

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

Dean F. Baw

Signature

Chairman, Board of County Commissioners

4-2-92

Date

MCPHERSON COUNTY, KANSAS
RESOLUTION NO. 92-6

A RESOLUTION APPROVING THE SANITATION CODE FOR
MCPHERSON COUNTY, KANSAS

WHEREAS, it is necessary to adopt a Sanitation Code for the protection of the health and welfare of the residents of McPherson, County, Kansas; and

WHEREAS, the adoption of said Code will promote the health, safety, morals, comfort and general welfare of the residents of McPherson County, Kansas.

BE IT RESOLVED by the governing body of the County of McPherson, Kansas:

1. That such Sanitation Code was prepared in book-form following a public hearing as required by Kansas law.

2. Said Code shall regulate and control those environments and environmental conditions that adversely affect the health and safety of the citizens of McPherson County.

3. Official copies of the Sanitation Code shall be filed with the McPherson County Health Department, 119 North Maple, McPherson, Kansas 67460, to be open for inspection and available to the public at all reasonable hours.

4. The Sanitation Code shall apply to all unincorporated territories comprising the County of McPherson, State of Kansas.

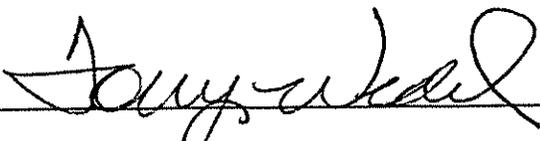
5. This Resolution shall be in full force and effect from and after its publication once in the official County newspaper.

Passed and approved this 2 day of ~~March~~^{April}, 1992.

BOARD OF COUNTY COMMISSIONERS
OF MCPHERSON COUNTY, KANSAS



Dean Bacon, Chairman

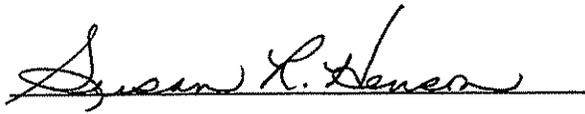


Tony Wedel, Member

A handwritten signature in cursive script, reading "Duane Patrick", is written over a solid horizontal line.

Duane Patrick, Member

ATTEST:

A handwritten signature in cursive script, reading "Susan R. Henson", is written over a solid horizontal line.

Susan Henson, County Clerk

SANITATION CODE
for
McPHERSON COUNTY,
KANSAS

S A N I T A T I O N C O D E

FOR

M C P H E R S O N C O U N T Y ,
K A N S A S

Adopted April 2, 1992

McPHERSON COUNTY
HEALTH DEPARTMENT

APR 17 1992

APPROVED
Kansas Department of Health
and Environment

April 2, 1992
Date

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CHAPTER I - ADMINISTRATION

Section 1-1.0 AUTHORITY AND POLICY

- 1-1.1 Legal Authority. This code is adopted under the authority granted to the Board of County Commissioners by K.S.A. 19-3701 et. seq. and/or K.S.A. 12-3301 et. seq. as amended (see Appendix B).
- 1-1.2 Declaration of Finding and Policy. The McPherson County Commissioners find necessary and desirable the provision of adequate and reasonable control over the environmental conditions in unincorporated, suburban areas of the county; the adoption of a sanitary code to eliminate and prevent the development of environmental conditions that are hazardous to health and safety, and promotion of the economical and orderly development of the land and water resources of the county.
- 1-1.3 Purpose of the Code. The purpose and intent of this code is to regulate and control those environments and environmental conditions that adversely affect the health and safety of the citizens of McPherson County.
- 1-1.4 Title. This code shall be known and referred to as the McPherson County Sanitation Code.
- 1-1.5 Scope. This code shall apply to all unincorporated territory comprising the County of McPherson, State of Kansas.
- 1-1.6 Effective Date. This code shall become effective on and after final adoption of the sanitary code.

Section 1-2.0 DEFINITIONS

- 1-2.1 Administrative Agency means the McPherson County Health Department.
- 1-2.2 Authorized Representative means any person who is designated by the Administrative Agency to administer this code.
- 1-2.3 Board of County Commission means the McPherson County Board of Commissioners.

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- 1-2.4 Board of Health means the McPherson County Board of Health.
- 1-2.5 Health Department means the McPherson County Health Department.
- 1-2.6 Hearing Officer means any person designated by the Board of County Commission to hear appeals from decisions of the Administrative Agency relating to the enforcement of this code.
- 1-2.7 Person means any institution, corporation, partnership, association or individual.
- 1-2.8 Premise means any lot or tract of land and all buildings, structures or facilities located thereon.

Section 1-3.0 ADMINISTRATIVE POWERS AND PROCEDURES

- 1-3.1 Administrative Agency. The Administrative Agency for this code is the McPherson County Health Dept.
- 1-3.2 Right of Entry. Representatives of the Administrative Agency shall have the right to investigate such premises as they shall deem necessary for the enforcement of this code.
- 1-3.3 Obstruction of Administrative Agency. No person shall willfully impede or obstruct representatives of the Administrative Agency in their discharge of official duties under the provision of this code.

Section 1-4.0 PERMITS AND LICENSES

- 1-4.1 Applications. Whenever a permit or license is required by this sanitary code, application therefore shall be made to the Administrative Agency by the property owner or his authorized agent on standard forms provided for that purpose.
- 1-4.2 Issuance of Permit or License. Within five (5) working days after receipt of an application for a permit or license required by this code, the Administrative Agency shall begin such investigations and inspections as shall be deemed necessary to determine whether the permit should be issued or denied and shall issue or deny the permit or license within thirty (30) days after receipt of the application. If the permit is

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denied, the Administrative Agency shall send the applicant a written notice stating reasons for rejection of the permit.

- 1-4.3 Permit Non-transferable. No permit or license required by this code shall be transferable, nor shall any fees paid hereunder be refundable.

Section 1-5.0 NOTICES, ORDERS, APPEALS

- 1-5.1 Notices of Violations. Whenever the Administrative Agency determines that there has been a violation of any provision of the McPherson County Sanitary Code, notice shall be given of such alleged violation to the person responsible therefore. The notice shall be (1) in writing; (2) include a statement of why the notice is being issued; (3) allow a reasonable period of time for performance of any work required by the notice; (4) be properly served upon the premise occupant and premise owner or his agent, provided that such notice shall be deemed properly served upon such premise occupant and premise owner or his agent when a copy thereof has been sent by certified mail to the last known address of the premise occupant and premise owner or his agent.

- 1-5.2 Appeal for Hearing. Any person affected by any notice or order issued by the Administrative Agency under the provisions of this sanitary code may request, and shall be granted, a hearing on the matter before the hearing officer appointed by the Board of County Commission, provided: that such person shall file with the Administrative Agency within ten (10) days after the date of issuance 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 a hearing shall operate as a stay of the notice. Upon receipt of such petition, the Administrative Agency shall 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 should be modified or withdrawn. The hearing shall be commenced not later than ten (10) days after the date on which the petition was filed: provided that upon request of the petitioner the Administrative Agency may postpone the day of the hearing for a reasonable time beyond such ten-day period, when the petitioner has submitted good and sufficient reasons for such

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postponement.

- 1-5.3 Report of Hearing. Within ten (10) days after such a hearing, exclusive of Sundays and holidays, the hearing officer shall submit a written report of his finding to the Board of County Commission with the recommendation that the Board issue an order sustaining, modifying or withdrawing the order or notice of the Administrative Agency. Upon receipt of the report of the hearing officer, the Board of County Commission shall consider the report and issue an order confirming, modifying or withdrawing the order or notice of the Administrative Agency and shall notify the appellant in the same manner as is provided for in Sec. 1-5.1.
- 1-5.4 Emergency Orders. Whenever the Administrative Agency finds that an emergency exists which requires immediate action to protect the public health, the Administrative Agency may, without notice or hearing, issue an order reciting the existence of such an emergency and requiring that such action be taken as may be deemed necessary to meet the provisions of this ordinance; such order shall be effective immediately. Any person to whom such an order is directed shall comply therewith immediately but upon petition to the Administrative Agency, shall be afforded a hearing as soon as possible, but not more than five (5) days after the emergency order is issued.

Section 1-6.0 RECORDS

- 1-6.1 Filing of Applications. Applications for permits or licenses required by this code shall be managed by the Administrative Agency.
- 1-6.2 Official Actions. Written records shall be kept of all official actions taken on applications for permits and licenses required by this code and shall be managed by the Administrative Agency.
- 1-6.3 Proceedings of Hearings. The proceedings of all hearings, including findings and decision of the hearing officer, together with a copy of every notice and order related thereto shall be filed in the health department. Transcriptions of the proceedings of hearings need not be made unless a judicial review of the decision is sought.

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Section 1-7.0 VIOLATION AND PENALTIES

- 1-7.1 The violation of this code or any orders issued under the provision of this code shall be deemed a misdemeanor and shall be prosecuted as such under the laws of the State of Kansas.
- 1-7.2 Any person who violates any provision of McPherson County Sanitary Code shall, on conviction be punished by a fine of not more than two hundred dollars (\$200.00) for each offense, and each day's failure to comply with this code shall constitute a separate violation.

Section 1-8.0 PARTIAL INVALIDATION

- 1-8.1 Liability Waiver. This code shall not be construed or interpreted as imposing upon McPherson County, Kansas, or its officials or employees any liability or responsibility for damages to any property, or warranty that any system, installation or portion thereof that is constructed or repaired under permits and inspections required by this code will function properly.
- 1-8.2 Separability. If any section, subsection, paragraph, sentence, clause or phrase of the McPherson County Sanitary Code should be declared invalid for any reason whatsoever, such decision shall not affect the remaining portion of the sanitary code, which shall remain in full effect; and to this end the provisions of the sanitary code are hereby declared to be severable and shall be presumed to have been adapted knowing that the part of section declared invalid would be so declared.

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CHAPTER II - ON-SITE WASTEWATER MANAGEMENT

Section 2-1.0 PURPOSE AND INTENT

Sewage is a potential source of disease and a potential hazard to the health, safety, and welfare of the public. The provisions of this chapter are adopted for the purpose of regulating and controlling the location, design, construction, maintenance, and use of on-site wastewater systems, and the removal and disposal of materials removed from such facilities within the legal boundaries of McPherson County.

Section 2-2.0 AREA OF APPLICABILITY

The provisions of this chapter shall apply to all unincorporated areas of McPherson County, Kansas.

Section 2-3.0 COMPLIANCE REQUIRED

After the effective date of this code, no person shall construct on any property subject to this code, any semi-public or private wastewater system that does not comply with both the requirements of this code and with K.A.R. 28-30-2 et seq. (see Appendix F.)

Section 2-4.0 DEFINITIONS

In addition to the definitions provided in Chapter 1 of this code, the words, terms, and phrases listed below, for purposes of this Chapter 2, are defined as follows:

2-4.1 Distances
means horizontal distance unless otherwise designated. Measurements referred to "not less than", "minimum", "at least" and other similar designations shall mean horizontal distances unless specifically indicated otherwise.

2-4.2 Domestic Sewage
means sewage originating primarily from kitchen, bathroom, and laundry sources, including waste from food preparation, dishwashing, garbage-grinding, toilets, baths, showers, and sinks as defined in K.A.R. 28-16-56a (see Appendix C).

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- 2-4.3 Human Excreta
means the normal body wastes from humans (feces and urine).
- 2-4.4 Industrial and Commercial Wastes
A. Industrial wastes means wastes from a facility serving an individual or commercial enterprise or group, or a combination thereof, for the purposes of treating sewage or process-generated wastewater other than domestic sewage by physical, chemical, or biological means or by a combination of those methods. Industrial treatment facility includes municipally-owned electricity generating facilities and water treatment plants.
B. Commercial wastes means wastes from a facility serving and owned by an industrial or commercial enterprise or group, or a combination thereof, for the purposes of treating domestic sewage by physical, chemical, or biological means, or by a combination of those methods and includes slaughter houses with an average slaughter rate of 50 animals or less per week.
- 2-4.5 Modify
means to change an existing system for purposes other than routine maintenance.
- 2-4.6 Nuisance
means conditions or activities which have or threaten to have a detrimental effect on the health of the public or its members.
- 2-4.7 Private Wastewater System
means any system which does not hold a Kansas Water Pollution Control Permit and includes waste water disposal systems which function by soil absorption, evaporation, transpiration, holding tanks, or any combination of the above.
- 2-4.8 Public Wastewater System
means a wastewater system under the jurisdiction of a city, county, township, district or other governmental unit.
- 2-4.9 Sanitary Privy
means a facility designed for the disposal of non-water carried wastes from the human body.

- 2-4.10 Sanitary Service
means the pumping out and/or removal of sewage, sludge, or human excreta from privies, vaults, septic tanks, or private wastewater systems; and the transportation of such material to a point of final disposal.
- 2-4.11 Semi-public Wastewater System
means a small wastewater system owned by one entity and designed to serve a commercial development or not-for-profit organization producing less than 1000 gallons of domestic sewage per day.
- 2-4.12 Sewage
means any substance that contains any of the waste products or excrementitious or other discharges from the bodies of human beings or animals, or chemical or other wastes from domestic, manufacturing or other forms of industry.
- 2-4.13 Wastewater System
means any system along with attendant pipes and appurtenances designed and constructed to collect, store, treat, and dispose of domestic, industrial, or commercial waste.
- 2-4.14 Sewer District
means any sewer district legally organized or created by the Board of County Commission in accordance with state statutes.
- 2-4.15 State Department of Health and Environment
means Kansas Department of Health and Environment.
- 2-4.16 Subdivision
means any tract of land that is or has been subdivided into two or more lots for the purpose of sale or building development, whether immediate or future, including the streets, alleys or other portions thereof intended to be dedicated for public use; and any resubdivision of lands or lots.
- 2-4.17 Vaults/Holding Tank
means a water-tight receptacle for the retention of sewage either before, during, or after treatment.

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2-4.18 Waste Stabilization Pond
means a shallow pond designed specifically to treat sewage by natural, mechanical, and biological activity.

Section 2-5.0 PROHIBITED PRACTICES

2-5.1 Use of Nonapproved Wastewater Systems
No person shall use, or cause to be used, any wastewater system constructed after adoption of this code until it has been inspected and approved by the Administrative Agency or if it:

- a. has been enjoined as a public health nuisance by a court of competent jurisdiction;
- b. fails to comply with the provisions of this sanitation code, and written notice thereof has been given by the McPherson County Health Department;
- c. discharges wastes onto the surface of the ground, into wells, watercourses, lakes, ponds, or any impoundment; or,
- d. causes vector breeding, produces offensive odors or any condition that is prejudicial to health and comfort.

2-5.2 Use of Private Systems Within 400 Feet of Public Sewer

No private wastewater system shall be constructed within 400 feet of the existing public sewer, unless the McPherson County Health Department finds that connection to such a sewer is not feasible and that a private wastewater system, meeting the requirements of this code, can be constructed on the property.

2-5.3 Location of Private Wastewater Systems Below Full/Flood Pool

No portion of a private wastewater system shall be located below the flood pool elevation of any reservoir or full pool elevation of any pond, lake, or water supply reservoir unless written approval for location below full flood pool is obtained from the Administrative Agency.

2-5.4 Location of a Private Wastewater System Within 50 Feet of Well

No portion of a private wastewater system shall be

located less than 100 feet from a water well or a pump suction line from a water well, unless the facility is of water tight construction. No sanitary sewer line, regardless of construction, shall be located less than 10 feet from a water well or a suction line from a water well.

2-5.5 Connection to Nonapproved Public Wastewater System

No premise shall be permitted to connect to any public wastewater system that does not hold a valid permit from the Kansas Department of Health and Environment.

2-5.6 Requirements for Subdivision Development

After adoption of this code, no person shall develop any subdivision until the plans and specifications for wastewater management for such subdivision have been approved by the McPherson County Health Department.

Section 2-6.0 REQUIREMENTS FOR PRIVATE WASTEWATER SYSTEMS

2-6.1 Approval of Plans

After adoption of this code no person shall develop any private wastewater system until the plans and specifications for such system have been approved by the Administrative Agency. References utilizing technology currently approved by the Kansas Department of Health and Environment may be used as a guide by the Administrative Agency. See Appendix E for those approved references.

2-6.2 Permit

No person shall construct or modify, or permit to be constructed or modified, any private wastewater system until a permit has been issued by the McPherson County Health Department.

2-6.3 Maintenance

All persons holding a permit for use of a wastewater system and responsible for its operation shall operate and maintain the system in conformity with standard operation practices.

2-6.4 Suitable Site

No site shall be approved if:

- a. connection to an approved public wastewater system is feasible or the site violates the provisions of Section

- 2-5.0 of this code;
- b. the site does not meet the square footage requirements of the subdivision regulations of McPherson County, 1983 or latest edition, and/or the zoning regulations of McPherson County, 1988 or latest edition.
- c. the soil, topography, and geology do not meet the requirements set forth in Section 2-8.3, 2-9.1, and 2-10.4.

2-6.5 Waiver

The Administrative Agency shall have the authority to grant exceptions when reliable information is provided which justifies the exception and does not violate the provisions of this code.

Section 2-7.0 REQUIREMENTS FOR SEMI-PUBLIC WASTEWATER SYSTEMS

2-7.1 Permits Required

No person shall construct, alter, extend, or use any semi-public wastewater system without obtaining a permit from the Administrative Agency.

2-7.2 Approved Plans. No person shall construct or alter the construction of any semi-public sewerage system until the plans and specifications therefor have been submitted to and approved by the Administrative Agency.

2-7.3 Area. No person shall construct any semi-public wastewater system unless a site is provided and set aside exclusively for use as an absorption field area that meets the minimum requirements of Section 2-7.3. The minimum area for such a site shall be 10,000 square feet plus 15 square feet per gallon of estimated sewage generated per day. The Administrative Agency shall estimate the quantity of sewage generation based on the best available information including historic data. The Health Officer may require special plumbing features as deemed necessary or desirable including, but not limited to, grease and grit traps, dosing systems, pressure distribution and distribution arrangements enabling the resting of part of the absorption field. The Administrative Agency may require the wastewater system to be

designed by a professional engineer licensed by the State of Kansas.

2-7.4 Include All Properties. Before issuing any permit for construction of a semi-public wastewater system, the Administrative Agency shall ascertain whether all of the premises that can and should be served by such a semi-public wastewater system are included and provided for in the design of the system.

2-7.5 Limitations in Number of Properties Served. Semi-public wastewater systems shall not be constructed or used where creation of a public sewer district is feasible, except as an interim measure.

Section 2-8.0 REQUIREMENTS FOR SUBSURFACE SOIL ABSORPTION SYSTEM

2-8.1 Area Requirements. No person shall construct any subsurface soil absorption system on any premise that does not have an area meeting the current requirements of the McPherson County Sub-Division Regulations and/or Zoning Regulations. No person shall construct a subsurface soil absorption system on any premise unless at least ten thousand (10,000) square feet of land suitable for use as an absorption field can and will be provided.

2-8.2 Subsurface Soil Absorption System Design. No septic tank and/or subsurface soil absorption system shall be constructed or installed until detailed plans and specifications for the system have been approved by the Administrative Agency. Lateral lines must be in place but not covered until the Administrative Agency inspects the system. References utilizing technology currently approved by KDHE and attached as Appendix E, shall be used as a guide by the Administrative Agency in reviewing and approving plans and specifications for subsurface soil absorption systems.

2-8.3 Absorption Field Requirements.
a. Satisfactory soil percolation. No land that has a soil percolation rate of less than one (1) inch in sixty (60) minutes or more than one (1) inch in three (3) minutes shall be considered as suitable for absorption for septic tank effluent. All percolation rates shall be based on the standard test procedures recommended by references

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utilizing technology currently approved by KDHE (See Appendix E). The soil percolation test is the responsibility of the person applying for a permit. The Administrative Agency reserves the right to recheck the percolation rate. If the recheck discloses a percolation rate different from that on the application on file in the Administrative Agency, the applicant shall be responsible for the cost of the recheck test.

b. No land that has impervious rock formations within six (6) feet of the ground surface shall be considered suitable for absorption of septic tank effluent.

c. No land where the static level of the ground water is less than ten (10) feet below the ground surface shall be considered suitable for absorption of septic tank effluent.

d. No land with a natural slope of more than ten percent (10%) shall be considered suitable for absorption of septic tank effluent.

2-8.4

Location Requirements.

a. No portion of a septic tank subsurface soil absorption system that is not water-tight shall be located less than fifty (50) feet from a water well.

Section 2-9.0 REQUIREMENTS FOR WASTE STABILIZATION PONDS

2-9.1

Suitable Soil

Percolation test data shall be submitted with the plans and specification for the waste stabilization pond. The soil percolation test is the responsibility of the person applying for a permit. The Administrative Agency reserves the right to recheck the percolation rate. If the recheck discloses a percolation rate different from that on the application on file with the Administrative Agency, the applicant shall be responsible for the cost of the recheck test. If the result of the percolation test is greater than or equal to one (1) inch per hour, a septic tank-lateral field system shall be installed unless a special exemption is approved by the Administrative Agency.

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2-9.2

Site

Waste stabilization ponds shall be separated from other areas by distances equal to or greater than those shown in Table 2-1.

Table 2-1

<u>Area</u>	<u>Minimum Separation</u>
House it serves	100'
Other residential structures	250'
Applicant's private water supply well	100'
Property lines, including right of ways	100'
Public, semi-public, or private water supply well	100'
Public, semi-public, or private water transmission lines	25'

2-9.3

Construction

- a. The bottom of the waste stabilization pond shall be not less than 3 feet above the groundwater level.
- b. All dike slopes are to be 3 1/2 feet horizontal to 1 foot vertical.
- c. Minimum dike berm (top) width is to be 3 feet.
- d. Minimum dike freeboard is to be 2 feet.
- e. The inlet pipe is to be of rigid, freeze breakage resistant material such as steel, P.V.C., or A.B.S., and is to provide a capped cleanout line at the nearest upsewer point where the flowline will be above the maximum pond water level. The minimum slope of the inlet pipe is to be 1/8 inch per foot with the piping outlet opening one (1) foot from pond bottom.
- f. Surface drainage is to be diverted around the pond.
- g. The pond bottom and interior dikes up to 2 feet elevation are to be treated with a herbicide at the manufacturer's recommended sterilization rate. All dike area not sterilized is to be seeded with a densely growing, short rooted grass, such as blue, fescue, brome, or bermuda.
- h. The pond must be adequately fenced to prevent entrance of unauthorized personnel and animals. All of the area within the pond enclosure should be regularly mowed.
- i. Pond retention dikes shall be above the 100 year flood plane.

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Section 2-10.0 REQUIREMENTS FOR PRIVIES

2-10.1 Approval of Plans

No person shall construct or modify any privy until the plans and specifications for the proposed construction and/or modification have been approved by the Administrative Agency. Plans for all new privies shall conform with provisions of KDHE bulletins.

2-10.2 Approval of Construction

No person shall use, or make available for use, any newly constructed or modified privy until the construction has been inspected by the Administrative Agency for compliance with the approved plans.

2-10.3 Proper Maintenance

No person shall use, or offer for use, any privy that is not maintained in a clean and sanitary condition. Privies that permit insects or rodents access to the fecal material in the pit shall be repaired within a reasonable time or condemned by the Administrative Agency for further use.

2-10.4 Vault Required in Certain Areas

In areas where the elevation of the groundwater is within six (6) feet of the top of the ground, a watertight vault shall be provided in lieu of the standard pit.

2-10.5 Location

- a. No privy shall be installed less than 50 feet from an existing well.
- b. No privy shall be constructed or reconstructed on any premise served by a public water supply, or on which water is delivered to any building under pressure, unless special permission for use of privy is obtained from the Administrative Agency and all homeowners within 500 feet of the privy are notified of the proposed construction.

2-10.6 Zoning Regulations

No privy shall be constructed or approved for construction in any location where zoning regulations prohibit such facilities.

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Section 2-11.0 SANITARY SERVICES

2-11.1 License Required

a. No person responsible for operating a private wastewater system or privy shall contract with any person for sanitary service unless that person holds a valid license from the Administrative Agency.

b. No person shall remove or transport any wastes from any private wastewater system or privy, unless he holds a valid license from the Administrative Agency.

2-11.2 Application Fee

Every person wishing to obtain a sanitary service license shall make application for a license on forms provided for this purpose and shall pay the fee prescribed in the schedule of fees in Appendix A. Sanitary service equipment must meet minimum standards upon inspection by the Administrative Agency before such license is issued. License shall be subject to annual renewal. A receipt showing such payment shall be attached to the application form. In case the license is denied, no portion of the inspection fee will be refunded.

2-11.3 Minimum Standards for Sanitary Service Equipment

All equipment used for rendering of sanitary service shall be of watertight construction and maintained in good working condition to ensure that all materials removed from private wastewater systems or privies will be transported to an approved point of disposal without spillage of the waste.

2-11.4 Minimum Requirements for Disposal of Waste Material

Disposal of all domestic sewage, individual or commercial waste, or human excreta for any private wastewater system, private sewage disposal system or privy, shall be made at a sewage treatment plant or as otherwise approved by the Administrative Agency for that purpose.

Section 2-12.0 REQUIREMENTS FOR SUBDIVISION DEVELOPMENT

After adoption of this code no person shall develop any subdivision until the plans and

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specifications for wastewater management for such
subdivision have been approved by the
Administrative Agency.

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CHAPTER III - WATER SUPPLIES

SECTION 3-1.0 INTENT

The provisions of this code are for the purpose of regulating and controlling the development, maintenance, and use of private or semi-public water supplies in the unincorporated areas of McPherson County, Kansas.

SECTION 3-2.0 AREA OF APPLICABILITY

This code shall apply to all unincorporated areas of McPherson County, Kansas.

3-2.1 Compliance Required. After the effective date of this code, no person shall construct on any property subject to this code, any public, semi-public, or private water supply that does not comply with the requirements of this code. All construction shall be in compliance with this code and the conditions of Kansas Administrative Regulation Article 30 (see Appendix D).

3-2.2 Fees. A fee schedule shall be established for the necessary permits and inspections required to administer this portion of the sanitary code (see Appendix A).

SECTION 3-3.0 DEFINITIONS

In addition to the definitions provided in Chapter 1 and Appendix D of this code, the words, terms, and phrases listed below, for purposes of this Chapter 3, are defined as follows:

3-3.1 Private water supply. A water supply that provides water for domestic use to a single family dwelling.

3-3.2 Semi-public water supply. Any water supply that is neither a public nor private water supply and provides water for domestic use.

3-3.3 Public water supply. Any water supply that provides piped water to the public for human consumption, if such system has at least ten (10) service connections or serves an average of at least 25 individuals daily at least sixty (60) days out of the year.

SECTION 3-4.0 REQUIREMENTS FOR SEMI-PUBLIC WATER SUPPLIES

No person shall operate or maintain a semi-public water

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supply system that has been:

- a) constructed or reconstructed after the effective date of this code until it has been inspected and a permit issued by the Administrative Agency.
- b) temporarily or permanently enjoined as a public health nuisance by a court of competent jurisdiction.
- c) found by the Administrative Agency not to comply with the provisions of this code and a written notice thereof has been given to the owner or the owner's agent.

3-4.1 Permit Required. No person shall construct a semi-public water supply on any property subject to the provisions of this Sanitary Code until a permit has been obtained from the local Administrative Agency.

3-4.2 Approved Plans. No permit to construct or develop a semi-public water supply on premises subject to the regulations of this code shall be issued until the plan showing the location and construction of the supply has been approved by the Administrative Agency.

3-4.3 Use of a semi-public water supply. In addition to the requirements of 3-5.0 which pertain to private water wells, the following shall be completed and reviewed by the Administrative Agency prior to the issuance of a permit:

1. An initial and at least annual analysis for total coliform bacteria.
2. A partial chemical analysis initially and at least every three years thereafter.
3. Other tests such as a screen for pesticides, volatile organic chemicals, and heavy metals may be required, at the discretion of the Administrative Agency.

Required analyses must demonstrate safe water quality before permit is issued. Payment of laboratory fees for analyses shall be the responsibility of the owner of the water supply or his/her representative.

SECTION 3-5.0 REQUIREMENTS FOR PRIVATE WATER SUPPLIES

3-5.1 Permit. No person shall drill, develop, or construct any private water supply on any premises subject to the

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regulations of this code until he/she has obtained a permit therefor from the Administrative Agency.

3-5.2 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 plan showing the location and construction of the supply has been approved by the Administrative Agency.

3-5.3 Use limitation.

a. No permit for drilling a well for private water supply purposes shall be issued to any person when in the discretion of the Administrative Agency the property can be served at a reasonable cost by a public water supply, or when the water supply to be accessed constitutes a significant, quantified health risk.

b. No use of surface water (lakes, ponds, or streams) as a source of water for private water supply shall be permitted:

1) Where a satisfactory ground water source is available;

2) Unless adequate treatment is provided (in no case shall surface water be used without filtration and chlorination), or

3) Where the pond or lake receives any drainage or discharge from septic tanks or sewage treatment plants.

SECTION 3-6.0 MINIMUM STANDARDS FOR PRIVATE AND SEMI-PUBLIC WATER SUPPLIES

3-6.1 Location. The horizontal distance between the well and potential sources of pollution or contamination, for example, septic tanks, lateral fields, pit privy, seepage pits, fuel or fertilizer storage, pesticide storage, feedlots, or barnyards, shall be 100 feet or more. The distance between a well and a waste stabilization pond shall be one hundred (100) feet or more.

3-6.2 Protection Against Flooding

No well used as a source of water for a public, semi-public, or private water supply shall be located in an area subject to inundation with flood water as specified by FEMA and FIRM. The well casing shall extend at least one foot (1') above such specified flood plane.

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3-6.3 Construction. Construction for all wells shall comply with K.A.R. 28-30-6 (see appendix D).

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APPENDIX A
SANITARY CODE
FEE SCHEDULE

Permits - \$25.00

1. Private sewage system
2. Semi-public sewerage system
3. Private water supply
4. Semi-public water supply

Licenses - \$25.00 per year

5. Sanitary service - removal or transportation
6. Sanitary service examination fee

Inspections - \$25.00

7. Inspection of site and disposal method for sanitary service
8. Inspection of site of new or existing sewerage system
9. Inspection of existing sanitary service providers
10. Inspection of site of new or existing water supply

Mortgage Inspections (requested by lending agencies involved in the sale or purchase of property on which a water and/or wastewater system is located.

11. Initial inspection
 One system (water or wastewater) \$42.00 +lab fees
 Two systems (water and wastewater) 54.00 + lab fees
12. Return inspection 18.00 + lab fees

Charges for lab fees will be the same as those charged to the Health Department by the lab performing the tests.

Note: If multiple requests for a single property are submitted at the same time, then only one inspection fee will apply.

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APPENDIX B

Article 33. - ADOPTION OF CODES BY REFERENCE

12-3301. Definitions. As used in this act, the following terms shall have the meanings indicated unless the context otherwise requires:

(a) "Rules" means those regulations or orders that have general application;

(b) "Municipality" means any county or local unit of government which is authorized to enact local laws under the state law or constitution;

(c) "Code" means any model or standard published compilation of rules in book or pamphlet form which has been prepared by a technical association, a federal agency, this state or any agency thereof, municipalities of this state or any agency or instrumentality thereof and any metropolitan or regional agency within this state, and such codes may be specifically, but shall not be limited to: Building codes, plumbing codes, electrical wiring codes, gas piping codes, health and sanitation codes, codes for the processing, distribution and sale of products for human consumption; codes of local traffic regulations, together with any other code which embraces a subject which is a proper legislative matter;

(d) "published" means printed or otherwise reproduced.

12-3302. City adoption of codes by reference in ordinance. The provisions of any code may be incorporated in a city ordinance by reference, in accordance with the procedure and subject to the limitations provided by K.S.A. 12-3009 through 12-3012.

12-3303. County adoption by reference in resolution; publication of resolution; hearing; applicability of code to certain areas of county to be specified. The provisions of any code may be incorporated in a county resolution by reference and shall be as much a part of the resolution as if the same had been set out in full therein when the resolution has been passed by the board of county commissioners in the manner provided by law and it is published and copies of said code are filed and marked as set forth in K.S.A. 12-3304. Any county proposing to adopt or incorporate the provisions of any code under the provisions of this act shall give notice thereof by publication once in the official county newspaper. Such notice shall identify the code or provisions proposed to be adopted and that area of the county in which the same will be applied and fix a time for the holding of a public hearing before the board of county commissioners upon the same. Any section, article, chapter, part or portion of such code not incorporated shall be clearly and specifically described by the incorporating resolution and declared to be omitted and

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any provisions changing or adding to the incorporated provisions shall be stated in full and published as a part of the resolution. Instead of incorporating with omissions, the incorporating resolution may designate specifically the sections, articles, chapters, parts or portions of the code to be incorporated. No such resolution shall be deemed to have incorporated therein any code or part thereof unless the same shall be clearly described in the resolution by name or title, and the resolution contain the name or title of the person, association, agency or other organization which prepared, compiled, published or promulgated the same, the year, edition of the work and the statute number or other sufficiently identifying description. The amendment of any code or the publication of any revision by the person or organization sponsoring the same shall not affect the incorporating resolution but such incorporation resolution shall continue in effect until it is repealed or amended or a later code is incorporated by reference. Any statute or section thereof or any state regulation or portion thereof which has been incorporated by reference and which is amended by the legislature or changed by the issuing state officer, board of agency, shall cease to be effective until and unless incorporated by amendment of the incorporating resolution or the passage of another incorporating resolution. Any part of a code adopted pursuant to the provisions of this section may be made applicable, by resolution, either to all unincorporated portions of the county or to any area of the county outside of but within three (3) miles of the nearest point of the corporate limits of any city. The resolution by which any such codes are adopted shall clearly specify the portions of the code which are applicable to the territory within three (3) miles of the corporate limits of a city and which parts of said code are applicable to the remaining unincorporated portions of the county. The county may itself enforce any such codes or may contract with any city for the enforcement of codes in the territory surrounding such city.

12-3304. Same, filing of copies of adopted code; furnishing copies. Not less than five (5) copies of such code incorporated by reference by a county resolution shall be marked or stamped "official copy as incorporated by resolution No. _____", with all sections or portions thereof intended to be omitted clearly marked to show any such omission or showing the sections, articles, chapters, parts or portions that are incorporated, as the case may be, and to which shall be attached a copy of the incorporating resolution, such copies filed with the county clerk shall be open to inspection and available to the public at all reasonable business hours. Copies of such code, or part thereof which are incorporated by reference shall be furnished without charge to the courts and all administrative agencies charged with the enforcement of such code.

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12-3305. Same; penalty provisions to be in full in resolution. Any county resolution which incorporates a code or part thereof by reference and provides a penalty for violating such code or such resolution shall state the penalty in full, and no part of such penalty shall be incorporated by reference. The resolution incorporating the provisions of any code or part thereof shall be published at least once in the official county newspaper.

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Article 37. - SANITATION CONTROLS

19-3701. Sanitary codes in certain counties; definitions. The term "sanitary code" as used in this act shall mean rules and regulations designed to minimize or control those environments and environmental conditions that may adversely affect the health and well-being of the public. Such environments and environmental conditions may include, but are not restricted to: Sewerage and sewage disposal; water supply; food and food handling; insects and rodents; refuse storage, collection and disposal; housing, trailers and trailer courts.

The term "local health department" as used in this act shall mean any county, city-county, or multi-county health department created or organized by the county commissioners in this state for the purpose of protecting the public health and welfare of the citizens of the county and enforcing public health laws in the county and employing one or more full-time sanitation personnel.

19-3702. Certain counties; adoption of code by county commissioners; contents; fees. For the purpose of promoting the public health, comfort and well-being of the public, the county commissioners of any county in this state which is served by a local health department may by resolution adopt a sanitary code or codes to apply to such parts of the county as set forth in this act as they deem necessary, for the control of those environments and environmental conditions that may adversely affect the health and well-being of the public. Each sanitary code may provide for permits, licenses and fees. The county commissioners as set forth in this act may adopt reasonable fees for permits, licenses or other activities as required in the sanitary codes.

19-3703. Sanitary codes in certain counties; administration of. Unless otherwise provided by the board of county commissioners, the local health department shall have the authority and responsibility for administering all sanitary codes. The board of county commissioners may designate a county agency other than the local health department to administer sanitary code regulations concerning sewage and sewage disposal.

19-3704. ... Same; submission to secretary of health and environment; notice; hearing; resolution; publication. Whenever the county commissioners of such a county as set forth in this act deem it necessary to adopt a sanitary code, they shall prepare such sanitary code and submit it to the secretary of

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health and environment for review and approval. After such approval, the county commissioners shall hold at least one public hearing thereon and shall afford interested parties an opportunity to be heard either in favor or in protest of the proposed code. Such public hearing may be continued at the discretion of the county commissioners. Notice of the public hearing, including the date, time, place of the meeting, the purpose of the sanitary code, and in reasonable detail, the boundaries of the areas to be subjected to the code, shall be published in the official county newspaper once a week for three consecutive weeks. The notice also shall state that copies of the proposed sanitary code are available for public inspection at the local health department or at a place designated by the board of county commissioners. The date of the public hearing shall be not less than 10 nor more than 30 days after the date of the last notice published. After the final adjournment of such hearing or hearings, the county commissioners, to adopt the sanitary code, shall by resolution declare such code as necessary for the protection of the health and welfare of the public, and shall publish once in the official county newspaper the resolution, the purpose of the sanitary code, and in reasonable detail the boundaries of the areas to be subjected to the sanitary code. The resolution also shall state that copies of the sanitary code are available for public inspection at the local health department or at a place designed by the board of county commissioners.

19-3705. Same; adoption of changes or amendments. Any change or amendment of a sanitary code shall be adopted by following the same procedure as set forth in this act for the initial adoption of the sanitary code.

19-3706. Same; inapplicability of act or codes. This act or any sanitary codes adopted as provided in this act shall not apply to incorporated cities or to any premises under one ownership which exceeds 10 acres in area, unless such code specifically provides for a greater acreage limitation, and which is used only for agricultural purposes. For the purposes of this act, "agricultural purpose" means a purpose related to the production of livestock or crops.

19-3707. Same; penalties for violation of code; prosecutions. Any violation of any provision of a sanitary code shall be deemed to be a misdemeanor and punishable by a fine not to exceed two hundred dollars (\$200) for each offense, and each day's violation shall constitute a separate offense. It shall be the duty of the county attorney of each county to prosecute any person who shall violate any provision of a sanitary code.

19-3708. Same; invalidity of part. If any clause, sentence,

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paragraph, section or subsection of this act shall, for any reason, be adjudged 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 in its operation to the clause, sentence, paragraph, section or subsection thereof so found unconstitutional and invalid.

19-3709. Septic tank cleaning and hauling of sewage; licensing; fees; regulations; penalties for violation. In any county where any person, firm, corporation or association is engaging in the business of the cleaning of septic tanks and the hauling of sewage the board of county commissioners may provide by resolution for the licensing of such cleaners of septic tanks and haulers of sewage. The board of county commissioners may provide for licensing procedures, fees, bonding, inspection, removal of licenses, assignments of routes and other procedures and provisions related to the cleaning of septic tanks and hauling of sewage, and necessary to implement the administration of this act.

Any person violating such resolution adopted by the board of county commissioners shall be guilty of a class C misdemeanor.

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APPENDIX C - K.A.R. 28-16-56A

Adopted April 2, 1992

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APPENDIX C

28-16-56a. Sewage permit fees; definitions. For the purposes of K.A.R. 28-16-56b:

- (a) "Sewage" shall be defined as in K.S.A. 65-164.
- (b) "Domestic sewage" means sewage originating primarily from kitchen, bathroom and laundry sources, including waste from food preparation, dishwashing, garbage-grinding, toilets, baths, showers and sinks.
- (c) "Municipal waste treatment facility" means a facility owned or operated by a city, county, township, sewer district or other governmental unit for the purpose of treating primarily domestic sewage by physical, chemical or biological means or by a combination of those methods.
- (d) "Commercial waste treatment facility" means a facility serving and owned by an industrial or commercial enterprise or group or a combination thereof, for the purposes of treating primarily domestic sewage by physical, chemical or biological means or by a combination of those methods and includes slaughter houses with an average slaughter rate of 50 animals or less per week.
- (e) "Industrial waste treatment facility" means a facility serving an industrial or commercial enterprise or group or a combination thereof for the purposes of treating sewage or process-generated wastewater other than domestic sewage by physical, chemical or biological means or by a combination of those methods. Industrial waste treatment facility includes municipally-owned electricity generating facilities and water treatment plants.
- (f) "Cooling water discharge" means cooling water from any system in which there is no contact with process pollutants and where there is no measured chemical buildup other than chemicals added for biological control and cooling water from a system owned and operated by a city, county, township, or other governmental unit. All other cooling water systems adding any substance to the cooling water for corrosion control shall be classified as industrial waste treatment facilities and the fee shall be based on the design or on measured blowdown (discharge), whichever is greater.
- (g) "Dewatering discharge" means a discharge resulting from drainage or removal of water from a lagoon, quarry, pit or other holding device. Dewatering discharge shall not include discharge in which there is measured chemical buildup or to which chemicals have been added for any purpose.
- (h) "Dairy farm waste control facility" means a facility used to treat or retain the sewage from the loafing areas, barns, milking parlor, bulk tank and appurtenances and cattle pens associated

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with the operation of a Grade A dairy farm or a dairy farm which produces manufacturing milk. This classification shall not apply to a processing plant which pasteurizes or bottles milk or which manufactures milk products.

(i) "Confined feedlot waste control facility" means a facility used to treat or retain the sewage from a confined cattle, swine, poultry, or sheep feeding operation, or any combination thereof, on land under common ownership with a contiguous boundary, excluding public roadways. Two cattle, swine, sheep or poultry operations on separate pieces of land without a contiguous ownership boundary shall be classified as separate operations and each operation shall be assessed a fee under K.A.R. 28-16-56b.

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APPENDIX D - ARTICLE 30.
WATER WELL CONTRACTOR'S LICENSE; WATER WELL CONSTRUCTION AND
ABANDONMENT

Adopted April 2, 1992

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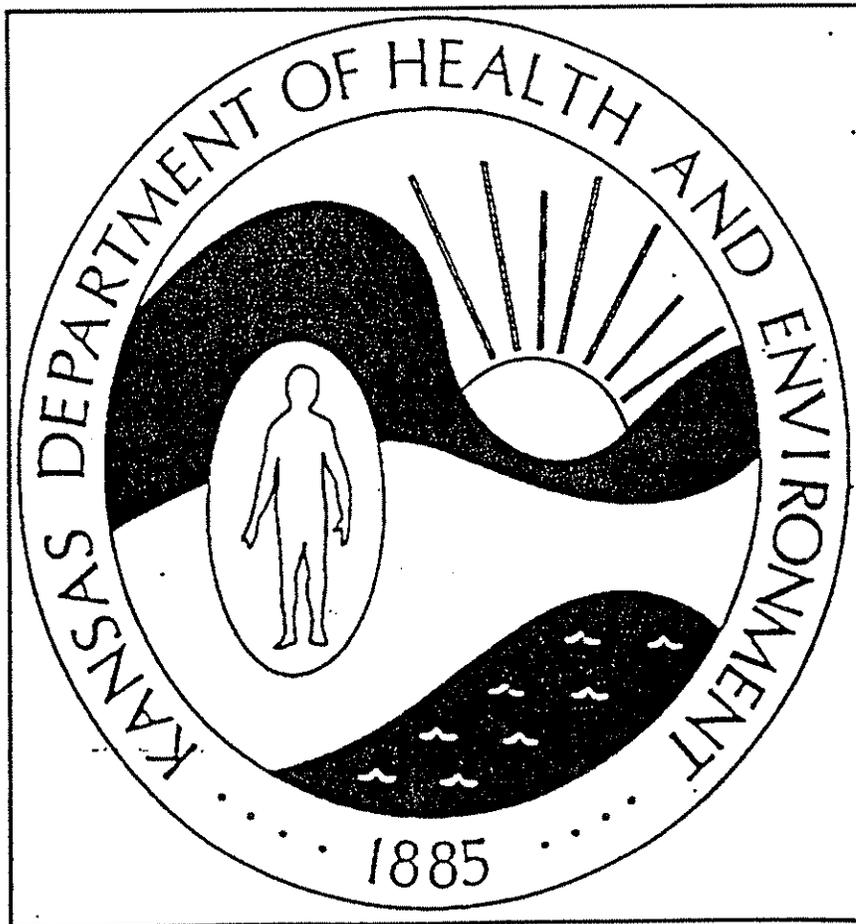
4-02-92

Date

STATE OF KANSAS
DEPARTMENT OF HEALTH AND ENVIRONMENT
Bureau of Water
Industrial Programs Section
Forbes Field - Bldg. 740
Topeka, KS 66620-0001

ARTICLE 30
WATER WELL CONTRACTOR'S LICENSE;
WATER WELL CONSTRUCTION AND ABANDONMENT

Effective May 1, 1987



APPROVED
Kansas Department of Health
and Environment

4-02-92
Date

ARTICLE 30--WATER WELL CONTRACTOR'S LICENSE;
WATER WELL CONSTRUCTION AND ABANDONMENT

This article regulates the construction, reconstruction, treatment and plugging of water wells and sets forth procedures for the licensing of water well contractors as required by K.S.A. 82a-1201 to 82a-1215 and amendments thereto.

28-30-1. (Authorized by K.S.A. 1979 Supp. 82a-1202, 82a-1205; effective, E-74-34, July 2, 1974; modified, L. 1975 ch. 481, May 1, 1975; revoked May 1, 1980.)

28-30-2. Definitions. (a) "License" means a document issued by the Kansas state department of health and environment to qualified persons making application therefore, authorizing such persons to engage in the business of water well contracting.

(b) "Department" means the Kansas department of health and environment.

(c) "Abandoned water well" means a water well determined by the department to be a well;

(1) in which the use has been permanently discontinued;

(2) in which pumping equipment has been permanently removed;

(3) which 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 poses potential health and safety hazards; or

(5) which is in such a condition it cannot be placed in active or inactive status.

(d) "Water well contractor" or "contractor" means any individual, firm, partnership, association, or corporation who shall construct, reconstruct, or treat a water well. The term shall not include:

(1) An individual constructing, reconstructing or treating a water well located on land owned by the individual, when the well is used by the individual for farming, ranching, or agricultural purposes or for domestic purposes at the individual's place of abode.

(2) An individual who performs labor or services for a licensed water well contractor at the contractor's direction and under the contractor's supervision.

(e) "Aquifer" means an underground formation that contains and is capable of transmitting groundwater.

(f) "Confined aquifer" is an aquifer overlain and underlain by impermeable layers. Groundwater in a confined aquifer is under pressure greater than atmospheric pressure and will rise in a well above the point at which it is first encountered.

(g) "Unconfined aquifer" is an aquifer containing groundwater at atmospheric pressure. The upper surface of the groundwater in an unconfined aquifer is the water table.

(h) "Domestic uses" means the use of water by any person or family unit or household for household purposes, or for the watering of livestock, poultry, farm and domestic animals used in operating a farm, or for the irrigation of lands not exceeding a total of two acres in area for the growing of gardens, orchards and lawns.

(i) "Public water-supply well" means a well that provides groundwater to the public for human consumption, if such system has at least 10 service connections or serves an average of at least 25 individuals daily at least 60 days out of the year.

(j) "Groundwater" means the part of the subsurface water which is in the zone of saturation.

(k) "Grout" means cement grout, neat cement grout, bentonite clay grout or other material approved by the department used to create a permanent impervious watertight bond between the casing and the undisturbed formation surrounding the casing or between two or more strings of casing.

(1) "Neat cement grout" means a mixture consisting of one 94 pound bag of portland cement to five to six gallons of clean water.

(2) "Cement grout" means a mixture consisting of one 94 pound bag of portland cement to an equal volume of sand having a diameter no larger than 0.080 inches (2 millimeters) to five to six gallons of clean water.

(3) "Bentonite clay grout" means a mixture consisting of water and commercial grouting or plugging sodium bentonite clay containing high solids such as that manufactured under the trade name of "volclay grout", or an equivalent as approved by the department.

(A) The mixture shall be as per the manufacturer's recommendations to achieve a weight of not less than 9.4 pounds per gallon of mix. Weighting agents may be added as per the manufacturer's recommendations.

(B) Sodium bentonite pellets, tablets or granular sodium bentonite may also be used provided they meet the specifications listed in K.A.R. 28-30-2(k), (3), above.

(C) Sodium bentonite products that contain low solids, are designed for drilling purposes or that contain organic polymers shall not be used.

(l) "Pitless well adapter or unit" means an assembly of parts installed below frost line which will permit pumped groundwater to pass through the wall of the casing or extension thereof and prevent entrance of contaminants.

(m) "Test hole" or "hole" means any excavation constructed for the purpose of determining the geologic, hydrologic and water quality characteristics of underground formations.

(n) "Static water level" means the highest point below or above ground level which the groundwater in the well reaches naturally.

(o) "Annular space" means the space between the well casing and the well bore or the space between two or more strings of well casing.

(p) "Sanitary well seal" is a manufactured seal installed at the top of the well casing which, when installed, creates an air- and watertight seal to prevent contaminated or polluted water from gaining access to the groundwater supply.

(q) "Treatment" means the stimulation of production of groundwater from a water well, through the use of hydrochloric acid, muriatic 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 slime deposits associated with iron or manganese bacterial growths which inhibit the movement of groundwater into the well.

(r) "Reconstructed water well" means 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.

(s) "Pump pit" means a watertight structure constructed at least two feet away from the water well and below ground level to prevent freezing of pumped groundwater and which houses the pump or pressure tank, distribution lines, electrical controls, or other appurtenances.

(t) "Grout tremie pipe" or "grout pipe" means a steel or galvanized steel pipe or similar pipe having equivalent structural soundness that is used to conduct pumped grout to a point of selected emplacement during the grouting of a well casing or plugging of an abandoned well or test hole.

(u) "Uncased test hole" means any test hole in which casing has been removed or in which casing has not been installed.

(v) "Drilling rig registration license number" means a number assigned by the department which is affixed to each drilling rig operated by or for a licensed water well contractor.

(w) "Active well" means a water well which is an operating well used to withdraw water, monitor or observe groundwater conditions.

(x) "Inactive status" means a water well which is not presently operating but is maintained in such a way it can be put back in operation with a minimum of effort.

(y) "Heat pump hole" means a hole drilled to install piping for an earth coupled water source heat pump system, also known as a vertical closed loop system. (Authorized by K.S.A. 82a-1205 and implementing K.S.A. 82a-1202, 82a-1205, 82a-1213; effective, E-74-34, July 2, 1974; modified, L. 1975, Ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1987.)

28-30-3. Licensing. (a) Eligibility. To be eligible for a water well contractor's license an applicant shall:

- (1) Have passed an examination conducted by the department; or
- (2) meet the conditions contained in subsection (c).

(b) Application and fees.

(1) Each application shall be accompanied by an application fee of \$10.00.

(2) Before issuance of a water well contractor's license, each contractor shall pay a license fee of \$100.00 plus \$25.00 for each drill rig operated by or for the contractor. These fees shall accompany the application and shall be by bank draft, check or money order payable to the Kansas department of health and environment - water well licensure.

(c) Reciprocity.

(1) Upon receipt of an application and payment of the required fees from a nonresident, the secretary may issue a license, providing the nonresident holds a valid license from another state and meets the minimum requirements for licensing as prescribed in K.S.A. 82a-1207, and any amendments thereto.

(2) If the nonresident applicant is incorporated, evidence shall be submitted to the department of health and environment showing that the applicant meets the registration requirements of the Kansas secretary of state.

(3) Nonresident fees for a license shall be equal to the fee charged a Kansas contractor by the applicant's state of residence but shall not be less than \$100.00. The application fee and drill rig license fee shall be the same as the Kansas resident fees.

(d) Water well construction fee. A fee of \$5.00 shall be paid to the Kansas department of health and environment, either by bank draft, check or money order, for each water well constructed by a licensed water well contractor. The construction fee shall be paid when the contractor requests the water well record form WWC-5 from the department or shall accompany the water well records submitted on form WWC-5 as required under K.A.R. 28-30-4. No fee shall be required for reconstructed or plugged water wells.

(e) License number. Each drill rig operated by or for a licensed water well contractor shall have prominently displayed thereon the drill rig license number, as assigned by the department, in letters at least two inches in height. Decals, paint, or other permanent marking materials shall be used. (Authorized by K.S.A. 82a-1205; implementing K.S.A. 82a-1202, 82a-1205, 82a-1206, 82a-1207, 82a-1209; effective, E-74-34, July 2, 1974; effective, May 1, 1975; amended May 1, 1980; amended May 1, 1983; amended May 1, 1987.)

28-30-4. General operating requirements. (a) Water well record. Within 30 days after construction or reconstruction of a water well, the water well contractor shall submit a report of such work, to the Kansas department of health and environment and to the landowner, on the water well record form, form WWC-5, provided by the department. The contractor shall report to the department and to the landowner on the water well record or attachments made thereto any polluted or other noncompliant conditions which the contractor was able to correct and any conditions which the contractor was unable to correct. The contractor shall report to the department and the landowner the plugging of any abandoned water well. The report shall include the location, landowner's name, method, type of plug material, its placement and amount used to plug the abandoned water well.

A landowner who constructs, reconstructs, or plugs a water well, which will be or was, used by the landowner for farming, ranching or agricultural purposes or is located at the landowner's place of abode, shall submit a water well record, on form WWC-5, of such work to the department within 30 days after the construction, reconstruction or plugging of the water well. No fee shall be required from the landowner for the record.

(b) Artificial recharge and return. The construction of artificial recharge wells and freshwater return wells shall comply with all applicable rules and regulations of the department.

(c) Well tests. When a pumping test is run on a well, results of the test shall be reported on the water well record, form WWC-5, or a copy of the contractor's record of the pumping test shall be attached to the water well record.

(d) Water samples. Within 30 days after receipt of the water well record, form WWC-5, the department may request the contractor, or landowner who constructs or reconstructs his or her own water well, to submit a sample of water from the well for chemical analysis. Insofar as is possible, the department will define in advance areas from which well water samples are required. (Authorized by K.S.A. 82a-1205, and implementing K.S.A. 82a-1202, 82a-1205, 82a-1212, 82a-1213; effective, E-74-34, July 2, 1974; modified, L. 1975, ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1987.)

28-30-5. Construction regulations for public water supply and reservoir sanitation zone wells. All activities involving public water supply wells and wells located in reservoir sanitation zones shall conform to existing statutes, and rules and regulations, of the Kansas department of health and environment, including K.A.R. 28-10-100, 28-10-101, and 28-15-16. (Authorized by K.S.A. 82a-1205; implementing K.S.A. 82a-1202, 82a-1205; effective, E-74-34, July 2, 1974; effective May 1, 1975; amended May 1, 1980; amended May 1, 1983; amended May 1, 1987.)

28-30-6. Construction regulations for all wells not included under section 28-30-5. (a) A water well shall be so located as to minimize the potential for contamination of the delivered or obtained groundwater and to protect groundwater aquifers from pollution and contamination.

(b) Grouting:

(1) Constructed or reconstructed wells shall be sealed by grouting the annular space between the casing and the well bore from ground level to a minimum of 20 feet or to a minimum of five feet into the first clay or shale layer, if present, whichever is greater. If a pitless well adapter or unit is being installed, the grouting shall start below the junction of the pitless well adapter or unit where it attaches to the well casing and shall continue a minimum of 20 feet below this junction or to a minimum of five feet into the first clay or shale layer whichever is greater.

(2) To facilitate grouting, the grouted interval of the well bore shall be drilled to a minimum diameter at least three inches greater than the maximum outside diameter of the well casing. If a pitless well adapter or unit is being installed on the well's casing, the well bore shall be a minimum diameter of at least three inches greater than the outside maximum diameter of the well casing through the grouted interval below the junction of the pitless well adapter or unit where it attaches to the well casing.

(c) If groundwater is encountered at a depth less than the minimum grouting requirement, the grouting requirement may be modified to meet local conditions if approved by the department.

(d) Waters from two or more separate aquifers shall be separated from each other in the bore hole by sealing the bore hole between the aquifers with grout.

(e) The well casing shall terminate not less than one foot above the finished ground surface. No casing shall be cut off below the ground surface except to install a pitless well adapter unit which shall extend at least 12 inches above the ground surface. No opening shall be made through the well casing except for installation of a pitless well adapter so designed and fabricated to prevent soil, subsurface and surface water from entering the well.

(f) Well vents shall be used and shall terminate not less than one foot above ground surface and shall be screened with not less than 16-mesh, brass, bronze, copper screen or other screen materials approved by the department and turned down in a full 180 degree return bend so as to prevent the entrance of contaminating materials.

(g) Prior to completion of a constructed or reconstructed well, the well shall be cleaned of mud, drill cuttings and other foreign matter so as to make it suitable for pump installations.

(h) Casing. All wells shall have durable watertight casing from at least one foot above finished ground surface to the top of the producing zone of the aquifer. In no event shall the watertight casing extend less than 20 feet below the ground level. Exceptions to either of the above may be granted by the department if warranted by local conditions. The casing shall be clean and serviceable and of a type to guarantee reasonable life so as to insure adequate protection to the aquifer or aquifers supplying the groundwaters. Used, reclaimed, rejected, or contaminated pipe shall not be used for casing any well. All water well casing shall be approved by the department.

(i) All wells, when unattended during construction, reconstruction, treatment or repair, or during use as cased test holes, observation or monitoring wells, shall have the top of the well casing securely capped in a watertight manner to prevent contaminating or polluting materials from gaining access to the groundwater aquifer.

(j) During construction, reconstruction, treatment or repair and prior to initiation of use, all wells producing water for human consumption or food processing, shall be disinfected according to K.A.R. 28-30-10.

(k) The top of the well casing shall be sealed by installing a sanitary well seal.

(l) All groundwater producing zones that are known or suspected to contain natural or man-made pollutants shall be adequately cased and grouted off during construction of the well to prevent the movement of the polluted groundwater to either overlying or underlying fresh groundwater zones.

(m) Toxic materials shall not be used in the construction, reconstruction, treatment or plugging of a water well unless those materials are thoroughly flushed from the well prior to use.

(n) Any pump pit shall be constructed at least two feet away from the water well. The pipe from the pump or pressure tank in the pump pit to the water well shall be sealed in a watertight manner where it passes through the wall of the pump pit.

(o) Water wells shall not be constructed in pits, basements, garages or crawl spaces. Existing water wells which are reconstructed, abandoned and plugged in basements shall conform to these rules and regulations except that the finished grade of the basement floor shall be considered ground level.

(p) All drilling waters used during the construction or reconstruction of any water well shall be initially disinfected by mixing with the water enough sodium hypochlorite to produce at least 100 milligrams per liter, mg/l, of available chlorine.

(q) Natural organic or nutrient producing material shall not be used during the construction, reconstruction or treatment of a well unless it is thoroughly flushed from the well and the groundwater aquifer or aquifers before the well is completed. Natural organic or nutrient producing material shall not be added to a grout mix used to grout the well's annular space.

(r) Pump mounting.

(1) All pumps installed directly over the well casing shall be so installed that an airtight and watertight seal is made between the top of the well casing and the gear or pump head, pump foundation or pump stand.

(2) When the pump is not mounted directly over the well casing and the pump column pipe or pump suction pipe emerges from the top of the well casing, a sanitary well seal shall be installed between the pump column pipe or pump suction pipe and the well casing. An airtight and watertight seal shall be provided for the cable conduit when submersible pumps are used. (Authorized by K.S.A. 82a-1205; implementing K.S.A. 82a-1202, 82a-1205; effective, E-74-34, July 2, 1974; modified, L. 1975, ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1983; amended May 1, 1987.)

28-30-7. Plugging of abandoned wells, cased and uncased test holes. (a) 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 all cases, the landowner shall perform the following as minimum requirements for plugging abandoned wells.

(1) The casing shall be cut off three feet below ground surface and removed.

(2) All wells shall be plugged from bottom to top using volumes of material equaling at least the inside volume of the well.

(3) Plugging top of well:

(A) For cased wells a grout plug shall be placed from six to three feet below ground surface.

(B) For dug wells, the lining material shall be removed to at least five feet below ground surface, and then sealed at five feet with a minimum of six inches of concrete or other materials approved by the department. Compacted surface silts and clays shall be placed over the concrete seal to ground surface.

(4) Any groundwater displaced upward inside the well casing during the plugging operation shall be removed before additional plugging materials are added.

(5) From three feet below ground level to ground level, the plugged well shall be covered over with compacted surface silts or clays.

(6) Compacted clays or grout shall be used to plug all wells from the static water level to six feet below surface.

(7) All sand and gravel used in plugging abandoned domestic or public water supply wells shall be chlorinated prior to placement into a well.

(b) Abandoned wells formerly producing groundwater from an unconfined aquifer shall be plugged in accordance with the foregoing and in addition shall have washed sand, and gravel or other material approved by the department placed from the bottom of the well to the static water level.

(c) Abandoned wells, formerly producing groundwater from confined and unconfined aquifers or in confined aquifers only, shall be plugged according to K.A.R. 28-30-7 (a) and by using one of the following additional procedures:

(1) The entire well column shall be filled with grout, or other material approved by the department, by use of a grout tremie pipe.

(2) A 10 foot grout plug shall be placed opposite the impervious formation or confining layer above each confined aquifer or aquifers by use of a grout tremie pipe; and

(A) The space between plugs shall be filled with clays, silts, sand and gravel or grout and shall be placed inside the well so as to prevent bridging.

(B) A grout plug at least 20 feet in length shall be placed with a grout pipe so at least 10 feet of the plug extends below the base of the well casing and at least 10 feet of the plug extends upward inside the bottom of the well casing.

(C) A grout plug at least 10 feet in length shall be placed from at least 13 feet below ground level to the top of the cut off casing.

(3) Wells that have an open bore hole below the well casing, and where the casing was not grouted into the well bore when the well was constructed, shall be plugged by (1) or (2) above except that the top 20 feet of well casing shall be removed or perforated with a casing ripper or similar device prior to plugging. If the well is plugged according to part (2) of this subsection, the screened or perforated intervals below the well casing shall be grouted the entire length by use of a grout tremie pipe.

(d) Plugging of abandoned holes. If the hole penetrates an aquifer containing water with more than 1,000 milligrams per liter, mg/l, total dissolved solids or is in an area determined by the department to be contaminated, the entire hole shall be plugged with an approved grouting material from the bottom of the hole, up to within three feet of the ground surface using a grout tremie pipe or similar method. From three feet below ground surface to ground surface the plugged hole shall be covered over with compacted surface silts or clays; otherwise, the hole shall be plugged in accordance with the following paragraphs.

(1) Plugging of abandoned cased test holes. The casing shall be removed if possible and the abandoned test hole shall be plugged with an approved grouting material from the bottom of the hole, up to within three feet of the ground surface, using a grout tremie pipe or similar method. From three feet below ground surface to ground surface the plugged hole shall be covered over with compacted surface silts or clays. If the casing cannot be removed, in addition to plugging the hole with an approved grouting material the annular space shall also be grouted as described in K.A.R. 28-30-6 or as approved by the department.

(2) Abandoned uncased test holes, exploratory holes or any bore holes except seismic or oil field related exploratory and service holes regulated by the Kansas corporation commission under K.A.R. 82-3-115 through 82-3-117. A test hole or bore hole drilled, bored, cored or augered shall be considered an abandoned hole immediately after the completion of all testing, sampling or other operations for which the hole was originally intended. The agency or contractor in charge of the exploratory or other operations for which the hole was originally intended is responsible for plugging the abandoned hole using the following applicable method, within three calendar days after the termination of testing or other operations.

(A) The entire hole shall be plugged with an approved grouting material from bottom of the hole, up to within three feet of the ground surface, using a grout tremie pipe or similar method.

(B) From three feet below ground surface to ground surface the plugged hole shall be covered over with compacted surface silts or clays.

(C) For bore holes of 25 feet or less, drill cuttings from the original hole may be used to plug the hole in lieu of grouting material, provided that an aquifer is not penetrated or the bore hole is not drilled in an area determined by the department to be a contaminated area.

(3) Plugging of heat pump holes drilled for closed loop heat pump systems. The entire hole shall be plugged with an approved grouting material from bottom of the hole, to the bottom of the horizontal trench, using a grout tremie pipe or similar method approved by the department.

(e) Abandoned oil field water supply wells. A water well drilled at an oil or gas drilling site to supply water for drilling activities shall be considered an abandoned well immediately after the termination of the oil or gas drilling operations. The company in charge of the drilling of the oil or gas well shall be responsible for plugging the abandoned water well, in accordance with K.A.R. 28-30-7(a), (b), and (c), within 30 calendar days after the termination of oil or gas drilling operations.

Responsibility for the water well may be conveyed back to the landowner in lieu of abandoning and plugging the well but the well must conform to the requirements for active or inactive status. The transfer must be made through a legal document, approved by the department, advising the landowner of the landowner's responsibilities and obligations to properly maintain the well, including the proper plugging of the well when it is abandoned and no longer needed for water production activities. If a transfer is to be made, the oil or gas drilling company shall provide the department with a copy of the transfer document within 30 calendar days after the termination of oil or gas drilling operations. Within 30 calendar days of the effective date of the transfer of the well the landowner shall notify the department of the intended use and whether the well is in active status or inactive status in accordance with K.A.R. 28-30-7(f).

(f) Inactive status. Landowners may obtain the department's written approval to maintain wells in an inactive status rather than being plugged if the landowner can present evidence to the department as to the condition of the well and as to the landowner's intentions to use the well in the future. As evidence of intentions, the owner shall be responsible for properly maintaining the well in such a way that:

(1) The well and the annular space between the hole and the casing shall have no defects that will permit the entrance of surface water or vertical movement of subsurface water into the well;

(2) the well is clearly marked and is not a safety hazard;

(3) the top of the well is securely capped in a watertight manner and is adequately maintained in such a manner as to prevent easy entry by other than the landowner;

(4) the area surrounding the well shall be protected from any potential sources of contamination within a 50 foot radius;

(5) if the pump, motor or both, have been removed for repair, replacement, etc., the well shall be maintained to prevent injury to people and to prevent the entrance of any contaminant or other foreign material;

(6) the well shall not be used for disposal or injection of trash, garbage, sewage, wastewater or storm runoff; and

(7) the well shall be easily accessible to routine maintenance and periodic inspection.

The landowner shall notify the department of any change in the status of the well. All inactive wells found not to be in accordance with the criteria listed in lines one through seven above shall be considered to be abandoned and shall be plugged by the landowner in accordance with K.A.R 28-30-7(a) through (c). (Authorized by K.S.A. 82a-1205; implementing K.S.A. 82a-1202, 82a-1205, 82a-1212, 82a-1213; effective, E-74-34, July 2, 1974; modified, L. 1975, Ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1983; amended May 1, 1987.)

28-30-8. Pollution sources. Well locations shall be approved by municipal and county governments with respect to distances from pollution sources and compliance with local regulations. The following minimum standard shall be observed.

(a) The horizontal distances between the well and the potential source of pollution or contamination such as sewer lines, pressure sewer lines, septic tanks, lateral fields, pit privy, seepage pits, fuel or fertilizer storage, pesticide storage, feed lots or barn yards shall be 50 feet or more as determined by the department.

(b) Proper drainage in the vicinity of the well shall be provided so as to prevent the accumulation and ponding of surface water within 50 feet of the well. The well shall not be located in a ravine or any other drainage area where surface water may flow into the well.

(c) When sewer lines are constructed of cast iron, plastic or other equally tight materials, the separation distance shall be 10 feet or more as determined by the department.

(d) All wells shall be 25 feet or more from the nearest property line, allowing public right-of-ways to be counted; however, a well used only for irrigation or cooling purposes may be located closer than 25 feet to an adjoining property where:

(1) such adjoining property is served by a sanitary sewer and does not contain a septic tank system, disposal well or other source of contamination or pollution; and

(2) the property to be provided with the proposed well is served by both a sanitary sewer and a public water supply. (Authorized by and implementing K.S.A. 82a-1202, 82a-1205; effective, E-74-34, July 2, 1974; modified, L. 1975, Ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1987.)

28-30-9. Appeals. (a) Requests for exception to any of the foregoing rules and regulations shall be submitted to the department in writing and shall contain all information relevant to the request.

(1) Those requests shall specifically set forth why such exception should be considered.

(2) The department may grant exceptions when geologic or hydrologic conditions warrant an exception and when such an exception is in keeping with the purposes of the Kansas groundwater exploration and protection act.

(b) Appeals from the decision of the department shall be made to the secretary, who after due consideration may affirm, reverse or modify the decision of the department. (Authorized by K.S.A. 82a-1205; implementing K.S.A. 82a-1202, 82a-1205; effective, E-74-34, July 2, 1974; effective May 1, 1975; amended May 1, 1980; amended May 1, 1983; amended May 1, 1987.)

28-30-10. Water well disinfection for wells constructed or reconstructed for human consumption or food processing. (a) Gravel for gravel-packed wells shall be disinfected by immersing the gravel in a chlorine solution containing not less than 200 milligrams per liter, mg/l, of available chlorine before it is placed in the wells annular space.

(b) Constructed or reconstructed wells shall be disinfected by adding sufficient hypochlorite solution to them to produce a concentration of not less than 100 mg/l of available chlorine when mixed with the water in the well.

(c) The pump, casing, screen and pump column shall be washed down with a 200 mg/l available chlorine solution.

(d) All persons constructing, reconstructing, or treating, a water well and removing the pump or pump column, replacing a pump, or otherwise performing an activity which has potential for contaminating or polluting the groundwater supply shall be responsible for adequate disinfection of the well,

well system and appurtenances thereto. (Authorized by and implementing K.S.A. 82a-1202, 82a-1205; effective, E-74-34, July 2, 1974; modified, L. 1975, ch. 481, May 1, 1975; amended May 1, 1980; amended May 1, 1987.)

APPROVED
Kansas Department of Health
and Environment
4-02-92
Date

Effective Date May 1, 1980

Kansas Department of Health and Environment
Approved Water Well Casing
(Authorization K.A.R. 28-30-6(h))

Water Well Casing for Water Wells Other Than Public
Water Supply and Reservoir Sanitation Zone Water Wells.

STEEL AND WROUGHT IRON

Depth of Casing in Feet	Nominal Diameter, (in inches)									
	4	6	8	10	12	14	16	18	24	30
	Minimum Wall Thickness *									
0-100	10	10	10	10	10	10	10	10	7	.219
100-200	10	10	10	10	10	7	7	7	.219	.219
200-400	10	10	10	10	7	7	7	.219	.250	.250
400-600	7	7	7	7	7	7	.219	.250	.312	.312
600 +	7	.219	.219	.219	.219	.219	.250	.375	.375	.375

*Decimal numbers indicate thickness in inches. Whole numbers indicate the United States standard gauge (10 gauge=0.141 inches and 7 gauge=0.179 inches).

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(Authorization K.A.R. 28-30-6(h))

Water Well Casing for Water Wells Other Than Public
Water Supply and Reservoir Sanitation Zone Water Wells.

THERMALPLASTIC WATER WELL CASING

For Polyvinyl Chloride (PVC), Styrene Rubber (SR)
which is the same as Rubber Modified Polystyrene (RMP)
and Acrylonitrile - Butadiene - Styrene (ABS)

Minimum Wall Thickness (inches) and Tolerances (inches) made in
Standard Dimension Ratios (SDR).

Nominal Pipe Size	SDR 26		SDR 21		SDR 17		SDR 13.5	
	Minimum	Tolerance	Minimum	Tolerance	Minimum	Tolerance	Minimum	Tolerance
2	--	--	0.113	0.020	0.140	0.020	0.176	0.021
2.5	--	--	0.137	0.020	0.169	0.020	0.213	0.026
3	--	--	0.167	0.020	0.206	0.025	0.259	0.031
3.5	--	--	0.190	0.023	0.235	0.028	0.296	0.036
4	0.173	0.021	0.214	0.026	0.265	0.032	0.333	0.040
5	0.214	0.027	0.265	0.032	0.327	0.039	0.412	0.049
6	0.255	0.031	0.316	0.038	0.390	0.047	0.491	0.058
8	0.332	0.040	0.410	0.049	0.508	0.061	--	--
10	0.413	0.050	0.511	0.061	0.632	0.076	--	--
12	0.490	0.059	0.606	0.073	0.750	0.090	--	--
14	0.539	0.065						
16	0.616	0.074						

The minimum is the lowest wall thickness of the well casing pipe at any cross section.
All tolerances are on the plus side of the minimum requirement.

APPENDIX E - BULLETIN 4-2

RECOMMENDED STANDARDS FOR LOCATING, CONSTRUCTING, AND OPERATING
SEPTIC TANK SYSTEMS

Adopted April 2, 1992

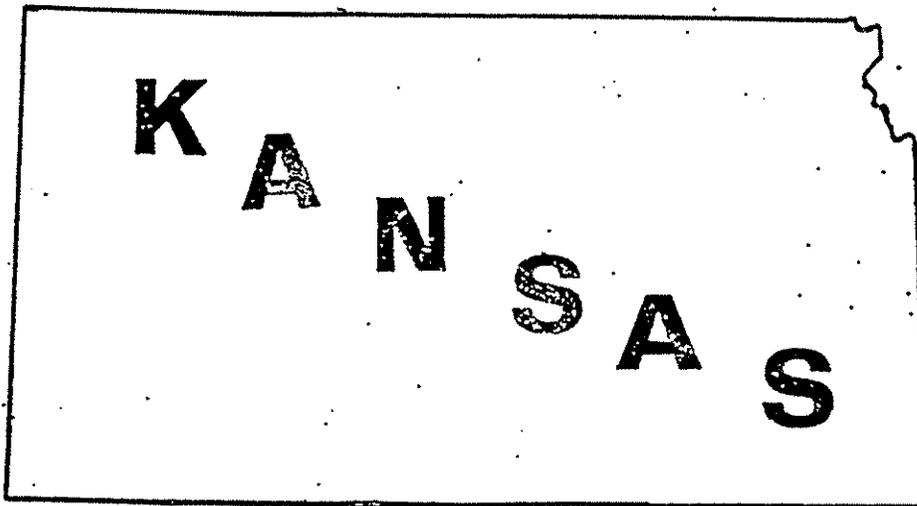
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APPROVED
Kansas Department of Health
and Environment

4-02-92

Date

A MANUAL OF RECOMMENDED STANDARDS
FOR
LOCATING, CONSTRUCTING AND OPERATING
SEPTIC TANK SYSTEMS
FOR
RURAL HOMES



STATE OF KANSAS
DEPARTMENT OF HEALTH AND ENVIRONMENT
DIVISION OF ENVIRONMENT

Topeka, Kansas
March 1984

APPROVED
Kansas Department of Health
and Environment

4-02-92
Date

FOREWARD .

This manual has been prepared to aid and assist rural families in Kansas in providing sanitary and safe disposal for sewage and waste water from their homes.

In the last several years there has been a great increase in the demand of rural families for modern homes. This increase has come about in a large measure due to the extension of electric and water supply service to rural areas.

The use of individual septic tank systems for the disposal of wastes in urban areas, as a substitute for community sewers, is not recommended. Public sewers should be provided for these and the sewage should be treated so as to permit its discharge into natural watercourses without detrimental effects to humans, animals or plant life.

The designs shown in this bulletin are not suitable for use at schools, institutions, or commercial establishments such as motels, restaurants, camps or trailer parks. Sewage disposal systems to serve these kinds of places need special study by experienced engineers and/or architects.

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INTRODUCTION

Safe disposal of all human and domestic wastes is necessary to protect the health of the individual family and the community and to prevent the occurrence of nuisances. To accomplish satisfactory results, such wastes must be disposed of so that:

1. They will not contaminate any drinking water supply.
2. They will not give rise to a public health hazard by being accessible to insects, rodents, or other possible carriers of disease organisms which may come into contact with humans, food, or drinking water.
3. They will not give rise to a public health hazard by being accessible to children.
4. They will not pollute or contaminate the waters of any bathing beach or stream.
5. They will not cause a nuisance due to odor or unsightly appearance.

These criteria can best be met by the discharge of domestic sewage to a public or community sewerage system. Where the installation of an individual household sewage disposal system is necessary, the basic principles outlined in this manual on design, construction, installation, and maintenance should be followed. When these principles are followed the greatest assurance of satisfactory service is provided.

SUITABILITY OF SOIL

The first step in the design of subsurface sewage disposal systems is to determine whether the soil is suitable for the absorption of septic tank effluent and, if so, how much area is required. The soil must have an acceptable percolation rate, without interference from ground water or impervious strata below the level of the absorption system. In general, two conditions must be met:

1. The percolation time should be within the range of those specified in Table 1.
2. The maximum elevation of the ground water table should be at

least 4 feet below the bottom of the absorption trench. Rock formations or other impervious strata should be at a depth greater than 4 feet below the bottom of the trench.

Unless these conditions are satisfied, the site is unsuitable for a subsurface sewage disposal system.

PERCOLATION TESTS

Subsurface explorations are necessary to determine subsurface formations in a given area. An auger with an extension handle, as shown in Figure 1, is often used for making the investigation. In some cases, an examination of road cuts, stream embankments, or building excavations will give useful information. Wells and well drillers' logs can also be used to obtain information on ground water and subsurface conditions. In some areas, subsoil strata vary widely in short distances, and borings must be made at the site where the system is to be constructed. If the subsoil appears suitable, percolation tests should be made at points and elevations selected as typical of the area in which the disposal field will be located.

The percolation tests determine the acceptability of the site and the design of the subsurface disposal system. The length of time required for percolation tests will vary in different types of soil. The safest method is to make tests in holes which have been kept filled with water for at least 4 hours, preferably overnight. This procedure is particularly desirable if the tests are to be made by an inexperienced person. In soils which swell upon wetting the lengthier procedure is recommended even if the individual has had considerable experience. Percolation rates should be figured on the basis of the test data obtained after the soil has had an opportunity to become thoroughly wetted or saturated and has had an opportunity to swell for at least 24 hours. Enough tests should be made in separate holes to assure that the results are valid.

Procedure for Making Percolation Tests

1. Number and location of tests - Six or more tests shall be made in separate test holes spaced uniformly over the proposed absorption field site.
2. Type of test hole - Dig or bore a hole, with horizontal dimensions of from 4 to 12 inches and vertical sides to the depth of the proposed absorption trench. In order to save time, labor, and volume of water required per test, the holes can be bored with a 4-inch auger. (See Figure 2)

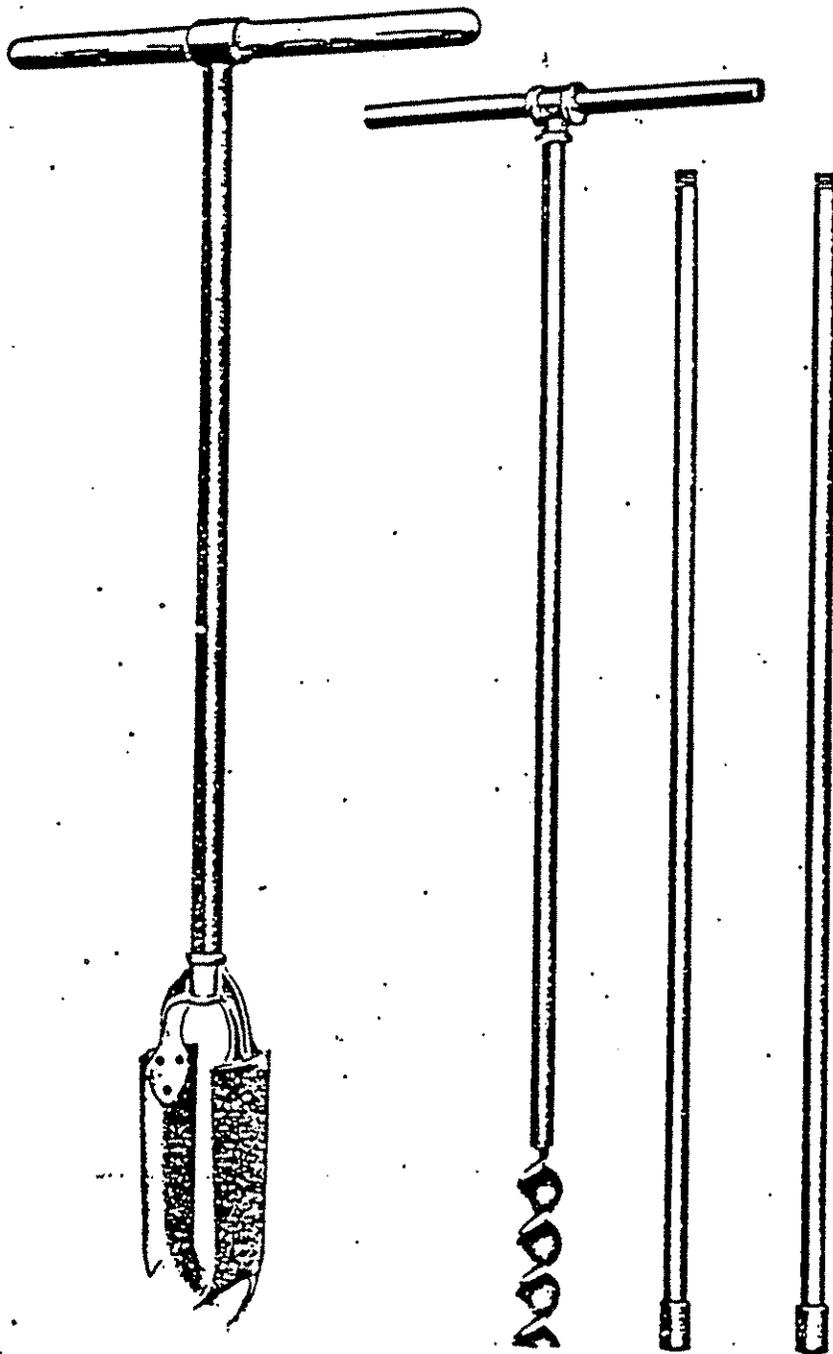


Figure 1.—Auger and extension handle for making test borings.

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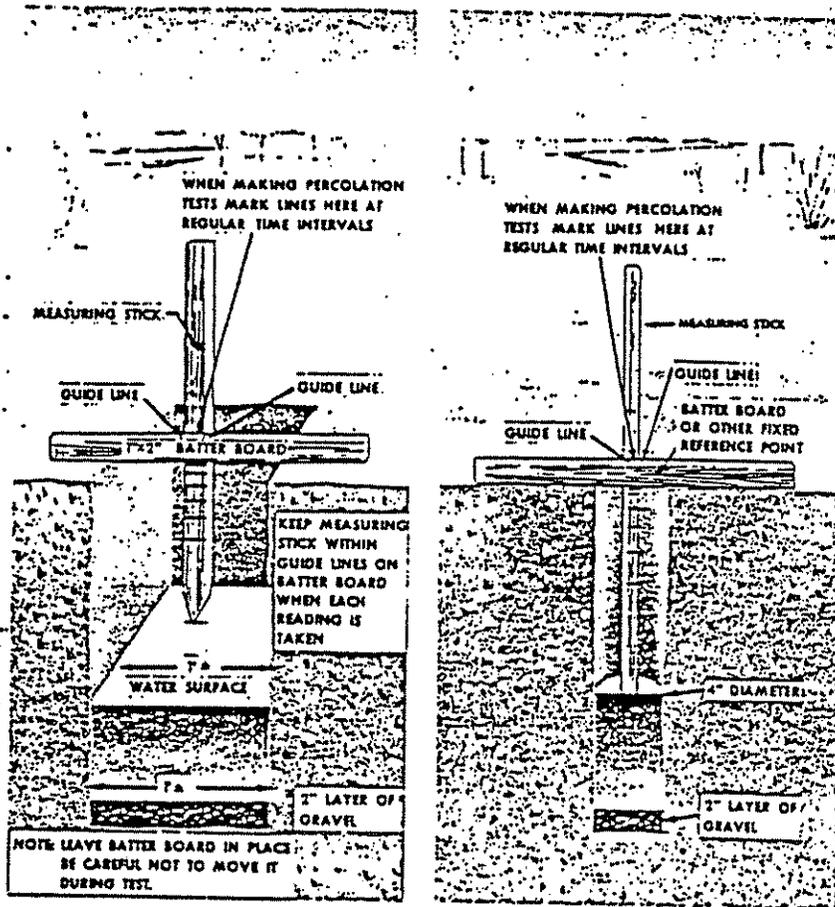


Figure 2.—Methods of making percolation tests.

3. Preparation of test hole - Carefully scratch the bottom and sides of the hole with a knife blade or sharp pointed instrument, in order to remove any smeared soil surfaces and to provide a natural soil interface into which water may percolate. Remove all loose material from the hole. Add 2 inches of coarse sand or fine gravel to protect the bottom from scouring and sediment.
4. Saturation and swelling of the soil - It is important to distinguish between saturation and swelling. Saturation requires that the void spaces between soil particules be full of water. This can be accomplished in a short period of time. Swelling is caused by intrusion of water into the individual soil particle. This is a slow process, especially in clay type soil, and is the reason for requiring a prolonged soaking period.

In conducting the test, carefully fill the hole with clear water to a minimum depth of 12 inches over the gravel for at least 4 hours and preferably overnight. In most soils, it will be necessary to refill the hole periodically with water from a tank or reservoir in order that 12 inches of water is kept in the hole. Determine the percolation rate 24 hours after water is first added to the hole. The delay in starting measurements is to insure that the soil is given ample opportunity to swell and to approach the condition that will exist during the wettest season of the year. Thus, if properly done the test will give comparable results in the same soil, whether made in a dry or in a wet season. In sandy soils containing little or no clay, the swelling procedure is not essential, and the test may be made as described in item 5C below, after the water from one filling of the hole has completely seeped away.

5. Percolation rate measurement - With the exception of sandy soils, percolation rate measurements should be made on the day following the soaking procedure described under item 4, above.
 - a. If water remains in the test hole after the overnight swelling period, adjust the depth to approximately 6 inches over the gravel. From a fixed reference point, measure the drop in water level over a 30-minute period. This drop is used to calculate the percolation rate.
 - b. If no water remains in the hole after the overnight swelling period, add clear water to bring the depth of water in the hole to approximately 6 inches over the gravel. From a fixed reference point, measure the drop of water level at approximately 30-minute intervals for 4 hours, refilling to the 6-inch depth over the gravel after each reading or

measurement. The drop that occurs during the final 30-minute period is used to calculate the percolation rate. The drops during prior periods provide information for possible modification of the procedure to suit local circumstances.

- c. In sandy soils (or other soils in which the first 6 inches of water seeps away in less than 30 minutes, after the overnight swelling period), the time interval between measurements shall be taken as 10 minutes and is used to calculate the percolation rate.

Table 1. - Absorption Area Requirements for Private Residences
(Provides for garbage grinder and automatic sequence washing machines)

Percolation rate (Time required for water to fall 1 inch, in minutes)	Required absorp- tion area, in sq. ft. per bedroom ¹ standard trench ²	Percolation rate (Time required for water to fall 1 in., in minutes)	Required absorp- tion area in sq. ft. per bedroom ¹ stand- ard trench ²
1 or less	70	10	165
2	85	15	190
3	100	30	250
4	115	45	300
5	125	60 ³	330

¹In every case, sufficient area should be provided for at least 3 bedrooms.

²Absorption area for standard trenches is figured as trench bottom area.

³Unsuitable for absorption systems if over 60.

ABSORPTION FIELD

For areas where the percolation rates are good, the next step after making the percolation tests is to determine the required absorption area from Table I or Figure 3. As noted in Table I, soil in which the percolation rate is slower than 1 inch in 60 minutes is unsuitable for use of a soil absorption disposal system. Therefore, septic tanks should not be used in such cases.

A safe distance should be maintained between the absorption field and any source of water supply. Since the distance that pollution will travel underground depends upon numerous factors, including the characteristics

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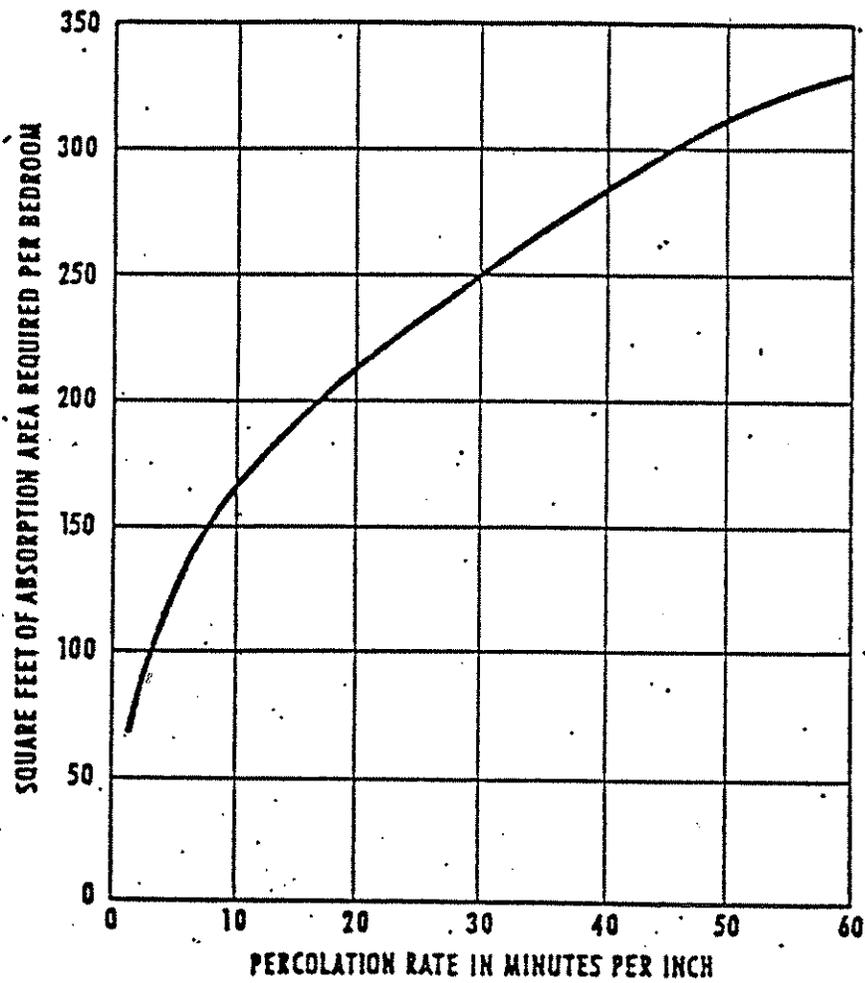


Figure 3.—Absorption area requirements for private residences.

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of the subsoil formations and the quantity of sewage discharged, it is not practical to specify minimum distances that would be reasonable in all localities. Ordinarily, of course, the greater the distance, the greater will be the degree of safety provided. In general, all subsurface absorption systems should be located in minimum of 50 feet (greater distances where possible) from any water supply well, 50 feet from any stream or water course, and 25 feet from footings and foundation walls of dwellings.

Details pertaining to local water wells, such as depth, type of construction, rate of pumping, and drawdown, together with data on the geological formations and porosity of subsoil strata, should be considered in determining the minimum safe allowable distance between wells and subsurface disposal systems.

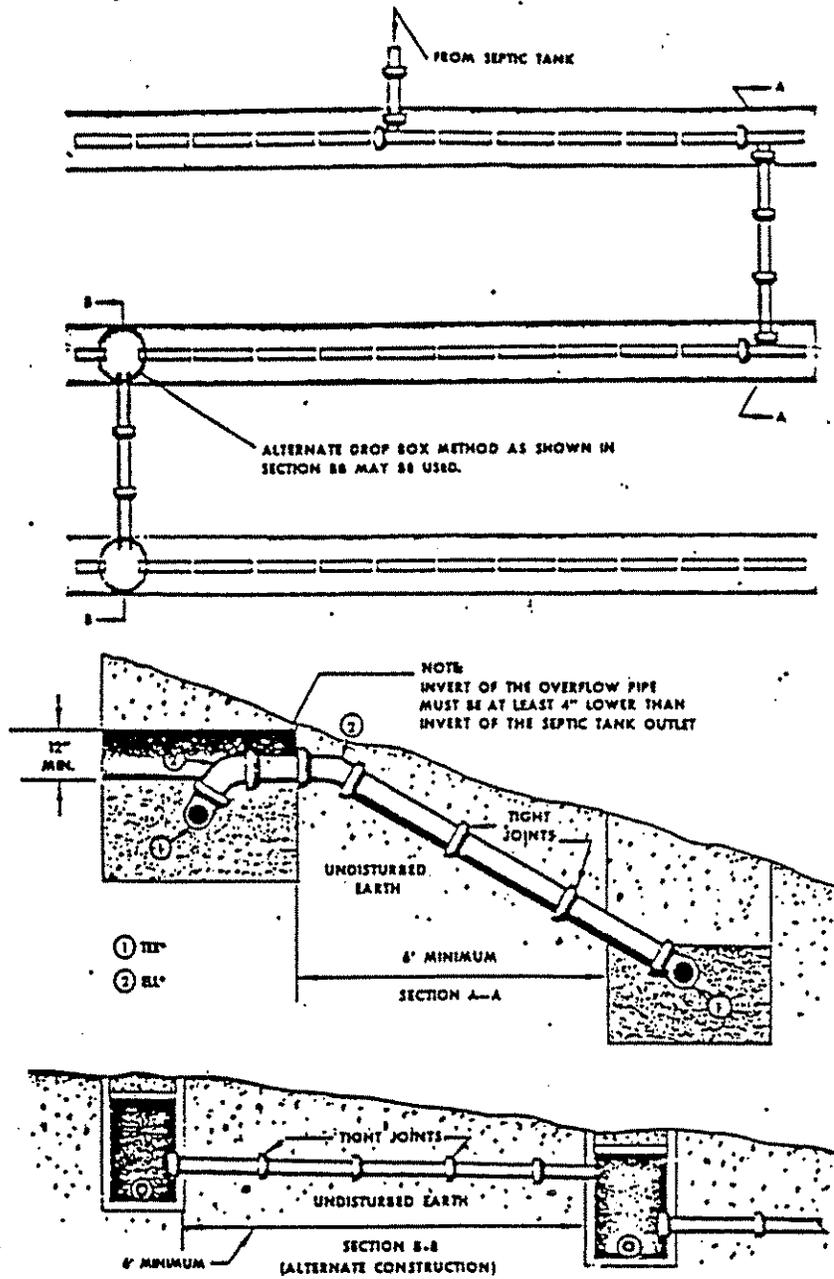
Standard Trenches

The absorption field or subsurface tile system is constructed with 4-inch agricultural drain tile, 2 to 3-foot lengths of vitrified clay sewer pipe or perforated, non-metallic pipe, which is laid in such a manner that flow from the septic tank will be distributed with reasonable uniformity to all natural soil surfaces. The individual laterals preferably should not be over 60 feet long, with a maximum length of 100 feet. The trench bottom and tile distribution lines should be nearly level with a fall of 2 to 4 inches per 100 feet, and never to exceed 6 inches per 100 feet.

There are now a number of new products on the market for the construction of lateral fields. Many of these products are of very high quality but there are also a number of inferior products available. If you have doubts about using any specific brand, you should consult your local health department or the Division of Environment.

Certain special techniques may have to be used when installing flexible lateral field lines. In order to insure uniformity in grade, the pipe should be uncoiled and placed flat on the ground at least 24 hours prior to placement in the trench. This should not be attempted when the outside temperature is lower than that recommended by the manufacturer of the pipe. When placing pipe in trench, a grade board must be used and the pipe fastened to the board with wire or heavy cord ties at intervals of not more than two feet. This is to insure the pipe maintaining its proper grade during backfilling of trenches.

Many different designs may be used in laying out subsurface disposal fields. The choice will depend on the size and shape of the available disposal area, the area required, and the topography of the disposal area. A typical layout is illustrated in Figure 4. Enlarged details or sections of a trench are shown in Figure 5.



* DIFFERING GROUND SLOPES OVER SUBSURFACE DISPOSAL FIELD MAY REQUIRE USE OF VARIOUS COMBINATIONS OF FITTINGS.

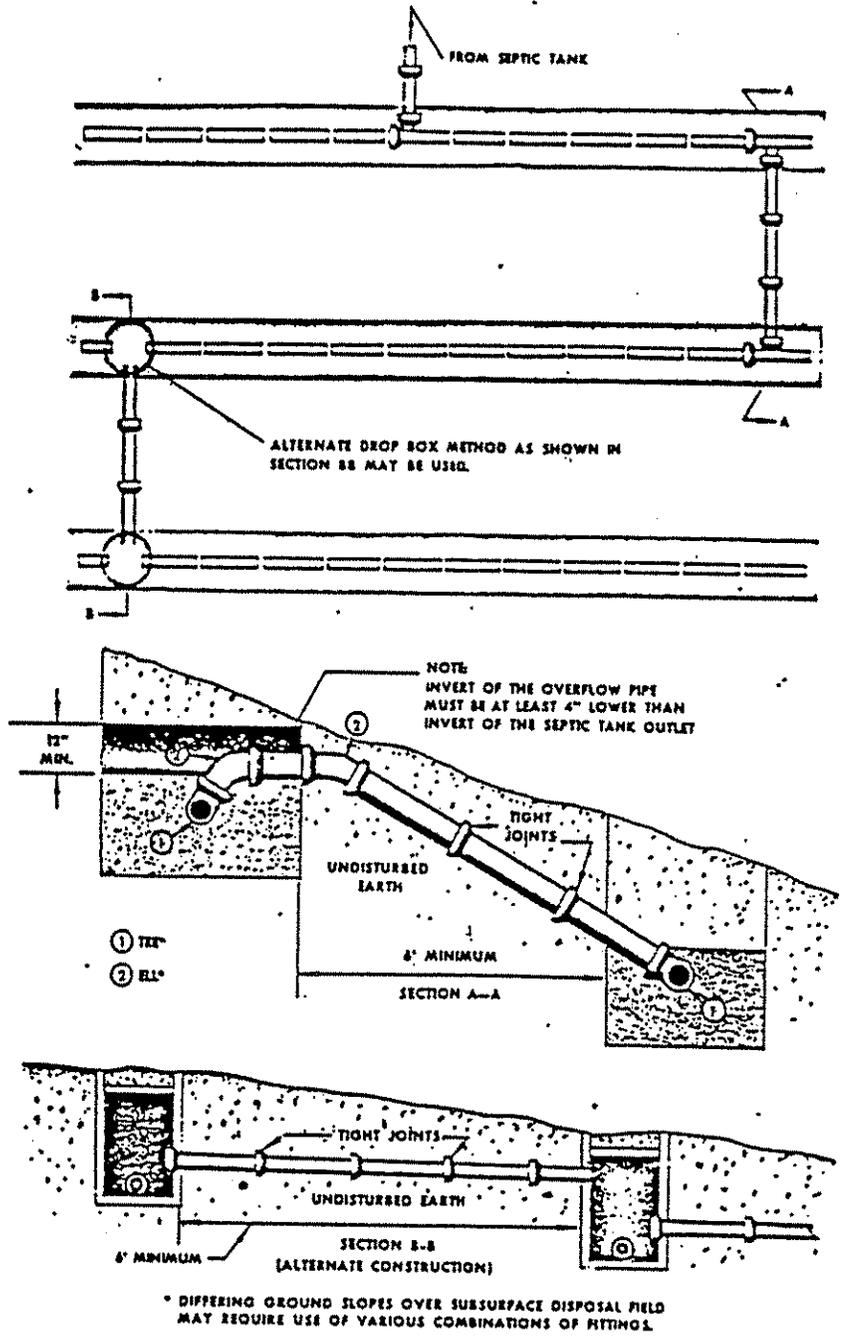
A SERIAL DISTRIBUTION ARRANGEMENT

FIGURE 4.

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A SERIAL DISTRIBUTION ARRANGEMENT

FIGURE 4.

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Table 2. Distances Between Trenches

Trench width, inches	Minimum distance between centerline of trenches, feet	Trench width, inches	Minimum distance between centerline of trenches, feet
12 to 18	6.0	24 to 30	7.0
18 to 24	6.5	30 to 36	7.5

The depth of the absorption field trenches should be at least 18 inches. Additional depth may be needed for contour adjustment, extra aggregate under the tile, or for other design purposes. In considering the depth of the absorption field trenches, the possibility of tile lines freezing during a prolonged cold period is often raised. Freezing rarely occurs in a carefully constructed system kept in continuous use. It is important that the tile lines are surrounded by gravel.

Current design practice for soil absorption fields provides for trench width varying from 18 to 24 inches, with the tile laid on 6 inches of gravel. Within this range and for trenches up to 36 inches, the absorption area per linear foot of trench is proportioned to the width of the trench. The required absorption area is predicated on the results of soil percolation test, and may be obtained from Column 2 of Table I or Figure 3. Note especially that the area requirements are per bedroom. Thus for a 3 bedroom house on a lot where the percolation rate was 1 inch in 15 minutes, the necessary leaching trench area will be 3×190 sq. ft. or 570 sq. ft. For trenches 2 feet wide with 6 inches of gravel below the drain tile, the required total length of trench would be $570 \div 2$, or 285 feet. If this were divided into 5 portions (i. e., 5 laterals), the length of each line would be $285 \div 5$, or 57 feet. The minimum spacing between tile lines may vary between 6 to 7.5 feet, depending on the selected width of trench (Table 2, page 11). In the example cited, a minimum lateral spacing of 6.5 feet should be used. The minimum total area for the absorption field required would equal $(5 \times 6.5 \times 57)$ 1,852 sq. ft.

Construction

Careful construction is important in obtaining a satisfactory disposal field. Attention should be given to the protection of the natural absorption properties of the soil. Trenches should not be excavated when the soil is wet enough to smear or compact easily. Soil moisture is right for safe working only when a handful will mold with considerable pressure. Open trenches should be protected from surface runoff to prevent the entrance of silt and debris. If it is necessary to walk in the trench, a temporary board laid on the bottom will prevent the damage from excessive compaction. Some smearing and damage is bound to occur. All smeared or compacted surfaces should be raked to a depth of 1 inch, and loose material removed before the gravel is placed in the trench.

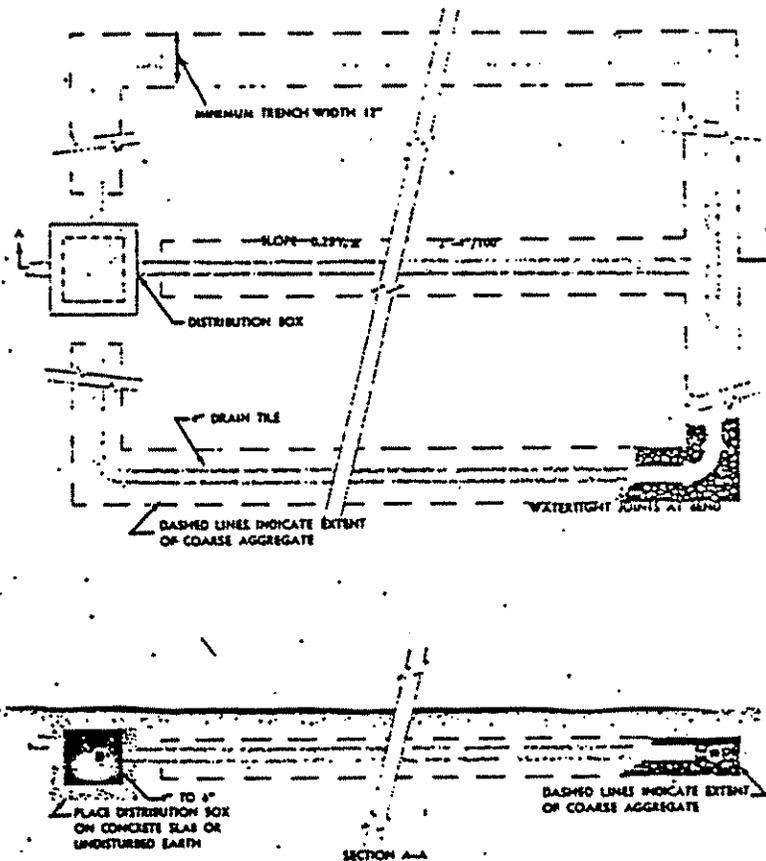


Figure 8.—Absorption-field system for level ground.

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The tile should be surrounded by clean, graded gravel, broken brick, washed rock, or similar aggregate. The material may range in size from 1/2 inch to 2 1/2 inches. Cinders, broken shell, and similar material are not recommended because they usually contain too much fine material that may lead to premature clogging. The trench should be filled with gravel material from a point at least 6 inches below the bottom of the tile to a point at least 2 inches above the top of the tile. The upper half of the joint openings should be covered, as shown in Figure 6. The top of the stone should be covered with untreated building paper or a 2-inch layer of hay or straw before placing the earth backfill. This will help prevent soil from entering the stone and clogging the openings until natural bridging of the soil occurs. An impervious covering such as tar paper or roofing material should not be used, as this interferes with evapotranspirations at the surface. Although generally not figured in the calculations, evapotranspiration is often an important factor in the operation of soil absorption systems.

Drain tile connectors, collars, clips, or other spacers with covers for the upper half of the joints are of value in obtaining uniform spacing, proper alignment and protection of tile joints, but use of such aids is optional. They have been made of galvanized iron, copper, and plastic.

It has been found that root problems may be prevented best by using a liberal amount of gravel or stone around the tile. Clogging due to roots has occurred mostly in lines with insufficient gravel under the tile. Furthermore, roots seek the location where moisture conditions are most favorable for growth and in the small percentage of cases where they become troublesome in well-designed installations, there is usually some explanation involving the moisture conditions. At a residence which is used only during the summer, for example, roots are most likely to penetrate when the house is uninhabited, or when moisture immediately below or around the gravel becomes less plentiful than during the period when the system is in use. In general, trenches constructed within 10 feet of large trees or dense shrubbery should have at least 12 inches of gravel or crushed stone beneath the tile.

The top of a new absorption trench should be hand tamped and should be overfilled with about 4 to 6 inches of earth. Unless this is done, the top of the trench may settle to a point lower than the surface of the adjacent ground. This will cause the collection of storm water in the trench, which can lead to premature saturation of the absorption field. Machine tamping or hydraulic backfilling of the trench should be prohibited.

Where the disposal field is constructed on sloping ground, it is helpful to construct a surface water diversion ditch on the slope above the field to divert surface water around the field. The ditch should be maintained and kept free of obstructions until the field becomes well covered with vegetation.

A heavy vehicle can readily crush the tile in a shallow absorption field. For this reason, heavy machinery should not be driven across the disposal area unless special provision is made to support the weight.

OPTIONAL METHOD OF ABSORPTION FIELD WITH DISTRIBUTION BOX

A distribution box is not considered essential for absorption field systems, but may be used. If used, care must be exercised in construction to prevent uneven settlement resulting in unequal distribution of flow to the absorption field lines.

A typical distribution box located between a septic tank and absorption system is shown in Figures 6 & 7. Details of small household distribution boxes are shown in Figure 8.

While it is possible and relatively simple to build your own distribution box at the site, there are now a number of commercially available appliances which serve the purpose equally well. There also are some inferior products for this purpose on the market. If you have doubt concerning one of these commercially available devices, you should check with the Division of Environment or your local health authority.

THE SEPTIC TANK

Functions of the Septic Tank

Untreated liquid household wastes (sewage) will quickly clog all but the most porous gravel formations. The septic tank conditions the sewage so that it may be more readily absorbed into the subsoil. To do this, the septic tank must accomplish the following functions:

1. Remove the suspended solids - Clogging of soil with tank effluent varies directly with the amount of suspended solids in the liquid. As sewage from a building sewer enters a septic tank, its rate of flow is reduced so that larger suspended solids sink to the bottom or rise to the surface. The solids are retained in the tank and the clarified sewage is discharged to the absorption field.
2. Decompose the solids - The solids in the tank are subjected to continuous decomposition by bacteria and other living organisms normally present in sewage and natural processes. The bacteria thrive in the absence of free oxygen and the decomposition of the solids occur under anaerobic or septic conditions; hence the name of the tank.
3. Provide storage for sludge and scum - Sludge is the accumulation of the settled solids at the bottom of the tank, while scum is a partially submerged mat of floating solids that forms at the surface of the liquid in the tank. Sludge, and scum to a lesser degree, will be digested and reduced to a small residue of inert material. Space must be provided in the tank for accumulation of this residue during the interval between cleanings; otherwise, sludge and scum will

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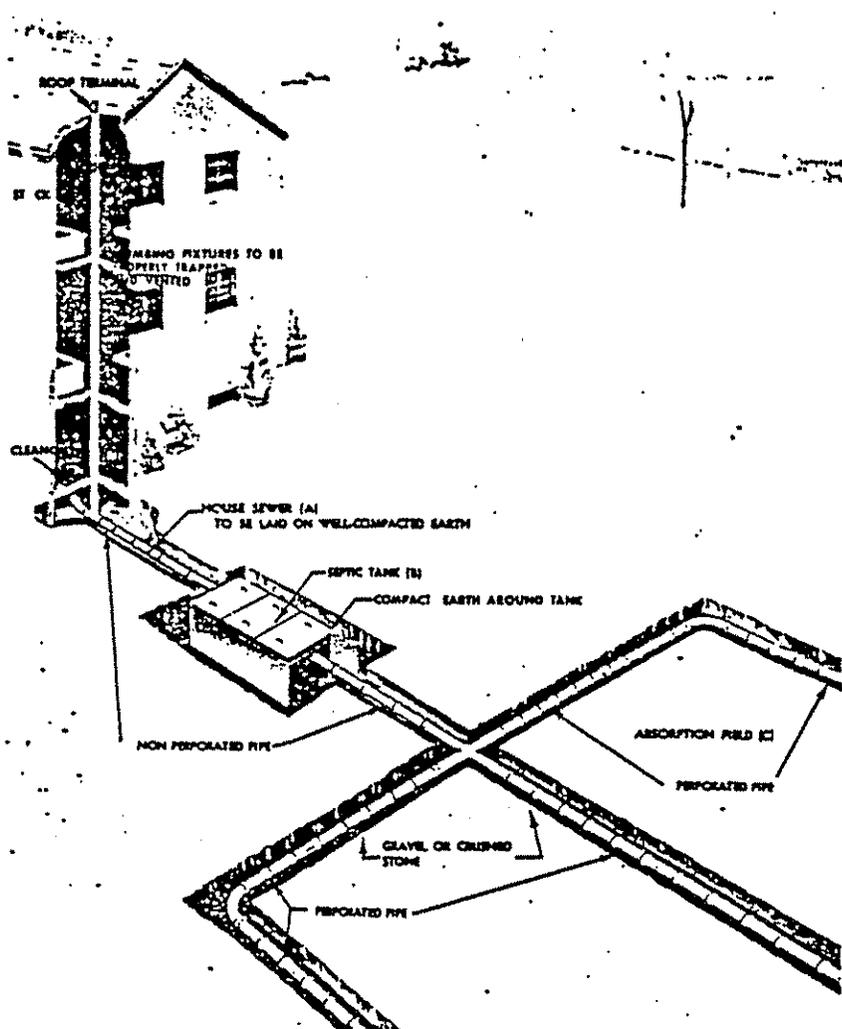


Figure 7.—Septic-tank sewage-disposal system.

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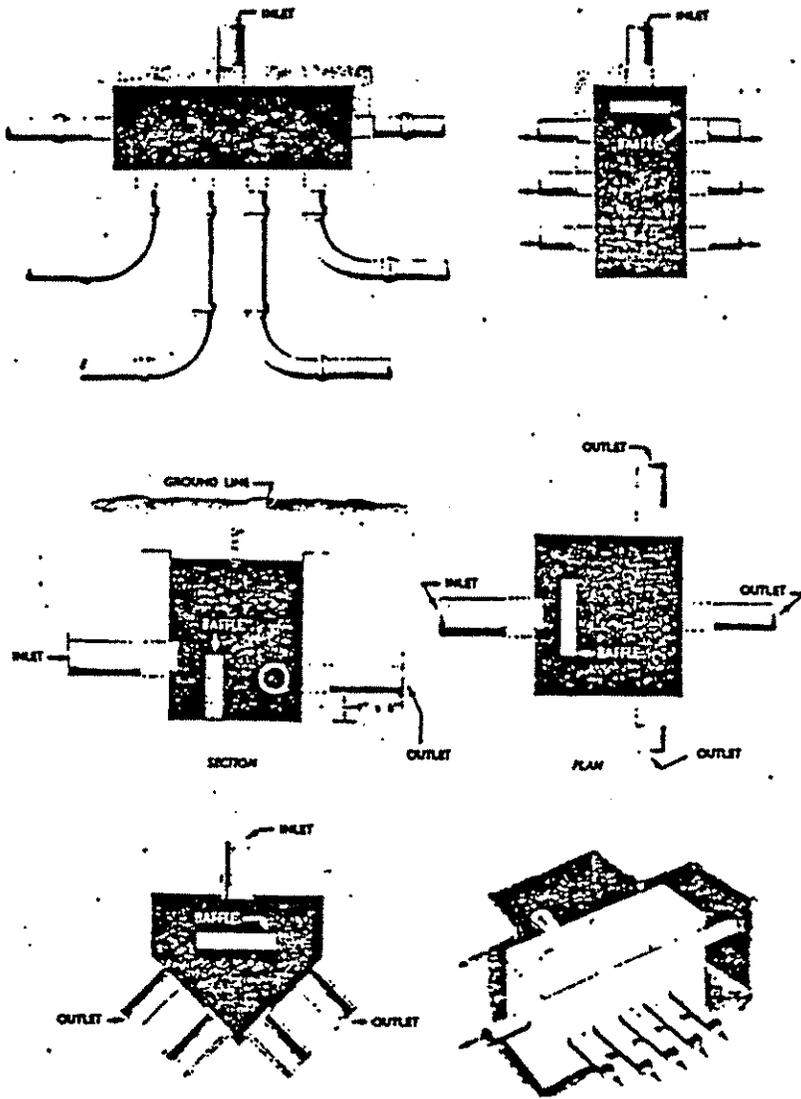


Figure 8.—Distribution boxes.

eventually be carried out of the tank into the disposal field where it will clog the soil.

If adequately designed, constructed, and operated, septic tanks are very effective in accomplishing these functions.

Location of the Septic Tank

Septic tanks should be located where they will not cause contamination of any well, spring, or other source of water supply. Underground pollution usually moves in the same general direction as the normal movement of the ground water in the locality, i. e., from the area of higher water table to areas of lower water table. In general, the water table follows the general contour of the ground surface. Sewage from disposal systems occasionally contaminate wells having higher surface elevations. Obviously, the elevations of disposal systems are almost always higher than the level of water in such wells as may be located nearby; hence, pollution from a disposal system on a lower surface elevation may still travel downward to the water-bearing stratum as shown in Figure 9. It is necessary, therefore, to rely upon horizontal as well as vertical distances for protection. Tanks should never be closer than 50 ft. from any source of water supply; and greater distances are preferred where possible.

The septic tank should not be located within 5 feet of any building. The tank should not be located in swampy areas, nor in areas subject to flooding. In general, the tank should be located where the largest possible area will be available for the disposal field. Consideration should also be given to the location from the standpoint of cleaning and maintenance.

Contrary to popular belief septic tanks do not provide a high degree of bacteria removal. Although the sewage undergoes some treatment in passing through the tank, this does not mean that infectious agents will be removed; hence, septic tank effluents cannot be considered safe for discharge onto the surface of the ground or into ditches or watercourses. The liquid that is discharged from a tank is, in some respects, more objectionable than that which goes in; it is septic and malodorous. This, however, does not detract from the value of the tank. As previously explained, its primary purpose is to condition the sewage so that it will cause less clogging of the soil in the disposal field.

Further treatment of the effluent, including the removal of disease-producing organisms, is accomplished by percolation through the soil. Disease-producing bacteria die out rather quickly in the unfavorable environment present in the soil. In addition, large numbers of bacteria are also removed by the sewage filtering through the soil. This combination of factors results in the eventual purification of the sewage.

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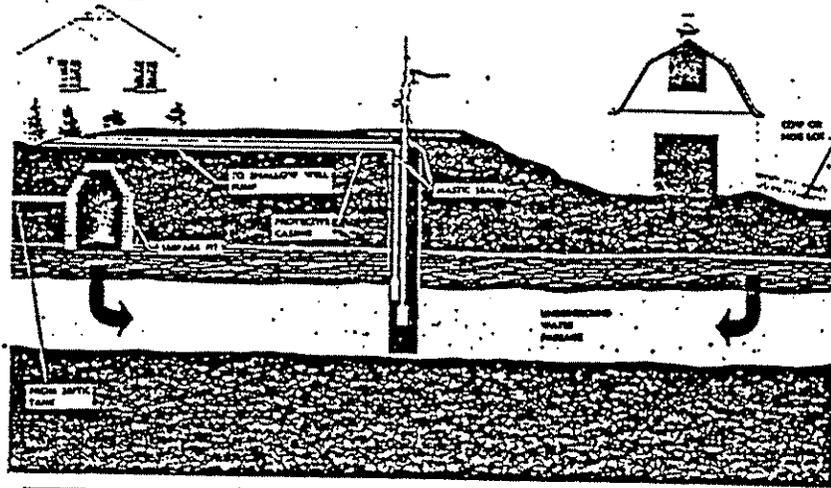


Figure 9.—Pollution of well from sources with lower surface elevations.

Design of Septic Tank

Capacity- Capacity is one of the most important considerations in septic tank design. Studies have proved that liberal tank capacity is not only important from a functional standpoint, but is also good economy. The liquid capacities recommended in Table 4 allow for the use of all modern household appliances, including garbage grinders.

Table 4. Liquid capacity of tank (gallons)
(Provides for use of garbage grinders, automatic washers, and other household appliances)

<u>Number of bedrooms</u>	<u>Recommended Minimum tank capacity.</u>	<u>Equivalent capacity per bedroom</u>
2 or less	750	375
3	900	300
4 ¹	1,000	250

¹For each additional bedroom, add 250 gallons.

Construction- Septic tanks should be water tight and constructed of material not subject to excessive corrosion or decay, such as concrete, coated metal, vitrified clay, heavyweight concrete blocks, or hard-burned bricks. Properly cured precast and cast-in-place reinforced concrete tanks are acceptable. Steel tanks meeting Commercial Standard 177-62 of the U.S. Department of Commerce are generally acceptable. Special attention should be given to job-built tanks to insure water tightness. Heavyweight concrete block should be laid on a solid foundation and the mortar joints should be well filled. The interior of the tank should be surfaced with two 1/4-inch thick coats of Portland cement-sand plaster.

In addition to the three types of septic tanks mentioned above, there are now a number of fiberglass septic tanks on the market. However, due to poor construction and design of early models, some local health departments will not approve them.

These tanks have a couple of unique problems associated with them. First of all, it is relatively easy to crush one with pumpout equipment if they are not adequately protected. Secondly, if they are pumped out during a time of high ground water, the fiberglass tank may rise to the surface causing major disruption of the system. Care must be exercised when installing them to prevent similar occurrences. It is best to fill them with water immediately after setting them in the ground. They should be filled before backfilling, especially if hydraulic backfilling is employed.

Precast tanks should have a minimum wall thickness of 2 1/2 inches, and should be adequately reinforced to facilitate handling. When precast slabs are used as covers, they should have a thickness of at least 3 inches and be adequately reinforced. A typical septic tank is illustrated in Figure 10.

Backfill around septic tanks should be made in thin layers thoroughly tamped in a manner that will not produce undue strain on the tank. Settlement of backfill may be done with the use of water, provided the material is thoroughly wetted from the bottom upwards and the tank is first filled with water to prevent floating.

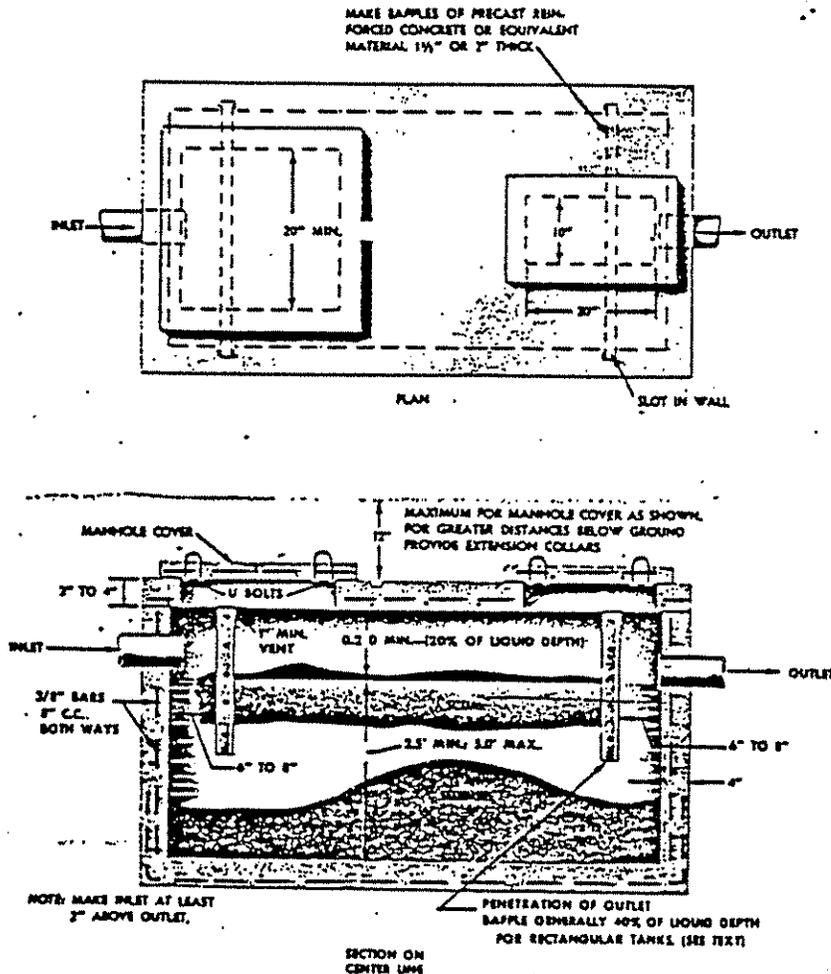


Figure 10.—Household septic tank.

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Adequate access should be provided to each compartment of the tank for inspection and cleaning. Both the inlet and outlet devices should be accessible. Access can be provided to each compartment by means of either (1) a removable cover or (2) a 20 -inch square or round manhole. Where the top of the tank is located more than 18 inches below the finished grade, manholes and inspection holes should extend to approximately 8 inches below the finished grade. (See Figure 11)

Outlet- It is important that the outlet device penetrate just far enough below the liquid level of the septic tank to provide a balance between sludge and scum accumulation; otherwise, part of the advantage of capacity is lost. A vertical section of a properly operating tank would show it divided into three distinct layers; scum at the top, a middle zone free of solids (called "clear space"), and a bottom layer of sludge. The outlet device retains scum in the tank, but at the same time it limits the amount of sludge that can be accommodated without scouring. Experience indicates that the outlet device should generally extend below the liquid surface a distance equal to 40 per cent of the liquid depth. For horizontal, cylindrical tanks, this distance should be reduced to 35 per cent. For example, in a horizontal cylindrical tank having a liquid depth of 24 inches, the outlet device should penetrate $42 \times .35 = 14.7$ inches below the liquid level.

The outlet device should extend above the liquid line to a point approximately 1 inch below the top of the tank. The space between the top of the tank and the baffle or tee allows gas to escape from the tank through the house vent.

Inlet- The inlet invert should be located at least 1 inch (preferably 3 inches) above the liquid level in the tank to allow for momentary rise in liquid level during discharges to the tank. This free drop prevents any stranding of solid material in the house sewer.

A vented inlet tee or baffle should be provided to divert the incoming sewage downward. It should extend at least 6 inches below the liquid level, but in no case should the penetration be greater than that provided for the outlet device. A number of arrangements commonly used for inlet and outlet devices are shown in Figure 12.

Tank Proportions- The available data indicate that for tanks of a given capacity and surface area, shallower tanks function as well as deep ones. Also, for tanks of a given capacity and depth, the shape of a septic tank is unimportant. However, it is recommended that the smallest plan dimension of the tank be at least 2 feet. Liquid depth may range between 30 and 60 inches.

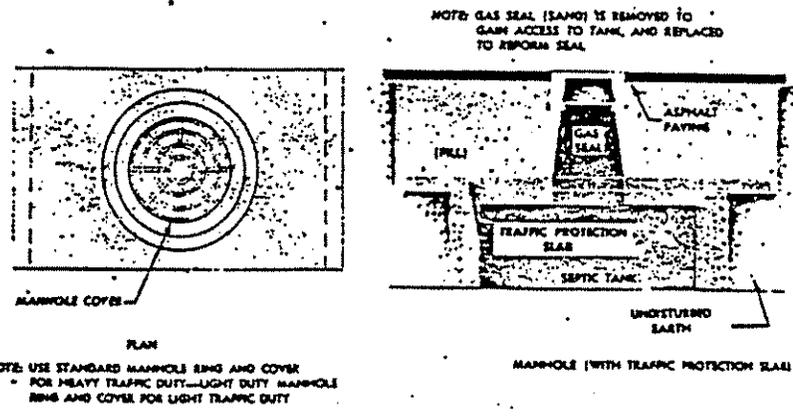
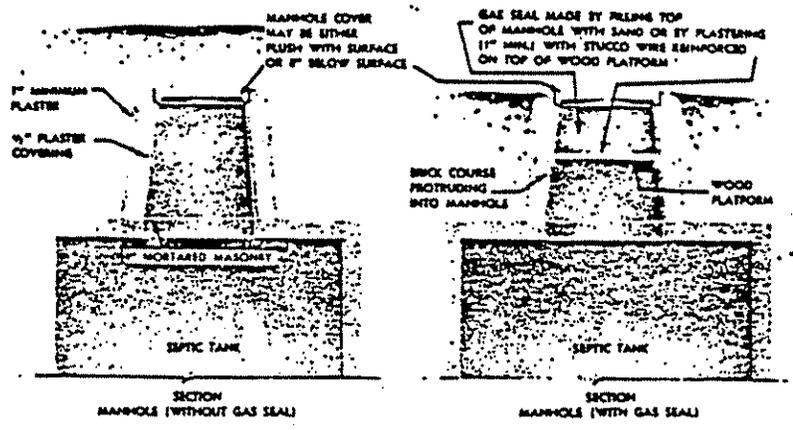


Figure 11—Design of manholes.

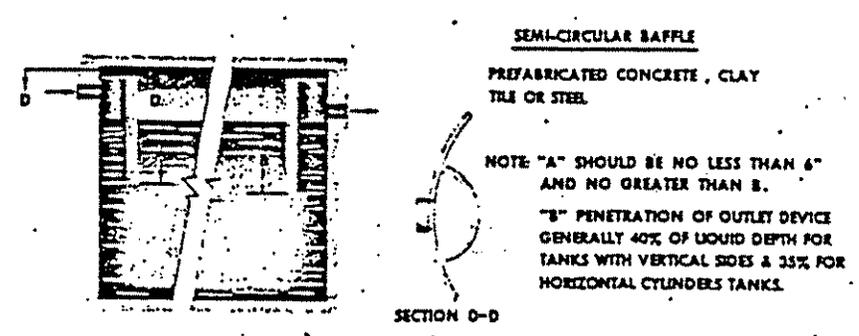
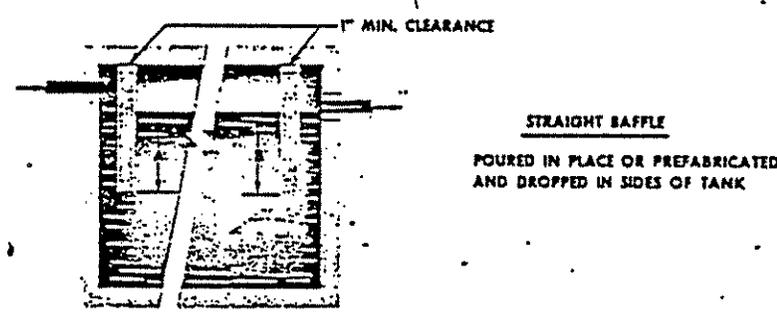
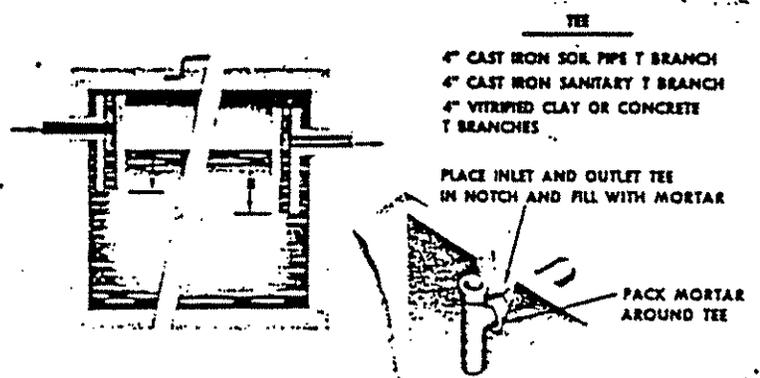


Figure 12. Types of inlet and outlet devices.

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Storage Above Liquid Level- Capacity above the liquid line is required to provide space for that portion of the scum which floats above the liquid. In addition to the provision for scum storage, an additional 1 inch of space should be provided to permit free passage of gas from the tank to the inlet and house vent pipe.

For tanks having straight, vertical sides, the distances between the top of the tank and the liquid line should be equal to approximately 20 per cent of the liquid depth. In horizontal, cylindrical tanks an area equal to approximately 15 per cent of the total circle should be provided above the liquid level. This condition is met if the liquid depth (distance from outlet invert to bottom of tank) is equal to 75 per cent of the diameter of the tank.

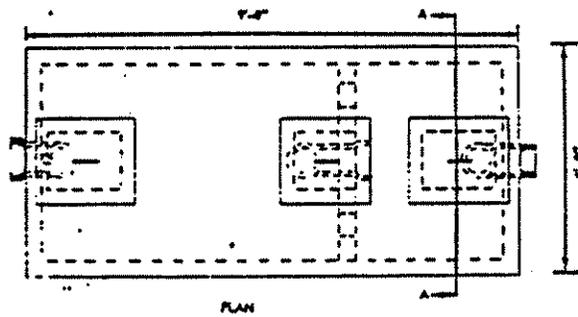
Use of Compartments- Although a number of arrangements are possible, the term "compartmentation", as used here, refers to a number of units placed in series. These can be either separate units linked together, or sections enclosed in one continuous shell (as in Figure 13), with water tight partitions separating the individual compartments.

A single compartment tank will give acceptable performance. Research data indicate, however, that a two-compartment tank with the first compartment equal to one-half to two-thirds of the total volume provides somewhat better removal of suspended solids, which may be quite valuable where tight soil conditions exist. Tanks with three or more equal sized compartments give at least as good performance as single compartment tanks of the same total capacity. No tanks should have an excess of four compartments, and each compartment shall have a minimum plan dimension of 2 feet with a liquid depth ranging from 30 to 60 inches.

An access manhole should be provided to each compartment. Venting between compartments should be provided to allow free passage of gas. Inlet and outlet fittings in the compartmented tank should be installed in same manner as for a single tank. The same allowance should be made for storage above the liquid line as in a single tank.

Inspection

After a subsurface sewage disposal system has been installed and before it is used, the entire system should be tested and inspected. The septic tank should be filled with water and allowed to stand overnight to check for leaks. If leaks occur, they should be repaired. The distribution box and absorption field should be checked before the laterals are covered to be sure that the disposal system is installed properly.



NOTE: ALL FITTINGS 4" V.C.
 OUTLET FITTING SET 1"
 BELOW INLET FITTING

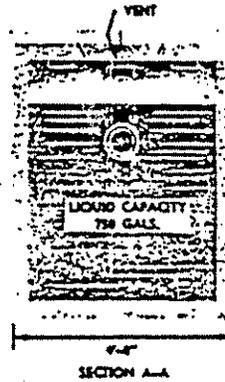
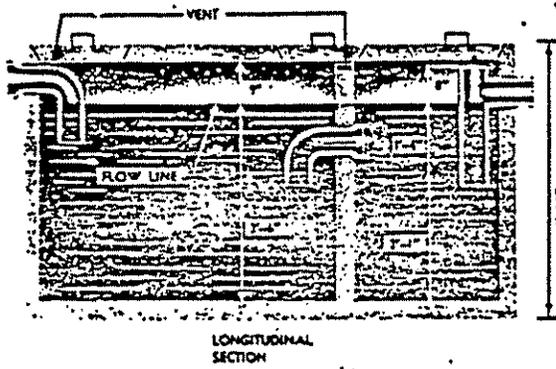


Figure 13.—Precast septic tank.

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OPERATION AND MAINTENANCE OF SEPTIC TANK SYSTEMS

Cleaning- Septic tanks should be cleaned before too much sludge or scum is allowed to accumulate. If the top of the sludge or the bottom of the scum approaches too closely to the bottom of the outlet device, solids will be carried out of the tank into the disposal field and may clog the pores of the soil. Eventually, when this happens, liquid may break through to the ground surface, and the sewage may back up in the plumbing fixtures. When a disposal field becomes clogged in this manner, it is not only necessary to clean the tank but it also may be necessary to construct a new disposal field.

The tank capacities given in Table 4 will give a reasonable period of good operation before cleaning becomes necessary. There are wide differences in the rate that sludge and scum will accumulate in septic tanks. For example, in one case out of 20, the tank will reach the point where it should be cleaned in less than 3 years. Other tanks of similar capacity may be used for much longer periods before it is necessary. Tanks should be inspected at least once a year and cleaned when necessary.

Although it is difficult for most homeowners, actual measurement of sludge and scum accumulations is the only sure way to determine when a tank needs to be cleaned. When a tank is inspected the depth of sludge and scum should be measured in the vicinity of the outlet baffle. The tank should be cleaned if either (1) the bottom of the outlet device, or (2) sludge comes within the limits specified in Table 5.

Table 5. Allowable sludge accumulation

Liquid capacity of tank, gallons	Liquid depth		
	3 feet	4 feet	5 feet
Distance from bottom of outlet device to top of sludge, inches			
500 -----	11	16	21
600 -----	8	13	18
750 -----	6	10	13
900 -----	4	7	10
1,000 -----	4	6	8

Scum can be measured with a stick to which a weighted flap has been hinged or with any device that can be used to feel out the bottom of the scum mat. The stick is forced through the mat, the hinged flap falls into a horizontal position, and the stick is raised until resistance from the bottom of the scum is felt. With the same tool, the distance to the bottom of the outlet device can be found. (See Figure 14)

A long stick wrapped with rough, white toweling and lowered to the bottom of the tank will show the depth of sludge and the liquid depth of the tank. The stick should be lowered behind the outlet device to avoid scum particles. After several minutes, if the stick is carefully removed, the sludge line can be distinguished by sludge particles clinging to the toweling.

In many communities where septic tanks are used, there are firms which "pump out" or clean septic tanks. Cleaning is usually accomplished by pumping the contents of the septic tank into a tank truck. Septic tanks do not need to be washed or disinfected after pumping. A small amount of sludge should be left in the tank for seeding purposes. The material removed from the septic tank should be ^{filled under} buried in uninhabited areas or, with permission of the city or service district, emptied into a sanitary sewer system. The material should never be emptied into storm drains or discharged directly into any stream or watercourse. Methods of disposal should be approved by the health authorities. *cleaning*

Grease Interceptors- Grease interceptors (grease traps) are not ordinarily considered necessary on household sewage disposal systems. The discharge from a garbage grinder should never be passed through grease traps. The septic tank capacities recommended in this manual are sufficient to receive the grease normally discharged from a rural home.

Chemicals- The functional operation of septic tanks is not improved by the addition of disinfectants or other chemicals. In general, the addition of chemicals to a septic tank is not recommended. Some proprietary products which are claimed to "clean" septic tanks contain sodium hydroxide or potassium hydroxide as the active agent. Such compounds may cause "sludge bulking" and interfere with the digestion process. The resulting effluent may severely damage soil structure and cause accelerated clogging even though some temporary relief may be experienced immediately after application of the product.

The harmful effects of ordinary household chemicals are frequently overemphasized. Small quantities of lye or caustics normally used in the home or added to plumbing fixtures will not interfere with the operation of the tank. If the septic tanks are as large as recommended in this manual, dilution of the lye or caustics in the tank will be sufficient to overcome any harmful effects that might otherwise occur.

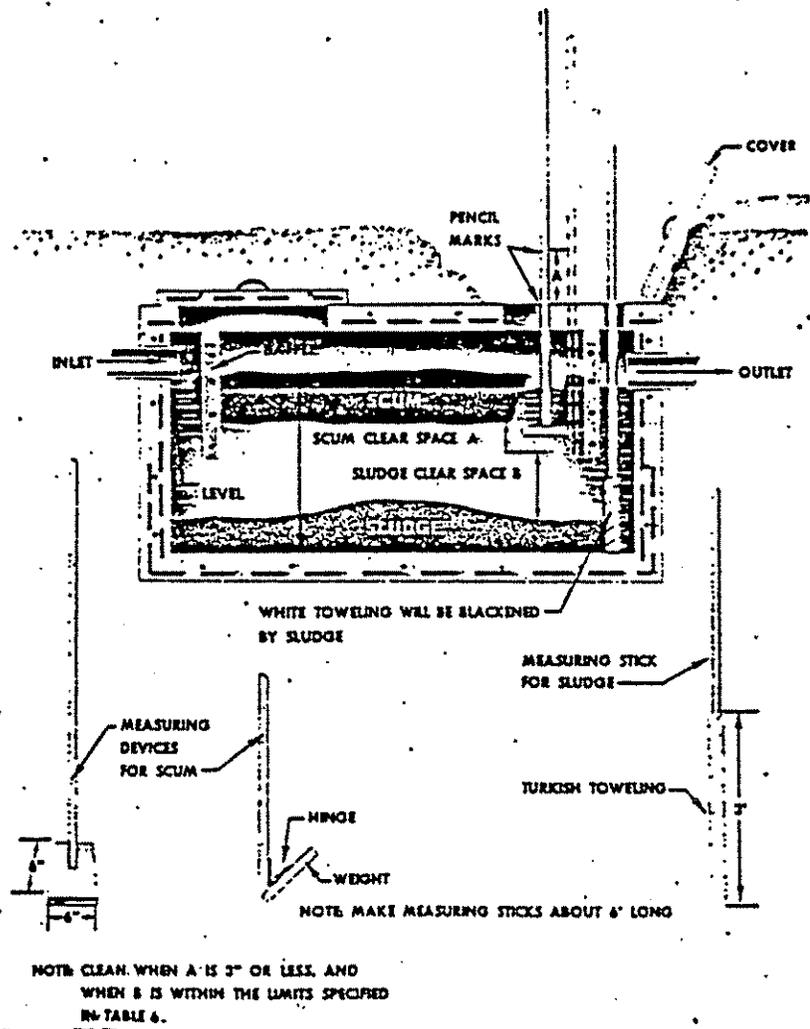


Figure 14.—Devices for measuring sludge and scum.

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 4-02-92
 Date

WASTE STABILIZATION PONDS

Due to limited absorption capacity of the soil in many areas of Kansas, septic tank-lateral field systems described in this bulletin will not function properly and will not absorb the wastewater in the quantities produced. In these areas properly located, designed, constructed, and operated waste stabilization ponds provide a possible solution where public sewers are not available.

The waste stabilization pond system does have certain drawbacks. Under recent, more stringent water pollution control standards, the only economical method of design is to make them totally retentive. This necessitates a slightly larger pond than specified in the past.

In a typical situation, a total space of approximately 90 feet by 90 feet is needed to accommodate the pond measuring from outside toes of opposite dikes. Another factor greatly affecting site selection is the requirement of at least 100 feet separation from other properties. Road right-of-ways may be included to make up the required separation from other properties. In hardship and adverse terrain situations, the separation distance requirement may be reduced to as little as 50 feet with permission of the affected property owner and approval of the Division of Environment. The separation distance is measured from the water surface of the pond when it is full. These spacing requirements generally dictate a minimum lot size of 2 to 3 acres.

There are a number of policy and legal considerations in addition to the 100 foot separation which require conformation in establishing this type of sewage treatment facility.

First of all, a meaningful percolation test must be conducted. Instructions for performing such a test appear on pages 2-5 of this booklet. If the percolation test reveals a good soil percolation rate, generally such that 1 inch of fall occurs within 30 minutes, a lateral field should be used instead of a waste stabilization pond. If the percolation rate of the soil is poor, generally such that it takes 60 minutes or longer to obtain 1 inch of fall, a lateral field does not have a reasonable chance of performing over a satisfactory time period. Special cases which do not seem to clearly meet these guidelines for various reasons will be individually reviewed by the Bureau of Environmental Sanitation.

The minimum separation of 100 feet from property lines may include public roadways (total right-of-way) as part of the 100 feet if necessary.

There will be a minimum separation of 50 feet from a private water supply well or 25 feet from public water transmission lines. If the well is ever used to service more than a single household, the current policy states there must be 100 feet separation from the water level of the pond.

Applications are available from the Division of Environment, Bureau of Environmental Sanitation, Topeka, Kansas 66620, and from some county health departments. A simple sketch of the area surround the proposed lagoon site for a radius of 1/2 mile is to be submitted along with the application and fee. This sketch should show location of any wells or public water supply lines which traverse the area. It also should include relative position of all currently existing or proposed residences and commercial establishments. In addition to the sketch, locate the involved property in the section block provided on the reverse side of the last page of the application.

Before any construction is started, you must have met any applicable city or county regulations, submitted a completed application along with a check or money order for \$12.50 as required by law, and received approval of your proposal. Checks or money orders are to be made payable to the Kansas Department of Health and Environment-Sewage Permit. Prior to approval of your proposal, an appraisal of the site of the proposed treatment facility will be made by a representative of the Division of Environment.

After the site appraisal and receipt of other necessary information, the Division of Environment will issue plans, specifications and permission to construct. At this time the owner or his contractor may construct the facility according to furnished plans. Upon completion of the facility, the owner or his contractor must notify the Division of Environment so that a post-construction appraisal can be made. If construction is satisfactory, a permit valid for 5 years will be sent to the owner. This permit is renewable every 5 years if reappraisal shows it to be in satisfactory condition. A fee of \$12.50 is charged for each renewal.

ACTIVATED SLUDGE UNITS

Recent advances in technology and a greater awareness of the problems facing our environment has brought to the market a number of activated sludge or aerobic sewage treatment systems designed for single-family dwelling use.

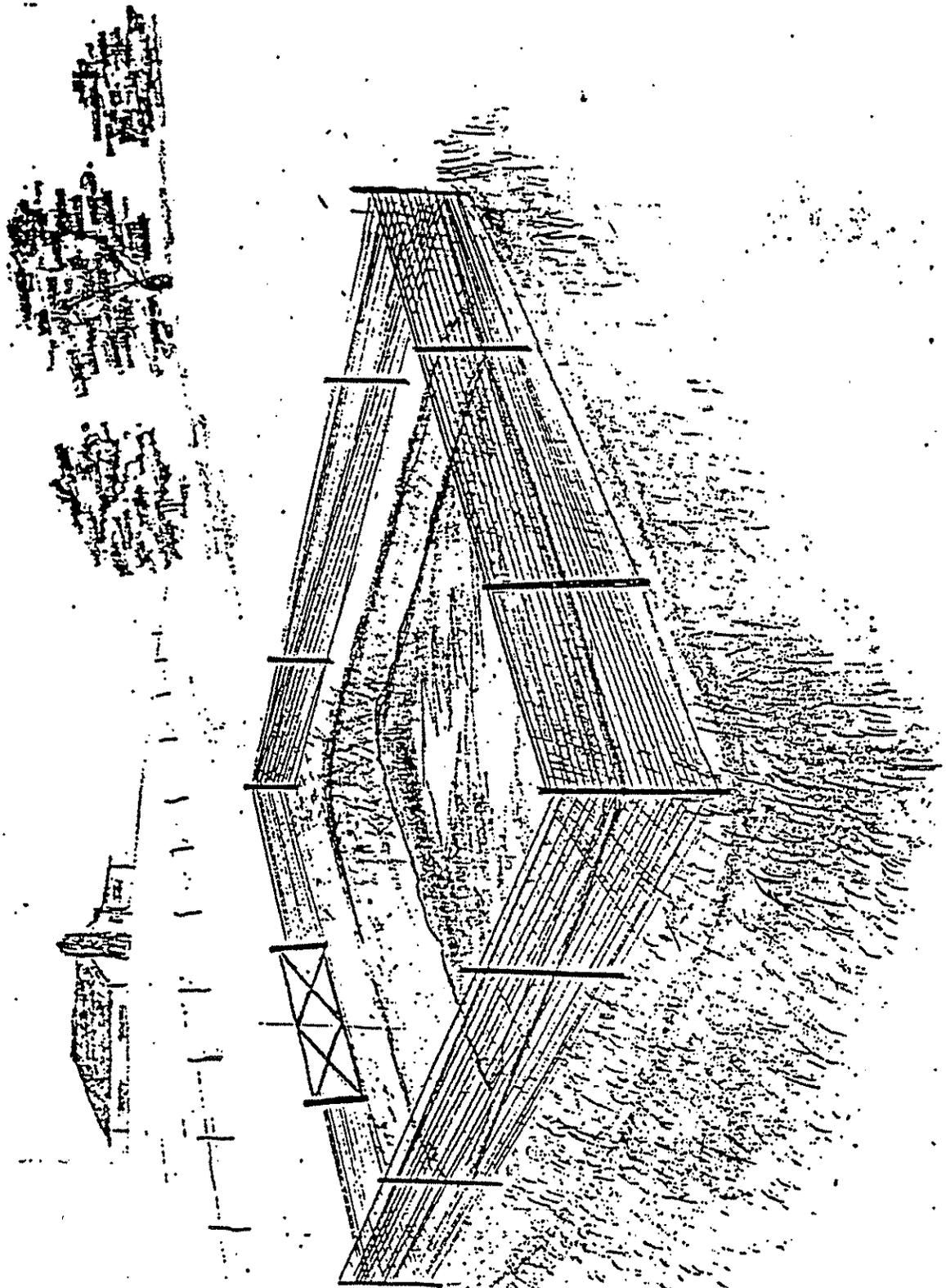
While there are a myriad of brands in various sizes and shapes, they all work on the same basic principle. They cause the sewage to be placed in intimate contact with oxygen from the air to create an accelerated breakdown of organic solids and promote rapid growth of aerobic bacteria. On rare occasions, these are suitable for discharging effluent directly to a receiving stream. In such cases, the effluent must meet current national standards and the facility must have advance approval and be installed in compliance with all local, state, and federal regulations pertaining to discharging facilities.

These facilities may be used in lieu of a septic tank in conjunction with a lateral field. However, we do not approve any reduction in the size of the lateral field since the amount of water remains the same as with a septic tank.

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APPENDIX F - ARTICLE 5

Adopted April 2, 1992

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Kansas Department of Health
and Environment

4-02-92

Date

STATE OF KANSAS
DEPARTMENT OF HEALTH AND ENVIRONMENT
Bureau of Water
Industrial Programs Section
Forbes Field - Bldg. 740
Topeka, KS 66620-0001

ARTICLE 5

SEWAGE AND EXCRETA DISPOSAL



Article 5 SEWAGE AND EXCRETA DISPOSAL

28-5-1 (Authorized by K.S.A. 65-171d; effective Jan. 1, 1966; revoked E-72-11, March 17, 1972; revoked Jan. 1, 1973.)

28-5-2 Privies and seepage pits. No person, company, corporation, association or institution shall construct, maintain, use or permit to be constructed or maintained any privy, seepage bed or similar device into which a water closed, lavatory, kitchen sink, or similar plumbing fixture is drained, within fifty feet of any well or spring or other source of water used for drinking or culinary purposes; nor shall any such privy or seepage pit be drained or permitted to drain into any stream, ditch or the ground surface (Authorized by K.S. A. 65-171d; effective Jan. 1, 1966; amended E-72-11, March 17, 1972; amended Jan. 1, 1973.)

28-5-3. Drains. All drains carrying domestic sewage, human or animal excreta located within 50 feet of a source of water supply shall be watertight. (Authorized by K.S.A. 65-171d; effective Jan. 1, 1966.)

25-5-4. Public health nuisances. The following conditions and practices are declared to be public nuisances hazardous to public health and local boards of health are directed to order their abatement whenever they are called to their attention by the state department of health and environment or any citizen of the state.

(1) Any privy, privy vault or other place used for the deposit of human excreta which permits animals or insects access to the excreta, which produces foul or objectionable odors, or is located so as to make pollution of a domestic water supply probable.

(2) The collection or accumulation of any organic materials such as swill, meat scraps, dead fish, shells, bones, decaying vegetables, dead carcasses, human or animal excrement or any kind of offal that may decompose and create an attraction or breeding place for flies, mosquitoes or rodents.

(3) Any domestic animal pen that pollutes a domestic water supply, underground water bearing formation; or stream in a manner that is hazardous to human health; or is maintained in a manner that creates a fly attraction or breeding place for flies or mosquitoes or rodents.

(3) Any domestic animal pen that pollutes a domestic water supply, underground waterbearing formation; or stream in a manner that is hazardous to human health; or is maintained in a manner that creates a fly attraction or breeding place for flies or mosquitoes; or is a rodent harborage or breeding place. (Authorized by K.S.A. 1975 Supp. 65-101, 65-171d, 65-202; effective Jan. 1, 1966; amended, E-72-11, March 17, 1972; amended; Jan. 1, 1973; amended May 1, 1976.

Article 5
Sewage and Excreta Disposal
Page 2

28-5-5. Discharge of domestic sewage into wells, pits or sub-surface excavations prohibited. No person, company, corporation or institution shall excavate, drill construct or use or permit to be constructed or used any well, pit, mine shaft, or subsurface excavation for the disposal of untreated or inadequately treated domestic sewage. (Authorized by K.S.A. 65-171d; effective, E-72-11, March 17, 1972, effective Jan. 1, 1972)

28-5-6 Discharge of domestic wastes. All domestic wastes from sanitary fixtures located in any dwelling, shop, school, or other building used as a home or meeting place for humans shall be discharged into a community sewer system approved by the state department of health or into a private sewer system operating under a permit from the department or a septic tank located, designed and operated in accordance with standards set forth in state health department bulletin 4-2 (Authorized by K.S.A. 65-171d; effective E-72-11, March 17, 1972; effective Jan. 1, 1973.)

28-5-7 Discharge of septic tank effluent. All effluent from a septic tank shall be discharged into (1) properly designed and maintained soil absorption field; or (2) a properly designed sewage treatment facility operating under a valid permit from the state department of health or (3) into a seepage pit provided it is so designed, constructed, and operated as not to contaminate any groundwater or impair the quality of any groundwater for any beneficial use. Written permission to construct such a seepage pit is to be obtained from the local board of health having jurisdiction or the state department of health provided there is no local rule, regulation or code prohibiting the use of such a seepage pit. (Authorized by K.S.A. 65-171d; effective E72-11, March 17, 1972; effective Jan. 1, 1973.)

28-5-8 Construction of seepage pits. Any seepage pit for disposal and treatment of sewage shall be preceded by an adequately sized septic tank and shall conform to the following requirement: (1) The pits shall not be constructed, drilled, dug, bored or excavated to a vertical separation of less than 10 feet above the maximum water table elevations determined by the groundwater table elevation measurements of local water supply wells.

(2) Seepage pits shall not penetrate or terminate in other than unconsolidated strata such as soil, silt, or medium sand having an effective sized no greater than 0.5 mm. If unconsolidated materials, coarse sand or gravel having an effective size greater than 0.5 mm should be penetrated the bottom portion of the pit shall be filled with sand having an effective size no greater than 0.5 mm.

(3) All Seepage pits shall be filled with coarse gravel or rock to prevent the hazards of cave-ins and which will additionally

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