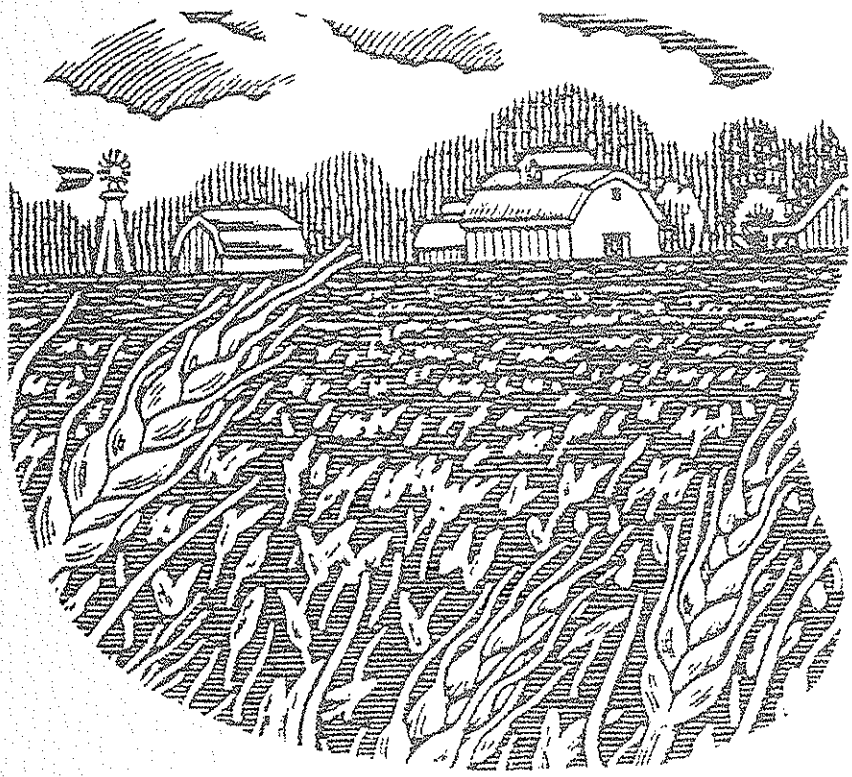
ANDERSON COUNTY KANSAS



SANITATION CODE

Anderson County Planning/ Zoning Office

June 1999

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

Dudley R. Feuerborn

Signature
Chairman, Board of County Commissioners

November 13, 2000

Date

ANDERSON COUNTY

KANSAS

SANITATION CODE

JUNE 1999

REVISED: NOVEMBER, 2000

Resolution No. 2000,1113:1

A RESOLUTION OF THE ANDERSON COUNTY BOARD OF COUNTY COMMISSIONERS ADOPTING AN AMENDMENT TO THE ANDERSON COUNTY, KANSAS SANITATION CODE FOR THE UNINCORPORATED AREAS OF THE COUNTY IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN K.S.A. 19-3705 ET. SEQ.

WHEREAS, Anderson County, Kansas is a Municipal County Government with the authority to adopt and amend a sanitary code as provided in K.S.A. 19-3704 et. seq.; and

WHEREAS, the Anderson County Board of County Commissioners did approve Resolution 99,0607:1, adopting the Anderson County, Kansas Sanitation Code; and

WHEREAS, the Anderson County Board of County Commissioners has determined that an amendment of the sanitation code is necessary for the promotion of the public health, safety and general welfare and protection of the environment; and

WHEREAS, the Secretary of the Department of Health and Environment has reviewed the amendment to the Anderson County, Kansas Sanitation Code and has approved said amendment; and

WHEREAS, The County Commissioners have held a public hearing to consider adoption of an amendment to the sanitation code for the unincorporated areas of Anderson County pursuant to the provisions of K.S.A. 19-3704 and finds that the adoption of said amendment to the sanitation code is necessary for the protection of the health and welfare of the public.

NOW, THEREFORE, BE IT RESOLVED, that the Anderson County Board of County Commissioners does hereby approve and adopt an amendment to Chapter 2; Article 8; Section 2-8.0 *Holding Tanks* of the Anderson County, Kansas Sanitation Code. Said amendment as shown in "Exhibit A" attached, is hereby incorporated by reference as if fully set out herein, as provided by K.S.A. 12-3303.

PASSED AND ADOPTED ON THIS 13th DAY OF NOVEMBER 2000.

This action shall take effect upon publication in the Official County newspaper.

ATTEST:

COUNTY CLERK OFFICIAL SEAL ANDERSON COUNTY KANSAS

Phyllis Gettler, County Clerk

Dudley R. Feuerborn, Chairman

Dean Register, Commissioner

Eugene E. Highberger, Commissioner

Resolution No. 990607:1

A RESOLUTION OF THE ANDERSON COUNTY BOARD OF COUNTY COMMISSIONERS ADOPTING A SANITATION CODE FOR THE UNINCORPORATED AREAS OF THE COUNTY IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN K.S.A. 19-3701 ET. SEQ. AND K.S.A. 12-3301 ET. SEQ. AND ENTITLED "ANDERSON COUNTY, KANSAS SANITATION CODE".

WHEREAS, Anderson County, Kansas is a Municipal County Government with the authority to adopt and amend a sanitary code as provided in K.S.A. 19-3704; and

WHEREAS, the Anderson County Board of County Commissioners has determined that the adoption of a sanitation code is necessary for the promotion of the public health, safety and general welfare and protection of the environment; and

WHEREAS, the Secretary of the Department of Health and Environment has reviewed a draft of the Anderson County, Kansas Sanitation Code and has approved said draft; and

WHEREAS, The County Commissioners have held a public hearing to consider adoption of the sanitation code for the unincorporated areas of Anderson County and finds that the adoption of said sanitation code is necessary for the protection of the health and welfare of the public; and

NOW, THEREFORE, BE IT RESOLVED, that the Anderson County Board of County Commissioners does hereby approve and adopt a sanitation code for the unincorporated areas of Anderson County, Kansas, entitled Anderson County, Kansas Sanitation Code which is hereby incorporated by reference as if fully set out herein, as provided by K.S.A. 12-3031.

PASSED AND ADOPTED ON THIS 7th DAY OF JUNE 1999.

This action shall take effect upon publication in the Official County newspaper.

ATTEST:

COUNTY CLERK OFFICIAL SEAL ANDERSON COUNTY KANSAS

Phyllis Gettler, County Clerk

Dudley R. Feuerborn, Chairman

Dean Register, Commissioner

Eugene E. Highberger, Commissioner

Anderson County Sanitation Code

Table of Contents

CHAPTER 1: POLICY, ADMINISTRATION AND ENFORCEMENT

ARTICLE 1: GENERAL PROVISIONS

Section 1-1.0 **Authority and Policy.**

Section 1-1.1 **Title.**
This Code shall be known and referred to as the Anderson County Sanitation Code.

Section 1-1.2 **Legal Authority.**
This code is adopted under the authority granted to the Board of County Commissioners by K.S.A. 19-3701 et seq., K.S.A. 12-3301 et seq. as amended, and pursuant to the powers and authorities of the Board of County Commissioners under K.S.A. 19-101a.

Section 1-1.3 **Findings and Declaration of Policy.**
The Anderson County Commissioners find that provisions for adequate and reasonable control over the sanitation and environmental conditions, in unincorporated areas of the County, are needed and desirable and that it is necessary, therefore, to adopt a sanitation code to:

a. Eliminate and prevent the development of environmental conditions that are hazardous to health and safety; and

b. Promote the economical and orderly development of the land and water resources of the County.

For these reasons and objectives, it will be the policy of the Board of County Commissioners to adopt and amend this code to provide regulations that protect environmental sanitation and public health and safety.

Section 1-1.4 **Purpose.**
The purpose and intent of this code is:

a. To promote the public health, safety and welfare; and

b. To protect the integrity of the environment and natural resources; and

c. To prescribe the administrative procedures to be followed in administering the Code or any amendments thereto; and

d. To establish administrative procedures to facilitate fair and equitable regulation while recognizing the rights of affected persons to receive reasonably prompt processing and to appeal administrative decisions.

Section 1-1.5 **Jurisdiction and Application.**

This Code and all authorized rules, regulations, restrictions and requirements shall apply to all persons, property, establishments and business activities located or conducted, regardless of ownership and acreage, within the unincorporated areas of Anderson County, Kansas.

Section 1-1.6 **Severability.**

If any clause, sentence, paragraph, section or subsection of this Code shall be adjudged invalid for any reason, such judgement shall not affect, repeal or invalidate the remainder thereof, but shall be confined to the clause, sentence, paragraph, section or subsection thereof as found to be invalid.

Section 1-1.7 **Disclaimer of Liability.**

This Code shall not be construed or interpreted as imposing upon the County, or its officials or employees:

a. Any liability or responsibility for damages to any property; or

b. Any warranty that any installation, system, or portion thereof that is constructed or repaired under permits or inspections required by this Code will function properly; or

c. Any personal liability for damage which may occur to any person or property as a result of the discharge of official duties.

Section 1-1.8 **Amendments and Additions.**

This Code may be supplemented or its provisions may be amended by Resolution adopted by the Board of County Commissioners, after notice and hearing, as required by K.S.A. 19-3705.

Section 1-1.9 **Effective Date.**

This Code shall become effective from and after the date of adoption by the Board of County Commissioners and publication of notice as required by law.

ARTICLE 2: ADMINISTRATION

Section 1-2.0 Administration.

Section 1-2.1. Administrative Authority.

Unless otherwise specifically designated by this Code, the Anderson County Planning/Zoning Office shall have the primary authority and responsibility for the administration of this Code; and is hereafter referred to as the Administrative Agency.

The County Attorney or County Counselor shall enforce the provisions of this code and is hereby authorized and directed to file appropriate actions for such enforcement within sixty (60) days of receipt of a request from the Administrative Agency.

Section 1-2.2 Definition of Terms or Words.

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

a. Words appearing in the singular shall include the plurals, and those appearing in the plural shall include the singular.

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

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

d. The word "shall is mandatory; the word "may" is permissive.

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

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

1. Access: Entry into or upon any real estate, structure or including any part thereof.

2. Administrative Agency: The agency or official designated in any of the Chapters contained in this Code to administer the provisions of that Chapter or any Section therein.

3. Administration Rules: Any regulation adopted by the Administering Agency, which the agency determines to be necessary and appropriate to enable it to fulfill its duties and responsibilities under this Code.

4. Agricultural Purpose: A land use of 40 acres or more related to the production of livestock or crops, including growing crops or pasture and functions immediately and necessarily related thereto, and the feeding of livestock by the resident on the land, as provided by Anderson County zoning regulations, but does not include any structure used as a dwelling or the sewage disposal system servicing such dwelling.

5. Applicant: Any person who submits an application or requests permission to do some act regulated by this Code.

6. Application: The application form provided by the Administering Agency, including the filing fee and any other supporting documents required by the agency.

7. Authorized Representative: A person who is designated by the Administering Agency to administer the provisions of this Code or any Chapter therein.

8. Board of Health: The Board of County Commissioners acting as the Board of Health.

9. Board of County Commissioners: The Board of County Commissioners of Anderson County, Kansas.

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

11. Effluent: The liquid waste discharged from a sewage disposal system.

12. Engineer: A licensed professional engineer and registered with the State of Kansas.

13. Establishment: Any structure or self-contained unit therein,

including single and multiple family dwellings, commercial and industrial buildings, schools, churches, and public institutions.

14. Flood Plain: Land that is subject to inundation as a result of flooding, having a one percent (1%) chance of annual occurrence. Also known as the 100-year Flood Plain

15. Ground Water Table: The upper surface of ground water in the zone of saturation of a geologic formation.

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

17. Industrial and Commercial On-Site Wastewater System: Any approved wastewater collection and/or treatment system for industrial and commercial domestic sewage and certain nonhazardous waste material when approved by the Kansas Department of Health and Environment.

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

19. Permit: The written authorization to perform some act regulated by this Code, including, for example, authorization to construct or authorization to operate.

20. Person: An individual, corporation, partnership, association, State or political subdivision thereof, federal agency, state agency, municipality, commission, interstate body or other legal entity.

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

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

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

24. Private Sewage Disposal System: A wastewater collection and treatment system designed exclusively for the use of a single residential structure or commercial structure solely for domestic sewage not discharged into a stream or waterway.

25. Privy: A biological composting facility used for the disposal of human excreta.

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

27. Schedule of Compliance: A schedule of remedial measures and times, including an enforceable sequence of actions or operations leading to compliance with any regulations or limitation.

28. Sewage: A combination of liquid wastes, which may include chemicals, house wastes, laundry wastes, human excreta, animal or vegetable matter in suspension or solution, and other solids in suspension or solution, which is discharged from a dwelling building, or other establishment.

29. Sewer District: Any County-operated sewer municipal system duly formed, authorized and empowered to plan, construct and operate a public sewer system in accordance with K.S.A. 19-27a01.

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

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

Section 1-2.3 Right of Entry.

The authorized representative of the Administrative Agency shall have the power and authority to enter upon private property to inspect, to examine and to otherwise enforce this code.

Section 1-2.4 Vested Interests.

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

Section 1-2.5 Compatibility with Other Laws.

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

ARTICLE 3: PERMITS AND LICENSES

Section 1-3.0 **Permits, Licenses and Procedures:**

Section 1-3.1 **Permits and Licenses Required**.
No private sewage disposal system shall be installed, removed, altered, repaired or replaced except subject to a permit or license as required by this code.

a. Private Sewage Disposal System - Permit Required. Every person who installs, removes, alters, repairs or replaces or causes to be installed, removed, altered, repaired or replaced any private sewage disposal system or part thereof shall apply for and obtain a permit to perform such work.

b. Sanitary System Contractor - License Required. Every person who contracts for the activity of installing a private sewage disposal facility shall apply for, obtain, and maintain a valid license to perform that activity.

Section 1-3.2 **Application Forms and Procedures**.
Application for a permit or license shall be made on forms provided by the County Planning/Zoning Office for that purpose.

a. Content: The application shall give a description of the character of the work proposed to be done, or activity to be engaged in, and, if appropriate, the locations, ownership, occupancy, and use of the premises in connection therewith. The Administrative Agency shall require plans, specification or drawings and such other information as deemed necessary.

b. Filing: An application for any permit or license required under this Code shall be filed with the Anderson County Planning/Zoning Office.

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

d. The applicant shall be responsible for compliance with the requirements as further set out in this Code.

Section 1-3.3 **Permit/License Issuance; Investigations**

If the Administrative Agency determines that the application complies with the requirements of this code, a permit or license shall be issued.

The Administrative Agency shall issue or deny the permit or license within five (5) working days of receipt of the application provided all requirements for soil profile, percolation tests, site assessment, system designs, and license qualifications have been completed. If the application is denied, the agency shall give the applicant written reason for denial.

The person performing the work authorized by a permit shall notify the Administrative Agency when work is ready for any required inspection. Such notification shall be given not less than one (1) working day before the work is to be inspected.

Section 1-3.4 **Permit Conditions**.

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

a. Right of Access: Any permit issued under this Code shall grant to any representative of the Administrative Agency the right to enter upon any property subject to the permit, at any reasonable time during standard business hours, for the purpose of inspection to determine and ensure compliance with the permit, including reasonable access to and review of records, property or other materials necessary to perform the inspection.

b. Authorized Activity: Each permit or license shall specifically refer to the activity description contained within the permit or license application, and any change in the type, manner, scope or location of any activity shall require application for and modification of the permit or license.

c. Permit Non-Transferable: No permit or license required by this Code shall be transferable to another person or premises.

d. Term Expiration: Each permit or license issued under the authority of this Code shall be for a period not to exceed one (1) year.

e. Renewal: Any permit or license issued under the authority of this Code may be renewed for one or more additional terms upon application for renewal filed with the Anderson County Planning/Zoning Office on a form authorized for that purpose. No

permit or license which has been expired for more than thirty (30) days or which is subject to revocation, for any reason, may be renewed, and such permits or licenses may be reissued only upon the filing of a complete application for a new permit or license. No additional fee shall be charged for a renewal.

f. Errors and Omissions: The issuance of a permit or license shall not prevent the Administrative Agency from requiring the correction of errors in plans and specifications or from revoking any permit or license when issued in error.

Section 1-3.5 **Fee Standard.**

As provided by K.S.A. 19-3702, there shall be a standard fee for the issuance and administration of any permit or license under this Code.

a. Fee Schedule: The schedule of fees shall be established by Resolution passed by the Anderson County Board of County Commissioners.

b. Fee Payment: The fee imposed under this Code shall be paid by the applicant prior to the issuance of any permit or license authorized by the Code.

c. Failure to Pay: Failure to pay any fee imposed by this Code shall be cause for suspension or revocations of any permit or license.

Section 1-3.6 **Administration of State Requirements.**

In the event that any rules, regulations or requirements arising under the Laws of the State of Kansas, whereby the jurisdiction of the state authority is delegated to or administered by the Anderson County, then any permit or license issued or issuable by the State authority shall apply and shall satisfy the permit or license requirements imposed by this Code.

ARTICLE 4: INSPECTIONS AND ENFORCEMENT PROCEEDINGS

Section 1-4.0 **Inspections and Enforcement.**

Section 1-4.1 **Inspections Required.**

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

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

b. Industrial/Commercial On-Site Wastewater Systems: Each industrial or commercial on-site wastewater system hereafter permitted shall be inspected at least once annually to ensure compliance with this Code.

c. Repairs/Replacements and Emergencies: Any replacement or repair to a private sewage disposal system regulated by this Code (other than normal maintenance) which constitutes a structurally significant alteration, shall require a permit and be inspected prior to being placed back into operation. Emergency repairs installed during evening hours or on the weekend shall be reported to the Administrative Agency within twenty-four (24) hours with an application for a permit, when required.

Section 1-4.2 **Inspection Reports.**

A written inspection report shall be made for all inspections conducted under the authority of this Code. The report shall enumerate all findings made during the inspection and indicate compliance or noncompliance with the approved system design.

A copy of the completed report shall be issued to the holder of the permit.

Section 1-4.3 **Inspection Scheduling and Reinspections.**

Whenever inspections are required under this Code to be scheduled for any installation, construction, initial activity, or for correction of any violation or other non-conforming condition, it shall be the duty of the holder of the permit or license to promptly notify the Administrative Agency and schedule the time and date for the inspection or reinspection.

A reinspection fee shall be assessed if the work is not complete or if the corrections required are not made and a subsequent inspection is required.

Section 1-4.4 **Property Resale, Courtesy Inspections.**

Whenever any property connected to, or served by, a private sewage disposal system is offered for or subject to a contract of sale, at the request of the property owner or contract buyer, the Administrative Agency may provide a courtesy inspection, to inspect and determine the condition of the system. Any inspection provided under this section shall be performed as a courtesy only and shall not constitute nor be deemed a warranty, and neither the Administrative Agency nor any other official of the County shall be liable for any failures of the system or for other claims arising out of the inspection. Upon completion of the inspection, a certificate shall be issued to the property owner reporting the results. Issuance of the certificate shall not relieve any person of compliance with the requirements of this Code.

Section 1-4.5 **Emergency Order.**

The Administrative Agency may issue such order or directive as deemed necessary to prevent, contain or eliminate an obvious violation of this Code or an imminent threat to the public health, safety or general welfare of the public.

a. Health Risk: Whenever a duly appointed representative of the Administrative Agency determines that a condition exists with a private sewage disposal system which requires immediate action to protect the public health, the Administrative Agency may issue an emergency order stating the nature of the threat to public health, safety or general welfare and directing that action be taken as necessary to eliminate or minimize such condition. Such emergency order shall be in writing and shall be effective immediately upon issuance.

b. Work Stoppage: Whenever any work is being performed on a private sewage disposal system that is contrary to the provisions of this Code, the Administrative Agency representative may order the work stopped immediately by issuing an emergency order and serving it on any person engaged in the doing or causing such work to be done.

c. Compliance: Any person to whom an emergency order is directed shall comply therewith immediately, but may appeal such order within five (5)

days of issuance. A hearing before the Hearing Officer shall be held within ten (10) days of the issuance of such emergency order as provided in Section 1-6.1 through Section 1-6.4 (Appeals).

Section 1-4.6 **Suspension of Permit or License.**

The Administrative Agency may suspend any permit or license that it issues if the holder thereof does not comply with the requirements of this Code. The suspension shall be in writing and shall become effective immediately. The holder or other aggrieved party may appeal such suspension within five (5) days of issuance. A hearing before the Hearing Officer shall be held within ten (10) days of the issuance of such suspension as provided in Section 1-6.1 through Section 1-6.4 (Appeals).

Section 1-4.7 **Revocation of Permit or License.**

The Administrative Agency may revoke a permit or license for serious or repeated violations of any of the requirements of this Code or for interference with the Administrative Agency in the performance of its duties.

Prior to revocation, the Administrative Agency shall notify, in writing, the holder of the license or permit, of the specific reason(s) for which the permit or license is to be revoked. The holder or aggrieved party may appeal such revocation within five (5) days of issuance. A hearing before the Hearing Officer shall be held within ten (10) days of the issuance of such revocation as provided in Section 1-6.1 through Section 1-6.4 (Appeals).

Section 1-4.8 **Abatement of Nuisances.**

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

ARTICLE 5: ENFORCEMENT, VIOLATIONS AND PENALTIES

Section 1-5.0 **Enforcement Procedures.**

Section 1-5.1 **Enforcement.**

The County Attorney or County Counselor shall enforce the provisions of this Code and other Sanitary codes as authorized by State or Federal law, rule or regulation which are applicable to and administered by the County. The County Attorney or County Counselor shall file appropriate actions for enforcement within sixty (60) days of receiipt of a request from the Administrative Agency. Actions of injunction or writ of mandamus may be utilized for enforcement of this code as governed by the provisions of the Kansas Code of Civil Procedures.

Section 1-5.2 **Violations.**

The following acts shall be deemed violations of this code:

a. Obstruction of Administering Agency: No person shall willfully impede or obstruct a representative of the Administrative Agency in the discharge of official duties as set forth under the provisions of this Code.

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

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

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

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

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

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

h. Failure to Repair or Correct: No person shall fail or refuse to repair or correct any defect, deficiency or other condition, whether natural or otherwise, in any private sewage disposal system which has caused, or has been determined by the Administrative Agency likely to cause, any improper discharge or other health hazard, unsanitary condition, or unlawful pollution.

Section 1-5.3 **Administrative Action.**

The Administrative Agency may issue an order requestiing that the property be vacated and all activities associated with the use of or the installation of facilities, found or determined to be in violation of this code, to cease immediately.

Section 1-5.4 **Penalties.**

Any violation of any provision or requirement of this Code or the commission of any unlawful act or conduct specified in this Article shall be deemed to be a misdemeanor under the codes and regulations of Anderson County, Kansas, and punishable upon conviction by a fine of not less than two hundred dollars ($200.00) for each offense. Each day's violation shall constitute a separate offense.

ARTICLE 6: APPEAL, VARIANCE HEARINGS

Section 1-6.0 **Hearings for Appeals/Variances.**

Section 1-6.1 **Application for Appeal:**
Except as otherwise provided by this Code, any person aggrieved by any notice, order, revocation, suspension or denial of a permit or license by the Administrative Agency, may request an appeal hearing on such matter. The appeal must be filed within five (5) days of receiving the notice, order, revocation., suspension or denial of the permit or license, and shall be filed with the Hearing Officer on forms provided by the County Planning/Zoning Office for that purpose, and setting forth all grounds on which the appeal is made. The filing of an appeal shall operate as a stay of any order, notice, revocation, suspension or denial, except an emergency order.

Section 1-6.2 **Appeals Hearing.**
Upon receipt of the appeal request, the Hearing Officer shall set a time and place for a hearing, and shall give the petitioner written notice thereof. The hearing shall be held no later than ten (10) days after the date on which the request for hearing was filed. However, upon request of the aggrieved party, the hearing may be postponed for a reasonable time beyond such 10-day period.

A record shall be made at the hearing, and the aggrieved party may be represented by counsel or other authorized person. The Administrative Agency shall have the burden to sustain any notice, final order or other decision subject to the appeal.

Section 1-6.3 **Decision on Appeal.**
Within five (5) days after the conclusion of the appeal hearing, the Hearing Officer shall issue a written decision to the petitioning party. That decision may sustain, modify or deny the decision of the Administrative Agency.

A summary of the hearing, including the findings and any decision or order related thereto, shall be filed with the Administrative Agency.

Section 1-6.4 **Decision on Appeals Affecting State Requirements.**
The appeal of any final decision or action of the Administrative Agency which is taken under the authority of the laws of the State of Kansas shall be subject to and conducted in accordance with the Kansas

Administrative Procedures Act, K.S.A. 77-501, et seq. The provisions of that Act shall supersede any and all time limitations and procedures otherwise specified in this Code.

Section 1-6.5 **Variance Application.**

Any person who owns a lot or tract of land, which has been recorded or platted prior to the effective date of the Code, may apply for a variance from the minimum lot size requirements established by this Code for the installation, use or operation of a private sewage disposal system. The variance application shall be filed with the Hearing Officer on forms provided by the County Planning/Zoning Office for that purpose and setting forth the grounds and justification for the variance request.

Section 1-6.6 **Variance Hearing.**

Upon receipt of the variance request, the Hearing Officer shall set a time and place for a hearing, and shall give the petitioner written notice thereof. The hearing shall be commenced no later than ten (10) days after the date on which the request for hearing was filed. However, upon request of the party requesting the variance, the hearing may be postponed for a reasonable time beyond such 10-day period.

A record shall be made at the hearing, and the party requesting the variance may be represented by counsel or other authorized person. The party requesting the variance shall have the burden of showing that a sewage disposal system will meet the provisions of this Code and that granting of the variance will not adversely impact surrounding properties.

Section 1-6.7 **Decision on Variance.**

Within five (5) days after the conclusion of the variance hearing, the Hearing Officer shall issue a written decision to the petitioning party and shall include any findings justifying the decision.

A summary of the hearing, including the findings and the decision of the Hearing Officer, together with a copy of every notice related thereto, shall be filed with the Administrative Agency.

CHAPTER 2: SEWAGE DISPOSAL SYSTEMS

ARTICLE 1: GENERAL PROVISIONS

Section 2-1.0 **Sewage Disposal Requirements, Rule Exceptions and Policy.**

Section 2-1.1 **Purpose and Scope.**
It is the purpose of this Chapter to provide minimum standards for the sanitary disposal of all sewage generated or transported within Anderson County, unless otherwise regulated by competent authority. All sewage must be disposed of by the use of a sanitary sewer system as defined in this Code. A sanitary sewer system may be classified as either a public sewage disposal system or a private sewage disposal system.

Section 2-1.2 **Requirement for Subdivision Development.**
After the adoption of this Code, no person shall develop any subdivision until the plans and specifications for on-site wastewater management have been approved by the Anderson County Engineer's Office, the Anderson County Planning Commission, the Anderson County Commissioners and, when required, by the Kansas Department of Health and Environment.

Section 2-1.3 **Definitions.**
Unless the context requires or specifies otherwise, the following words, terms or phrases, as used in this Code, shall be given the meaning defined in this Section.

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

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

c. Aerobic Sewage Treatment System: A private sewage disposal system employing biological action that is maintained by the addition of air or oxygen.

d. Alternative On-Site Sewage Management System: Any on-site

sewage management system which has proven reliability and performance in field use, but differs in design or operation from conventional approved septic tank and absorption systems.

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

f. Bedrock: A soil horizon that contains greater than 50% consolidated material, by volume.

g. Cesspool: Cesspool means a "drywell" that receives solely untreated sanitary waste, and which sometimes has any open bottom and/or perforated sides. Drywell means a well, other than an improved sinkhole or subsurface fluid distribution system, completed above the water table so that its bottom and sides are typically dry except when receiving fluids.

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

i. Hearing Officer: The Anderson County Engineer shall serve as the Hearing Officer to review and consider variances, rule exceptions and appeals.

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

k. Installer: Any person who is licensed to construct, install and/or repair private sewage disposal.

l. Lagoon or Sewage Lagoon: An artificial pond designed to exclude surface water and receive domestic wastewater through a submerged sewer for biological decomposition. (Also see "Wastewater Stabilization Pond".)

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

n. Mound System: An alternative above-ground system used to absorb

effluents from septic tanks in cases where limited capabilities prevent conventional subsurface absorption systems.

o. Private Sewage Disposal System: A sanitary sewage system which retains sewage generated by an individual establishment on the same premises as the establishment and such sewage is treated on site.

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

This includes, but is not limited to:

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

(2) For regulatory purpose, holding tanks serving commercial, retail or industrial establishments.

q. Sanitary Disposal Contractor: Any person, firm, company or corporation licensed to design or install sanitary disposal facilities for a fee.

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

s. Seepage Pit: A hole lined and filled with stone or other inert material such as broken brick used for disposal of household wastewater, usually preceded by a septic tank.

t. Septic Tank: A watertight, accessible, covered receptacle designed and constructed to receive sewage in which the following processes take place: settling of the solids; and the digestion of some of the accumulated solids by anaerobic action.

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

1. Replacement, repair or extension of any portion of the lateral field of the system; and/or

2. Replacement, repair or reconstruction of any one or more of the critical parts of the system, as designated by the Administrative Agency; and/or

3. Any replacement, repair or reconstruction which the Administrative Agency has determined to be an essential repair in order to correct or prevent an improper discharge or imminent health hazard or unlawful pollution.

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

w. Water Table Zone: A zone in the soil that is saturated continually or seasonally with water.

Section 2-1.4 **Rules of Application.**

The requirements established by this Code shall apply and be applicable to any and all public and private sewage disposal systems now or hereafter installed used or operated upon any property located within the unincorporated areas of Anderson County, Kansas.

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

b. Existing Domestic Waste Treatment Systems: Any private sewage disposal system, except for seepage pits or cesspools, lawfully installed prior to the effective date of this Code and used exclusively for domestic sewage may remain in use provided:

1. It continues to operate in accordance with the original design and location,

2. Does not experience any system failure,

3. Does not present any hazard to the public health, safety or welfare.

4. Seepage pits and cesspools are prohibited and are not considered as an acceptable sewage disposal system

c. Existing Industrial and Commercial On-Site Wastewater Systems:

1. Discharge of industrial or commercial waste, other than domestic waste, to a soil absorption system is prohibited. Any soil absorption systems in use at the time of adoption of this Code shall be referred to the Kansas Department of Health and Environment to assure compliance with state and federal requirements.

2. Industrial and/or commercial wastes collected and retained on site using holding tanks at the time of adoption of the code shall be subject to all Kansas Department of Health and Environment permit and inspection requirements.

3. Those industrial or commercial systems that are used exclusively for domestic wastes may remain in use, subject to at least one (1) annual inspection, as long as the system is used only for domestic waste treatment and complies with the requirements of this Code.

d. Existing Tracts and Lots of Record: The owner of any tract or lot of record on the effective date of this Code which contains sufficient size or acreage to satisfy the minimum lot size requirements for any permit specified under this Code, may apply for a permit provided:

(1) The tract or lot size is at least three (3) acres; or has been granted a rule exception as provided in Article 1; and
(2) The installation and use of the system shall be exclusively for domestic wastes and will comply with all other requirements of this Code; and
(3) The lot is located in a plat which has received final plat approval on or before the effective date of this Code or the lot or tract is not platted but is duly recorded as a lot or tract of record prior to the effective date of this Code; and
(4) The lot or tract is not located within the boundaries of any approved sewer district.

Section 2-1.5 **Rule Exceptions.**

The owner of any land or the user of any on-site sewage disposal system regulated by this Code may apply for any exception to any standard, specification, rule or regulation other than lot size required by

this Code.

a. Application: Application for any rule exception under this Section shall be filed with County Engineer's Office on approved and authorized forms and shall contain the following information:

1. The name of the applicant.
2. The name of the property owner if different than the applicant.
3. The address and legal description of the property.
4. The zoning and land use for the property.
5. The express rule, regulation or requirement for which exception is sought.
6. A detailed description of the alternative plan, action, or other specification which is proposed to the rule requirement.

b. Report and Final Decision: Upon receipt of an application for a rule exception under this Section, the County Engineer's Office shall evaluate the application and may conduct such site inspections or other investigations including additional facts, information or tests as deemed appropriate. The County Engineer shall prepare a written report and decision on the Rule Exception Request within seven (7) days after receipt of the application. A copy of the report and recommendation shall be sent to the applicant and to any appropriate interested person or party.

c. Standards for Review: The person applying for any rule exception shall have the responsibility to demonstrate that the exception is justified and necessary. No rule exception shall be granted unless it is found and determined that:

1. The rule or requirement for which an exception is sought cannot practically be met as applied to the property without extreme and undue hardship; and

2. The rule exception will not adversely affect the proper and efficient operation of the private sewage disposal system nor require extraordinary monitoring, care or maintenance; or

3. The system, as proposed, will comply with all other applicable rules, regulations or requirements and will not cause nor result in any identifiable risk to the environment or public health.

ARTICLE 2: PUBLIC SEWAGE DISPOSAL SYSTEMS

Section 2-2.0 **Public Systems.**

Section 2-2.1 **Regulation of Public Sewer Systems.**

Any public sewage disposal system which is maintained and operated by a public sanitary sewer district, or by a public improvement district authorized by the State of Kansas or the United States and located in whole or part within Anderson County, Kansas, shall be built and operated only as permitted by the rules and regulations of the Kansas Department of Health and Environment and the United States Environmental Protection Agency. Said system shall comply with and be governed by such laws, rules, regulations and administrative actions.

Section 2-2.2 **Policy Regarding Public Sewage Disposal Systems.**

When it is determined that private sewage disposal systems are not feasible due to unsuitable soil conditions, high ground water table, bedrock being close to the surface of the ground, and/or the density of the proposed development warrants, it is the policy of the Anderson County Commission to require public sewage disposal systems. Where a public system is required, a sanitary sewer district shall be formed pursuant to K.S.A. 19-27a01 et seq. The cost of installation, maintenance, and operations of sewer district and system shall be borne by those properties and/or persons being served by the system.

Section 2-2.3 **Types of Public Wastewater Disposal Systems.**

Public sewer systems shall be of the following types:

a. Conventional Gravity Flow Collection Systems: Where collection of waste from the point of origin is delivered by gravity to a place of treatment. Treatment may include a number of standard and alternative options designed in accordance with professional engineering practices and approved by the Kansas Department of Health and Environment.

b. Alternative Wastewater Treatment/Disposal: The Septic Tank Effluent Pump (STEP) system is a pressure sewer system recognized for alternative use as a wastewater collection

system. Treatment from STEP systems may involve the use of lagoons, sand filtration beds, constructed wetlands, a package treatment plan or other treatment methods as recommended by a professional engineer and approved by the Kansas Department of Health and Environment.

c. Other: Any other type of public wastewater disposal system approved by the Kansas Department of Health and Environment and accepted by the Anderson County Board of County Commissioners.

ARTICLE 3: PRIVATE SEWAGE DISPOSAL SYSTEM

Section 2-3.0 **Private Systems.**

Section 2-3.1 **Types.**

Private Sewage Disposal Systems are classified as being one of the following:

(1) Septic Tank
(2) Mound System
(3) Lagoon (waste stabilization pond)
(4) Waterless Toilet (Privy)
(5) Holding Tank
(6) Other

Section 2-3.1 **Maintenance and Operation of Private Sewage Disposal Systems .**

All private sewage disposal systems shall be maintained in good working condition and shall not discharge at the surface of the ground, or into the groundwater, or drain into any stream, pond, lake or roadside ditch, or produce any offensive odors. Surfacing of effluent or evidence of effluent contamination in any stream or groundwater supply will indicate system failure.

Whenever the Administrative Agency shall find any private sewage malfunctioning and causing any prohibited condition, it shall order the owner and/or user to correct the condition within thirty (30) days.

Section 2-3.2 **Connections to Public Sewage Disposal Systems.**

To the extent feasible, public sewage disposal systems shall be encouraged for the disposal of sewage within Anderson County. No private sewage disposal system shall be permitted under this Chapter whenever a public sewage disposal system is within four hundred feet (400') of the property to be served. Whenever any property is served by a private sewage disposal system, said system shall connect to a public system as provided:

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

b. Extensions or Waivers. The requirement for connection to a public sewage disposal system lot may be waived, or the time extended, by official action of the Board of County Commissioners, where it can be established by the owner that the required connection would result in undue hardship.

Section 2-3.3 **Repairs/Replacement.**

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

Section 2-3.4 **Location of Private Wastewater Systems Below Flood Elevation.**

a. No portion of a private wastewater system shall be located below the flood elevation of any pond, lake, or water supply reservoir with the potential to inundate the wastewater system.

b. No pond, swimming pool or similar facility shall be constructed or maintained so as to discharge water or grey water into any on-site wastewater disposal system.

Section 2-3.5 **Location of Private Wastewater Disposal Systems Within a Floodplain.**

No portion of a private wastewater disposal system shall be constructed within the "*Special Flood Hazard Areas*" (100 year Floodplain) as shown on the Flood Hazard Boundary Maps, dated December 13, 1977 and prepared for the Federal Insurance Administration.

Existing systems located within the "*Special Flood Hazard Areas*" may be repaired, provided all other requirements of this Code are met.

ARTICLE 4: REGULATIONS FOR SEPTIC TANK SYSTEMS

Section 2-4.0 **Septic Systems.**

Section 2-4.1 **Permits Required.**
It shall be unlawful for any person, firm, or corporation to erect, construct, remove, convert, demolish or perform any structurally significant alteration, any septic system regulated by this Code, without first obtaining a permit.

Permits issued under this Article shall be subject to the following qualifications:

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

b. Minimum Lot Size. Unless a waiver or rule exception is granted pursuant to Article 1 of this chapter, the minimum lot size for septic systems shall be three (3) acres or as required by the Anderson County Zoning Regulations.

c. Terms and Renewals. Any permit issued for a septic system shall be valid for a period of twelve (12) months following the date of issuance and may be renewed as provided in Section 1-3.4.e. of this Code.

d. Transfer. Permits issued under this Code shall not be transferable.

e. Standards. No permit shall be issued to any person, property, or establishment that does not comply with and satisfy the specified requirements of this Code.

Section 2-4.2 **General System Requirements.**
The septic system shall be designed to receive all domestic sewage, including laundry waste. The design of the system shall ensure that any waste which is discharged from the private sewage disposal system:

a. Does not contaminate any drinking water.

b. Does not contaminate the water of any pond or stream.

c. Does not surface above ground level.

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

children.

e. Does not give rise to a nuisance due to odor or unsightly appearance.

Section 2-4.3 **Application Procedure**.

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

a. Identify and describe the activity for which permission is requested. (e.g., new construction, addition or repair, etc.)

b. Identify the location for which permission is requested and provide legal description and street address (if available).

c. Be accompanied by a site assessment for each site location as specified, to be performed according to the procedures described in Appendix "A" of this Code (Septic Systems).

d. Be accompanied by a system design to be done in conformance with the recommendations of the site assessment. The system design shall include the required laterals, septic tank size and home bedroom number.

e. Be signed by the owner of the premises where the activity is to be conducted, or his or her duly authorized representative.

Section 2-4.4 **Plans and Specifications.**

Plans and specifications shall include, but not be limited to the following information:

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

b. Proposed location of the sewage disposal system.

c. Proposed location of a replacement area for the sewage disposal system.

d. Location of the soil profile sites, when required by the Administrative Agency.

A set of approved plans shall be retained by the Administrative Agency.

Section 2-4.5 **Inspection Required for System Approval.**

No septic system shall be placed into service for use of any residence to be connected to such system until the system has been inspected and approved by the Administrataive Agency.

The applicant or property owner shall provide a minimum of one (1) working day notice to the Administrative Agency to perform any request for a septic system inspection.

Section 2-4.6 **Construction and Installation Specifications.**

All septic systems shall be designed and installed in conformance with the minimum design standards for septic tank/lateral fields "established by the Kansas Department of Health and Environment pursuant to Kansas Administrative Regulations K.A.R. 28-5-6 to 28-5-9 and the provisions set forth in Appendix "A" Septic Systems of this Code.

ARTICLE 5: REGULATIONS FOR MOUND SYSTEMS

Section 2-5.0 **Mound Systems.**

Section 2-5.1 **Permits Required.**

It shall be unlawful for any person to erect, construct, remove, convert, demolish or perform any structurally significant alteration, on any mound disposal system without first obtaining a permit.

Permits issued under this Article shall be subject to the following:

a. Land Use: A mound system may be permitted or operated only for single-family residences.

b. Minimum Lot Size: Unless a waiver or rule exception is granted pursuant to Article I of this Chapter a minimum lot or tract size of three (3) acres per living unit shall be required for use, operation or permittence of any mound system under this Article.

c. Terms and Renewals: A permit shall be valid for a period of twelve (12) months following the date of issuance and may be renewed as provided in Section 1-3.4.e. of this Code.

d. Transfer: Permits issued under this Code shall not be transferable.

e. Standards: Any mound system permitted or operated under authority of this Article shall comply with the standards prescribed in this Article and all applicable terms, conditions and requirements of this Code.

Section 2-5.2 **General Requirements and Standards.**

Mound systems shall not be permitted in soils with high groundwater or with bedrock within twenty-four inches (24") of the surface. All mound systems shall be designed by a Registered Professional Engineer and approved by the Administrative Agency.

ARTICLE 6: REGULATIONS FOR WASTE STABILIZATION PONDS

Section 2-6.0 **Waste Stabilization Ponds (Lagoons).**

Section 2-6.1 **Permit Required.**

It shall be unlawful for any person, firm, or corporation to erect, construct, remove, convert, demolish or perform any structurally significant alteration on any lagoon regulated by this Code, without first obtaining a permit from the Administrative Agency. The use of an individual waste stabilization pond for a private sewer system, usually referred to as a lagoon, will be considered where it is determined that a septic tank/lateral field disposal system or other alternative system is not practical. Permits issued under this Article shall be subject to the following qualifications:

a. Land Use: Permits may be issued under this Article only for resident purposes.

b. Minimum Lot Size: Unless a waiver or rule exception is granted pursuant to Article 1 of this chapter, the minimum lot size for lagoon systems shall be three (3) acres or as required by the Anderson County Zoning Regulations.

c. Terms and Renewals: A permit issued shall be valid for a period of twelve (12) months following the date of issuance and may be renewed as provided in Section 1-3.4.e. of this Code.

d. Transfer: Permits issued under this Code shall not be transferable.

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

Section 2-6.2 **General System Requirements.**

The lagoon system shall be designed to receive all domestic sewage, including laundry waste. The installation and design of the system shall ensure that:

a. The completed construction of the facility shall conform to the plans and specifications approved by the County Engineer's Office.

b. The facility is maintained so as not to overflow or discharge into the ground.

c. That the facility is operated in such a manner that a public nuisance problem will not arise.

d. That the facility does not contaminate the water of any pond or stream.

e. That the facility is fenced and said fencing is maintained so as not to be exposed or accessible to animals or children.

Section 2-6.3 **Application Procedure.**

The person applying for a lagoon system shall file an application in writing, on a form furnished by the Administrative Agency. The application shall:

a. Identify and describe the activity for which permission is requested. (e.g., new construction, addition or repair, etc.)

b. Identify the location for which permission is requested and provide legal description and street address (if available).

c. Be accompanied by a site assessment for each site location as specified, to be performed according to the procedures described in Appendix "B" of this Code (Lagoon Systems).

d. Be accompanied by a system design to be done in conformance with the recommendations of the site assessment. The system design shall include the sewer line size, location and cleanouts, number of home bedrooms, when applicable, and size of the lagoon.

e. Be signed by the owner of the premises where the activity is to be conducted, or his/her duly authorized representative.

Section 2-6.4 **Plans and Specifications.**

Plans and specifications shall include, but not be limited to the following information:

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

b. Proposed location of the sewage disposal system.

c. Proposed location of a replacement area for the sewage disposal system.

d. Location of the soil profile sites, when required by the Administrative Agency.

A set of approved plans shall be retained by the Administrative Agency.

Section 2-6.5 **Inspection Required for System Approval.**
No lagoon system shall be placed into service until the system has been inspected and approved by the Administrative Agency.

The applicant or property owner shall provide a minimum of one (1) working day notice to the Administrative Agency to perform any request for inspection.

Section 2-6.6 **Construction and Installation Specifications.**
All waste stabilization ponds (lagoon systems) shall be designed, installed and constructed in conformance with the minimum design standards for "wastewater stabilization ponds" as may be established by the Kansas Department of Health and Environment, and those provisions set forth in Appendix "B" (Lagoon Systems) of this Code.

ARTICLE 7: REGULATIONS FOR WATERLESS TOILETS (PRIVIES)

Section 2-7.0 **Waterless Toilets**

Section 2-7.1 **Permit.**

No waterless toilet or privy shall be permitted to serve any residential use. Privies may be permitted which serve seasonal uses such as campgrounds, etc., subject to the approval of a Special Use Permit and any conditions as may be required.

Other types of waterless toilets, i.e. chemical or dry, shall be allowed only as temporary facilities for use during construction subject to approval of such facilities from the Administrative Agency.

All other waterless toilets shall be prohibited.

ARTICLE 8: REGULATIONS FOR HOLDING TANKS

Section 2-8.0 **Holding Tanks.**

Section 2-8.1 **Scope.**
For purposes of this Article, the term "Holding Tank" refers to a watertight receptacle to retain sewage on-site prior to removal from the site by a licensed Sanitary Disposal Contractor.

Section 2-8.2 **Authorized Usage.**
A holding tank may be used for the on-site retention of sewage for commercial or industrial uses, for RV parks, mobile home parks or campgrounds where it has been determined that no alternative sewer system will work or is available.

Any holding tank which serves more than one (1) commercial or industrial use or more than one (1) RV, mobile home, cabin or camp site, shall be considered a public sewage disposal system and shall not be permitted under this Code.

Section 2-8.3 **Permit Required.**
It shall be unlawful for any person, firm or corporation to construct, perform any structurally significant alteration, convert or use any holding tank without first obtaining a permit from the Administrative Agency. Said permit application must include evidence of a service contract with a licensed Sanitary Disposal Contractor prior to approval of a permit.

Section 2-8.4 **General Requirements.**
The system shall be designed to consist of a holding unit and required connection(s). The design of the system shall ensure that waste discharged to the system:

a. Does not contaminate any groundwater or drinking water.

b. Does not contaminate the waters of any stream.

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

d. Does not give rise to a nuisance due to odor or unsightly appearance.

Section 2-8.5 **Permit Qualifications.**

Any permit authorized under this Article shall be issued subject to the qualifications specified in this Section.

a. Standards. No permit shall be issued to any person, property, or establishment that does not comply with the specifications prescribed in the Article and all applicable terms, conditions, and requirements of this Code.

b. Transfer. Permits for holding tanks are not transferable.

c. Sanitary Disposal Contractor. No permit shall be issued unless the owner has a written contract with a licensed Disposal Contractor. The contract shall state when the disposal of all waste is to take place.

d. Term and Renewal. Permits for holding tanks used for commercial or industrial domestic wastes are valid for twelve (12) months from the date of issuance and are renewable annually. Applications for renewals shall be submitted no later than thirty (30) days before permit expiration with the applicable fee. Upon receipt of the application and fee, a permit will be issued for the following year.

Section 2-8.6 **Specifications.**

Any holding tank system authorized under this Article shall be designed, constructed and operated to comply with specifications deemed necessary and advisable by the Administrative Agency, including the minimum requirements specified in this Section.

a. Capacity: Tanks serving commercial or industrial establishments shall have a minimum five (5) day holding capacity, but not less than twenty-five hundred (2,500) gallons. Tanks serving non-commercial or industrial uses shall have a minimum seven (7) day holding capacity, but not less than fifteen hundred (1500) gallons.

b. Site Location: Tanks shall be located at least ten feet (10') from any part of a building. Holding tanks shall be located with access to an all-weather road or drive to provide access for pumping equipment.

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

d. Access Opening: Each tank shall have an access manhole with a minimum twenty (20) inch diameter opening. In addition, each tank

shall have a four (4) inch stand pipe to access pumping services.

Section 2-8.7 **Changes in Use.**
The permit holder shall notify the Administrative Agency in writing within five (5) working days of any change in the use of the premises which are serviced by the holding tank or any change in ownership or occupancy of the premise.

ARTICLE 9: REGULATIONS FOR SANITARY WASTE DISPOSAL SERVICE

Section 2-9.0 **Sanitary Waste Disposal Service.**

Section 2-9.1 **Sanitary Waste Disposal Service License.**
Any person, firm, company or business engaged in the pumping or cleaning of a private sewage disposal system or transporting sewage, must hold a valid Sanitary Waste Disposal Service License. Employees of a validly licensed Sanitary Disposal Service contractor are not required to be separately licensed. The license shall also designate the vehicles to be used by the licensee.

Section 2-9.2 **License Term and Renewal.**
Applications for a waste disposal service license or renewal shall be filed with the Administrative Agency on forms provided by the Agency. A license filing fee, as established by the County Commissioners, shall be paid at the time of application. No fee required by this Article shall be refunded or prorated for any portion of the year. Any license issued under this Article shall expire on December 31 of the year issued, and must be renewed annually on or before January 15 of the following year.

Section 2-9.3 **License Requirements.**
Every person licensed as a sanitary waste disposal service contractor shall comply with the following requirements:

a. All sanitary waste disposal service vehicles used in providing sanitary waste disposal services shall be licensed and insured in accordance with the requirements of K.S.A. 8-126 to 8-149 and K.S.A. 40-3104 et seq.

b. All sewage shall be transported in enclosed tanks. Any tank used in conjunction with sanitary waste disposal shall be of water-tight construction, maintained in good working condition and provided with hoses, couplings, valves, pumps and other equipment to ensure that all removed material is transported to a disposal site without spillage onto roads or private property. After use, hoses shall be capped or plugged.

c. Sewage shall be transported only in vehicles approved for that purpose by the Administrative Agency. Any vehicle approved for such use shall bear the name of the company, name of owner and address of the company/owner in letters five (5) inches or better in height. Such vehicle must be inspected prior to the licensing of any

Sanitary Waste Disposal Service.

d. The license holder shall dispose all collected sewage only at approved locations acceptable by the Administrative Agency. Said license holder shall submit a written monthly report to the Administrative Agency stating the dates, source, volume and disposal site of all waste transported for that reporting month. The report must include the signature of the responsible person operating the disposal site for all waste received at the site from the license holder.

e. The license holder shall comply with any applicable federal, state and local regulations for the disposal of sewage and sludge.

Section 2-9.4 **<u>License Revocation</u>.**

A Sanitation Waste Disposal Service license may be revoked by the Administrative Agency for failure to comply with any provision of this Code. The revocation procedure, including any appeal, shall comply with the provisions of Sections 1-4.7 and 1-6.1 of this Code.

ARTICLE 10: REGULATIONS FOR PRIVATE SANITATION SYSTEM INSTALLER

Section 2-10.0 **Private Sanitation Systems Installation.**

Section 2-10.1 **License Required.**

Any person, firm, company or business engaged in the installation of, or repair a private sewage disposal system must hold a valid Sanitation System Installer License. Employees of a validly licensed Installer are not required to be separately licensed.

Section 2-10.2 **License Term and Renewal.**

Applications for an Installers license or renewal shall be filed with the Administrative Agency on forms supplied by the Agency. A license filing fee, as established by the County Commissioners, shall be paid at the time of application. No fee required by this Article shall be refunded or prorated for any portion of a year.

Any license issued under this Article shall expire on December 31 of the year issued and must be renewed annually, on or before January 15 of any following year.

Section 2-10.3 **License Requirements.**

a. Prior to the issuance or renewal of an Installers license, the applicant shall provide evidence of liability and workmanship insurance and a copy of the certificate of insurance shall be filed with the Administrative agency.

b. In addition to proof of insurance, the Administrative Agency may establish a requirement for bonding of any installer and may prescribe reasonable terms and conditions for said bonds.

c. Installers shall comply with all Federal, State and local requirements, including the provisions of this Code for the installation of any private sanitation disposal system.

Section 2-10.4 **License Revocation.**

A Sanitation Installers license may be revoked by the Administrative Agency for failure to comply with any provisions of this Code. The revocation procedure, including any appeal, shall comply with the provisions of Sections 1-4.7 and 1-6.1 of this Code.

CHAPTER 3: WATER SUPPLY

ARTICLE 1: GENERAL PROVISIONS

Section 3-1.0 **Water Supply Requirements and Permits.**

Section 3-1.1 **Purpose and Intent.**
It is the purpose of this Chapter to protect the public health and safety and to ensure that measures are implemented to protect water resources from contamination and pollution by establishing regulations and controls for the development, maintenance and use of private or semipublic water supplies throughout the unincorporated areas of Anderson County.

Section 3-1.2 **Compliance Required.**
After the effective date of this Code, no person shall construct any semi-public or private water supply that does not comply with the requirements of this Code.

Section 3-1.3 **Definitions.**
In addition to the definitions provided in Chapter 1 of this Code, the words, terms and phrases listed below, for purpose of this Chapter 3, are defined as follows:

a. Potable Water. Water that is free from impurities, including bacteria, so as to be acceptable for human consumption and conforming with KDHE regulations.

b. Domestic Purpose. Water used by any person or family unit or household for household purposes, or for the watering of livestock, poultry, farm or 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.

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

d. Semi-Public Water Supply. A water supply used for domestic purposes serving two (2) to nine (9) residential units (rental or under separate ownership) on a piped system and serving less than twenty-five (25) persons per year.

e. Private Water Supply. A water supply used for domestic purposes which serves not more than one (1) dwelling.

f. Water District. Any special district authorized and empowered by state statutes to plan, construct and/or operate a public water supply system.

g. Abandoned Water Well. A well:

(1) Which has been permanently discontinued from use;
(2) From which the pumping equipment has been permanently removed;
(3) Which is in such a state of disrepair that it cannot be used to supply water;
(4) Which possesses potential health and safety hazards; or
(5) Which is in such a condition it cannot be placed in active or inactive status.

h. Test Hole. Any excavation dug or drilled for the purposes of determining the geologic and hydrologic and water quality characteristics of underground formations.

i. Treatment. The stimulation of groundwater produced from a water well, through use of Hydrochloric Acid, Muritic Acid, Sulfamic Acid, Calcium or Sodium Hypochlorite, polyphosphates or other chemicals and mechanical means, for the purpose of reducing or removing Iron and Manganese Hydroxide and oxide deposits, Calcium and magnesium carbonate deposits and slime deposits associated with iron or manganese bacterial growth which inhibit the movement of groundwater into the well or water quality characteristics.

j. Active Water Well. An operating well used to withdraw water, monitor or observe groundwater conditions.

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

l. Inactive Water Well. A water well which is not presently operating but is maintained in such a way it can be put back into operation with a minimum of effort.

m. Groundwater. That part of the subsurface waters which is in the zone of saturation.

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

o. Construction of Water Wells. All acts necessary to obtaining groundwater, without limitation, including the location of and excavation.

Section 3-1.4 **Requirements for Public Water Supplies.**

a. State Permit. No person shall operate a public water supply without obtaining a permit from KDHE. A copy of the permit shall be filed with the Administrative Agency.

b. State Approved Plans. No person shall construct any public water supply on any property subject to the provisions of this Code until the plans and specifications have been submitted to and approved by KDHE. A copy of the plans and specifications shall be filed with the Administrative Agency.

Section 3-1.5 **Requirements for a Semi-Public Water Supply.**
No person shall use a semi-public water supply system until a permit has been issued by the Administrative Agency and the following requirements have been met.

a. An initial and at least annual bacterial analysis.

b. An initial and at least annual nitrate analysis.

c. A partial chemical analysis for common inorganic chemicals and common positive and negative charged minerals is to be done initially and every three (3) years thereafter.

d. Other tests such as a fecal coliform analysis and a screen for pesticides, volatile organic chemicals, and heavy metals may be required, at the direction of the Administrative Agency.

e. The water samples shall be collected by the Administrative Agency or its designee and sent to a state certified laboratory for analysis.

f. The owner will be charged a fee for the investigation and cost of analysis.

g. If a public health threat exists, the Administrative Agency may shut down the water supply source.

Section 3-1.6 **Use of a Semi-Public Water Supply, Prohibited.**

No person shall operate or maintain a semi-public water 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 of his/her agent.

Section 3-1.7 **Requirements for a Private Water Supply.**

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

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

C. Use Limitation.

1. A permit for drilling a well for private water supply shall not be issued to any person when in the discretion of the Administrative Agency that, the property can be served at a reasonable cost by a public water supply, or when the water supply constitutes a significant health risk.

2. The use of surface water (lakes, ponds, or streams) as a source of water for private water supply shall not be permitted if it is determined:

   (a) a satisfactory ground water source is available;
   (b) adequate treatment is not provided. (In no case

shall surface water be used without filtration and chlorination); and

(c) the pond or lake receives any drainage or discharge from septic tanks, or sewage treatment plans or other sources of pollution.

Section 3-1.8 **Minimum Standards for Private and Semi-private Groundwater Supplies.**

The following standards shall apply to all groundwater supplies within the unincorporated areas of Anderson County:

a. Location: the horizontal distance between the well and the potential sources of pollution or contamination, such as septic tanks, lateral field, pit privy, seepage pits, fuel or fertilizer storage, pesticide storage, feed lots or barnyards shall be one hundred feet (100') or more.

b. Construction: All wells that are to serve as a source of private or semipublic water shall be constructed in accordance with State Administrative Regulations Section 28-30-6.

c. Plugging of Abandoned Wells and Test Holes: All water wells abandoned by the landowner on or after July 1, 1979 and all water wells that were abandoned prior to July 1979 which pose a threat to groundwater supplies, shall be plugged or caused to be plugged by the landowner in accordance with Kansas Administrative Regulations Section 28-30-7.

d. Pollution Sources: Well locations shall be approved by the Administrative Agency with respect to distances from pollution sources and in compliance with wastewater and disposal regulations. The minimum standards set forth in State Administrative Regulations Section 28-30-8 are hereby adopted by Anderson County.

e. Water Well Disinfection: Disinfection standards as set forth in State Administrative Regulations Section 28-30-10 are hereby adopted by Anderson County and shall apply to all water wells used for public consumption or food processing.

Section 3-1.9 **Appeals.**

Appeals or exceptions of any notice, order, revocation, suspension or denial of a permit by the Administrative Agency, may be filed pursuant to the provisions of Section 1-6.0 of this Code.

a. Requests for an exception to any of the foregoing rules and regulations, as set out within the provisions of the Kansas Administrative Regulations, shall be submitted to in writing to the Kansas Department of Health and Environment and shall contain all information relevant to the request.

b. Requests for an appeal of any decision rendered by the Administrative Agency shall be submitted in writing to the County Engineer and shall contain all relevant information.

   (1) Any request for an appeal shall specifically set forth why such exception should be considered.

   (2) The County Engineer 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; provided, however no such exception shall be granted without a prior written approval from KDHE.

c. Appeals from the decision of the County Engineer shall be made to the District Court.

APPENDIX A

SEPTIC SYSTEMS

INTRODUCTION:

The provisions of these standards and design criteria are for the purpose of regulating and controlling the location, construction, maintenance and use of septic systems as private onsite wastewater disposal facilities. These standards are in compliance with the provisions of Kansas Administrative Regulations (K.A.R.) 28-5-6 through 28-5-9 and Kansas Department of Health and Environment Bulletin 4-2, entitled *Minimum Standards for Design and Construction of Onsite Wastewater Systems.*

While disposal of domestic wastewater into a public sewer collection and treatment system is the most desirable means of disposing sewage, most rural areas (including Anderson County) do not have population densities to warrant or financially support the cost of construction and operation of a public sewer treatment facility. Therefore, rural areas have had to rely on private, individual onsite sewer treatment systems. The most commonly used individual wastewater onsite treatment system throughout rural Kansas is the septic tank/soil absorption system. The septic tank/soil absorption system has generally been more desirable than other alternative systems due to the fact that the septic tank and lateral lines are completely covered and therefore, not visible.

Additionally, when properly designed and in good working condition (wastewater not surfacing) there is no sewer odor.

Due to the number of variables which influence the functional operations of the septic tank/soil absorption system (septic system) the Anderson County has determined that the following standards and design criteria shall be the minimum requirements for the installation of septic systems throughout the unincorporated areas of Anderson County.

Wastewater Flows:

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

Design flow is estimated by multiplying the number of household bedrooms by 150 gallons per day (gpd). This is based on 75 gallons per person per day for two people in each bedroom. This accounts for the number of people that can occupy the home for extended periods rather than how many actually live there when the system is installed. Houses frequently experience a change in ownership or occupancy over the life of the wastewater system. When calculating wastewater flow, note that a water softener may increase water use by as much as 10 gallons per capita per day or possibly more where water is very hard.

Site and Soil Evaluations:

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

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

The site evaluation begins by reviewing available information such as a published soil survey and then evaluating the soil on site. County soil survey reports are usually available from the local Natural Resource Conservation Service (NRCS, formerly Soil Conservation Service).

The soil survey provides general information and serves as a guide to the soil conditions. Sites characterized by slow permeability, restrictive subsoil layer, shallow soil over rock, high ground, poor drainage, or steep slopes, as identified in the soil survey, have moderate to severe restrictions for conventional septic tank – soil absorption systems and other options may be preferred or required.

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

TABLE 1 – Soil Limitation Ratings Used by NRCS for Wastewater Absorption Fields

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

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

To perform a soil profile analysis, an excavator is used to open a pit, which exposes the soil profile. The soil evaluation, performed by a trained and qualified person, includes examining the soil profile, determining the soil texture, structure, color, consistence, measuring soil depth, and looking for evidence of a high or perched water table or other restrictions. The soil profile should be analyzed to a depth of at least 4 feet below the bottom of the absorption area or at least 6 feet below the surface.

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

At least three pits should be dug surrounding the area to establish the range of soil characteristics that are present on the site, and to determine the best location for the absorption field.

The soil profile evaluation provides a comprehensive assessment of soil characteristics and is the preferred evaluation. A few consultants, either engineers or design/installation contractors, also provide this service.

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

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

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

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

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

Separation of the soil absorption field from building, structures, and boundaries is essential to maintain system performance, to permit repairs, to maintain required separation from wells, and to reduce undesirable effects of underground wastewater flow and dispersion. The structures and boundaries to consider include easements, building, property lines, utilities, wells, and components of the wastewater disposal system. Minimum required separation distances for private wastewater systems are given in Table 3.

Table 3: MINIMUM REQUIRED DISTANCES FROM THE SYSTEM

	Septic Tank	Lateral Field
Property Line	50 feet	50 feet
Well	100 feet	100 feet
Pond or lake not used for drinking water	100 feet	100 feet
Water Line	25 feet	25 feet
Building or foundation drain	10 feet	50 feet
Public utility lines	25 feet	25 feet

Many soils, especially in eastern Kansas, have properties that restrict their suitability for soil absorption fields. When limiting properties occur in the soil profile, a variation of conventional laterals, wastewater ponds or alternative treatment systems may be used to compensate for the limiting condition. Variations and alternatives that may be considered are summarized in Table 4. When possible, sites with these restrictive conditions should be avoided due to higher cost, large land areas, and greater maintenance requirements for the alternative systems.

TABLE 4 – General Alternative Option Guide for Moderate or Severe Limiting Soil Conditions

I. Shallow Permanent, Perched or Seasonal Groundwater

- **Subsurface drainage system at least 50 feet from the soil absorption area to lower the water table – suitable for moderate or more permeable soil conditions. The alternative creates drainage that must be discharged away from the area.**
- **Variation of conventional lateral trench**
  - **Shallow in ground trench – suitable for groundwater at 4¾ feet or deeper**
  - **At grade lateral system – suitable for groundwater at 4 feet or deeper**
- **Enhanced wastewater treatment by rock –plant filter, sand filter, or aerated tank or other equivalent system followed by shallow soil absorption or wastewater pond**
- **Wisconsin (engineered) mound – suitable for groundwater or other restriction at 1 foot or deeper**
- **Rock-plant filter – suitable for groundwater at 1 foot or deeper followed by soil absorption**

II. Shallow Bedrock

- **Wastewater pond – suitable for sites with bedrock at any depth when overexcavated and at least 1½ feet of compacted clay lining is installed**
- **Variation of conventional lateral trench**
  - **Shallow in-ground trench system – suitable for bedrock at 4¾ feet or deeper**
  - **At grade lateral system – suitable for bedrock at 4 feet or deeper**
- **Enhanced wastewater treatment options (See I above) followed by shallow soil absorption**
- **Wisconsin (engineered) mound – suitable for bedrock at 1 foot or deeper**

III. Rapid Perc Rate (<5 mpi) or very permeable soil (>20 in/hr).

- **Pressurized distribution dosing system to uniformly distribute wastewater throughout the absorption field**
- **One foot lining using loam soil to bottom and sides of the trench to limit water absorption rate.**

IV. Slow Perc Rate (60 to 120 mpi) or "slow" soil permeability (0.2-0.6 in/hr)

- **Dual shallow lateral systems in permeable surface soils (each with 60% to 80% of conventional lateral area) with a diversion valve and alternating use of systems**
- **Wastewater pond provided sufficient site area is available to meet all setback requirements**
- **Wisconsin (engineered) mound – suitable for nearly level sites with more permeable soils**
- **Enhanced wastewater treatment options (see I above) followed by shallow soil absorption into permeable surface soil**

V. Very Slow Perc Rate (>120 mpi), "very slow" soil permeability (<0.2 in/hr.)

- **Wastewater pond – suitable for sites with enough site area to meet all setback requirements**
- **Wisconsin (engineered) mound – suitable for level sites with permeable surface soil**
- **Enhanced wastewater treatment options (see 1 above) followed by shallow soil absorption into permeable surface soil**

Septic Tank:

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

Septic tanks are designed to handle all the daily flow a household will normally produce and must have sufficient capacity for the minimum recommended volume of at least two times the daily wastewater flow. Larger capacity tanks usually mean less carryover of solids, resulting in prolonged life of the soil absorption field. Larger tanks require less frequent cleaning and allow for future expansion of the home or times when guests visit. They also have a good cost-benefit return. Table 5 gives minimum and recommended capacities for sizing septic tanks.

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

TABLE 5 – Minimum and Recommended Septic Tank Capacities Based on the Number of Household Bedrooms.

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

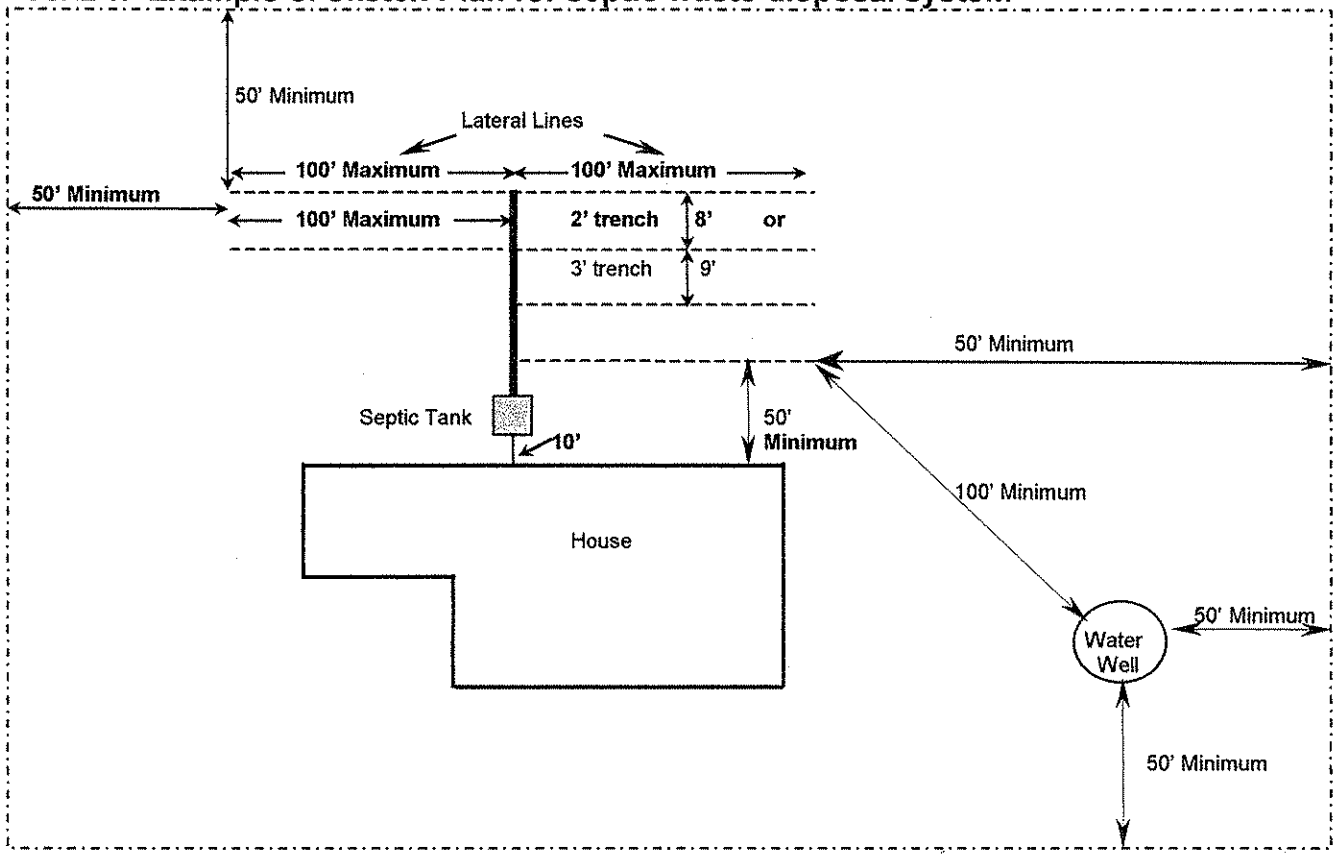
There shall be no permanent structure (patio, building, driveway, etc.) over the tank, lateral or other part of an onsite wastewater system. Consideration should also include easy access of trucks and equipment for pumping, maintenance, and repair. To avoid damage to the system, heavy equipment should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

A sketch of the wastewater disposal system as constructed, showing measurements shall be made by the homeowner, and filed with the permit at the Administrative Agency. Figure 1 shows an example septic system reference sketch.

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

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

FIGURE 1. Example of Sketch Plan for septic waste disposal system



Septic Tank Design/Construction Specifications:

1. General Requirements: The following factors are required of all septic tanks regardless of the construction material:

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

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

    c. The minimum septic tank capacity is two times the daily wastewater flow using 150 gallons per bedroom or 1,000 gallons, whichever is larger. See Table 5 for minimum tanks sizes. Tanks sized at three times the daily flow are recommended and shall be required when garbage disposals are used.

    d. The top of all tanks shall be designed and constructed to support a minimum uniform load of 400 pounds per square foot plus 2,500 pound axle load. When buried more than 2 feet deep, the tank,

especially the top, shall support an additional 100 pounds per square foot for each foot of soil or portion thereof in excess of 2 feet.

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

f. Space above the liquid line is required for that portion of the scum that floats above the liquid. For vertical side wall tanks, the distance between the top of the tank and the outlet invert should be at least 15 percent of the liquid depth with a minimum of 7 inches. In horizontal, cylindrical tanks, an area equal to approximately 12½ percent of the total volume should be provided above the liquid level. This condition is met if the space above the liquid level (distance from outlet invert to top of tank) is 15 percent of the tank diameter.

g. Sewage line carrying solids from the source to the tank should have sufficient slope to maintain velocities that keep solids moving. For household size lines, a slope of between 1 percent (1/8 inch per foot) and 2 percent (¼ inch per foot) is usually best. The last 15 feet of sewer line preceding the tank shall not slop more than 2 percent (¼ inch per foot).

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

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

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

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

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

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

m. The dividing baffle in two compartment tanks shall extend from the bottom of the tank to at least 6 inches above the liquid line.

n. The opening in the dividing baffle may be any shape and shall be at least 2 inches minimum dimension with a total area of at least 12 square inches. The baffle opening is to be centered 35 percent of liquid depth (30 percent for cylindrical tanks) below the liquid level.

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

p. The sewer line from the house to the tank, all fittings and pipes in the tank, all extensions to the surface from the top of the tank and the first 10 feet exiting the tank shall be schedule 40 pipe or heavier.

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

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

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

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

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

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

e. Reinforcing steel shall be placed as designed by a Kansas licensed structural engineer to ensure floor, wall, and top do not crack from moisture, frost, soil load, water loads, axle loads, or other stresses. Loads as specified above shall be used for the design condition. Reinforcing steel shall be covered by a minimum of 1 inch of concrete and shall be place within ± ¼ inch.

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

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

h. Manufacturers are strongly urged to follow guidelines and meet standards of American Concrete Institute, National Precast Concrete Association, and American Society for Testing and Materials.

Manufacturers should identify and advertise their products that meet applicable standards.

3. Special Considerations for Fiberglass, Fiberglass Reinforce Polyester, and Polyethylene Tanks:

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

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

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

Septic Tank Placement Specifications:

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

b. Where natural soil is not suitable, tanks shall be placed on a bed of at least 4 inched of sand, pea gravel, or crushed granular noncorrosive material for proper level and bearing. Material shall be not larger than 2 inches in diameter and bed depth shall be at least four times the largest material diameter.

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

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

e. Septic tanks shall be water tight. And adequate test for water tightness is to fill the tank with water and let it stand for 8 hours to allow concrete to absorb water and plastic tanks to adjust. Then the tank is topped off and an initial measurement made with a hook gauge with vernier scale. After an hour, another measurement is made. Any loss is cause to reject the tank. Observations of the outside of the tank can also give clues about leakage losses. Any trickle, ooze, or exterior wet spot is reason to reject the tank. Precast one-piece tanks are best tested at the plant

before delivery. Two piece tanks that are assembled on-site must be tested following placement but before back filling.

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

Absorption Field Size:

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

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

The maximum gravity lateral run shall not exceed 100 feet and preferably should be less than 60 feet. If a lateral is supplied from the center, the total length shall not exceed 200 feet (100 feet to each side) and a maximum of 120 feet is preferred. Lateral systems on level sites with all laterals on the same elevation shall be connected at each end with a level manifold or connector pipes as shown in Figure 1 so there are not dead ends.

For sites that slope more than about 1 percent, a level lateral system installed without shaping the surface often requires more than a half foot difference in soil cover from one side of the area to the other. On slopes greater than 1½ percent there is enough slope to use a step down (or serial) distribution. This results in the top lateral being filled before effluent builds up and flows to the next lateral down slope. Step down or serial distribution is recommended for all sites that slope 1½ percent or more and/or result in more than 6 inches difference in cover for a level lateral system.

Adjacent absorption field trenches should be separated by at least 6 feet of undisturbed soil. Table 6 shows the minimum spacing for trench widths ranging from 18 to 36 inches. Individual trenches should be constructed on contour with the surface grade and with a level trench bottom to keep the trench cover a uniform thickness.

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

Variations from the standard lateral design described above allow the designer additional flexibility in some restrictive soil situations and are discussed in the site and soil evaluation section and included in Table 4. Many soils in eastern Kansas have a friable, moderately permeable surface soil layer of up to 15 to 18 inches in thickness. Many subsoils have high clay contents and a very restricted permeability. Laterals placed into the tight, very slowly permeable subsoil frequently do not perform satisfactorily.

Shallow in-ground laterals dug 6 to 12 inches into the surface soil layer and covered with imported topsoil may be a viable option to achieve a workable soil absorption system for some soil conditions. Shallow in ground systems may overcome marginal conditions such as groundwater or rock over 4¼ feet but less than 6 feet required for conventional laterals.

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

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

Loading rates and other design criteria are basically the same for shallow in-ground and at-grade systems as for conventional lateral trenches. The at-grade lateral requires tilling the soil strip under the lateral on a level contour. A pressure dosing system shall be included as a part of the at-grade design. Distribution lateral line pipe shall be sized and spaced to evenly distribute flow throughout the lateral system. If the area is too large to pressurize the entire system, a multizone design and sequencing valve shall be used to dose zones in sequence.

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

Absorption Field Material Specifications:

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

Washed gravel or crushed stone is commonly used as the porous media for the trench. The media gradation shall be ¾ inches to 2 inches in diameter, with the smaller sizes preferred to reduce masking of the infiltration surface. Uniform size is preferred because more void space

is created. Rock having a hardness of three or more on the Moh's Scale of Hardness is required. Rock that can scratch a penny without crumbling or flaking generally meets this criterion. Larger diameter and smaller diameter material, or soft aggregate such as calcite limestone are not acceptable and shall not be used.

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

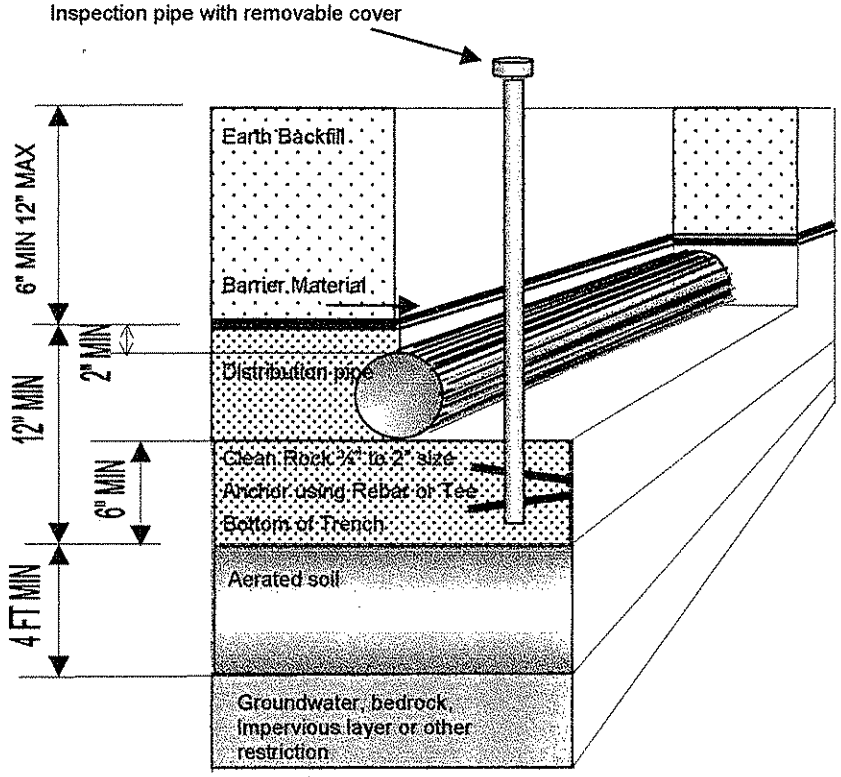
When suitable rock or gravel is not locally available, is expensive, or access to the site is restricted, gravelless chambers are good choices for laterals. They have the advantage of more liquid storage capacity, reducing the effect of high flows or loadings on weekends or holidays. Chamber systems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

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

TABLE 6 – Trench Separation Distances

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

FIGURE 2- Standard Lateral Trench Design



Field Construction Specifications:

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

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

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

The trench bottom should than be immediately covered with at least 6 inches of rock or the chamber. Distribution pipes are carefully places on the rock, and leveled with perforations at

4 o'clock and 8 o'clock positions. Rock is placed around and over the pipe to a cover depth of at least 2 inches.

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

APPENDIX B

SEWER LAGOON SYSTEMS

INTRODUCTION:

The design criteria and construction standards contained herein are for the purpose of regulating and controlling the location, construction, maintenance and protection of sewer lagoon systems used as private onsite disposal systems. These requirements are intended to carry out the provisions set forth in Kansas Administrative Regulations (K.A.R.) 28-5-6 through 28-5-9 and the guidelines established by the Kansas Department of Health and Environment (KDHE) and the Cooperative Extension Service, Kansas Department of Agriculture, Kansas State University, Manhattan, Kansas.

Generally, there are two types of private onsite wastewater treatment systems used throughout the rural areas of Kansas. The septic tank/soil absorption system (described in Appendix A of these regulations) is the most commonly used and desired system due primarily to aesthetic reasons. However, many soils, particularly in Eastern Kansas, are not conducive for use of the septic tank/soil absorption system because of the low permeability of the soil (high clay content) or the shallowness of soils in rocky areas. In many cases where these limitations occur, the wastewater stabilization pond (lagoon) has been found to be a suitable alternative. Lagoon systems are typically less expensive to construct than the septic tank/soil absorption system, but require more maintenance.

When properly designed, installed and maintained, odors from sewer lagoons are infrequent (if any) and visual impacts are minimal.

Lagoon System:

A sewer lagoon is simply a small pond which receives sewage waste. This pond has an operational water depth of five (5) feet and is sized according to the loading factor which is based on the number of persons in the household, and typically determined by the number of bedrooms.

Sewage waste is piped to the lagoon from the source (residence), entering near the bottom of the lagoon and preferably near the center.

Unlike the septic tank/soil absorption system, the sewer lagoon is an aerobic system requiring oxygen for the microorganisms to treat the sewage. Wastes in the sewage are broken down by these microorganisms into gases and residual solids which settle to the bottom of the lagoon. Sunlight is essential for the algae which produce oxygen required for the bacteria and other organisms that treat the sewage. These microorganisms, in turn, produce carbon dioxide which is then used by algae in their growth. In order to ensure proper working conditions, it is essential that the lagoon surface not be shaded. Therefore, trees and water vegetation must not be allowed to grow in or near the lagoon.

Lagoon Location:
Before considering the installation of a waste stabilization pond (lagoon), one should consider several factors. The area required by a pond may be large, up to 4,000 square feet. Separation and setback distances from buildings and property lines require a total lot size of 3 acres or more. Ponds require routine maintenance of dikes, fences and vegetation; and, therefore, must be accessible.

A lagoon is best located far enough away and down slope from the residence so that the sewer line to the lagoon will allow flow by gravity at the proper slope.

The lagoon must be a minimum of 100 feet from:

a. Any property line.

b. Any well or pond.

c. The residence (source)

In addition, a lagoon shall be located a minimum of 25 feet from any pressurized potable water line (public or private). See TABLE 1 for separation distances.

A site plan with locations of all physical features – surface and buried – and contour elevations is required to show the location and design of the lagoon.

TABLE 1: MINIMUM REQUIRED DISTANCES FROM THE LAGOON

	Lagoon
Property Line	100 feet
Well	100 feet
Pond or lake not used for drinking water	100 feet
Water line	25 feet
Building	10 feet
Public utility lines	25 feet

Note: Distances measured from the average water level

Lagoon Size:
Size and design of the lagoon involves several considerations. Firstly, the surface must be kept large enough to provide sufficient oxygen to keep the pond aerobic. Secondly, the pond must have enough capacity (volume) to hold all discharged household wastewater.

To function the best, a pond water level must be as close to the 5 foot design depth as possible. The water level may drop to about 2½ feet for short periods without seriously affecting the pond operation, provided the water level is above the wastewater entrance line. If the water depth becomes less than 2½ feet, attached aquatic plants may grow across the pond bottom which greatly increases maintenance requirements.

Plant growth will soon diminish the treatment area resulting in failure of the system.

Generally, the wastewater flow, in conjunction with the net pond water loss, will determine the size of the lagoon. Wastewater flow is estimated at 150 gallons per day per household bedroom.

Net pond losses vary greatly, depending on rainfall, temperature and wind. The average net loss in eastern Kansas (transevaporation and seepage) is 1foot per year. TABLE 2 provides a guide to sizing the lagoon system depending on the number of bedrooms per household.

The table shows both the side length for square lagoon ponds and the radius for round ponds. While the shape of the pond is not specific, it is important that the length not exceed twice the width.

TABLE 2: Recommended Sizes of Square and Round Wastewater Lagoons

	Side Length (ft.)	Radius (ft.)	Surface Area (sq. ft.)
SMALL (2 bedrooms or less)	55	28.2	3025
MEDIUM (3 bedrooms)	60	33.9	3600
LARGE (more than 3 bedrooms)	65	36.8	4225

Sewer Line to Lagoon:

The sewer line from the residence to the lagoon shall be a minimum of a four (4) inch diameter solid schedule forty (40) thermoplastic sewer pipe with solvent welded joints. Minimum slope of the line shall be ⅛ inch per foot (1 foot per 100 feet). Maximum slope shall not exceed ⅜ inch per foot or 3 feet per 100 feet.

Sewer line slopes should not vary in order to avoid accumulation of solids in the pipe.

The trench bottom should be undisturbed soil and free of rocks or other material that could break the line. Backfill shall be compacted around the sides of the line and at least 2 inches

over the top of the line. The remainder of the trench shall be filled and mounded over the trench to allow for settling.

At least two (2) cleanouts shall be provided. One cleanout shall be located just outside the house and a second shall be located near the lagoon. Additionally, a cleanout will be required every 100 feet and at every change in directions of the sewer line. Cleanouts may be a "T" or "Y" the same size as the sewer line.

The line should enter below the water surface at least 20 inches above the bottom and should extend to near the center of the lagoon. The end should be anchored to a concrete slab at least 2 feet X 2 feet X 4 inches thick. This anchor helps prevent damage to the unsupported line.

Construction:

A small bulldozer or front loader is ideal for stabilization pond construction. Construction shall not be done when the soil is muddy or excessively soft. Muddy soil is difficult to work and forms clods which can prevent smoothing of the top of the dike.

Topsoil shall be removed from the pond and dike area before beginning the embankment construction and should be stockpiled for later use on the embankment.

Embankment slopes shall not exceed 3½ feet (horizontal) to 1 foot (vertical).

The slopes shall ensure that the minimum design size of the pond maintains at least two (2) feet of freeboard above the normal functional pond depth of five (5) feet. The top of the slope berm shall have a minimum width of four (4) feet. Surface water shall be diverted from the lagoon by constructing a diversion terrace around the upslope side of the lagoon (when required by the Administrative Agency).

The pond bottom and embankment surfaces shall be of uniform slope and free of rocks, slope debris, ridges and ruts that may interfere with mowing the embankment.

Topsoil should be replaced on embankment surface once the pond is completed. Perennial groundcover is necessary to reduce erosion. Groundcover shall be seeded promptly at completion of the pond construction. A protective straw or hay cover mulch is encouraged to hold the soil and seed in place until the cover is established.

FIGURE 1 depicts a typically constructed wastewater lagoon system.

The entire pond area must be fenced. Fencing diagrams are shown in FIGURES 2, 3 and 4. Fencing material shall be no smaller than 12.5 gauge wire. The fence will have a minimum height of 4 feet. Fence openings will be no larger than 2-inch X 4-inch. The fence may be installed no closer than four feet from the inside edge of the top of the embankment. It is strongly recommended that the fence be place at the outside toe of the embankment to facilitate maintenance. In addition, a double strand of barbed wire or electric fence shall be installed if the facility will be accessible to livestock.

A gate of sufficient size (minimum 4 ft. width) must be located to accommodate the entrance of a mower. This gate must provide the same degree of resistance to entry as the fence and shall be padlocked to restrict unauthorized access to the facility.

FIGURE 1: Lagoon System

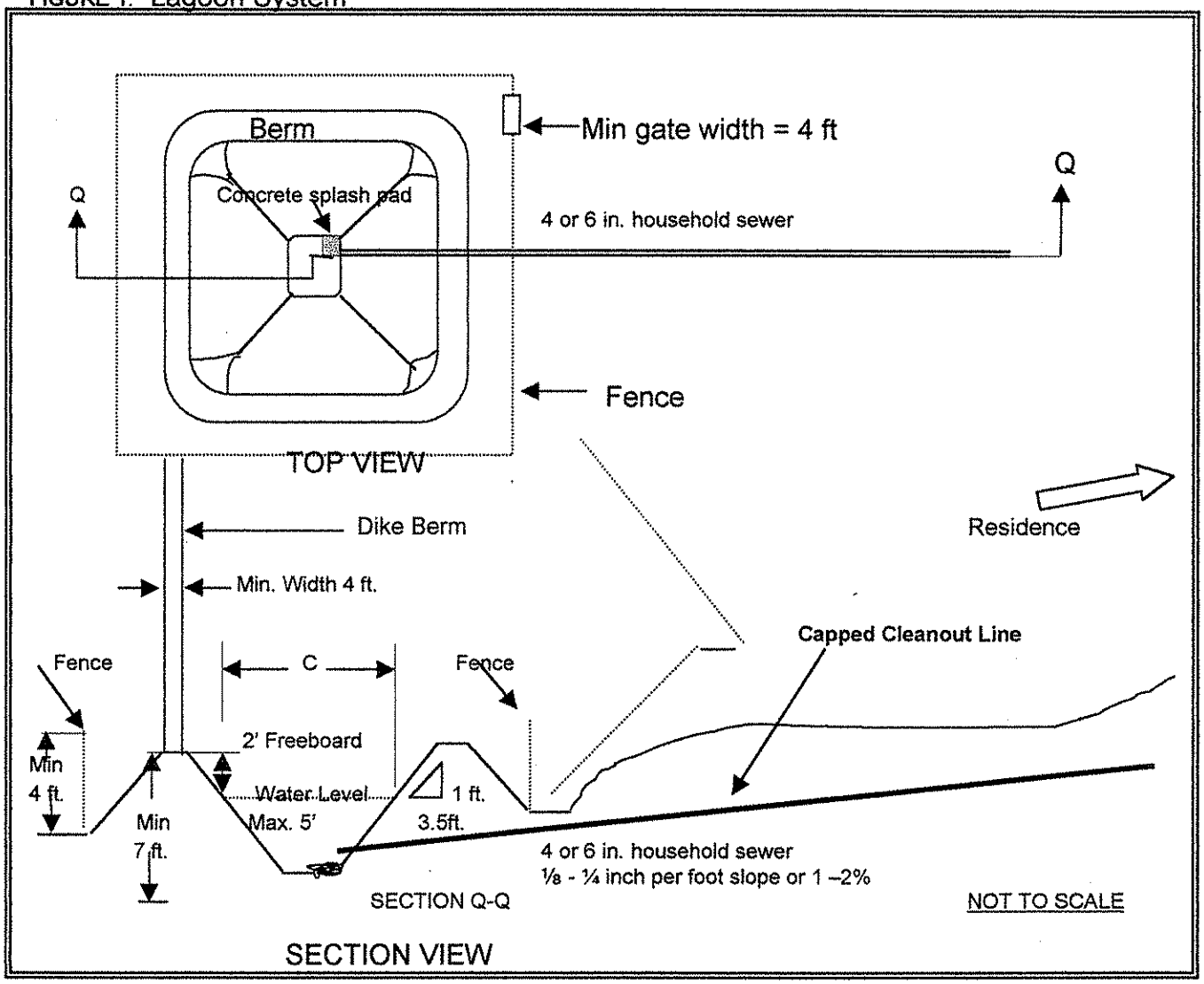


FIGURE 2:

FENCING:
STANDARD HUNG GATE – "H" STYLE BRACING

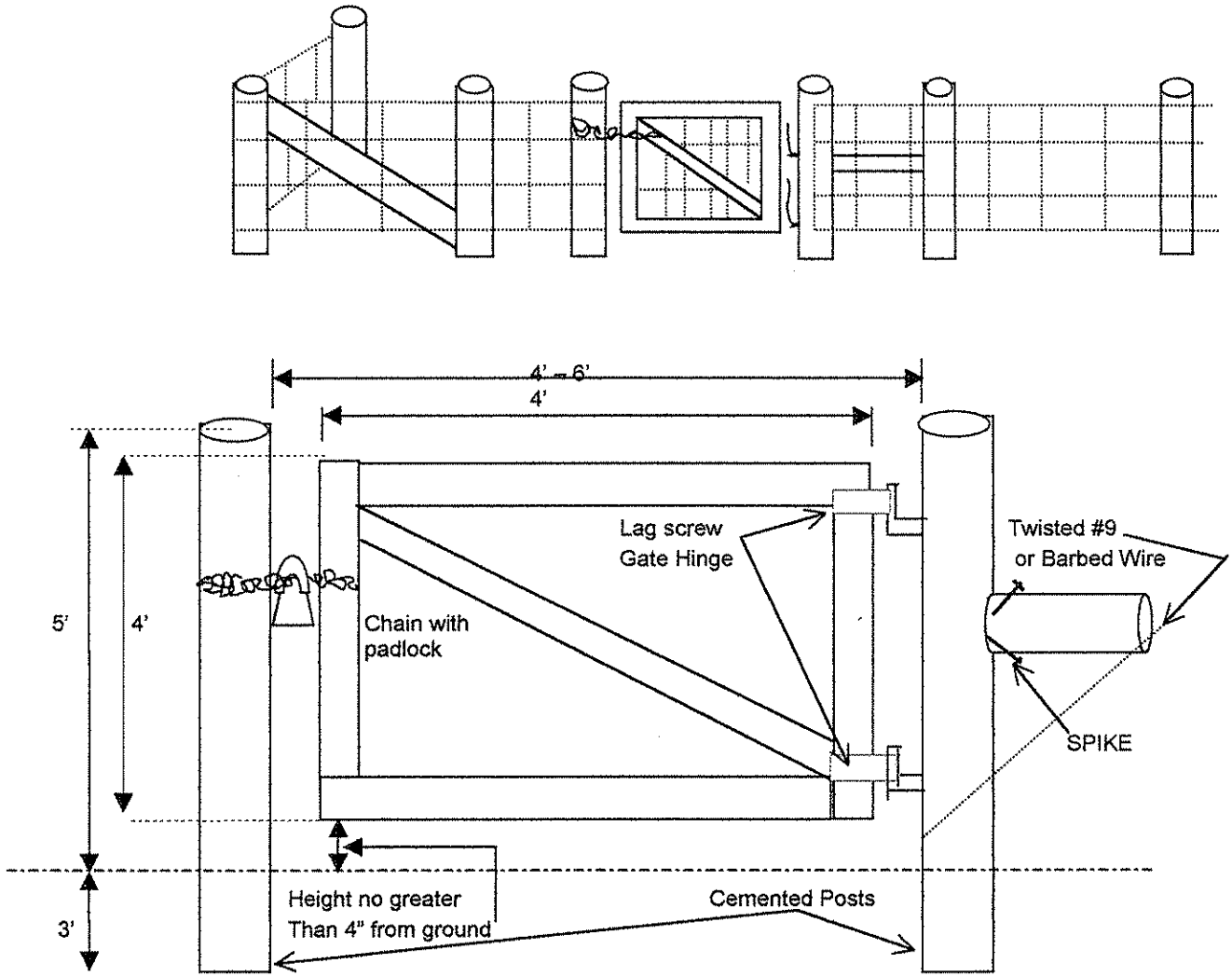
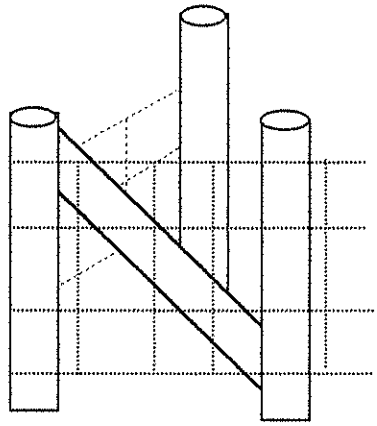


FIGURE 3:

STANDARD BRACING FOR CORNERS – "N" STYLE



2" x 4" Welded Wire or
Chain Link Fencing

Post Material: Osage Orange or
Pressure treated Creosote Post

Corner Post Size: 8' – 0" X 5" Top
Line Post 6" X 3½ " Top

Use Fence Staples - 1½" Long
Wire: #9 or 4 Strand Twisted,
Barbed Wire

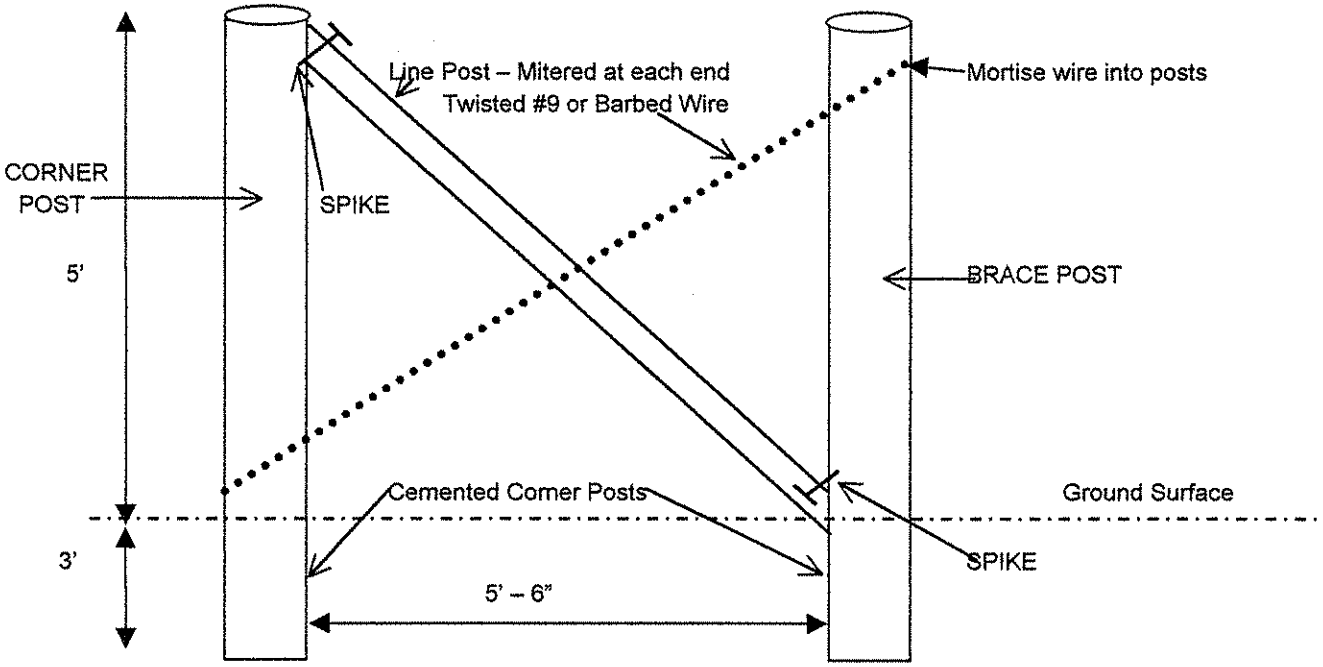
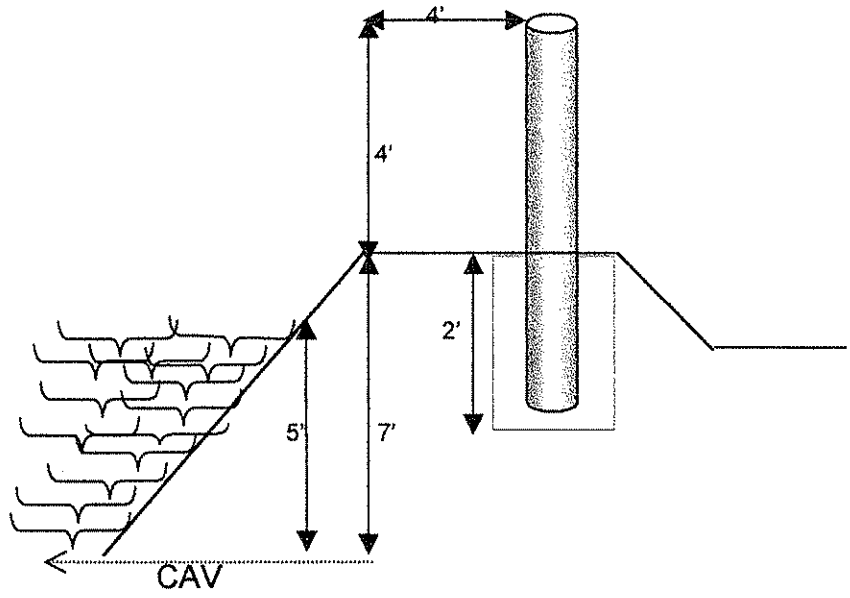
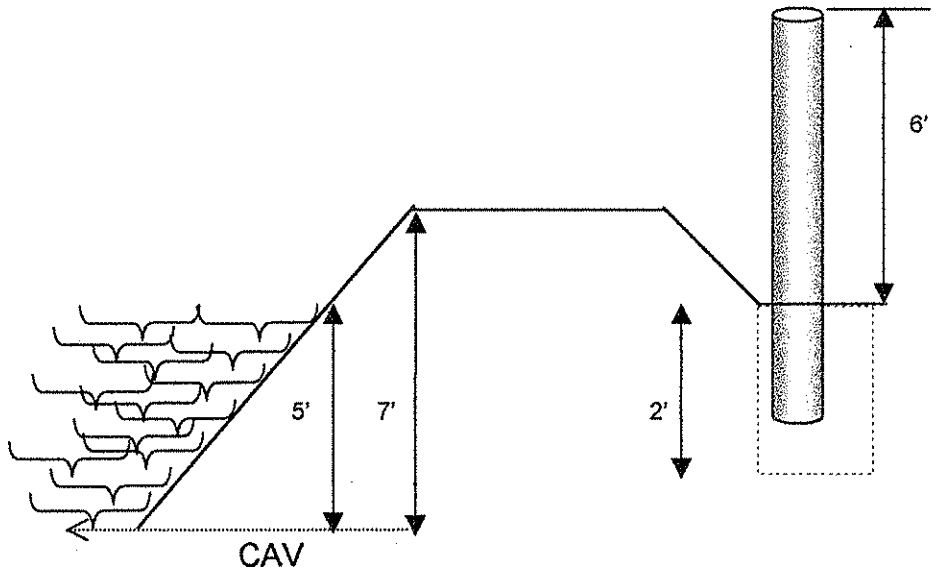


FIGURE 4:



No Livestock



Livestock

Water Balance:

The lagoon is designed to provide sufficient surface area for oxygen exchange to promote decomposition of waste and to provide adequate depth to help prevent weed growth. Both of these requirements are essential for proper operation. Water level should be maintained at the design level of five (5) feet. The water level must **NEVER** drop lower than the sewer line inlet pipe. A post or similar device marked with water depths should be installed to help monitor water depth.

During periods of below normal rainfall, it may be necessary to add water to maintain adequate surface area and water depth in the lagoon. Therefore a reliable source of water should be available.

Two feet of freeboard (embankment height above the water surface) shall be maintained to provide water storage during times of exceptional rainfall. If the pond water depth should encroach on the freeboard. Excess water must be pumped and removed from the site.

Pumping must be done using the requirements as set forth in Article 9 of the Sanitation Code.

Operation and Management:

No starter or other additive is necessary to put a new lagoon into use. However, it is desirable to fill the lagoon to the design operating level before putting it into use. Odors most common to lagoon systems occur when the contents become anaerobic or septic. This condition may occur during extended periods of cloudy, cool weather or cold winter conditions when ice or shade coverage reduces algae growth. With warmer weather there is an accelerated increase in microbiological activity reducing oxygen levels and possibly resulting in odors. Maintaining algae growth to sustain proper oxygen levels is essential for good operating conditions and it may be necessary to add fertilizer (sodium nitrate or ammonium nitrate), especially during cold weather.

Generally, the operating condition of a lagoon can be evaluated by color and odor. A proper operating pond should not have any odor except for the late fall and early spring turnover periods.

The color of the water is directly related to pH (acidity) and dissolved oxygen (Do). Typically, a deep green color is a good indicator of a properly operating system. The following table* gives typical color characteristics and possible symptoms.

Color	Condition	Symptom or Cause
Dark, sparkling green	good	high pH and Do
Dull green to yellow	not good	pH and Do are dropping, too much blue-green algae
Grey to black	bad to very bad	pond is septic (black) or is becoming septic with anaerobic conditions prevailing
Tan to brown	not good	bank or silt erosion reducing pH balance

*Source: EPA Office; 1977 Operations Manual.

After a period of time (average of 10 years, where system is properly designed in accordance with wastewater flows), lagoons will fill with silt, sludge and organic materials. This problem will be accelerated by improper maintenance, such as uncut grass around the pond's edge, leaves blowing into the pond, water fowl, animals burrowing and livestock damage.

Since it is critical to maintain the original pond depth and volume for proper working conditions, removal of the sludge or silt buildup is required. When this condition occurs, the pond must be dewatered as soon as possible. The dewatering should be done by pumping. However, dewatering can be done by using the water for irrigation, provided this use is approved by the Administrative Agency and no runoff will occur.

Sludge may be removed by a backhoe, bulldozer or front end loader. Sludge must be removed to an approved wastewater treatment facility, properly licensed landfill operation or the sludge may be tilled into farmland, subject to approval of the Administrative Agency.

After removal of the sludge, the lagoon must be restored in accordance with the requirements of the original design and inspected and approved by the Administrative Agency prior to reuse.

Abandonment:

A wastewater treatment stabilization pond (lagoon) shall be abandoned if any of the following conditions occur:

1. A public sewer system becomes available within 400 feet.

2. After construction, the lagoon will not retain water and repairs are not possible.

3. In the opinion of the Administrative Agency, the system cannot be made to function properly so as to protect the public health, safety and general welfare, or to protect the quality of waters of the State.

Whenever it has been determined that abandonment is necessary, a permit shall be required from the Administrative Agency and the following procedure shall be used:

1. The lagoon must be dewatered in accordance with procedures approved by the Administrative Agency.

2. Dikes shall be pushed in, soil compacted and leveled.

3. The area shall be covered with topsoil and seeded to an appropriate ground cover.