

The seal of St. Louis County, Minnesota, is a large, faint watermark in the background. It is circular and contains the text "COUNTY OF SAINT LOUIS" at the top and "ESTAB. MAR. 1ST 1856" at the bottom. The central part of the seal depicts a landscape with a tree, a plow, a factory, and a bridge.

# **St Louis County**

## **Individual Sewage Treatment Systems**

### **ORDINANCE 55**

**Adopted 8-1-2000  
Revised 9-1-2008**

**St Louis County Environmental Services  
Department  
307 1<sup>st</sup> Street South  
Suite 115  
Virginia, Minnesota  
55792**

**AN ORDINANCE AND CONSTRUCTION STANDARDS  
REGULATING THE DESIGN, LOCATION, INSTALLATION,  
RENOVATION, OPERATION, MAINTENANCE, AND  
INSPECTION OF INDIVIDUAL SEWAGE TREATMENT  
SYSTEMS; REQUIRING PERMITS THEREFORE; AND  
PRESCRIBING PENALTIES.**

Effective August 1, 2000  
St Louis County  
Individual Sewage Treatment Systems  
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# ORDINANCE

## SECTION 1. REPEALER.

This Ordinance hereby repeals and replaces St. Louis County 36.

## SECTION 2. INTRODUCTION & DEFINITIONS

- 2.01 Title. This ordinance shall be known as the St. Louis County Individual Sewage Treatment Systems Ordinance 55.
- 2.02 Authority. Pursuant to the authority granted in Minn. Stat., §§ 394.21 through 394.37, Chapters 104, 105, 115, 115A, 116, 116A, 145, and 145A, and all act amendatory thereto, the County of St. Louis does ordain as follows:
- 2.03 Purpose and Intent. The purpose of this Ordinance is to protect and promote the health, safety, and general welfare of the people of St. Louis County and of other affected communities by regulating the design, location, Installation, alteration, operation, Maintenance, and monitoring of all Individual Sewage Treatment Systems so as to protect land, water, and other natural resources within and outside the County of St. Louis from impairment, pollution, or destruction; to minimize the risk of spreading communicable diseases; and to prevent and avoid other health and ecologic hazards attributable to bacterial and chemical contamination of lands and waters; and to save the residents and property owners from the large and unnecessary expense associated with the providing central public water and sewer services where such expense may reasonably be avoided.
- 2.04 Scope. This Ordinance shall govern and apply to the following after the effective date of this Ordinance: the Installation or Renovation of Individual Sewage Treatment Systems, Collector Systems; and the operation, maintenance, correction, and inspection of all sewage treatment systems within St Louis County including municipalities, irrespective of when they were installed.
- 2.05 Interpretation. In the interpretation and application of this Ordinance, its provisions shall be held to be minimum requirements and shall be construed so as to fully affect its purpose and shall not be deemed a limitation or repeal of any other power established by law or ordinance except as specifically provided herein. In the event conflicting requirements are imposed by this Ordinance or by other ordinances of St. Louis County, the more restrictive provisions shall apply. The Administrator shall rule on what is more restrictive, and appeals from such decisions, as well as other interpretations, may be made in accordance with Sections 9 and 10 herein.
- 2.06 Construction. Words used in the present tense include the past and future tense;

the singular includes the plural, and the plural includes the singular; the word "shall" is mandatory, and the word "may" is permissive; the masculine gender includes the feminine gender.

- 2.07 Definitions. The definitions contained in Minnesota Rules, Chapter 7080.0020 and acts and rules amendatory thereto are hereby adopted by reference and incorporated as part of this Ordinance, except as modified herein. The following definitions shall also apply in the interpretation and enforcement of this Ordinance and Standards:

**Absorption Area.** Absorption Area means the area of Original Soil below a Mound that is designed to absorb sewage tank effluent. The Absorption Area for Trenches, Seepage Beds, and At-grade Systems is the bottom area in contact with the Distribution Medium and the Original Soil designed to absorb sewage tank effluent.

**Additive.** Individual Sewage Treatment System. A product which is added to the wastewater or to the system to improve the performance of an Individual Sewage Treatment System.

**Administrator.** Administrator means the St Louis County Director of Environmental Services or an agent or employee authorized to act on his/her behalf.

**Aerobic Tank.** Any Sewage tank which utilizes the principle of oxidation in the decomposition of sewage by the introduction of air into the sewage.

**Agency.** Agency means the Minnesota Pollution Control Agency (MPCA).

**Alternative Local Standards.** Alternative Local Standards means Individual Sewage Treatment System Standards that differ from the state standard.

**Alternative System.** An individual Sewage treatment system employing such methods and devices as provided for in Section 23.

**Applicant.** A Person who submits an application for a permit for the installation or renovation of a sewage treatment system.

**Apprentice.** Apprentice means an individual who meets the requirements for training, has passed the examination, and has a plan to complete the experience requirements.

**As-built.** As-built means drawings and documentation specifying the final in-place location, size, and type of all system components. These records identify The results of materials testing and describe conditions during construction.

**At-grade System.** At-grade System means a pressurized soil treatment

system where wastewater is dosed to a drainfield rock bed that is constructed on original soil at the surface of the ground and covered by loamy soil materials.

**Authorization to Construct.** The authorization issued in writing by the Administrator to construct an Individual Sewage Treatment System.

**Authorization to Use.** The authorization issued in writing by the Administrator to use a completed Individual Sewage Treatment System.

**Baffle.** A device installed in a Septic Tank for proper operation of the tank and to provide maximum retention of solids, and includes vented sanitary tees and submerged pipes.

**Bedrock.** That layer of parent material which is consolidated and unweathered. Bedrock also includes layers of which greater than 50 percent by volume consists of unweathered in-place consolidated bedrock fragments.

**Bedroom.** Any room within a dwelling that might reasonably be used as a sleeping room.

**Biochemical Oxygen Demand (5 day, BOD).** A test in which standardized procedures are used to determine the relative oxygen requirements of wastewaters, effluents, and polluted waters. The test has its widest application in measuring waste loadings to treatment plants and in evaluation the BOD removal efficiency of such treatment systems.

**Bluff.** A topographic feature such as a hill, cliff, or embankment having all of the following characteristics:

- a. part or all of the feature is located in a shoreland area;
- b. the slope rises at least 25 feet above the ordinary high water level of the water body;
- c. the grade of the slope from the toe of the bluff to a point 25 feet or more above the ordinary high water level averages 30 percent or greater; and
- d. the slope must drain toward the water body.
- e. An area with an average slope of less than 18 percent over a distance for 50 feet or more shall not be considered part of the bluff.
- f. Bluff shall be further defined by the St. Louis County Zoning Ordinance.

**Bluff Impact Zone.** A bluff and land located within 20 feet from the top of a bluff.

**Board.** The St Louis County Board of Commissioners.

**Board of Adjustment.** The St. Louis County Board of Adjustment.

**Building Drain.** That part of the lowest piping of the drainage system which receives the Sewage discharge inside the walls of the building and conveys it to the Building Sewer beginning at least one foot outside the building footings.

**Building Sewer.** That part of the drainage system which extends from the end of the building drain and conveys its discharge to an Individual sewage treatment system.

**Capacity.** The liquid volume of a Sewage Tank using inside dimensions below the outlet.

**Certificate of Compliance.** Certificate of Compliance means a document issued by a qualifying MPCA certified individual after a Compliance Inspection, certifying that a system is in compliance with applicable requirements.

**Cesspool.** Cesspool means an underground pit, receptacle, or seepage tank that receives sewage directly from the building sewer and leaches sewage into the surrounding soil, bedrock, or other soil materials.

**Chambered System.** Chambered System means a distribution medium consisting of a structure buried in a trench to create an enclosed open space with the original soil surface to act as a surface for the infiltration of sewage tank effluent.

**Clean Sand.** Clean Sand for the purposes of mound construction shall meet the following sieve sizing requirements:

<u>SIEVE SIZE</u>	<u>PERCENT PASSING SIEVE</u>
3/8 inch	80-100
No. 4	80-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	5-30
No. 100	0-10
No. 200	0-3

NOTE: The fine aggregate shall not have more than forty-five percent (45%) sand retained between any two consecutive sieves.

NOTE: Discard the #4 and larger aggregate for computation of percent passing the #8 through #200 sieve.

**Collector System.** Collector System means any Individual Sewage Treatment System serving two or more sources of wastewater.

**Commercial System.** Commercial System means a sewage treatment system serving a commercial establishment that generates wastewater having characteristics other than residential-type waste or has an average flow greater than 2,000 gallons per day.

**Compliance Inspection.** Compliance Inspections means an evaluation, investigation, inspection, or other such process for the purpose of issuing a Certificate of Compliance or Notice of Non-compliance.

**DNR.** DNR means the Minnesota Department of Natural Resources.

**Department.** Department means The St. Louis County Environmental Services Department.

**Disclosure.** Disclosure means any conclusions or statements regarding an existing or abandoned ISTS made by the Owner of a property during change of ownership.

**Distribution Box.** Distribution Box means a device designed to distribute Sewage Tank effluent concurrently and equally by gravity to a soil treatment system.

**Distribution Device.** Distribution Device means a device used to receive and transfer effluent from a supply pipe to distribution pipes or downslope supply pipes, or both. These devices include Drop Boxes, Valve Boxes, Distribution Boxes, or Manifolds.

**Distribution Medium.** Distribution Medium means the material used to distribute Sewage Tank effluent within a soil treatment system. This medium includes drainfield rock, gravelless drainfield pipe in a geotextile wrap, chambered system, or drip irrigation tubing.

**Distribution Pipes.** Perforated pipes that are used to distribute sewage tank effluent in a soil treatment system.

**Distinct.** Distinct means the soil color that varies from another color by one or more hues, more than two units of value, or more than one unit of chroma.

**Dosing Chamber, Pump Pit, Wet Well, or Lift Station.** A tank or separate compartment following the sewage tank which serves as a reservoir for the dosing device.

**Dosing Device.** A pump that discharges effluent from the dosing chamber to the soil absorption system.

**Drainfield Rock.** Crushed rock, or similar insoluble, durable, and decay-resistant material with no more than five percent by weight passing a number 4 sieve and no more than one percent by weight passing a number 200 sieve. The size shall range from three-fourths inch to two and one-half inches (commonly sold as 1½" washed rock).

**Drop Box.** A watertight chamber used for the serial distribution of effluent from one trench to the next.

**Dwelling.** Any building or place used or intended to be used by human occupants as a single family or multi family unit.

**Effluent.** See sewage tank effluent.

**Effluent Filter.** An effluent filter is a device installed either on the outlet of a septic tank or externally in a separate compartment to prevent the solids larger than one-eighth inch from reaching the pumping chamber or soil absorption system.

**Experimental System.** Any individual wastewater treatment system which will provide unknown or unpredictable levels of treatment and is installed for the purpose of recognized research or knowledge which is beneficial to the science of wastewater treatment. Systems will be defined as "experimental" by the Administrator.

**Failing System.** Failing System means any system that has less than one foot of vertical separation between the bottom of the distribution media and the saturated soil level or bedrock. In addition, any system posing an Imminent Threat to Public Health or Safety shall be considered failing.

**Flood Fringe.** Flood Fringe means that portion of the flood plain outside the flood way. Flood Fringe is synonymous with the term "Flood Way Fringe" used in flood insurance studies.

**Flood Plain.** Flood Plain means the area covered by a 100-year flood event along the lakes, rivers, and streams, as published in technical studies by local, state, and federal agencies, or in the absence of these studies, estimates of the 100-year flood boundaries and elevations as developed pursuant to a local unit of government's Flood Plain or related land use regulations.

**Flood Way.** Flood Way means the bed of a wetland or lake, the channel of a watercourse, and those portions of the adjoining Flood Plain that are reasonably required to carry or store the regional flood discharge.

**Gas Deflecting Baffle.** Gas Deflecting Baffle means an obstructing device at the Septic Tank outlet that limits the escape of solids that are carried by Septic Tank gases. Effluent screens serve as gas deflecting baffles.

**Greywater.** Liquid waste from a dwelling or other establishment produced by bathing, laundry, culinary operations, and from floor drains associated with these sources, and specifically excluding toilet waste.

**Hazardous Materials.** Any substance which, when discarded, meets the definition of hazardous waste in Minnesota Statutes Section 116.06, Subd. 11, and any act or rule amendatory to.

**Holding Tank.** A watertight tank for storage of sewage until it can be transported to a point of approved treatment and disposal.

**Imminent Threat to Public Health or Safety.** Imminent Threat to Public Health or Safety means situations that pose an immediate or potential threat to public health or safety. Such situations include, but are not limited to: discharge of sewage to the ground surface, surface water or a groundwater source; any system causing sewage backup into a dwelling or other establishment; or other situation that prohibits the system from functioning as intended.

**Individual Sewage Treatment System.** (ISTS) A sewage treatment system, or part thereof, serving a dwelling, or other establishment, or group thereof, which uses subsurface soil treatment and disposal.

**Installation.** The construction or placement of a sewage treatment system on real property.

**Invert.** The lowest point of a channel inside a pipe.

**Limiting Factor.** A Limiting Factor is a site condition, either natural or manmade, that is an obstacle to the installation of a wastewater treatment system. This shall include, but is not limited to, steep slope, bedrock, water well, slowly permeable soils, and high water table.

**Limiting Soil Characteristics.** Those soil characteristics which preclude the Installation of a Standard System, including evidence of Water Table or bedrock and percolation rates faster than one-tenth or slower than 120 minutes per inch.

**Linear Loading Rate.** Linear Loading Rate is defined as the loading rate per lineal foot of system (gallons per day per linear foot) along the contour.

**Maintenance.** Such regular inspection and care for the Individual Sewage Treatment System as may be determined by the Administrator in order to ensure its safe, healthful operation consistent with the intent of this Ordinance.

**MPCA.** Minnesota Pollution Control Agency.

**Mottling.** A zone of chemical oxidation and reduction activity, appearing as splotchy patches of red, brown, orange, and gray in the soil.

**Mound System.** A system where the Soil Treatment Area is built above the ground to overcome limits imposed by proximity to Water Table or bedrock, or by rapidly or slowly permeable soils.

**Non-compliant.** An ISTS that is not in compliance with St Louis County Ordinance and Standards.

**Non-conforming.** Non-conforming means any existing soil treatment system that has less than the equivalent of three feet but more than one foot of vertical separation between the bottom of the distribution media and saturated soil level or bedrock in Shoreland areas or two feet in non-shoreland areas; any system that discharges sewage to a Seepage Pit, Dry Well or Leaching Pit; or Individual Sewage Treatment Systems in use that are undersized relative to occupancy.

**Non-pressurized Water Supply.** Non-pressurized water supply means any primitive development where water is hand-carried rather than available under pressure.

**Notice of Failure.** Notice of Failure means a document written and signed by a qualifying MPCA certified individual after a Compliance Inspection that gives notice that the Individual Sewage Treatment System is failing according to St Louis County Ordinance and Standards.

**Notice of Non-compliance.** Notice of Non-compliance means a document written and signed by a qualifying MPCA certified individual after a Compliance Inspection that gives notice that an Individual Sewage Treatment System is not in compliance.

**Ordinary High Water Level.** The boundary of public waters and wetlands that is an elevation delineating the highest water level maintained for a sufficient period of time to leave evidence upon the landscape, commonly that point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. For watercourses, the ordinary high water level is the elevation of the top of the bank of a channel. For reservoirs and flowages the ordinary high water level must be the operating elevation of the normal summer pool.

**Operating Permit.** Operating Permit means an ISTS permit that is issued for the construction, installation or use of a system that includes Performance Standards, time limitations, maintenance requirements, and other conditions as may be required by the Administrator to evaluate and assure adequate system construction, installation, maintenance, or performance.

**Original Soil.** Naturally occurring inorganic soil that has not been moved, smeared, compacted, or manipulated with construction equipment.

**Other Establishment.** Any public or private structure other than a dwelling that generates sewage and discharges to an Individual Sewage Treatment System.

**Owner.** All Persons having possession of, control over, or title to an Individual Sewage Treatment System.

**Performance Standards.** Performance Standards means requirements and conditions applied to the issuance of an Operating Permit for the purpose of evaluating system performance. Performance factors may include, but are not necessarily limited to fecal coliform, BOD, flow rates and other related factors designated in the Operating Permit.

**Performance System.** Performance System means any individual wastewater treatment system to which Performance Standards are applied or used to design, construct and evaluate performance as a condition of the permit.

**Permit.** A permit issued for the construction or installation of an Individual Sewage Treatment System.

**Permitting Authority.** St. Louis County Environmental Services Department.

**Person.** An individual, partnership, firm, corporation, or association, or other legal entity, the state, or any other political subdivision thereof or government entity, but not including the County of St Louis.

**Plastic Limit.** A soil moisture content below which the soil may be manipulated for purposes of installing a soil treatment system, and above which manipulation will cause compaction and puddling.

**Point of Sale Inspection.** An inspection of all Individual Sewage Treatment Systems located on real property lying within St Louis County including municipalities at the time of property transfer.

**Primitive System.** An Individual Sewage Treatment System that treats only Greywater from a dwelling or building that has no pressurized water, such as sink drains and saunas.

**Public Waters.** A body of water capable of substantial beneficial public use.

**Renovation.** Activity involving the extension, alteration, modification, or reconstruction of a soil treatment system in whole or in part.

**Repair.** The repair or replacement of a damaged or faulty component part of an Individual Sewage Treatment System such that completion of such repair will

return the system to its original operable condition. The repair shall not alter the original area, dimensions, or concept of the system.

**Required Absorption Width.** That width, measured in the direction of the original land slope and perpendicular to the original contours, which is required for the sewage tank effluent to infiltrate into the original soil.

**Residential System.** Residential System means any Individual Sewage Treatment System serving a private residence or a commercial establishment generating only residential waste in amounts averaging less than 2,000 gallons per day.

**Residential Waste.** Residential Waste means wastewater having an average BOD of less than 450 mg/liter, TSS less than 150 mg/liter, and oils and grease levels less than 50 mg/l.

**Sanitary Check-off.** A record review of the land owner's Individual Sewage Treatment System generated through the application for a land use permit.

**Seepage Bed.** A Seepage Bed is a soil absorption system having an excavation width greater than 3 feet but not exceeding 10 feet.

**Seepage Pit, or Leaching Pit, or Dry Well.** An underground pit into which a sewage tank discharges effluent or other liquid waste and from which the liquid seeps into the surrounding soil through the bottom and openings in the side of the pit.

**Septage.** Those solids and liquids removed during periodic maintenance of an Individual Sewage Treatment System, or solids and liquids that are removed from a holding tank.

**Septic Tank.** Septic Tank means any watertight, covered receptacle designed and constructed to receive the discharge of sewage from a building sewer, separate solids from liquid, digest organic matter, store liquids through a period of detention, and allow the clarified liquids to discharge to a soil treatment system.

**Setback.** A separation distance measured horizontally.

**Sewage.** Any water carried domestic waste, exclusive of water softener backflush discharge water, spa/hot tub water, and footing/roof drainage, from any industrial, agricultural, or commercial establishment, or any dwelling or any other structure. Domestic waste includes liquid waste produced by toilets, whirlpool/jetted tubs, bathing, laundry, culinary operations, and the floor drains associated with these sources, and specifically excludes animal waste and commercial or industrial waste water.

**Sewage Subcommittee.** The St Louis County Board Sewage Subcommittee.

**Sewage Tank.** A tank meeting the criteria in Section 19 and used in the treatment of sewage, and includes septic tanks and aerobic tanks.

**Sewage Tank Effluent.** Liquid that flows from a septic or aerobic tank under normal operation.

**Shoreland.** Land located within the following distances from public waters: 1,000 feet from the ordinary high water mark of a lake, pond, or flowage; and 300 feet from a river or stream or the landward extent of a flood plain designated by ordinance on such a river or stream, whichever is greater.

**Site.** The area bounded by the dimensions required for the proper location of the soil treatment system.

**Site Evaluator.** Any person who conducts an evaluation of a site proposed for an Individual Sewage Treatment System and meets the requirements of licensing and certification set forth in Section 8 of this Ordinance.

**Slope.** The ratio of vertical rise or fall to horizontal distance.

**Soil Treatment Area.** That area of Trench or Seepage Bed bottom which is in direct contact with the Drainfield Rock of the soil treatment system, and for mounds, the basal area needed to absorb the wastewater being treated.

**Soil Treatment System.** A system where sewage tank effluent is treated and disposed of into the soil by percolation and filtration, and includes but is not limited to Trenches, Seepage Beds, At-grade Systems and Mound Systems.

**Standard System.** An Individual Sewage Treatment System which utilizes three feet of unsaturated soil, natural or imported, and is constructed and sized in accordance with recognized prescriptive standards and includes a Trench, Seepage Bed, At-grade, and Mound System on soils having a percolation rate of less than 120 minutes per inch.

**Standards.** The Individual Sewage Treatment System Standards as adopted and amended from time to time by the St Louis County Board. The Standards include, but are not limited to, guidelines covering such topics as the Site Evaluation, lot size and width, system design, multiple source systems, plan submission, and operation and maintenance.

**Subsoil.** Subsoil means a soil layer that has a color value of 3.5 or greater.

**Technical Advisory Committee.** (TAC) The Technical Advisory Committee appointed by the County Board to serve as advisors to the Sewage Subcommittee and Administrator on matters of policy and procedures.

**Toilet Waste.** Fecal matter, urine, toilet paper, and any water used for flushing.

**Topsoil.** Topsoil means the natural in-place soil layer with a color value of less than 3.5 in a Munsell color chart.

**Topsoil Borrow.** Topsoil Borrow means a loamy soil material having: less than five percent material larger than 2.0 mm (#10 sieve); no material larger than 2.5 cm; a moist color value of 3.5 or less; and adequate nutrients and pH to sustain healthy plant growth.

**Total Suspended Solids (TSS).** TSS is an indicator of wastewater strength that will adversely effect the sewage treatment system. TSS is that portion of the total solids in the wastewater that is retained on the filter. Total solids is equal to the Total Suspended Solids and the total dissolved solids.

**Transfer Agreement.** An agreement which allows the transfer of real property prior to an ISTS Certificate of Compliance Inspection.

**Trench.** Trench means a linear excavation not exceeding 36 inches in width that contains Drainfield Rock or other distribution medium.

**Valve Box.** Any device which stops sewage tank effluent from flowing to a portion of the Soil Treatment Area and includes but is not limited to, caps or plugs on distribution or Drop Box outlets, divider boards, butterfly valves, gate valves, or other mechanisms.

**Variance.** Any modification or relief from this Ordinance and Standards where it is determined that by reason of exceptional circumstances the strict enforcement of the provisions of this Ordinance and Standards would cause unnecessary hardship as defined in Section 9.02.D.1.b.

**Vertical Separation.** Vertical Separation means the vertical measurement of unsaturated soil or sand between the bottom of the distribution medium and the saturated soil level or bedrock.

**Water-saving Device.** Toilets using 1.6 gallons or less per flush and showerheads using 2.5 gpm or less are designated as water saving.

**Water Table.** The highest elevation in the soil where all voids are filled with water as evidenced by presence of water or soil Mottling or other information.

**Watertight Sewage Tank.** A Sewage Tank constructed so that no water can get into or out of the Sewage Tank except through the inlet and outlet pipes.

**Wetlands.** Wetlands are sites that have hydric soils, surface and subsurface hydrology, and hydrophytic vegetation.

**Whirlpool / Jetted Tubs.** Whirlpool/Jetted Tubs are bathtubs having a recirculation system and are intended to be filled and drained after each use.

### SECTION 3. ADMINISTRATION

3.01 Administrator. The St. Louis County Director of Environmental Services shall administer the provisions of this Ordinance. In addition to the duties set forth herein, the Administrator shall maintain adequate files and records relating to all permits issued, inspections made, work approved and other official actions.

3.02 Powers. The Administrator shall have all powers necessary to administer and enforce the provisions of this Ordinance. In addition to the other powers set forth herein, and without limitation, the Administrator shall be empowered to do the following:

- A. Prepare reports and recommendations regarding any additional sanitary measures he/she deem necessary to effect the purpose of this Ordinance.
- B. Obtain assistance and cooperation from other St. Louis County Departments, St. Louis County Planning Commission Personnel, St. Louis County Board of Adjustment Personnel, Technical Advisory Committee, and other state and local health, legal and policy officials in the administration and enforcement of this Ordinance.
- C. Cooperate with local and state personnel in the enforcement of this Ordinance and state regulations, rules and requirements relating to sewage treatment.
- D. Arrange for the enforcement of any and all rules, orders, permits and other requirements established herein or issued pursuant to this Ordinance.
- E. Interpret the provisions of this Ordinance as provided in Section 2.05.

### SECTION 4. GENERAL REQUIREMENTS

#### 4.01 Administration by State Agencies.

For an Individual Sewage Treatment System, or group of Individual Sewage Treatment Systems, that are located on adjacent properties and under single ownership, the owner or owners shall make application for and obtain a state disposal system permit from the MPCA if either of the following conditions apply:

- A. The Individual Sewage Treatment System or systems are designed to treat an average daily flow greater than 10,000 gallons per day:

- B. The wastewater contains hazardous or flammable components.

The systems must, at a minimum, conform to the requirements of these ISTS Standards:

- A. For dwellings such as rental apartments, townhouses, resort units, rental cabins, and condominiums, the sum of the flows from all existing and proposed sources under single management or ownership will be used to determine the need for a state disposal system permit.
- B. Individual Sewage Treatment Systems serving establishments or facilities licensed or otherwise regulated by the state of Minnesota shall conform to the requirements of these Standards.

#### 4.02 Surface Discharge.

Unless specifically permitted by the MPCA, sewage, sewage tank effluent, or seepage from a soil treatment system shall not be discharged to the ground surface, abandoned wells, or bodies of surface water, or into any rock or soil formation the structure of which is not conducive to purification of water by filtration, or into any well or other excavation in the ground.

All new or existing systems which discharge to surface waters or the ground surface must obtain either a National Pollutant Discharge Elimination System (NPDES) or State Disposal System Permit from the MPCA and shall comply with all requirements pertaining thereto.

#### 4.03 Treatment Required.

- A. The system, or systems, shall be designed to receive all sewage from the dwelling, building, or other establishment served. Footing or roof drainage shall not enter any part of the system. Products containing hazardous materials must not be discharged to the system other than a normal amount of household products and cleaners designed for household use. Substances not used for household cleaning, including solvents, pesticides, flammables, photo finishing chemicals, or dry cleaning chemicals, must not be discharged to the system. A Holding Tank shall be provided to receive any of the above hazardous wastes.
- B. Hand carried Greywater shall not be discharged directly to the surface waters, drainageways, or in a manner harmful to the environment or to public health.

- 4.04 System Components. The system shall consist of a building sewer, Sewage Tank, secondary treatment if required, and a soil treatment system. All sewage shall be treated in a Sewage Tank or toilet waste treatment device, and the sewage tank effluent shall be discharged to the soil treatment system.
- 4.05 Prohibited Installations. Cesspools, Seepage Pits, Dry Wells, and Leaching Pits shall not be installed.
- 4.06 System Sizing. Where the construction of additional Bedrooms, the installation of mechanical equipment, or other factors likely to affect the operation of the system can be reasonably anticipated, the installation of a system for such anticipated need shall be required.
- 4.07 New, Experimental, Performance Systems.

It is the intention of St Louis County to promote the research, development and use of new sewage treatment technology in an attempt to: solve sewage treatment system failures in existing problem areas; and allow for prudent development in areas where standard septic systems are not feasible.

If a new, experimental, or Performance System can be installed and reasonably be expected to provide appropriate safeguards to the public, it may, at the discretion of the Department, be installed. Monitoring of said system to the specifications of the Department shall be required as a condition of the permit.

- 4.08 Water Meters. Water meters shall be required on all commercial establishments, Holding Tanks, and as a condition of all Operating Permits.
- 4.09 Plumbing and Well Codes. The location and materials used in building sewers are governed by the Minnesota State Building Code, Minnesota Rules Chapter 1300, which incorporates by reference portions of the Minnesota Plumbing Code, Minnesota Rules Chapter 4715, and by specific provisions of the Minnesota Water Well Construction Code, Minnesota Rules Chapter 472, and acts and rules amendatory to.
- 4.10 Treatment. No building structure, area, or premises shall be constructed or maintained for human occupancy, use, or assembly without adequate facilities for sanitary and safe treatment and disposal of all human excreta, sewage and all liquid wastes that could offer a hazard to the public health.
- 4.11 Dispersal. Regardless of the type of treatment technology used, all sewage must be dispersed below grade in such a manner as to allow no discharge to the ground surface or otherwise create an imminent public health threat.
- 4.12 Capacity. Individual Sewage Treatment Systems shall be designed to receive all sewage from the dwelling(s), building(s), or other establishment(s) served by the system, including laundry waste and basement floor drainage. Surface

water, roof drainage, water softener back flush water, spa/swimming pool water, foundation drainage, and other storm water shall not be allowed to enter any part of the system.

- 4.13 Limitations. Not more than one dwelling or commercial, business, institutional, or industrial unit shall be connected to the same Individual Sewage Treatment System unless such multiple connections was specified in the application submitted and in the permit issued for the system or as otherwise approved by the Administrator.
- 4.14 Expansion. Where it can reasonably be anticipated that the construction of additional structures, dwellings, or Bedrooms, or the installation of additional equipment or services will increase the amount of sewage discharge or affect the operation of the system, a system to be installed or renovated shall comply with requirements applicable to such additional needs.
- 4.15 Replacement Area. All occupied properties shall provide and maintain sufficient undisturbed land area to allow for the replacement of the Individual Sewage Treatment System serving any structures, dwellings, or premises on the parcel. This area must meet, or exceed, the minimum site requirements for the treatment and disposal of the wastewater generated.
- 4.16 Proximity to Public Sewer. No Individual Sewage Treatment System or other means of sewage or excreta disposal shall be maintained or used on property where a public sanitary sewer is located within 200 feet of the property line and hookup is practical. Practicality shall be determined by the Department with input from the local unit of government, or if the local unit of government elects to determine practicality, it shall be left to the local unit of government.
- 4.17 Compliance With Other Laws. The holder of any permit or license as required in this Ordinance shall also comply with all applicable federal, state, or local laws, ordinances, and regulations.
- 4.18 Location. All soil treatment systems shall be located wholly upon the property served, except as specifically approved by the Administrator and included as a condition of permit.
- 4.19 Maintenance. It shall be the responsibility of the owner of any premises using an Individual Sewage Treatment System to provide for the periodic maintenance of such system as necessary to assure adequate function.
- 4.20 Correction. When the Administrator, based on inspection, determines an Individual Sewage Treatment System is not operating in an approved manner and is in need of correction, he/she shall notify the owner in writing that the problem shall be corrected within the time period deemed necessary by the Administrator. Further, the Administrator may, upon failure of an individual to

follow the correction notice, enter such property for the purpose of proper closure, restoration or cleanup of pollution as stated in the correction notice.

- 4.21 Repair of Individual Sewage Treatment Systems. No permit is required for system repair if the repair does not alter the original area, dimensions, or concept of the system.
- 4.22 Failing Systems. Failing Systems shall be brought into compliance within 24 months of notification. A permit for correction must be applied for within 10 days of notification of failure. In the case of an imminent public health threat, abatement of the threat must be accomplished within 10 days of notification and the system must be brought into compliance within 60 days. For the purpose of Point of Sale Inspection a failing ISTS must be upgraded.
- 4.23 Non-conforming Systems. For the purpose of Point of Sale or Compliance Inspection, a Non-conforming system shall be identified. A Notice of Non-compliance will be issued by the Administrator or a state certified designer I or inspector. For Point of Sale Inspections the buyer must be given a copy of the Point of Sale Inspection report.
- 4.24 Technical Requirements. All Individual Sewage Treatment Systems shall be installed and renovated in accordance with the requirements contained in this Ordinance and Standards.

## SECTION 5. SYSTEM PERMITS.

- 5.01 Requirement. No Person shall construct, install, renovate or use an Individual Sewage Treatment System within St. Louis County without first obtaining the required permit or permits from the Administrator applicable to the specific activity to be undertaken. All construction permits issued by the Department shall expire 24 months after date of issue. Permits are not transferable from one person to another or from one site to another. No system permit of any type shall be issued except following compliance with the provisions contained herein.
- 5.02 Time Length and Conditions of Permit. The Administrator may establish time limits and apply conditions to the issuance of any permit. Where weather or other conditions prevent permanent correction of an imminent public health threat within 60 days or abatement within 10 days, a provisional permit for a Holding Tank or other method of treatment may be issued. The length of the provisional permit shall not exceed 150 days.
- 5.03 Revocation and Suspension of Permit. A permit may be revoked or suspended as provided in Section 12.02 of this Ordinance.

- 5.04 Application Fees. Applications for permits shall be accompanied by the payment of a fee in an amount to be determined by the County Board.
- 5.05 Application Content. The applicant or his/her designated representative shall submit a completed application on forms furnished by the Administrator which shall contain: legal description of the proposed site; parcel code number; name and address of the property owner(s) and of the person(s) performing the permit activity; a plot plan of the land showing the site of the permit activity, indicating boundary lines, abutting roads, existing and proposed structures, feed lots, wells, water bodies, land elevations, soils and site evaluation information, slopes and location of proposed system; a sketch of the proposed system including its parts, size, design and location; a description of the proposed system including building(s) to be served, maximum number of Bedrooms to be served and estimated daily sewage flows (or for non-residential uses, anticipated average and peak daily flow of water); a description of the water supply, well and well casing depth, proximal location of bedrock and Water Table; and such additional information as may be required by the Administrator. Each permit application shall be kept on file with any permit issued pursuant to this Ordinance.
- 5.06 Application Review. Upon receipt of an ISTS application, the Administrator shall at his/her discretion, perform site visits or require additional information as necessary to evaluate or clarify information contained in the permit application with regard to the requirements contained herein.
- 5.07 System Types. Based on the information contained in the application and any additional information concerning the anticipated construction, the Administrator shall make a determination of the type of system to be installed. The system shall be classified as follows:
- A. Standard Systems. Standard Systems shall be issued a standard construction permit, which will expire 24 months after date of issue, and an Authorization to Use which will remain in effect until the system fails or a change in use occurs such that the system is no longer adequate to serve the property.
  - B. Performance Systems. A Performance System shall be required in all commercial applications, in residential situations where a Standard System cannot be installed, or when the applicant's choice is to use pre-treatment technology and disperse the effluent into less than three feet of natural unsaturated soil. All Performance Systems shall require an Operating Permit which shall be issued for a length of time not to exceed five (5) years. Upon expiration, renewal of the Operating Permit shall occur after approval by the Department of a new application. In the event of a property transfer the new owner must apply for an Operating Permit. A fee will be charged for a new Operating Permit at a reduced rate determined by the County Board.

1. Treatment Expectations. Performance Systems shall provide at least the same quality of sewage treatment that would be achieved by dispersing the septic tank effluent through three feet of natural unsaturated soil.
2. Permit Application. In addition to the information required in Section 5.05, an Operating Permit application shall also contain the following information:
  - a. Expected system performance - For parameters delineated by the Department such as: the five-day biological oxygen demand (BOD), organic loading, nutrient removal, fecal coliform removal, total suspended solids (TSS), and/or other criteria deemed relevant by the Department.
  - b. Monitoring Plan - A plan to monitor relevant parameters of performance including frequency and delineation of who performs the monitoring requirements.
  - c. Contingency Plan - An alternative means of wastewater disposal in the event the system fails, is disabled, or the Operating Permit is revoked.
  - d. Operation and Maintenance Plan - Requirements for the successful operation and maintenance of the system.
  - e. System design including all component parts - Construction specifications for all treatment and dispersal components of the Performance System.
  - f. Dispersal field loading factors - Wastewater acceptance rate in gallons per day per square foot.
  - g. Environmental description - This shall include a description of the physical environment of the property, soils and other information deemed relevant by the Department.
  - h. Approved operator - Individual responsible for monitoring and operating wastewater systems deemed suitable by MPCA certification, or other means deemed adequate by the Department.
  - i. Reporting requirements - Listing of required parameters to be submitted to the Department and the frequency of submittal.

- j. Non-compliance penalty - Delineation of penalties for non-compliance. This may include revocation of the Operating Permit and possible legal action.
  - k. Required system compliance - Performance requirements for the system as designated by the Administrator. These may differ from the predicted system performance and shall include operation and maintenance requirements, operator requirements, and performance requirements.
  - l. Other site or system related information as may be required by the Administrator to evaluate the expected system performance.
3. Permit Conditions. In order for the Operating Permit to remain in effect, the system must be operated in compliance with conditions set by the Administrator to assure system performance. Failure to comply with these conditions may result in permit suspension or revocation as authorized in Section 12.02. Such conditions may include, but are not necessarily limited to the following:
- a. All Performance Systems shall be designed to disperse wastewater below grade and onto a minimum of one foot of unsaturated soil.
  - b. All Performance Systems shall be monitored for flows using a water meter.
  - c. Performance Systems may be required to remove nutrients to specified levels if located in sensitive environments as required by the Department.
  - d. Performance Systems shall be monitored as deemed necessary by the Department.
  - e. For the purpose of monitoring, the following definitions shall apply:
    - 1) With less than one (1) foot of unsaturated soil, fecal coliforms shall not exceed an average of 200 fecal colonies per 100 ml or background levels, whichever is greater, before being discharged into the soil.
    - 2) With between one (1) and three (3) feet of unsaturated soil, fecal coliform colonies shall not exceed an average, 10,000 fecal coliforms per 100 ml

above background levels before discharged into the soil.

4. Experimental Systems: Systems will be defined as “experimental” by the Administrator. Experimental Systems shall require an annual Operating Permit.

5.08 Authorization to Construct. Following review of the application, the Administrator shall make a written evaluation that describes whether the proposed system can be installed or renovated in compliance with this Ordinance, describing site or system problems that must be mitigated in connection with the installation or renovation. Once the application is approved, the Administrator shall issue an Authorization to Construct. If the system cannot be constructed as submitted, the application shall be disapproved with reasons therefore in writing.

## SECTION 6. INSPECTION AND MONITORING

6.01 Construction Inspection. The Administrator shall make inspections as necessary to determine whether an installation or renovation of an Individual Sewage Treatment System for which a permit is required pursuant hereto is being accomplished in compliance with this Ordinance and the applicable permit. Unless specific approval has been given by the Administrator, no part of such a sewage treatment system shall be covered until it has been inspected and/or finally approved by the Administrator.

6.02 Notification. It shall be the responsibility of the applicant for the permit to notify the Department a minimum of twenty-four (24) hours in advance, excluding weekends and holidays, that the job is ready for inspection or reinspection, and it shall be the duty of the Department to make the indicated inspection as promptly as possible to determine construction is being carried out in accordance with the provisions of this Ordinance. Such inspection is performed to assure compliance with the construction Standards and is not meant in any way to assure function or product reliability of said system. It shall also be the responsibility of the applicant to notify the Department and receive approval prior to commencing construction during inclement weather or upon discovering questionable soil conditions.

6.03 Certificate of Compliance: New or Renovated Systems. No Individual Sewage Treatment System for which a system permit is required pursuant hereto shall be placed or replaced in operation until the Administrator has issued a Certificate of Compliance governing the subject installation or renovation. A Certificate of Compliance is valid for five years for new ISTS installations, and for three years for an existing ISTS. Where, upon inspection, the Administrator discovers an Individual Sewage Treatment System has not been installed or renovated in compliance with the provisions contained in this Ordinance or the applicable

permit, the Administrator shall issue to the owner a written notice requiring compliance. The applicant shall be responsible for correcting and eliminating all defects cited in the notice within the time period designated by the Administrator.

6.04 Compliance Inspection Requirements:

- A. Sanitary Check-off. Sanitary Check-off is a record review of the land owner's Individual Sewage Treatment System, as required by the St Louis County or Township Zoning Ordinance, generated through the application for a Land Use Permit, in the following situations:
  - 1. When application is made for a Land Use Permit, other than the addition of a Bedroom, on parcels less than 2.5 acres.
  - 2. When application is made for a Land Use Permit, other than the addition of a Bedroom, on shoreland parcels. Shoreland is defined as within 1,000 feet of a lake or 300 feet of a river.
- B. Compliance Inspection. A Compliance Inspection meeting the requirements of Section 25 shall be conducted on real property in the following situations:
  - 1. When a Sanitary Check-off Record Review approval cannot be given because of inadequate ISTS information on file.
  - 2. When the applicant applies for a Land Use Permit for a Bedroom addition or as required by the St Louis County or Township Zoning Ordinance.
  - 3. At the time of property transfer / Point of Sale.
- C. Point of Sale Requirements.
  - 1. St Louis County elects to require Point of Sale Inspections of all soil treatment systems located on real property lying within St Louis County. The County does so in the exercise of its statutory and discretionary powers on behalf of the citizens of St Louis County. Point of Sale Inspections afford the County a very unique opportunity to serve the public and protect the environment by requiring inspection of systems that are not new construction and are not known to be failing and by requiring that the inspections be performed at a time when financing may be more readily available and the parties to the land exchange have the opportunity to negotiate regarding any soil treatment system issues concerning the real property. Point of Sale Inspections will provide for a more uniform, reputable and comprehensive means of inspecting soil treatment systems throughout the County. Finally, Point of Sale

Inspections will further encourage and foster a mode of land utilization that facilitates the safe, economical and adequate provision of sanitation, water supply, drainage, and landowner education; facilitate reduction of governmental expenditures; protect groundwater; conserve and develop natural resources; and foster and develop agriculture and human habitation in the places best suited to them.

2. Prior to the conveyance of any real property, the seller must disclose in writing to the buyer information about the status and location of all known ISTS on the property by delivering to the buyer either a sworn affidavit by the seller that no ISTS exists on the property to the best of their knowledge after diligent investigation, or provide a Certificate of Compliance, a Notice of Non-compliance, or a Notice of Failure as the result of a Compliance Inspection conducted by a Minnesota state registered inspector holding a Designer I or Inspector certification. A Certificate of Compliance, Notice of Non-compliance, or a Notice of Failure must be submitted to the Administrator, the seller, and the buyer within 30 days after the Compliance Inspection.
3. Prior to the conveyance of any real property within St Louis County the seller shall provide to the Department one of the following:
  - a. A sworn affidavit by the seller certifying that no Individual Sewage Treatment System exists on said property to the best of their knowledge after diligent investigation;
  - b. A Certificate of Compliance on forms approved by the Administrator;
  - c. A Notice of Non-compliance on forms approved by the Administrator.
  - d. A Notice of Failure on forms approved by the Administrator.
  - e. Transfer Agreement. A Transfer Agreement shall be submitted to the Department and reviewed for approval by the Administrator. The Transfer Agreement shall be submitted on forms provided by the Department and must be accompanied by an ISTS application.

Failure to comply with the requirements of this subdivision does not impair the validity of the deed. Failure to present to the Department an affidavit, Certificate of Compliance, Notice of Non-compliance,

Notice of Failure, or Transfer Agreement as outlined in this subdivision shall be a violation of this Ordinance.

4. If upon inspection the ISTS is found to be failing it must be upgraded as stated below:
  - a. Prior to the conveyance of any real property.
  - b. In accordance with the Transfer Agreement in Section 6.04, C, 6.
5. An Individual Sewage Treatment System not meeting the requirements of the St Louis County Individual Sewage Treatment Systems Ordinance must be upgraded in accordance with Section 6.04, C, 4 of this section prior to the issuance of any St Louis County, food, beverage, or lodging Permit or license.
6. In accordance with Section 6.04, C, 3, e, above, all property conveyances subject to this Ordinance occurring prior to a Compliance Inspection shall require a Transfer Agreement, which includes an ISTS permit application. When a Compliance Inspection cannot be performed prior to the conveyance due to frozen soil conditions, it shall be completed on or before the immediately following June 1<sup>st</sup>. for all other conveyances the Compliance Inspection shall be performed within 30 days of the property transfer.

6.05 Inspections. It shall be the duty of the Owner or occupant of the premises for which an ISTS permit has been issued and for which an Authorization to Use has not been issued by the Administrator, to give the Administrator free access to the premises at reasonable times for the purpose of system inspections, testing, and measurements as may be necessary to fulfill the obligations and requirements of this Ordinance. Failure to permit such free access shall result in revocation of any existing permits relating to the subject system.

## SECTION 7. TECHNICAL ADVISORY COMMITTEE.

7.01 Creation. A Technical Advisory Committee (TAC) may be created by the County Board to provide technical recommendations for policy and procedure development as it relates to Individual Sewage Treatment Systems. Members shall be appointed by the County Board as an official Advisory Committee.

7.02 Terms of Office.

- A. Except as provided below, each member of the Technical Advisory Committee shall be appointed to serve for a period of three calendar years. No Person shall be appointed for more than three consecutive full terms of office.
- B. Initial appointments made pursuant to this Ordinance shall be made in such a manner that no more than four terms shall expire at the close of any calendar year.
- C. Each calendar year shall be presumed to run from the date of the first required meeting of the County Board in a given year to the first required meeting in the following calendar year.

7.03 Membership. The TAC shall consist of eleven (11) voting members and two alternates from a variety of technical backgrounds. A quorum shall consist of five voting members. One member of the committee shall be from the St Louis County Soil and Water Conservation District and the position may be exempt from the terms of office as specified in Section 7.02. No more than four TAC members shall be from government agencies. For the purpose of TAC membership, townships shall not be considered government agencies.

7.04 Vacancies.

- A. Appointments shall be made by the County Board to fill any vacancy for the unexpired duration of the term.
- B. Vacancies in regular positions shall be declared by the County Board under any of the following conditions:
  - 1. Death of a member.
  - 2. Resignation of a member.
  - 3. Removal of a member for cause as provided in this Ordinance and Standards.
  - 4. Expired term.

7.05 Removal for Cause. Reasons for removal shall be deemed sufficient cause for the County Board of Commissioners to remove any Technical Advisory Committee member. The County Board shall remove any member upon the occurrence of any of the following conditions as reported to the County Board by the Administrator.

- A. Failure of the member to attend one-third of the regularly scheduled committee meetings in any 12 month period.

- B. Failure of the member to attend three consecutive committee meetings, or to attend four consecutive regular and special committee meetings.
  - C. Attendance at regular or special committee meetings for such a short length of time as to render the member's services of little value. The County Board of Commissioners shall make judgment on such matters after receiving a report from the Administrator.
  - D. Inability to carry out the duties of the Committee due to a conflict of interest.
- 7.06 Authority. The TAC shall be empowered to set meeting protocol, keep records, and obtain from the Department any public information it may require to formulate its recommendations.
- 7.07 Purpose. The purpose of the TAC is to:
- A. Review proposed revisions and additions to the St Louis County ISTS Ordinance and Standards in an advisory capacity.
  - B. Review and recommend new methods, techniques, and materials for soil treatment in an advisory capacity.
  - C. Review on-site wastewater treatment system plans and provide recommendations in an advisory capacity as specified in Section 16.03.

## SECTION 8. LICENSING.

- 8.01 Requirement. No Person, with the exception of those in the employ of the Department, shall engage or perform any aspects of the business or perform for others the service of site evaluation, design, installation, pumping, maintaining, renovation of Individual Sewage Treatment Systems within St. Louis County without first obtaining a license from the Minnesota Pollution Control Agency. Installer licensees shall be authorized to construct, install, renovate, and repair Individual Sewage Treatment Systems.
- 8.02 Licensing Exemption. Individuals installing a Standard System on their own property for their own use are exempt from installer licensing requirements, but must conform to all other aspects of this Ordinance and Standards. To be exempt the property owner must demonstrate to the Administrator the ability to design an ISTS. In the case of a Mound System the property owner must also demonstrate the ability to construct the ISTS.

## SECTION 9. VARIANCES.

### 9.01 General.

- A. Applications for Variances from the terms of this Ordinance, or appeals from any order, requirement, decision or determination made by the Administrator shall be made to the Board of Adjustment.
- B. Such appeals may be taken by any person aggrieved, or any officer, department, board or bureau of a town, municipality, county or state.
- C. Such appeals shall be taken to the Board of Adjustment within 45 days of receipt of notice from the Administrator of any order, requirement, decision, or determination made by him/her.
- D. An appeal stays all proceedings in furtherance of the action appealed from unless the Board of Adjustment certifies that, by reason of the facts stated in the certificate, a stay would cause imminent peril to life or property.

### 9.02 Applications, Hearings, Decisions, and Criteria.

- A. Applications.
  - 1. An application for a Variance shall be filed with the Administrator on a proper form provided for that purpose. Other appeals shall be filed in a manner prescribed by the Administrator.
  - 2. Appeals applications shall be filed in a timely manner in advance of a scheduled hearing date as the Board of Adjustment may provide in its rules of procedure.
  - 3. Application forms shall be complete, and shall clearly specify the grounds of the appeal. Where required by the nature of the appeal, the application shall be accompanied by detailed plans, with drawings, showing all details of the land area and the nature of the circumstances surrounding the appeal.
  - 4. The application shall be accompanied by the required fee as determined by the County Board.
  - 5. The Administrator shall reject, and refuse to refer to the Board of Adjustment any application not accompanied by the required fee or by other materials and information as required by this Ordinance.

B. Hearings.

1. The Board of Adjustment shall conduct a public hearing on each appeal.
2. The Board of Adjustment shall set a reasonable time for the hearing of the appeal and shall give due notice thereof as provided for in this section.
3. Such hearings shall be conducted according to applicable Minnesota Statutes and to the rules of procedure of the Board of Adjustment.

C. Decisions.

1. Decisions by the Board of Adjustment shall be made within thirty-five (35) days of the date a public hearing is closed.
2. The Board of Adjustment shall keep a written record of its proceedings showing the vote of each member on each question, or if absent or failing to vote indicating such fact.
3. The Board of Adjustment shall render its decisions in writing stating its reasons in sufficient detail so that it can be determined that the decision was made in reliance on testimony given at the public hearing, and according to the criteria contained in this Ordinance.
4. A certified copy of any order issued by the Board of Adjustment acting upon any appeal shall be filed with the County Recorder or Registrar of Titles for record. The order shall include a legal description of the property involved. It shall be the responsibility of the Administrator to carry out this provision.
5. After any appeal to the Board of Adjustment has been approved the appellant shall have 60 days, after receipt of notice of the decision, to make application to the Administrator for any permit necessary to begin the structure or the use for which the appeal was made.

D. Criteria for Decisions. The following criteria shall be used in making decisions:

1. The Board of Adjustment shall always act with due consideration to promoting the public health, safety, and welfare, encouraging the most appropriate use of land and conserving property value, and shall permit no method of sewage treatment or disposal detrimental to a neighborhood.

- a. Decisional Standards. Regardless of whether practical difficulties and hardship are distinguished or equated, Variances are only permitted if the following criteria are met:
- 1) The Variance is in harmony with the general purposes and intent of the official control.
  - 2) The Variance is only permitted when there are practical difficulties or particular hardship in the way of carrying out the strict letter of the official control.
  - 3) The terms of the Variance are consistent with the comprehensive plan; Minn. Stat. § 394.27, subd. 7.

These decisional standards should always be a required part of the conclusions of the Board of Adjustment in any decision. In addition to these, criteria hardship standards have been identified in the legislature.

- b. Criteria Hardship Standards. "Hardship" as used in connection with the granting of a Variance means that the property in question cannot be put to a reasonable use under the conditions allowed by this Ordinance; the plight of the landowner is due to circumstances unique to his/her property not created by the landowner; and the Variance, if granted, will not alter the essential character of the locality. Economic considerations alone shall not constitute a hardship if a reasonable use for the property exists under the terms of this Ordinance.
- c. Practical Difficulty Standards. The subsequent standards shall be considered as a condition of Variance:
- 1) Whether strict compliance with the terms of the ordinance will preclude a permitted use from being pursued.
  - 2) Whether the land will yield a reasonable return.
  - 3) The degree to which the applicant seeks to vary from the ordinance.
  - 4) The degree of harm which will be imposed on the surrounding area if the Variance is granted.

- 5) Whether some other method can be pursued to avoid the need for the Variance.
- 6) Whether the difficulty is self-imposed.
- 7) Whether the interest of justice and the general welfare is served.

In evaluating practical difficulties, no one factor alone controls and all must be considered.

## 2. Variances

- a. The Board of Adjustment may authorize a Variance from the terms of this Ordinance which will not be contrary to public interest, where owing to special conditions a practical difficulty or particular hardship would be created by carrying out the strict letter of the Ordinance, and when the terms of the Variance are consistent with the spirit and intent of this Ordinance and with the County's Land Use or Comprehensive Plan, if any.
- b. When in the opinion of the Board of Adjustment a Variance may result in a material adverse effect on the environment, the appellant may be required by the Board of Adjustment to demonstrate the nature and extent of the effect.
- c. It shall be the burden of the applicant to demonstrate sufficient hardship to sustain the need for a Variance. Absent a showing of hardship as provided in Minnesota Statutes and this Ordinance, the Board of Adjustment shall not approve any Variance.

## E. Appeals from Board Decisions.

1. All decisions by the Board of Adjustment in granting Variances or in hearing appeals from any administrative order, requirement, decision, or determination shall be final except any aggrieved person or persons, or any department, board or commission of the jurisdiction or of the state shall have the right to appeal within 30 days after receipt of the notice of the decision to the District Court on questions of law and fact.

F. Other Appeals.

1. The Board of Adjustment may reverse or affirm wholly or partly, or modify the order, requirement, decision or determination appealed from and to that end shall have all the powers of the officer from whom the appeal was taken and may direct the issuance of a Permit.

SECTION 10. BOARD OF ADJUSTMENT REHEARING.

10.01 Responsibility of the Administrator. The Administrator may determine and place on the agenda of the Board of Adjustment a matter that has been previously heard. The basis for such rehearing shall be the following:

- A. An irregularity in the previous proceedings whereby the Administrator determines that the Person requesting the rehearing was deprived of a fair hearing and that if the irregularity had not taken place the Board of Adjustment would have likely made a different decision.
- B. Misconduct of a member of the decision-making body.
- C. Material evidence newly discovered which, with reasonable diligence, could not have been found and produced at the hearing and that would have likely resulted in a change in the final outcome of the decision.
- D. Errors of law occurring at the hearing and objected to at the time of the hearing.
- E. Conditions have changed requiring a re-examination of the original conditions of a permit.

10.02 Rehearing Denial. The Administrator shall not order a rehearing when a land use permit has been issued on the proposed activity.

10.03 Rehearing Procedure. All rehearings shall be scheduled as soon as possible and, once scheduled, no land use permit may be issued for the proposed activity. All hearings shall follow the same procedures as was required by the original permit. The Board of Adjustment, after the close of public testimony, may take the following action:

- A. Affirm the previous decision.
- B. Adjust conditions placed on the previous decision.
- C. Reverse the decision.

Only members of the Board of Adjustment who were present for the original decision may vote on the rehearing action. If less than five members of the Board of Adjustment are eligible to vote on the matter there shall be a new application on the proposal.

## SECTION 11. NEW APPLICATION AFTER DENIAL

11.01 Basis for a New Application. The Administrator may permit a new application for a project previously acted upon by the Board of Adjustment or Planning Commission based on at least one of the following criteria:

- A. The new application is determined by the Administrator to be significantly different from the earlier application.
- B. The intent of the Standards for rehearing listed in Section 10 above are met.
- C. New State, Federal, or local regulations are in effect which would alter the review of the application by the decision making body.
- D. Development pattern of the area has changed in a manner which would alter the findings made by the decision-making body.
- E. The decision-making body in its original decision stated terms for reapplication.

11.02 No New Application. No new application will be permitted if the intent of the applicant is to cause numerous hearings on a similar issue in order to either disrupt the review process, obtain a new vote based on a perceived difference in the decision-making body, or cause property owners and interested citizens to have to attend numerous hearings.

## SECTION 12. ENFORCEMENT.

12.01 Violations. Any Person who commits any of the following acts or violates any of the provisions of this ordinance that prescribe certain action as unlawful shall be guilty of a misdemeanor and, upon conviction thereof, shall be fined in an amount not to exceed \$700 for each violation. Each day the unlawful activity continues shall constitute a separate violation:

- A. Disposes of sewage in a manner contrary to the terms of this Ordinance.

- B. Disposes of sewage or installs or renovates an Individual Sewage Treatment System without first having received a permit as provided herein or violates the conditions of said permit.
- C. Uses or allow the use of a system that allows sewage (treated or untreated) to be discharged to the surface of the ground, into surface or groundwaters, or other potential drinking water source.
- D. Installs or renovates an Individual Sewage Treatment System or discharges sewage in a manner that involves the knowing and material variation from the terms and specifications contained in the application or permit.
- E. Conducts the business of or engages in activities described in Section 8 herein without first having obtained the required license(s).
- F. Willfully fails to conduct the maintenance obligations established pursuant hereto or unlawfully refuses a right of entry to the Administrator.
- G. Violates the terms of a Board of Adjustment decision issued pursuant to the provisions contained herein.
- H. Disposes of Sewage from an ISTS after the Administrator has suspended or revoked the system permit.
- I. Disposes of sewage from an ISTS in violation of a cease and desist order issued.
- J. Violates the terms of an order issued pursuant to the provisions contained herein.
- K. Operates a Performance System without a valid and current Operating Permit and Authorization to Use.
- L. Fails to allow the Administrator free access to the property to inspect any ISTS the Administrator has cause to believe is being installed, operated, maintained, or repaired in violation of this Ordinance.

12.02 Revocation and Suspension. The Administrator may by written order suspend or revoke any system permit when he has information indicating the permit has been issued in error or on the basis of incorrect or inadequate information, or that work is either not being performed in compliance with this Ordinance or the system is not being operated in compliance with the provisions/conditions of the permit.

12.03 Cease and Desist Order. The Administrator may issue an order to the owner or occupant of any premises utilizing an Individual Sewage Treatment System to

cease and desist the use of any system operating in a manner creating substantial hazard to the public, health, safety, or welfare or that has not been repaired in accordance with the provisions of any order issued pursuant to Section 4 herein. If requested, an appeal pursuant to the provisions of Section 9 shall be held within 30 days following the issuance of such an order to determine whether the order should be continued in force and effect.

12.04 Citations. The Sheriff's Department may issue citations for violations of this Ordinance.

A. Citations shall contain the following information:

1. The name and address of the person charged with a violation or the owner or person in charge of the premises at which the violation occurs.
2. The date and place of the violation.
3. A short description of the violation followed by the section of the Ordinance violated.
4. The date and place at which the person receiving the citation shall appear and a notice that if such person does not appear, a warrant may be issued for such person's arrest.

B. Whenever any representative of the Administrator discovers a violation of this Ordinance, the Administrator may ask the Sheriff's Department to issue a citation to the person alleged to have committed the violation.

C. If a citation is issued, the issuing Department shall provide complete investigation reports to the County Attorney's Office a minimum of 24 hours prior to the first scheduled court appearance.

D. After the issuance of the citation and within such time as shall be fixed by court rule, the person charged with the violation shall report to court as directed by the citation.

E. If the person charged with the violation does not appear at the time specified by the citation, the court shall request a summons and complaint from the prosecuting authority which will direct the person charged to appear on a date specified. If such person fails to respond to the summons, the court shall cause a warrant to be issued for the arrest of such person on a charge of failure to appear.

12.05 Costs to be Assessed. The Administrator may cause to be assessed against the property on which an Individual Sewage Treatment System is located the cost of proper closure, restoration, and cleanup of pollution occurring as a result of a

system failure. Upon certification by the Administrator of the cost incurred, the St. Louis County Auditor shall cause the cleanup assessment to be levied against the property on which the system is located.

- 12.06 Injunctive Relief. The Administrator may, in addition, enforce all provisions of this Ordinance through such proceedings for injunctive relief as may be proper under the laws of Minnesota. The Administrator shall initiate action to prevent, restrain, correct, or abate violations or threatened violations.

### SECTION 13. AMENDMENTS.

- 13.01 General. This Ordinance may be amended whenever the public health, safety, and general welfare would be best served by such an amendment.
- 13.02 Amendment Initiation. An amendment to this Ordinance may be initiated by the County Board, citizen, Town Board, Sewage Subcommittee, or Planning Commission. An amendment not initiated by the Planning Commission shall be referred to it for study, public hearing, and report to the County Board in writing.
- 13.03 Amendment Adoption. After conducting a public hearing on an Ordinance amendment, the Planning Commission shall report in writing to the County Board within thirty days of the closing of the hearing. Upon filing of a report by the Planning Commission the County Board, in the manner prescribed by State statute, may by Ordinance adopt the amendment or any portion thereof as it deems advisable.
- 13.04 Hearing Procedure. The Planning Commission hearings, for the purpose of amending this Ordinance, shall be conducted as prescribed in St Louis County Zoning ordinance.

### SECTION 14. FEES.

- 14.01 The St. Louis County Board of Commissioners shall set, revise, or rescind and collect such fees as it deems necessary for the administration of this Ordinance. Fees may include, but are not limited to, those charged for permits, licenses, and Variance requests. The St. Louis County Board of Commissioners may establish a late fee for any or all categories.

### SECTION 15. GENERAL PROVISIONS.

- 15.01 Liability. This Ordinance shall not relieve or lessen the responsibility or liability of

any person owning, operating, controlling, or installing any sewage treatment system or disposing of septage for damage to persons or property or any other injury occasioned thereby. The Administrator assumes no responsibility for the proper, safe, and efficient functioning and performance of sewage treatment systems installed, renovated, or maintained pursuant to the requirements contained herein.

15.02 Severability. It is hereby declared to be the intention of St. Louis County that the provisions of this Ordinance are severable. If any provision or the application thereof to any person or circumstances is held to be illegal or invalid, such invalidity or illegality shall not affect other provisions of this Ordinance or the application of said provisions to any other property, building, or structure not specifically included in said determination. To this end, the provisions of this Ordinance and the various applications thereof are declared to be severable.

15.03 Abrogation and Greater Restriction. It is not intended by this Ordinance to appeal, abrogate, annul, impair, or interfere with any existing easements, covenants, deeds, restrictions, agreements, ordinances, rules, regulations, permits previously adopted, or issues pursuant to law. However, where this Ordinance imposes greater restrictions, the provisions of this Ordinance shall govern.

## **STANDARDS**

### **SECTION 16. PREPARATION, SUBMISSION, AND APPROVAL OF PLANS FOR SOIL TREATMENT SYSTEMS**

16.01 Applications. Each permit application shall contain a complete site evaluation with the following information: legal description of the proposed site; name and address of the property owner(s) and of the person(s) performing the permit activity; a plot plan of the land showing the site of the permit activity, indicating boundary lines, abutting roads, existing and proposed structures, feed lots, wells, water bodies, land elevations, soils (description, borings, Mottling), slopes, and location of proposed system; a sketch of the proposed system including its parts, size, design, and location; a description of the proposed system including building(s) to be served, maximum number of Bedrooms to be served, and size in gallons (or for nonresidential uses, anticipated average and peak daily flow of water); a description of the water supply, well and casing depth, proximal location of bedrock and Water Table; a complete site evaluation worksheet furnished with each application; and such additional information as may be required by the Administrator. Each permit application shall be kept on file with any permit issued pursuant to the ordinance of which these Standards are a part.

16.02 Approval of Plans. Any plans for an Individual Sewage Treatment System including those submitted to other agencies and those prepared by a state certified registered engineer, etc., shall be submitted to and be approved by the Department prior to the onset of construction and shall be on forms provided by the Department.

16.03 Plans for Commercial Systems or Performance Systems with less than one foot of natural inorganic soil.

Plans for an Individual Sewage Treatment System shall be prepared by a state certified registered civil engineer or state certified designer and must be reviewed by the Technical Advisory Committee:

- A. For systems generating over 2,000 gallons/day.
- B. For systems serving ten (10) or more Sewage sources.
- C. At the discretion of the Department where unusual, marginal, or adverse conditions exist.
- D. On all systems having less than one foot of natural inorganic soil.
- E. On all Individual Sewage Treatment Systems serving structures generating wastewater having either biological oxygen demands (BOD) greater than 450 mg/liter, a total suspended solids (TSS) greater than 140 mg/liter, or oil and grease levels greater than 50 mg/liter.

## SECTION 17. SITE EVALUATION

17.01 Evaluation Factors. All proposed sites for Individual Sewage Treatment Systems shall be evaluated as to:

- A. depth to the highest known seasonally saturated zone in the soil profile or bedrock;
- B. soil conditions, properties, and permeability;
- C. slope;
- D. the existence of Wetlands, local surface depressions, and rock outcrops;
- E. all legal Setback requirements from: existing and proposed buildings; property lines; Sewage Tanks; soil treatment systems; water supply wells; buried water pipes and utility lines; the ordinary high water level of public waters; and the location of all soil treatment systems and water supply

wells on adjoining lots within 150 feet of the proposed soil treatment system, sewage tank, and water supply well;

- F. surface water flooding probability.
- G. accessibility for maintenance;
- H. future replacement area of the system;
- I. size and shape of the lot or parcel.

1. Lot Evaluation.

Minimum lot sizes in regard to Individual Sewage Treatment Systems are based on limiting water, soil, and topographical factors.

Limiting Factors:

- a. On-site water supply.
- b. Soil textures having a permeability either equal to or slower than clays, or on coarse textured soils equal to or faster than coarse sand.
- c. Water table/bedrock less than five feet (5').
- d. Slope more than 20 percent.
- e. Slope more than twelve percent (12%) on clay soils.

Excessively high Water Table, bedrock, lack of Original Soil, or excessive slope may be grounds for rejection of the plat or lot.

2. Lot or Parcel Size.

- a. ½ acre - 100 foot width.  
Only allowed with public water supply. No Limiting Factors.
- b. 1 acre – 150 foot width.  
One (1) Limiting Factor.
- c. 2 acres – 200 foot width.  
Two (2) Limiting Factors.
- d. 3 acres – 250 foot width.  
Three (3) Limiting Factors.

- e. 4.5 acres – 300 foot width.  
Four (4) Limiting Factors.
- f. Lots falling short of the minimum lot width and area requirements listed above may be permitted provided they meet **all** the conditions listed in this Section of 1 or 2 below:
  - 1) The lot is a lot of record as of February 22, 1979.
    - a) The lot is in separate ownership from the abutting lands.
    - b) The lot has septic system and replacement areas and all other applicable requirements such as, but not limited to setbacks and separation distances can be met.
    - c) The lot meets minimum requirements of St. Louis County Zoning Ordinance 46 or other local zoning ordinance.
    - d) The proposed installation meets with Departmental approval.
  - 2) The lot is developed and there is no proposed increase in water use \*.
    - a) The sanitary system currently serving the lot has been inspected by a licensed ISTS professional and determined to be failing as defined in St. Louis County Ordinance 55.
    - b) There is sufficient area available for corrective measures to be taken.
    - c) The proposed installation meets with Departmental approval.

\* For the purpose of this section an increase in water use shall mean that there will be more sewage generated on the lot. Examples of increased water use would include changing the property use from seasonal to year round; going from a privy to indoor plumbing; adding a bedroom, bunkhouse, loft; or adding large water-using fixtures such as a spa-type bathtub.

17.02 Test Holes. Where test holes are required, they shall be made as follows:

- A. Each boring or excavation shall be by means of an excavated test pit or otherwise approved by the Administrator and shall be made to a depth at least three feet deeper than the bottom of the proposed system or until bedrock or a Water Table is encountered, whichever is less.
- B. A soil texture description shall be recorded by depth and notations made where texture changes occur.
- C. Particular effort shall be made to determine the highest known Water Table by recording the first occurrence of Mottling observed in the hole, or if Mottling is not encountered, the open holes in clay or loam soils shall be observed after standing undisturbed a minimum of 16 hours, and depth to standing water, if present, shall be measured.

17.03 Applicable Minnesota Department of Health Water Well Construction Code 4725.4450 Distance From Pollution or Contamination Sources. Subpart 1. Distances (in part). A well with at least 50 feet of water-tight casing or penetrates 10 feet of a confining layer shall be at least:

- A. Seventy-five (75) feet from cesspools, leaching pits, and dry wells.
- B. Fifty (50) feet from a buried sewer, Septic Tank, subsurface disposal field, grave, animal or poultry yard or building, privy, or other contaminants that may drain into the soil.
- C. Twenty (20) feet from a buried sewer constructed of cast iron pipe or plastic pipe (ASTM 2665 for polyvinyl chloride pipe or ASTM 2661 for acrylonitrile-butadiene-styrene pipe), as prescribed in the Minnesota Plumbing Code, part 4715.0420, subpart 3 with tested watertight joints, a pit or unfilled space below ground surface, a sump or a petroleum storage tank except that a well may be drilled closer than 20 feet to an approved basement, but no closer than as provided in part 4725.2100. A community public water supply well shall be isolated at least 50 feet from any source of contamination.
- D. Wells which do not have 50 feet of water-tight casing or do not penetrate 10 feet of a confining layer requires a 150-foot distance between a cesspool, seepage pit, leaching pit or dry well; and shall be located at  
  
least 200 feet from a subsurface disposal field, manure storage pile, or similar source of contamination.

17.04 Statutory Authority: Minnesota Statute Sections 115.03; 115.55; 115.56, Minnesota Rule Section 6120.3400, and acts and rules amendatory to.

Soil treatment systems must be set back from the ordinary high water level in accordance with Table I.



**Table I**

**Sewage Treatment System Setback Standards From Protected Waters**

	<u>Building Setback</u>	<u>ISTS Setback</u>
Natural Environment Lakes	150 feet	150 feet
Recreation Development Lakes	100 feet	75 feet
General Development Lakes	75 feet	50 feet
Mine Pit Lakes	150 feet	75 feet
Trout Streams	150 feet	150 feet
DNR Remote Rivers	200 feet	150 feet
Forest Rivers	150 feet	100 feet
SLC Primitive	300 feet	250 feet
SLC Remote Rivers	200 feet	150 feet
SLC Urban	100 feet	75 feet
Rural Agricultural Rivers	200 feet	75 feet
All other protected lakes and rivers	100 feet	75 feet
Natural Environment/ Recreational Development (NERD)	100 feet	150 feet

17.05 Additional Site. An additional suitable Site (12 inches of Original Soil above the Water Table and sufficient area) must be identified during the Site Evaluation.

**SECTION 18. BUILDING SEWERS**

18.01 General. The design, construction, and location of, and the materials for use in, building sewers shall be governed by the Minnesota Building Code, which incorporates by reference the Minnesota Plumbing Code, and by specific provisions of the Minnesota Water Well Construction Code. Relevant portions of the Minnesota Plumbing Code are adopted as part of these Standards.

18.02 Materials.

A. Quality of Materials. All materials used in any drainage or plumbing system or part thereof, shall be free from defects, and no materials damaged or defective shall knowingly be installed.

B. Identification of Materials. All materials must be marked, unless otherwise easily identifiable, so as to provide a visual means of identification as to

types, grades, weights, and strengths. The installer shall, as far as possible, position the identification marks so as to provide ease of inspection by the Administrative Authority.

18.03 Clean Out.

- A. Size of clean out. The clean out shall be of the same nominal size as the pipes they serve up to four inches (4") in diameter and not less than four inches (4") for larger piping.
- B. Separation Distance. The distance between clean out in horizontal piping shall not exceed 50 feet for three inch (3") or less in size and not over 100 feet for four inch (4") and over in size.

18.04 Separation of Water Service and Building Sewer. Distance Limits and Methods of Installing. Except as permitted below, the underground water service pipe and the building drain or building sewer shall not be less than ten feet (10') apart horizontally and shall be separated by undisturbed or compacted earth.

The water service pipe may be placed in the same Trench with the building drain and the building sewer provided approval is given by the Administrative Authority and the following conditions are met:

- A. The bottom of the water service pipe, at all points, shall be at least 12 inches above the top of the sewer line at its highest point.
- B. The water service pipe shall be placed on a solid shelf excavated at one side of the common Trench. The water service pipe shall preferably be of one piece. Where this is not feasible, the number of joints in the service pipe shall be kept to a minimum.
- C. The sewer and water service pipes shall be tested prior to backfilling by methods acceptable to the Administrative Authority.
- D. Where the provisions of subsections A and B above cannot be met, the sewer pipe shall be of cast iron or approved plastic and the water pipe of copper or cast iron or approved plastic.
- E. Where the water service pipe must cross the building sewer, the bottom of the water service pipe located within 10 feet of the point of crossing shall be at least 12 inches above the top of the sewer, except where this is not feasible, the sewer shall be of cast iron or schedule 40 plastic for at least 10 feet on either side of the crossing.
- F. Water Service near Sources of Pollution. Potable water service pipes shall not be located in, under, or above cesspools, Septic Tanks, Septic Tank drainage fields, or Seepage Pits. A separation of 10 feet shall be maintained.

#### 18.05 Drainage Piping Installation.

- A. Pitch or Horizontal Drainage Piping. Horizontal drainage piping shall be installed in uniform alignment at uniform slopes in accordance with the following requirements and in no case at a slope that will produce a computed velocity of less than two feet (2') per second, unless otherwise permitted by the Administrative Authority, based on hydraulic analysis of the piping system.
- B. Change in Direction. Changes in direction in drainage piping shall be made by the appropriate use of 45 degree Y's, long or short sweep quarter bends, sixth, eighth, or sixteenth bends, or by combination of these or equivalent fittings. Single and double sanitary tees (T), quarter bends, and long turn ells (L) may be used in drainage lines only where the direction of the flow is from the horizontal to the vertical.

Short Sweeps Permitted. Short sweep bends or long turn ells 3 inches or larger in diameter may be used in soil or waste lines where the change in direction of flow is from either the horizontal to the vertical or from the vertical to the horizontal.

- C. Building Drains below Building Sewer. Building drains that cannot be discharged to the sewer by gravity flow shall discharge into an approved watertight, gas tight, vented sump or receiving tank, so located as to receive the sewage or wastes by gravity. From such sump or receiving tank, the sewage or other liquid wastes shall be lifted and discharged into the building gravity drain by approved automatic pumping equipment. The system or drainage piping entering such sump shall be installed and vented as required in this section for a gravity system.

18.06 Maintenance. The plumbing system of every building shall be maintained in a sanitary and safe operating condition.

### SECTION 19. SEWAGE TANKS

19.01 General. All tanks, regardless of material or method of construction, must:

- A. be watertight;
- B. be designed and constructed to withstand all lateral earth pressures under saturated soil conditions with the tank empty;
- C. be designed and constructed with adequate tensile and compressive strength to withstand a minimum of seven feet of saturated earth cover above the tank top and manhole cover;

- D. not be subject to corrosion or decay;
- E. have the manufacturer's name, model number, and tank capacity in gallons permanently displayed on the tank above the outlet pipe;
- F. have an effluent screen installed at the outlet baffle.

Any tank not having an integrally cast bottom shall not be installed when the Water Table is closer than three inches to the bottom of the excavation at the time of construction.

Tanks used in primitive systems are exempt from subsections C and E above.

19.02 Design of Septic Tanks. All tanks, with the exception of tanks used in primitive systems, regardless of material or method of construction, shall conform to the following criteria:

- A. The liquid depth of any Septic Tank or compartment thereof shall be not less than 30 inches. A liquid depth greater than six and one-half feet shall not be considered in determining tank capacity.
- B. No tank or compartment thereof shall have an inside horizontal dimension less than 24 inches.
- C. Inlet and outlet connections of the tank shall be submerged by means of baffles.
- D. The space in the tank between the liquid surface and the top of the inlet and outlet baffles shall be not less than 20 percent of the total required liquid capacity, except that in horizontal cylindrical tanks this space shall be not less than 15 percent of the total required liquid capacity.
- E. Inlet and outlet baffles shall be constructed of acid resistant concrete, acid resistant fiberglass, or plastic.
- F. Baffles must be integrally cast with the tank, affixed with a permanent waterproof adhesive, or affixed with stainless steel connectors, top and bottom. Sanitary tees, which are used as baffles, shall be affixed to the inlet or outlet pipes with a permanent waterproof adhesive.
- G. The inlet baffle shall extend at least six inches but not more than 20 percent of the total liquid depth below the liquid surface and at least one inch above the crown of the inlet sewer.
- H. The outlet baffle and the baffles between compartments shall extend below the liquid surface a distance equal to 40 percent of the liquid depth

except that the penetration of the indicated Baffles or sanitary tees for horizontal cylindrical tanks shall be 35 percent of the total liquid depth. In no case shall they extend less than six inches above the liquid surface.

- I. There shall be at least one inch between the underside of the top of the tank and the highest point of the inlet and outlet devices.
- J. The inlet Invert shall be not less than three inches above the outlet invert.
- K. The inlet and outlet shall be located opposite each other along the axis of maximum dimension. The horizontal distance between the nearest points of the inlet and outlet devices shall be at least four feet.
- L. Sanitary tees shall be at least four inches in diameter. Inlet baffles shall be no less than six inches or no more than 12 inches measured from the end of the inlet pipe to the nearest point on the baffle. Outlet baffles shall be six inches measured from beginning of the outlet pipe to the nearest point on the baffle.
- M. Access to the Septic Tank shall be as follows:
  - 1. There shall be one or more manholes, at a minimum of 20 inches least dimension, and located within six feet of all walls of the tank. The manhole shall extend through the tank cover to a point within 12 inches of finished grade. If the manhole is covered with less than six inches of soil, the cover must be secured to prevent unauthorized access.
  - 2. There shall be an inspection pipe of at least four inches diameter over the inlet and large enough to remove an effluent filter from the outlet. The inspection pipe shall extend through the tank cover or the manhole cover and be capped flush or above finished grade. A downward projection of the center line of the inspection pipe shall be directly in line with the center line of the inlet or outlet device.
  - 3. An inspection pipe at least four inches in diameter must be located between the inlet and outlet baffles for the purpose of evaluating scum and sludge accumulations. The inspection pipe must extend through either the tank cover or manhole cover and must be capped flush with or above finished grade.
- N. Compartmentation of single tanks.
  - 1. When a Septic Tank is divided into two compartments, not less than one-half nor more than two-thirds of the total volume shall be in the first compartment.

2. When a Septic Tank is divided into three or more compartments, one-half of the total volume shall be in the first compartment and the other half equally divided in the other compartments.
3. Connections between compartments shall be baffled so as to obtain effective retention of scum and sludge. The submergence of the inlet and outlet baffles of each compartment shall be as specified in items G and H.
4. Adequate venting shall be provided between compartments by baffles or by an opening of at least 50 square inches near the top of the compartment wall.
5. Adequate access to each compartment shall be provided by one or more manholes, at least 20 inches least dimension, and located within six feet of all walls of the tank. The manhole shall extend through the tank cover to a point within 12 inches of finished grade. If the manhole is covered with less than six inches of earth, the cover must be secured to prevent unauthorized access.

O. Multiple tanks.

1. Where more than one tank is used to obtain the required liquid volume, the tanks shall be connected in series.
2. Each tank shall comply with all other provisions of Section 19.02.
3. No more than four tanks in series can be used to obtain the required liquid volume.
4. The first tank shall be no smaller than any subsequent tanks in series.

P. Outlet pipe from Septic Tank.

1. The outlet pipe from the Septic Tank must not be cast iron.
2. The outlet pipe extending from the Septic Tank must be of sound and durable construction, not subject to corrosion or decay.
3. The outlet pipe extending from the Septic Tank to the undisturbed soil beyond the tank must meet the strength requirements of American Society for Testing and Materials (ASTM), schedule 40 plastic pipe and must be supported in a manner that there is no

deflection during the backfilling and subsequent settling of the soil between the edge of the Septic Tank and the edge of the excavation.

4. The soil around the pipe extending from the Septic Tank must be compacted to original density for a length of three feet beyond the edge of the tank excavation.

### 19.03 Capacity of Septic Tanks.

- A. Dwellings. The liquid capacity of a Septic Tank serving a dwelling shall be based on the number of Bedrooms contemplated in the dwelling served and shall be at least as large as the capacities given in Table II:

**Table II**

SEPTIC TANK SIZING

<u>Number of Bedrooms</u>	<u>Tank Liquid Capacities (gallons)</u>
2 or less	750
3 or 4	1,000
5 or 6	1,500
7, 8, or 9	2,000
10 or more	Septic Tank shall be sized as another establishment. See Item B.

- B. Other Establishments. The liquid capacity of a Septic Tank serving an establishment other than a dwelling shall be sufficient to provide a sewage detention period of not less than 36 hours in the tank for sewage flows less than 1,500 gallons per day, but in no instance shall the liquid capacity be less than 750 gallons. For sewage flows greater than 1,500 gallons per day, the minimum liquid capacity shall equal 1,125 gallons plus 75 percent of the daily sewage flow. For restaurants and laundromats, twice the liquid capacity shown above must be provided. For laundromats the outlet baffle of the Septic Tank must be submerged to a depth of 50 percent.
- C. Garbage disposals. If a garbage disposal unit is installed in a residence or other establishment at any time, Septic Tank capacity must be at least 50 percent greater than that required in subsections A and B, above, and either multiple compartments or multiple tanks must be provided.
- D. Pumping of raw sewage. A sewage pump must not deliver sewage to a one-tank system if the pump cycle delivers more than one percent of the liquid capacity of the tank. For systems with multiple tanks, at least two tanks in series must be used, each having at least the liquid capacity specified in this subpart. The volume of sewage delivered in each pump

cycle must not exceed five percent of the liquid capacity of the first tank. Owners of multiple tank systems having more than two tanks may increase the volume of the sewage delivered in each pump cycle.

- E. Large capacity jetted/whirlpool tubs. If a large capacity jetted/whirlpool tub unit is installed in a residence or other establishment at any time, Septic Tank capacity must be at least two times greater than that required in subsections A and B, above, and either multiple compartments or multiple tanks must be provided. An effluent screen must be provided at the outlet baffle. The liquid capacity of the tub will be reviewed prior to the issuance of the permit.

#### 19.04 Location of Sewage Tanks.

The Sewage Tank shall be placed so that it is accessible for the removal of liquids and accumulated solids.

The Sewage Tank shall be placed on firm and settled soil capable of bearing the weight of the tank and its contents.

Where soil conditions may cause damage to the septic tank due to large rocks, bedrock, or where uneven settling could occur, the Sewage Tank must be placed on 4 inches of sand or granular material.

Two-piece Sewage Tanks shall have the seam set at least one (1) foot above seasonally saturated soil as determined by Mottling.

Sewage Tanks shall not be placed in areas subject to flooding or in Flood Plains delineated by St Louis County Flood Plain Management Ordinance Number 43 or in areas which regional flood information is available from the DNR, except that in areas where ten year flood information is available from and/or approved by the DNR, Sewage Tanks may be installed in accordance with all provisions of Section 23.02.

#### 19.05 Maintenance of Septic Tanks.

- A. The owner of any Septic Tank or the owner's agent shall regularly, but in no case less frequently than every three years, inspect and measure the accumulations of sludge, which includes the settled materials at the bottom of the tank, and the accumulations of scum, which includes grease and other floating materials at the top of the tank. The owner of any Septic Tank or the owner's agent must arrange for the removal and sanitary disposal of septage from the tank whenever the top of the sludge layer is less than 12 inches below the bottom of the outlet baffle or

whenever the bottom of the scum layer is less than three inches above the bottom of the outlet baffle. Removal of septage shall include complete removal of scum and sludge.

- B. Individual Sewage Treatment System additives must not be used as a means to reduce the frequency of proper maintenance and removal of septage from the Septic Tank as specified in subsection A, above.

#### 19.06 Aerobic Tanks.

Aerobic Tank treatment systems shall comply with the general requirements for Sewage Tanks set forth in Section 19.01, and with the following:

- A. The treatment system including each individual unit or compartment shall be easily accessible for inspection and Maintenance and shall be provided with secured covers.
- B. The raw sewage flow from the dwelling shall be intercepted by a trash trap prior to its entering the aeration compartment. The trash trap shall have a net holding capacity of not less than 20 percent of the average daily flow. The invert level to the trap shall be above the liquid level and discharge directly into the trap. The outlet from the trap to the aeration compartment shall be deep baffled or equipped with a tree or long ell.
- C. The trash trap shall be readily accessible for inspection and effective cleaning and shall be constructed as to prevent unauthorized entry.
- D. The aeration compartment shall have a minimum holding capacity of 500 gallons or 120 gallons per Bedroom, whichever is greater.
- E. The method of aeration shall be accomplished by mechanical aeration, diffused air, or both. The method used shall maintain aerobic conditions at all times.
- F. The settling compartment shall have a minimum net holding capacity equal to 20 percent of the volume of the aeration compartment. The design shall provide for effective settling and continuous return of settled sludge to the aeration compartment.
- G. A minimum one-year warranty and an initial two-year service contract which specifies regular inspection calls and effluent quality checks shall be provided as a part of the purchase agreement.
- H. All other features of the Aerobic Tanks not specifically mentioned above shall comply with National Sanitation Foundation Standard No. 40.
- I. An Operating Permit is required.

## Septic Tank Cross Section

**Note: Seasonal high Water Table should be at least one foot below the seams.**

## SECTION 20. DISTRIBUTION OF EFFLUENT

### 20.01 Gravity Distribution.

- A. Drop Boxes or valve boxes must be used to distribute effluent to individual Trenches in a soil treatment system unless the necessary elevation differences between Trenches for Drop Boxes cannot be achieved by natural topography or by varying the excavation depths, in which case a distribution box or a valve box may be used. The Drop Boxes must meet the following criteria:
1. The Drop Box shall be watertight and constructed of durable materials not subject to corrosion or decay.
  2. The invert of the inlet pipe shall be at least one inch higher than the invert of the outlet pipe to the next Trench.
  3. The invert of the outlet pipe to the next Trench shall be at least two inches higher than the top of the distribution pipe of the Trench in which the box is located.
  4. When Sewage Tank effluent is delivered to the Drop Box by a pump, the pump discharge shall be directed against a wall or side of the box on which there is no outlet.
  5. The Drop Box shall have a riser or removable cover either flush with or above finished grade or covered by no more than six inches of soil.
  6. Drop Boxes shall be installed so that distribution pipes may be accessed to direct and control wastewater flow.
- B. Systems using valve boxes shall meet the criteria of Sub-items 1 through 4 below:
1. The valve boxes shall be watertight and constructed of durable materials not subject to corrosion or decay.
  2. The invert of the inlet pipe shall be at least one inch higher than the inverts of the outlet pipes to the Trenches.
  3. When Sewage Tank effluent is pumped to a valve box, either a baffle wall must be installed in the valve box or the pump discharge must be directed against a wall or side of the box on which there is no outlet. The baffle must be secured to the box and extend at least one inch above the crown of the inlet flow line.

4. The valve box shall have a riser or removable cover either flush or above finished grade or covered by no more than six inches of soil.

C. The distribution boxes must meet the following criteria:

1. The box must be watertight with either a removable cover or a clean out pipe extending to finished grade and must be constructed of durable materials not subject to corrosion or decay.
2. The inverts of all outlets must be at the same elevation.
3. The inlet invert must be at least one inch above the outlet.
4. Each drain field Trench line must be connected separately to the distribution box and must not be subdivided.
5. When Sewage Tank effluent is delivered to the distribution box by pump, either a baffle wall must be installed in the distribution box or the pump discharge must be directed against a wall or side of the box on which there is no outlet. The baffle must be secured to the box and must extend at least one inch above the crown of the inlet flow line.
6. Distribution boxes shall be designed and installed so that wastewater flows can be diverted or controlled.

D. Distribution Pipes.

1. Distribution pipes used in Trenches or Seepage Beds for gravity distribution must be at least four inches in diameter and must be constructed of sound and durable material not subject to corrosion or decay or to loss of strength under continuously wet conditions.
2. Perforated pipe used for sewage distribution pipes must have one or more rows of holes of no less than one-half inch in diameter spaced no more than 40 inches apart. Holes must be spaced to prevent failure due to loads. Distribution pipes must have a load bearing capacity of not less than 1,000 pounds per lineal foot.
3. The Distribution pipes for gravity distribution must be laid level or on a uniform slope away from the distribution device of no more than four inches per 100 feet.
4. Gravity distribution pipes in Seepage Beds must be uniformly spaced no more than five feet apart and not more than 30 inches from the side walls of the Seepage Bed.

5. Other devices such as corrugated tubing wrapped with a permeable synthetic material or a chambered Trench or Seepage Bed may be used to distribute Sewage Tank effluent over the Soil Treatment Area upon approval of the Permitting Authority.

20.02 Pressure Distribution.

- A. Pressure distribution must be used for the following soil treatment systems:
  1. all Mound Systems and At-grade Systems; and
  2. systems where the soil percolation rate is 0.1 to five minutes per inch if the effluent is pumped to Trenches that are all at the same elevation.
- B. Distribution pipes used for pressure distribution must be constructed of sound and durable materials not subject to corrosion or decay or to loss of strength under continuously wet conditions.
- C. All pipes and associated fittings used for pressure distribution must be properly joined together. The pipe and connections must be able to withstand a pressure of at least 40 pounds per square inch.
- D. Perforations must be no smaller than three-sixteenths inch diameter and no larger than one-quarter inch diameter. The number of perforations, perforation spacing, and pipe size for pressure distribution laterals must be as shown in Table III. The friction loss in any individual perforated lateral must not exceed 20 percent of the average pressure head on the perforations.

**Table III**

MAXIMUM ALLOWABLE NUMBER OF ONE-FOURTH INCH DIAMETER, OR SMALLER, PERFORATIONS PER LATERAL

Pipe Diameter, Nominal and Inside

Perforation Spacing in Feet	1"	1-1/4"	1-1/2"	2"
	<u>1.049</u>	<u>1.380</u>	<u>1.610</u>	<u>2.067</u>
2.5	8	14	18	28
3	8	13	17	26
3.3	7	12	16	25
4	7	11	15	23
5	6	10	14	22

- E. Perforation holes must be drilled straight into the pipe and not at an angle. The perforated pipe laterals must be installed level with the perforations downward.
- F. Laterals must be spaced no further than 60 inches apart and must be spaced no further than a horizontal distance of 30 inches from the bottom edge of the Drainfield Rock layer.
- G. Laterals must be connected to a header or manifold pipe that is of a diameter such that the friction loss in the header or manifold will be no greater than five percent of the average head at the perforations. The header or manifold pipe must be connected to the supply pipe from the pump.
- H. Perforated laterals must be designed and installed in such a way that no perforations are located closer than 12 inches from the edge of the Drainfield Rock.

## SECTION 21. DOSING OF EFFLUENT

### 21.01 Dosing Chamber.

A dosing device is not necessary in all situations but, where used, shall comply with the following requirements:

- A. The dosing chamber shall be watertight and constructed of sound and durable materials not subject to excessive corrosion or decay.
- B. There shall be one or more manholes, at least 20 inches least dimension and preferably located directly above the dosing device. The manhole shall extend through the dosing chamber cover to final grade and shall be so constructed as to prevent unauthorized entry.

### 21.02 Dosing Devices for Gravity Distribution.

- A. Where a dosing device is employed, a pump shall deliver the dose to the soil treatment system for gravity distribution over the Soil Treatment Area.
- B. For dwellings, the dosing device shall discharge at least 10 gallons per minute but no more than 45 gallons per minute.
- C. For other establishments, the dosing device should discharge at a rate at least ten percent greater than the water supply flow rate but no faster than the rate at which effluent will flow out of the distribution device.

- D. A pump shall be cast iron or bronze fitted and with stainless steel screws or constructed of other sound, durable, and corrosion-resistant materials.
- E. Where the Soil Treatment Area is at a higher elevation than the pump, sufficient dynamic head shall be provided for both the elevation difference and friction loss.
- F. A pump shall have an approved alarm device installed to warn of pump failure.

21.03 Dosing Devices for Pressure Distribution.

- A. The dosing device shall be a pump which is cast iron or bronze fitted and with stainless steel screws or constructed of sound, durable, and corrosion-resistant materials.
- B. The pump discharge capacity shall be based upon the perforation discharges for an average head of 1.0 feet for Residential Systems and 2.0 feet for other establishments. Perforation discharge will be determined by the following formula:

$$Q = 19.65 \text{ cd } h^{2 \ 1/2}$$

where: Q = discharge in gallons per minute

c = 0.60 = coefficient of discharge

d = perforation diameter in inches

h = head in feet

- C. The pump discharge head shall be at least five feet greater than the head required to overcome pipe friction losses and the elevation difference between the pump and the distribution device.
- D. The quantity of effluent delivered for each pump cycle shall be no greater than 25 percent of one day's sewage flow.
- E. An electric alarm device shall be installed on a separate circuit from pump to warn of pump failure.
- F. The dosing chamber for a pressure distribution system shall either include an alternating two pump system or shall be sized to a 500 gallon tank or 100% of the daily design flow, whichever is greater.

- G. Timed dosing is the preferred method of dosing for pressure.

**SECTION 22. FINAL TREATMENT**

**22.01 General.**

Final treatment of all Sewage Tank effluent shall be by means of a soil treatment system.

**22.02 Standard System.**

**A. Sizing:**

1. The required Soil Treatment Area shall be determined by the daily sewage flow and the percolation rate of the soil.
2. The Absorption Area shall mean that area which is directly beneath the Drainfield Rock, gravelless pipe, or Chambered System (e.g. one foot of 12 inch gravelless pipe equals one square foot of Absorption Area).
3. Acceptable methods for estimating sewage flow for dwellings are given in Table IV. The minimum daily sewage flow estimated for any dwelling shall provide for at least two Bedrooms. For multiple residential systems, the estimated daily sewage flow shall consist of the sum of the flows of each individual system.

**Table IV**

**SEWAGE FLOW (GALLONS PER DAY)**

<u>Number of Bedrooms</u>	<u>Classification of Dwelling*</u>	
	<u>I</u>	<u>II</u>
2	300	240
3	450	360
4	600	480
5	750	600
6	900	720

\*Table IV is based on the following formulas:

Classification I: Sewage Flow = 150 x (No. of Bedrooms).

Classification II: Classification I but with no Toilet Wastes discharged into the sewage system. If a Greywater system is employed pursuant to Section 23.04, A, 3, estimated sewage flow shall equal 75 percent of the amount provided in column I of Table IV.

4. If measured flows are used to design, flow rates used shall be a minimum of 1½ times the measured daily flow.
5. For other establishments, the daily sewage flow shall be determined by measurement of actual water use or, if actual measurements are unavailable, as estimated by the best available data provided to the Agency.

**Table V**

REQUIRED SOIL TREATMENT AREA

<u>Percolation Rate (Minutes per inch)</u>	<u>Soil Texture</u>	<u>Required Soil Treatment Area in Square Feet of Trench Bottom (Per Gallon of Sewage Flow per Day)</u>
Faster than 0.1*	Coarse Sand	--
0.1 to 5**	Sand	0.83****
6 to 15	Sandy Loam	1.27
16 to 30	Loam	1.67
31 to 45	Silt Loam	2.00
46 to 60	Clay Loam	2.20
61 to 120***	Clay	4.20
Slower than 120*****		

\* See Section 22.02, E, 1 and 2, for special requirements for these soils.

\*\* See Section 22.02, E, 3, for special requirements for these soils.

\*\*\* See Section 22.02, F, for special requirements for these soils.

\*\*\*\* For soils having more than 50 percent of very fine sand by weight, plus fine sand having a particle size range of 0.05 millimeters (sieve size 270) to 0.25 millimeters (sieve size 60), the required Soil Treatment Area is 1.67 square feet per gallon of sewage flow per day.

\*\*\*\*\* See section 23.04 and Section 23.05 for special requirements for these soils.

Note: Although the percolation rate is used to size systems, the preferred methodology is soil textures and structure.

B. Location:

1. On slopes in excess of 12 percent, the soil profile shall be carefully evaluated in the location of the proposed soil treatment system and downslope to identify the presence of layers with different permeabilities that may cause sidehill seepage. In no case shall a Trench be located within 15 feet of where such a layer surfaces on the downslope.
2. Seepage Bed construction shall be limited to areas having natural slopes of less than six percent.
3. Soil treatment systems shall be located as specified in Table VI.

**Table VI**

MINIMUM SETBACK DISTANCES (FEET)

<u>Feature</u>	<u>Sewage Tank</u>	<u>Soil Treatment Area</u>
Water supply well less than 50 feet of water-tight casing or which does not penetrate ten feet of a confining layer.	50	100
Any other water supply well or buried water suction pipe.	50	50
Buildings occupied.	10	20
Buildings unoccupied.	10	10
Property lines.	10	10
The ordinary high water level of public waters.	**	**

\*\* Setbacks from lakes, river, and streams are listed in Section 17.04, Table I.

4. Soil treatment systems shall not be placed in areas subject to flooding or in Flood Plains delineated by St Louis County Floodplain Management Ordinance No. 43, or in areas for which regional flood information is available from the DNR, except that in areas where ten year flood information is available, soil treatment systems may be installed in accordance with the provisions of Section 23.02.

C. Design and construction:

1. The bottom of Trenches and Seepage Beds shall be at least three feet above the Water Table or bedrock.
2. The Trenches shall not be more than 36 inches wide. Any excavation wider than 36 inches shall be considered a Seepage Bed. No Seepage Bed may be wider than 10 feet.
3. The bottom of the Trench or Seepage Bed excavation shall be level.
4. The bottom and sides of the soil treatment system to the top of the Drainfield Rock shall be excavated in such a manner as to leave the soil in a natural, unsmeared, and uncompacted condition. Excavation shall be made only when the soil moisture content is less than the plastic limit.
5. When the percolation rate is slower than 15 minutes per inch, excavation shall be by backhoe or other means that allow the equipment wheels or tracks to remain on the surface soil. Excavation equipment or other vehicles shall not be driven on the Soil Treatment Area.
6. There shall be a layer of at least six inches of Drainfield Rock below the pipe in the bottom of the Trenches and Seepage Beds.
7. The Drainfield Rock shall completely encase the top and sides of the distribution pipes to a depth of at least two inches. The top of the Drainfield Rock in Trenches, Seepage Beds, and Mounds must be level in all directions.
8. The Drainfield Rock must be covered with a permeable synthetic fabric.
9. The Trenches or Seepage Beds shall be backfilled and crowned above finished grade to allow for settling. The top six inches of soil shall have the same texture and density as the adjacent soil.
10. The minimum depth of cover over the distribution pipes shall be at least six inches. The maximum depth of cover over the distribution pipes shall be no more than 18 inches and preferably no more than 12 inches.
11. A vegetative cover shall be established over the soil treatment system.

12. A vertical inspection pipe at least one and one-half inches in diameter must be installed in each Drainfield Rock layer of every Trench or Seepage Bed. The inspection pipe must be located at an end opposite from where the Sewage Tank effluent enters the rock layer. The inspection pipe must have three-eighths inch or larger perforations spaced vertically no more than six inches apart. At least two perforations must be located in the rock layer. The inspection pipe must extend to the bottom of the rock layer and must be capped flush with or above finished grade.

D. Slowly permeable soils.

1. Excavation for the purpose of constructing a soil treatment system must not be made in any soil layer having a percolation rate slower than 120 minutes per inch.
2. Excavation for the purpose of constructing a soil treatment system must not be made in a soil layer having a percolation rate slower than 60 minutes per inch unless the moisture content is lower than the plastic limit of the soil.
3. Drainfield Rock must not be placed in contact with Original Soil having a percolation rate slower than 60 minutes per inch.
4. Where the percolation rate of the Original Soil is slower than 60 minutes per inch, at least 12 inches of fill material having a texture defined as Clean Sand must be placed between the Drainfield Rock and the Original Soil along the excavation bottom.
5. Construction equipment wheels or tracks must not be placed in contact with the bottom of the excavation during the construction of a soil treatment system in soils having a percolation rate slower than 15 minutes per inch.
6. The size of the soil treatment system must be based on an acceptance rate of 0.24 gallons per square foot, which is equivalent to a sizing factor of 4.2 square feet per gallon per day.

E. Rapidly permeable soils.

1. Drainfield Rock for a soil treatment system must not be placed in contact with Original Soil having a percolation rate faster than one-tenth minute per inch.
2. For coarse soils having a percolation rate faster than one-tenth minute per inch, at least 12 inches of loamy sand textured soil having a percolation rate between six and 15 minutes per inch at

the original site must be placed between the Drainfield Rock and the coarse soil along the excavation bottom and sidewalls. The size of the soil treatment system must be based on the required

treatment area for a soil having a percolation rate of 16 to 30 minutes per inch as specified in Section 22, Table V.

3. For soils with percolation rates between one-tenth and five minutes per inch, at least one of the following treatment techniques must be used:
  - a) distribute the Sewage Tank effluent by pressure flow over the treatment area as specified in Section 20.02.
  - b) divide the total Soil Treatment Area into at least four parts with no area containing over 25% of the system size.
  - c) provide at least 12 inches of loamy sand textured soil with a percolation rate between six and 15 minutes per inch in situ between the Drainfield Rock and the coarse soil. Trenches must be used with this liner system. The size of the soil treatment system must be based on the required treatment area for a soil having a percolation rate between 16 to 30 minutes per inch as specified in Section 22, Table V.

F. Mounds (soils up to 120 minutes per inch).

1. Mounds must be constructed on Original Soils so there is at least 36 inches of separation between the bottom of the Drainfield Rock layer and Limiting Soil Characteristics as defined in Section 2.07, Limiting Soil Characteristics.
2. There must be at least 12 inches of Original Soil with a percolation rate faster than 120 minutes per inch above the Limiting Soil Characteristics as defined in Section 2.07, Limiting Soil Characteristics.
3. Where the Original Soil has a depth of at least 12 inches to the Water Table as the Limiting Soil Characteristics but has a percolation rate of five minutes per inch or faster, a layer of at least 12 inches of loamy sand textured soil with a percolation rate between six and 15 minutes per inch at the original site must be applied to the Absorption Area before placing the Clean Sand layer of the Mound. The required absorption width must be determined for a soil having a percolation rate between 16 and 30 minutes per inch as specified in Section 22.02, F, Table VII.

4. If Original Soil conditions do not exist on a site proposed for a Mound, as defined in Section 2.07, Original Soil, the site is unsuitable for a Mound.
5. The allowable absorption loading rate of the Mound shall be based on the percolation rate of the soil in the strata with the highest percolation rate within 24 inches of the ground surface. Table VII shall be used to determine the allowable absorption rate based on percolation rate.

**Table VII**  
ALLOWABLE ABSORPTION AREA LOADING RATE

Percolation rate of Original Soil under sand layer, minutes per inch	Soil Textures	Allowable absorption area loading rate	
		gallons per day per square foot	square feet per gallon per day
6 to 15	Sandy Loam	0.79	1.50
16 to 30	Loam	0.60	2.00
31 to 45	Silt Loam	0.50	2.40
46 to 60	Clay Loam	0.45	2.67
61 to 120	Clay	0.24	5.00

6. The required absorption width of Mounds constructed on ground sloping from zero to 2.9 percent must include the width of the rock layer plus a distance measured between the outer edges of the upslope and the downslope banks. The required absorption width for Mounds constructed on ground sloping between three and 12 percent must include the width under the Drainfield Rock layer plus a portion of the width of the downslope bank.
7. Mounds may be located on natural slopes exceeding 12 percent if the Absorption Area is designed to be at least 25 percent larger than that required in Table VII.
8. The bottom area of the Drainfield Rock layer may be sized on the basis of 0.83 square feet per gallon of waste per day when installed over clean sand. If fill material (pit-run sand) other than approved sand is used for construction, the Drainfield Rock layer shall be sized at a minimum of 1.67 square feet per gallon per day, or the percolation rate of the fill material, whichever is greater.
9. Absorption Area width is a function of the Linear Loading Rate and the design sand loading rate. The width of the Drainfield Rock layer in a single rock bed must not exceed ten feet. Rock beds shall not

be installed side-by-side in a single Mound. Absorption Area width equals the Linear Loading Rate divided by the sand loading rate.

10. Absorption Area length, along the natural slope, is a function of the design flow rate (gpd) and the Linear Loading Rate (gpd/lf). Length is equal to the design flow rate divided by the Linear Loading Rate. Slowly permeable soils (greater than 120 minutes per inch) may have a designed Linear Loading Rate of 2-3 gpd/lf whereas more permeable soils may be loaded as high as 8-10 gpd/lf.
11. A rubber-tired tractor may be used for plowing or discing but must not be driven on the Absorption Area after the surface preparation is completed. A crawler or track-type tractor must be used for Mound construction where the soil percolation rate is slower than 15 minutes per inch.
12. The discharge pipe from the pump to the Mound area must be installed before soil surface preparation. The Trench must be carefully backfilled and compacted to prevent seepage of effluent.
13. All vegetation in excess of four inches in length and dead organic debris must be removed from the surface of the total area selected for the Mound, including the area under the banks. The total area must be roughened by plowing, if the soil moisture content is below the plastic limit, or roughened by backhoe teeth. Furrows must be thrown uphill and there must be no dead furrow under the Mound. The soil under the Mound, including the area under the banks, must not be roughened by rototilling or pulverizing. In soils having percolation rates faster than 15 minutes per inch (sandy loam) in the top eight-inch depth, discing may be used for surface preparation as a substitute for plowing. Mound construction must proceed immediately after surface preparation is completed. The Original Soil must not be excavated or moved more than one foot from its original location during soil surface preparation.
14. A minimum of 12 inches of soil defined as Clean Sand must be placed where the Drainfield Rock is to be located. This sand must be placed by using a construction technique that minimizes compaction. If the sand is pushed into place, a crawler tractor with a blade or unloaded bucket must be used to push the sand into place. At least six inches of sand must be kept beneath equipment to minimize compaction of the plowed layer. When placing sand with a backhoe that has rubber tires, the tractor must not drive over the Drainfield Rock or banks of the Mound. The sand layer upon which the Drainfield Rock is placed must be level.

On Slopes of three percent (3%) or greater, the long axis of the level Drainfield Rock layer must not diverge up or down the slope by more than 12 inches of elevation from the natural contour line. The depth of the sand layer along the upper edge of the level Drainfield Rock layer must not vary by more than 12 inches.

On Slopes of three percent (3%) or greater, and where the percolation rate in the top foot of Original Soil is in the 61 to 120 minutes per inch range, Mounds must not be located where the ground surface contour lines directly below the long axis of the Drainfield Rock layer represent a swale or draw, unless the contour lines have a radius of curvature greater than 100 feet. Mounds must never be located in swales or draws where the radius of curvature of the contour lines is less than 50 feet.

15. A depth of at least nine inches of Drainfield Rock must be placed over the rock bed area below the distribution pipe.
16. Distribution of effluent over the Drainfield Rock layer must be by perforated pipe under pressure.
17. The Drainfield Rock shall completely encase the top and sides of the distribution pipes to a depth of at least two inches. The top of the Drainfield Rock must be level in all directions.
18. The Drainfield Rock must be covered with a permeable synthetic fabric.
19. Construction vehicles must not be allowed on the Drainfield Rock until backfill is placed.
20. Sandy loam soil must be placed on the Drainfield Rock to a depth of one foot in the center of the Mound and to a depth of six inches at the sides.
21. At least two inches but less than six inches of topsoil borrow must be placed on the fill material over the entire area of the Mound.
22. A vegetative cover shall be established over the entire area of the Mound.
23. Shrubs or gardens must not be planted on the top of the Mound. Shrubs may be placed at the foot and side slopes of the Mound.
24. The side slopes on the Mound must not be steeper than four to one.

25. Whenever Mounds are located on slopes, a diversion must be constructed immediately upslope from the Mound to intercept and direct runoff.
26. A pump must be used as specified in Section 21.03.
27. A vertical inspection pipe at least one and one-half inches in diameter must be installed in each Drainfield Rock layer of every Mound. The inspection pipe must have three-eighths inch or larger perforations spaced vertically no more than six inches apart. At least two perforations must be located in the rock layer. The inspection pipe must extend to the bottom of the rock layer and must be capped flush with or above finished grade.
28. Timed dosing is the preferred method of dosing a Mound.

G. At-grade Systems.

1. Location of At-grade Systems.
  - a. At-grade Systems must be constructed on Original Soils with at least 36 inches of vertical separation.
  - b. There must be at least 12 inches of Original Soil with a percolation rate faster than 61 minutes per inch below the Absorption Area or have a soil sizing factor of 2.2 square feet per gallon per day or less as shown in Table VII.
  - c. At-grade Systems shall not be installed in areas with slopes greater than 25 percent.
  - d. Setbacks must be in accordance with Table VI. Setbacks shall be measured from the edge of the Absorption Area.
2. Design of At-grade Systems.
  - a. Rock bed absorption width shall be calculated by multiplying the Linear Loading Rate by the soil sizing factor, identified in Table VII, of the upper 12 inches of soil in the proposed Absorption Area. The Linear Loading Rate shall be as determined by the relationship between vertical and horizontal water movement in the soil and shall not exceed a Linear Loading Rate of 12 gallons per foot per day. The total rock bed width for sloping ground shall consist of the rock bed absorption width plus enough rock on the upslope side to provide stability.

- b. Rock bed length shall be calculated by multiplying the soil sizing factor by the average design flow and dividing by the rock bed width.
  - c. At-grade Systems shall be pressurized in accordance with Section 20.02, Section 21.01, Section 21.03, and Table III. Distribution pipe shall be installed in the center of the rock bed on slopes less than one percent and on the upslope edge at the rock bed absorption width on slopes one percent or greater.
3. Construction of At-grade Systems.
- a. Surface preparation for At-grade Systems shall be in accordance with Section 22.02, F, 13.
  - b. Drainfield Rock must be used as the distribution medium in At-grade Systems.
  - c. The upslope edge of an At-grade System shall be installed along the natural contour.
  - d. The rock bed shall completely encase the top and sides of the distribution pipe to a depth of at least two inches above the pipe. There shall be at least nine inches of rock below the distribution pipe.
  - e. The entire rock bed shall be covered with a durable nonwoven geotextile cover meeting or exceeding the requirements of Section 22.02, C, 8.
  - f. One foot of loamy or sandy cover material shall be installed over the rock bed. Cover shall extend at least five feet from the ends of the rock bed and be sloped to divert surface water. Side slopes shall not be steeper than four horizontal units to one vertical unit. The upper six inches of the loamy soil cover must be topsoil borrow. Topsoil borrow must be of a quality that provides a good vegetative cover on the At-grade System and excludes peaty material.
  - g. Three vertical inspection pipes of at least 1.5 inches in diameter shall be installed and secured along the downslope portion of the rock bed. These pipes shall be located within three feet of the downslope edge of the rock bed at the middle and one-sixth of the total rock bed length and placed as measured from the ends of the rock bed. The inspection

pipes shall have three-eighths inch or larger perforations spaced vertically no more than six inches apart. No perforations shall exist above the permeable synthetic fabric. The inspection pipes must extend to the rock bed/soil interface and must be stabilized and capped flush with or above finished grade.

- h. A vegetative cover must be established over the entire area of the At-grade System. The soil treatment At-grade System shall be protected until a vegetative cover is established. The vegetative cover shall not interfere with the hydraulic performance of the system and shall provide adequate frost and erosion protection.

**Trench Construction / Drop Boxes**

## Seepage Bed

**Pressurized Mound System**

## SECTION 23. ALTERNATIVE SYSTEMS

### 23.01 General.

The intent of this section is to provide Standards for the design, location, installation, use, and maintenance of alternative ISTS in areas of Limiting Soil Characteristics, or where a Standard System cannot be installed or is not the most suitable treatment. Where such systems are employed, they shall be subject to timely inspections to assure adherence to specifications.

Extreme caution and careful planning shall be employed wherever limiting characteristics including, but not limited to, Water Table or bedrock exist within two feet of the original ground surface.

Where Limiting Soil Characteristics exist, special systems of sewage treatment and disposal, including but not limited to the systems in this section, may be employed provided:

- A. reasonable assurance of performance of such system is presented to the Permitting Authority;
- B. the engineering design of such system is first approved by the Permitting Authority;
- C. there is no discharge to the ground surface or to surface waters;
- D. treatment and disposal of wastes is in such a manner so as to protect the public health and general welfare; and
- E. such systems comply with all applicable requirements of these Standards and with all local codes and ordinances.

### 23.02 Class I Alternatives, Modified Standard Systems.

- A. Floodplain areas.
  - 1. The Soil Treatment Area shall be a Trench system with at least 12 inches of Drainfield Rock below the distribution pipe. There shall be no pipe or other installed opening between the Drainfield Rock and the soil surface.
  - 2. If a pumping station is used to move effluent from the Sewage Tank to the soil treatment system, provisions shall be made to prevent the pump from operating when inundated with flood waters.
  - 3. When sand fill is needed to raise the elevation of the Soil Treatment Area, a Mound System may be used with the following additional

requirement: The elevation of the Mound shall be such that the elevation of the bottom of the rock layer shall be at least one-half foot above the ten-year flood elevation. Inspection wells shall not be installed unless the top of the Mound is above the elevation of the regional flood.

4. When the top of the Sewage Tank is inundated, the dwelling must cease discharging sewage into it. This may be accomplished by either temporarily evacuating the structure until the system again becomes functional, or by diverting the sewage into a Holding Tank sized and installed according to the requirements below.
5. The building sewer shall be designed to prevent backflow of liquid into the building when the system is inundated. If a Holding Tank is utilized, the building sewer shall be designed to permit rapid diversion of sewage into the Holding Tank when the system is inundated.
6. If a Holding Tank is utilized for a dwelling, its liquid capacity shall be equal to 100 gallons times the number of bedrooms times the number of days between the ten-year stage on the rising limb of the regional flood hydrograph and the ten-year stage on the falling limb of the hydrograph, or 1,000 gallons, whichever is greater. For other establishments, storage equal to at least five times the estimated daily flow must be provided.
7. Whenever the water level has reached a stage above the top of the Sewage Tank, the tank shall be pumped to remove all solids and liquids after the flood has receded before use of the system is resumed.

### 23.03 Class II Alternatives, Performance Systems.

- A. Pre-treatment components such as Aerobic Tanks, sand filters, peat filters, constructed wetlands, or other approved components, and the soil treatment system, shall be designed, constructed, and maintained according to the manufacturer's or qualified engineer's design specifications.
  1. Engineered pre-treatment components and the soil treatment system may be reviewed by the Technical Advisory Committee (TAC) according to Section 16.03.
  2. A renewable Operating Permit shall be required for all Performance Systems.

## 23.04 Class III Alternatives, Reduced Area Systems.

### A. Separate Toilet Waste and Greywater Systems.

1. General. A Toilet Waste treatment device shall be used in conjunction with a Greywater system. In all cases, only toilet wastes shall be discharged to toilet waste treatment devices. Greywater or garbage shall not be discharged to the device except as specifically recommended by a manufacturer.
2. Toilet waste treatment devices.
  - a. Toilet waste treatment devices shall be considered as one of two types: I, privies; and II, other devices, including, but not limited to, incinerating, composting, biological, chemical, recirculating, or holding toilets.
  - b. Type I, privies. Pit privies shall not be installed where the bottom of the pit is less than three feet above the Water Table. A vault privy shall be used in areas of high ground water. The vault of a vault privy shall be constructed in the same manner as a Septic Tank.

Privies shall be set back from surface waters the same distance as required for buildings and from property lines and water supply wells the same distance as required for Soil Treatment Areas.

Pits or vaults shall be of sufficient capacity for the residence they serve, but shall have at least 27 cubic feet of capacity.

The sides of the pit shall be curbed to prevent cave-in.

The superstructure shall be constructed so as to be easily cleaned, and it shall be insect proof. The door and seat shall be self-closing. All openings, including vent openings, shall be screened.

Privies shall be adequately vented.

When the pit is filled to within one foot of the top, the solids shall be removed or a new pit shall be constructed. The abandoned pit shall be filled with clean earth and slightly mounded to allow for settling. Removed solids shall be disposed of by land application in accordance with this standard.

- c. Type II, other devices. Other devices may be used where reasonable assurance of performance is provided.

All type II devices shall be vented.

All electric, gas, and water connections to a type II device shall conform to all local ordinances and codes.

Operation and Maintenance of all type II devices shall follow the manufacturer's recommendations.

- d. All materials removed from a type I or II toilet waste treatment device, including but not limited to, ashes, compost, and all solids and liquids shall be disposed of in a public sewage system or by land application in accordance with MPCA Standards.

3. Greywater system.

- a. Plumbing. The building drain and building sewer shall be no greater than two inches in diameter to prevent Installation of a water flush toilet. There shall be no openings or connections to the drainage system, including floor drains, larger than two inches in diameter. For repair or replacement of an existing system, the existing drainage system may be used.

Toilets or urinals of any kind shall not be connected to the drainage system. Toilet waste or garbage shall not be discharged to the drainage system.

Garbage grinders shall not be connected to the drainage system.

- b. Building Sewer. The building sewer shall meet all requirements of Section 18 except that the building sewer for a Greywater system shall be no greater than two inches in diameter.
- c. Sewage Tank. Greywater Septic Tanks shall meet all requirements of Section 19.01, except that the liquid capacity of a Greywater Septic Tank serving a dwelling shall be based on the number of bedrooms contemplated in the dwelling served and shall be at least as large as the capacities given in Table VIII. (See Section 2.07, Bedroom; and Section 4.06)

**Table VIII**

GREYWATER SEPTIC TANKS

<u>Number of Bedrooms</u>	<u>Tank Liquid Capacity</u> <u>(gallons)</u>
Primitive (no water under pressure, sink drain only and limited seasonal use)*	50
2 or less	300
3 or 4	500
5 or 6	750
7, 8, or 9	1000

\*This category may be used in cases of limited development and use such as DNR and county leased lots, islands, water access only lots and saunas. A plastic 55 gallon drum may be used for the tank along with the appropriate plastic pipe tees for baffles.

- d. Distribution and dosing. Distribution and dosing of Greywater shall meet all requirements of Section 20 and Section 21.
- e. Final treatment and disposal. Standard System. A standard Greywater system shall meet all requirements of Section 22.
- f. Alternative System. A Greywater Mound System shall meet all requirements of Section 22.02.

23.05 Class IV Alternatives, Advanced Alternative Systems.

- A. Mounds (soils greater than 120 minutes per inch).

Mounds may be allowed on Original Soils with percolation rates slower than 120 minutes per inch if the following special design requirements, in addition to those listed in Section 22.02, are used:

- 1. For the purpose of design computation, the width of the drainfield rock bed used in determining Mound sizing, shall not exceed five feet (5').
- 2. Rock beds shall not be installed side by side.
- 3. All vegetation in excess of two inches in length must be removed from the total area under the banks.
- 4. Water saving fixtures shall be required.

5. Event counter or lapse time meter shall be installed.
6. The use of time dosing is strongly preferred.

B. Collector Systems.

1. In general. Where site or soil conditions do not allow for final treatment and disposal on an individual lot, a system where a soil treatment system is located on another lot or lots may be employed, where approved by the municipality.

Plans and specifications shall comply with local ordinances on such issues as zoning, joint ownership of land, joint maintenance responsibilities, easements, and other considerations and shall be approved by the municipality.

2. Design.
  - a. The size of a common soil treatment system for two to four dwellings connected to a single drainfield shall be based on the sum of the areas required for each residence.
  - b. The system shall be designed with each residence having a Sewage Tank or with a common Sewage Tank. In the case of a common tank, the capacity of the tank shall be sized according to Section 19.03, B, and shall be compartmented if in a single tank.
  - c. Collector Systems shall be designed on an estimated average daily flow for dwellings based on Table IV set forth in Section 22.02 plus estimated flows from other establishments.
  - d. The sewer for systems with common Sewage Tanks shall be so constructed to give mean velocities, when flowing full, of not less than two feet per second. The sewer for systems with individual Sewage Tanks shall be so constructed and designed to hydraulically conduct the flow for which they were designed. In no case shall a gravity sewer be less than four inches in diameter.
  - e. Infiltration or exfiltration shall not exceed 200 gallons per inch of pipe diameter per mile per day.
  - f. Clean out, brought flush with or above finished grade, shall be provided wherever a common sewer joins an individual

building sewer or piping from an individual Sewer Tank, or every 90 feet, whichever is less, unless manhole access is provided.

- g. There shall be no physical connection between sewers and water supply systems. Sewers shall be set back from water supply systems and piping as required for building sewers. Where it is not possible to obtain proper separation distances, the sewer connections shall be watertight and pressure tested.
  - h. Pump stations shall be watertight.
  - i. Pump stations shall have manholes flush with or above finished grade for cleaning and maintenance.
  - j. Manhole covers shall be so constructed as to prevent unauthorized entry.
  - k. Pumps and pump stations shall be sized to handle peak flows.
  - l. An electrical alarm system shall be provided for all pumping stations to warn of pump failure, overflow, or other malfunction. This alarm system shall be on a separate circuit from the pump.
  - m. Seam of pump station shall not be installed below the seasonal high Water Table.
  - n. An Operating Permit may be required depending on the system complexity.
3. Maintenance. All Persons using a common drainfield system shall assure, by contract with maintenance personnel or other equivalent means, that the system will be adequately maintained throughout its useful life. The system so maintained includes, but is not limited to, common drainfields, common Sewage Tanks, common pumps, common pump stations, common sewers, and all individual tanks connected to the common system.

#### 23.06 Class V Alternatives, Holding Tanks.

- A. An Operating Permit is required to construct and maintain a Holding Tank. Holding Tanks may only be installed where standard or Alternative Systems are not feasible.

- B. Holding Tanks may be allowed:
1. as replacements for existing nonconforming systems on existing parcels or lots as of the date of the enactment of these Standards;
  2. on existing lots of record for new seasonal development;
  3. in cases where a municipal sewer will be available in the near future (within 5 years).
- C. A Holding Tank shall be constructed of the same materials and by the same procedures as those specified for watertight Septic Tanks.
- D. A clean out pipe of at least six inches diameter shall extend to the ground surface and be provided with seals to prevent odor and to exclude insects and vermin. A manhole of at least 20 inches shall extend through the cover to a point within 12 inches, but no closer than six inches, below finished grade. The manhole cover shall be covered with at least six inches of earth.
- E. The tank shall be protected against flotation under high Water Table conditions. This shall be achieved by weight of tank, earth anchors, or shallow bury depths.
- F. For a dwelling the size shall be 1,000 gallons, or 400 gallons times the number of bedrooms, whichever is greater.
- For permanent structures other than dwellings, the capacity shall be based on measured flow rates or estimated flow rates. The tank capacity shall be at least five times the daily flow rate.
- G. Holding Tanks shall be located: in an area readily accessible to the pump truck under all weather conditions; as specified for Septic Tanks in Section 22, Table VI; where accidental spillage during pumping will not create a nuisance.
- H. A contract for disposal and treatment of the sewage waste shall be maintained by the owner with a Minnesota State-Licensed pumper, municipality, Agency, or firm established for that purpose.
- I. Holding Tanks shall be monitored to minimize the chance of accidental sewage overflows. Techniques such as visual observation, warning lights, or bells, or regularly scheduled pumping shall be used. For other establishments, a positive warning system shall be installed which allows 25 percent reserve capacity after actuation.

- J. Property use. Residential properties using a Holding Tank shall be limited to seasonal use only. Seasonal is defined as April through November.
- K. Pumps. Pumps shall not be allowed to be installed in Holding Tanks.
- L. Water meters shall be installed.
- M. The inlet of the Holding Tank shall not be installed below the seasonal high Water Table.

23.07 Class VI, Alternative Fill Systems.

A. Above Grade Fill System

- 1. An above grade fill system may be used where the only Limiting Factors are high Water Table or bedrock within five (5) feet of the ground surface and an onsite water supply. If electricity is available to the site, a Mound with pressure distribution must be installed.
- 2. Site Preparation/Fill Requirements/Final Cover
  - a. Fill systems must be constructed on Original Soils so there is at least 36 inches of separation between the bottom of the Drainfield Rock layer and the Limiting Soil Characteristics.
  - b. There must be at least 12 inches of Original Soil with a percolation rate faster than 60 minutes per inch above the Limiting Soil Characteristics.
  - c. Where the Original Soil has a depth of at least 12 inches to the Water Table as the Limiting Soil Characteristics but has a percolation rate of five (5) minutes per inch or faster, a layer of at least 12 inches of loamy sand textured soil with a percolation rate between six (6) and 15 minutes per inch at the original site must be placed before placing the Clean Sand layer of the fill. The required absorption width must be determined for a soil having a percolation rate between 16 and 30 minutes per inch.
  - d. If Original Soil conditions do not exist the site is unsuitable.
  - e. The allowable Absorption Area loading rate must be determined according to Section 22, Table VII, by the percolation rate of the soil in the strata with the highest percolation rate within 24 inches of the ground surface.

- f. A rubber-tired tractor may be used for plowing or discing but must not be driven on the Absorption Area after the surface preparation is completed. A crawler or track-type tractor must be used for fill construction where the soil percolation rate is slower than 15 minutes per inch.
- g. The discharge pipe to the fill area must be installed before soil surface preparation. The Trench must be carefully backfilled and compacted to prevent seepage of effluent.
- h. All vegetation in excess of four inches (4") in length and dead organic debris must be removed from the surface of the total area selected for the fill, including the area under the banks. The total area must be roughened by a plow or by backhoe teeth. Furrows must be thrown uphill and there must be no dead furrow under the fill. The soil must be plowed or roughened when the moisture content of a fragment eight inches (8") below the surface is below the plastic limit. The soil under the fill, including the area under the banks, must not be roughened by rototilling or pulverizing. The soils having percolation rates faster than 15 minutes per inch (sandy loam) in the top eight-inch (8") depth, discing may be used for surface preparation as a substitute for plowing. Fill construction must proceed immediately after surface preparation is completed. The Original Soil must not be excavated or moved more than one foot (1') from its original location during soil surface preparation.
- i. A minimum of 12 inches of soil defined as sand must be placed where the Drainfield Rock is to be located. This sand must be placed by using construction technique that minimizes compaction. If the sand is pushed into place, a crawler tractor with a blade or unloaded bucket must be used to push the sand into place. At least six inches (6") of sand must be kept beneath equipment to minimize compaction of the plowed layer. When placing sand with a backhoe that has rubber tires, the tractor must not drive over the Drainfield Rock or banks of the fill. The sand layer upon which the Drainfield Rock is placed must be level.

On slopes of three percent (3%) or greater, the long axis of the level Drainfield Rock layer must not diverge up or down the slope by more than 12 inches of elevation from the

natural contour line. The depth of the sand layer along the upper edge of the level Drainfield Rock layer must not vary by more than 12 inches.

- j. The Drainfield Rock shall completely encase the top and sides of the distribution pipes to a depth of at least two inches (2"). The top of the Drainfield Rock must be level in all directions.
- k. The Drainfield Rock must be covered with either a permeable synthetic fabric.
- l. Construction vehicles must not be allowed on the Drainfield Rock until backfill is placed.
- m. Sandy loam soil must be placed on the Drainfield Rock to a depth of one foot (1') in the center of the Mound and to a depth of six inches (6") at the sides.
- n. Six inches (6") of topsoil borrow must be placed on the fill material over the entire area of the fill system.
- o. Vegetative cover must be established over the entire area of the fill system.
- p. Shrubs must not be planted on the top of the fill system. Shrubs may be placed at the foot and side slopes of the system.
- q. The side slopes on the fill system must not be steeper than four to one.
- r. Whenever fill systems are located on slopes, a diversion must be constructed immediately up slope from the fill to intercept and direct runoff.
- s. A vertical inspection pipe at least one and one-half inches (1½") in diameter must be installed in each Drainfield Rock layer of every fill system. The inspection pipe must have three-eighths inch (3/8") or larger perforations spaced vertically no more than six inches (6") apart. At least two (2) perforations must be located in the rock layer. The inspection pipe must extend to the bottom of the rock layer and must be capped flush with or above finished grade.

3. Distribution and Dosing. Distribution of effluent within the Alternative Fill Bed System shall be accomplished in accordance with the methods described in Section 20. Efforts need to be made to try to distribute the effluent over the total rock area.
4. Final Treatment.
  - a. Sizing
    - 1) The size of the fill system shall be based on the Absorption Area of the fill.
    - 2) The Absorption Area of the fill system shall be determined by the estimated daily sewage flow (Section 22, Table IV).
    - 3) Trenches within the fill system shall be sized on the estimated daily sewage flow and the percolation rate of the fill material.
    - 4) The bottom area of a rock bed must be sized 1.5 times larger than the Absorption Area of a Trench.

## Alternative Fill System

## SECTION 24. MULTIPLE SOURCE ONSITE SEWAGE TREATMENT SYSTEMS

### 24.01 Multiple Source Systems and Collector Systems.

#### A. General.

1. Where Site or soil conditions do not allow for final treatment on an individual lot, a system may be located on another lot or lots, where suitably executed and recorded easements or right-of-way agreements exist.
2. Plans and specifications shall comply with all ordinances on such issues as zoning, joint ownership of land, joint maintenance responsibilities, easements, and other considerations and shall be approved by the Department.
3. Operating Permit may be required depending on the complexity of the system.

#### B. Design Criteria.

1. Common soil treatment field -- a common soil treatment field shall be based on the sum of the areas required for each source or on the total estimated (or measured) daily Sewage flow. (See Section 22.)
2. Sewage Tanks. The system shall be designed with each residence having a Sewage Tank or with a common Sewage Tank. In all cases, the capacity and construction of the tank shall be according to Section 19.
3. Sewers (See also Section 18).
  - a. Sewer systems shall be designed on an estimated average daily flow for dwellings based on Table IV, Section 22, plus estimated flows from other establishments.
  - b. The sewer for systems with common Sewage Tanks shall be so constructed to give mean velocities, when flowing full, of not less than two feet (2') per second. The sewer for systems with individual Sewage Tanks shall be so constructed and designed to hydraulically conduct the flow for which they were designed. In no case shall a gravity sewer be less than four inches (4") in diameter.

- c. Infiltration or exfiltration shall not exceed 200 gallons per inch of diameter per mile per day.
- d. Clean out, brought flush with or above finished grade, shall be provided wherever a common sewer joins an individual building sewer or piping from an individual Sewage Tank, or every 100 feet, whichever is less, unless manhole access is provided.
- e. There shall be no physical connection between sewers and water supply systems. Sewers shall be set back from water supply systems and piping as required for building sewers. (See Section 18). Where it is not possible to obtain proper separation distances, the sewer connections shall be watertight and pressure tested.

4. Pumps and pump stations.

- a. Pump stations shall be watertight.
- b. Pump stations shall have manholes flush with or above finished grade for cleaning and maintenance.
- c. Manhole covers shall be so constructed as to prevent unauthorized entry.
- d. Pumps and pump stations shall be sized to handle peak flows.
- e. An alarm system shall be provided for all pumping stations to warn of pump failure, overflow, or other malfunction.

C. Maintenance.

All Persons using a common drainfield system shall assure, by contract with maintenance personnel or other equivalent means, that the system will be adequately maintained throughout its useful life. The system so maintained includes, but is not limited to, common drainfields, common Sewage Tanks, common pumps, common pump stations, common sewers and all individual tanks connected to the common system.

D. Any multiple source systems or collector must be approved by the Permitting Authority.

SECTION 25. INDIVIDUAL SEWAGE TREATMENT SYSTEM INSPECTIONS

25.01 Sanitary Check-off / Record Review.

- A. A Sanitary Check-off / Records Review is required as per Section 6.04, A.
- B. Upon request for a Sanitary Check-off all ISTS records shall be reviewed for:
  - 1. An approved ISTS Permit is on file.
  - 2. The number of bedrooms on the Land Use Application is not greater than the number of Bedrooms that the ISTS is sized for.
  - 3. Based on the information in the ISTS file, there are not Drywells, the system is not excessively undersized, no final inspection was completed, or any other information that would make issuance of the Land Use Permit inadvisable.
  - 4. Adequate ISTS expansion area exists.
- C. If the septic system meets the criteria of Item B above, the Administrator will notify the land owner and the governing zoning authority in writing.
- D. If the septic system does not meet the criteria of Item B above, the Administrator will notify the land owner and the governing zoning authority that a Compliance Inspection is required.

25.02 Compliance Inspection / Certificate of Compliance.

- A. A Compliance Inspection shall be conducted on real property in the following situations:
  - 1. When a Sanitary Check-off / Record Review approval cannot be given because of inadequate ISTS information on file.
  - 2. When the Applicant applies for a Land Use Permit for a bedroom addition or as otherwise required by the St Louis County Zoning or Township Ordinance, or by law, rule, regulation, or Ordinance.
  - 3. At the time of property transfer / Point of Sale.

- B. A Compliance Inspection shall be conducted by a Minnesota State Registered Inspector holding a Designer I or Inspector Certification.
1. An ISTS shall be considered in compliance and the property owner shall receive a Certificate of Compliance from the Administrator if the ISTS meets the following criteria:
    - a. Must meet all Setback distances.
    - b. Must be sized appropriately for the proposed use.
    - c. Must provide the equivalent of three feet vertical separation between the bottom of the distribution medium and the saturated soil level or bedrock in shoreland areas; or two feet separation in non-shoreland areas.
    - d. The Sewage does not discharge into a Drywell, Leaching Pit, Seepage Pit, or Cesspool.
    - e. Is not an imminent public health threat.
  2. Documentation following a Certificate of Compliance Inspection shall include information listed in Section 16.01. The certified statement from the Designer I or Inspector who conducted the Compliance Inspection shall identify the type of system inspected and indicate whether the ISTS is in compliance with applicable requirements. The Certificate of Compliance, Notice of Non-compliance, or Notice of Failure shall be sent to the Administrator.
  3. A Certificate of Compliance is valid for five years for new ISTS installations, and for three years for an existing ISTS.
- C. Notice of Non-compliance / Notice of Failure. Following a Compliance Inspection all systems not meeting the minimum criteria shall be issued a Notice of Non-compliance or Notice of Failure. Copies of the Notice shall be provided to the owner and the Administrator. If a Compliance Inspection indicates that the system is not in compliance with applicable requirements or presents an Imminent Threat to Public Health or Safety, the owner will receive a statement specifying why the owner must have the system reinspected, upgraded, replaced, or the use discontinued within the required time period.

SECTION 26. INDIVIDUAL SEWAGE TREATMENT SYSTEM  
ABANDONMENT

26.01 Tank Abandonment Procedures.

Tank abandonment procedures for Sewage Tanks, Cesspools, Leaching Pits, Drywells, Seepage Pits, privies, and Distribution Devices are as follows: All solids and liquids shall be removed and properly disposed of, and abandoned chambers shall be removed or be filled with soil material.

26.02 Future Discharge.

Access for future discharge to the system shall be permanently denied.

26.03 Contaminated Materials.

If soil treatment system is removed, contaminated materials shall be properly handled to prevent human contact and shall be disposed of in a manner assuring that public health and the environment are protected.

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**EFFECTUATION**

This Ordinance (except Section 6.04C which will be in full force on August 1, 2001) shall take effect and be in full force on the 1st day of August, upon its adoption by the St. Louis County Board of Commissioners, and shall be published in the official newspaper(s) of St. Louis County as provided by Minnesota Statutes.

Public hearings were held by the St. Louis County Planning Commission on July 8, July 15, November 18, November 22, December 2, 1999, March 9, and April 13, 2000, and by the St. Louis County Board of Commissioners on May 23 and June 6, 2000.

Recommended by the Planning Commission to the County Board for adoption on the 13th day of April, 2000.

Commissioner Fay moved the adoption of this Ordinance, and Commissioner Sweeney, duly seconded the motion, and it was adopted on the following vote:

Yeas: Commissioners Fink, Fay, Kron, Forsman, Raukar, and Chair Sweeney 6  
Nays: None  
Absent: Commissioner Prebich - 1

\_\_\_\_\_  
Steve Raukar Chair of the County Board

Certified as a complete and accurate  
copy of Ordinance No. 55

\_\_\_\_\_  
Gordon D. McFaul,  
County Auditor

Attest: \_\_\_\_\_  
Paul L. Tynjala  
Clerk of the County Board