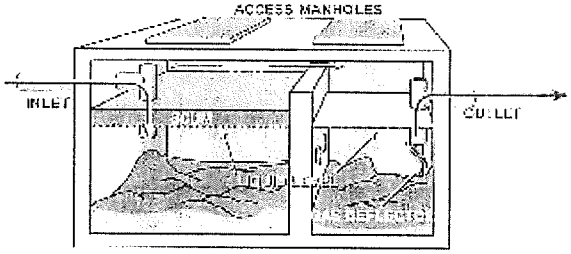
There shall be no permanent structure (patio, building, driveway, etc.) over the tank, lateral or other part of an onsite wastewater system. Consideration should also include easy access of trucks and equipment for pumping, maintenance, and repair. To avoid damage to the system, heavy equipment should not have to cross any portion of the wastewater system when servicing the septic tank.

A sketch of the wastewater disposal system as constructed, showing measurements should be made and delivered to the homeowner for future reference, and filed with the permit at the county health department. Figure 3 shows an example septic system reference sketch.

Septic tanks and soil absorption systems are an expensive and long-term investment. Materials selection, design, and construction should be done with long life in mind. When located in suitable soil, well designed, properly constructed, and adequately maintained they should last several decades.

All abandoned or unused septic tanks, cesspools, seepage pits or other holes that have received wastewater shall be emptied and plugged following procedures described in K-State Research and Extension bulletin MF 2246.

Figure 1—Compartmentalized Septic Tank



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Septic Tank Design/Construction Specifications[19]

General Requirements

Figure 2 shows the dimensions included in this section for a typical precast concrete septic tank. The following factors are required of all septic tanks regardless of the construction material:

A. The septic tank including all extensions to the surface shall be watertight to prevent leakage into or out of the tank. It shall be structurally sound and made of materials resistant to corrosion from soil and acids produced from septic tank gases. Because of corrosion, steel tanks are not acceptable.

B. The tank liquid depth (distance from outlet invert to bottom of tank) shall be at least 3 feet but shall not exceed 6½ feet. The effective inside length of tanks shall not be less than 1.5 nor greater than four times the effective inside width.

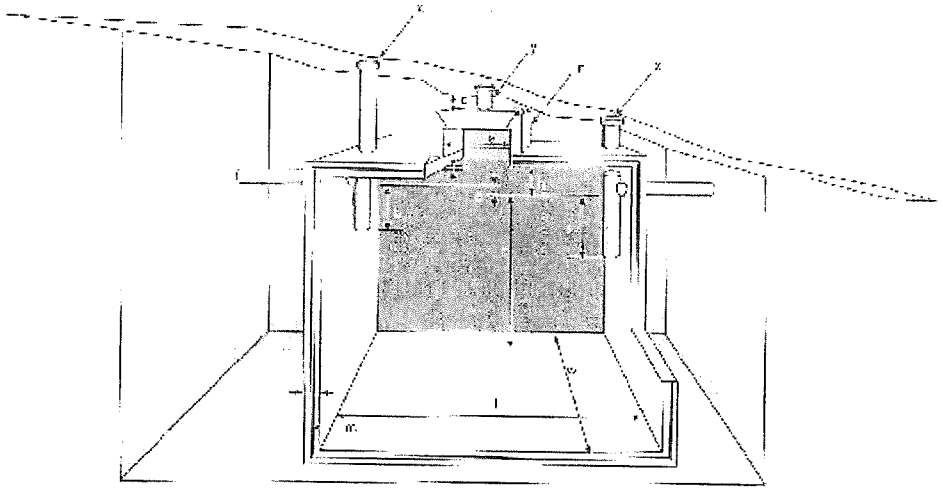
C. The minimum septic tank capacity is two times the daily wastewater flow using 150 gallons per bedroom or 1,000 gallons, whichever is larger. See Table 7 for minimum tank sizes. Tanks sized at three times daily flow are recommended and shall be required when garbage disposals are used.

D. The top of all tanks shall be designed and constructed to support a minimum uniform load of 400 pounds per square foot plus 2,000 pound axle load. Where buried more than 2 feet deep, the tank, especially the top, shall support an additional 100 pounds per square foot for each foot of soil or portion thereof in excess of 2 feet.

E. If the tank is placed in an area subject to any vehicular traffic it shall be certified to meet H-20 highway loading by a Kansas licensed structural engineer.

F. Space above the liquid line is required for that portion of the septic that floats above the liquid. For vertical sidewall tanks, the distance between the top of the tank and the outlet invert should be at least 15 percent of the liquid depth with a minimum

Figure 2- Design Details for a Precast Concrete Septic Tank



Name	Measurement	Min.	Max.
a. access manhole	smallest dimension	20"	
b. inlet baffle	penetration	8"	0.2 × d
c. cover[20]	surface to manhole	surface	12"
d. liquid depth	outlet to tank bottom	3	6½'
e. difference	inlet to outlet inverts	3"	4"
f. outlet baffle	outlet to bottom	0.35 × d	
g. thickness	wall	2½"	

Name	Measurement	Min.	Max
h. open space	outlet invert to top	7"	0.15 × d
k. space	gap	1"	–
l. tank length	inside of walls	5'	4 × w
m. reinforcement	per engineering design		as needed
n. extension riser length[22]	to ≤ 1" from surface grade		
w. tank width	inside of walls	4	
x. inspection riser	inside diameter	6"	
y. location riser	inside diameter	18"	

[20]When locally available products cannot properly meet these requirements, manufacturers will have until July 1, 2002 to comply. [22]A tank is deeper than 12" with extension risers as shown so top of riser is no more than 12" from surface.

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of 7 inches. In horizontal, cylindrical tanks, an area equal to approximately 12.5 percent of the total volume should be provided above the liquid level. This condition is met if the space above the liquid level (distance from outlet invert to top of tank) is 15 percent of the tank diameter.

G. Sewage lines carrying solids from the source to the tank should have sufficient slope to maintain velocities that keep solids moving. For household size lines, a slope of between 1 percent (⅛ inch per foot) and 2 percent (¼ inch per foot) is usually best. The last 15 feet of sewer line preceding the tank shall not slope more than 2 percent (¼ inch per foot).

H. The inlet and outlet baffle or tee and compartment baffle should extend above the liquid level to one inch below the top of the tank. This space at the top of the tank is essential to allow gas to escape from the tank through the house stack vent.

I. The invert of the inlet pipe shall be located at least 3 inches above the invert of the outlet when the tank is level. This space allows for temporary rise in liquid level during discharges to the tank, and prevents liquid from standing in the sewer line between the house and the septic tank, which may cause stoppage or backup.

J. The septic tank or pumping tank inlet shall be a sanitary tee, elbow or long sweep elbow with low head inlet or baffle to direct incoming sewage downward and prevent flow from disturbing the floating scum layer. It should extend at least 8 inches below the liquid level, but should not penetrate deeper than 20 percent of the liquid depth.

K. The outlet tee or baffle prevents scum from being carried out with effluent, but limits the depth of sludge that can be accommodated. The outlet device should generally extend below the liquid surface a distance equal to 35 percent of the liquid depth. For horizontal, cylindrical tanks, this distance should be reduced to 30 percent of liquid depth.

Example: Horizontal cylindrical tank 60 inches in diameter. Liquid depth = 52 inches, outlet tee penetrates 52 × .30 = 15.6 inches below liquid level.

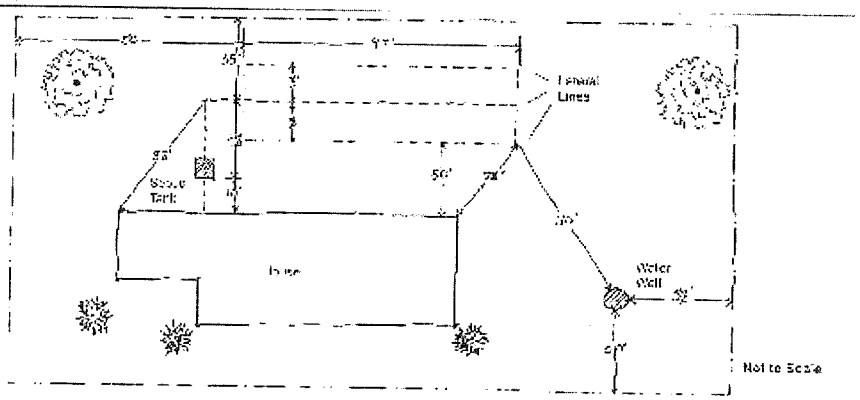
L. Inlet and outlet openings shall be designed and constructed to be water tight for at least a 20-year life of the system.

M. The dividing baffle in two compartment tanks shall extend from the bottom of the tank to at least 6 inches above the liquid line. The opening in the dividing baffle may be any shape and shall be at least 2 inches minimum dimension with a total area of at least 12 square inches. The baffle opening is to be centered 35 percent of liquid depth (30 percent for cylindrical tanks) below the liquid level.

N. Septic tanks shall have an access manhole with 20 inches minimum dimension for each compartment. If the manhole does not extend to surface grade, a small diameter (at least 1½ inch diameter) pipe shall extend to surface from the cover to mark the location of the manhole. This pipe shall not penetrate the lid of the tank. Inspection risers at least 6 inch diameter shall extend to surface grade centered over the inlet and outlet tees. All below grade attachments to the tank, connections, risers, extensions and lid shall be water tight. When any opening larger than 8 inches extends to the surface, that opening shall be child and tamper resistant. Ways to accomplish this include: lids weighing at least 65 pounds, locks, or anchors that are not removable without special tools.

O. The sewer line from the house to the tank, all fittings and pipe in the tank, all extensions to the

Figure 3 Septic System Reference Sketch



surface from the top of the tank and the first 10 feet exiting the tank shall be schedule 40 pipe or heavier.

F. Septic tanks shall be designed for at least a 20-year life. They shall be designed and constructed to withstand extremes in loads resulting from adverse conditions without excessive deflection, deforming, creep, cracking or breaking. Change in shape shall be limited to 5 percent. Loads shall be based on 62.4 pounds per cubic foot for water and water saturated soil. Top loads for design shall be in: uniform 400 pounds per square foot plus 2,500 pound axle point load. Design shall be based on a 2 foot placement depth to top of the tank. If the tank will be placed deeper than 2 feet or subject to vehicular traffic over the tank, a design by Kansas licensed structural engineer shall be done for the specific conditions.

Special Considerations for Concrete Tanks

The anaerobic environment of a septic tank produces gases that combine with moisture to produce acids. Concrete above the liquid level is subject to corrosion and deterioration from these acids. This corrosion is best resisted by high quality concrete mix. Concrete septic tanks shall meet the following requirements in addition to those above:

A. The concrete design mix shall be for a compressive strength of at least 4,000 pounds per square inch at 28 day cure. The water-cement ratio shall not exceed 0.45.

B. Baffles or other interior concrete units shall not be used for precast or poured in place concrete septic tanks unless they are cast or built into the tank wall at the time the tank is constructed.

C. Air entrainment additives shall be added at 5 percent volume. Other chemical admixtures are encouraged to reduce water content, improve concrete placement in forms and wet handling of incompletely cured concrete.

D. Concrete tanks and lids shall receive proper care during the hydration (hardening) period by: 1) monitoring and controlling temperature of the concrete and gradients (i.e. maintain 50 to 90 degrees Fahrenheit for conventional cure and up to 140 degrees Fahrenheit under low pressure steam cure.) 2) monitoring and controlling humidity to prevent adverse moisture loss from fresh concrete (i.e. prevent or replenish loss of essential moisture during the early relatively rapid stage of hydration.)

E. Reinforcing steel shall be placed as designed by a Kansas licensed structural engineer to ensure floor, wall, and top do not crack from moisture, frost, soil load, water loads, axle loads, or other stresses. Loads as specified above shall be used for the design condition. Reinforcing steel shall be covered by a minimum of 1 inch of concrete and shall be placed within ± ½ inch.

F. Pouring the floor and walls of the septic tank at the same time (monolithic pour) is the preferred construction procedure. Very large tanks are often cast in 2 pieces and assembled in the field. All tanks shall meet the same structural strength standard as specified earlier. Two piece tanks shall have permanently sealed structurally sound joints and shall be water tested after assembly. A Kansas Licensed structural engineer shall determine if the tank meets the strength specification.

G. In areas of high sulfate water (greater than 250 mg/L) more acid producing gases are likely and additional corrosion resistance is appropriate. Recommended measures include ASTM C150 Type II cement (moderate sulfate resisting), ASTM C150 Type V cement (highly sulfate resisting), or coating interior concrete surfaces above the water line. Coatings that provide additional protection of the concrete include asphalt, coal tar, or epoxy. The product used should be acid resistant and provide a moisture barrier coating for the concrete. The product must not bleed into the water and thus risk groundwater contamination.

H. Manufacturers are strongly urged to follow guidelines and meet standards of American Concrete Institute, National Precast Concrete Association, and American Society for Testing and Materials. Manufacturers should identify and advertise their products that meet applicable standards.

Special Considerations for Fiberglass, Fiberglass Reinforced Polyester, and Polyethylene Tanks

A. All tanks shall be sold and delivered by the manufacturer completely assembled.

B. Tanks shall be structurally sound and support external forces as specified above when empty and internal forces when full. Tanks shall not deform or creep resulting in deflection more than 5 percent in shape as a result of loads imposed.

C. Tanks and all below grade fittings and connections shall be water tight.

Septic Tank Placement Specifications

A. During the process of placing the septic tank, avoid causing compaction in the absorption field by not entering the absorption field area.

B. Where natural soil is not suitable tanks shall be placed on a bed of at least 4 inches of sand, pea gravel, or crushed granular noncorrosive material for proper leveling and bearing. Material shall be no larger than 2 inches in diameter and bed depth shall be at least four times the largest material diameter.

C. Access manholes should be at surface grade, but shall not be more than 12 inches below surface grade. Where top of the tank must be more than 12 inches below surface grade, a water tight extension collar shall be added as required to raise the cover. Inspection openings placed over inlet and outlet tees or baffles shall be at least 6 inches in diameter and extend to the surface to permit easy tank inspection, cleaning of effluent filter, checking condition of tee or baffle and sludge accumulation.

D. Septic tanks should not be placed into the water table (including perched or seasonal water table) because of the tendency of the tank to float, especially when empty, as when pumped for maintenance. In any area subject to high water table or seasonally high water table, plastic and fiberglass tanks shall not be used unless precautions are taken to drain ground water.

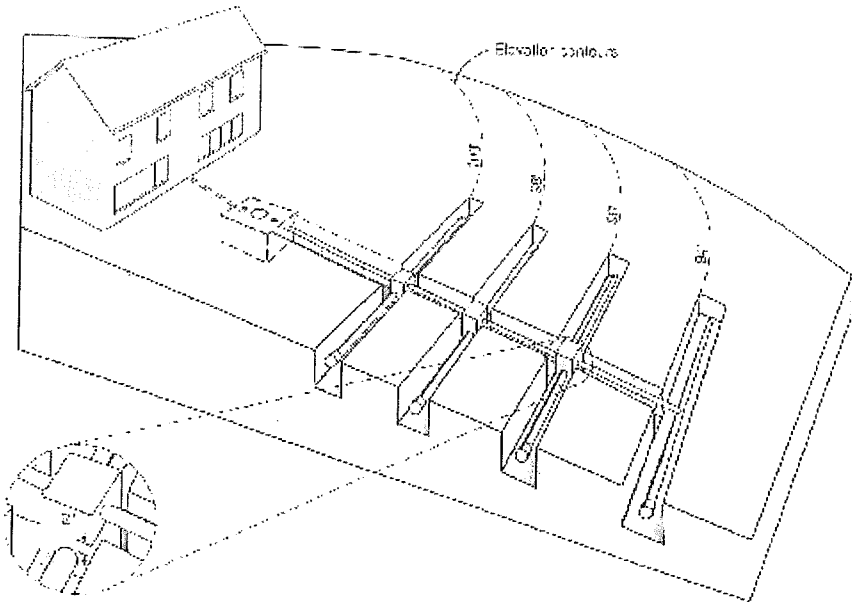
E. Septic tanks shall be water tight. An adequate test for water tightness is to fill the tank with water and let it stand for 8 hours to allow concrete to absorb water and plastic tanks to adjust. Then the tank is topped off and an initial measurement made with a hook gauge with vernier scale. After an hour, another measurement is made. Any loss is cause to reject the tank. Observations of the outside of the tank can also give clues about leakage paths. Any cracks, gaps, or exterior wet spots is reason to reject the tank. Precast, one piece tanks are best tested at the plant before delivery. Two pieces tanks that are assembled on-site must be tested, following placement but before back filling.

F. The hole that the tank is placed into shall provide a ample space around the tank for access to do compaction. Backfill shall be in uniform, compacted layers not exceeding 2 feet thick and surrounding the tank. Because of potential soil collapse, it is unsafe and may be illegal for a person to enter a trench deeper than 5 feet without adequate shoring. Compaction should be done from the surface without entering trenches deeper than 5 feet.

Absorption Field Size

Absorption field area is dependent on two factors: wastewater flow and soil loading rate. The wastewater design flow is based on the number of bedrooms allowing 150 gpd per bedroom (75 gpd per person) as discussed previously. The wastewater flow assumes the house is fully occupied with two persons per bedroom.

Figure 4. Typical Step Down or Serial Distribution System



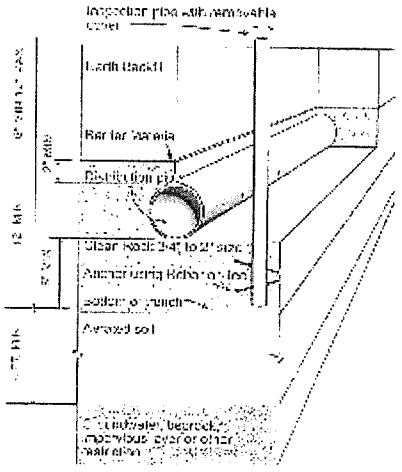
The site and soil evaluation previously discussed in that section is essential for good design. The loading rate is determined from the soil profile using Table 2 or from the perc rate using Table 4 or by using another method as specified in the local code. The soil absorption area is obtained by dividing the wastewater flow in gallons per day (gpd) by the loading rate (gpd per square foot (ft^2)).

The maximum gravity lateral run shall not exceed 100 feet and preferably should be less than 60 feet. If a lateral is supplied from the center, the total length shall not exceed 200 feet (100 feet to each side) and a maximum of 120 feet is preferred. Lateral systems on level sites with all laterals on the same elevation shall be connected at each end with a level manifold or connector pipes as shown in Figure 3 so there are no dead ends.

Table 8—Trench Separation Distances

Trench Width (inches)	Recommended Minimum Distance Between Trench Centerline (feet)
18–24	8.0
24–30	8.5
30–36	9.0

Figure 3—Standard Lateral Trench Design



Loading rate example

The following example illustrates how to choose and use the loading rate for design:

- four bedroom home
- Hermosa soil. Light silty clay loam with medium subangular blocky structure at 17 to 40 inches
- greater than 6 feet to restrictions of rock or perched water table
- perc rate 40 minutes per inch
- trench width 3 feet
- undisturbed soil width between trenches is 6 feet

Wastewater flow

Size of house (number of bedrooms) × flow rate (gpd) per bedroom = total daily wastewater production

4 bedrooms × 150 gpd/bedroom = 600 gal

Loading rate

From soil evaluation Table 2 = 0.4 gpd/ft^2 and from perc test using Table 4 = 0.5 gpd/ft^2

Use the smaller of these or 0.4 gpd/ft^2 for design.

Absorption Area

Wastewater flow ÷ loading rate = absorption area

$$\frac{600 \text{ gpd}}{0.4 \text{ gpd/ft}^2} = \frac{600 \text{ ft}^2}{0.4} = 1{,}500 \text{ ft}^2$$

Trench Length

Absorption area ÷ trench width = length of trench

$$\frac{1{,}500 \text{ ft}^2}{3 \text{ feet}} = 500 \text{ lineal feet of trench length}$$

Field Area

Only the bottom area of the trench is considered in determining absorption area. The absorption trench width should be 18 to 36 inches, preferably 24 inches. For 3 feet wide trenches as in this example, the total lateral length needed is 500 feet. If trenches are 2 feet wide, the total lateral trench length is 750 feet. Assuming that a 3 feet wide trench will be used and 100 feet is the length of each trench, 5 trenches, 100 feet long will be needed for 1,500 ft^2 total trench bottom. To calculate the total area necessary for the field, include the minimum 6 feet of undisturbed soil between trenches. For this example the total width is (5 × 3 ft) + (4 × 6 ft) = 15 ft + 24 ft = 39 feet. The total field area is 39 × 100 or 3,900 ft^2. An area equal to this same size should be reserved for future expansion and/or replacement.

For sites that slope more than about 1 percent, a level lateral system installed without shaping the surface often requires more than a half foot difference in soil cover from one side of the area to the other. On slopes greater than 1½ percent there is enough slope to use a step down (or serial) distribution. This results in the top lateral

ing filled before effluent builds up and flows to the next lateral down slope. Step down serial distribution as shown in Figure 4 is recommended for all sites that slope 1½ percent or more and/or result in more than 6 inches difference in cover for a level lateral system.

Adjacent absorption field trenches should be separated by at least 5 feet of undisturbed soil. Table 8 shows the minimum spacing for trench widths ranging from 18 to 48 inches. Individual trenches should be constructed on contour with the surface grade and with a level trench bottom to keep the trench cover a uniform thickness.

A minimum of 6 inches of rock or gravel shall be placed in the trench under the distribution pipe, followed by enough gravel to cover the pipe by 2 inches. The soil cover over the trench should not be less than 6 inches to provide adequate water holding capacity for grass nor more than 12 inches to maximize water and nutrient use by vegetation. Generally, the total trench depth should be as shallow as possible, but not less than 18 inches. Perforated distribution pipe shall be used and, where pressure dosing is not required, 4-inch diameter pipe is adequate. See standard lateral trench design and dimensions shown in Figure 5. Where pressure dosing is required, the pipe size should be just large enough to avoid excessive pressure loss (no more than 10 percent) in the distribution lines.

Variations from the standard lateral design described above allow the designer additional flexibility in some restrictive soil situations and are discussed in the site and soil evaluation section and included in Table 6. Many soils in eastern Kansas have a friable, moderately permeable surface soil layer of up to 15 to 18 inches in thickness. Many subsoils have high clay contents and a very restricted permeability. Laterals placed into the tight, very slowly permeable subsoil frequently do not perform satisfactorily.

Shallow in ground laterals dug 9 to 12 inches into the surface soil layer and covered with imported topsoil may be a viable option to achieve a workable soil absorption system for some soil conditions. Shallow in-ground systems may overcome marginal conditions such as groundwater or rock over 2½ feet but less than 6 feet required for conventional laterals.

The shallow, rock-filled trench shall be covered with a synthetic geotextile barrier material (at least 3 ounce nylon or 5 ounce polypropylene nonwoven filter fabric) before the lateral and interval between laterals is covered with top soil brought to the site.

In soils with still more restrictive or shallow soil conditions (4 to 4½ feet to restrictions) an at-grade lateral system may be an option. The at grade lateral involves preparing the soil surface on a level contour in strips much as the first step in constructing a Wisconsin mound. The rock, normally placed in a trench, is placed on the surface. Pressure dosing distribution is used to ensure even water distribution and help prevent horizontal flow at the natural soil surface resulting from temporary ponding in the lateral. The rock lateral shall be covered with barrier material before the lateral and interval space is covered with top soil brought to the site.

Loading rates and other design criteria are basically the same for shallow in ground and at grade systems as for conventional lateral trenches. The at grade lateral requires tilling the soil strip under the lateral on a level contour. A pressure dosing system shall be included as a part of the at grade design. Distribution lateral line pressure should not exceed 5 feet of head. Orifices in the pipe shall be sized and spaced to evenly distribute flow throughout the lateral system. If the area is too large to pressurize the entire system, a multizone design and sequencing valve shall be used to zone zones in sequence.

The use of an effluent filter on the septic tank outlet is strongly encouraged to prevent solids from plugging the absorption field. This will prolong the life of the absorption field and improve performance of the system. It also helps reduce the strength of wastewater effluent.

Absorption Field Material Specifications

Rigid PVC or corrugated polyethylene plastic pipe meeting American Society for Testing and Materials (ASTM) standard ASTM D2729-93 and ASTM F405-93 or latest edition respectively meet minimum standards for use as solid or perforated gravity distribution lines. All materials used in the plumbing, wastewater lines, and lateral fields shall meet standards specified by ASTM. In gravity lateral pipes, perforations are circular, ½inch diameter and are placed at 4 and 8 o'clock positions on the pipe circumference. In no circumstance is slotted pipe acceptable as the narrow slot openings plug easily.

Washed gravel or crushed stone is commonly used as the porous media for the trench. The media gradation shall be ¾ inches to 2 inches in diameter, with the smaller sizes preferred to reduce masking of the infiltration surface. Uniform size is preferred because more void space is created. Rock having a hardness of three or more on the Moh's Scale of Hardness is required. Rock that can scratch a penny without crumbling or flaking generally meets this criterion. Larger diameter and smaller diameter material, or soft aggregate such as calcite limestone are not acceptable and shall not be used.

Fines should be eliminated as much as possible. Fines shall not exceed 5 percent by volume, so unwashed material is generally unacceptable. A simple test is to wash a volume of material into a clear container of the same diameter and measure fines (5 inches of gravel should produce no more than ¼" of fines).

When suitable rock or gravel is not locally available, is expensive, or access to the site is restricted, gravelless chambers are good choices for laterals. They have the advantage of more liquid storage capacity, reducing the effect of high flows or loadings on weekends or holidays. Chamber systems are lightweight making installation easier at sites with restricted heavy equipment access. Chambers also may be recovered for reuse in the future. Before using chambers, consult the local authority to identify requirements.

Chunks of recycled tires are a suitable substitute for rock. Ninety percent of the pieces should be 1 to 4 inches in size with no fines. Wire strands shall not extend more than ¼ inch from the pieces.

The porous media shall be covered with a filter fabric (at least 3 ounce nylon or 5 ounce polypropylene) before backfilling to prevent soil from sifting through the media. Traditional untreated building paper or 3-inch layer of straw are inferior second choices or are not recommended. Filter fabric is required when tire pieces are used as the porous media. Materials relatively impervious to air and moisture are not permitted.

Field Construction Specifications

Protection of the absorption field area begins before any activity on the site. The site and soil evaluation identifies the best lateral field area and reserve area. Heavy equipment, such as loaded trucks, should be kept away from the absorption field by marking the site. The weight of such equipment can permanently alter soil characteristics due to compaction. Excessive equipment or foot traffic can compact even relatively dry soils.

Construction of septic tank–lateral field systems when the soil is too wet causes compaction and smearing of the soil structure greatly reducing the water absorption and treatment efficiency of the system. A good test for this is to work the soil into a ball and roll between the hands. If it can be rolled out into a soil wire ¼ inch in diameter or smaller without falling apart, it is too wet and construction should not proceed.

Before beginning construction, contours should be determined and level lateral locations should be marked by flags or stakes on the contour. Trenches shall not be excavated deeper than the design depth or wider than the design width. Following excavation, the trench sides and bottom shall be raked to remove any smearing and graded to assure a bottom with no more than 1 inch difference in elevation along the entire lateral length or the complete field for a level system. The lateral pipe and rock cover shall not vary more than 1 inch in elevation along the lateral length using a surveyor level or laser.

The trench bottom should then be immediately covered with at least 6 inches of rock or the chamber. Distribution pipes are carefully placed on the rock, and leveled with perforations at 4 o'clock and 8 o'clock positions. Rock is placed around and over the pipe to a cover depth of at least 2 inches.

After rock and pipe have been placed in the trench the filter fabric or other barrier shall be placed to protect from soil movement into the rock. Finally, earth backfill shall be carefully placed to fill the trench cavity. The backfill shall be mounded above the trench about 20 percent of the soil fill height to allow for settling. If a variation in the trench depth is used, topsoil also must be placed between laterals as well as over the lateral to level the site.

Maintaining Onsite Wastewater Systems

The homeowner's responsibility for onsite wastewater treatment and disposal does not end when the backfill is placed over the trench lines and wastewater introduced. Maintenance of the system is a critical factor to ensure long life and continued effectiveness of the system. Minimum annual maintenance criteria include:

- check the sludge and scum in the tank to determine pumping requirements; tanks need to be pumped regularly depending on wastewater flow and tank size, (often 3 to 5 years),
- check the baffles or tees to ensure they are intact, secure, and in good condition,
- check the septic tank and soil absorption area monthly for indications of leaks or failure,
- check observation ports in each lateral to ensure effluent is reaching all parts of the system,
- check effluent filter and clean as needed.

Refer to K-State Research and Extension bulletins listed at the end of this document for additional information. A file containing records of repairs, pumping, site plan of the system, annual checklist, and other pertinent information should be maintained for easy reference and for information when ownership changes.

Wastewater Stabilization Ponds

Wastewater ponds, sometimes called lagoons, are a viable sewage treatment method and should be considered for individual household wastewater where soil conditions have severe limitations for conventional lateral absorption field systems. Single family wastewater ponds should not be considered if septic tank–lateral field systems are feasible as determined by local requirements or recommendations contained in this bulletin. Wastewater ponds are especially applicable on sites with very restrictive permeability, tight clay subsoil, (i.e. slow perc rates) or shallow bedrock where adequate area is available.

A wastewater pond is a small pond with a maximum 5-foot operational water depth, which receives domestic wastewater. Size, as in a soil absorption field, is deter

tained by the number of occupants and thus the wastewater flow, the soil, and evaporation.

Wastewater enters the pond by a pipe outlet near the bottom close to the center of the lagoon. All private wastewater ponds must be nondischarging and must be fenced. Wastewater ponds require a sizable area, including water surface, embankment, and separation distances. Maintenance is required to remove vegetation at the water's edge, to mow vegetation on embankments, and to remove trees that will shade the pond. Odors from a properly designed, installed, and maintained pond are infrequent and minimal.

Individuals considering wastewater ponds for sewage treatment should first check with county or other local authorities to determine requirements. Proceed with any private sewerage facility only when public sewers are not available and all applicable local requirements are met. Refer to K State Research and Extension bulletins on wastewater ponds for more information and guidance.

Alternative Systems Guidelines

Kansas Administrative Regulations (K.A.R. 28-5-4) authorize county health departments, or other authorized local agency, in counties that have local codes, to grant a variance for alternative onsite wastewater treatment and disposal systems. Most county codes contain a variance clause that authorizes the local administrative agency to grant requests for variances provided that certain conditions are met. The request for variance is filed with the county administrative agency. The local agency can consult with KDHE for technical assistance in evaluating the system, but has the authority to issue the variance locally if there is a local code.

No private onsite wastewater system shall have a surface discharge.

When there is no local code KDHE is authorized by regulation to grant a variance. Onsite wastewater treatment options that might be considered for variance include enhanced wastewater treatment options such as aerated tank, sand or media filter, rock-plant filter, or other equivalent system. Design, construction, operation, and maintenance criteria or guidelines are planned but are not yet available for use in Kansas.

Some county codes require that design and specifications for alternative systems be completed by a licensed professional engineer. Engineers should be adequately trained or have experience under adequate supervision, before designing alternative systems. Results show that design by an inexperienced engineer can not produce a more reliable or long life alternative than conventional systems. Some alternative systems involve complex design and specific construction criteria that can result in dramatic failure when violated.

Appendix A

Conducting a Perc Test

Water movement through soil in response to gravity is called percolation. For wastewater soil absorption field evaluation, the absorption of water from a post-type hole is a method for the evaluation for soil suitability and loading rate design. The absorption of water from this hole involves water movement in 2 dimensions and forces other than gravity. The term "perc" test is applied to this evaluation. The purposes of this test include:

- Obtaining the rate at which wet, unsaturated soil will absorb water,
- Helping assess suitability of soil on a specific site to absorb septic tank effluent,
- Helping select from among alternative onsite sewage systems and establish a design loading rate.

To ensure the best evaluation, all available soil information should be utilized. This would include the assessment of restrictive conditions such as high water table, perched water table, shallow depth of soil, and restrictive layers such as clay pan; soil profile evaluation from the site, including history of high water tables; and description of soil profiles from county soil surveys.

Brief Description

A minimum of four to six holes are placed throughout the proposed site of the absorption field and at the depth of the proposed laterals and soaked with water until the clay is swelled, usually for at least 24 hours. The perc rate is measured in each hole and reported as the number of minutes it takes for an inch of water to be absorbed in the hole. The optimum time to conduct a perc test is in the spring when the soil is normally wet. An accurate perc test during a dry period, when the soil is cracked may not be possible.

Materials Needed to Conduct the Perc Test

1. Site plan including proposed absorption field and location of tests. Dimensions help ensure the test holes are properly located in and around the field.
2. One batter board—1 inch by 2 inch board of 18 inches long for each perc test hole.
   A. Number each board so that each test hole will be distinguishable.
   B. Mark a notch. Use on the side of each batter board. This will provide a consistent reference point for the measuring device.
3. Durable measuring device (1 to 2 feet long) and a way to reproducibly locate the water surface, such as a pointed hook or float on a stiff wire or rod.
4. An adequate supply of water to soak the hole and conduct the test. Water usually has to be transported to the site. Two hundred to 300 gallons is usually adequate.

Procedure

1. Identify Proposed Site of Absorption Field—The site preferably should be located downslope from the septic tank. If effluent will not flow by gravity, an effluent pump may be used to move effluent to a suitable absorption field. For new businesses, the proposed area reserved for future use should also be checked for suitability.
2. Number and Location of Tests—Locate a minimum of four to six holes uniformly over the proposed absorption field site. If the site is sloping, it is especially important to have test holes at all elevations to be used so that any differences in soil will be evaluated.
3. Type of Test Hole—Dig or bore each hole to the depth of the proposed trench (usually 18 to 24 inches) and with a consistent diameter (8 inches is recommended). All test holes shall be the same size to help ensure consistency in results.
4. Prepare the Test Hole—Scratch the sides and bottom of the hole to eliminate any smeared or compacted soil surfaces and remove loose material from the hole. Place 2 inches of washed gravel in the bottom of the hole. The gravel can be contained in a mesh bag for easy removal and reuse at other sites. This gravel protects the bottom of the hole from erosion scouring and sediment as water is introduced.
5. Wet Hole to Allow for Soil Swelling. Saturation means that the voids between the soil particles are filled with water. This happens fairly quickly for soil immediately surrounding the portion submerged in water. Swelling is caused by intrusion of water into the clay particles and can take many hours and possibly days when the soil is quite dry.
   A. Carefully add 12 to 14 inches of water. Using a hose will prevent soil washing down from the sides of the hole.
   B. Maintain the water level for at least 24 hours to allow for swelling to occur. In most cases it will be necessary to add water periodically from a reservoir. A float supplied by a hose from a reservoir simplifies the procedure.
   C. If the soil appears to be sandy or initially very dry, plan to check the condition of the hole wetting after 12 hours or overnight. If there is no water left in the hole and the reservoir is dry, refill the reservoir and holes. After the full 24 hours have passed since soaking was initiated, begin measuring as described in #6.
6. Perc Measurement
   A. Remove the apparatus used to add water to the hole.
   B. Place the batten board across the top of each hole and secure with weights, spikes or attach to stakes. Be sure that the centerline mark is centered over the hole and each board is numbered.
   C. Align the measuring rule with mark on the board and use the hook gauge on the float and rod to read the level when it just touches the water surface. Record the measurement and time. Fill the hole to about 6 inches over the rock and make the initial measurement.
   D. Measure at 30 minute intervals (does not have to be exact) recording both level and time. If the water level in the hole drops too rapidly, it will be necessary to reduce the time interval for measurement. The time interval should be short enough that the water level should not drop more than 25 percent of the wetted hole depth.

   Note: If the water drops more than 1 to 2 inches in 30 minutes, it will be necessary to add water to the hole after each reading until it is the same depth as recorded initially. Be sure to record the measurement of the refilled perc hole.
7. Calculate Perc Rate. Divide time interval by drop in water level to find the perc rate in minutes per inch (mpi).

Examples:

If the drop is 8 inches in 25 minutes:

$$\frac{25}{8} = 25 \times \frac{5}{8} = 10 \text{ mpi}$$

If the drop is 4 inches in 12 minutes:

$$\frac{12}{4} = \frac{12}{4} = \frac{12 \times 2}{3} = 3 \text{ mpi}$$

   A. Continue measurements until each of three consecutive calculated rates varies by no more than 10 percent from the average of the three rates. Use the average of three rates as the value for that hole.

   Example:

   Rates of 26.0, 28.0, and 30.5 mpi average 28.2 mpi

   B. Measure and calculate the rate for each hole in the application field. Average the rates for all holes as the value to use for loading rate and bottom area sizing.
8. Compare with Permeability in the NRCS Soil Survey. The field measured perc (mpi) should be no smaller than about one fifth the inverse of the permeability rate shown in the table of physical and chemical properties of soils in the soil survey report. If it is, suspect a problem with the perc test, soil mapping or other cause. A well aggregated, undisturbed soil may have a good perc rate.

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Appendix B

Sources of Additional Information

Kansas State University, Agricultural Experiment Station and Cooperative Extension Service Bulletins[21] (except as noted)

Wastewater Systems and Related Information

Design of Submerged Flow Wetlands, Special Report 457, Missouri Small Flows Education and Research Center, Agricultural Experiment Station, University of Missouri, Columbia, MO 65211

Environmental Health Handbook, First Edition, Aug 1992, Kansas Association of Sanitarians, KDHE, and K State Research and Extension cooperating. Available from K State, Extension Biological and Agricultural Engineering. Cost: $20.00[22]

Get to Know Your Septic System, MF-2178

How to Run a Percolation Test, PC-3583-C, (Revised 1993), Minnesota Extension Service, University of Minnesota, St. Paul, MN 55108

Onsite Domestic Sewage Disposal Handbook, MWPS-24, Midwest Plan Service, Iowa State University, available from K-State, Extension Biological and Agricultural Engineering. Cost: $8.00[23]

Plugging Cisterns, Cesspools, Septic Tanks, and Other Holes, MF 2246

Rock-Plant Filter Design and Installation, expected 1997

Rock Plant Filter Operation, Maintenance and Repair, expected 1997

Septic Tank Maintenance, MF-847

Septic Tank Soil Absorption System, MF 844

Soil Evaluation for Home Septic Systems, MF 845

Wastewater Pond Design and Construction, MF-1044

Wastewater Pond Operation, Maintenance, and Repair, MF-2290

Why Do Septic Systems Fail? MF-946

Your Wastewater System Owner/Operator Manual, S-88 for sale bulletin, cost 35¢

Other Helpful Bulletins

Kinds and Types of Levels, L-117[22]

Land Judging and Homesite Evaluation, S-34

Operating, Checking and Caring for Levels, L-101[22]

Safe Domestic Wells, MF-870

Soil Water Measurements: An Aid to Irrigation Water Management, L-785

Using a Level, AF-10[22]

Standards Related to Onsite Wastewater System Materials and Procedures

ACI 212.3R Chemical Admixtures for Concrete

ACI 350R Environmental Engineering Concrete Structures

ASTM[24] C 150-95 Standard Specification for Portland Cement. Vol. 04.01

ASTM C267-92 Standard Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings. Vol 04.05

ASTM C452-95 Standard Test Method for Potential Expansion of Portland Cement–Cement Mortars Exposed to Sulfate. Vol. 04.01

ASTM C890-91 Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures. Vol. 04.05

ASTM C1227-95 Standard Specification for Precast Concrete Septic Tanks. Vol. 04.05

ASTM D 883-94 Standard Terminology for Abbreviated Terms Relating to Plastics. Vol. 08.04

ASTM D2321-89 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications. Vol. 08.04

ASTM D2729-96 Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings. Vol. 08.04

ASTM F481-94 Standard Practice for Installation of Thermoplastic Pipe and Corrugated Tubing in Septic Tank Leach Fields. Vol. 08.04

ASTM F405-93 Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings. Vol. 08.04

ASTM F412-94a Standard Terminology Relating to Plastic Piping Systems. Vol. 08.04

ASTM F449-93 Standard Practice for Subsurface Installation of Corrugated Thermoplastic Tubing for Agricultural Drainage or Water Table Control. Vol. 08.04

ASTM D3385-94 Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer. Vol. 04.08

ASTM F789-89 Standard Specification for Type PS-46 Poly(Vinyl Chloride) (PVC) Plastic Gravity Flow Sewer Pipe and fittings. Vol. 08.04

ASTM F810-93 Standard Specification for Smoothwall Polyethylene (PE) Pipe for Use in Drainage and Waste Disposal Absorption Fields. Vol. 08.04

ASTM ASTM F949-93a Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings. Vol. 08.04

NPCA[25] Durable, Watertight Precast Concrete, TECH notes, April 1996

NPCA Septic Tank Manufacturing: A Best Practices Manual. Anticipated by Summer 1998

NPCA Underground Watertight Systems (video)

[21] Publication Services/Distribution, Kansas State University, 28 Umberger Hall, Manhattan, KS 66506-3402, Phone: (785) 532-1155

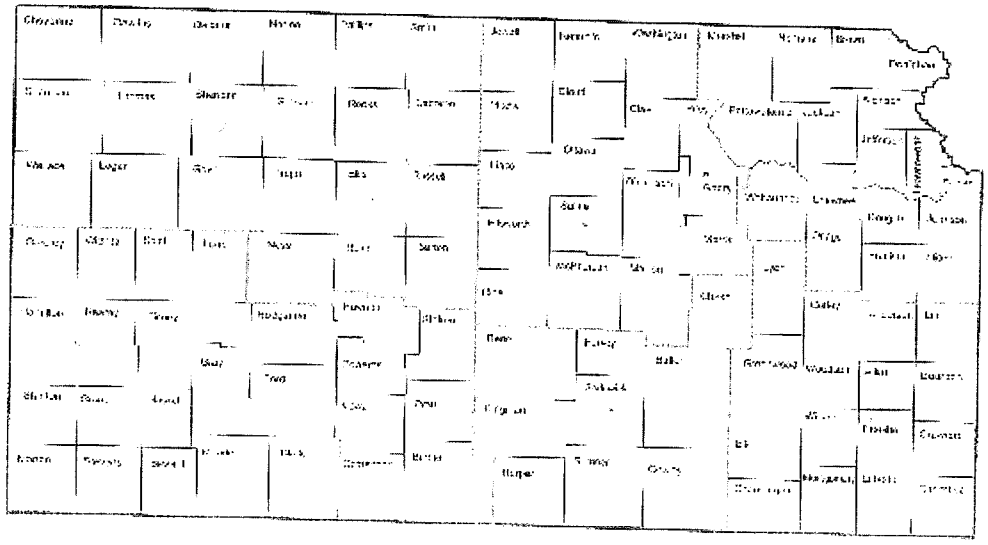
[22] Available through Extension Biological and Agricultural Engineering, Kansas State University, 237 Seaton Hall, Manhattan, KS 66506-2947, Phone: (785) 532-5813

[23] American Concrete Institute, P.O. Box 9094 Farmington Hills, Michigan 48333, Phone: (810) 848-3800

[24] American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 Phone (610) 832-9500

[25] National Precast Concrete Association, 10333 North Meridian Street, Suite 272 Indianapolis, Indiana 46290 Phone (317) 571-0500

KDHE District Boundries and District Offices



KDHE, Division of Environment, Nonpoint Source Section
Forbes Field Bldg. 283
Topeka, Kansas 66620
(785) 296-5195

KDHE District Offices

Kansas Dept Health & Environment
Northwest District Office
2301 E. 13th Street
Hays, KS 67601-2651
(785) 625-5663

Kansas Dept Health & Environment
North Central District Office
2501 Market Place Suite D
Salina, KS 67401
(785) 827-9639

Kansas Dept Health & Environment
Northeast District Office
800 W. 24th Street
Lawrence KS 66046-4417
(785) 842-4600

Kansas Dept Health & Environment
Southwest District Office
302 W. McArtor Road
Dodge City, KS 67801-5098
(316) 225-0596

Kansas Dept Health & Environment
South Central District Office
130 S. Market, 6th Floor
Wichita, KS 67202-3802
(316) 337-6020

Kansas Dept Health & Environment
Southeast District Office
1500 W. 7th Street
Chanute, KS 66720-9701
(316) 431-2390

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