

CERRO GORDO COUNTY

ORDINANCE #27B

PRIVATE SEWAGE DISPOSAL SYSTEMS

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Private Sewage Disposal Systems Ordinance

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Chapter 1

Private Sewage Disposal System

A regulation relating to permits, licensing, and standards for the treatment and disposal of private sewage and liquid waste for the promotion of public health in Cerro Gordo County, Iowa; and providing penalties for the violation of the provisions hereof.

This ordinance amends the preceding Ordinance #27 which was adopted on February 7, 1989, and as amended on July 20, 1993, and July 1, 2005, and July 1, 2009.

The Cerro Gordo County Board of Health, pursuant to the authority of Iowa Code Section 455B.172, hereby adopts the following regulations to wit;

1.1 Definitions

1.1 (01) "ADMINISTRATIVE AUTHORITY" means the Cerro Gordo County Health Director or his/her authorized representative as authorized by Iowa Code section 137.6.

1.1 (02) "AEROBIC TREATMENT UNIT" means a disposal system employing bacterial action which is maintained by the utilization of air or oxygen and includes the aeration plant and equipment and the method of final effluent disposal.

1.1 (03) "APPROVED" means accepted or acceptable under an applicable specification stated or cited in these rules, or accepted as suitable for the proposed use by the Administrative Authority.

1.1 (04) "AREA DRAIN" means a drain installed to collect surface or storm water from an open area of a building or property.

1.1 (05) "BIOFILTER" means a secondary treatment option which includes peat moss, crushed grass, or other organic product as a treatment media.

1.1 (06) "BOARD OF HEALTH" means the Cerro Gordo County Board of Health.

1.1 (07) "BEDROCK" means any rock which cannot be excavated by normal trenching equipment, is so slowly permeable that it will not transmit effluent, or has open fractures or solution channels.

1.1 (08) "BUILDING DRAIN" means that part of the lowest horizontal piping of a house drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of any building and conveys the same to the building sewer.

1.1 (09) "BUILDING SEWER" means that part of the horizontal piping from the building wall to its connection with the main sewer or the primary treatment portion of a private sewage disposal system conveying the drainage of one building site.

1.1 (10) "CENTRAL SYSTEM" means a central wastewater collection and treatment center approved by the Board of Health and, when so required, approved also by the Department.

1.1 (11) "CHAMBER SYSTEM" means a buried structure, typically with a domed or arched top, providing at least a six-inch height of sidewall soil exposure, creating a covered open space above a buried soil infiltrative surface.

1.1 (12) "CONVENTIONAL" when used in reference to sewage treatment means a soil absorption system involving a series of two or three foot wide trenches filled with gravel one foot deep, containing a four inch diameter rigid pipe to convey the sewage effluent.

1.1 (13) "COUNTY" means Cerro Gordo County, Iowa.

1.1 (14) "DEPARTMENT" means the Iowa Department of Natural Resources.

- 1.1 (15) "DISTRIBUTION BOX" is means a structure designed to accomplish the equal distribution of wastewater to two or more soil absorption trenches.
- 1.1 (16) "DOMESTIC SEWAGE" or "DOMESTIC WASTEWATER" means water-carried waste products from residences, public buildings, institutions, or other buildings, including bodily discharges from human beings together with groundwater infiltration and surface water as may be present.
- 1.1 (17) "DOSING" is means a measured application of effluent by mechanical or other means from an approved wastewater treatment facility, such as a septic tank, into an approved wastewater disposal system. Dosing utilizes the disposal system more effectively than a conventional gravity flow type system.
- 1.1 (18) "DRAINAGE DITCH" means any watercourse meeting the classification of a "general use segment" under rule 567--61.3 (455B) which includes intermittent watercourses and those watercourses which typically flow only for short periods of time following precipitation in the immediate locality and whose channels are normally above the water table.
- 1.1 (19) "DRIP IRRIGATION" means a form of subsurface soil absorption using shallow pressure distribution with low-pressure drip emitters.
- 1.1 (20) "DROP BOX" is means a structure to divert wastewater flow into a soil absorption trench until the trench is filled to a set level, then allow any additional waste, which is not absorbed by that trench, to flow to the next drop box or soil absorption trench.
- 1.1 (21) "DWELLING" means any house or place used or intended to be used by humans as a place of residence.
- 1.1 (22) "EXPANDED POLYSTYRENE (EPS) AGGREGATE SYSTEMS" means cylinders comprised of expanded polystyrene (EPS) synthetic aggregate contained in high-strength polyethylene netting. Cylinders are 12" in diameter and are produced both with and without a distribution pipe. Cylinders may be configured in a trench, bed, at-grade and mound applications to obtain the desired width, height and length. Cylinders containing a distribution pipe shall be connected end-to-end with an internal coupling device.
- 1.1 (23) "FILL SOIL" means clean soil, free of debris or large organic material, which has been mechanically moved onto a site and has been in place for less than one year.
- 1.1 (24) "FILTERED PUMP VAULT" means a device that is installed in a septic tank and houses a pump and screens effluent until it is pumped.
- 1.1 (25) "FOUNDATION DRAIN" means that portion of a building drainage system provided to drain groundwater from the outside of the foundation or over or under the basement floor not including any wastewater and not connected to the building drain.
- 1.1 (26) "FREE ACCESS FILTER (OPEN FILTER)" means an intermittent sand filter constructed within the natural soil or above the ground surface with access to the distributor pipes and top of the filter media for maintenance and media replacement.
- 1.1 (27) "GRAVEL" means stone screened from river sand or quarried and washed free of clay and clay coating. Concrete aggregate designated as Class II by the Department of Transportation is acceptable.
- 1.1 (28) "GRAVELLESS PIPE SYSTEM" means an absorption system comprised of large diameter (8 and 10 inches) corrugated plastic pipe, perforated with holes on a 120-degree arc centered on the bottom, wrapped in a sheath of geotextile filter wrap and installed level in a trench without gravel bedding or cover.
- 1.1 (29) "GREASE INTERCEPTOR" means a watertight device designed to intercept and retain or remove grease and fatty substances. The device may be located inside (grease separator) or outside (grease tank or grease trap) of a facility

1.1 (30) "INTERMITTENT SAND FILTERS" means beds of granular materials 24 to 36 inches deep underlain by graded gravel and collecting tile. Wastewater is applied intermittently to the surface of the bed through distribution pipes or troughs and the bed is underdrained to collect and discharge the final effluent. Uniform distribution is normally obtained by dosing so as to flood the entire surface of the bed. Filters may be designed to provide free access (open filters), or may be buried in the ground (buried filters or subsurface sand filters).

1.1 (31) "LAKE" means a natural or man-made impoundment of water with more than one acre of water surface area at the high water level.

1.1 (32) "LIMITING LAYER" means bedrock, seasonally high groundwater level, or clay loam and clay soils.

1.1 (33) "MOUND SYSTEM" means an above ground soil absorption system used to disperse effluent from septic tanks in cases where either seasonally high water table, high bedrock conditions, slowly permeable soils or limited land areas prevent conventional subsurface absorption systems.

1.1 (34) "PACKED BED MEDIA FILTER" means a watertight structure filled with uniformly sized media that is normally placed over an under drain system. The wastewater is dosed onto the surface of the media through a distribution network and is allowed to percolate through the media to the under drain system. The under drain collects the filtrate and discharges the final effluent.

1.1(35) "PERSON" means a natural individual person only.

1.1 (36) "PRETREATED EFFLUENT" means septic tank effluent treated through aeration or other methods that, upon laboratory analysis, meets or exceeds a monthly average for biochemical oxygen demand (BOD) of 30 mg/L and total suspended solids (TSS) of 30 mg/L.

1.1 (37) "POND" means a natural or man-made impoundment of water with a water surface area of one acre or less at the high water level.

1.1 (38) "PRIMARY TREATMENT UNIT" is means a unit or system to separate the floating and settleable solids from the wastewater before the partially treated effluent is discharged for secondary treatment.

1.1 (39) "PRIVATE SEWAGE DISPOSAL SYSTEM" means a system which provides for the treatment or disposal of domestic sewage from four or fewer dwelling units or the equivalent of less than 16 individuals on a continuing basis. This includes domestic waste, whether residential or nonresidential, but does not include industrial waste of any flow rate. Included within the scope of this definition are building sewers, septic tanks, subsurface absorption systems, mound systems, sand filters, gravelless systems, chamber systems, and aerobic treatment units.

1.1 (40) "PROFESSIONAL SOIL ANALYSIS" means a which depends upon a knowledgeable person evaluating the soil characteristics, such as color, texture, and structure, in order to determine an loading rate. A person performing a professional soil analysis shall demonstrate training and experience in soil morphology, such as testing absorption qualities of soil by the physical examination of the soil's color, mottling, texture, structure, topography, and hillslope position.

1.1 (41) "PUMPING CONTRACTOR" means a person engaged in the business of cleaning privy, vaults, cesspools, and septic tanks.

1.1 (42) "QUALIFIED SAMPLER" for the purposes of collecting compliance effluent samples required under NPDES General Permit No. 4, means one of the following persons: a city or county environmental health staff person; an Iowa-certified wastewater treatment operator; or an individual who has received training approved by the department to conduct effluent sampling.

1.1 (43) "REASONABLY ACCESSIBLE" as it applies to a connection to a public sewer system, shall mean a determination made by the Administrative Authority as to the practicality of the connection.

1.1 (44) "ROOF DRAIN" is a means a drain installed to receive water collecting on the surface of a

roof and discharging into an area or storm drain system.

1.1 (45) "SECONDARY TREATMENT SYSTEM" is means a system which provides biological treatment of the effluent from septic tanks or other primary treatment units to meet minimum effluent standards as required in these rules and NPDES General Permit No. 4. Examples include soil absorption systems, media filters, aerobic treatment units, or other systems providing equivalent treatment.

1.1 (46) "SEPTAGE" means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or from a holding tank, when the system is cleaned or maintained.

1.1 (47) "SEPTIC TANK" is means a watertight structure into which wastewater is discharged for solids separation and digestion, referred to as the closed portion of the treatment system.

1.1 (48) "SEWAGE SLUDGE" means any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. "Sewage sludge" includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum septage, portable toilet pumpings, Type III marine device pumpings as defined in 33 C.F.R. Part 159, and sewage sludge products. "Sewage sludge" does not include grit, screening, or ash generated during the incineration of sewage sludge.

1.1 (49) "STORM DRAIN" is means a drain used for conveying rainwater, groundwater, subsurface water, condensate, cooling water or other similar discharge to a storm sewer or combined sewer.

1.1 (50) "STREAM" means any watercourse listed as being a "designated use segment" in rule 567--61.3 (455B) which includes any watercourse which maintains flow throughout the year, or contains sufficient pooled areas during intermittent flow periods to maintain a viable aquatic community of significance.

1.1 (51) "SUBSURFACE SAND FILTER" means a system in which the effluent from the primary treatment unit is discharged into perforated pipes, filtered through a layer of sand, and collected by lower perforated pipes for discharge to the surface or to a subsurface soil absorption system. A subsurface sand filter is an intermittent sand filter that is placed within the ground and provided with a natural topsoil cover over the crown of the distribution pipes.

1.1 (52) "SUBSURFACE SOIL ABSORPTION SYSTEM" is means a system of perforated conduits connected to a distribution system, forming a series of subsurface, water-carrying channels into which the primary treated effluent is discharged for direct absorption into the soil (referred to as part of the open portion of the treatment system).

1.1 (53) "TIME OF TRANSFER" means the first day any buyer or transferee becomes obligated under any purchase agreement or contract for sale, deed, unless such obligation is later rescinded by the parties.

1.1 (54) "WASTEWATER" is means the waste-carrying water derived from ordinary living processes, including but not limited to the discharge of effluent from any private sewage disposal system.

1.1 (55) "WASTEWATER MANAGEMENT DISTRICT" means an entity organized in accordance with permitting legislation to perform various specific functions such as planning, financing, construction, supervision, repair, maintenance, operation and management of private sewage disposal systems within a designated area.

1.2 Illegal Discharge of Wastewater

1.2 (01) It is prohibited to discharge any wastewater for any reason or in any fashion except from a private sewage disposal system meeting the requirements of this ordinance (or under an NPDES

permit) to any ditch, stream, pond, lake, natural or artificial waterway, county drain tile, surface water drain tile, land drain tile, or to the surface of the ground. Under no conditions shall wastewater be discharged to any abandoned well, agricultural drainage well or sinkhole. Existing discharges to any of the above-listed locations or structures shall be eliminated by constructing a system which is in compliance with the requirements of these rules.

1.3 Pre-Existing Private Sewage Disposal Systems

1.3 (01) No person, firm, partnership, corporation or other public or private entity shall connect an existing private sewage disposal system to a pre-existing or new structure without the prior approval from the county health department. The county health department shall be notified in writing, to include and not limited to, documentation and a valid permit. The health officer shall determine if a sewage disposal system is adequate.

1.3 (02) If a valid permit has not been issued, the county health department shall evaluate the sewage disposal system to determine if the construction is in accordance with these regulations and is adequate to serve the pre-existing or new structure. If the sewage system is in accordance with these regulations and adequate, the person, firm, partnership, corporation or other public or private entity shall file for a valid sewage permit.

1.3 (03) If a valid permit has not been issued and the sewage disposal system construction is not in accordance with these regulations, connection of the sewage disposal system to a pre-existing or new structure shall be denied and a valid permit shall be applied for in the county health department.

1.4 Permit Requirements

1.4 (01) No private sewage disposal system shall be installed, altered, expanded or repaired until an application for a permit has been submitted and a permit issued by the Cerro Gordo County Board of Health or the Administrative Authority. The installation shall be in accordance with these rules.

1.4 (02) A private sewage disposal system permit shall be issued by the Cerro Gordo County Board of Health or the Administrative Authority prior to the issuance of a building permit or zoning certificate.

1.4 (03) Permits shall have validity for a maximum of twelve (12) months from the time of issuance, during which time the private sewage disposal system shall be completed.

1.4 (04) No private sewage disposal system shall be covered so as to deny final inspection by the Administrative Authority.

1.4 (05) No private sewage disposal system for which a permit has been issued shall be put into operation until the construction, repair, alteration, or remodeling shall have been inspected and approved by the Administrative Authority.

1.5 Fees

1.5 (01) Permit fee schedule shall be determined by the Board of Health.

1.5 (02) No permit fee shall be refundable after a professional soil analysis has been completed. A permit may be transferable upon written approval of former permit holder.

1.6 Private System Contractor's Licensing

1.6 (01) Any person, desiring to act as a private contractor in their own regard or on behalf of an employer, corporation or other person or entity, to construct, alter, or repair any private sewage disposal system in Cerro Gordo County, Iowa, shall first file for a license and approved with the Administrative Authority, conditioned on the faithful performance of all duties and regulations required by the Board of Health of Cerro Gordo County, Iowa and any other laws or ordinance regulating private sewage disposal systems.

1.6 (02) The Administrative Authority will issue a Contractor's License, valid for a period of twelve months beginning on March 1st and expiring on February 28th. Renewal of the license shall be considered once application, application fee, and proof of completion of twelve (12) hours of classroom instruction has been received. Classroom instruction shall be from Administrative Authority sponsored/approved sources.

1.6 (03) The private sewage disposal system contractor license may be revoked by the Administrative Authority if terms of this regulation is violated and only reinstated at the discretion of the Board of Health. No person in whose name a revoked license was issued shall be issued a new license within a period of twelve (12) months after the effective date of the revocation, except on recommendation by the Board of Health.

1.6 (04) The license fee schedule shall be determined by the Board of Health.

1.7 Emergency Repair

1.7 (01) In the event of an emergency situation, work may be initiated without first obtaining a permit; provided this repair work is reported to the Administrative Authority by 12 o'clock noon of the next business day. Contractors or property owners failing to report emergency repair work as specified shall be subject to a penalty as indicated in section 1.14-Penalties. All repair work shall conform to the specifications provided in the Cerro Gordo County Private Sewage Disposal System ordinance. All completed work shall be left uncovered until inspection by the Administrative Authority is made and the work approved.

1.8 Abandonment of Private Sewage Disposal System

1.8 (01) All primary treatment sections of the sewage disposal facilities (vault or septic tank) replaced by connections to a publicly operated sewage system or when an existing sewage disposal facility is replaced or use discontinued, shall be abandoned as specified by the Administrative Authority. No sewage disposal facilities shall be abandoned until the pumping contractor has cleaned said sewage disposal facilities.

1.9 Plats and Sizes Hereinafter Established

1.9 (01) All plats and subdivisions not approved and officially recorded prior to the effective date of this regulation shall have the approval of the Administrative Authority with regards to private sewage disposal system construction and operation.

1.9 (02) Where a public sewer is not made available to serve the proposed plat, the plat or must provide engineering data as requested to confirm the suitability of the site for private sewage disposal system construction.

1.9 (03) Lot sizes shall comply with applicable zoning ordinance regulations. Structures lying within Clear Lake's Environmental Resources Overlay District must meet lot requirements as defined in Article 5.5 – Overlay District Regulations.

1.10 Enforcement

1.10 (01) It shall be the duty and responsibility of the Board of Health to enforce the provisions of this ordinance. This duty may be delegated to an authorized representative. The ordinance may be enforced by either issuing a civil citation for a county infraction or by issuing a criminal citation, or both, for a violation of the County Ordinance.

1.11 Refusal of Admittance

1.11 (01) In the event the Administrative Authority, in proceeding to enter any premises for the purpose of making an inspection to carry out the provisions of this ordinance, shall be refused entry, a complaint may be made under oath at the District Court in the County and said Court thereupon issue a warrant directed to some peace officer of the County, commanding him/her between the hours of sunrise and sunset, accompanied by the Administrative Authority, to enter upon the premises and make such inspection, and to obtain such samples as may be required to carry out the provisions of this ordinance.

1.12 Notice

1.12 (01) Whenever the Administrative Authority determines that there are reasonable grounds to believe there has been a violation of any provisions of this ordinance, he/she shall give notice of such alleged violation to the person or persons responsible, as thereof provided. Such notice shall:

- A) Be in writing.
- B) Include a statement of the reasons the ordinance was violated.
- C) Allow reasonable time for performance of any act or remediation to achieve compliance.
- D) Be served upon the responsible owner, agent or occupant, as the case may require. Such notice shall be deemed to be properly served if a copy is sent by certified mail to the last known address of the responsible owner, agent or occupant, or if served by any other method authorized or required by the laws of this state.

1.12 (02) Such notice shall contain an outline of remedial action which, if taken, will effect compliance with the provisions of this regulation.

1.12 (03) This provision is not meant to limit the Administrative Authority's right of entry during his/her investigation prior to the determination of the existence of reasonable grounds.

1.13 Hearings

1.13 (01) In the event that any person or entity is aggrieved by any order made by the Administrative Authority, that person or entity may within twenty (20) days of the date of such order, appeal in writing to the Board of Health, stating reasons for requesting the order to be rescinded or modified. The Board of Health shall review the action of the Administrative Authority, shall modify, withdraw, or order compliance with, the order. Appeal for any order of the Board of Health may be taken within twenty (20) days to the District Court of Cerro Gordo County, Iowa.

1.14 Penalties

1.14 (01) Any person, firm, partnership, corporation, or other entity or responsible person violating any regulation in or any provision of this Ordinance or of any amendment or supplement thereto, shall be guilty of a simple misdemeanor which is punishable by a fine of not more than one hundred dollars (\$100) or by imprisonment of not more than thirty (30) days and shall be guilty of a county infraction punishable by a civil penalty of not more than one hundred dollars (\$100) or if the infraction is a repeat offense by a civil penalty not to exceed two hundred dollars (\$200). Each day

that a violation occurs or is permitted by the defendant to exist, constitutes a separate offense.

1.15 Court Order

1.15 (01) Whenever in the judgment of the Board of Health or the Administrative Authority any person that has engaged or is about to engage, in any acts or practices which constitutes or will constitute a violation of this ordinance, application may be made to the appropriate court to grant appropriate relief to abate or halt the violation or both.

1.16 Applicability

1.16 (01) Provisions contained herein are applicable to all private sewage disposal systems in Cerro Gordo County and all buildings discharging domestic waste not governed by any other local or municipal ordinances. No septage or wastewater shall be disposed of except in compliance with the requirements contained in these rules.

1.17 Variances

1.17 (01) Variances to these rules may be granted by the Iowa Department of Natural Resources or by the Board of Health provided sufficient information is afforded to substantiate the need and propriety of such action. Application for variances and justification shall be in writing and copies filed with the Cerro Gordo County Board of Health.

1.18 Amendments

1.18 (01) Amendments and additions to this ordinance shall be made as required by Iowa Code Chapter 137.6. The Board of Health shall propose amendments and additions to this regulation to the Board of Supervisors whenever the Board of Health determines such changes are necessary to fulfill the purpose of this regulation.

1.19 Separability of Provisions

1.19 (01) If any section, paragraph, clause or provision of this ordinance shall be held invalid, the invalidity of such section, paragraph, clause or provision shall not effect any of the remaining provision of this ordinance.

1.20 Regulation Effective Upon Publication

1.20 (01) This regulation being deemed essential and imperative for the preservation of the public health, shall be in force and effect from and after its passage and publication as provided by law. Amendments to this Ordinance passed in June of 2009 shall be effective on July 1, 2009.

Chapter 2

Private Sewage Disposal System Construction

2.1 Requirements When Discharging Into Surface Waters

2.1 (01) All discharges from private sewage disposal systems which are discharged into, or have the potential to reach, any designated water of the state or subsurface drainage tile shall be treated in a manner that will conform with the requirements of NPDES General Permit No. 4 issued by the Department of Natural Resources, as referenced in 567--Chapter 64. Prior to the installation of any system discharging to waters of the state or a subsurface drainage tile, a Notice of Intent to be covered by NPDES General Permit No. 4 shall be submitted to the department. Systems covered by this permit must meet all applicable requirements listed in the NPDES permit.

2.2 Requirements When Discharging Into the Soil

2.2 (01) No septage or wastewater shall be discharged into or onto the soil except in compliance with the requirements contained in these rules.

2.3 Requirements When Effluent is Discharged Above the Ground Surface.

2.3 (01) All private sewage disposal systems that discharge above the ground surface shall be inspected annually to ensure proper operation.

2.3 (02) Private sewage disposal systems that require a maintenance contract shall be inspected by a manufacturer's certified technician in accordance with the manufacturer's standards.

2.4 Site Evaluation

2.4 (01) A site evaluation shall be conducted prior to issuance of a construction permit. Consideration shall be given, but not limited to, the impact of the following: topography; drainage ways; terraces; floodplain; percent of land slope; location of property lines; location of easements; buried utilities; existing and proposed tile lines; existing, proposed and abandoned water wells; amount of available area for the installation of the system; evidence of unstable ground; alteration (cutting, filling, compacting) of existing soil profile; and soil factors determined from a professional soil analysis and soil survey maps.

2.4 (02) Onsite wastewater tracking system. All pertinent information, including but not limited to, the site address, owner, type, date of installation, and as-built drawing of the private sewage disposal system shall be entered into the department's web-based onsite wastewater tracking system.

2.5 Minimum Distances

2.5 (01) All private sewage disposal systems shall be located in accordance with the minimum distances shown in Table I:

TABLE I

Minimum Distance in Feet From	Closed Portion of Treatment System (1)	Open Portion of Treatment System (2)
Private water supply well	50	100
Public water supply well	200	200
Groundwater heat pump borehole	50	100
Lake or reservoir	50	100
Stream or pond	25	25
Edge of drainage ditch	10	10
Dwelling or other structure	10	10
Property lines (unless a mutual easement is signed and recorded)	10	10
Other type subsurface treatment system	5	10
Water lines continually under pressure	10	10
Suction water lines	50	100
Foundation drains or subsurface tiles	10	10

(1) Includes septic tanks, closed biofilters, aerobic treatment units and impervious vault toilets.

(2) Includes subsurface absorption systems, open bottom media filters, mound systems, and intermittent sand filters.

2.6 Connection to Public Sewers

2.6 (01) No private sewage disposal system shall be installed, repaired or rehabilitated where a publicly owned treatment works (POTW) is reasonably accessible or where a local ordinance requires connection to a POTW. The POTW may be considered as not available when such POTW, or any building or any exterior drainage facility connected thereto, is located more than 300 feet from the closest point on any proposed or existing building, or exterior wastewater drainage facility, on any lot or premises which abuts and is served by such POTW. Final determination of availability shall be made by the Administrative Authority.

2.6 (02) When a POTW becomes reasonably accessible, within 300 feet of the closest point on any building required to be served by a private sewage disposal system, the building shall be connected to said POTW within a time period as determined by the Administrative Authority. Final determination of availability and connection shall be made by the Administrative Authority.

2.6 (03) When a POTW is not available, every building wherein persons reside, congregate or are employed shall be provided with an approved private sewage disposal system.

2.7 Construction, Alteration or Repair

2.7 (01) All private sewage disposal systems constructed, altered, or repaired after the effective date of these rules shall comply with these requirements. Alteration includes any changes that effect the intended treatment or disposal of the waste. Repair of existing components that does not change the treatment or disposal characteristics of the system would be exempt. However, the discharge restrictions in 1.2 (01) apply.

2.8 Building Sewers

2.8 (01) Location and construction. The types of construction and distances as shown in Table II shall be maintained for the protection of water supplies. The distances shall be considered minimum and increased where possible to provide better protection.

TABLE II

Sewer Construction	Distance from PRIVATE Well Water Supply	Distance from PUBLIC Well Water Supply
Schedule 40 pipe (or SDR 26 or stronger) with approved type joints or cast-iron soil pipe (extra heavy or centrifugally cast) with joints of preformed gaskets.	10	25
Sewer pipes installed to remain watertight and rat proof.	50	75

Under no circumstances shall a well suction line pass under a building sewer line.

2.8 (02) Requirements for building sewers.

- A) Type. Building sewers used to conduct wastewater from a building to the primary treatment unit of a private sewage disposal system shall be constructed of Schedule 40 plastic pipe (or SDR-26 or stronger) with solvent-weld or bell-and-gasket type joints, or cast iron, with integral bell-and-gasket type joints.
- B) Size. Building sewers shall not be less than four (4) inches in diameter.
- C) Grade. Such building sewers shall be laid to the following minimum grades:
 4-inch sewer 12 inches per 100 feet
 6-inch sewer 8 inches per 100 feet

2.8 (03) Cleanouts

- A) Spacing. A cleanout shall be provided where the building sewer leaves the house and at least every 100 feet allowing rodding downstream.
- B) Change of direction. An accessible cleanout shall be provided at each change in direction or grade, if the change exceeds 45 degrees.

2.8 (04) Grease Interceptors

- A) Applicability. Grease interceptors shall be provided for kitchen flows at restaurants, nursing homes, schools, hospitals and other facilities from which grease can be expected to be discharged.
- B) Installation. Grease interceptors shall be installed on a separate building sewer serving kitchen flows into which the grease will be discharged. The discharge from the grease interceptor must flow to a properly designed septic tank or to a building sewer and then to the septic tank.

2.9 Septic Tanks

2.9 (01) General Requirements.

- A) Septic tank required. Every private sewage disposal system, unless waived by the Administrative Authority, shall have as a primary treatment unit, a septic tank, as described in this rule. All wastewater from the facility serviced shall discharge into the

- septic tank (except as noted in “D” below).
- B) Easements. No septic tank shall be located upon property under ownership different from the ownership of that property or lot upon which the wastewater originates unless easements to that effect are legally recorded and approved by the proper Administrative Authority.
 - C) Effluent discharge requirements. All septic tank effluent shall discharge into a secondary treatment system in compliance with this rule or other system approved by the Administrative Authority.
 - D) Prohibited wastes. Septic tanks shall not be used for the disposal of chemical wastes or grease in quantities which might be detrimental to the bacterial action in the tank. No drainage from roof drains, foundation drains, area drains, or water softener backwash shall enter any private sewage disposal system.

2.9 (02) Capacity

- A) Minimum capacity. The minimum liquid holding capacity shall be as specified in Table III (capacity may be obtained by using one or more tanks):

TABLE III

Number of Bedrooms	Minimum Septic Tank Capacity
up to and including 3 bedroom homes	1,250 gal.
4 bedroom homes	1,500 gal.
5 bedroom homes	1,750 gal.
6 bedroom homes	2,000 gal.

- B) Other domestic waste systems. In the event that any installation serves more than a 6 bedroom home or its equivalent, or serves a facility other than a house and serves the equivalent of 15 persons or less (1,500 gal/day), approval of septic tank capacity and design must be obtained from the Administrative Authority. Minimum septic tank liquid holding volume shall be two times the estimated daily sewage flow.
- C) For wastewater flow rates for nonresidential and commercial domestic waste applications under 1,500 gal/day, refer to Appendix A.
- D) Minimum depth. Minimum liquid holding depth in any compartment shall be 40 inches.
- E) Maximum depth. Maximum liquid holding depth for calculating capacity of the tank shall not exceed 6 6.5 feet.
- F) Dimensions. The interior length of a septic tank should not be less than 5 feet and shall be at least 1 ½ times the width (larger length-to-width ratios are preferred). No tank or compartment shall have an inside width of less than 2 feet. The minimum inside

diameter of a vertical cylindrical septic tank shall be 5 feet.

2.9 (03) Construction Details

- A) Fill soil. Any septic tank placed in fill soil shall be placed upon a level, stable base that will not settle.
- B) Compartmentalization. Every septic tank shall be divided into two compartments as follows (compartmentalization may be obtained by using more than one tank):
 - 1) The capacity of the influent compartment shall not be less than one-half nor more than two-thirds of the total tank capacity.
 - 2) The capacity of the effluent compartment shall not be less than one-third nor more one-half of the total tank capacity.
- C) Inlet/outlet. The invert of the inlet pipe shall be a minimum of 2 inches and a maximum of 4 inches higher than the invert of the outlet pipe.
- D) Baffles. Four-inch diameter schedule 40 plastic pipe tees shall be used as inlet and outlet baffles. Inlet tees shall extend at least 6 inches above and 8 inches below the liquid level of the tank. The outlet tee shall extend above the liquid level a distance of at least 6 inches and below the liquid level a distance of at least 10 inches but no more than 30 percent of the liquid depth. A minimum clearance between the top of the inlet and outlet tees and the bottom of the tank lid of 2 inches shall be provided. A horizontal separation of at least 36 inches shall be provided between the inlet baffle and the outlet baffle in each compartment. Outlet baffles shall be fitted with an effluent screen. All effluent screens shall be certified by an ANSI-accredited third-party certifier to meet National Sanitation Foundation Standard 46, including appendices, or other equivalent testing as determined by the department. Effluent screens require periodic inspection and cleaning to ensure their continued proper operation. A horizontal slot 4 inches by 6 inches, or two suitably spaced 4-inch diameter holes in the tank partition, may be used instead of a tee or baffle, the top of the slot or holes to be located below the water level a distance of one-third the liquid depth. A ventilation hole or slot shall be provided in the partition, at least 8 inches above the liquid level.
- E) Access.
 - 1) Access necessary for adequate inspection, operation, and maintenance must be provided to all parts of septic tanks.
 - 2) An access opening shall be provided at each end of the tank over the inlet and outlet. These opening shall be at least 18 inches in the smallest dimension.
 - 3) Watertight risers shall be installed to bring the access openings to the ground surface. Risers shall be secured using stainless steel fasteners of sufficient complexity, locking devices, concrete lids of sufficient weight, or another device approved by the administrative to deter tampering.

2.9 (04) Construction

- A) Materials. Tanks shall be constructed of poured concrete or plastic resistant to corrosion or decay and designed so that they will not collapse or rupture when subjected to anticipated earth and hydrostatic pressures when the tanks are either full or empty. Metal tanks are prohibited.
- B) Watertight tanks. Tanks shall be watertight. Prior to approving a tank, the Administrative Authority may ask for proof that a tank is watertight.
- C) Dividers. Tank divider walls and divider wall supports shall be constructed of heavy,

durable plastic, fiberglass, concrete or other similar corrosion-resistant materials approved by the Administrative Authority.

- D) Inlet and outlet ports. Inlet and outlet ports of pipe shall be constructed of heavy, durable schedule 40 PVC plastic sanitary tees or other similar approved corrosion-resistant material.

2.9 (05) Wall thickness. Minimum wall thickness for tanks shall conform to the following specifications:

Poured concrete	6 inches thick
Poured concrete, reinforced	4 inches thick
Special concrete mix, vibrated and reinforced ...	2.5 inches thick
Fiberglass or plastic	0.25 inches thick

2.9 (06) Concrete specifications. Concrete used in precast septic tank construction shall have a maximum water-to-cement ratio of 0.45. Cement content shall be at least 650 pounds per cubic yard. Minimum compressive strength (fc) shall be 4,000 psi (28 Mpa) at 28 days of age. The use of ASTM C150 Type II cement or the addition of silica fume or Class F fly ash is recommended.

2.9 (07) Tank bottom. Septic tank bottoms shall conform to the specifications set forth for septic tank walls except special mix concrete shall be at least 3 inches thick.

2.9 (08) Tank tops. Concrete or masonry septic tank tops shall be a minimum of 4-inches in thickness and reinforced with 3/8 inch reinforcing rods in a 6-inch grid or equivalent. Fiberglass or plastic tank tops shall be a minimum of 1/4 inch in thickness and shall have reinforcing and be of ribbed construction.

2.9 (09) Reinforcing steel placement. The concrete cover for reinforcing bars, mats, or fabric shall not be less than 1-inch.

2.9 (10) Bedding. Fiberglass or plastic tanks shall be bedded according to manufacturer's specifications. Provisions should be made to prevent flotation when the tanks are empty.

2.9 (11) Connecting pipes.

- A) Minimum diameter. The pipes connecting septic tanks installed in series and at least the first 5 feet on the effluent side of the last tank shall be a minimum of 4-inches diameter schedule 40 plastic.
- B) Tank connections. All inlet and outlet connections at the septic tanks shall be made by self-sealing gaskets cast into the concrete or formed into the plastic or fiberglass.
- C) Joints. All joints in connecting schedule 40 plastic pipe shall be approved plastic pipe connections such as solvent welded or compression-type gaskets.
- D) Pipe in unstable ground. Schedule 40 plastic pipe shall be used extending across excavations or unstable ground to at least 2 feet beyond the point where the original ground has not been disturbed in septic tank installations. If the excavation spanned is more than 2 feet, it must be filled with sand or compacted fill to provide a firm bed for the pipe. The first 12-inches of backfill over the pipe shall be applied in thin layers using material free from stones, boulders, large frozen chunks of earth or any similar material

that would damage or break the pipe.

2.10 Subsurface Absorption Systems – Secondary treatment system installation shall be determined according to the following guidelines:

- A) A conventional system including pressure dosed distribution shall always be the first choice for a private sewage disposal system.
- B) If a conventional sewage disposal system does not meet the requirements of this Chapter, then a mound system shall be required.
- C) If a mound system does not meet the requirements of this chapter, then a subsurface sand filter or biofilter shall be required.
- D) If a subsurface sand filter or biofilter does not meet the requirements of this chapter, then an individual aerobic treatment unit shall be required as specified by section 2.10 (11) of this chapter.

2.10 (01) General requirements.

- A) Locations. All subsurface absorption systems shall be located on the property to maximize the vertical separation distance from the bottom of the absorption trench to the seasonal high groundwater level, bedrock, hardpan, or other confining layer, but under no circumstances shall this vertical separation be less than 3 feet.
- B) Soil Evaluation. A professional soil analysis is required before any soil absorption system is installed.
 - 1) When a professional soil analysis is performed, soil factors such as soil content, color, texture, and structure shall be used to determine a soil loading rate.
 - 2) Acceptable soil loading rate. An area is deemed suitable for conventional soil absorption if the average soil loading rate is equal to or greater than 0.2 gallons per square foot per day (gal/ft²/day).
- C) Groundwater. If seasonal high groundwater level is present within 3 feet of the trench bottom final grade and cannot be successfully lowered by subsurface tile drainage, the area shall be classified as unsuitable for the installation of a standard subsurface absorption system. Consult the Administrative Authority for an acceptable alternative method of wastewater treatment.
- D) Site limitations. In situations where specific location or site characteristics would appear to prohibit normal installation of a soil absorption system, design modifications may be approved by the Administrative Authority which could overcome such limitations. Examples of such modifications could be the installation of subsurface drainage, use of shallow or at-grade trenches, use of dual soil treatment areas, mound system, or water conservation plans.
- E) Prohibited drainage. Roof, foundation, and storm drains shall not discharge into or upon subsurface absorption systems. Nothing shall enter the subsurface absorption system which does not first pass through the septic tank.
- F) Prohibited construction. There shall be no construction of any kind, including driveways, covering the septic tank, distribution box or absorption field of a private sewage disposal system. Vehicle access should be infrequent, primarily limited to vegetation maintenance.
- G) Driveway crossings. Connecting lines under driveways shall be constructed of schedule 40 plastic pipe, or equivalent, and shall be protected from freezing.
- H) Easements. No wastewater shall be discharged upon any property under ownership

different from the ownership of the property or lot upon which it originates unless easements to that effect are legally recorded and approved by the Administrative Authority.

2.10 (02) Sizing requirements.

- A) Soil loading charts. Table IV provides soil loading rates based upon soil texture and structure. Use and Table IV to determine the appropriate soil loading rate. Table V specifies linear feet of lateral trenches required based upon the soil loading rate, wastewater flow rate, and trench width. Table VI provides a method to determine the size of an absorption bed. Absorption beds (Table VI) shall not be used except when the lot size limitations preclude the installation of a lateral trench system. Further details concerning limitations of this alternative shall be obtained from the Administrative Authority before authorization for installation is requested.

Table IV

Maximum soil loading rates based upon soil evaluations in gallons per square foot (gal/ft²/day) for septic tank effluent. Values in () are for secondary treated effluent.

Soil Texture	Single Grain	Massive	Structure Granular, Blocky, or Prismatic			Platy	
			weak	moderate	strong	weak	moderate strong
Coarse Sand and Gravel	1.2 (1.6)	x	1.2 (1.6)	x	x	1.2 (1.6)	X
Medium sands	0.7 (1.4)	x	0.7 (1.4)	x	x	0.7 (1.4)	X
Fine sands	0.5 (0.9)	x	0.5 (0.9)	x	x	0.5 (0.9)	X
Very fine sands*	0.3 (0.5)	x	0.3 (0.5)	x	x	0.3 (0.5)	X
Sandy Loam	X	0.3 (0.5)	0.45 (0.7)	0.6 (1.1)	0.65 (1.2)	0.4 (0.6)	0.3 (0.5)
Loam	X	0.4 (0.6)	0.45 (0.7)	0.5 (0.8)	0.55 (0.8)	0.4 (0.6)	0.3 (0.5)
Silty loam	X	NS	0.4 (0.6)	0.5 (0.8)	0.5 (0.8)	0.3 (0.5)	0.2 (0.3)
Clay loam	X	NS	0.2 (0.3)	0.45 (0.7)	0.45 (0.7)	0.1 (0.2)	0.1 (0.2)
Silty clay loam	X	NS	0.2 (0.3)	0.45 (0.7)	0.45 (0.7)	NS	NS

"X" - not found in nature

NS - not suitable for soil absorption

* some very fines sands are difficult to determine flow rates and experience may provide better information and flow rates.

Table V

Length of absorption trenches in feet

	2 bedroom 300 gal.		3 bedroom 450 gal.		4 bedroom 600 gal.		5 bedroom 750 gal.		6 bedroom 900 gal.	
	2'	3'	2'	3'	2'	3'	2'	3'	2'	3'
Width of trench in feet										
Soil loading rate gal/ft ²										
0.1	Not suitable for soil absorption trenches									
0.2	750	500	1125*	750	1500*	1000*	1875*	1250*	2250*	1500*
0.3	500	333	750	500	1000*	666	1250*	833*	1500*	1000*
0.4	375	250	562	375	750	500	938*	625	1125*	750
0.5	300	200	450	300	600	400	750	500	900*	600
0.6	250	167	375	250	500	333	625	417	750	500
0.7	214	143	321	214	428	286	536	357	643	429
0.8	188	125	281	188	375	250	469	312	562	375
0.9	167	111	250	167	333	222	417	278	500	333
1.0	150	100	250	150	300	200	375	250	450	300
1.1	136	91	205	136	273	182	341	227	409	273
1.2	125	84	188	125	250	167	313	208	375	250

NS - Not suitable for laterals

* Requires pressure distribution (pump)

Table VI
Alternative Option for Use of Absorption Bed⁽¹⁾

Perecolation Rate Min./Inch	Absorption Area/Bedroom Sq. Ft.	Loading Rate/Day Gal./Sq. Ft.
4-5	300	.5
6-15	400	.375
16-30	600	.25

⁽¹⁾Absorption beds may only be used when site space restrictions require and soil loading rate is not < 0.25.

Min. Per Inch	Two- Bedroom 300 gal/day	Three- Bedroom 450 gal/day	Four- Bedroom 600 gal/day	Five- Bedroom 750 gal/day	Six- Bedroom 900 gal/day
4-5	160	200	260	340	400
6-15	200	300	400	500	600
16-30	300	400	500	600	700

31-45	400	500	600	800	900
46-60	500	600	700	900	1,100

For domestic, nonhousehold wastewater flow rates refer to Appendix A.

Table IV (B)
Alternative Option for Use of Absorption Bed

Percolation Rate (min/inch)	Absorption Area per Bedroom (sq. ft.)	Loading Rate per Day (gal./sq. ft.)
1-5	300	0.5
6-15	400	0.375
16-30	600	0.25

2.10 (03) Construction details (All gravity fed soil absorption trenches)

- A) Depth. Lateral trenches shall not exceed 36 inches in depth, but a shallower trench bottom depth of 18 to 24 inches is recommended. Not less than 6 inches of porous soil shall be provided over the laterals. Minimum separation between trench bottom and groundwater, rock formation or other confining layers shall be 36 inches even if extra rock is used under the pipe.
- B) Length. No gravity fed lateral absorption trench shall be greater than 100 feet long, unless pressure distribution is utilized.
- C) Separation distance. At least 6 feet of undisturbed soil shall be left between each trench edge on level sites. The steeper the slope of the ground, the greater the separation distance should be. Two feet of separation distance should be added for each 5 percent increase in slope from level.
- D) Grade. Trench bottom should be constructed level from end to end. On sloping ground, the trench shall follow a uniform land contour to maintain a minimum soil cover of 6 inches while ensuring a level trench bottom.
- E) Compaction. There shall be minimum use or traffic of heavy equipment on the area proposed for soil absorption. In addition, it is prohibited to use heavy equipment on the bottom of the trenches in the absorption area.
- F) Fill soil. Soil absorption systems shall not be installed in fill soil. Disturbed soils which have stabilized for at least one year would require a recent professional soil analysis.
- G) Bearing strength. Soil absorption systems shall be designed to carry loadings to meet AASHTO H-10 standards.
- H) Soil smearing. Soils with significant clay content should not be worked when wet. If soil moisture causes sidewall smearing, the trench bottom and sidewalls shall be scarified.

2.10 (04) Gravel Systems

- A) Gravel. A minimum of 6 inches of clean, washed river rock, free of clay and clay coatings, shall be laid below the distribution pipe, and enough rock shall be used to cover the pipe. This rock shall be of such a size that 100 percent will pass a 2.5 inch screen and 100 percent will be retained on a $\frac{3}{4}$ inch screen. **Limestone or crushed rock is not recommended for soil absorption systems.** If used, it shall meet the following criteria:
 - 1) Abrasion loss. The percent wear, as determined in accordance with the AASHTO T 96, Grading C, shall not exceed 40 percent.
 - 2) Freeze and thaw loss. When subjected to the freezing and thawing test, Iowa DOT Materials Laboratory Test Method 211, Method A, the percentage loss shall not exceed 10 percent.
 - 3) Absorption. The percent absorption, determined in accordance with Iowa DOT Materials Laboratory Test Method 202, shall not exceed 3 percent.
 - 4) Gradation. The aggregate shall have not more than 1.5 percent by weight pass a No. 16 sieve.
- B) Trench width. Lateral trenches, for gravel systems, shall be a minimum of 24 inches and a maximum of 36 inches in width at the bottom of the trench.
- C) Grade. The distribution pipes shall be laid with a minimum grade of 2 inches per 100 feet of run and a maximum grade of 6 inches per 100 feet of run with a preference given

to the lesser slope.

- E) Pipe. Distribution pipe shall be PVC rigid plastic meeting ASTM Standard 2729, or other suitable material approved by the Administrative Authority. The inside diameter shall be not less than 4 inches, with perforations at least $\frac{1}{2}$ inch and no more than $\frac{3}{4}$ inch in diameter spaced no more than 40 inches apart. Two rows of perforations shall be provided 120 degrees apart along the bottom half of the tubing (each 60 degrees up from the bottom centerline). The end of the pipe in each trench shall be sealed with a watertight cap unless, on a level site, a footer is installed connecting the trenches together. Coiled perforated plastic pipe shall not be used when installing absorption systems.
- F) Gravel cover. Unbacked, rolled, 3.5 inch-thick fiberglass insulation, untreated building paper, synthetic drainage fabric, or approved material shall be laid so as to separate the gravel from the soil backfill.

2.10 (05) Gravelless pipe systems

- A) Application. Gravelless subsurface absorption systems may NOT be used as a private sewage disposal system option.

2.10 (06) Chamber systems.

- A) Application. Chamber systems may be used as an alternative to conventional 4 inch pipe placed in gravel-filled trenches. However, they cannot be used in areas where conventional systems would not be allowed due to poor permeability, high groundwater, or insufficient depth to bedrock.
- B) Installation. Manufacturer's specifications and installation procedures shall be closely adhered to.
- C) Length of trench. The total length of absorption trench for chambers 24 inches or less in bottom width shall be the same as given in Table V for a two-foot wide conventional soil absorption trench. Chambers 33 inches wide or greater shall be sized as give in Table V for a three-foot wide conventional soil absorption trench.
- D) Sidewall. The chambers shall have at least 6 inches of sidewall effluent soil exposure height above the invert of the inlet.

2.10 (07) Expanded polystyrene (EPS) aggregate system.

- A) Application. EPS aggregate systems may be used as an alternative to conventional 4 inch pipe placed in gravel-filled trenches. However, EPS aggregate systems cannot be used in areas where conventional systems would not be allowed due to poor permeability, high groundwater, or insufficient depth to bedrock.
- B) Installation. The manufacturer's specifications and installation procedures shall be adhered to.
- C) Length of trench. The total length of soil absorption trench for 12 inch EPS aggregate bundles shall be the same as given in Table V for a two foot wide conventional soil absorption trench. Twelve inch EPS aggregate bundles 33 inches wide or greater shall be sized as given in Table V for a three-foot wide conventional soil absorption trench.
- D) Cover. Unbacked, rolled, 3 $\frac{1}{2}$ inch thick fiberglass insulation, untreated building paper,

synthetic drainage fabric, or other approved material shall be laid so as to separate the EPS aggregate from the soil backfill.

2.10 (08) Gravity distribution. Dosing is always recommended and preferred to improve distribution, improve treatment and extend the life of the system.

- A) On a hillside, septic tank effluent may be serially loaded to the soil absorption trenches by drop boxes or overflow piping (rigid sewer pipe). Otherwise, effluent shall be distributed evenly to all trenches by use of a distribution box or commercial distribution regulator approved by the Administrative Authority.
- B) Design. A distribution box shall always be used unless pressure distribution is utilized. It shall be of proper design and installed with separate watertight headers leading from the distribution box to each lateral.
- C) Outlet height. The distribution box shall have outlets at the same level at least 4 inches above the bottom of the box to provide a minimum of 4 inches of water retention in the box.
- D) Baffles. There shall be a pipe tee or baffle at the inlet to break the water flow.
- E) Unused outlets. All unused outlet holes in the box shall be securely closed.
- F) Interior coating. All distribution boxes shall be constructed of corrosion-resistant rigid plastic materials, or other corrosion-resistant material approved by the Administrative Authority.
- G) Outlets levels. All outlets of the distribution box shall be made level. A 4 inch cap with as an offset hole approximately 2 inches in diameter shall be installed on each outlet pipe. These caps shall be rotated until all outlets discharge at the same elevation. Equivalent leveling devices may be approved by the local authority. Once leveling outlets have been set, they shall be securely fastened to prevent shifting or adjustment.
- H) Access. Access necessary for adequate inspection, operation, and maintenance must be provided to the distribution box. A watertight riser shall be installed to bring the access opening to the ground surface. Risers shall be secured using stainless steel fasteners of sufficient complexity, locking devices, concrete lids of sufficient weight, or another device approved by the Administrative Authority to deter tampering.
- I) Equal length required. The soil absorption area serviced by each outlet of the distribution box shall be of equal length.
- J) Trenches. Must be insulated to prevent freezing.

2.10 (09) Dosing systems.

A) Pump systems.

- 1) Pump and pit requirements. In the event the effluent from the septic tank outlet cannot be discharged by gravity and still maintain proper lateral depths, the effluent shall discharge into a watertight vented pump pit with an inside diameter of not less than 24 inches, equipped with a tight-fitting manhole cover set at grade level, and sized not less than 300 gallons. The sump vent shall extend a minimum of 6 inches above grade level and shall be a minimum size of 1 1/4 inches fitted with a return bend. The pump shall be of a submersible type of corrosion-resistant material.
- 2) Pump setting. The pump shall be installed in the pump pit in a manner that ensures ease of service and protection from frost and settled sludge. The pump shall be set

to provide a dosing frequency of approximately four times a day based on the maximum design flow. No onsite electrical connections shall be made in the pump pit. These connections shall be made in an exterior weatherproof box.

- 3) Pressure line size. The pressure line from the pump to the point of discharge shall not be smaller than the outlet of the pump it serves.
 - 4) Drainage. Pressure lines shall be installed to provide total drainage between dosings to prevent freezing or be buried below frost level up to the distribution box.
 - 5) High water alarm. Pump pits shall be equipped with a sensor set to detect if the water level rises above the design high water level when the pump fails. This sensor shall activate an auditory or visual alarm to alert the homeowner that repairs are required.
 - 6) Discharge point. The effluent shall discharge under pressure into a distribution box or may be distributed by small diameter pipes throughout the entire absorption field.
 - 7) Pressure regulators. Each pressure distribution line shall be equipped with an accessible ball valve for pressure regulation and a riser pipe at the end of each pressured line for pressure determination. It is recommended that pressured distribution lines be inspected annually for consistent pressure throughout the system.
- B) Dosing siphons. Dosing siphons may also be used. Manufacturer's specifications shall be adhered to for installation. Similar dosing volumes and frequencies are recommended. Dosing siphons require periodic cleaning to ensure their continued proper operation.
- C) Filtered pump vaults. Filtered pump vaults may be used when dosing volume is less than 50 gallons. Filtered pump vaults require periodic inspection and cleaning to ensure their continued proper operation.

2.10 (10) Mound system.

A) General requirements.

- 1) Mound systems shall be permitted only after a thorough site evaluation has been made and landscaping, dwelling placement, effect on surface drainage and general topography have been considered.
- 2) Mound systems shall not be utilized on sites which are subject to flooding with a ten-year or greater frequency.
- 3) Mound systems shall not be utilized on soils where the high groundwater level or impermeable bedrock occur within 12 inches of natural grade, or where creviced bedrock occurs within 20 inches of natural grade.
- 4) Mound systems shall be constructed only upon undisturbed naturally occurring soils or where a soil analysis has determined the site is suitable..
- 5) Mound systems shall be located in accordance with the distances specified in Table I as measured from the outer edge of the mound toe.
- 6) No buildings, driveways, or other surface or subsurface obstructions shall be permitted within 50 feet on the down gradient side of the mound when the mound is constructed on a slope greater than 5 percent. No future construction shall be permitted in this effluent disposal area as long as the mound is in use.
- 7) Specifications given in these rules for mounds are minimal and may not be sufficient for all applications. Technical specifications are changing with experience and research. Other design information beyond the scope of these rules may be

necessary to properly design a mound system.

B) Material for mound fill.

- 1) The mound shall be constructed using clean, medium-textured sand, sometimes referred to as concrete sand. The sand size shall be such that at least 25 percent by weight shall have a diameter between 2.0 and 0.25 mm, less than 35 percent with a diameter between 0.25 and 0.05 mm and less than 5 percent with a diameter between 0.002 and 0.05 mm.
- 2) Rock fragments larger than 1/16 inch (2.0 mm) shall not exceed 15 percent by weight of the material used for sandy fill.

C) Construction details.

- 1) There shall be a minimum of 3 feet of fill material and undisturbed naturally occurring soils between the bottom of the washed gravel and the highest elevation of the limiting conditions defined in 2.10 (10) (A) 3.
- 2) Gravel shall be washed and shall range in size from 3/4 inch to 2.5 inches.
- 3) From 1 to 2 feet of medium textured sand (depending upon the underlying soil depth) must be placed between the bottom of the gravel and the top of the plowed surface of the naturally occurring soil.
- 4) Mound systems shall utilize absorption bed distribution piping design. The bed shall be installed with the long dimension parallel to the land contour. Systems on steep slopes with slowly permeable soils should be narrow to reduce the possibility of toe seepage.
- 5) Minimum spacing between distribution pipes shall be 4 feet, and a minimum of 3 feet shall be maintained between any trench and the sidewall of the mound.
- 6) No soil under or up to 50 feet down gradient of the mound may be removed or disturbed except as specified herein.
- 7) Construction equipment which would cause undesirable compaction of the soil shall be kept off the base area. Construction or plowing shall not be initiated when the soil moisture content is high. If a sample of soil from approximately 9 inches below the surface can be easily rolled into a 1/8 to 1/4 inch diameter wire, the soil moisture content is too high for construction purposes.
- 8) Above ground vegetation shall be closely cut and removed from the ground surface throughout the area to be utilized for the placement of the fill material.
- 9) The area shall be plowed to a depth of 7 to 8 inches, parallel to the land contour with the plow throwing the soil up slope to provide a proper interface between the fill and the natural soil. Tree stumps should be cut flush with the surface of the ground, and roots should not be pulled.
- 10) The base area of the mound is to be calculated on the results of the soil loading rate as indicated in Table IV. The base area of the mound below the downslope from the trenches, excluding the area under the end slopes, must be large enough for the natural soil to absorb the estimated daily wastewater flow.
- 11) The area of the fill material shall be sufficient to extend 3 feet beyond the edge of the gravel area before the sides are shaped to at least a 5:1 slope.
- 12) Distribution system.
 - a) The distribution pipe shall be rigid plastic pipe, schedule 40 or 80 with 1 inch nominal diameter.
 - b) The distribution pipe shall be provided with a single row of 1/4 inch perforations in a straight line 30 inches on center along the length of the pipe or as an

equivalent design that ensures uniform distribution. All joints and connections shall be solvent-cemented.

- c) The distribution pipe shall be placed in the clean, washed gravel with holes downward. The gravel shall be a minimum of 9 inches in depth below and 3 inches in depth above the pipe.
 - d) No perforations shall be permitted within 3 inches of the outer ends of any distribution pipes.
 - e) The outer ends of all pressure distribution lines shall be securely capped and accessible from the ground surface without excavation.
 - f) The central pressure manifold should consist of 1.5 inch or 2 inch solid plastic pipe using a tee or cross for connecting the distribution lines.
 - g) Clean out caps shall be placed over the ends of each distribution line for inspection purposes and pressure determination.
- 13) Construction should be initiated immediately after preparation of the soil interface by placing all of the sandy fill material needed for the mound (to the top of the trench) to a minimum depth of 21 inches above the plowed surface. This depth will permit excavation of the trenches to accommodate the 9 inches of washed gravel or crushed stone necessary for the distribution piping.
 - 14) The absorption trench or trenches shall be hand excavated to a depth of 9 inches, the bottoms of the trenches made certain to be level.
 - 15) Twelve inches of gravel shall be placed in the trench and hand leveled, and then 3 inches of the gravel removed with a shovel in the location where the distribution pipe will be placed. After the distribution pipe is placed, the pipe shall be covered with 2 inches of gravel.
 - 16) The top of the gravel shall be covered with synthetic drainage fabric. Unbacked, rolled 3 inch thick fiberglass insulation, untreated building paper, or other suitable material may be used with approval of the Administrative Authority. Plastic or treated building paper shall not be used.
 - 17) After installation of the distribution system, gravel and material over the gravel, the entire mound is to be covered with topsoil native to the site or of similar characteristics to support vegetation found in the area. The entire mound shall be crowned by providing 12 inches of topsoil on the side slopes with a minimum of 18 inches over the center of the mound. The entire mound shall be seeded, sodded, or otherwise provided with a grass cover to ensure stability of the installation.
 - 18) The area surrounding the mound shall be graded to provide for diversion of surface runoff water.
- D) Dosing.
- 1) Pressure dosing shall be required for mound systems.
 - 2) The dosing volume shall be three to ten times the distribution piping network volume, but not more than 25 percent of the design flow shall be applied to the soil in one dose.
 - 3) The dosing pump or siphon shall be capable of maintaining a squirt height of 3 feet above the pipe at the outer ends of the distribution lines. All lines shall have an equal squirt height above the pipe to maintain equal distribution..

2.10 (11) Intermittent sand filters.

A) General requirements.

- 1) Use. Intermittent sand filters may be used when the administrative authority determines the site is unacceptable for a full-sized soil absorption system or mound system.
- 2) Location. Intermittent sand filters shall be located in accordance with the distances specified in Table I.
- 3) Sampling.
 - a) A sampling port shall be available at the discharge point of the filter or shall be installed in the discharge line.
 - b) All intermittent sand filters having an open discharge shall be sampled in accordance with the requirements of NPDES General Permit No. 4 if applicable.
 - c) Prohibited construction. There shall be no construction, such as buildings or concrete driveways, covering any part of as an intermittent sand filter.

B) Construction.

- 1) Number. As an intermittent sand filter shall consist of one filtering bed or two or more filtering beds connected in series and separated by a minimum of 6 feet of undisturbed earth.
- 2) Pipelines. Each bed contains a horizontal set of collector lines. The collector lines shall be equivalent to schedule 40 PVC pipe, SDR-35 or other suitable materials.
 - a) One collector line shall be provided for each 6 feet of width or fraction thereof. A minimum of two collector lines shall be provided.
 - b) The collector lines shall be laid to a grade of 1 inch in 10 feet (or 0.5 to 1.0 percent).
 - c) Each collector line shall be vented or connected to a common vent. Vents shall extend at least 12 inches above the ground surface with the outlet screened, or provided with a perforated cap.
 - d) Gravelless drainfield pipe with fiber wrap may be used for the collector lines. If so, no gravel or pea gravel is required covering the collector lines. The pipe shall be bedded in filter sand.
 - e) If 4-inch plastic pipe with perforations is used for the collector lines, they shall be covered as follows:
 - 1) Gravel $\frac{3}{4}$ inch to 2 $\frac{1}{2}$ inches in size shall be placed around and over the lower collector lines until there is a minimum of 4 inches of gravel over the pipes.
 - 2) The gravel shall be overlain with a minimum of 3 inches of washed pea gravel $\frac{1}{8}$ -inch to $\frac{3}{8}$ -inch size interfacing with the filter media. A layer of fabric filter may be used in place of the pea gravel. Fabric filters must be 30 by 50 mesh with a percolation rate of at least 5 gal/sq.ft.
 - f) A minimum of 24 inches of coarse washed sand shall be placed over the pea gravel or above the gravelless drainfield pipe. The sand shall meet the Iowa DOT standards for concrete sand: 100 percent shall pass a 9.5 mm screen, 90 to 100 percent shall pass a 4.75 mm screen, 70 to 100 percent shall pass a 2.36 mm screen, 10 to 60 percent shall pass a 600 um screen, and 0 to 1.5 percent shall pass a 75 um screen.
 - g) The discharge pipe that extends from the collection system shall be SDR 35 PVC pipe at a minimum.

- C) Subsurface sand filters.
- 1) Distribution system and cover.
 - a) Gravel base. Six inches of gravel $\frac{3}{4}$ inch to $2\frac{1}{2}$ inches in size shall be placed upon the sand in the bed.
 - b) Distribution lines. Distribution lines shall be level and shall be horizontally spaced a maximum of 3 feet apart, center to center. Distribution lines shall be rigid perforated PVC pipe.
 - c) Venting. Venting shall be placed in the downstream end of the distribution lines with each distribution line being vented or connected to a common vent. Vents shall extend at least 12 inches above the ground surface with the outlet screened, or provided with a perforated cap.
 - d) Gravel cover. Enough gravel shall be carefully placed to cover the distributors.
 - e) Separation layer. A layer of material such as unbacked, rolled 3 inch thick fiberglass insulation, untreated building paper of 40 to 60 pound weight, synthetic drainage fabric or 4 to 6 inches of marsh hay or straw shall be placed upon the top of the upper layer of gravel.
 - f) Soil cover. A minimum of 12 inches of soil backfill shall be provided over the beds.
 - g) Distribution boxes. A distribution box shall be provided for each filter bed where gravity distribution is used. The distribution boxes shall be placed upon undisturbed earth outside the filter bed. Separate watertight lines shall be provided leading from the distribution boxes to each of the distributor lines in the beds.
 - h) As an alternative to gravel and rigid PVC pipe, EPS aggregate may be used for the distribution system. The EPS aggregate shall cover the entire surface of the sand filter, and a 3-foot separation between distribution pipes shall be maintained.
 - i) Pressure distribution. Pressure dosing is recommended to improve effluent distribution across the surface of the filter. Pressure distribution systems may use conventional rock and PVC pipe, chambers with small-diameter pipe, or EPS aggregate with small-diameter pipe.
 - 2) Sizing for subsurface sand filters.
 - a) Gravity flow.
 - 1) For residential systems, single bed subsurface sand filters shall be sized at a rate of 240 square feet of surface area per bedroom.
 - b) Siphon-dosed. For residential systems, subsurface sand filters dosed by a dosing siphon shall be sized at a rate of 180 square feet of surface area per bedroom.
 - c) Pressure dosed.
 - 1) For residential systems, subsurface sand filters dosed by a pump shall be sized at a rate of 150 square feet of surface area per bedroom.
 - 2) Dual subsurface sand filters, constructed in series, may be sized at the rate of 120 square feet of surface per bedroom in the first filter and 60 square feet of surface area per bedroom in the second filter in series.
 - 3) Nonhousehold. Effluent application rates for commercial systems treating domestic waste shall not exceed the following:
 - a) 1.0 gallon/square feet/day for single bed sand filters.

- b) Total surface area for any subsurface sand filter system shall not be less than 200 square feet.
- D) Free access sand filters.
- 1) Pretreatment required. These systems must be preceded by a secondary treatment system discharging a treated effluent with BOD and TSS values less than 30 mg/L.
 - 2) Description. Media characteristics and underdrain systems for free access filters are similar to those for subsurface filters. Dosing of the filter should provide for uniform distribution across the entire surface of the bed. Dosing frequency is usually greater than four times per day. For coarser media (greater than 0.5 mm) a dosing frequency greater than six times per day is desirable. Higher acceptable loadings on these filters as compared to subsurface filters relate primarily to the accessibility of the filter surface for maintenance. Gravel is not used on top of the sand media, and the distribution pipes are exposed above the surface.
 - 3) Distribution. Distribution to the filter may be by means of perforated pipe laid on the surface, pipelines discharging to splash plates located at the center or corners of the filter, or spray distributors. Care must be taken to ensure that lines discharging directly to the filter surface do not erode the sand surface. The use of curbs around the splash plates or large stones placed around the periphery of the plates will reduce the scour. A layer of washed pea gravel placed over the filter media may also be employed to avoid surface erosion. This practice will create maintenance difficulties, however, when it is time to rake or remove a portion of the media surface.
 - 4) Covers. Free access filters may be covered to protect against severe weather conditions and to avoid encroachment of weeds or animals. The cover also serves to reduce odor conditions. Covers may be constructed of treated wooden planks, galvanized metal, or other suitable material. Screens or hardware cloth mounted on wooden frames may also serve to protect filter surfaces. Where weather conditions dictate, covers should be insulated. A space of 12 to 24 inches should be allowed between the insulated cover and sand surface. Free access filters may not be buried by soil or sod.
 - 5) Loading. The hydraulic loading for free access sand filters shall be 5.0 gpd/sq.ft.
- E) Dosing. Dosing for sand filters is strongly advised. Without dosing, the entire area of the sand filter is never effectively used. Dosing not only improves treatment effectiveness but also decreases the chance of premature failure.
- 1) Pumps. A pump shall be installed when adequate elevation is not available for the system to operate by gravity.
 - a) The pump shall be of corrosion-resistant material.
 - b) The pump shall be installed in a watertight pit.
 - c) The dosing system shall be designed to flood the entire filter during the dosing cycle. A dosing frequency of greater than two times per day is recommended.
 - d) A high water alarm shall be installed.
 - 2) Dosing siphons. When a dosing siphon is used where elevations permit, such siphon shall be installed as follows:
 - a) Dosing siphons shall be installed between the septic tank and the filter bed.
 - b) Dosing siphons shall be installed with strict adherence to the manufacturer's instructions.
 - 3) Dosing tanks. The dosing tank shall be of such size that the siphon will flood the entire filter during the dosing cycle. Smaller, more frequent doses are

recommended.

- 4) Effluent Sampling. A sampling port shall be available at the discharge point of the filter or shall be installed in the discharge line. All free access sand filters having an open discharge shall be sampled in accordance with the requirements of the NPDES General Permit No. 4, if applicable.

2.10 (12) Individual Aerobic Treatment Unit.

- A) Use. Aerobic treatment units may be used only when the Administrative Authority determines that the site is unacceptable for a full-sized soil absorption system, mound system, subsurface sand filter, or biofilter. Because of the higher maintenance requirements of aerobic treatment units, preference should be given to other sewage disposal systems where conditions allow.
- B) Certification. All individual aerobic treatment units shall be certified by as an ANSI-accredited third-party certifier to meet National Sanitation Foundation Standard 40, Class I, including appendices (May 1996).
- C) Installation and operation. All individual aerobic treatment units shall be installed, operated and maintained in accordance with the manufacturer's instructions and the requirements of the Administrative Authority. The aerobic treatment units shall have a minimum treatment capacity of 150 gallons per bedroom per day or 500 gallons, whichever is greater. Installation of these types of plants should be restricted to those locations where they can be monitored by the local Administrative Authority.
- D) Pre-tank required. All aerobic treatment units shall be preceded by a septic or trash tank with a minimum capacity of 500 gallons. The trash tank may be a single-compartment tank. A trash tank built in as part of the aerobic treatment unit's design satisfies this requirement.
- E) Effluent treatment. The effluent from individual aerobic treatment units shall receive additional treatment through the use of intermittent sand filters, mound systems or subsurface absorption systems of the same magnitude as prescribed in rules 2.10 (11), 2.10 (10), 2.10 (06), 2.10 (07) and 2.10 (04) for pretreated effluent or as allowed by the Administrative Authority.
- F) Maintenance contract. A maintenance contract with a manufacturer certified technician shall be maintained at all times. Maintenance agreements and responsibility waivers shall be recorded with the county recorder and in the abstract of title for the premises on which aerobic treatment units are installed. It is the responsibility of the property owner to provide a copy of the maintenance agreement to the Administrative Authority on an annual basis. The maintenance contract shall include the aerobic treatment unit and effluent disposal system. Manufacturers are responsible for ensuring that an adequate number of maintenance providers are available to service all aerobic treatment units at the specified intervals. Aerobic treatment units shall be inspected for proper operation at least twice a year on six month intervals.
- G) An aerobic treatment unit shall be accessible to allow maintenance and service to all components within the plant.
- H) The design and construction of the unit shall prevent discharge of wastewater, under normal operation or component malfunction, from any opening which is not part of the designed flow path of the entire treatment process. A unit shall not be constructed (intentionally or unintentionally) in a manner that defeats this intent. No openings

within the unit shall exist which will allow a portion of the treatment process to be bypassed should a malfunction occur. As an access opening as provided shall not be deemed as an opening which will provide a bypass.

- D) The system shall be equipped with an audible and visual alarm in a conspicuous location within the building in order to warn the owner of as an overflow.
- J) Effluent sampling. All aerobic treatment unit systems having an open discharge shall be sampled in accordance with the requirements of NPDES General Permit NO. 4, if applicable. A copy of the laboratory results of effluent sampling shall be submitted to the health department.
- K) Continuation of the use and operation of the unit, as originally installed, is subject to the issuance of a discharge permit. Issuance of the discharge permit is based on the discharge criteria established and considered acceptable for surface discharge as stated in the IAC 567, Chapter 6964 and compliance with manufacturer's specifications for system operation. Discharge permit fees shall be established by the Board of Health to cover the cost the department's monitoring. These need to be established to cover cost of our testing.

2.10 (13) Peat moss biofilter systems. General requirements for individual peat moss biofilter systems are as follows:

- A) Use. Peat moss biofilter systems may be used when the Administrative Authority determines the site is unacceptable for a soil absorption system.
- B) Certification. All peat moss biofilter systems shall be certified by an ANSI-accredited third-party certifier to meet National Sanitation Foundation Standard 40, Class I, including appendices (March 2008), or equivalent testing as determined by the department.
- C) Installation and operation. All peat moss biofilter systems shall be preceded by a septic tank and installed, operated and maintained in accordance with the manufacturer's instructions and the requirements of the Administrative Authority. The septic tank shall be sized as specified in paragraph 69.8(2)a or larger if recommended by the manufacturer. Sizing of the system should be based on the manufacturer's specifications.
- D) Maintenance contract. A maintenance contract for the proper monitoring and servicing of the entire treatment system shall be established between the owner and a certified technician for the life of the system. All monitoring and servicing shall be performed by a manufacturer's certified technician or person demonstrating knowledge of the system in accordance with the manufacturer's standards. Manufacturers are responsible for ensuring that an adequate number of maintenance providers are available to service all peat moss biofilters at the specified intervals. Maintenance contracts and responsibility waivers shall be recorded with the county recorder and in the abstract of title for the premises on which the system is installed. The maintenance provider shall perform the required maintenance and reporting to the owner and to the Administrative Authority. The maintenance provider shall also report any discontinuance of maintenance of the peat moss biofilter system to the Administrative Authority. Peat moss biofilter systems shall be inspected annually by the maintenance provider. A copy of the maintenance contract shall be on file in the office of the Administrative Authority.
- E) Effluent sampling. A sampling port shall be available at the discharge point of the filter or shall be installed in the discharge line. All peat moss biofilter systems having an open

discharge shall be sampled in accordance with the requirements of NPDES General Permit No. 4 if applicable.

2.10 (14) Recirculating textile filter systems. General requirements for recirculating textile filter systems are as follows:

- A) Use. Recirculating textile filter systems may be used when the Administrative Authority determines the site is unacceptable for a soil absorption system.
- B) Certification. All recirculating textile filter systems shall be certified by an ANSI-accredited third-party certifier to meet National Sanitation Foundation Standard 40, Class I, including appendices (March 2008), or equivalent testing as determined by the department.
- C) Design. Recirculating textile filter systems shall be designed to prevent the passage of untreated waste during an equipment malfunction or power outage.
- D) Installation and operation. Recirculating textile filter systems shall be preceded by a septic tank and installed, operated and maintained in accordance with the manufacturer's instructions and the requirements of the Administrative Authority. The septic tank shall be sized as specified in paragraph 69.8(2)"a" or larger if recommended by the manufacturer. Sizing of the system should be based on the manufacturer's specifications.
- E) Maintenance contract. A maintenance contract for the proper monitoring and servicing of the entire treatment system shall be established between the owner and a certified technician for the life of the system. All monitoring and servicing shall be performed by a manufacturer's certified technician or person demonstrating knowledge of the system in accordance with the manufacturer's standards. Manufacturers are responsible for ensuring that an adequate number of maintenance providers are available to service all recirculating textile filters at the specified intervals. Maintenance contracts and responsibility waivers shall be recorded with the county recorder and in the abstract of title for the premises on which the system is installed. The maintenance provider shall perform the required maintenance and reporting to the owner and to the Administrative Authority. The maintenance provider shall also report any discontinuance of maintenance of the system to the Administrative Authority. Recirculating textile filter systems shall be inspected, at minimum, annually by the maintenance provider. A copy of the maintenance contract shall be on file in the office of the Administrative Authority.
- F) Effluent sampling. A sampling port shall be available at the discharge point of the filter or shall be installed in the discharge line. All recirculating textile filter systems having an open discharge shall be sampled in accordance with the requirements of NPDES General Permit No. 4 if applicable.

2.10 (15) Requirements for impervious vault toilets. All impervious vault toilets hereafter constructed or required by the Administrative Authority to be reconstructed shall comply with the following requirements:

- A) Location. Impervious vault toilets shall be located in accordance with the distances given in Table I for the closed portion of the treatment system.
- B) Construction. The vault shall be constructed of reinforced, impervious concrete at least 4 inches thick. The superstructure including floor slab, seat, seat cover, riser and

building shall comply with good design and construction practices to provide permanent safe, sanitary facilities. The vault shall be provided with a cleanout opening fitted with a fly tight cover.

- C) Disposal. Wastewater from impervious vault toilets shall be disposed of at a public sewage treatment facility.

2.10 (16) Requirements for portable toilets. All portable toilets shall be designed to receive and retain the wastes deposited in them and shall be located and maintained in a manner that will prevent the creation of any nuisance condition. Disposal of waste from portable toilets shall be at a public sewage treatment facility.

2.10 (17) Requirements for chemical toilets. All chemical toilets shall comply with the following requirements:

- A) Tank. Chemical toilets for use in isolated residences shall have a receptacle of smooth, impervious material that is resistant to chemicals and easily cleanable.
- B) Vent. When vents are required for chemical toilets, they shall be of durable corrosion-resistant material installed in a professional manner.
- C) Mixing and chemical charge. The fixture shall be equipped with a mixing device and shall be charged with the proper concentration of bactericidal chemical or chemicals. Chemical recharges shall be added and mixed with the contents when necessary to maintain sufficient solution strength and to suppress odors.
- D) Toilet rooms. Chemical toilets shall be located in toilet rooms which are well lighted, ventilated and maintained in a nuisance-free condition.
- E) Final disposal of receptacle contents. The receptacle contents shall be disposed of in accordance with the requirements of IAC 567 - Chapter 68. The recommended method of disposal is discharging to a municipal sewage treatment facility.

2.10 (18) Other methods of wastewater disposal. Other methods or types of private sewage disposal systems shall be installed only after plans and specifications for each project have been approved by the Administrative Authority.

2.10 (19) Disposal of septage from private sewage disposal systems. The collection, storage, transportation and disposal of all septage shall be carried out in accordance with the requirements in IAC 567 - Chapter 68 and in a sanitary manner which does not endanger the public health or create a nuisance condition.

- A) Methods of septage disposal.
 - 1) Discharge (with owner approval) to a municipal or other permitted wastewater treatment system.
 - 2) Discharge (with owner approval) to permitted sludge lagoons or sludge drying beds.
 - 3) Land application of septage shall not be permitted.

2.10 (20) Commercial septic tank cleaners. Individual administrative authorities shall enforce the licensing program for commercial septic tank cleaners in accordance with the requirements of IAC 567 - Chapter 68.

2.10 (21) Experimental private sewage disposal systems.

- A) Design requirements. Experimental systems are to be designed and operated in accordance with approved standards and operating procedures established by individual administrative authorities.
- 1) Plans and specifications, meeting all applicable rule requirements, should be prepared and submitted to the administrative authorities by a licensed professional engineer. Included with the engineering submittal should be adequate supporting data relating to the effectiveness of the proposed system.
 - 2) For systems designed to discharge treated effluent into waters of the state, a Notice of Intent to be covered under the requirements of NPDES General Permit No. 4 shall be obtained. The Administrative Authority is responsible for determining that the requirements of the permit, including the monitoring program, are met.
 - 3) Administrative authorities should prepare for signature an enforceable agreement to be placed on record which would require that present and future system owners meet all applicable rule requirements. In the event of noncompliance, the Administrative Authority shall require that adequate steps be taken by the system owner to bring the system into compliance.
- B) Reserved.

2.10 (22) Variances. Variances to these rules may be granted by the department of natural resources or the Administrative Authority provided sufficient information is submitted to substantiate the need for and propriety of such action. Applications for variances and justification shall be in writing and copies filed with the department.

These rules are intended to implement Iowa Code chapter 455B, division III, part 1.

Chapter 3

Time of Transfer Inspections

3.1 Property Transfer Inspection Requirement

3.1 (01) Inspections required. Beginning July 1, 2009, prior to any transfer of ownership of a building where a person resides, congregates, or is employed that is required to be served by a private sewage disposal system, the sewage disposal system serving the building shall be inspected. A building that will be demolished without being occupied does not require an inspection. A legally binding document verifying that the building will be demolished shall be provided to the county and to the department for record. In the event that weather or other temporary physical conditions prevent the certified inspection from being conducted, the buyer shall execute and submit a binding acknowledgment with the county board of health to conduct a certified inspection of the private sewage disposal system at the earliest practicable time and to be responsible for any required modifications to the private sewage disposal system as identified by the certified inspection. Title abstracts to property with private sewage disposal systems shall include documentation of compliance with the requirements in this rule.

- A. Inspection criteria. If a private sewage disposal system is absent or is failing to ensure effective wastewater treatment or is otherwise improperly functioning, the private sewage disposal system shall be renovated to meet current construction standards, as adopted by the department, either by the seller or, by agreement, within a reasonable time period as determined by the county or the department, by the buyer. If the private sewage disposal system is properly treating the wastewater and not creating an unsanitary condition in the environment at the time of inspection, the system is not required to meet current construction standards.
- B. Inspection validity. An inspection is valid for a period of two years for any ownership transfers during that period.

3.1 (02) Exemption from time of transfer inspection. A building required to be served by a private sewage disposal system does not need a time of transfer inspection if the property transfer can be described by the exemptions as stated in Iowa Code Section 455B.172 (11)(a).

3.1 (03) Certified time of transfer inspectors. Inspections shall be conducted by an inspector certified by the department. In order to be a certified time of transfer inspector, an individual shall have met the experience requirements, have successfully completed the inspection course and examination, and have been issued a current certificate by the department in accordance with this rule.

- A. Experience requirements. In order to be certified by taking the inspection course and examination only, an individual must have at least two years' experience in the operation, installation, inspection, design or maintenance of private sewage disposal systems. Individuals lacking this experience must complete additional coursework before attending the inspection course with testing. The additional courses shall include, but not be limited to, "Onsite Basics 101" and "Alternative Systems" offered by the Onsite

Wastewater Training Center of Iowa or courses determined by the department to be equivalent.

- B. Examination application. A person wishing to take the examination necessary to become a certified inspector shall complete the Certified Time of Transfer Inspector Application, Form 542-0192. A listing of dates and locations of examinations is available from the department upon request. The application form requires the applicant to indicate pertinent educational background, training and past experience in providing private sewage disposal services. The completed application and the application fee shall be sent to Time of Transfer Inspector Certification, Iowa Department of Natural Resources, 502 E. 9th St., Des Moines, Iowa 50319-0034. An application for examination must be received by the department at least 60 days prior to the date of the examination.
- C. Application evaluation. The director may designate department personnel or an experience review committee to evaluate all applications for examination. A notification of the application review decision will be sent to the applicant prior to the examination date. The applicant shall have the right to dispute the application evaluation.
- D. Certification. Applicants who successfully meet the department's requirements will receive a written certification from the department. The department shall maintain a current listing of certified time of transfer inspectors. The list shall be available on the department's Web site and shall be provided to county boards of health and other interested parties.
- E. Fees. The following nonrefundable fees apply:
 - (1) Examination fee. The fee for each examination shall be \$50.
 - (2) Certification fee. The fee for inspector certification shall be \$75 for each one-half year of a two-year period from the date of issuance of the certification to June 30 of the next even-numbered year.
 - (3) Certification renewal fee. The fee for certification renewal shall be \$300 for the two-year period.
 - (4) Penalty fee. The penalty fee shall be \$100 for each 30 days in delinquency. The penalty fee is for late payment of the initial certification fee or renewal fee or for incomplete application forms.
- F. Renewal period. All certificates shall expire on June 30 of even-numbered years and must be renewed every two years in order to maintain certification.

3.1 (04) Continuing education.

- a. CEU requirements. Continuing education units (CEU's) must be earned during each two-year period from April 1 of the even-numbered year until March 30 of the next even-numbered year. A certified inspector must earn 1.2 CEU's or 12 contact hours during each two-year period. Newly certified time of transfer inspectors (previously uncertified) who become certified after April 1 of a two-year period will not be required to earn CEU's until the next two-year period.
- b. CEU approval. All activities for which CEU credit will be granted must be approved by an accredited college or university, an issuing agency, or the department and shall be related to private sewage disposal systems.
- c. CEU reporting. It is the personal responsibility of the certified inspector to maintain a written record of and to notify the department of the CEU's earned during the period. The CEU's earned during the period shall be shown on the application for renewal.

3.1 (05) Certificate renewal.

- A. Certification period. All certificates shall expire on June 30 of even-numbered years and must be renewed every two years in order to stay effective.
- B. Application for renewal. Renewal applications shall be submitted on DNR Form 542-0192 60 days before the expiration date of the current certificate. Late applications or incomplete applications may lead to revocation of the certificate. Renewal of certificates will only be granted to inspectors in good standing.
- C. CEU's. Only those certified inspectors fulfilling the continuing education requirements before the end of each two-year period (June 30) will be allowed to renew their certificates. The certificates of inspectors not fulfilling the continuing education requirements shall expire on June 30 of the even-numbered year.
- D. Renewal fee. A renewal fee in the amount of \$300 must accompany the renewal application in order for the inspector to renew the certificate. Failure to submit the renewal fee on time may lead to revocation of the certificate.

3.1(06) Obligations of certified inspectors.

- A. Certified inspectors shall conduct time of transfer inspections according to this rule.
- B. Following an inspection, the inspection form and any related reports shall be provided to the county environmental health department for enforcement of any follow-up mandatory improvements to the system, to the department for record, and to the county recorder's office.

3.1 (07) Disciplinary actions.

- A. Reasons for disciplinary action. Disciplinary action may be taken against a certified time of transfer inspector on any of the grounds specified in Iowa Code section 455B.219 and the following more specific grounds.
 - 1) Failure to use reasonable care or judgment or to apply knowledge or ability in performing the duties of a certified time of transfer inspector.
 - 2) Failure to submit required records of inspection or other reports required under applicable permits or rules of the department, including failure to submit complete records or reports.
 - 3) Knowingly making any false statement, representation, or certification on any application, record, report or document required to be maintained or submitted under any applicable permit or rule of the department.
 - 4) Fraud in procuring a license.
 - 5) Professional incompetence.
 - 6) Knowingly making misleading, deceptive, untrue or fraudulent representations in the practice of the licensee's profession or engaging in unethical conduct or practice harmful or detrimental to the public. Proof of actual injury need not be established.
 - 7) Habitual intoxication or addiction to the use of drugs.
 - 8) Conviction of a felony related to the profession or occupation of the licensee. A copy of the record of conviction or plea of guilty shall be conclusive evidence.
 - 9) Fraud in representations as to skill or ability.

- 10) Use of untruthful or improbable statements in advertisements.
 - 11) Willful or repeated violations of the provisions of 455B, division III.
- B. Disciplinary sanctions. Disciplinary sanctions may include the following:
- 1) Revocation of a certificate. Revocation may be permanent without chance of recertification or for a specified period of time.
 - 2) Partial revocation or suspension. Revocation or suspension of the practice of a particular aspect of the inspection of private sewage disposal systems.
 - 3) Probation. Probation under specified conditions relevant to the specific grounds for disciplinary action.
 - 4) Additional education, training, and examination requirements. Additional education, training, and reexamination may be required as a condition of reinstatement.
 - 5) Penalties. Civil penalties not to exceed \$1,000 may be assessed for causes identified in 69.2(6)a through the issuance of an Administrative Order.
- C. Procedure.
- 1) Initiation of disciplinary action. The department staff shall initiate a disciplinary action by conducting such lawful investigation as is necessary to establish a legal and factual basis for action. Written notice shall be given to a certified inspector against whom disciplinary action is being considered. The notice shall provide the certified inspector with 20 days to present any relevant facts and to indicate the certified inspector's position in the matter.
 - 2) A certified inspector's failure to communicate facts and positions relevant to the disciplinary investigation by the required date may be considered when determining appropriate disciplinary action.
 - 3) If an agreement as to appropriate disciplinary action, if any, can be reached between the Department and the certified inspector, a written stipulation and settlement shall be entered into. The stipulation and settlement shall recite the basic facts and violations alleged, any facts established by the operator, and the reasons for the particular sanction imposed.
 - 4) If an agreement as to appropriate disciplinary action can not be reached, the department may initiate formal contested case procedures through the issuance of a letter imposing such disciplinary sanctions as the Department has deemed appropriate. Service shall be provided by certified mail.
 - 5) A certified inspector may appeal any disciplinary sanction imposed by the Department by filing a notice of appeal with the Director within 30 days of receipt of notice. If an appeal is filed by the certified inspector, contested case proceedings shall be initiated by the Department in accordance with 567—Chapter 7 and Chapter 17A of the Code of Iowa.
 - 6) Reinstatement of revoked certificates. Upon revocation of a certificate, application for certification may be allowed after two years from the date of revocation unless otherwise specified in accordance with 69.2(6)b. Any such applicant must meet all education and experience eligibility requirements pursuant to 69.2(2)(455B), and successfully complete an examination and be certified in the same manner as a new applicant.

3.1 (08) Noncompliance with child support order procedures. Upon receipt of a certification of noncompliance with a child support obligation as provided in Iowa Code section 252J.7, the department will initiate procedures to deny an application for certification or renewal, or to suspend a

certification in accordance with Iowa Code section 252J.8(4). The department shall issue to the person by restricted certified mail a notice of its intent to deny or suspend time of transfer inspector certification based on receipt of a certificate of noncompliance. The suspension or denial shall be effective 30 days after receipt of the notice unless the person provides the department with a withdrawal of the certificate of noncompliance from the child support recovery unit as provided in Iowa Code section 252J.8(4)“c.” Pursuant to Iowa Code section 252J.8(4), the person does not have a right to a hearing before the department to contest the denial or suspension action under this subrule but may seek a hearing in district court in accordance with Iowa Code section 252J.9.

3.1 (09) Inspection procedures. Inspections shall be conducted as follows:

- A. Inspection form. The inspection shall be conducted using DNR Form 542-0191, Time of Transfer Inspection Report.
- B. Record search. Prior to an inspection, the certified inspector shall contact the Administrative Authority to obtain any permits, as-built drawings or other information that may be available concerning the system being inspected. Information may also be obtained from service providers or the homeowner. If an as-built drawing is available, the system inspection shall verify that drawing. If no as-built drawing is available, the inspector shall develop an as-built drawing as part of the inspection.
- C. Septic tank. At the time of inspection, any septic tank(s) existing as part of the sewage disposal system shall be opened and have the contents pumped out and disposed of according to 567—Chapter 68. In the alternative, the owner may provide evidence of the septic tank being properly pumped out within three years prior to the inspection by a commercial septic tank cleaner licensed by the department which shall include documentation of the size and condition of the tank and its components at the time of such occurrence. If the septic tank(s) is opened, the condition of the tank and its components shall be documented and included in the final report.
- D. Pumps and pump chambers. Pump chambers or vaults shall be opened for inspection, and the pump shall be tested to ensure proper operation.
- E. Secondary treatment. Proof that a secondary treatment system is in place must be provided. This proof may include, but is not limited to:
 - 1) Opening a distribution box or uncovering a header pipe for a soil absorption system. Existing distribution boxes shall be opened for inspection.
 - 2) Verification of the existence of a sand filter by locating the vents and discharge pipe.
 - 3) Locating and opening the lid(s) of an advanced treatment unit.
 - 4) Absorption fields shall be probed to determine their condition. The condition of the fields shall be noted on the inspection report. The condition of the absorption field may also be determined with a hydraulic loading test.
- F. Discharging systems. An effluent test shall be performed on any legally discharging private sewage disposal system. The effluent shall be tested to determine if it meets the requirements of the NPDES General Permit No.4, and the test results shall be included in the inspection report.
 - 1) The certified inspector shall ensure that a legally discharging private sewage disposal system has an NPDES General Permit No.4, if applicable.
 - 2) The certified inspector shall ensure that a Notice of Intent to discharge is submitted to the department for coverage under the NPDES General Permit No.4.
- G. Packaged treatment units. An advanced treatment unit, such as an aerobic treatment unit,

textile filter, peat filter or fixed activated sludge treatment system, shall be inspected according to the manufacturer's recommendations.

- H. Other systems and system components. Private sewage disposal systems not mentioned above shall be inspected for code compliance, and an effluent sample shall be taken if applicable. Any components of the private sewage disposal system not mentioned above shall be inspected for proper function. Examples of other components include, but are not limited to, effluent screens, tertiary treatment systems, disinfection devices, alarms, control boxes and timers.
- I. Inspection reports. Following an inspection, the inspection form and a narrative type-written report describing the condition of the private sewage disposal system at the time of the inspection shall be provided to the county, to the department for record, and to the county recorder in the county where the inspection occurred.

3.1 (10) Inspection Fee. The Cerro Gordo County Board of Health will determine inspection fees for time of transfer inspections performed by the Administrative Authority.

Chapter 4

Pumping Contractors

Sections 4.1 - 4.4 ~~DELETE~~

Appendix A

Estimates of Non-household Domestic Sewage Flow Rates

Source of use for sewage unit	(units)	Gallons per day per unit
Dwelling Units		
Hotels or luxury motels	(Each guest)	60
	(Add per employee)	13
or	(Per square foot)	0.3
Discount motels	(Each guest)	40
	(Add per employee)	13
or	(Per square foot)	0.46
Rooming house	(Each resident)	50
	(Add per nonresident meal)	4.0
Commercial/Industrial		
Retail stores	(Per square foot of sales area)	0.15
or	(Each customer)	5
	(Plus each employee)	15
or	(Each toilet room)	630

Source of use for sewage unit	(units)	Gallons per day per unit
Offices	(Each employee)	18
or	(Per square foot)	0.25
Medical offices	(Per square foot)	1.6
Industrial buildings	(Each employee)	20
(Does not include process ware or cafeteria)		
Construction camp	(Each employee)	20
Visitor center	(Each visitor)	20
Laundromat	(Each machine)	690
or	(Each load)	50
or	(Per square foot)	2.9
Barber shops	(Per chair)	80
Beauty shops	(Per station)	300
Car washes	(Per inside square foot)	10
(Does not include car wash water)		
Eating and Drinking Establishments		
Restaurant	(Per meal)	4.0
(Does not include bar or lounge)		
or	(Each seat)	40

Source of use for sewage unit	(units)	Gallons per day per unit
	(Plus add for each employee)	13
Dining hall	(Per meal)	4.0
Coffee shop	(Each customer)	2.5
	(Add per employee)	13
Cafeteria	(Each customer)	2.5
	(Add per employee)	13
Drive-in	(Per car stall)	145
Bar or lounge	(Each customer)	5.5
	(Add per employee)	16
or	(Per seat)	40
Country clubs	(Per member) (no meals)	22
or	(Per member) (Meals and showers)	130
or	(Per member in residence)	100
Resorts		
Housekeeping cabin	(Per person)	50
Lodge	(Per person)	74

Source of use for sewage unit	(units)	Gallons per day per unit
Parks/swimming pools	(Per guest)	13
Picnic parks with toilet only	(Per guest)	10
Movie theaters	(Per guest)	4.0
Drive-in theaters	(Per space)	5
Skating rink/dance hall	(Per customer)	10
Bowling lanes	(Per lane)	200
Transportation		
Airport, bus or rail depot	(Per passenger)	4
or	(Per square foot)	6.5
or	(Per public restroom)	630
Auto service station	(Each vehicle served)	13
	(Add per employee)	16
or	(Per inside square foot)	0.6
or	(Per public restroom)	630
Institutional		
Hospitals	(Each medical bed)	250

Source of use for sewage unit	(units)	Gallons per day per unit
	(Add per employee)	16
Mental institution	(Each bed)	175
	(Add per employee)	16
Prison or jail	(Each inmate)	160
	(Add per employee)	16
Nursing home	(Each resident)	145
	(Add per employee)	16
Schools and Churches		
School	(Per student) (No gym, cafeteria or showers)	17
	(Per student) (Cafeteria only)	17
	(Per student) (Cafeteria, gym & showers)	30
Boarding school	(Per student)	115
Churches	(Per member)	2
	(Per member with kitchen)	5
Recreational		
Campground/with hookups	(Per person)	40

Source of use for sewage unit	(units)	Gallons per day per unit
or	(Per site with central bath)	100
	(Per site)	75
	(Add for dump station w/ hookup)	16
Day camp (no meals)	(Per person)	16
Weekly overnight camp	(Per member)	33

Adopted by:

Dr. Mark C. Johnson
Cerro Gordo County Board of Health

Date

Approved by:

Phillip Dougherty
Cerro Gordo County Board of Supervisors

Date