

1 Pollution Control Agency
2 Adopted Permanent Rules Relating to Individual Subsurface Sewage
3 Treatment Systems

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4 CHAPTER 7080

5 MINNESOTA POLLUTION CONTROL AGENCY
6 DESIGN STANDARDS FOR INDIVIDUAL SUBSURFACE
7 SEWAGE TREATMENT SYSTEMS

8 7080.1050 PURPOSE AND INTENT.

9 The proper location, design, installation, use, and
10 maintenance of an individual subsurface sewage treatment system
11 (ISTS) protects the public health, safety, and general welfare
12 by preventing the discharge of adequately treated sewage to the
13 groundwater. In accordance with the authority granted in
14 Minnesota Statutes, chapters 103F, 103G, 115, and 116, the
15 Pollution Control Agency provides minimum environmental
16 protection standards for ISTS as defined in this chapter. These
17 environmental protection standards shall be adopted countywide
18 and administered and enforced by local units of government as
19 directed by chapter 7082, as published in the State Register,
20 volume 31, page 1079, and as subsequently adopted, and Minnesota
21 Statutes, section 115.55.

22 This chapter regulates all ISTS as defined in this
23 chapter. This chapter does not regulate systems that do not
24 receive sewage as defined in this chapter. If systems receive
25 both sewage and nonsewage, the requirements of this chapter
26 apply, plus any additional requirements governing the nonsewage
27 portion of the wastewater. Systems serving two or more
28 dwellings, systems serving other establishments that serve over

1 20 persons, and systems receiving nonsewage are also regulated
2 under Code of Federal Regulations, title 40, parts 144 and 146.

3 This chapter does not regulate systems that discharge to
4 the ground surface or surface waters. Those systems require a
5 national pollution discharge elimination system permit.

6 In addition, this chapter provides prescriptive design,
7 construction, and operational standards to reasonably protect
8 surface water and groundwater and promote public health, safety,
9 and general welfare. This chapter also provides public health
10 and environmental outcomes as a basis for a custom-designed
11 system. Technology and products employed in system design shall
12 adequately protect the public health and the environment as
13 determined by ~~this~~ chapter 7083, as published in the State
14 Register, volume 31, page 1088, and as subsequently adopted, and
15 be approved for use by the local unit of government.

16 In conjunction with these standards, the agency encourages
17 the use of advanced treatment methods and waste reduction to
18 further reduce the discharge of contaminants.

19 Companion to this chapter are standards for mid-sized ISTS,
20 chapter 7081, as published in the State Register, volume 31,
21 page 1064, and as subsequently adopted; administrative
22 requirements for local ordinances, permit, and inspection
23 programs, chapter 7082, as published in the State Register,
24 volume 31, page 1079, and as subsequently adopted; and
25 certification and licensing requirements for those who design,
26 install, inspect, manage, or maintain ISTS, chapter 7083, as
27 published in the State Register, volume 31, page 1088, and as

1 subsequently adopted.

2 7080.1100 DEFINITIONS.

3 Subpart 1. Certain terms. In addition to the definitions
4 in chapters 7081, 7082, and 7083, as published in the State
5 Register, volume 31, pages 1064, 1079, and 1088, and as
6 subsequently adopted, which are incorporated in this part, and
7 Minnesota Statutes, section 115.55, the following terms have the
8 meanings given them. For the purposes of this chapter, if a
9 term used in this chapter is defined in chapter 7081, 7082, or
10 7083, as published in the State Register, volume 31, pages 1064,
11 1079, and 1088, and as subsequently adopted, it shall apply to
12 other SSTS if referenced in later chapters. For the purposes of
13 these standards, certain terms or words used are interpreted as
14 follows: the words "shall" and "must" are mandatory and the
15 words "should" and "may" are permissive. All distances
16 specified in this chapter are horizontal distances unless
17 otherwise specified.

18 Subp. 2. Absorption area. "Absorption area" means the
19 area-on design parameter that is associated with the hydraulic
20 acceptance of effluent. The absorption area for mound systems
21 is the original soil below a mound system that is designed to
22 absorb sewage tank effluent. The absorption area for trenches,
23 seepage beds, and at-grade systems is the soil area in contact
24 with the part of the distribution medium that is designed and
25 loaded to allow absorption of sewage tank effluent. This
26 includes both bottom and sidewall soil contact areas.

27 Subp. 3. Agency. "Agency" means the Pollution Control

1 Agency.

2 Subp. 4. Alarm device. "Alarm device" means a device that
3 ~~uses-visual-and-audible-methods-to-alert-the-system-owner-or~~
4 ~~operator-of-malfunction-to-prevent-sewage-overflows~~ alerts a
5 system operator or system owner of a component's status using a
6 visual or audible device. An alarm device can be either on site
7 or remotely located.

8 Subp. 5. Applicable requirements. "Applicable
9 requirements" means:

10 A. local ISTS ordinances that comply with parts
11 7080.2150, subpart 2, and 7081.0080, subparts 1 to 5, as
12 published in the State Register, volume 31, pages 1051 and 1066,
13 and as subsequently adopted; chapter 7082, as published in the
14 State Register, volume 31, page 1079, and as subsequently
15 adopted; and Minnesota Statutes, section 115.55; or

16 B. in areas without complying ordinances to regulate
17 ISTS, the requirements of this chapter.

18 ~~Subp. 6. ASTM. "ASTM" means the American Society for~~
19 ~~Testing and Materials.~~

20 Subp. 7 6. At-grade system. "At-grade system" means a
21 pressurized soil treatment and dispersal system where sewage
22 tank effluent is dosed to an absorption bed that is constructed
23 directly on original soil at the ground surface and covered by
24 loamy soil materials.

25 Subp. 8 7. Baffle. "Baffle" means a device installed in a
26 septic tank to retain solids and includes, but is not limited
27 to, vented sanitary tees with submerged pipes and effluent

1 screens.

2 Subp. 9 8. **Bedrock.** "Bedrock" means geologic layers, of
3 which greater than 50 percent by volume consist of unweathered
4 in-place consolidated rock or rock fragments. Bedrock also
5 means weathered in-place rock which cannot be hand augered or
6 penetrated with a knife blade in a soil pit.

7 Subp. ~~10~~ 9. **Bedroom.** "Bedroom" means ~~a-room-or-unfinished~~
8 ~~area-within-a-dwelling-that-might-reasonably-be-used-as-a~~
9 ~~sleeping-room-as-determined-by-the-local-unit-of-government,~~
10 for the sole purpose of estimating design flows from dwellings,
11 an area that is:

12 A. a room designed or used for sleeping; or

13 B. a room or area of a dwelling that has a minimum
14 floor area of 70 square feet with access gained from the living
15 area or living area hallway. Architectural features that affect
16 the use as a bedroom under this item may be considered in making
17 the bedroom determination.

18 Subp. ~~11~~ 10. **Biochemical oxygen demand or BOD.**

19 "Biochemical oxygen demand" or "BOD" means the measure of the
20 quantity amount of oxygen used-by-microorganisms-in-the-aerobic
21 oxidation-of-organic-matter-and-reduced-chemicals required by
22 bacteria while stabilizing, digesting, or treating biodegradable
23 organic matter under aerobic conditions over a five-day
24 incubation period, commonly expressed in milligrams per liter
25 (mg/L).

26 Subp. ~~12~~ 11. **Building.** "Building" means ~~all-potentially~~
27 ~~occupied-structures-and-any-structure's-foundation-that-could-be~~

1 ~~damaged or the structural integrity of which could be~~
2 ~~jeopardized by the seepage of sewage or sewage tank effluent~~ any
3 structure used or intended for supporting or sheltering any use
4 or occupancy.

5 Subp. ~~13~~ 12. Carbonaceous biochemical oxygen demand or
6 CBOD₅. "Carbonaceous biochemical oxygen demand" or "CBOD₅"
7 means the measure of the ~~quantity of oxygen used by~~
8 ~~microorganisms in the aerobic oxidation of organic matter and~~
9 ~~other compounds containing carbon~~ amount of oxygen required by
10 bacteria while stabilizing, digesting, or treating the organic
11 matter under aerobic conditions over a five-day incubation
12 period while in the presence of a chemical inhibitor to block
13 nitrification. CBOD is commonly expressed in milligrams per
14 liter (mg/L).

15 Subp. ~~14~~ 13. Certificate of compliance. "Certificate of
16 compliance" means a document, written after a compliance
17 inspection, certifying that a system is in compliance with
18 applicable requirements at the time of the inspection.

19 Subp. ~~15~~ 14. Certified statement. "Certified statement"
20 means a statement signed by a certified individual, apprentice,
21 or qualified employee under chapter 7083, as published in the
22 State Register, volume 31, page 1088, and as subsequently
23 adopted, certifying that the licensed business or qualified
24 employee completed work in accordance with applicable
25 requirements.

26 Subp. ~~16~~ 15. Cesspool. "Cesspool" means an underground
27 pit, receptacle, or seepage tank that receives sewage directly

1 from a building sewer and leaches sewage into the surrounding
2 soil, bedrock, or other soil materials. Cesspools include
3 sewage tanks that were designed to be watertight, but
4 subsequently leak below the designed operating depth.

5 Subp. ~~17~~ 16. **Clean sand.** "Clean sand" means a soil fill
6 material required to be used in mounds. The standards for clean
7 sand are outlined in part 7080.2220, subpart 3, item C.

8 Subp. ~~18~~ 17. **Commissioner.** "Commissioner" means the
9 commissioner of the Pollution Control Agency.

10 Subp. ~~19~~ 18. **Compliance inspection.** "Compliance
11 inspection" means an evaluation, investigation, inspection, or
12 other such process for the purpose of issuing a certificate of
13 compliance or notice of noncompliance.

14 ~~Subp. 20. --Disinfection.--"Disinfection"--means-the-process~~
15 ~~of-destroying-pathogenic-microorganisms-in-sewage-through-the~~
16 ~~application-of-ultraviolet-light, chlorination, or ozonation.~~

17 Subp. ~~21~~ 19. **Distinct.** "Distinct" means a soil color that
18 is not faint as described in subpart 29.

19 Subp. ~~22~~ 20. **Distribution box.** "Distribution box" means a
20 device ~~designed~~ intended to distribute sewage tank effluent
21 concurrently and equally by gravity to multiple segments of a
22 soil ~~treatment-and~~ dispersal system.

23 Subp. ~~23~~ 21. **Distribution device.** "Distribution device"
24 means a device used to receive and transfer effluent from supply
25 pipes to distribution pipes or downslope supply pipes, or both.
26 These devices include, but are not limited to, drop boxes, valve
27 boxes, distribution boxes, or manifolds.

1 Subp. 24 22. Distribution medium. "Distribution medium"
2 means the material used to ~~store-and-distribute-sewage-tank~~
3 ~~effluent-within-a-soil-treatment-and-dispersal-system~~ provide
4 void space in a dispersal component, through which effluent
5 flows and is stored prior to infiltration. Distribution media
6 includes, but is not limited to, drainfield rock, polystyrene
7 beads, chambers, and gravelless pipe.

8 Subp. 25 23. Distribution pipes. "Distribution pipes"
9 means perforated pipes that distribute effluent within a
10 distribution medium.

11 ~~Subp. 26. Dosing chamber. "Dosing chamber" means a tank~~
12 ~~or separate compartment following the sewage tank that serves as~~
13 ~~a reservoir for a pump. Dosing chambers in a separate tank are~~
14 ~~considered a septic system tank under Minnesota Statutes,~~
15 ~~section 115.55, subdivision 17, paragraph (o).~~

16 ~~Subp. 27. Drip dispersal system. "Drip dispersal system"~~
17 ~~means a small diameter pressurized wastewater distribution~~
18 ~~system that can deliver small, precise doses of effluent to the~~
19 ~~soil surrounding the drip distribution piping.~~

20 Subp. 28 24. Drop box. "Drop box" means a distribution
21 device used for the serial gravity application of sewage tank
22 effluent to a soil treatment dispersal system.

23 Subp. 29 25. Dwelling. "Dwelling" means any building or
24 ~~place used or intended to be used by human occupants as a~~
25 ~~single-family, multifamily, or seasonal residence with plumbing.~~
26 ~~Each family unit in a multifamily residence is considered one~~
27 ~~dwelling~~ with provision for living, sanitary, and sleeping

1 facilities.

2 Subp. 30 26. Effluent screen. "Effluent screen" means a
3 ~~device that filters solid materials from sewage tanks as~~
4 ~~effectively as an outlet baffle before discharge to a soil~~
5 ~~treatment system~~ installed on the outlet piping of a septic tank
6 for the purpose of retaining solids of a specific size.

7 Subp. 31 27. EPA. "EPA" means the United States
8 Environmental Protection Agency.

9 Subp. 32 28. Existing systems. "Existing systems" means
10 systems that have been previously inspected and approved by the
11 local unit of government during installation. In addition, all
12 operating systems installed before the adoption of a local
13 permitting and inspection program are considered existing
14 systems.

15 Subp. 33 29. Faint. "Faint" means a soil color:

16 A. with the same hue as another soil color but that
17 varies from the other color by two or less units of value and
18 not more than one unit of chroma;

19 B. that differs from another soil color by one hue
20 and by one or less units of value and not more than one unit of
21 chroma; or

22 C. that differs from another soil color by two units
23 of hue with the same value and chroma.

24 Subp. 34 30. Fecal coliform or FC. "Fecal coliform" or
25 "FC," for purposes of this chapter, means bacteria common to the
26 digestive systems of ~~warm-blooded animals~~ humans that are
27 cultured in standard tests. Counts of these organisms are

1 typically used to indicate potential contamination from sewage
2 or to describe a level of disinfection, generally expressed in
3 colonies per 100 mL.

4 Subp. 35 31. **Fine sand.** "Fine sand" means a sand soil
5 texture, as described in the Field Book for Describing and
6 Sampling Soils, which is incorporated by reference in subpart
7 40, where more than 50 percent of the sand has a particle size
8 range of 0.05 millimeters, sieve size 270, to 0.25 millimeters,
9 sieve size 60.

10 Subp. 36 32. **Flood fringe.** "Flood fringe" means that
11 portion of the floodplain outside the floodway. Flood fringe is
12 synonymous with the term "floodway fringe" used in flood
13 insurance studies.

14 Subp. 37 33. **Floodplain.** "Floodplain" means the area
15 covered by a 100-year flood event along lakes, rivers, and
16 streams as published in technical studies by local, state, and
17 federal agencies, or in the absence of these studies, estimates
18 of the 100-year flood boundaries and elevations as developed
19 according to a local unit of government's floodplain or related
20 land use regulations.

21 Subp. 38 34. **Floodway.** "Floodway" means the bed of a
22 wetland or lake, the channel of a watercourse, and those
23 portions of the adjoining floodplain that are reasonably
24 required to carry the regional flood discharge.

25 Subp. 39 35. **Flow measurement.** "Flow measurement" means
26 any method to accurately measure water or sewage flow,
27 including, but not limited to, water meters, event counters,

1 running time clocks, or electronically controlled dosing.

2 Subp. 40 36. **Geomorphic description.** "Geomorphic
3 description" means the identification of the landscape,
4 landform, and surface morphometry of the proposed area of the
5 soil treatment and dispersal system as described in the Field
6 Book for Describing and Sampling Soils: Version 2.0 (2002),
7 developed by the National Soil Survey Center and Natural
8 Resources Conservation Service of the United States Department
9 of Agriculture. The field book is incorporated by reference, is
10 not subject to frequent change, and is available through the
11 Minitex interlibrary loan system.

12 Subp. 41 37. **Greywater Graywater.** "Greywater
13 Graywater" means sewage that does not contain toilet wastes.

14 Subp. 42 38. **Greywater Graywater system.** "Greywater
15 Graywater system" means a system that receives, treats, and
16 disperses only greywater graywater or other similar system as
17 designated by the commissioner.

18 Subp. 43 39. **Hazardous waste.** "Hazardous waste" means any
19 substance that, when discarded, meets the definition of
20 hazardous waste in Minnesota Statutes, section 116.06,
21 subdivision 11.

22 Subp. 44 40. **Holding tank.** "Holding tank" means a tank
23 for storage of sewage until it can be transported to a point of
24 treatment and dispersal. Holding tanks are considered a septic
25 system tank under Minnesota Statutes, section 115.557
26 ~~subdivision-17-paragraph-(e)~~.

27 Subp. 45 41. **Individual subsurface sewage treatment system**

1 or **ISTS**. "Individual subsurface sewage treatment system" or
2 "ISTS" means a an individual sewage treatment ~~and-dispersal~~
3 system or part thereof, as set forth in Minnesota Statutes,
4 sections 115.03 and 115.55, that ~~consists-of~~ employs sewage
5 tanks or other treatment devices with final discharge into the
6 soil below the natural soil elevation or elevated final grade
7 that are designed to receive a sewage ~~from-three-or-fewer~~
8 ~~dwellings-or-other-establishments-with-an-average-daily~~ design
9 flow of ~~2,500~~ 5,000 gallons per day or less. ISTS includes the
10 holding tanks and privies that serve these same facilities.
11 ISTS does not include building sewers or other components
12 regulated under chapter 4715 or collection systems.

13 Subp. ~~46~~ 42. **Inner wellhead management zone**. "Inner
14 wellhead management zone" means the drinking water supply
15 management area for a public water supply well that does not
16 have a delineated wellhead protection area approved by the
17 Department of Health under part 4720.5330.

18 Subp. ~~47~~ 43. **Invert**. "Invert" means the lowest point of a
19 channel inside a pipe.

20 Subp. ~~48~~ 44. **Liquid capacity**. "Liquid capacity" means the
21 liquid volume of a sewage tank below the invert of the outlet
22 pipe or, for holding tanks and ~~dosing-chambers~~ pump tanks, the
23 liquid volume below the invert of the inlet.

24 Subp. ~~49~~ 45. **Lot**. "Lot" means a parcel of land in a plat
25 recorded in the office of the county recorder or registrar of
26 titles or a parcel of land created and conveyed, using a
27 specific legal description, for a building site to be served by

1 an ISTS.

2 Subp. 50 46. **Management plan.** "Management plan" means a
3 plan that requires the periodic examination, adjustment,
4 testing, and other operational requirements to maintain meet
5 system performance expectations, including a planned course of
6 action in the event a system does not meet performance
7 expectations.

8 Subp. 51 47. **Matrix.** "Matrix" means the majority of the
9 color in a soil horizon, as described in the Field Book for
10 Describing and Sampling Soils, which is incorporated by
11 reference in subpart 40 36.

12 Subp. 52 48. **Medium sand.** "Medium sand" means a sand soil
13 texture, as described in the Field Book for Describing and
14 Sampling Soils, which is incorporated by reference in subpart 40
15 36, that ranges in size between 0.25 millimeters, sieve size 60,
16 and 0.5 millimeters, sieve size 35.

17 Subp. 53 49. **Mottles.** "Mottles" means the minority of the
18 variegated colors in a soil horizon, as described in the Field
19 Book for Describing and Sampling Soils, which is incorporated by
20 reference in subpart 40 36.

21 Subp. 54 50. **Mound system.** "Mound system" means a soil
22 treatment and dispersal system ~~with-an-absorption-bed-elevated~~
23 ~~above-the-original-soil-with-clean-sand-to-overcome-soil~~
24 limitations designed and installed such that all of the
25 infiltrative surface is installed above grade, using clean sand
26 between the bottom of the infiltrative surface and the original
27 ground elevation, utilizing pressure distribution and capped

1 with suitable soil material to stabilize the surface and
2 encourage vegetative growth.

3 Subp. 55 51. **New construction.** "New construction" means
4 installing or constructing a new ISTS or altering, extending, or
5 adding capacity to a system that has been issued an initial
6 certificate of compliance.

7 Subp. 56 52. **Notice of noncompliance.** "Notice of
8 noncompliance" means a document written and signed by a
9 certified inspector after a compliance inspection that gives
10 notice that an ISTS is not in compliance as specified under part
11 7080.1500.

12 ~~Subp. 57. --O&G. --"O&G" means oil and grease, a component of~~
13 ~~sewage typically originating from foodstuffs such as animal fats~~
14 ~~or vegetable oils or consisting of compounds of alcohol or~~
15 ~~glycerol with fatty acids such as soaps and lotions, typically~~
16 ~~expressed in mg/L.~~

17 Subp. 58 53. **Ordinary high water level.** "Ordinary high
18 water level" of surface water has the meaning given in Minnesota
19 Statutes, section 103G.005, subdivision 14.

20 Subp. 59 54. **Original soil.** "Original soil" means
21 naturally occurring soil that has not been cut, filled, moved,
22 smeared, compacted, altered, or manipulated to the degree that a
23 ~~different soil sizing factor is needed from natural soil~~
24 conditions the loading rate must be reduced from that associated
25 with natural soil conditions.

26 Subp. 60 55. **Other pit.** "Other pit" means any pit or
27 other device designed to leach sewage effluent that is greater

1 than 30 inches in height or has a bottom area loading rate of
2 sewage greater than two gallons per square feet per day.

3 Subp. 61 56. Owner. "Owner" means any person having
4 possession of, control over, or title to property with an ISTS.

5 Subp. 62 57. Parent material. "Parent material" means the
6 ~~geologic-material-from-which-the-soil-was-formed-and-is-commonly~~
7 ~~differentiated-from-soil-by-the-absence-of-soil-structure-and~~
8 ~~high-color-values~~ unconsolidated and chemically weathered
9 geologic mineral or organic matter from which soils are
10 developed by soil forming processes.

11 Subp. 63 58. Percolation rate. "Percolation rate" means
12 the rate of a drop of water infiltrating into a test hole as
13 specified in part 7080.1720, subpart 6, item B.

14 Subp. 59. Periodically saturated soil. "Periodically
15 saturated soil" means the highest elevation in the soil that is
16 in a reduced chemical state due to soil pores filled or nearly
17 filled with water causing anaerobic conditions. Periodically
18 saturated soil is determined by the presence of redoximorphic
19 features in conjunction with other established indicators as
20 specified in part 7080.1720, subpart 5, items E and F, or
21 determined by other scientifically established technical methods
22 or empirical field measurements acceptable to the permitting
23 authority in consultation with the commissioner.

24 Subp. 64 60. Plastic limit. "Plastic limit" means a soil
25 moisture content ~~below-which-the-soil-may-be-manipulated-for~~
26 ~~purposes-of-installing-a-soil-treatment-and-dispersal-system-and~~
27 above which manipulation will cause compaction or smearing. The

1 ~~soil-moisture-content-at-the~~ plastic limit can be measured by
 2 American Society for Testing and Materials, Standard Test
 3 Methods for Liquid Limit, Plastic Limit, and Plasticity Index of
 4 Soils, ASTM D4318 (2005). The standard is incorporated by
 5 reference, is available through the Minitex interlibrary loan
 6 system, and is not subject to frequent change.

7 Subp. 65 61. Pressure distribution. "Pressure
 8 distribution" means a network of distribution pipes in which
 9 effluent is forced through orifices under pressure.

10 Subp. 66 62. Privy. "Privy" means an aboveground
 11 structure with an underground cavity meeting the requirements of
 12 part 7080.2280 that is used for the storage or treatment and
 13 dispersal of toilet wastes, excluding water for flushing and
 14 ~~greywater~~ graywater. A privy also means a nondwelling structure
 15 containing a toilet waste treatment device.

16 ~~Subp. 67. Proprietary product. "Proprietary product"~~
 17 ~~means a sewage treatment or distribution technology, method, or~~
 18 ~~material subject to a patent or trademark.~~

19 ~~Subp. 68. Public domain technology. "Public domain~~
 20 ~~technology" means a sewage treatment or distribution technology,~~
 21 ~~method, or material not subject to a patent or trademark.~~

22 Subp. 69 63. Public waters. "Public waters" means any
 23 public waters or wetlands defined in Minnesota Statutes, section
 24 103G.005, subdivision 15, or identified as public waters or
 25 wetlands by the inventory prepared according to Minnesota
 26 Statutes, section 103G.201.

27 Subp. 64. Pump tank. "Pump tank" means a tank or separate

1 compartment following the sewage tank that serves as a reservoir
 2 for a pump. A separate tank used as a pump tank is considered a
 3 septic system tank under Minnesota Statutes, section 115.55,
 4 subdivision 1, paragraph (o).

5 Subp. 70 65. Redoximorphic features. "Redoximorphic
 6 features" means:

7 A. a color pattern in soil, formed by oxidation ~~or~~
 8 and reduction of iron or manganese in saturated soil coupled
 9 with their removal, translocation, or accrual, which results in
 10 the loss (depletion) or gain (concentration) of mineral
 11 compounds compared to the matrix color; or

12 B. a soil matrix color controlled by the presence of
 13 ferrous iron.

14 Redoximorphic features are described in part 7080.1720, subpart
 15 5, item E.

16 Subp. 71 66. Replacement. "Replacement" means the removal
 17 or discontinued use of any major portion of an ISTS and
 18 reinstallation of that portion of the system, such as
 19 reinstallation of a new sewage tank, holding tank, dosing
 20 chamber, privy, or soil ~~treatment-and~~ dispersal system.

21 ~~Subp. 72. Seasonally-saturated-soil. "Seasonally~~
 22 ~~saturated-soil" means the highest elevation in the soil that is~~
 23 ~~in a reduced chemical state due to soil pores filled with water~~
 24 ~~causing anaerobic conditions. Seasonally-saturated-soil is~~
 25 ~~determined by the presence of redoximorphic features in~~
 26 ~~conjunction with other established indicators as specified in~~
 27 ~~part 7080.1720, subpart 5, items E and F, or determined by other~~

1 ~~scientifically-established-technical-methods-or-empirical-field~~
2 ~~measurements-acceptable-to-the-permitting-authority-in~~
3 ~~consultation-with-the-commissioner.~~

4 Subp. 73 67. Seepage bed. "Seepage bed" means a soil
5 treatment and dispersal system, the absorption width of which is
6 greater than three feet but no greater than 25 feet ~~and-that-has~~
7 ~~more-than-one-distribution-pipe.~~

8 Subp. 74 68. Seepage pit. "Seepage pit" means an
9 underground pit that receives sewage tank effluent and from
10 which the liquid seeps into the surrounding soil and that meets
11 the design requirements in part 7080.2550.

12 Subp. 75 69. Septage. "Septage" means solids and liquids
13 removed from an SSTS:--Septage and includes solids and liquids
14 from cesspools, seepage pits, other pits, or similar systems or
15 devices that receive sewage. Septage also includes solids and
16 liquids that are removed from portable, incinerating,
17 composting, holding, or other toilets. Waste from Type III
18 marine sanitation devices, as defined in Code of Federal
19 Regulations, title 33, section 159.3, and material that has come
20 into contact with untreated sewage within the past 12 months is
21 also considered septage.

22 Subp. 76 70. Septic tank. "Septic tank" means any
23 watertight, covered receptacle that is designed and constructed
24 to receive the discharge of sewage from a building sewer or
25 preceding tank, stores liquids ~~through-a-period-of~~ for a
26 ~~detention,~~ separates-solids-from-liquid period that provides
27 separation of solids from liquid and digestion of organic

1 ~~matter, digests-organic-matter,~~ and allows the effluent to
2 discharge to a succeeding tank, treatment device, or
3 soil ~~treatment-and~~ dispersal system.

4 Subp. 77 71. **Serial distribution.** "Serial distribution"
5 means distribution of sewage tank effluent by gravity flow that
6 progressively loads one section of a soil treatment and
7 dispersal system to a predetermined level before overflowing to
8 the succeeding section and does not place a dynamic head on the
9 lower section of the soil treatment and dispersal system. The
10 distribution medium ~~may-function~~ is allowed to serve as a
11 conveyance medium to the next section.

12 Subp. 78 72. **Setback.** "Setback" means a separation
13 distance measured horizontally.

14 Subp. 79 73. **Sewage.** "Sewage" means waste produced by
15 toilets, bathing, laundry, or culinary operations or the floor
16 drains associated with these sources, and includes household
17 cleaners, medications, and other constituents in sewage
18 restricted to amounts normally used for domestic purposes.

19 Subp. 80 74. **Sewage tank.** "Sewage tank" means a
20 receptacle used in the containment or treatment of sewage and
21 includes, but is not limited to, septic tanks, aerobic
22 tanks, ~~lift-stations,-dosing-chambers~~ pump tanks, and holding
23 tanks. Requirements for sewage tanks are described in parts
24 7080.1900 to 7080.2030. Sewage tanks are considered a septic
25 system tank in Minnesota Statutes, section 115.55, subdivision
26 1, paragraph (o).

27 Subp. 81 75. **Sewage tank effluent.** "Sewage tank effluent"

1 means the liquid that flows from a septic tank or other
2 treatment device.

3 Subp. 82 76. Site. "Site" means the area required for the
4 proper location of the ISTS.

5 Subp. 83 77. Slope. "Slope" means the vertical rise or
6 fall divided by the horizontal distance, expressed as a
7 percentage.

8 Subp. 78. Soil dispersal area. "Soil dispersal area"
9 means the area required for the soil dispersal system, including
10 spacing between individual units or zones.

11 Subp. 79. Soil dispersal system. "Soil dispersal system"
12 means a system where sewage effluent is dispersed into the soil
13 for treatment by absorption and filtration and includes, but is
14 not limited to, trenches, seepage beds, at-grade systems, mound
15 systems, and drip dispersal systems.

16 Subp. 84 80. Soil texture. "Soil texture" means the soil
17 particle size classification and particle size distribution as
18 specified in the Field Book for Describing and Sampling Soils,
19 incorporated by reference in subpart 40 36.

20 ~~Subp. 85. Soil treatment area. "Soil treatment area"~~
21 ~~means the area required for the soil treatment and dispersal~~
22 ~~system, including spacing between individual units or zones.~~

23 ~~Subp. 86. Soil treatment and dispersal system. "Soil~~
24 ~~treatment and dispersal system" means a system where sewage~~
25 ~~effluent is treated and dispersed into the soil by percolation~~
26 ~~and filtration and includes, but is not limited to, trenches,~~
27 ~~seepage beds, at-grade systems, mound systems, and drip~~

1 ~~dispersal-systems.~~

2 Subp. 87 81. **Subsoil.** "Subsoil" means a soil layer that
3 has a moist color value of 3.5 or greater and has undergone
4 weathering and soil formation processes.

5 Subp. 88 82. **Subsurface sewage treatment system or SSTS.**
6 "Subsurface sewage treatment system" or "SSTS" is either an
7 individual subsurface sewage treatment system as defined in
8 subpart 45 or a mid-sized subsurface sewage treatment system as
9 defined in part 7081.0020, subpart 3 4, as published in the
10 State Register, volume 31, page 1064, and as subsequently
11 adopted, as applicable.

12 Subp. 89 83. **Supply pipe.** "Supply pipe" means a
13 nonperforated pipe, the purpose of which is to transport sewage
14 tank effluent.

15 Subp. 90 84. **Systems in shoreland areas or wellhead**
16 **protection areas or systems serving food, beverage, or lodging**
17 **establishments or SWF.** "Systems in shoreland areas or wellhead
18 protection areas or systems serving food, beverage, or lodging
19 establishments" or "SWF" means the following three categories of
20 systems:

21 A. SSTS constructed in shoreland areas where land
22 adjacent to public waters has been designated and delineated as
23 shoreland by local ordinance as approved by the Department of
24 Natural Resources;

25 B. SSTS constructed in wellhead protection areas
26 regulated under Minnesota Statutes, chapter 103I; and

27 C. SSTS serving food, beverage, and lodging

1 establishments that are required to obtain a license under
 2 Minnesota Statutes, section 157.16, subdivision 1, including
 3 manufactured home parks and recreational camping areas licensed
 4 according to Minnesota Statutes, chapter 327.

5 Subp. 91 85. Toilet waste. "Toilet waste" means waste
 6 commonly disposed of in toilets, including fecal matter, urine,
 7 toilet paper, and water used for flushing.

8 Subp. 92 86. Toilet waste treatment devices. "Toilet
 9 waste treatment devices" means other toilet waste apparatuses
 10 including incinerating, composting, biological, chemical,
 11 recirculating, or holding toilets or portable restrooms.

12 Subp. 93 87. Topsoil. "Topsoil" means the natural,
 13 in-place organically enriched soil layer with a color value of
 14 less than 3.5.

15 Subp. 94 88. Topsoil borrow. "Topsoil borrow" means a
 16 loamy soil material having:

17 A. less than five percent material larger than two
 18 millimeters, No. 10 sieve;

19 B. no material larger than 2.5 centimeters;

20 C. a moist color value of less than 3.5 or less; and

21 D. adequate nutrients and pH to sustain healthy plant
 22 growth.

23 ~~Subp. 95. --TN. --"TN" means total nitrogen, typically~~
 24 ~~expressed in mg/l.~~

25 ~~Subp. 96. --Total-suspended-solids-or-TSS. --"Total-suspended~~
 26 ~~solids" or "TSS" means solids that are in suspension in water~~
 27 ~~and that are removable by laboratory filtering.~~

1 ~~Subp. 97. TP. "TP" means total phosphorus, typically~~
2 ~~expressed in mg/L.~~

3 Subp. 98 89. Trench. "Trench" means a soil treatment and
4 dispersal system, the absorption width of which is 36 inches or
5 less.

6 Subp. 99 90. Valve box. "Valve box" means a watertight
7 structure designed for alternate distribution of sewage tank
8 effluent to segments of a soil treatment system.

9 Subp. ~~100~~ 91. Vertical separation. "Vertical separation"
10 means the vertical measurement of unsaturated soil or sand
11 between the bottom of the distribution medium and the ~~seasonal~~
12 periodically saturated soil level or bedrock.

13 Subp. ~~101~~ 92. Watertight. "Watertight" means constructed
14 so that no liquid can get into or out of a device except through
15 designed inlets and outlets.

16 Subp. ~~102~~ 93. Wellhead protection area. "Wellhead
17 protection area" means the surface and subsurface area
18 surrounding a well or well field that supplies a public water
19 system, through which contaminants are likely to move toward and
20 reach the well or well field as regulated under chapter 4720.
21 For the purposes of this chapter, wellhead protection area is
22 that area bounded by the drinking water supply management area
23 as regulated under chapter 4720.

24 ~~7080.1150-ADVISORY-COMMITTEE-~~

25 ~~Subpart 1. Establishment. An advisory committee on~~
26 ~~subsurface sewage treatment systems is established.~~

27 ~~Subp. 2. Duties. The committee shall, subject to the~~

1 approval-of-the-commissioner, review-and-advise-the-agency-on:

2 A.--revisions-to-chapters-7080-to-7083, as-published
3 in-the-State-Register, volume-31, pages-1023-1101, and-as
4 subsequently-adopted, and-legislation-relating-to-SSTPS;

5 B.--technical-data-relating-to-SSTPS;

6 C.--a-technical-manual-on-SSTPS;

7 D.--educational-materials-and-programs-for-SSTPS;

8 E.--the-administration-of-standards-and-ordinances
9 pertaining-to-SSTPS-at-the-state-and-local-level;

10 F.--the-product-registration-and-renewal-process;

11 G.--development-of-any-product-registration-advisory
12 panels-that-may-be-created; and

13 H.--other-SSTPS-activities-considered-appropriate-by
14 the-committee.

15 Subp.-3.--Membership.--The-committee-consists-of-the
16 following-voting-members-of-whom:

17 A.--one-must-be-a-citizen-of-Minnesota, representative
18 of-the-public;

19 B.--one-must-be-from-the-Minnesota-Extension-Service
20 of-the-University-of-Minnesota;

21 C.--six-must-be-county-administrators, such-as-zoning
22 administrators, sanitarians, and-environmental-health
23 specialists, each-of-whom-administers-an-SSTPS-permitting-or
24 inspection-program.--The-six-administrators-must-be
25 geographically-distributed-throughout-the-state;

26 D.--one-must-be-a-municipal-inspector-who-administers
27 an-SSTPS-permitting-and-inspection-program;

1 E.--one-must-be-a-township-inspector-who-administers
2 an-SSTS-permitting-and-inspection-program;

3 F.--six-must-be-SSTS-designated-certified-individuals
4 as-defined-in-part-7083.0020,--as-published-in-the-State
5 Register,--volume-31,--page-1079,--and-as-subsequently-adopted,--who
6 have-geographic-distribution-throughout-the-state,--with-each
7 certification-category-represented-on-the-committee;

8 G.--two-must-be-elected-public-officials-with-members
9 having-geographic-distribution-throughout-the-state;

10 H.--one-must-be-from-the-Department-of-Natural
11 Resources;

12 I.--one-must-be-from-the-Department-of-Labor-and
13 Industry,--and

14 J.--one-must-be-a-water-well-contractor.

15 Subp.-4.--Nonvoting-members.--The-following-agencies-and
16 associations-shall-each-have-at-least-one-nonvoting-member-to
17 assist-the-advisory-committee-and-to-be-advised,--in-turn,--on
18 matters-relating-to-chapters-7080-to-7083,--as-published-in-the
19 State-Register,--volume-31,--pages-1023-1101,--and-as-subsequently
20 adopted:--the-agency,--the-United-States-Department-of
21 Agriculture-Natural-Resource-Conservation-Service,--the-Minnesota
22 Association-of-Professional-Soil-Scientists,--the-Metropolitan
23 Council,--the-Association-of-Minnesota-Counties,--the-Minnesota
24 Association-of-Townships,--the-League-of-Minnesota-Cities,--the
25 Minnesota-Society-of-Engineers,--the-Association-of-Small-Cities,
26 the-Minnesota-Association-of-Realtors,--the-Minnesota
27 Environmental-Health-Association,--SSTS-suppliers,--the-Minnesota

1 On-Site-Wastewater-Association, the American Society of Home
2 Inspectors, the Minnesota Small Business Association,
3 Hospitality Minnesota, and Minnesota Waters.

4 Subp. 5. -- Appointment, terms. -- All members must be
5 appointed by the commissioner from recommendations by the named
6 entities or organizations. -- All members serve four-year terms,
7 with terms staggered to maintain continuity. -- Voting members may
8 serve a maximum of two consecutive terms, except by virtue of
9 their office. -- If the voting member's attendance falls below 50
10 percent during the term, the appointed member loses membership
11 status for the remaining term. -- The commissioner shall then
12 appoint a replacement member for the remainder of the term from
13 the recommendation offered by the affected entity or
14 organization. -- In the case of a vacancy, the commissioner shall
15 appoint a replacement member for the unexpired balance of the
16 term. -- Administrators, inspectors, elected officials, and
17 contractors must be bona fide residents of this state for at
18 least three years before being appointed and must have at least
19 three years' experience in their respective businesses or
20 offices.

21 Subp. 6. -- Procedural rules. -- Robert's Rules of Order Newly
22 Revised, Henry M. Robert (2000), must prevail at all meetings of
23 the advisory committee. -- Robert's Rules of Order is incorporated
24 by reference, is available through the Minitex interlibrary loan
25 system, and is not subject to frequent change.

26 Subp. 7. -- Quorum. -- A quorum consists of nine voting members.

27 7080.1200 ADMINISTRATION OF DESIGN STANDARDS.

1 Subpart 1. **Administrative scope.** ISTS must be designed,
2 constructed, and operated according to this chapter, except as
3 modified through a local ordinance in compliance with chapter
4 7082, as published in the State Register, volume 31, page 1079,
5 and as subsequently adopted, and Minnesota Statutes, section
6 115.55. ISTS must be designed, installed, inspected, pumped,
7 serviced, and operated by licensed businesses meeting the
8 qualifications in ~~chapter-7083~~ parts 7083.0070 to 7083.2040, as
9 published in the State Register, volume 31, page 1088, and as
10 subsequently adopted. ISTS must conform to all applicable state
11 laws and rules.

12 Subp. 2. **Federal regulation.** SSTS that are designed to
13 receive sewage or nonsewage from a two-family dwelling or
14 greater or receive sewage or nonsewage from another
15 establishment that serves more than 20 persons per day, are
16 regulated under Code of Federal Regulations, title 40, parts 144
17 and 146.

18 Subp. 3. **Variance procedures.** The standards in this
19 chapter are provided to be incorporated into a local ordinance
20 according to chapter 7082, as published in the State Register,
21 volume 31, page 1079, and as subsequently adopted, and Minnesota
22 Statutes, section 115.55. Variance requests to the standards
23 made by an owner or owner's agent must be issued or denied by
24 the local unit of government. ~~Variances may not be issued by~~
25 ~~the local unit of government for part 7080.2150, subpart 2,~~
26 ~~items A to F.~~ Local units of government shall not issue
27 variances for part 7080.2150, subpart 2, items A to D.

1 7080.1500 COMPLIANCE CRITERIA.

2 Subpart 1. Treatment required. Sewage discharged from a
3 dwelling that is not served by a system issued a permit
4 containing effluent and discharge limits or specific monitoring
5 requirements by the agency must be treated according to
6 applicable requirements.

7 Subp. 2. Primitive dwellings structures. Greywater
8 Graywater from dwellings structures without plumbing that
9 originated from hand-carried water must not be discharged
10 directly to surface waters, drainageways, or poorly drained
11 soils; in a manner or volume harmful to the environment or
12 public health; or in a manner that creates a public health
13 nuisance as determined by the local unit of government.

14 Subp. 3. Compliance criteria for new construction. An
15 ISTS regulated under a current construction permit is considered
16 compliant if it meets the applicable requirements of parts
17 7080.2150 to 7080.2400.

18 Subp. 4. Compliance criteria for existing systems. To be
19 in compliance, an existing ISTS must meet the provisions of this
20 subpart.

21 A. The ISTS must be protective of public health and
22 safety. A system that is not protective is considered an
23 imminent threat to public health or safety. At a minimum, a
24 system that is an imminent threat to public health or safety is
25 a system with a discharge of sewage or sewage effluent to the
26 ground surface, drainage systems, ditches, or storm water drains
27 or directly to surface water; systems that cause a reoccurring

1 sewage backup into a dwelling or other establishment; systems
2 with electrical hazards; or sewage tanks with unsecured,
3 damaged, or weak maintenance hole covers ~~or weak lids~~. A
4 determination of protectiveness for other conditions ~~may~~ must be
5 made by a qualified employee inspector or licensed inspection
6 business.

7 B. The ISTS must be protective of groundwater. A
8 system that is not protective is considered a system failing to
9 protect groundwater. At a minimum, a system that is failing to
10 protect groundwater is a system that is a seepage pit, cesspool,
11 drywell, leaching pit, or other pit; a system with less than the
12 required vertical separation distance described in items D and
13 E; and a system not abandoned in accordance with part 7080.2500.
14 A determination of ~~protectiveness~~ the threat to groundwater
15 quality for other conditions ~~may~~ must be made by a qualified
16 employee or licensed inspection business.

17 C. The ISTS must be operated, meet performance
18 standards, and be managed according to its ~~management plan,~~
19 ~~operating permit, monitoring and mitigation plan, or local~~
20 ~~ordinance requirements.~~

21 D. ISTS built after March 31, 1996, or in an SWF area
22 as defined under part 7080.1100, subpart 84, shall have a
23 three-foot vertical separation or a vertical separation based on
24 applicable requirements. The local ordinance ~~may~~ must not allow
25 no more than a 15 percent reduction in the vertical separation
26 distance to account for settling of sand or soil, normal
27 variation of measurements, and interpretations of the limiting

1 layer conditions.

2 E. ISTS built before April 1, 1996, in non-SWF areas
3 that are not SWF areas as defined under part 7080.1100, subpart
4 84, must have at least two feet of vertical separation.

5 F. The vertical separation measurement for items D
6 and E shall be measured outside the area of system influence in
7 an area of similar soil.

8 Subp. 5. Compliance criteria for systems with a flow of
9 greater than 2,500 gallons per day. In addition to the
10 requirements under subpart 4, systems designed under part
11 7080.2150, subpart 4, item A or B, must demonstrate that the
12 additional nutrient reduction component required under those
13 items is in place and functioning.

14 Subp. 5 6. Compliance criteria for systems receiving
15 replacement components. Components of an existing system that
16 result in the system being in noncompliance must be repaired or
17 replaced according to part 7082.0100, subpart 1, as published in
18 the State Register, volume 31, page 1081, and as subsequently
19 adopted. The repaired or replacement components must meet
20 technical standards and criteria for new construction according
21 to local ordinance. The remaining components of the existing
22 system must result in the system being in compliance with
23 subpart 4.

24 7080.1550 ACCEPTABLE AND PROHIBITED DISCHARGES.

25 Subpart 1. Sewage. This chapter provides design standards
26 for ISTS that exclusively receive sewage. If ISTS receive both
27 sewage and nonsewage, the requirements of this chapter and

1 requirements governing the nonsewage portion of the waste apply.

2 Subp. 2. System influent. Footing or roof drainage and
 3 chemically treated hot tub and pool water must not be discharged
 4 into any part of a system. Products containing hazardous
 5 chemicals and hazardous waste must not be discharged to a system
 6 other than in normal amounts of household products and cleaners
 7 designed for household use. Substances not intended for use in
 8 household cleaning, including but not limited to solvents,
 9 pesticides, flammables, photo finishing chemicals, paint, and
 10 dry-cleaning chemicals must not be discharged to the system.
 11 Other unused products or substances, or unused medicines, must
 12 not be discharged to the system solely as a method of disposal.
 13 Floor drains from garages serving dwellings must not be
 14 connected to the system.

15 ~~7080.1600-PRODUCT-REVIEW-AND-REGISTRATION-PROCESS-~~

16 ~~Subpart 1.--General-~~

17 ~~A.--The-commissioner-shall-develop-a-product-review~~
 18 ~~and-registration-process-and-maintain-a-list-of-registered~~
 19 ~~sewage-treatment-and-distribution-products-for-SSTS-~~

20 ~~B.--The-commissioner-shall-develop-recommended~~
 21 ~~standards-and-guidance-to-assist-local-units-of-government-in~~
 22 ~~permitting-different-types-of-sewage-treatment-technologies-and~~
 23 ~~sewage-distribution-technologies,-including-the-following-four~~
 24 ~~categories-~~

25 ~~(1)-public-domain-treatment-technologies,-such-as~~
 26 ~~sand-filters,-~~

27 ~~(2)-proprietary-treatment-technologies,-such-as~~

1 manufactured-aerobic-treatment-systems;

2 (3)-public-domain-distribution-technologies,-such
3 as-drainfield-rock-or-generic-drainfield-rock-substitutes,-and

4 (4)-proprietary-distribution-technologies,-such
5 as-gravelless-distribution-products-and-drip-dispersal-products.

6 E.--Sewage-technologies-shall-have-standards-described
7 in-this-chapter-or-agency-recommended-standards-and-guidance
8 before-local-units-of-government-may-permit-them.--Recommended
9 standards-and-guidance-must-include-information-and-detail,-such
10 as-application,-design,-installation,-operation,-monitoring-and
11 maintenance,-and-performance-expectations,-and-sources-of-the
12 information.

13 Subp.-2.--Proprietary-treatment-products,-certification-and
14 registration.

15 A.--Manufacturers-shall-register-their-proprietary
16 products-with-the-commissioner-before-the-local-unit-of
17 government-may-permit-their-use.

18 B.--To-qualify-for-product-registration,-manufacturers
19 desiring-to-sell-or-distribute-proprietary-treatment-products
20 shall:

21 (1)-verify-product-performance-through-testing
22 using-the-testing-protocol-established-in-Table-F-in-part
23 7080.1610-and-register-their-product-with-the-commissioner-using
24 the-process-described-in-parts-7080.1600-to-7080.1660;

25 (2)-report-test-results-of-influent-and-effluent
26 sampling-obtained-throughout-the-testing-period,-including
27 normal-and-stress-loading-phases,-for-evaluation-of-constituent

1 reduction-according-to-Table-II-in-part-7080.1615;

2 (3)-demonstrate-product-performance-according-to
3 Table-III-in-part-7080.1620;--All-30-day-averages-and-geometric
4 means-obtained-throughout-the-test-period-must-meet-the
5 identified-threshold-values-to-qualify-for-registration-at-that
6 threshold-level; and

7 (4)-verify-bacteriological-reduction-according-to
8 part-7080.1635; for-registration-at-levels-A-and-B-in-Table-III
9 in-part-7080.1620;

10 C.--Manufacturers-verifying-product-performance
11 through-testing-according-to-the-following-standards-or
12 protocols-shall-have-product-testing-conducted-by-a-qualified,
13 third-party-testing-facility.--Product-performance-testing-shall
14 be-consistent-with-the-following:

15 (1)-National-Sanitation-Foundation-(NSF)
16 International,-Residential-Wastewater-Treatment-Systems,
17 Standard-40-(July-2000);--The-standard-is-incorporated-by
18 reference,-is-available-through-the-Minitex-interlibrary-loan
19 system,-and-is-not-subject-to-frequent-change;

20 (2)-Environmental-Protection-Agency-(EPA)-and
21 National-Sanitation-Foundation-(NSF);-Protocol-for-the
22 Verification-of-Wastewater-Treatment-Technologies-(April-2001);-
23 The-protocol-is-incorporated-by-reference,-is-available-through
24 the-Minitex-interlibrary-loan-system,-and-is-not-subject-to
25 frequent-change;

26 (3)-Environmental-Protection-Agency-(EPA)
27 Environmental-Technology-Verification-(ETV)-Program;-Protocol

1 for-the-Verification-of-Residential-Wastewater-Treatment
2 Technologies-for-Nutrient-Reduction-(November-2000).--The
3 protocol-is-incorporated-by-reference, is-available-through-the
4 Minitex-interlibrary-loan-system, and-is-not-subject-to-frequent
5 change;

6 (4)-European-Committee-for-Standardization-(CEN),
7 Small-Wastewater-Treatment-Systems-for-up-to-50-PT---Part-3:
8 Packaged-and/or-Site-Assembled-Domestic-Wastewater-Treatment
9 Plants, EN-12566-3-(October-2003).--The-standard-is-incorporated
10 by-reference, is-available-through-the-Minitex-interlibrary-loan
11 system, and-is-not-subject-to-frequent-change;

12 (5)-other-equivalent-protocols-and-standards
13 consistent-with-the-above-referenced-standards-and-protocol-to
14 verify-product-performance-as-approved-by-the-commissioner; and

15 (6)-protocol-for-bacteriological-reduction
16 described-in-part-7080.1635.

17 D.--Treatment-levels-used-in-part-7080.1620-are-not
18 intended-to-be-applied-as-field-compliance-standards.--Their
19 intended-use-is-to-establish-treatment-product-performance-in-a
20 product-testing-setting-under-established-protocols-by-qualified
21 testing-entities.

22 7080.1610-TESTING-REQUIREMENTS-FOR-PROPRIETARY-TREATMENT
23 PRODUCTS.

24 The-testing-protocols-in-this-part-are-incorporated-by
25 reference-under-part-7080.1600, subpart-2, item-C.

26 -TABLE-I-

27 Treatment-component/

1	sequence-category	Required-testing-protocol
2	-----	-----
3	Category-A:--Designed-to-treat	NSF-Residential-Wastewater
4	sewage-with-strength-typical	Treatment-Systems7
5	of-a-residential-source	Standard-407-or-CEN-European
6	when-septic-tank-effluent	Standard7-EN-12566-3
7	is-anticipated-to-be-equal	
8	to-or-less-than-treatment	
9	Level-C-(Table-III7	
10	part-7080.1620)	
11		
12	Category-B:--Designed-to-treat	EPA/NSF-Protocol-for-the
13	high-strength-sewage-when	Verification-of-Wastewater
14	septic-tank-effluent-is	Treatment-Technologies7
15	anticipated-to-be-greater-than	EPA/EPV-Protocol-for-the
16	treatment-level-C-(Table-III7	Verification-of-Residential
17	part-7080.1620)7-including	Wastewater-Treatment
18	restaurants7-grocery-stores7	Technologies-for
19	mini-marts7-group-homes7-medical	Nutrient-Reduction7-or
20	clinics7-residences7-etc7	equivalent
21	-----	-----
22	Total-nitrogen-and	EPA-Environmental-Technology
23	phosphorus-reduction-in	Verification7-Protocol-for-the
24	Categories-A-and-B	Verification-of-Residential
25		Wastewater-Treatment
26		Technologies-for-Nutrient
27		Reduction7-or-equivalent
28		

29 7080.1615-TEST-RESULTS-REPORTING-REQUIREMENTS-FOR-PROPRIETARY
 30 TREATMENT-PRODUCTS-

31 -TABLE-II-

32	Treatment-component/ sequence-category	Testing-results-reported
33	-----	-----
34	-----	-----
35	Category-A:--Designed-to-treat	Report-test-results-for
36	sewage-with-strength-typical	influent-and-effluent-sampling
37	of-a-residential-source	obtained-throughout-the
38	when-septic-tank-effluent	testing-period-for-evaluation
39	is-anticipated-to-be-equal	of-consistent-reduction-for
40	to-or-less-than-treatment	the-parameters-CBOD5-and-TSS:
41	Level-C-(Table-III7	---Average
42	part-7080.1620)	
43		---Minimum
44		---Median
45		---30-day-average-(each-month)
46		---Standard-deviation
47		---Maximum
48		---Interquartile-range7
49		
50		For-bacteriological-reduction

1 performance, report fecal
 2 coliform test results of
 3 influent and effluent sampling
 4 by geometric mean from
 5 samples drawn within 30-day or
 6 monthly calendar periods,
 7 obtained from a minimum of
 8 three samples per week
 9 throughout the testing period.
 10 See part 7080.1635.
 11 Test report must also include
 12 the individual results of all
 13 samples drawn throughout the
 14 test period.
 15
 16 Category B:--Designed to treat Report all individual test
 17 high-strength sewage when results and full test average
 18 septic tank effluent is values of influent and effluent
 19 anticipated to be greater than sampling obtained throughout
 20 treatment Level C (Table III, the testing period for
 21 part 7080.1620), including CBOD₅, TSS, and oil
 22 restaurants, grocery stores, and grease.
 23 mini-marts, group homes, Report the treatment capacity
 24 medical clinics, of the product tested in
 25 residences, etc. pounds per day for CBOD₅.
 26 -----
 27 Total nitrogen and Report test results on all
 28 phosphorus reduction in required performance criteria
 29 Categories A and B according to the format
 30 prescribed in the test protocol
 31 described in Table I,
 32 part 7080.1610.
 33

34 7080.1620-PRODUCT PERFORMANCE REQUIREMENTS FOR PROPRIETARY
 35 TREATMENT PRODUCTS.

36 -TABLE III

37 Treatment 38 component/ 39 sequence category	40 Product performance requirements					
41 -----						
42 Category A: 43 Designed to treat 44 sewage with 45 strength typical 46 of a residential 47 source when septic 48 tank effluent is 49 equal to or less 50 than treatment	41 Treatment system performance testing levels					
	42 Level	43 Parameters				
		44 CBOD ₅ (mg/L)	45 TSS (mg/L)	46 O&G (mg/L)	47 FC (#/100ml)	48 Nutrient (mg/L)
	A	15	15	--	17000	--
	B	25	30	--	107000	--
	C	125	80	20	--	--
	TN	--	--	--	--	20

1 Level-C. TP -- -- -- 2

2
3 Values-for-levels-A-and-B-are-30-day
4 values-(averages-for-CBOD₅-TSS₇-and
5 geometric-mean-for-FC).--All-30-day
6 averages-throughout-the-test-period
7 must-meet-these-values-in-order-to-be
8 registered-at-these-levels.--Values
9 for-levels-C₇-TN₇-and-TP-are-derived
10 from-full-test-averages.

11
12 Category-B: All-of-the-following-requirements-must-be
13 Designed-to-treat met:
14 high-strength (1)-all-full-test-averages-must-meet
15 sewage-when-septic Level-C₇-and
16 tank-effluent-is (2)-the-treatment-capacity-of-the
17 anticipated-to-be product-tested-in-pounds-per-day-for-CBOD₅
18 greater-than-treat- must-be-reported.
19 ment-Level-C₇
20 including
21 restaurants,
22 grocery-stores,
23 mini-marts,
24 group-homes,
25 medical-clinics,
26 residences,
27 etc.

28 Total-nitrogen-and Test-results-must-establish-product
29 phosphorus performance-effluent-quality-meeting-levels
30 reduction-in TN-and-TP₇-when-presented-as-the-full-test
31 Categories-A-and-B average.

32
33 7080.1625-PROPRIETARY-TREATMENT-PRODUCTS-REGISTRATION-PROCESS
34 AND-REQUIREMENTS.

35 A.--Manufacturers-shall-register-their-proprietary
36 treatment-products-with-the-commissioner-by-submitting-a
37 complete-application-in-the-format-prescribed-by-the
38 commissioner,
39 including:

40 (1)-the-manufacturer's-name,
41 mailing-address,
42 street-address,
43 and-telephone-number;

44 (2)-the-contact-individual's-name,
45 title,
46 mailing-address,
47 street-address,
48 and-telephone-number.--The-contact
49 individual-must-be-a-company-official-with-the-authority-to

1 represent-the-manufacturer-in-this-capacity;

2 (3)-the-name,-including-specific-brand-and-model,

3 of-the-proprietary-treatment-product;

4 (4)-a-description-of-the-function-of-the

5 proprietary-treatment-product-along-with-any-known-limitation-of

6 the-use-of-the-product;

7 (5)-product-description-and-technical

8 information,-including-process-flow-drawings-and-schematics,

9 materials-and-characteristics,-component-design-specifications,

10 design-capacity,-volumes-and-flow-assumptions-and-calculations,

11 components,-dimensioned-drawings,-and-photos;

12 (6)-for-treatment-systems-in-Category-B,-daily

13 capacity-of-the-model-or-models-provided-in-pounds-per-day-of

14 CBOD₅;

15 (7)-siting-and-installation-requirements;

16 (8)-a-detailed-description,-procedure,-and

17 schedule-of-routine-service-and-system-maintenance-events;

18 (9)-estimated-operational-costs-for-the-first

19 five-years-of-the-treatment-component's-life-including-estimated

20 annual-electricity-usage-and-routine-maintenance-costs,

21 including-replacement-of-parts;

22 (10)-identification-of-information-requested-to

23 be-protected-from-disclosure-of-trade-secrets-or-confidential

24 business-information;

25 (11)-copies-of-product-brochures-and-manuals,

26 such-as-sales,-promotional,-design,-installation,-operation,-and

27 maintenance-materials-and-homeowner-instructions;

1 ~~{12}-the-most-recently-available-product-test~~
2 ~~protocol-and-results-report;~~

3 ~~{13}-all-available-product-testing-results,~~
4 ~~including-a-listing-of-state-approvals-and-denials;~~

5 ~~{14}-a-signed-and-dated-certification-by-the~~
6 ~~manufacturer's-authorized-senior-executive-or-authorized-agent~~
7 ~~specifically-including-the-following-statement:--"I-certify-that~~
8 ~~I-represent-{INSERT-MANUFACTURING-COMPANY-HERE}-and-I-am~~
9 ~~authorized-to-prepare-or-direct-the-preparation-of-this~~
10 ~~application-for-registration.--I-attest,under-penalty-of-law,~~
11 ~~that-this-document-and-all-attachments-are-true,accurate,and~~
12 ~~complete.--I-understand-and-accept-that-the-product-testing~~
13 ~~results-reported-in-this-application-for-registration-are-the~~
14 ~~parameters-and-values-to-be-used-for-determining-conformance~~
15 ~~with-treatment-system-performance-testing-levels-established-in~~
16 ~~Minnesota-Rules,part-7000.1620."~~

17 ~~{15}-a-signed-and-dated-certification-from-the~~
18 ~~testing-entity-including-the-statement:--"I-certify-that-I~~
19 ~~represent-{INSERT-TESTING-ENTITY-NAME}-and-I-am-authorized-to~~
20 ~~report-the-testing-results-for-this-proprietary-product.--I~~
21 ~~attest,under-penalty-of-law,that-the-report-about-the-test~~
22 ~~protocol-and-results-is-true,accurate,and-complete."~~

23 ~~{16}-a-technology-review-fee-if-allowed-by-law.~~

24 ~~B.--Manufacturers-shall-submit-each-proprietary~~
25 ~~product-for-registration-to-the-commissioner.--Products-within-a~~
26 ~~single-series-or-model-line,sharing-distinct-similarities-in~~
27 ~~design,materials,and-capabilities,may-be-registered-under-a~~

1 single-application, consistent with their test protocols for the
2 certification of other products within a product series.
3 Products outside of the series or model line must be registered
4 under separate applications.

5 C.--Upon receipt of the application, the commissioner
6 shall, within 60 days:

7 (1) review the application and verify the
8 application for compliance with item A;

9 (2) if the application is not in compliance with
10 item A, return the application for resubmittal with the
11 requested information for full compliance with item A; and

12 (3) if the application is complete and the
13 commissioner determines that the product meets or exceeds all
14 applicable protocols, the commissioner shall place the product
15 on the list of registered treatment devices.

16 D.--Registrations are valid for up to three years,
17 expiring on December 31 of the third year of registration,
18 unless the product is recalled for any reason, found to be
19 defective, or no longer available.

20 E.--To renew technology registration, a manufacturer
21 shall:

22 (1) submit a request for renewal of product
23 registration at least 30 days before the current registration
24 expires, using the form or in the format prescribed by the
25 commissioner;

26 (2) submit the results of retesting if the
27 product has completed retesting according to the protocol

1 required-for-registration-and-a-report-from-the-testing-entity
2 has-been-issued-since-initial-registration-or-previous-renewal.
3 Renewal-must-be-based-on-the-most-recent-test-results; and
4 (3)-provide-an-affidavit-to-the-commissioner
5 verifying-whether-the-product-has-changed-over-the-previous
6 three-years.--If-the-product-has-changed, the-affidavit-must
7 include-a-full-description-of-the-changes.--If-the-product-has
8 changed-in-a-way-that-affects-performance, the-product-may-not
9 be-renewed-and-must-fulfill-the-requirements-for-initial
10 registration.

11 F.--As-part-of-the-product-registration-renewal, the
12 commissioner-shall:

13 (1)-request-field-assessment-comments-from-local
14 units-of-government-no-later-than-October-31-for-product
15 renewal.--The-comments-may-include-concerns-about-a-variety-of
16 field-assessment-issues, including-product-function, product
17 reliability, product-performance, and-problems-arising-from
18 operation-and-maintenance;

19 (2)-discuss-with-the-Technical-Advisory-Panel-of
20 the-ISTPS-Advisory-Committee-established-under-part-7080.1150-any
21 field-assessment-information-that-may-impact-product
22 registration-renewal;

23 (3)-notify-the-manufacturer-of-any-product-to-be
24 discussed-with-the-Technical-Advisory-Panel, prior-to-discussion
25 with-the-Technical-Advisory-Panel, regarding-the-nature-of
26 comments-received; and

27 (4)-renew-the-product-registration, unless-the

1 manufacturer-does-not-apply-for-renewal-or-the-commissioner,
 2 after-deliberation-with-the-Technical-Advisory-Panel, concludes
 3 product-registration-renewal-should-not-be-given-or-should-be
 4 delayed-until-the-manufacturer-submits-information-that
 5 satisfactorily-answers-concerns-and-questions.

6 G.--The-commissioner-shall-maintain-a-list-of
 7 proprietary-treatment-products-meeting-the-registration
 8 requirements-established-in-this-chapter.--The-product
 9 registration-is-a-condition-of-approval-for-use.

10 H.--Manufacturers-shall-have-readily-accessible
 11 information-for-designers, regulators, systems-owners, and-other
 12 interested-parties-about-their-product, including-but-not
 13 limited-to:

- 14 (1)-product-manuals;
 15 (2)-design-instructions;
 16 (3)-installation-instructions;
 17 (4)-information-regarding-operation-and
 18 maintenance;
 19 (5)-homeowner-instructions, and
 20 (6)-a-list-of-representatives-and
 21 manufacturer-certified-service-providers, if-any.

22 7080.1630-TRANSITION-FROM-PREVIOUS-REQUIREMENTS-FOR-AEROBIC-TANK
 23 TREATMENT-SYSTEMS-AND-OTHER-TREATMENT-SYSTEMS-TO-NEW-REGISTERED
 24 LIST.

25 A.--The-use-of-aerobic-tank-treatment-systems-as
 26 specified-in-Minnesota-Rules-2005, chapter-7080, and-other
 27 advanced-treatment-technologies-may-be-used-for-18-months-after

1 ~~the effective date of this chapter.~~

2 ~~B.--After 18 months after the effective date of this~~
3 ~~chapter, only those products registered under this chapter may~~
4 ~~be used as directed in registration guidance documents.~~

5 ~~C.--To be registered, manufacturers of aerobic tank~~
6 ~~treatment systems shall apply for product registration.--Aerobic~~
7 ~~tank treatment systems must meet all other requirements~~
8 ~~established in this chapter for registration.~~

9 ~~D.--Manufacturers of aerobic tank treatment system~~
10 ~~products shall meet all other requirements established in this~~
11 ~~chapter for product registration.~~

12 ~~7080.1635-BACTERIOLOGICAL-REDUCTION.~~

13 ~~Subpart 1.--Scope.--This part establishes the requirements~~
14 ~~for registering bacteriological reduction processes.~~

15 ~~Subp. 2.--Verification.--Manufacturers shall, for the~~
16 ~~purpose of product registration as described in parts 7080.1605~~
17 ~~to 7080.1625 for meeting treatment level A or B, verify~~
18 ~~bacteriological reduction performance by sampling and testing~~
19 ~~for fecal coliform.~~

20 ~~Subp. 3.--Testing process.--All test data submitted for~~
21 ~~product registration must be produced by a qualified,~~
22 ~~third-party testing organization.--Bacteriological reduction~~
23 ~~performance requirements must be determined while the treatment~~
24 ~~product or sequence is tested according to the NSF Standard-40~~
25 ~~testing protocol, or other equivalent commissioner approved~~
26 ~~testing protocol.--The tester must:~~

27 ~~A.--collect samples from both the influent and~~

1 effluent-streams-and-identify-the-treatment-performance-achieved
2 by-the-full-treatment-process, component, or sequence;

3 B.--obtain-influent-characteristics-within-the-range
4 of 10^6 --- 10^8 -fecal-coliform/100-mL-calculated-as-30-day
5 geometric-means-during-the-test;

6 C.--test-the-influent-to-any-disinfection-unit-and
7 report-flow-rate, pH, temperature, and-turbidity-at-each
8 occasion-of-sampling-performed-in-item-D;

9 D.--obtain-samples-for-fecal-coliform-analysis-during
10 both-design-loading-and-stress-loading-periods, as-follows:

11 (1)-grab-samples-shall-be-collected-and-analyzed
12 from-both-the-influent-and-effluent-on-three-separate-days-of
13 the-week, and

14 (2)-each-set-of-influent-and-effluent-grab
15 samples-must-be-taken-from-a-different-dosing-time-frame
16 (morning, afternoon, or-evening)-so-that-samples-have-been-taken
17 from-each-dosing-time-frame-by-the-end-of-the-week;

18 E.--conduct-analyses-for-fecal-coliform-according-to
19 Standard-Methods-for-the-Examination-of-Water-and-Wastewater,
20 prepared-and-published-jointly-by-the-American-Public-Health
21 Association, American-Water-Works-Association, and-Water
22 Environment-Federation-(1998).--The-standard-methods-are
23 incorporated-by-reference, are-available-through-the-Minitex
24 interlibrary-loan-system, and-are-subject-to-frequent-change;

25 F.--report-the-geometric-mean-of-fecal-coliform-test
26 results-from-all-samples-taken-within-30-day-or-monthly-calendar
27 periods;

1 G.--report-the-individual-results-of-all-samples-taken
2 throughout-the-test-period-for-design-loading-and-stress
3 loading;-and

4 H.--report-all-maintenance-and-servicing-conducted
5 during-the-testing-period;-such-as-instances-of-cleaning-an
6 ultraviolet-lamp-or-replenishment-of-chlorine-chemicals;

7 Subp.-4.--Disinfection.--Manufacturers-may-register
8 products-that-use-disinfection-in-treatment-levels-A-and-B-or
9 products-that-use-disinfection-may-be-registered-by
10 manufacturers-as-a-component-of-the-process-in-treatment-level-A
11 or-B.

12 7080.1640-DISTRIBUTION-MEDIUM;-CERTIFICATION-AND-REGISTRATION-

13 A.--If-drainfield-rock-is-to-be-used-as-the
14 distribution-medium;-it-must:

15 (1)-be-insoluble;-durable-rock;

16 (2)-be-between-three-fourths-inch-and-2-1/2
17 inches-in-size;

18 (3)-have-no-more-than-five-percent-by-weight-able
19 to-pass-through-a-three-fourths-inch-sieve;

20 (4)-have-no-more-than-one-percent-by-weight-able
21 to-pass-through-a-No.-200-sieve;-and

22 (5)-have-no-more-than-five-percent-by-weight-of
23 materials-greater-than-2-1/2-inches-in-size.

24 B.--For-nonrock-distribution-media;-manufacturers
25 shall-register-the-distribution-media;-including-gravelless
26 distribution-media-and-subsurface-drip-dispersal-products;-with
27 the-commissioner-before-the-local-unit-of-government-may-permit

1 their-use.

2 C.--Manufacturers-desiring-to-sell-distribution-media
3 shall-certify-that-the-media-meet-the-standards-established-in
4 this-part-and-register-the-media-with-the-commissioner-using-the
5 process-in-part-7080.1645.

6 D.--Distribution-media-must:

7 (1)-be-constructed-or-manufactured-from-materials
8 that-are-nondecaying-and-nondeteriorating-and-do-not-leach
9 chemicals-when-exposed-to-sewage-and-the-subsurface-soil
10 environment;

11 (2)-provide-liquid-storage-volume-at-least-equal
12 to-the-storage-volume-provided-within-the-30-percent-void-space
13 in-a-12-inch-layer-of-drainfield-rock-in-a
14 drainfield-rock-filled-distribution-system.--The-storage-volume
15 must-be-established-by-the-distribution-medium, system-design,
16 and-installation-and-must-be-maintained-for-the-life-of-the
17 system.--This-requirement-may-be-met-on-a-linear-foot-basis-or
18 on-an-overall-system-design-basis;

19 (3)-provide-suitable-effluent-distribution-and
20 infiltration-rate-to-the-absorption-area-at-the-soil-interface;
21 and

22 (4)-maintain-the-integrity-of-the-trench-or-bed.
23 The-material-used, by-its-nature-and-manufacturer-prescribed
24 installation-procedure, must-withstand-the-physical-forces-of
25 the-soil-sidewalls, soil-backfill, and-weight-of-equipment-used
26 in-the-backfilling.

27 E.--Subsurface-drip-dispersal-products-must:

1 ~~(1)-be-warrantied-by-the-manufacturer-for-use~~
2 ~~with-sewage-and-for-resistance-to-root-intrusion;~~

3 ~~(2)-incorporate-emitters-with-a-maximum-nominal~~
4 ~~rated-discharge-of-1.3-gallons-per-hour.--Emitter-discharge-rate~~
5 ~~may-be-controlled-by-use-of-pressure-compensating-emitters-or~~
6 ~~with-a-pressure-regulator;-and~~

7 ~~(3)-be-color-coded-purple-to-identify-that-the~~
8 ~~pipe-contains-nonpotable-water-from-a-sewage-source.~~

9 ~~7080.1645-PROPRIETARY-DISTRIBUTION-PRODUCTS;-PROCESS-AND~~
10 ~~REQUIREMENTS.~~

11 ~~Subpart 1.--Proprietary-media.--Manufacturers-shall-obtain~~
12 ~~registration-of-their-proprietary-media-with-the-commissioner-by~~
13 ~~submitting-a-complete-application-in-the-format-prescribed-by~~
14 ~~the-commissioner;-including:~~

15 ~~A.--the-manufacturer's-name;-mailing-address;-street~~
16 ~~address;-and-telephone-number;~~

17 ~~B.--the-contact-individual's-name;-title;-mailing~~
18 ~~address;-street-address;-and-telephone-number.--The-contact~~
19 ~~individual-must-be-vested-with-the-authority-to-represent-the~~
20 ~~manufacturer-in-this-capacity;~~

21 ~~C.--the-name;-including-specific-brand-and-model;-of~~
22 ~~the-proprietary-distribution-product;~~

23 ~~D.--a-description-of-the-function-of-the-distribution~~
24 ~~medium-along-with-any-known-limitations-on-its-use;~~

25 ~~E.--a-description-of-the-medium-and-technical~~
26 ~~information;-including-schematics;-materials-and~~
27 ~~characteristics;-component-design-specifications;-design~~

1 capacity; volumes and flow assumptions and calculations;
 2 components; and dimensioned drawings; photos; application; and
 3 use;

4 F.---siting and installation requirements;

5 G.---a detailed description; procedure; and schedule of
 6 routine service and system maintenance events;

7 H.---identification of information requested to be
 8 protected from disclosure of trade secrets;

9 I.---copies of product brochures and manuals; such as
 10 sales; promotional; design; installation; operation; and
 11 maintenance materials and homeowner instructions;

12 J.---a quantitative description of the actual exposed
 13 trench bottom and sidewall absorption area or sizing criteria
 14 for drip dispersal systems for each model seeking registration;

15 K.---all available product testing results; including a
 16 listing of state approvals and denials;

17 L.---a statement from a licensed professional engineer
 18 that certifies the technology meets the standards established in
 19 part 7080.1640;

20 M.---a signed and dated certification by the
 21 manufacturer's senior executive or agent; specifically including
 22 the following statement:--"I certify that I represent (INSERT
 23 MANUFACTURING COMPANY HERE) and I am authorized to prepare or
 24 direct the preparation of this application for registration.--I
 25 attest, under penalty of law, that this document and all
 26 attachments are true, accurate, and complete.;"

27 N.---a signed and dated certification from the licensed

1 professional-engineer-including-the-statement:--"I-certify-that
 2 I-represent-(INSERT-PROFESSIONAL-ENGINEERING-FIRM-NAME)-and-that
 3 I-am-authorized-to-certify-the-performance-for-the-proprietary
 4 distribution-product-presented-in-this-application.--I-attest,
 5 under-penalty-of-law,that-the-technology-report-is-true,
 6 accurate, and-complete."; and

7 0.--a-technology-review-fee-if-allowed-by-law.

8 Subp.-2.--Proprietary-media-products.--Manufacturers-shall
 9 submit-proprietary-media-products-for-registration-to-the
 10 commissioner.--Products-within-a-single-series-or-model-line
 11 sharing-distinct-similarities-in-design,materials, and
 12 capabilities-may-be-registered-under-a-single-application.
 13 Products-outside-of-the-series-or-model-line-must-be-registered
 14 under-separate-applications.

15 Subp.-3.--Commissioner-review.--Upon-receipt-of-the
 16 application, the-commissioner-shall:

17 A.--review-the-application-and-verify-the-application
 18 for-compliance-with-subpart-1;

19 B.--if-the-application-is-not-in-compliance-with
 20 subpart-1, return-the-application-for-resubmittal-with-the
 21 requested-information-for-full-compliance-with-subpart-1, or

22 C.--if-the-application-is-complete-and-the
 23 commissioner-determines-that-the-product-meets-or-exceeds-all
 24 applicable-protocols, the-commissioner-shall-place-the-product
 25 on-the-list-of-distribution-products.

26 Subp.-4.--Duration-of-registration.--Registrations-are
 27 valid-for-up-to-three-years, expiring-on-December-31-of-the

1 third-year-of-registration, unless the product is recalled for
2 any reason, found to be defective, or no longer available.

3 Subp. 5. -- Renewal. -- To renew a proprietary distribution
4 product registration, a manufacturer shall:

5 A. -- submit a request for renewal of product
6 registration at least 30 days before the current registration
7 expires, using the form or in the format prescribed by the
8 commissioner; and

9 B. -- provide an affidavit to the commissioner verifying
10 whether the product has changed over the previous three years.
11 If the product has changed, the affidavit must include a full
12 description of the changes. -- If the product has changed in a way
13 that affects performance, the product may not be renewed and
14 must fulfill the requirements for initial registration.

15 Subp. 6. -- Commissioner review. -- As part of the product
16 registration renewal, the commissioner shall:

17 A. -- request field assessment comments from local units
18 of government no later than October 31 for product renewal. -- The
19 comments may include concerns about a variety of field
20 assessment issues, including product function, product
21 reliability, and problems arising from operation and
22 maintenance;

23 B. -- discuss with the Technical Advisory Panel of the
24 ISTS Advisory Committee established under part 7080.1150 any
25 field assessment information that may impact product
26 registration renewal;

27 C. -- notify the manufacturer of any product to be

1 ~~discussed with the Technical Advisory Panel, prior to discussion~~
2 ~~with the panel, regarding the nature of comments received, and~~
3 ~~D.--renew, modify, or deny the product registration~~
4 ~~based on information received during the renewal process.--If~~
5 ~~the manufacturer does not apply for renewal or the commissioner,~~
6 ~~after deliberation with the Technical Advisory Panel, concludes~~
7 ~~product registration renewal should not be given or should be~~
8 ~~delayed until the manufacturer submits information that~~
9 ~~satisfactorily answers concerns and questions, product~~
10 ~~registration shall be denied.~~

11 ~~Subp. 7.--List.--The commissioner shall maintain a list of~~
12 ~~proprietary distribution products meeting the registration~~
13 ~~requirements established in this part.--The product registration~~
14 ~~is a condition of approval for use.~~

15 ~~Subp. 8.--Manufacturer information.--Manufacturers shall~~
16 ~~have readily accessible information for designers, regulators,~~
17 ~~system owners, and other interested parties about their product,~~
18 ~~including but not limited to:~~

19 ~~A.--product manuals;~~

20 ~~B.--design instructions;~~

21 ~~C.--installation instructions;~~

22 ~~D.--information regarding operation and maintenance;~~

23 ~~E.--system owner instructions; and~~

24 ~~F.--a list of representatives and~~

25 ~~manufacturer-certified service providers, if any.~~

26 ~~7080.1650 TRANSITION FROM PREVIOUS REQUIREMENTS FOR DISTRIBUTION~~
27 ~~PRODUCTS TO NEW REGISTERED LIST.~~

1 A.--The distribution products specified in Minnesota
2 Rules 2005, chapter 7080, may be used 18 months after the
3 effective date of this chapter.

4 B.--After 18 months after the effective date of this
5 chapter, only those products registered under this chapter may
6 be used as directed in registration guidance documents.

7 C.--To be registered, manufacturers of proprietary
8 distribution products shall apply for product registration.

9 D.--Distribution products shall meet all other
10 requirements for registration established in this chapter.

11 7080.1655-PRODUCT DEVELOPMENT PERMITS.

12 Subpart 1.--Local government may issue.--A local unit of
13 government may issue a product development permit (PDP) for any
14 proprietary treatment component or sequence.--To protect public
15 health during the development period, a PDP may be applied to a
16 Type I, Type II, or Type III system, as described under parts
17 7080.2200 to 7080.2300.--A PDP may also be applied to a Type IV
18 system, as described under part 7080.2350, if treatment levels
19 of the technologies meet or exceed requirements in the operating
20 permit.--The product under development may then be added to the
21 treatment system allowing the product developer to gather data
22 about the product's performance in the field.--The PDP allows
23 product developers to explore and develop new technologies prior
24 to product testing and registration under parts 7080.1605 to
25 7080.1625.--The PDP is not an alternative to testing and
26 registration.

27 Subp. 2.--Application contents.--An application for a PDP

1 must-include:

2 A.--proof-of-an-existing-conforming-system-in
3 compliance-with-all-local-requirements-or-a-permit-for-a
4 conforming-system.--The-conforming-system-must-be-installed-in
5 its-entirety-before-the-PDP-becomes-valid;

6 B.--a-description-of-the-product-under-development,
7 including-performance-goals-and-a-description-of-how-the-system
8 will-be-used-to-treat-sewage;

9 C.--documentation-of-financial-assurance-that-will
10 cover-the-correction-of-any-potential-public-health-threats-or
11 environmental-damage-resulting-from-the-use-of-the-product-under
12 development.--Instruments-of-financial-assurance-include:--an
13 irrevocable-letter-of-credit-in-the-amount-required-by-the-local
14 unit-of-government-issued-by-an-entity-authorized-to-issue
15 letters-of-credit-in-Minnesota;-cash-or-a-security-deposit
16 payable-to-the-local-unit-of-government-in-the-amount-required
17 by-the-local-unit-of-government;-or-any-other-financial
18 assurance-that-satisfies-the-local-unit-of-government;

19 D.--documentation-signed-by-the-owner-of-the-proposed
20 product-development-site-allowing-access-to-the-local-unit-of
21 government-and-the-agency-and-its-employees-or-agents-for
22 inspection-of-the-site;

23 E.--an-agreement-to-obtain-all-other-required-permits;

24 F.--a-declaration-that-the-applicant-meets-all-state
25 requirements;-and

26 G.--other-information-required-by-the-local-unit-of
27 government.

1 Subp.-3.--Additional-requirements-

2 A.--The-local-unit-of-government-may-stipulate
3 additional-requirements-for-a-PDP-necessary-to-ensure-the
4 performance-of-the-conforming-system,-including,-but-not-limited
5 to,-providing-performance-data-to-the-local-unit-of-government-

6 B.--The-system-owner-shall-consent-in-writing-to-allow
7 the-manufacturer-access-to-the-system-for-the-duration-of-the
8 permit-

9 C.--The-product-tester-shall-agree-in-writing-to
10 contact-utility-companies-before-excavation-

11 D.--The-manufacturer-and-product-tester-shall-agree-in
12 writing-to-hold-harmless,-indemnify,-and-defend-the-agency-and
13 local-unit-of-government-from-any-conduct-by-the-manufacturer-or
14 product-tester-that-causes-harm-or-injury-to-the-site-owner's
15 property-and-indemnifies-the-agency-and-local-unit-of-government
16 from-such-claims-

17 Subp.-4.--PDP-required-for-each-site.--A-PDP-is-a
18 site-specific-permit.--Product-development-at-multiple-sites
19 requires-a-PDP-for-each-site-

20 Subp.-5.--Product-developer-has-control.--During-the-term
21 of-the-PDP,-product-development,-testing,-and-sampling-are-under
22 the-full-control-of-the-product-developer-and-all-data-collected
23 is-considered-proprietary-information-

24 Subp.-6.--PDP-duration.--A-PDP-is-valid-for-one-year-and
25 may-be-renewed-by-the-local-unit-of-government-

26 Subp.-7.--End-of-PDP-period.--The-product-development
27 period-is-over-when-the-original-PDP-or-any-subsequently-renewed

1 permits-have-expired.--At-that-time,--the-product-developer
2 shall,--at-the-direction-of-the-local-unit-of-government,--remove
3 the-product-under-development-from-the-site,--restore-the-real
4 property-to-its-original-condition,--and-reestablish-all
5 appropriate-plumbing-and-power-connections-for-the-conforming
6 system.--The-developer-may-also-subject-the-product-to
7 performance-testing-described-in-parts-7080.1600,--subpart-2,--and
8 7080.1645,--subpart-1,--to-allow-the-product-to-be-eligible-for
9 product-registration-with-the-agency.

10 Subp.-8.--Revocation-or-amendment-of-PDP.--The-local-unit
11 of-government-may-revoke-or-amend-a-PDP:

12 A.--if-the-continued-operation-or-presence-of-the
13 product-under-development-presents-a-risk-to-the-public-health
14 or-the-environment,--causes-adverse-effects-on-the-proper
15 function-of-the-conforming-system-on-the-site,--or-leaks-or
16 discharges-sewage-on-the-surface-of-the-ground;

17 B.--if-the-product-developer-fails-to-comply-with-any
18 requirement-stipulated-on-the-permit-by-the-local-unit-of
19 government,--or

20 C.--upon-request-of-the-site-owner.

21 Subp.-9.--Fees.--The-local-unit-of-government-may-charge
22 fees-adequate-to-administer-the-PDP-program.

23 7080.1660-PRODUCT-REGISTRATION-CONTESTED-CASE-HEARING.

24 A-person-is-afforded-an-opportunity-for-a-contested-case
25 hearing-under-Minnesota-Statutes,--chapter-14,--for-an-approval,
26 denial,--or-other-action-in-relation-to-product-registration-or
27 renewal,--within-30-days-of-the-action.

1 7080.1670 ~~PROFESSIONAL~~ REQUIREMENTS TO CONDUCT WORK.

2 Systems must be designed, installed, inspected, operated,
3 and maintained by appropriately licensed businesses and
4 certified ~~professionals~~ individuals according to part 7083.0700,
5 as published in the State Register, volume 31, page 1089, and as
6 subsequently adopted, and any other applicable state
7 requirements.

8 7080.1700 DESIGN PHASE I; SITE EVALUATION.

9 Site evaluations consisting of preliminary and field
10 evaluations according to parts 7080.1710 and 7080.1720 must be
11 conducted for all proposed sites for ISTS. The site evaluation
12 is considered the first phase of an ISTS design.

13 7080.1710 PRELIMINARY EVALUATION.

14 A preliminary evaluation shall consist of the
15 determination, location, or existence of the following items:

16 A. design flow amounts for the dwelling, or dwellings
17 , or other establishments;

18 B. proposed or existing:

19 (1) water supply wells within 100 feet of the
20 proposed ISTS;

21 (2) noncommunity transient public water supply
22 wells within 200 feet of the proposed ISTS if alternative local
23 standards are in effect;

24 (3) a community or noncommunity nontransient
25 water supply in a drinking water supply management area if
26 alternative local standards are in effect;

1 (4) existing and proposed buildings or
2 improvements on the lot; and

3 (5) buried water supply pipes within 50 feet of
4 the proposed system;

5 C. easements on the lot;

6 D. the ordinary high water level of public waters, if
7 adjacent to the lot;

8 E. floodplain designation and flooding elevation from
9 published data or data that is acceptable to and approved by the
10 local unit of government or the Department of Natural Resources,
11 if applicable;

12 F. property lines;

13 G. all required setbacks from the system;

14 H. ~~determination-of~~ the soil characteristics at the
15 proposed soil treatment and dispersal areas as obtained from the
16 soil survey report, if available, including the soil map, map
17 units, landscape position, parent material, flooding potential,
18 slope range, periodically saturated soil level, depth to
19 bedrock, texture, color, depth to redoximorphic features, and
20 structure and consistence of soil horizons;

21 I. a ~~legal-description~~ township, range, and section
22 number and other unique property identifiers as required by
23 local government and lot dimensions;

24 J. names of property owners; and

25 K. the inner wellhead management zone or wellhead
26 protection area of a public water supply; and, if applicable

27 ~~E--a-determination-of-whether-a-wetland-delineation~~

1 ~~has-been-conducted-or-whether-a-regulatory-body-will-require-a~~
2 ~~wetland-delineation-to-be-conducted-on-the-lot.~~

3 7080.1720 FIELD EVALUATION.

4 Subpart 1. **Scope.** A field evaluation consists of the
5 items described in subparts 2 to 7.

6 Subp. 2. **Lot lines.** Lot lines shall be established to the
7 satisfaction of the property owner or the property owner's
8 agent. Lot improvements, required setbacks, and easements must
9 be identified.

10 Subp. 3. **Surface features.** The following surface features
11 must be described:

12 A. the percent and direction of the slope at the
13 proposed system location;

14 B. vegetation types;

15 C. any evidence of cut or filled areas or disturbed
16 or compacted soil;

17 D. the flooding or run-on potential; and

18 E. a geomorphic description.

19 Subp. 4. **Soil observations.** ~~Multiple~~ A minimum of three
20 soil observations are required for the initial and replacement
21 soil treatment area and at least one soil observation must be
22 performed in the portion of the soil treatment area anticipated
23 to have the most limiting conditions. The total number of soil
24 observations required is based on the judgment of the certified
25 individual or the local unit of government. Soil observations
26 must comply with the following requirements:

27 A. the soil observations must be conducted within or

1 on the borders of the proposed site;

2 B. the soil observations must be performed in an
3 exposed pit or by hand augering or probing. The use of flight
4 augers is not allowed;

5 C. the soil observation method must allow observation
6 of the different soil horizons that constitute the soil profile
7 and, if determining the loading rate by part 7080.2150, subpart
8 3, item E, Table IX, must allow-the-observation-of-undisturbed
9 soil-structure be observed by a soil pit;

10 D. underground utilities must be located before soil
11 observations are undertaken;

12 E. required safety precautions must be taken before
13 entering soil pits;

14 F. soil observations must be conducted prior to any
15 required percolation tests to determine whether the soils are
16 suitable to warrant percolation tests and, if suitable, at what
17 depth percolation tests shall be conducted; and

18 G. the minimum depth of the soil observations must be
19 to the ~~seasonally~~ periodically saturated layer, to the bedrock,
20 or three feet below the proposed depth of the system, whichever
21 is less.

22 Subp. 5. **Soil descriptions.** Each soil profile observed at
23 the proposed soil treatment area must be evaluated under
24 adequate light conditions with the soil in a moist unfrozen
25 state for the characteristics in items A to H:

26 A. the depth of each soil horizon measured from the
27 ground surface. Soil horizons are differentiated by changes in

1 texture, color, redoximorphic features, bedrock, structure,
2 consistence, and any other characteristic that ~~may-affect~~
3 affects water movement or treatment of effluent;

4 B. a description of all soil colors for each horizon
5 according to the Munsell Soil Color Charts, Revised Edition,
6 Munsell Color Corporation (1992), or equivalent. The color
7 charts are incorporated by reference, are available through the
8 Minitex interlibrary loan system, and are not subject to
9 frequent change;

10 C. a description of the soil texture, structure, and
11 consistence using the United States Department of Agriculture
12 (USDA) soil classification system as specified in the Field Book
13 for Describing and Sampling Soils, which is incorporated by
14 reference under part 7080.1100, subpart ~~40~~ 36;

15 D. depth to the bedrock;

16 E. depth to the ~~seasonally~~ periodically saturated
17 soil for new construction or replacement as determined by
18 redoximorphic features and other indicators, as determined in
19 subitems (1) to (3):

20 (1) in subsoil and parent material, redoximorphic
21 features include:

22 (a) distinct redoximorphic iron
23 accumulations or distinct redoximorphic iron depletions;

24 (b) a gleyed or depleted soil matrix or
25 redoximorphic mottles having a color chroma of two or less or a
26 depleted matrix or redoximorphic mottles having a color hue of
27 5Y and a chroma of three or less; or

1 (c) faint redoximorphic concentrations or
2 faint redoximorphic depletions in subsoil or parent material
3 with a hue of 7.5YR or redder;

4 (2) in lower topsoil layers that are deeper than
5 12 inches from the surface and are immediately followed in depth
6 by a ~~seasonally~~ periodically saturated horizon, redoximorphic
7 features include:

8 (a) soil colors with a redoximorphic chroma
9 of two or less; or

10 (b) redoximorphic accumulations or
11 depletions;

12 (3) in the upper 12 inches of the topsoil layer
13 immediately followed by a ~~seasonally~~ periodically saturated
14 horizon, the depth of seasonal saturation ~~may-be~~ is determined
15 by indicators in units (a) to (e):

16 (a) soil colors with a chroma of zero;

17 (b) organic soil textures or mineral soil
18 textures with an organic modifier;

19 (c) dominance of ~~hydrophilic~~ hydrophytic
20 vegetation;

21 (d) the soil treatment area at or near the
22 elevation of the ordinary high water level of a surface water or
23 ~~the-soil-treatment-area~~ in a ~~depressional-landscape~~
24 ~~position~~ concave hill slope position; or

25 (e) the soil expressing indicators of
26 seasonal saturation as determined in Field Indicators of Hydric
27 Soils in the United States: A Guide for Identifying and

1 Delineating Hydric Soils, USDA Natural Resource Conservation
 2 Service (2003 2006). The field indicators are incorporated by
 3 reference, are available through the Minitex interlibrary loan
 4 system, and are subject to frequent change;

5 F. depth to the ~~seasonally~~ periodically saturated
 6 soil for all existing systems, determined by redoximorphic
 7 features in item E, except subitems (2), unit (a), and (3),
 8 units (a), (c), and (d), as measured outside the area of system
 9 influence in an area of similar soil;

10 G. depth of standing water in the soil observation
 11 excavation, measured from the soil surface, if observed; and

12 H. any other soil characteristic that ~~may-need~~ needs
 13 to be described to ~~properly~~ design a system, such as hardpans or
 14 restrictive layers. These other characteristics must be
 15 classified according to the Field Book for Describing and
 16 Sampling Soils, which is incorporated by reference under part
 17 7080.1100, subpart ~~40~~ 36.

18 Subp. 6. ~~Percolation-tests~~ Determination of loading rate
 19 and absorption area size. Percolation-tests, when desired or
 20 required to supplement the soil texture, structure, and
 21 consistence determination, must be made as The effluent loading
 22 and absorption area size must be determined by either item A or
 23 B as required by the local unit of government:

24 A. the loading rate based on an examination of soil
 25 texture, structure, and consistence in soil pits using the
 26 United States Department of Agriculture (USDA) soil
 27 classification system as specified in the Field Book for

1 Describing and Sampling Soils, which is incorporated by
2 reference under part 7080.1100, subpart 36; or

3 B. the loading rate based on the percolation
4 procedure described in items-A-to-H. subitems (1) to (8) or
5 other equivalent procedure as approved by the local unit of
6 government:

7 A. (1) each test hole must be six to eight inches
8 in diameter, have vertical sides, and be located in the soil
9 treatment absorption area. For mounds and at-grade systems, the
10 bottom of each test hole must be in the upper 12 inches of the
11 original soil. For trenches and seepage beds, the bottom of
12 each test hole shall be at the depth of the absorption area;

13 B. (2) soil texture descriptions for percolation
14 test holes must note the depths from the ground surface where
15 texture changes occur;

16 C. (3) the bottom and sides of the hole must be
17 carefully scratched to remove any smearing and to provide a
18 natural soil surface into which water ~~may-penetrate~~ penetrates.
19 The scarification must not result in the hole having a diameter
20 of greater than eight inches;

21 D. (4) all loose material must be removed from
22 the bottom of the test hole and two inches of one-fourth to
23 three-fourths inch gravel or clean sand must be added to protect
24 the bottom from scouring;

25 E. (5) the hole must be carefully filled with
26 clear water to a minimum depth of 12 inches from the bottom of
27 the test hole and maintained for no less than four hours for

1 saturation to occur. The soil must then be allowed to swell for
2 at least 16, but no more than 30, hours. In sandy soils, the
3 saturation and swelling procedure is not required and the
4 test may is allowed to proceed if the initial filling of the
5 hole with 12 inches of water seeps away in less than ten
6 minutes;

7 F- (6) in sandy soils, water depth must be
8 adjusted to eight inches over the soil at the bottom of the test
9 hole. From a fixed reference point, the drop in water level
10 must be measured in inches to the nearest 1/16 inch at
11 approximately ten-minute intervals. A measurement may is also
12 allowed to be made by determining the time it takes for the
13 water level to drop one inch from an eight-inch reference
14 point. If eight inches of water seeps away in less than ten
15 minutes, a shorter interval between measurements must be used,
16 but water depth must not exceed eight inches. The test must
17 continue until three consecutive percolation rate measurements
18 do not vary by more than ten percent. In other soils, the water
19 depth must be adjusted to eight inches over the soil at the
20 bottom of the test hole. From a fixed reference point, the drop
21 in water level must be measured in inches to the nearest 1/16
22 inch at approximately 30-minute intervals and refilled between
23 measurements to maintain an eight-inch starting head. If water
24 seeps away in less than 30 minutes, a shorter time interval
25 between measurements must be used, but water depth must not
26 exceed eight inches. The test must continue until three
27 consecutive percolation rate measurements do not vary by more

1 than ten percent. The percolation rate ~~may~~ is also allowed to
2 be determined by observing the time it takes the water level to
3 drop one inch from an eight-inch reference point if a constant
4 water depth of at least eight inches has been maintained for at
5 least four hours prior to the measurement;

6 ~~G.~~ (7) the time interval must be divided in
7 minutes by the drop in water level in inches to obtain the
8 percolation rate in minutes per inch. The percolation rates
9 that are within the ten percent provision determined for each
10 test hole must be averaged to determine the final percolation
11 rate for that hole. The slowest final percolation rate for all
12 holes within the soil ~~treatment-and~~ dispersal area must be used
13 for design; and

14 ~~H.~~ (8) a percolation test must not be run where
15 frost exists within 12 inches of the bottom of the percolation
16 test hole.

17 Subp. 7. **Site protection.** The proposed soil treatment and
18 dispersal area site shall be protected from disturbance,
19 compaction, or other damage by staking, fencing, posting, or
20 other effective method.

21 7080.1730 PHASE I; SITE EVALUATION REPORTING.

22 A written report on the site evaluation must be prepared
23 and include the following:

24 A. preliminary and field evaluation results from
25 parts 7080.1710 and 7080.1720;

26 B. dates of preliminary and field evaluations;

27 C. a map drawn to scale or dimension with a north

1 arrow, and including:

2 (1) horizontal and vertical reference points of
 3 the proposed soil treatment and dispersal areas, soil
 4 observations, percolation tests, and pertinent distance from the
 5 proposed ISTS to all required setbacks, lot improvements,
 6 easements, ordinary high water mark of public waters, property
 7 lines, and direction and percent slope;

8 (2) the location of any unsuitable, disturbed, or
 9 compacted areas; and

10 (3) the access route for system maintenance;

11 D. the estimated depth of ~~seasonally~~ periodically
 12 saturated soil layer, bedrock, or flood elevation, if
 13 appropriate;

14 E. the proposed elevation of the bottom of the soil
 15 treatment and dispersal system;

16 ~~F. the final soil sizing factor. If there is a~~
 17 ~~discrepancy between the soil texture, structure, and consistence~~
 18 ~~determination and any percolation rates measured in Table IX in~~
 19 ~~part 7080.2150, subpart 3, item F, the larger soil sizing factor~~
 20 ~~must be used or a justification for a smaller sizing must be~~
 21 ~~submitted in the design report. Soil sizing determined using~~
 22 ~~soil texture, structure, and consistence must be based on an~~
 23 ~~undisturbed soil sample from which an evaluation of the soil~~
 24 ~~structure and consistence can be made;~~

25 G F. anticipated construction-related issues;

26 H G. the name, address, telephone number, and
 27 certified statement of the individual conducting the site

1 evaluation;

2 ‡ H. an assessment of how known or reasonably
3 foreseeable land use changes may are expected to affect system
4 performance, including, but not limited to, changes in drainage
5 patterns, increased impervious surfaces, and proximity of new
6 water supply wells;

7 ‡ I. a narrative explaining any difficulties
8 encountered during the site evaluation, including but not
9 limited to identifying and interpreting soil and landform
10 features and how the difficulties were resolved; and

11 ‡ J. ~~an explanation~~ a notation of any differences
12 between observed soil characteristics and those identified in
13 the soil survey report.

14 7080.1750 DESIGN PHASE II.

15 Subpart 1. **System design.** Completion of tasks outlined in
16 parts 7080.1850 to 7080.2430 is considered the second phase of
17 ISTS design.

18 Subp. 2. **Compliance.** Designs for new construction or
19 replacement ISTS must comply with applicable requirements and
20 any other applicable codes, rules, and laws.

21 7080.1850 SEWAGE FLOW DETERMINATION FOR DWELLINGS.

22 Subpart 1. **System sizing.** If construction of additional
23 dwellings or bedrooms, the installation of water-using devices,
24 or other factors likely to affect the operation of the ISTS can
25 be reasonably anticipated, the system must be designed to
26 accommodate these factors.

1 Subp. 2. Design flow. ~~Average-daily-flow-must-be-used-to~~
 2 ~~size-soil-treatment-and-dispersal-systems.~~ The estimated
 3 ~~average-daily~~ design flow for any dwelling must provide for at
 4 least two bedrooms. For multiple or multifamily dwellings, the
 5 average design flow consists of the sum of the ~~average-daily~~
 6 design flows for each individual unit.

7 7080.1860 ~~AVERAGE-DAILY~~ DESIGN FLOW (GALLONS PER DAY).

8 TABLE IV

9 10 11 12 13 14	Number of bedrooms	Classification of dwelling			
		I	II	III	IV
15 16 17 18 19 20					
Gallons per day					
15	2 or less	300	225	180	*
16	3	450	300	218	*
17	4	600	375	256	*
18	5	750	450	294	*
19	6	900	525	332	*

21 * Flows for Classification IV dwellings are 60 percent of the
 22 values as determined for Classification I, II, or III systems.
 23 For more than six bedrooms, the ~~average-daily~~ design flow is
 24 determined by the following formulas:

25 Classification I: Classification I dwellings are those
 26 with more than 800 square feet per bedroom, when the dwelling's
 27 total finished floor area is divided by the number of bedrooms,
 28 or where more than two of the following water-use appliances are
 29 installed or anticipated: clothes washing machine, dishwasher,
 30 water conditioning unit, bathtub greater than 40 gallons,
 31 garbage disposal, or self-cleaning humidifier in furnace. The
 32 ~~average-daily~~ design flow for Classification I dwellings is
 33 determined by multiplying 150 gallons by the number of bedrooms.

1 Classification II: Classification II dwellings are those
2 with 500 to 800 square feet per bedroom, when the dwelling's
3 total finished floor area is divided by the number of bedrooms,
4 and where no more than two of the water-use appliances listed in
5 Classification I are installed or anticipated. The average
6 ~~daily~~ design flow for Classification II dwellings is determined
7 by adding one to the number of bedrooms and multiplying this
8 result by 75 gallons.

9 Classification III: Classification III dwellings are those
10 with less than 500 square feet per bedroom, when the dwelling's
11 total finished floor area is divided by the number of bedrooms,
12 and where no more than two of the water-use appliances listed in
13 Classification I are installed or anticipated. The average
14 ~~daily~~ design flow for Classification III dwellings is determined
15 by adding one to the number of bedrooms, multiplying this result
16 by 38 gallons, then adding 66 gallons.

17 Classification IV: Classification IV dwellings are
18 dwellings designed under part 7080.2240.

19 7080.1880 SEWAGE FLOW DETERMINATION FOR OTHER ESTABLISHMENTS.

20 Average-daily Design sewage flow and waste concentration
21 levels for other establishments with a flow of ~~2,500~~ 5,000
22 gallons per day or less shall be determined by part 7081.0130,
23 as published in the State Register, volume 31, page 1067, and as
24 subsequently adopted.

25 7080.1885 OTHER FLOW CONSIDERATIONS.

26 If the system is served by a sewage collection system, part

10/18/07

[REVISOR] CKM/JC AR3601

1 7081.0140, as published in the State Register, volume 31, page
2 1072, and as subsequently adopted, applies.

3 7080.1900 SEWAGE TANKS; GENERAL.

4 Sewage tanks serving ISTS must meet or exceed the
5 applicable requirements of parts 7080.1910 to 7080.2030 unless
6 otherwise approved by a licensed professional engineer and
7 approved by the local unit of government.

8 7080.1910 TANK STRENGTH.

9 Subpart 1. Requirements. Tanks, fittings, risers, and
10 apertures must:

11 A. be capable of supporting long-term vertical loads
12 for the conditions in which the tank will be placed. These
13 loads include, but are not limited to, saturated soil load,
14 based on 130 pounds per cubic foot, ~~and concentrated wheel load~~
15 ~~of 17,000 pounds;~~

16 B. be capable of withstanding a lateral load for the
17 conditions the tank will be placed, ~~with a minimum lateral load~~
18 ~~of 62.4 pounds per cubic foot;~~

19 ~~C. be capable of withstanding any other loads or~~
20 ~~stresses placed upon the tank;~~

21 ~~D. C.~~ with proper maintenance and venting, not be
22 subject to excessive failure due to corrosion and degradation
23 from sewage or sewage gases, including risers and maintenance
24 hole covers; and

25 ~~E. D.~~ be structurally capable of withstanding
26 exposure and stresses from freezing conditions.

1 Subp. 2. Poured-in-place concrete tanks. Poured-in-place
2 concrete tanks must be designed to meet each requirement of
3 subpart 1 and be designed by a Minnesota licensed professional
4 engineer.

5 7080.1920 SEPTIC TANK DESIGN.

6 Septic tanks must:

7 A. have a liquid depth of at least 30 inches. Any
8 liquid depth that is greater than 78 84 inches must not be used
9 when calculating the septic tank liquid capacity;

10 B. have a minimum of six feet between the inlet and
11 outlet of the tank, rather than between compartments, or have a
12 minimum of six feet from the inlet of the first tank to the
13 outlet of the last tank in series;

14 C. if site conditions warrant, the inlet and outlet
15 may are allowed to be located on walls that are not opposite
16 each other along the axis of maximum dimension; however, the
17 requirements of item B must be met;

18 D. have an inlet invert at least two inches above the
19 outlet invert; and

20 E. have a reserve or storage space between the liquid
21 surface and the top of the inlet and outlet baffles of not less
22 than eight inches or 100 gallons, whichever is greater.

23 7080.1930 SEPTIC TANK CAPACITY.

24 Subpart 1. Dwellings. The liquid capacity of septic tanks
25 must be at least as large as the liquid capacities given in
26 Table V.

TABLE V

Number of bedrooms	Septic tank liquid minimum capacities (gallons)
3 or less	1,000
4 or 5	1,500
6 or 7	2,000
8 or 9	2,500

Where more than nine bedrooms are present, the septic tank capacity must be calculated by the following formula: $2,500 + ([\# \text{ of bedrooms} - 9] \times 250)$.

Subp. 2. **Garbage disposals.** If a garbage disposal unit or other appliance with garbage grinding capability is anticipated or installed in a dwelling, the septic tank capacity must be at least 50 percent greater than that required in subpart 1 and must include either multiple compartments or multiple tanks. In addition, an effluent screen with an alarm must be employed.

Subp. 3. **Sewage pumping.** If sewage is pumped from a sewage ejector or grinder pump from a dwelling to a septic tank, the septic tank capacity must be at least 50 percent greater than that required in subpart 1 and must include either multiple compartments or multiple tanks. In addition, an effluent screen with an alarm must be employed.

Subp. 4. **Sewage pumping and garbage disposals.** If conditions in both subparts 2 and 3 apply to a dwelling, the mitigative requirements of either subpart 2 or 3 apply; the requirements of both subparts 2 and 3 need not be additive.

Subp. 5. **Systems serving multiple dwellings.** For systems serving multiple dwellings with a common septic tank, the liquid capacity must be determined by adding the capacities for each

1 dwelling as determined in this part.

2 Subp. 6. Prior to other treatment devices. Septic tank
3 liquid capacity prior to other treatment devices must accord
4 with manufacturer's requirements ~~or~~, accepted engineering
5 principles, or as identified in the product registration
6 recommended standards and criteria.

7 Subp. 7. Septic tank capacity for other establishments.
8 Septic tank liquid capacity for other establishments shall be
9 determined by part 7081.0240, subpart 2.

10 7080.1940 MULTIPLE TANKS.

11 A. If more than one septic tank is used to obtain the
12 required liquid capacity as determined in part 7080.1930, septic
13 tanks ~~may~~ must be connected in series or employ multiple
14 collection systems ~~or-employ-effective-flow-splitting-to-operate~~
15 ~~multiple-tanks-in-parallel-if-approved-by-the-local-unit-of~~
16 ~~government.~~

17 B. If tanks are connected in series, ~~no-tank-or~~
18 ~~compartment-may-be-less-than~~ each tank or compartment must
19 contain at least 25 percent of the required total liquid
20 capacity. For new construction, the first tank must be equal to
21 or larger than any subsequent tank in the series.

22 7080.1950 COMPARTMENTALIZATION OF SINGLE TANKS.

23 If septic tanks are compartmentalized, items A to E apply.

24 A. When septic tanks are divided into compartments,
25 the volume of the first compartment must be equal to or larger
26 than any succeeding compartments. ~~No-compartment-may-be-less~~

1 ~~than~~ Each compartment must contain at least 25 percent of the
2 total required liquid capacity--~~No-compartment-may~~ and have an
3 inside horizontal dimension ~~less-than~~ of at least 24 inches.

4 B. Flow between compartments can be achieved by an
5 un baffled transfer hole with a minimum size of 50 square inches
6 located in the clarified liquid zone or a minimum 12-square-inch
7 transfer hole located above the clarified liquid zone that is
8 baffled according to part 7080.1960. The final compartment of a
9 tank that employs a transfer hole in the clarified zone shall
10 not be used as a ~~dosing-chamber~~ pump tank.

11 C. Septic tanks must have at least a two-inch drop
12 between the invert of the inlet to the invert of the outlet. No
13 liquid level drop is required between the compartments.

14 D. Adequate venting must be provided between
15 compartments by baffles or by an opening of at least 12 square
16 inches near the top of the compartment wall.

17 E. All compartmental walls must be ~~strong-enough-to~~
18 ~~bear~~ designed to withstand the weight of the effluent against an
19 empty compartment.

20 7080.1960 SEPTIC TANK BAFFLES.

21 All septic tanks must be baffled according to items A to G.
22 Effluent screens ~~may~~ are allowed to be substituted for outlet
23 baffles.

24 A. Baffles must be installed at each inlet and outlet
25 of septic tanks. Outlet baffles are required on compartment
26 walls if the transfer hole is at the liquid level.

27 B. Baffles must be ~~constructed-of-acid-resistant~~

1 ~~concrete~~~~-acid-resistant-fiberglass~~~~-or-plastic~~ resistant to
2 corrosion or decay. Inlet baffles must not restrict the
3 movement of solids.

4 C. Baffles must be integrally cast with the tank or
5 affixed at the top and bottom with connectors that are not
6 subject to corrosion or decay. Baffles for
7 fiberglass-reinforced polyester tanks ~~may~~ are allowed to be
8 either resin bonded or secured with suitable structural
9 adhesive. Sanitary tees used as baffles must be affixed to the
10 inlet or outlet pipes with a permanent waterproof adhesive.

11 D. The inlet baffle must extend at least six inches,
12 but not more than 20 percent of the total liquid depth, below
13 the liquid surface and at least six inches above the liquid
14 surface.

15 E. The outlet baffle and any baffles between
16 compartments must extend below the liquid surface a distance
17 equal to 40 percent of the liquid depth, except that the
18 penetration of the indicated baffles or sanitary tees for
19 horizontal cylindrical tanks must be 35 percent of the total
20 liquid depth. They must also extend above the liquid surface as
21 required in item D. ~~In no case may~~ These baffles must extend
22 ~~less than~~ at least six inches above the liquid surface.

23 F. There must be at least one inch between the
24 underside of the top of the tank and the highest point of the
25 inlet and outlet baffles.

26 G. The nearest point on the inlet baffles other than
27 sanitary tees must be no less than six inches and no more than

1 12 inches from the end of the inlet pipe. The nearest point on
2 the outlet baffle, other than sanitary tees, ~~may-be-no~~ must not
3 be closer than six inches and no more than 12 inches from the
4 beginning of the outlet pipe to the baffle. Sanitary tees used
5 as inlet or outlet baffles must be at least four inches in
6 diameter.

7 7080.1970 SEPTIC TANK ACCESS.

8 A. ~~There-must-be-a-maintenance-hole-with-a-minimum~~
9 ~~diameter-of-20-inches-(least-dimension)-over-all-baffles,~~
10 ~~screens,-pumps,-or-other-devices-that-may-need-inspection,~~
11 ~~maintenance,-or-repair.~~ Septic tanks shall have a minimum of
12 two maintenance holes with a minimum diameter of 20 inches
13 (least dimension). One maintenance hole must be over the outlet
14 device (baffle or screen). Another maintenance hole must be
15 near the center of the tank, to facilitate pumping without
16 interference. For a compartmented tank, this hole must be
17 centered over the first compartment. The tank must also have an
18 inspection pipe with a minimum diameter of six inches over the
19 inlet baffle. Enough maintenance holes must be provided so
20 access can be gained within six feet of all walls for solids
21 removal of each compartment.

22 B. All maintenance hole risers must extend through
23 the tank cover ~~to-or~~ above finished final grade.

24 C. Covers for maintenance holes must:

25 (1) be secured by ~~having-sufficient-weight-or~~
26 ~~belted,-locked,-or-secured-by~~ being locked, being bolted or
27 screwed, having a weight of at least 95 pounds, or other methods

1 approved by the local unit of government⁷. Covers shall also be
2 leak resistant; and be designed so the cover cannot be slid or
3 flipped, which could allow unauthorized access to the tank;

4 (2) have a written and graphic label warning of
5 the hazardous conditions inside the tank;

6 (3) be capable of withstanding a load that the
7 cover is anticipated to receive. ~~---The cover must maintain the~~
8 ~~load rating and not be subject to loss of integrity or strength~~
9 ~~over time or changes in climatic temperature;~~ and

10 (4) be made of a material suitable for outdoor
11 use and resistant to ultraviolet degradation.

12 7080.1980 TANK CONSTRUCTION.

13 A. All precast reinforced concrete sewage tanks
14 ~~should be constructed according to~~ must be constructed to meet
15 the requirements of this chapter. Information on best practices
16 for tank construction is found in the National Precast Concrete
17 Association's best practices manual, Precast Concrete On-site
18 Wastewater Tanks (2005). The This manual is incorporated by
19 reference, is available through the Minitex interlibrary loan
20 system, and is not subject to frequent change. If a conflict
21 exists between the manual and this chapter, this chapter applies.

22 B. All fiberglass-reinforced polyester and
23 polyethylene tanks ~~should meet the construction standards in~~
24 must be constructed to meet the requirements of this chapter.
25 Information on best practices for these tanks is found in the
26 International Association of Plumbing and Mechanical Officials
27 (IAPMO), Material and Property Standard for Prefabricated Septic

1 Tanks, Standard PS 1-2006 (2006). ~~The~~ This standard is
2 incorporated by reference, is available through the Minitex
3 interlibrary loan system, and is not subject to frequent
4 change. If conflicts exist between the standard and this
5 chapter, this chapter applies.

6 7080.1990 TANK STORAGE, TRANSPORT, AND USE.

7 Subpart 1. Precast reinforced concrete tanks. Precast
8 reinforced concrete tanks must:

9 A. ~~have inserts-embedded-in-the-concrete~~ a method to
10 lift the tank ~~that-are-designed~~ for an ultimate load that is
11 four times the working load;

12 B. undergo proper curing to achieve a compressive
13 strength of 4,000 pounds per square inch before transport,
14 placement, or use; and

15 C. have no pipe penetration points or openings in the
16 exterior walls or tank bottom below the tank liquid level,
17 unless designed for a specific operational purpose and approved
18 by the local unit of government.

19 Subp. 2. Other tanks. Fiberglass-reinforced polyester or
20 polyethylene tanks must be protected against deterioration
21 during storage.

22 7080.2000 LOCATION AND INSTALLATION OF TANKS.

23 A. Sewage tanks must not be placed in areas with
24 ~~obstructions~~ that prohibit the removal of solids and liquids
25 from the tank according to ~~this~~ part 7080.2450.

26 B. ~~--Sewage-tanks-must-not-be-placed-in-areas-where~~

1 ~~vertical-or-horizontal-distances-prohibit-the-ability-of-pump~~
2 ~~trucks-to-remove-the-solids-and-liquids-according-to-this-part.~~

3 E B. Sewage tanks must be set back as specified in
4 Table VII in part 7080.2150, subpart 2, item F.

5 D C. The top of sewage tanks ~~shoud~~ must not be
6 buried deeper than four feet ~~and-must-not-be-buried-deeper-than~~
7 seven-feet from final grade for new dwellings, unless a local
8 ordinance allows for burial at a greater depth, not to exceed
9 the tank manufacturer's maximum designed depth for the
10 tank. ~~Tanks-shall-not-be-buried-deeper-than-the-tanks'-maximum~~
11 ~~designed-depth.~~ The minimum depth of soil cover over the
12 insulation on the top of the tank is six inches.

13 E D. Sewage tanks must not be placed in floodways,
14 drainageways, or swales. Upslope drainage must be diverted away
15 from the location of all tanks. A tank's final cover must be
16 crowned or sloped to shed surface water.

17 F E. Sewage tanks must not be placed in areas subject
18 to vehicular traffic unless engineered for the anticipated load.

19 G F. Sewage tanks must be placed on firm and evenly
20 compacted soil and with the soil level in all directions. The
21 bottom shall be excavated in a manner so the vertical load is
22 borne by the tank walls and not the tank bottom. If the bottom
23 of the tank excavation contains rocks, bedding material must be
24 used according to manufacturer's instructions. The soil beneath
25 the tank must be capable of bearing the weight of the tank and
26 its contents.

27 H:--~~Backfilling-around-sewage-tanks-must-be-made-in~~

1 ~~lifts no greater than 12 inches in loose thickness and placed~~
2 ~~nearly equally around the tank. -- Backfill material must be free~~
3 ~~of large stones, frozen soil material, or other debris.~~
4 ~~Backfill material must be brought to near natural density in a~~
5 ~~manner that avoids undue strain on the tank. -- For~~
6 ~~fiberglass-reinforced polyester or polyethylene tanks, the~~
7 ~~height of the backfill material must not exceed the height of~~
8 ~~water in the tank.~~

9 § G. Sewage tanks and risers must be installed
10 according to manufacturer's requirements and in a structurally
11 sound and watertight fashion.

12 § H. If the top of a sewage tank is to be less than
13 two feet from final grade, the lid of the tank must be insulated
14 to an R-value of ten. Maintenance hole covers must be insulated
15 to an R-value of ten. ~~Maintenance hole risers may be insulated~~
16 ~~to an R-value of ten.~~ All insulating materials must be
17 resistant to water absorption.

18 § I. Sewage tanks placed below the level of the
19 ~~seasonally~~ periodically saturated soil must ~~be anchored or have~~
20 ~~sufficient weight~~ employ a method to protect against flotation
21 ~~under high-water-table~~ periodic saturated soil conditions when
22 the tank is empty.

23 § J. Connections between the concrete tank and the
24 building sewer or supply pipe must meet the requirements of
25 American Society for Testing and Materials, Standard
26 Specification for Resilient Connectors Between Reinforced
27 Concrete Manhole Structures, Pipes, and Laterals, ASTM C923

1 (2002), or equivalent. The standard is incorporated by
2 reference, is available through the Minitex interlibrary loan
3 system, and is not subject to frequent change.

4 M K. Joints of concrete tanks and, concrete tank lids
5 , and concrete risers must be sealed using a bonding compound
6 that meets American Society for Testing and Materials, Standard
7 Specification for Joints for Concrete Pipe, Manholes, and
8 Precast Box Sections Using Preformed Flexible Joint Sealants,
9 ASTM C990 (2003). The standard is incorporated by reference, is
10 available through the Minitex interlibrary loan system, and is
11 not subject to frequent change.

12 7080.2010 TANK TESTING ASSESSMENT.

13 Subpart 1. General.

14 A. All sewage tanks must be watertight, including at
15 all tank and riser joints, riser connections, and pipe
16 connections.

17 B. ~~Testing~~ An assessment of all models of sewage
18 tanks to be used must be conducted to determine:

19 (1) the structural integrity of the tank design;
20 and

21 (2) the adequacy of the manufacturing process of
22 watertightness.

23 C. Sewage tanks, including riser joints, riser
24 connections, and pipe connections must be designed,
25 manufactured, and installed to be watertight ~~for-25-years~~ under
26 normal use.

27 Subp. 2. Structural integrity of design test. The

1 structural integrity of each model of tank ~~produced~~ manufactured
2 and all poured-in-place tanks must be verified by calculation,
3 proof testing, or a licensed professional engineer to determine
4 the horizontal and vertical loads that the tank can withstand
5 when empty. Tanks must be reverified for structural integrity
6 if the design, materials, or construction methods are modified.
7 A licensed professional engineer shall certify in writing if
8 different manufactured models are similar enough so that the
9 structural integrity information for one model is valid for
10 other models. Verifications must be submitted to the
11 commissioner. The commissioner shall maintain and make
12 available the verifications upon request. ~~All-poured-in-place~~
13 ~~tanks-must-be-verified.~~

14 Subp. 3. Watertightness test.

15 A. ~~Of-all-sewage-tanks-manufactured, every-25th-tank~~
16 ~~produced-must-be-tested-for-watertightness.~~ At least one tank
17 per year, per model must be tested for watertightness. All
18 poured-in-place tanks shall be tested for watertightness.
19 Records of testing must be maintained by the manufacturer for
20 three years and must be available to the commissioner and local
21 unit of government if requested. Tanks must be tested and meet
22 or exceed the applicable requirements of ~~subitems~~
23 subitem (1) to, (2), or (3):

24 (1) when empty, a tank must maintain a vacuum of
25 at least two inches of mercury for five minutes, without loss of
26 pressure;

27 (2) concrete tanks must hold water for one hour,

1 without loss, after the tank has been filled with water to the
2 top of the tank, let stand for 24 hours, and then refilled to
3 the same level; and or

4 (3) fiberglass-reinforced polyester or
5 polyethylene sewage tanks must hold water without loss for one
6 hour after being filled.

7 B. Sewage tanks that do not pass the tests listed in
8 item A~~7-subitems-(1)-to-(3)~~, must not be used until repaired and
9 retested. The repair and retest procedure must be repeated
10 until the tank passes the test or the tank must not be used.

11 7080.2020 TANK IDENTIFICATION.

12 A. Sewage tanks must be marked near the outlet with:

- 13 (1) the manufacturer's name;
14 (2) model number;
15 (3) liquid capacity;
16 (4) date of manufacture; and
17 (5) maximum depth of burial.

18 B. The tank manufacturer or manufacturer's agent
19 shall provide the information in item A to the installer in
20 writing.

21 B C. The tank inlet or outlet must be clearly marked.

22 E D. The installer shall submit the information in
23 item A with the as-built drawing.

24 7080.2030 EFFECTIVE DATE.

25 Sewage tanks must meet the requirements of parts 7080.1910
26 to 7080.2020 within three years of the effective date of this

1 chapter. Tanks produced and installed within this three-year
2 period must meet the requirements of Minnesota Rules 2005, part
3 7080.0130.

4 7080.2050 DISTRIBUTION OF EFFLUENT.

5 Subpart 1. General. Distribution of effluent for ISTS
6 must meet or exceed the requirements of this part.

7 Subp. 2. Supply pipes.

8 A. The supply pipe extending from the septic tank to
9 the undisturbed soil beyond the tank excavation must meet the
10 strength requirements of American Society for Testing and
11 Materials (ASTM), Schedule 40 Pipe, contained in Standard
12 Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe,
13 Schedules 40, 80, and 120, ASTM D1785 (2006). The schedule is
14 incorporated by reference, is available through the Minitex
15 interlibrary loan system, and is not subject to frequent change.

16 B. Supply pipes must:

17 (1) be made from materials resistant to breakdown
18 from sewage and soil;

19 (2) be watertight, including all joints;

20 (3) be durable ~~for a 25-year~~ throughout the
21 design life;

22 (4) not deflect, buckle, crush, or longitudinally
23 bend;

24 (5) be resistant to pressures, fatigue, and
25 strain for the application;

26 (6) be installed according to American Society of
27 Testing and Materials, Standard Practice for Underground

1 Installation of Thermoplastic Pipe for Sewers and Other
2 Gravity-Flow Applications, ASTM D2321 (2005). The standard is
3 incorporated by reference, is available through the Minitex
4 interlibrary loan system, and is not subject to frequent change;
5 (7) be designed, installed, and protected ~~so that~~
6 ~~effluent will not freeze~~ to minimize the danger of freezing in
7 the pipe;

8 (8) not be closer than six inches from final
9 grade. Pipes susceptible to freezing shall be insulated; and

10 (9) be set back from water supply wells and water
11 service pipes according to ~~chapter~~ chapters 4715 and 4725.

12 C. The minimum slope for gravity supply pipes is one
13 percent (1/8 inch per linear foot). There is no maximum slope.
14 Pipe restraints must be used for slopes greater than 20 percent
15 or where fluid velocities in the pipe exceed 15 feet per
16 second. For pressure systems, ~~the slope shall be sufficient to~~
17 ~~allow quick drainback to the dosing chamber~~ a minimum slope of
18 one percent for drainback or other frost protection measures
19 must be employed.

20 D. Access to each supply pipe must be provided for
21 cleanout. The cleanout access point must be accessible from
22 final grade.

23 Subp. 3. Gravity distribution.

24 A. Serial distribution must be used to distribute
25 effluent to individual trenches in a soil treatment and
26 dispersal system. If the necessary elevation differences
27 between trenches for serial distribution cannot be achieved by

1 natural topography or by varying the excavation depths, parallel
2 distribution ~~may~~ must be used. Serial distribution must not
3 create a pressure head on trenches at lower elevations.

4 B. If drop boxes are used for serial distribution,
5 subitems (1) to (6) apply.

6 (1) The drop box must be watertight and
7 constructed of durable materials not subject to corrosion or
8 decay.

9 (2) The invert of the inlet supply pipe must be
10 at least one inch higher than the invert of the outlet supply
11 pipe to the next drop box.

12 (3) The invert of the outlet supply pipe to the
13 next drop box ~~may~~ must be no greater than two inches higher than
14 the crown of the distribution pipe serving the trench in which
15 the box is located.

16 (4) When sewage tank effluent is delivered to the
17 drop box by a pump, the pump discharge must be directed against
18 a wall or side of the box on which there is no outlet or
19 directed against a deflection wall, baffle, or other energy
20 dissipater. ~~The pump must discharge at a rate at least ten~~
21 ~~percent greater than the water supply flow rate but no faster~~
22 ~~than the rate at which effluent will flow out of the~~
23 ~~distribution device.~~ The discharge rate into the drop box must
24 not result in surfacing of sewage from the drop box. The supply
25 pipe must drain after the pump shuts off.

26 (5) The drop box must be covered by a minimum of
27 six inches of soil. If the top of the box is deeper than six

1 inches, access must be provided above, at, or within six inches
2 of finished grade.

3 (6) The drop box must be placed on firm and
4 settled soil.

5 C. If valve boxes are used, all requirements of item
6 B apply to valve boxes.

7 D. Distribution boxes must meet the standards in
8 subitems (1) to (6).

9 (1) The box must be watertight and constructed of
10 durable materials not subject to corrosion or decay.

11 (2) The distribution box must be covered by a
12 minimum of six inches of soil. If the top of the box is deeper
13 than six inches, access must be provided above, at, or within
14 six inches of the finished grade.

15 (3) The inverts of all outlets must be set and
16 maintained at the same elevation.

17 (4) The inlet invert must be either at least one
18 inch above the outlet invert or sloped such that an equivalent
19 elevation above the outlet invert is obtained within the last
20 eight feet of the inlet pipe.

21 (5) Each trench line must be connected separately
22 to the distribution box and must not be subdivided.

23 Distribution boxes must not be connected to one another if each
24 box has distribution pipes.

25 (6) When sewage tank effluent is delivered by
26 pump, a baffle wall must be installed in the distribution box or
27 the pump discharge must be directed against a wall, baffle, side

1 of the box on which there is no outlet, or directed against a
2 deflection wall, baffle, or other energy dissipater. The baffle
3 must be secured to the box and extend at least one inch above
4 the crown of the inlet pipe. The discharge rate into the drop
5 box must not result in surfacing of sewage from the drop box.
6 Pressure must not build up in the box during pump discharge.

7 E. Nonpressurized distribution pipes must meet the
8 requirements of subitems (1) to (4) and subpart 2, item B,
9 subitems (1) and (3) to (5).

10 (1) Distribution pipes used for gravity
11 distribution must be at least four inches in diameter.

12 (2) Distribution pipes used for gravity
13 distribution must have at least one row of holes of no less than
14 one-half inch in diameter spaced no more than 40 inches apart.

15 (3) Distribution pipes for gravity distribution
16 must be laid level or on a uniform slope oriented away from the
17 distribution device of no more than four inches per 100 feet.

18 (4) Distribution pipes for gravity distribution
19 in seepage beds must be uniformly spaced no more than five feet
20 apart and not more than 30 inches from the side walls of the
21 seepage bed.

22 Subp. 4. Pressure distribution.

23 A. Pressure distribution must pressurize the entire
24 distribution system and must be used for:

25 (1) mound systems;

26 (2) at-grade systems;

27 (3) all seepage beds placed in soils with a

1 ~~sizing-classification~~ texture group of 1 ~~or-2~~ through 5 in Table
2 IX in part 7080.2150, subpart 3, item F E;

3 (4) all seepage beds with a width greater than 12
4 feet;

5 (5) all trench systems if the trenches are at the
6 same elevation and placed in soils with a ~~sizing-classification~~
7 texture group of 1 ~~or-2~~ through 5 in Table IX in part 7080.2150,
8 subpart 3, item F E;

9 (6) systems receiving ~~an-organic-load-of-less~~
10 ~~than-25-percent-of-values-in-part-7081.0270,-subpart-6~~ treatment
11 level A or B effluent, as determined in part 7083.4030, Table
12 III, as published in the State Register, volume 31 ...,
13 page 1077, and as subsequently adopted; and

14 (7) all systems where the distribution network is
15 installed above the original grade.

16 B. Pressurized distribution pipes must conform to the
17 requirements of subpart 2, item B, subitems (1) and (3) to (5).

18 C. Pressure distribution pipes and associated
19 fittings must be properly joined together. The pipe and
20 connections must be able to withstand a pressure of at least 40
21 pounds per square inch.

22 D. The distribution network must be designed so there
23 is less than a ten percent variance in flow for all perforations.

24 E. Perforations must be no smaller than one-eighth
25 inch diameter and no larger than one-quarter inch diameter. The
26 number of perforations, perforation spacing, and pipe size for
27 pressure distribution must be in accordance with Table VI. The

1 friction loss in any individual perforated lateral must not
 2 exceed 20 percent of the average pressure head on the
 3 perforations.

4 TABLE VI

5 MAXIMUM NUMBER OF PERFORATIONS PER LATERAL

6 1/4 inch holes

7 Pipe diameter in inches

8	9 Perforation	10 spacing in feet	11	12	13	14	15	16
			1	1.25	1.5	2	3	
12	2		10	13	18	30	60	
13	2.5		8	12	16	28	54	
14	3		8	12	16	25	52	

16 3/16 inch holes

17 Pipe diameter in inches

18	19 Perforation	20 spacing in feet	21	22	23	24	25	26
			1	1.25	1.5	2	3	
22	2		12	18	26	46	87	
23	2.5		12	17	24	40	80	
24	3		12	16	22	37	75	

26 1/8 inch holes

27 Pipe diameter in inches

28	29 Perforation	30 spacing in feet	31	32	33	34	35	36
			1	1.25	1.5	2	3	
32	2		21	33	44	74	149	
33	2.5		20	30	41	69	135	
34	3		20	29	38	64	128	

36 F. Perforation holes must be drilled straight into
 37 the pipe and not at an angle. Pressurized distribution laterals
 38 must be installed level. Perforation holes must be free of
 39 burrs. Holes may must be spaced no more than three feet apart.

1 A method to introduce air into the pipe after dosing must be
2 provided. The pipes must completely drain after the pump turns
3 off.

4 G. Pressure distribution laterals must be spaced no
5 further than 36 inches apart in seepage beds and mound
6 absorption beds, and no further than 24 inches from the outside
7 edge of the bed.

8 H. Pressure distribution laterals must be connected
9 to a header or manifold pipe that is of a diameter such that the
10 friction loss in the header or manifold will be no greater than
11 five percent of the average head at the perforations. The
12 header or manifold pipe must be connected to the supply pipe
13 from the pump.

14 I. Perforated laterals must not be installed closer
15 than 12 inches from the edges of the absorption bed and
16 ~~perforations-must-not-be-installed~~ perforated laterals must
17 terminate no closer than 12 inches from the ends of the
18 absorption bed.

19 J. Pressure distribution pipe cleanouts must be
20 provided to check the system for proper operation and cleaning
21 of plugged perforations. Cleanouts must be accessible from
22 final grade.

23 7080.2100 DOSING OF EFFLUENT.

24 Subpart 1. General. When pumping or dosing is necessary,
25 it must comply with this part.

26 Subp. 2. ~~Dosing-chambers~~ Pump tanks.

27 A. ~~Dosing-chambers~~ Pump tanks shall meet or exceed

1 the requirements of parts 7080.1910, 7080.1970, and 7080.1980 to
2 7080.2020. All dosing chambers must be vented.

3 B. The pump, pump controls, and pump discharge line
4 must be installed to allow access for servicing or replacement
5 without entering the dosing-chamber pump tank.

6 C. The dosing-chamber pump tank must either include
7 an alternating two-pump system or have a minimum total capacity
8 of 500 gallons for average-daily design flow valves values of
9 600 gallons per day or less or 100 percent of the average-daily
10 design flow for average-daily design flow valves values of
11 greater than 600 gallons per day.

12 D. An ISTS with a pump must employ an alarm device to
13 warn of failure.

14 E. The inlet of pumps must be elevated at least four
15 inches from the bottom of the dosing-chamber pump tank or
16 protected in some other manner to prevent the pump from drawing
17 excessive settled solids.

18 F. Electrical installations must comply with
19 applicable laws and ordinances including the most current codes,
20 rules, and regulations of public authorities having jurisdiction
21 and with part 1315.0200, which incorporates the National
22 Electrical Code.

23 Subp. 3. Pumps for gravity distribution. If a pump is
24 used to lift effluent into a gravity distribution system, items
25 A to C apply.

26 A. The pump must discharge at least ten gallons per
27 minute but no more than 45 gallons per minute.

1 B. The pump must be constructed and fitted with
2 sound, durable, and corrosion-resistant materials.

3 C. The pump must have sufficient dynamic head for
4 both the elevation difference and friction loss.

5 Subp. 4. Pumps for pressure distribution. Pumps for
6 pressure distribution must meet the requirements in items A to D.

7 A. Pumps must be constructed and fitted with sound,
8 durable, and corrosion-resistant materials.

9 B. The pump discharge capacity must be based on the
10 perforation discharges for a minimum average head of 1.0
11 foot for 1/4 inch and 3/16 inch perforations and 2.0 feet for
12 1/8 inch perforations for dwellings. The minimum average head
13 must be 2.0 feet for all other establishments. Perforation
14 discharge is determined by the following formula:

15
$$Q = 19.65 cd^2h^{1/2}$$

16 where: Q = discharge in gallons per minute

17 c = 0.60 = coefficient of discharge

18 d = perforation diameter in inches

19 h = head in feet.

20 C. The pump discharge head must be at least five feet
21 greater than the head required to overcome pipe friction losses
22 and the elevation difference between the pump and the
23 distribution device.

24 D. The quantity of effluent delivered for each pump
25 cycle must be no greater than 25 percent of the average-daily
26 design flow and at least five times the volume of the supply and
27 distribution pipes.

1 7080.2150 TREATMENT AND DISPERSAL.

2 Subpart 1. General. Treatment and dispersal of all sewage
3 for new construction or replacement ISTS must be in compliance
4 with this part and parts 7080.2200 to 7080.2400 as adopted into
5 local ordinances.

6 Subp. 2. General technical requirements for all systems.

7 All new construction or replacement ISTS must be designed to
8 meet or exceed the provisions in items A to G F.

9 A. All treatment and dispersal methods must be
10 designed to conform to all applicable federal, state, and local
11 regulations.

12 B. Treatment and dispersal processes must prevent
13 sewage or sewage effluent contact with humans, insects, or
14 vermin.

15 C. Treatment and dispersal of sewage or sewage
16 effluent must be in a safe manner that adequately protects from
17 physical injury or harm.

18 D. An unsaturated zone in the soil must be maintained
19 between the bottom of the soil treatment and dispersal system
20 and the ~~seasonally~~ periodically saturated soil or bedrock during
21 loading of effluent.

22 ~~E. Local units of government may also require~~
23 ~~additional standards for local resource protection, such as~~
24 ~~limits for nitrogen and phosphorus compounds.~~

25 F E. Soil treatment and dispersal systems must not be
26 designed in floodways. Soil treatment and dispersal systems
27 installed in flood fringes must meet the requirements in part

1 7080.2270. ~~Soil-treatment-and-dispersal-systems-should-not-be~~
 2 ~~placed-in-areas-subject-to-excessive-run-on.~~ All soil treatment
 3 systems located in areas subject to excessive run-on must have a
 4 diversion constructed upslope from the system.

5 G F. ISTS components must be set back ~~as-specified in~~
 6 accordance with Table VII. ~~This-chapter-does-not-require-a~~
 7 ~~setback-to-a-wetland-but-a-local-setback-may-exist.~~

8 TABLE VII

9 MINIMUM SETBACK DISTANCES (FEET)

10 Feature	Sewage tank, 11 holding 12 tank, or 13 sealed privy	Absorption area or unsealed 14 privy	Building sewer or supply pipes
15 Water supply wells	*	*	*
16 Buried water lines	*	*	*
17 Buildings**	10	20	
18 Property lines***	10	10	
19 Ordinary high water 20 level of public waters	****	****	

21
 22 * Setbacks from buried water lines and water supply wells are
 23 governed by chapters 4715 and 4725, respectively.

24 ** For structures other than buildings, these setbacks may be
 25 allowed to be reduced if necessary due to site conditions, but
 26 no component of an ISTS may be allowed to be located under or
 27 within the structure or other impermeable surface.

28 *** Infringement on property line setbacks must be made through
 29 accepted local procedures.

30 **** Setbacks from lakes, rivers, and streams are governed by
 31 chapters 6105 and 6120.

32 Subp. 3. Other technical requirements for systems.

33 ~~Requirements-in~~ Items A to K ~~will-be~~ J are required for specific

1 designs as determined in parts 7080.2200 to 7080.2400.

2 A. Employ components registered under ~~part-7080-1600~~
3 parts 7083.4070 and 7083.4080, as published in the State
4 Register, volume ..., page, and as subsequently adopted,
5 that are installed, used, and operated according to the
6 conditions placed on registration.

7 B. Employ structural components and joint sealants
8 that meet or exceed a-25-year the system's expected design life.

9 ~~C. Systems must not be designed, installed, or~~
10 ~~operated to exceed the loadings in part-7081-0270, subpart-6, as~~
11 ~~published in the State Register, volume-31, page-1077, and as~~
12 ~~subsequently adopted.~~

13 D C. For acceptable treatment of septic tank effluent
14 by soil, the soil treatment and dispersal systems must meet the
15 requirements of subitems (1) and (2).

16 (1) A minimum three-foot vertical soil treatment
17 and dispersal zone shall be designed below the distribution
18 media that meets the criteria in units (a) to (c):

19 (a) the zone must be above the ~~seasonally~~
20 periodically saturated soil and bedrock. The zone must be
21 continuous and not be interrupted by seasonal zones of
22 saturation;

23 (b) any soil layers with a ~~sizing~~
24 ~~classification~~ texture group of 1 or 4 in Table IX in item ~~F~~ E
25 must not be credited as part of the necessary three-foot zone;
26 and

27 (c) the entire treatment zone depth must be

1 within seven feet from final grade.

2 (2) The distribution system or media must not
3 place a hydraulic head greater than 30 inches ever above the
4 treatment-zone bottom of the bottom absorption area.

5 E D. The system's absorption area must be original
6 soil.

7 F E. The system's absorption area must be sized
8 according to Table IX.

9 TABLE IX

10 SOIL-SIZING-FACTORS LOADING RATES FOR DETERMINING BOTTOM
11 ABSORPTION AREA FOR TRENCHES AND SEEPAGE BEDS FOR
12 EFFLUENT TREATMENT LEVEL C AND ABSORPTION RATIOS
13 FOR DETERMINING MOUND ABSORPTION AREAS USING DETAILED
14 SOIL DESCRIPTIONS OR PERCOLATION TEST AND ABSORPTION
15 RATIOS FOR DETERMINING MOUND ABSORPTION AREAS USING
16 DETAILED SOIL DESCRIPTIONS

17 Sizing	18 Soil	19 Soil	20 Percolation	21 Soil-sizing	22 Absorption
23 classification	24 texture	25 structure*	26 rate	27 factor	28 ratio-for
			29 (minutes	30 (square-feet	31 mounds
			32 per-inch)	33 of-trench-or	
				34 seepage-bed	
				35 bottom-per	
				36 gallon-of	
				37 average	
				38 design-flow	
				39 per-day)	
40 1	41 Coarse	42 Single	43 faster-than	44 .83	1:0
	sand	grain	0-1		
45 2	46 Medium	47 Single	48 0-1-to-5	49 .83	1:0
	sand,	grain			
	loamy				
	sand*				
50 3	51 Fine	52 Single	53 0-1-to-5	54 1:67	1:0
	sand,	grain			
	loamy				
	fine				
	sand				
55 4	56 Sandy	57 Weak-to	58 6-to-15	59 1:27	1:5
	loam	strong			

1	5	Sandy loam	Massive or-platy	16-to-30	1-67	2-0
2						
3						
4	6	Loam	Moderate to-strong	16-to-30	1-67	2-0
5						
6						
7	7	Loam	Weak-or platy	31-to-45	2-0	2-4
8						
9						
10	8	Loam	Massive	46-to-60	2-2	3-0
11						
12	9	Silt loam	Moderate to-strong	31-to-45	2-0	2-4
13						
14						
15	10	Silt loam	Weak-or platy	46-to-60	2-2	3-0
16						
17						
18	11	Silt loam	Massive	61-to-85	3-0	3-6
19						
20						
21	12	Sandy clay loam, clay loam, silty clay loam	Moderate to-strong	46-to-60	2-2	2-6
22						
23						
24						
25						
26						
27						
28						
29						
30	13	Sandy clay loam, clay loam, silty clay loam	Weak-or platy	61-to-85	3-0	3-8
31						
32						
33						
34						
35						
36						
37						
38						
39	14	Sandy clay loam, clay loam, silty clay loam	Massive	121-or slower	-	-
40						
41						
42						
43						
44						
45						
46						
47						
48	15	Sandy clay, clay, silty clay	Strong	86-to-120	4-2	5-0
49						
50						
51						
52						
53						
54	16	Sandy	Weak-to	121-or	-	-

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1 clay, moderate, slower
2 clay, massive,
3 silty or-platy
4 clay

5
6 ~~*-The-soil-structure-must-have-a-moist-consistency-of-loose,~~
7 ~~very-friable,-friable,-or-firm-as-determined-by-the-Field-Book~~
8 ~~for-Describing-and-Sampling-Soils,-which-is-incorporated-by~~
9 ~~reference-under-part-7080.1100,-subpart-40.~~

10

11

12

13

<u>Texture</u>	<u>Texture group</u>	<u>Structure</u>	<u>Grade</u>	<u>Consistence</u>	<u>Soil loading rate (gpd/ft²)</u>	<u>Mound absorption ratio</u>
<u>Coarse sand*</u>	<u>1</u>	<u>single grain</u>		<u>loose</u>	<u>0.00</u>	<u>1</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.00</u>	<u>2</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Medium sand*</u>	<u>2</u>	<u>single grain</u>		<u>loose</u>	<u>1.20</u>	<u>1</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.60</u>	<u>2</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Fine sand</u>	<u>3</u>	<u>single grain</u>		<u>loose</u>	<u>0.60</u>	<u>2</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.24</u>	<u>5</u>

		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Coarse and medium loamy sand*</u>	<u>4</u>	<u>single grain</u>		<u>loose</u>	<u>1.20</u>	<u>1</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.60</u>	<u>2</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Fine and very fine loamy sand</u>	<u>5</u>	<u>single grain</u>		<u>loose</u>	<u>0.60</u>	<u>2</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>

<u>Coarse and medium sandy loam</u>	<u>6</u>	<u>pris, blk, gr</u>	<u>weak</u>	<u>v. friable, friable</u>	<u>0.45</u>	<u>2.6</u>
		<u>pris, blk, gr</u>	<u>weak</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>v. friable, friable</u>	<u>0.78</u>	<u>1.3</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.45</u>	<u>2.6</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable, friable</u>	<u>0.45</u>	<u>2.6</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>platy</u>	<u>mod or strong</u>	<u>v. friable, friable</u>	<u>0.45</u>	<u>2.6</u>
		<u>platy</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable, friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Fine and v. fine sandy loam</u>	<u>7</u>	<u>pris, blk, gr</u>	<u>weak</u>	<u>v. friable, friable</u>	<u>0.24</u>	<u>5.0</u>

		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.60</u>	<u>2.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable,</u> <u>friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Loam</u>	<u>8</u>	<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>2.6</u>
		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.60</u>	<u>2.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>

		<u>platy</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable,</u> <u>friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Silt loam</u>	<u>9</u>	<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>2.6</u>
		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.50</u>	<u>2.4</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.00</u>	<u>0.0</u>

		<u>platy</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable, friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Clay loam, silty clay loam, sandy clay loam</u>	<u>10</u>	<u>pris, blk, gr</u>	<u>weak</u>	<u>v. friable or friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>pris, blk, gr</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>v. friable or friable</u>	<u>0.45</u>	<u>2.6</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.24</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable or friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or strong</u>	<u>v. friable or friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>

		<u>massive</u>		<u>v. friable or friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.00</u>
<u>Clay, silty clay, sandy clay</u>	<u>11</u>	<u>pris, blk, gr</u>	<u>weak</u>	<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>pris, blk, gr</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>v. friable, or friable</u>	<u>0.24</u>	<u>5.0</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or strong</u>	<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>massive</u>		<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.00</u>

1 All very firm consistence has a loading rate of 0.0.

2 TABLE IXa

3 LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA
 4 FOR TRENCHES AND SEEPAGE BEDS FOR EFFLUENT TREATMENT
 5 LEVEL C AND ABSORPTION RATIOS FOR DETERMINING MOUND
 6 ABSORPTION AREAS USING PERCOLATION TESTS

7

8 <u>Percolation rate</u>	9 <u>Gallons per day per</u>	10 <u>Mound</u>
11 <u>(minutes per</u>	12 <u>square foot of</u>	13 <u>absorption</u>
14 <u>inch)</u>	15 <u>trench bottom</u>	16 <u>ratio</u>
17 <u>Faster than 0.1*</u>	18 <u>0.0</u>	19 <u>1</u>
20 <u>0.1 to 5*</u>	21 <u>1.20</u>	22 <u>1</u>
23 <u>0.1 to 5 (soil</u>	24 <u>0.6</u>	25 <u>2</u>
26 <u>texture groups</u>		
27 <u>3 & 5)</u>		
28 <u>6 to 15</u>	29 <u>0.78</u>	30 <u>1.3</u>
31 <u>16 to 30</u>	32 <u>0.6</u>	33 <u>2</u>
34 <u>31 to 45</u>	35 <u>0.5</u>	36 <u>2.4</u>
37 <u>46 to 60</u>	38 <u>0.45</u>	39 <u>2.6</u>
40 <u>61 to 120</u>	41 <u>0.24</u>	42 <u>5.0</u>
43 <u>Slower than 120</u>	44 <u>0.0</u>	45 <u>-</u>

46 *See part 7080.2260 for requirements for these soils.

47 G F. If drainfield rock medium is employed, a
 48 durable, nonwoven geotextile fabric must be used to cover the
 49 distribution rock medium. The fabric must be of sufficient
 50 strength to undergo installation without rupture. The fabric
 51 must permit passage of water without passage of overlying soil
 52 material into the rock medium.

53 H G. All excavation into the absorption area, or
 54 surface preparation of the upper 12 inches of absorption area,
 55 must be in a manner to expose the original soil structure in an

1 unsmeared and uncompacted condition. Excavation is only allowed
2 when the soil moisture content is at or less than the plastic
3 limit and is not frozen or freezing.

4 F H. Excavation equipment or other vehicles must not
5 be driven on the excavated or prepared absorption area. Foot
6 traffic on these areas must be minimized and not cause undue
7 compaction. The exposed areas must be immediately covered with
8 media or the designed coverage materials. If the areas are
9 exposed to direct rainfall, they must be allowed to dry and must
10 be re-prepared according to item H G.

11 F I. A minimum of six inches of topsoil borrow shall
12 be placed over the system.

13 K J. A close-growing, vigorous vegetative cover must
14 be established over the soil treatment and dispersal system and
15 other vegetatively disturbed areas. The sodding, seeding, or
16 other vegetation establishment shall begin immediately after the
17 placement of the topsoil borrow. The soil treatment and
18 dispersal system must be protected from erosion and excessive
19 frost until a vegetative cover is established. The vegetative
20 cover established must not interfere with the hydraulic
21 performance of the system and shall provide adequate frost and
22 erosion protection. Trees, shrubs, deep-rooted plants, or
23 ~~hydrophilic~~ hydrophytic plants ~~should~~ must not be planted on the
24 system.

25 Subp. 4. Systems with a design flow greater than 2,500
26 gallons per day. At a minimum, systems designed under this
27 chapter with a design flow of greater than 2,500 gallons per

1 day, which impact water quality of an aquifer, as defined in
2 part 4725.0100, subpart 21, must employ best management
3 practices for nitrogen reduction developed by the commissioner
4 to mitigate water quality impacts to groundwater.

5 7080.2200 TYPE I SYSTEMS.

6 Systems designed according to parts 7080.2200 to 7080.2240
7 are considered Type I systems.

8 7080.2210 TRENCHES AND SEEPAGE BEDS.

9 Subpart 1. Characteristics. To qualify as a trench or
10 seepage bed system, the system must meet or exceed the
11 requirements of items A to E:

12 A. employ flow values in ~~part~~ parts 7080.1850 to
13 7080.1885;

14 B. meet or exceed applicable technical requirements
15 of parts 7080.1900 to 7080.2030, 7080.2050, and 7080.2100;

16 C. provide flow measurement if a pump is to be
17 employed;

18 D. meet or exceed the requirements of part 7080.2150,
19 subparts 2 and 3; and

20 E. meet the requirements of subparts 2 to 4.

21 Subp. 2. Seepage ~~bed-construction~~ beds. Seepage bed
22 ~~construction~~ placement must be limited to areas having natural
23 slopes of less than six percent. Seepage beds and trenches must
24 not be placed in soils with a ~~sizing-classification~~ texture
25 group of ~~13-to-16~~ 10 and 11 on Table IX in part 7080.2150,
26 subpart 3, item F E. Seepage beds must not be located in

1 floodplains.

2 Subp. 3. Sizing of trenches and seepage beds.

3 A. ~~The system's proposed absorption area must meet~~
4 ~~sizing classifications 2 to 10 or 12 on Table IX in part~~

5 ~~7080.2150, subpart 3, item F.~~ The trench bottom absorption area
6 is calculated by multiplying dividing the average-daily design
7 flow by the appropriate soil sizing-factor loading rate in Table
8 IX or IXa in part 7080.2150, subpart 3, item F E. If gravity
9 distribution is used in seepage beds, the seepage bed absorption
10 area is calculated by multiplying dividing the average-daily
11 design flow by the soil sizing-factor loading rate in Table
12 IX or IXa in part 7080.2150, subpart 3, item F E, multiplied by
13 1.5. If pressure distribution is used in seepage beds, the
14 seepage bed absorption area is determined by multiplying
15 dividing the design flow by the soil sizing-factor loading rate
16 in Table IX or IXa in part 7080.2150, subpart 3, item F, by the
17 average-daily-flow E.

18 B. The minimum sidewall absorption ~~shall be~~ is six
19 inches. The bottom absorption area ~~may~~ is allowed to be
20 reduced, for trenches only, by ~~20 percent for loading 12 inches~~
21 ~~of sidewall absorption below the distribution pipe, 34 percent~~
22 ~~for 18 inches, and 40 percent for 24 inches. Reductions may be~~
23 ~~interpolated for other depths of sidewall absorption.~~ the
24 following:

25

26	<u>Sidewall</u>	<u>Bottom area</u>
27	<u>absorption -</u>	<u>reduction</u>
28	<u>inches</u>	
29		

1	<u>12 to 17</u>	<u>20%</u>
2		
3	<u>18 to 23</u>	<u>34%</u>
4		
5	<u>24</u>	<u>40%</u>
6		

7 Subp. 4. Design and construction of trenches and seepage
8 beds.

9 A. Trenches must be no more than 36 inches wide. Any
10 excavation wider than 36 inches shall be considered a seepage
11 bed. No A seepage bed may must not be wider than 12 feet if
12 gravity distribution is used and 25 feet if pressure
13 distribution is used. Natural, undisturbed soil must exist
14 between multiple trenches and seepage beds. Multiple seepage
15 beds must be spaced at one-half the bed width. Multiple
16 units ~~may-need-to~~ must be designed based on linear contour
17 loading rates as described in part 7080.2220, subpart 3, item B.

18 B. A vertical inspection pipe at least ±-1/2 four
19 inches in diameter must be installed and secured in the
20 distribution medium of every trench or seepage bed. The
21 inspection pipe must be located at an end opposite from where
22 the sewage tank effluent enters the medium. The inspection pipe
23 must have three-eighths inch or larger perforations spaced
24 vertically no more than six inches apart. At least two
25 perforations must be located in the distribution medium. No
26 Perforations may must not be located above the geotextile cover
27 or wrap. The inspection pipe must extend to the bottom of the
28 distribution medium, be secured, and be capped flush with or
29 above finished grade.

30 C. The top and bottom of the distribution medium must

1 be level ~~in-all-directions~~ along the contour. Sidewalls must be
2 as vertical as practical and not intentionally sloped.

3 D. The minimum depth of soil cover, including topsoil
4 borrow, over the distribution medium is 12 inches.

5 E. Trenches or seepage beds must be backfilled and
6 crowned above finished grade to allow for settling. The top six
7 inches of the backfill must have the same texture as the
8 adjacent soil.

9 7080.2220 MOUNDS.

10 Subpart 1. Mound system requirements. To qualify as a
11 mound system, the system must meet or exceed the following
12 requirements:

13 A. employ flow values in ~~part~~ parts 7080.1850 to
14 7080.1885;

15 B. meet or exceed applicable technical requirements
16 of parts 7080.1900 to 7080.2030, 7080.2050, and 7080.2100;

17 C. meet or exceed the requirements of part 7080.2150,
18 subparts 2 and 3;

19 D. employ flow measurement; and

20 E. meet the requirements of subparts 2 and 3.

21 Subp. 2. Location of mounds.

22 A. The upper 12 inches of the original soil mound
23 absorption area must ~~be-in-soil-sizing-categories-1-to-13-or-15~~
24 ~~in-Table-IX-in-part-7080.2150, subpart 3, item F.~~ have a mound
25 absorption ratio of greater than zero under part 7080.2150,
26 subpart 3, item E, Table IX or IXa. The upper 12 inches of the
27 absorption area must also be above the ~~seasonally~~ periodically

1 saturated soil or bedrock.

2 B. Setbacks must be according to Table VII in part
3 7080.2150, subpart 2, item G F. Setbacks must be measured from
4 the original soil absorption area.

5 C. On slopes of one percent or greater and where the
6 original soil mound absorption ~~area-sizing-classification-is-11,~~
7 ~~13, or-15~~ is 5.0 or greater in Table IX or IXa in part
8 7080.2150, subpart 3, item F E, mounds must not be located where
9 the ground surface contour lines that lie directly below the
10 long axis of the ~~rock~~ distribution media bed represent a swale
11 or draw, unless the contour lines have a radius of curvature
12 greater than 100 feet. Mounds must never be located in swales
13 or draws where the radius of curvature of the contour lines is
14 less than 50 feet.

15 Subp. 3. Mound design and construction.

16 A. The mound distribution media bed absorption area
17 consists of bottom area only and must be calculated
18 by ~~multiplying~~ dividing the ~~average-daily~~ design flow by ~~0.83~~
19 ~~square-feet-per-gallon~~ 1.2 gallons per square foot per day.

20 B. The mound distribution media bed absorption area
21 must be as long and narrow as practical. Mound absorption
22 distribution media beds must be no wider than ten feet.
23 Mound distribution bed absorption widths must be determined
24 by the contour loading rate, which is the relationship between
25 the vertical and horizontal water movement based on the
26 following soil conditions:

27 (1) the permeability difference between the

1 original soil mound absorption area and slower permeability
2 horizons below the original soil mound absorption area;

3 (2) the depth between the original soil mound
4 absorption area and the change in permeability described in
5 subitem (1); and

6 (3) the land slope.

7 C. Clean sand must be used to elevate the mound
8 distribution media bed ~~absorption-area~~ and must consist of
9 sound, durable material that conforms to the following
10 requirements:

11	Sieve Size	Percent Passing
12		
13	No. 4	95-100
14	No. 8	80-100
15	No. 10	0-100
16	No. 40	0-100
17	No. 60	0-40
18	No. 200	0-5
19		

20 Clean sand must also contain less than three percent
21 deleterious substances and be free of organic impurities.

22 D. The original soil mound absorption area is
23 determined by multiplying the original soil mound absorption
24 length by the original soil mound absorption width. The
25 original soil mound absorption width is calculated by
26 multiplying the mound distribution media bed ~~absorption~~ width by
27 the mound absorption ratio. The mound absorption ratio of the
28 upper 12 inches of soil in the proposed original soil mound
29 absorption area shall be determined according to Table IX or IXa
30 in part 7080.2150, subpart 3, item F E.

31 E. The required original soil absorption width for
32 mounds constructed on slopes from zero to one percent must be

1 centered under the mound distribution media bed ~~absorption~~ width.
2 The required original mound soil absorption width ~~for-mounds~~
3 constructed on slopes greater than one percent must be measured
4 downslope from the upslope edge of the mound distribution media
5 bed ~~absorption~~ width and measured in the direction of the
6 original land slope and perpendicular to the original contours.

7 F. The side slopes on the mound must not be steeper
8 than three horizontal units to one vertical unit and shall
9 extend beyond the required original soil absorption area, if
10 necessary.

11 G. Distribution of effluent over the mound ~~absorption~~
12 distribution media bed must be by level perforated pipe under
13 pressure according to parts 7080.2050 and 7080.2100.

14 H. The supply pipe from the pump to the original soil
15 absorption area must be installed before surface preparation of
16 the original mound soil absorption area. The trench excavated
17 for the supply pipe must be carefully backfilled and compacted
18 to prevent seepage of effluent.

19 I. Vegetation in excess of two inches in length and
20 dead organic debris including leaf mats must be removed from the
21 original soil mound absorption area. Trees must be cut nearly
22 flush with the ground and stumps must not be removed.

23 J. The original soil mound absorption area must be
24 roughened by backhoe teeth, moldboard, or chisel plow. The soil
25 must be roughened to a depth of eight inches. Discing is
26 allowed if the upper eight inches of soil has a texture of sandy
27 loam or coarser. If plowed, furrows must be thrown uphill and

1 there must not be a dead furrow in the original soil mound
2 absorption area. A rubber-tired tractor ~~may-be-used~~ is allowed
3 for plowing or discing. Rototilling or pulverizing the soil is
4 not allowed. The original soil must not be excavated or moved
5 more than one foot from its original location during soil
6 surface preparation.

7 K. Prior to placement of six inches of clean sand, ~~no~~
8 ~~vehicle-may~~ vehicles must not be driven on the original soil
9 mound absorption area before or after the surface preparation is
10 completed. The clean sand must immediately be placed on the
11 prepared surface.

12 L. The clean sand must be placed by using a
13 construction technique that minimizes compaction. If the clean
14 sand is driven on for construction, a crawler or track-type
15 tractor must be used. At least six inches of sand must be kept
16 beneath equipment to minimize compaction of the prepared surface.

17 M. A minimum of 12 inches of clean sand must be
18 placed in contact with the bottom area of the mound distribution
19 media bed ~~absorption-area~~ and must be uniformly tapered to cover
20 the entire original soil absorption area. Other sandy materials
21 ~~may~~ are allowed to be used outside of this area to complete
22 construction of the mound.

23 N. The top of the clean sand layer upon which the
24 mound distribution media bed ~~absorption-area~~ is placed must be
25 level in all directions.

26 O. A vertical inspection pipe at least $\pm\frac{1}{2}$ four
27 inches in diameter must be installed and secured at the

1 distribution medium and sand interface. The inspection pipe
2 must have three-eighths inch or larger perforations spaced
3 vertically no more than six inches apart. At least two
4 perforations must be located in the distribution medium. No
5 ~~perforation-may~~ Perforations must not be located above the
6 permeable synthetic fabric, if used. The inspection pipe must
7 extend to the bottom of the distribution medium, be secured, and
8 be capped, flush with or above finished grade.

9 P. On slopes of one percent or greater, the upslope
10 edge of the mound absorption bed must be placed on the contour.

11 ~~Q. The-mound-absorption-bed-must-completely-encase~~
12 ~~the-top-and-sides-of-the-distribution-pipes-to-a-depth-of-at~~
13 ~~least-one-inch-above-the-pipe.--The-mound-absorption-bed-must~~
14 ~~extend-six-inches-below-the-pipe.~~ The sidewalls of the mound
15 absorption bed must be as vertical as practical and not
16 intentionally sloped.

17 R. The top of the mound ~~absorption~~ distribution media
18 bed must be level in all directions.

19 S. A minimum of six inches of sandy to loamy soil
20 material must be placed on the top of the mound absorption bed
21 and sloped upwards toward the center of the mound a minimum of
22 ten horizontal units to one vertical unit.

23 T. Construction vehicles must not be allowed on the
24 distribution media until backfill is placed as described in item
25 S.

26 U. A minimum of six inches of topsoil borrow must be
27 placed over the entire mound.

1 7080.2230 AT-GRADE SYSTEMS.

2 Subpart 1. At-grade system. To qualify as an at-grade
3 system, the system must meet or exceed the following
4 requirements:

5 A. employ flow values in ~~part~~ parts 7080.1850 to
6 7080.1885;

7 B. meet or exceed applicable technical requirements
8 of parts 7080.1900 to 7080.2030, 7080.2050, and 7080.2100;

9 C. meet or exceed the requirements of part 7080.2150,
10 subparts 2 and 3;

11 D. employ flow measurement; and

12 E. meet the requirements of subparts 2 and 3.

13 Subp. 2. Location of at-grade systems.

14 A. The upper 12 inches of the absorption area must be
15 original soil with a ~~sizing-classification-of-2-to-10-or-12~~
16 loading rate of 0.45 gallons per day per square foot or greater
17 as shown in Table IX or IXa in part 7080.2150, subpart 3, item F
18 E.

19 B. At-grade systems must not be installed in areas
20 with slopes greater than 25 percent.

21 C. Setbacks must be according to part 7080.2150,
22 subpart 2, item G F. Setbacks must be measured from the
23 absorption area.

24 Subp. 3. Design and construction of at-grade systems.

25 A. The at-grade bed absorption width must be
26 determined according to part 7080.2220, subpart 3, item B, and
27 must not exceed a width of 15 feet. The at-grade bed absorption

1 width for slopes of one percent or greater does not include any
2 width of the media necessary to support the upslope side of the
3 pipe.

4 B. The at-grade absorption length must be calculated
5 by ~~multiplying~~ dividing the design flow by the soil sizing
6 ~~factor~~ loading rate found in Table IX or IXa in part 7080.2150,
7 subpart 3, item F E, for the upper 12 inches of soil ~~by the~~
8 ~~average-daily-flow~~ and dividing by the absorption bed width.

9 C. At-grade systems must employ pressurized
10 distribution by meeting or exceeding the applicable requirements
11 of parts 7080.2050 and 7080.2100. At-grade systems located on
12 slopes of one percent or greater require only one distribution
13 pipe located on the upslope edge of the distribution media, with
14 the absorption bed width being measured from the distribution
15 pipe to the downslope edge of the media. Multiple distribution
16 pipes ~~may~~ are allowed to be used to provide even distribution,
17 if necessary, based on site conditions.

18 D. The upslope edge of an at-grade absorption bed
19 must be installed along the natural contour.

20 ~~E. The absorption bed must completely encase the top~~
21 ~~and sides of the distribution pipe to a depth of at least two~~
22 ~~inches above the pipe. There must be at least six inches from~~
23 ~~the bottom of the pipe to the absorption area.~~

24 F E. At-grade materials must be placed by using
25 construction techniques that minimize compaction.

26 G F. Six inches of loamy or sandy cover material must
27 be installed over the distribution media. Cover must extend at

1 least five feet from the ends of the rock bed and be sloped to
2 divert surface water. Side slopes must not be steeper than four
3 horizontal units to one vertical unit. Six inches of topsoil
4 borrow must be placed on the cover material.

5 H G. Three One vertical inspection pipes pipe of at
6 least ~~1-5~~ four inches in diameter must be installed ~~and-evenly~~
7 ~~spaced~~ along the downslope portion of the absorption bed. The
8 inspection pipes must have three-eighths inch or larger
9 perforations spaced vertically no more than six inches
10 apart. ~~No Perforations may~~ must not exist above the
11 distribution medium. The inspection pipes must extend to the
12 absorption bed/soil interface and must be secured and capped
13 flush with or above finished grade.

14 7080.2240 ~~GREYWATER~~ GRAYWATER SYSTEMS.

15 Subpart 1. General. To qualify as a ~~greywater~~ graywater
16 system, the system must meet or exceed the following
17 requirements:

18 A. employ 60 percent of the flow values in ~~part~~ parts
19 7080.1850 to 7080.1885;

20 B. meet or exceed applicable technical requirements
21 of parts 7080.1900 to 7080.2030, 7080.2050, and 7080.2100,
22 except as modified in this part;

23 C. provide flow measurement if a pump is to be
24 employed;

25 D. meet or exceed the requirements of parts 7080.2210
26 to 7080.2230;

27 E. meet or exceed ~~applicable~~ requirements of part

1 7080.2150, subparts 2 and 3; and

2 F. meet the requirements of subparts 2 and 3.

3 Subp. 2. Toilet waste. No Toilet waste may-enter-a
4 greywater must not be discharged to a graywater system.

5 Subp. 3. Sewage tank. ~~Greywater-septic-tanks-must-meet~~
6 ~~the-requirements-of-part-7080-19007-except-that~~ The liquid
7 capacity of a ~~greywater~~ graywater septic tank serving a dwelling
8 must be based on the number of bedrooms existing and anticipated
9 in the dwelling served and shall be at least as large as the
10 capacities given in Table X.

11 TABLE X

12 Number of bedrooms	Tank liquid capacity
13 (gallons)	
14	
15 3 or less	750
16 4 or 5	1,000
17 6 or 7	1,250
18 8 or 9	1,500
19	

20 For ten or more bedrooms, the ~~greywater~~ graywater septic tank
21 shall be sized as: $(1,500 + ((\# \text{ or bedrooms} - 9) \times 150))$.

22 7080.2250 TYPE II SYSTEMS.

23 Systems designed according to parts 7080.2260 to 7080.2290
24 are considered Type II systems.

25 7080.2260 RAPIDLY PERMEABLE SOILS.

26 Subpart 1. General. A system must be designed under this
27 part if the soil in the proposed absorption area, or within
28 three vertical feet of the absorption area, has a ~~system-sizing~~
29 ~~factor-of-1-to-3~~ soil texture groups of 1 or 4 in Table IX in
30 part 7080.2150, subpart 3, item F E. The system must meet or

1 exceed the following requirements:

2 A. employ the design flow values in part parts
3 7080.1850 to 7080.1880;

4 B. meet or exceed applicable technical requirements
5 of parts 7080.1900 to 7080.2030, 7080.2050, and 7080.2100,
6 except as modified in this part;

7 C. provide flow measurement if a pump is to be
8 employed;

9 D. meet or exceed the requirements of parts 7080.2210
10 to 7080.2230;

11 E. meet or exceed ~~applicable~~ requirements of part
12 7080.2150, subparts 2 and 3, except as modified in this part;
13 and

14 F. meet the requirements of subparts 2 and 3.

15 Subp. 2. ~~Contact with soil.~~ The distribution media must
16 not be in contact with soils with a ~~sizing-classification~~
17 texture group of 1 as listed in Table IX in part 7080.2150,
18 subpart 3, item ~~F~~ E.

19 Subp. 3. ~~Treatment techniques.~~ If the distribution media
20 is in contact with soil with ~~a-sizing-classification-of-2-or-3~~
21 soil texture groups 2 through 5 in Table IX in part 7080.2150,
22 subpart 3, item ~~F, one-of-the-following-treatment-techniques~~
23 ~~must-be-used:~~ E,

24 ~~A,--employ~~ pressure distribution must be used as
25 specified in part 7080.2050, subpart 4, ~~or~~

26 ~~B,--divide-the-total-soil-treatment-and-dispersal~~
27 ~~system-into-at-least-four-parts-with-no-part-larger-than-25~~

1 ~~percent-of-the-area-required-by-part-7080.22107-subpart-37-item~~
2 ~~A7-with-the-parts-constructed-for-serial-distribution.~~

3 7080.2270 FLOODPLAIN AREAS.

4 Subpart 1. General. ISTS must be designed under this part
5 if the system is proposed to be located in a floodplain. A
6 system located in a floodplain must meet or exceed the following
7 requirements:

8 A. employ flow values in ~~part~~ parts 7080.1850 to
9 7080.1885;

10 B. meet or exceed applicable technical requirements
11 of parts 7080.1900 to 7080.2030, 7080.2050, and 7080.2100,
12 except as modified in this part;

13 C. provide flow measurement if a pump is to be
14 employed;

15 D. meet or exceed the requirements of parts 7080.2210
16 to 7080.2230;

17 E. meet or exceed ~~applicable~~ requirements of part
18 7080.2150, subparts 2 and 3, except as modified in this subpart;
19 and

20 F. meet the requirements of subparts 2 to 11.

21 Subp. 2. State and local requirements. The allowed use of
22 systems in floodplains must be according to state and local
23 floodplain requirements.

24 Subp. 3. Location of system. An ISTS must not be located
25 in a floodway and, whenever possible, placement within any part
26 of the floodplain should be avoided. If no alternative exists,
27 a system may is allowed to be placed within the flood fringe if

1 the requirements in subparts 4 to 9 11 are met.

2 Subp. 4. Openings. There must be no inspection pipe or
3 other installed opening from the distribution media to the soil
4 surface.

5 Subp. 5. Highest ground. An ISTS must be located on the
6 highest feasible area of the lot and must have location
7 preference over all other improvements except the water supply
8 well. If the ten-year flood data are available, the bottom of
9 the distribution media must be at least as high as the elevation
10 of the ten-year flood.

11 Subp. 6. Pump. If a pump is used to distribute effluent
12 to the soil treatment and dispersal system, provisions shall be
13 made to prevent the pump from operating when inundated with
14 floodwaters.

15 Subp. 7. Raising elevation. When it is necessary to raise
16 the elevation of the soil treatment system to meet the vertical
17 separation distance requirements, a mound system as specified in
18 part 7080.2220 may is allowed to be used with the following
19 additional requirements:

20 A. the elevation of the bottom of the mound bed
21 absorption area must be at least one-half foot above the
22 ten-year flood elevation if ten-year flood data are available;

23 B. inspection pipes must not be installed unless the
24 top of the mound is above the 100-year flood elevation; and

25 C. the placement of clean sand and other fill must be
26 done according to any community-adopted floodplain management
27 ordinance.

1 Subp. 8. Inundation of top. When the top of a sewage tank
2 is inundated, the dwelling must cease discharging sewage into it.

3 Subp. 9. Backflow. Backflow prevention of liquid into the
4 building when the system is inundated must be provided. If a
5 holding tank is used, the system must be designed to permit
6 rapid diversion of sewage into the holding tank when the system
7 is inundated.

8 Subp. 10. Holding tank. If a holding tank is used to
9 serve a dwelling, the holding tank's liquid capacity must equal
10 100 gallons times the number of bedrooms times the number of
11 days between the ten-year stage on the rising limb of the
12 100-year flood hydrograph and the ten-year stage on the falling
13 limb of the hydrograph, or 1,000 gallons, whichever is greater.
14 The holding tank must be accessible for removal of tank contents
15 under flooded conditions.

16 Subp. 11. Water level above top. Whenever the water level
17 has risen above the top of a sewage tank, the tank must be
18 pumped to remove all solids and liquids after the flood has
19 receded and before use of the system is resumed.

20 7080.2280 PRIVIES.

21 A. To qualify as a privy, the system must:

22 (1) meet or exceed the requirements of part
23 7080.2150, subpart 2;

24 (2) have soil beneath the bottom of the pit that
25 meets or exceeds the requirements of part 7080.2150, subpart 3,
26 item D C, ~~or~~ employ a watertight tank meeting applicable
27 requirements of parts 7080.1900 to 7080.2030, or employ a toilet

1 treatment device; and

2 (3) meet the requirements of items B to E.

3 B. Pits or vaults must have sufficient capacity for
4 the dwelling they serve, but must have at least 25 cubic feet of
5 capacity.

6 C. The sides of the pit must be curbed to prevent
7 cave-in.

8 D. The privy must be easily maintained and insect
9 proof. The door and seat must be self-closing. All exterior
10 openings, including vent openings, shall be screened.

11 E. Privies must be adequately vented.

12 7080.2290 HOLDING TANKS.

13 A. To qualify as a holding tank, the system must:

14 (1) meet or exceed applicable requirements of
15 parts 7080.1900 to 7080.2030;

16 (2) meet or exceed the applicable requirements of
17 part 7080.2150, subpart 2;

18 (3) meet or exceed the requirements of part
19 7080.2150, subpart 3, item B; and

20 (4) meet the requirements of items B to F.

21 B. All tanks used as holding tanks must be tested for
22 watertightness as specified in part 7080.2010, subpart 3.

23 C. A cleanout pipe of at least six inches in diameter
24 must extend to the ground surface and be provided with seals to
25 prevent odor emissions and exclude insects and vermin. A
26 maintenance hole of at least 20 inches in least dimension must
27 extend through the cover to a point within 12 inches, but no

1 closer than six inches, below finished grade. If the
2 maintenance hole is covered with less than six inches of soil,
3 the cover must be secured according to part 7080.1970, item C.

4 D. For a dwelling, the minimum size is 1,000 gallons
5 or 400 gallons times the number of bedrooms, whichever is
6 greater. For other establishments, the minimum capacity shall
7 be at least five times the average-daily design flow. Tank
8 sizing for floodplain areas must be calculated according to part
9 7080.2270, subpart 10.

10 E. Holding tanks must be located in an area readily
11 accessible to the pump truck under all weather conditions and
12 where accidental spillage during pumping will not create a
13 nuisance and must meet the setback requirements as specified in
14 Table VII in part 7080.2150, subpart 2, item G F.

15 F. Holding tanks must have an alarm device to
16 minimize the chance of accidental sewage overflows unless
17 regularly scheduled pumping is used. An alarm device shall
18 identify when the holding tank is at 75 percent capacity.

19 7080.2300 TYPE III SYSTEMS.

20 A system designed according to this part is considered a
21 Type III system. The system must:

22 A. employ design flow values in part parts 7080.1850
23 to 7080.1885;

24 B. meet or exceed applicable technical requirements
25 of part 7080.2050, subpart 4, item A;

26 C. provide flow measurement;

27 D. meet or exceed the requirements of part 7080.2150,

1 subpart 2; and

2 E. meet or exceed the requirements of part 7080.2150,
3 subpart 3, items A, B, ~~D~~-and-K C, G, I, and J.

4 If the site cannot accommodate a soil treatment and
5 dispersal system sized in accordance with Table IX or IXa in
6 part 7080.2150, subpart 3, item F E, a smaller soil treatment
7 and dispersal system may is allowed to be constructed that if it
8 employs flow restriction devices that do not allow loadings in
9 excess of those in Table IX or IXa of part 7080.2150, subpart 3,
10 item F E.

11 7080.2350 TYPE IV SYSTEMS.

12 Subpart 1. General. A system designed according to this
13 part is considered a Type IV system. The system must:

14 A. employ design flow values in ~~part~~ parts 7080.1850
15 to 7080.1885;

16 B. meet or exceed applicable technical requirements
17 of parts 7080.1900 to 7080.2030, 7080.2050, and 7080.2100;

18 C. meet or exceed the requirements of part 7080.2150,
19 subpart 2;

20 D. meet or exceed the requirements of part 7080.2150,
21 subpart 3, ~~item~~ items A and B; and

22 E. meet or exceed the requirements of ~~Tables~~ Table XI
23 in subpart 2 and Table XII or XIIa in ~~subparts-2-and~~ subpart
24 3.

25 Subp. 2. Table XI.

26 TABLE XI

27 TREATMENT COMPONENT PERFORMANCE LEVELS AND

METHOD OF DISTRIBUTION BY SOIL TEXTURE GROUP¹

Vertical separation (inches)	Soil group found in Table XII		
	1-5	3-6 6-9	7-8 10-11
12 ← 18 to 17	Treatment Level A Pressure Distribution Timed Dosing	Treatment Level B A Pressure Distribution Timed Dosing	Treatment Level B A Pressure Distribution Timed Dosing
≥ 18 < 24 to 23	Treatment Level B Pressure Distribution Timed Dosing	Treatment Level B Pressure Distribution Timed Dosing	Treatment Level B Pressure Distribution
≥ 24 < to 36	Treatment Level B Pressure Distribution Timed Dosing	Treatment Level B Pressure Distribution	Treatment Level B Pressure Distribution

¹ The treatment component performance levels correspond with those established for treatment components under the product testing requirements in Table III in part 7000.1620 7083.4030, as published in the State Register, volume ..., page ..., and as subsequently adopted.

Subp. 3. Table Tables XII and XIIa. The system's absorption area must be sized according to Table XII or Table XIIa.

TABLE-XII-
SOIL-GROUPING-DESCRIPTIONS-AND-MAXIMUM-HYDRAULIC-LOADING-RATE-TO-THE-ABSORPTION-AREA-

Soil group	Soil texture	Soil structure (type)	Soil structure (grade)	Minimum soil-sizing factor-(ft ² /gal- ² /day)
1	Coarse-sands, medium-sands, loamy-coarse sands, loamy medium-sands	Single-grain	Structureless	0.63

1					
2	2	Fine-sands ₇	Single-grain	Structureless	1-0
3		very-fine			
4		sands ₇ -loamy			
5		fine-sands ₇			
6		loamy-very			
7		fine-sands			
8					
9	3	Coarse-sandy	Massive	Structureless	1-67
10		loam ₇ -sandy			
11		loam	Platy	Weak ₇	
12				moderate ₇ -strong	2-0
13					
14			Prismatic ₇	Weak	1-42
15			blocky ₇		
16			granular	Moderate ₇ -strong	1-0
17					
18	4	Fine-sandy	Massive	Structureless	2-0
19		loam ₇ -very			
20		fine-sandy	Platy	Weak ₇	
21		loam		moderate ₇ -strong	---
22					
23			Prismatic ₇	Weak	1-67
24			blocky ₇		
25			granular	Moderate ₇ -strong	1-25
26					
27	5	loams	Massive	Structureless	2-0
28					
29			Platy	Weak ₇	
30				moderate ₇ -strong	---
31					
32			Prismatic ₇	Weak	1-67
33			blocky ₇		
34			granular	Moderate ₇ -strong	1-25
35					
36	6	Silt-loams	Massive	Structureless	5-0
37					
38			Platy	Weak ₇	
39				moderate ₇ -strong	---
40					
41			Prismatic ₇	Weak	1-67
42			blocky ₇		
43			granular	Moderate ₇ -strong	1-25
44					
45	7	Sandy-clay	Massive	Structureless	---
46		loams ₇ -clay			
47		loams ₇ -silty	Platy	Weak ₇	
48		clay-loams		moderate ₇ -strong	---
49					
50			Prismatic ₇	Weak	3-33
51			blocky ₇		
52			granular	Moderate ₇ -strong	1-67
53					
54	8	Sandy-clay ₇	Massive	Structureless	---

1	clay			
2	silty-clays	Platy	Weak	
3			moderate-strong	---
4				
5		Prismatic	Weak	---
6		blocky		
7		granular	Moderate-strong	3-33
8				
9				

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TABLE XII

12

LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA FOR
TRENCHES AND SEEPAGE BEDS FOR EFFLUENT MEETING TREATMENT LEVELS
A AND B AND ABSORPTION RATIOS FOR DETERMINING MOUND ABSORPTION
AREAS USING DETAILED SOIL DESCRIPTIONS

16

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<u>Texture</u>	<u>Texture group</u>	<u>Structure</u>	<u>Grade</u>	<u>Consistence</u>	<u>Soil loading rate (gpd/ft²)</u>	<u>Mound absorption ratio</u>
<u>Coarse sand*</u>	<u>1</u>	<u>single grain</u>		<u>loose</u>	<u>0.00</u>	<u>1</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.00</u>	<u>2</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Medium sand*</u>	<u>2</u>	<u>single grain</u>		<u>loose</u>	<u>1.6</u>	<u>1</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.78</u>	<u>2</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Fine sand</u>	<u>3</u>	<u>single grain</u>		<u>loose</u>	<u>1.0</u>	<u>2</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.45</u>	<u>2</u>

		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Coarse and medium loamy sand*</u>	<u>4</u>	<u>single grain</u>		<u>loose</u>	<u>1.6</u>	<u>1</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.78</u>	<u>2</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>
<u>Fine and very fine loamy sand</u>	<u>5</u>	<u>single grain</u>		<u>loose</u>	<u>1.0</u>	<u>2</u>
		<u>single grain</u>		<u>weakly cemented-friable</u>	<u>0.45</u>	<u>5.0</u>
		<u>single grain</u>		<u>cemented-firm</u>	<u>0.00</u>	<u>0</u>

<u>Coarse</u> <u>and</u> <u>medium</u> <u>sandy</u> <u>loam</u>	<u>6</u>	<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.6</u>	<u>2.6</u>
		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>1.0</u>	<u>1.3</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.6</u>	<u>2.6</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.6</u>	<u>2.6</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.6</u>	<u>2.6</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Fine and v.</u> <u>fine sandy</u> <u>loam</u>	<u>7</u>	<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>5.0</u>

		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.78</u>	<u>2.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.24</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Loam</u>	<u>8</u>	<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.6</u>	<u>2.6</u>
		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.78</u>	<u>2.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>

		<u>platy</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.24</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Silt loam</u>	<u>9</u>	<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.6</u>	<u>2.6</u>
		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.78</u>	<u>2.4</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.45</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable,</u> <u>friable</u>	<u>0.45</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable,</u> <u>friable</u>	<u>0.00</u>	<u>0.0</u>

		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.0</u>
		<u>massive</u>		<u>v. friable,</u> <u>friable</u>	<u>0.3</u>	<u>5.0</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.0</u>
<u>Clay loam,</u> <u>silty clay</u> <u>loam,</u> <u>sandy clay</u> <u>loam</u>	<u>10</u>	<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>v. friable or</u> <u>friable</u>	<u>0.3</u>	<u>5.0</u>
		<u>pris, blk,</u> <u>gr</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>v. friable or</u> <u>friable</u>	<u>0.6</u>	<u>2.6</u>
		<u>pris, blk,</u> <u>gr</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.3</u>	<u>5.0</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable or</u> <u>friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>v. friable or</u> <u>friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or</u> <u>strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>

		<u>massive</u>		<u>v. friable or friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.00</u>
<u>Clay, silty clay, sandy clay</u>	<u>11</u>	<u>pris, blk, gr</u>	<u>weak</u>	<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>pris, blk, gr</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>v. friable, or friable</u>	<u>0.3</u>	<u>5.0</u>
		<u>pris, blk, gr</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>weak</u>	<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>weak</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or strong</u>	<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>platy</u>	<u>mod or strong</u>	<u>firm</u>	<u>0.00</u>	<u>0.00</u>
		<u>massive</u>		<u>v. friable, friable</u>	<u>0.00</u>	<u>0.00</u>
		<u>massive</u>		<u>firm</u>	<u>0.00</u>	<u>0.00</u>

1 All very firm consistence has a loading rate of 0.0.

2 TABLE XIIa

3 LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA
 4 FOR TRENCHES AND SEEPAGE BEDS FOR EFFLUENT TREATMENT
 5 LEVELS A AND B AND ABSORPTION RATIOS FOR DETERMINING
 6 MOUND ABSORPTION AREAS USING PERCOLATION TESTS

7

8 <u>Percolation rate</u>	9 <u>Gallons per day per</u>	10 <u>Mound</u>
11 <u>(minutes per</u>	12 <u>square foot of</u>	13 <u>absorption</u>
14 <u>inch)</u>	15 <u>trench bottom</u>	16 <u>ratio</u>
17 <u>Faster than 0.1*</u>	18 <u>0.0</u>	19 <u>1</u>
20 <u>0.1 to 5*</u>	21 <u>1.6</u>	22 <u>1</u>
23 <u>0.1 to 5 (soil</u>	24 <u>1.0</u>	25 <u>2</u>
26 <u>texture groups</u>		
27 <u>3 & 5)</u>		
28 <u>6 to 15</u>	29 <u>1.0</u>	30 <u>1.3</u>
31 <u>16 to 30</u>	32 <u>0.78</u>	33 <u>2</u>
34 <u>31 to 45</u>	35 <u>0.78</u>	36 <u>2.4</u>
37 <u>46 to 60</u>	38 <u>0.6</u>	39 <u>2.6</u>
40 <u>61 to 120</u>	41 <u>0.3</u>	42 <u>5.0</u>
43 <u>Slower than 120</u>	44 <u>=</u>	45 <u>=</u>

46 *See part 7080.2260 for requirements for these soils.

33

34 7080.2400 TYPE V SYSTEMS.

35 A system designed according to this part is considered a
 36 Type V system. The system must:

37 A. employ design flow values in part parts 7080.1850
 38 to 7080.1885;

39 B. meet or exceed the requirements of part 7080.2150,
 40 subpart 2; and

1 C. be designed with a vertical separation that
2 ensures adequate sewage dispersal and treatment and dispersal.
3 Design factors to consider include, but are not limited to,
4 effluent quality, loading rates, groundwater mounding if loading
5 rates are in excess of those in part 7080.2350, subpart 2, Table
6 XII or XIIa, loading methods, and soil conditions.

7 ISTS must not contaminate underground waters or zones of
8 ~~seasonal~~ periodic saturation with viable fecal organisms.

9 7080.2430 REPORTING.

10 Phase II design reports must include detailed drawings,
11 design flows, system component sizing and calculations,
12 hydraulic and organic loading rates, setbacks, location and
13 elevations for construction considerations, and management plans
14 as described in part 7082.0600, subpart 1, as published in the
15 State Register, volume 31, page 1085, and as subsequently
16 adopted, and a certified statement.

17 7080.2450 MAINTENANCE.

18 Subpart 1. General. All ISTS must be operated under the
19 regulatory requirements of part 7082.0600, as published in the
20 State Register, volume 31, page 1085, and as subsequently
21 adopted. ISTS and all components must be maintained in
22 compliance with this chapter and manufacturer requirements.
23 ~~Subparts~~ Subpart 2, item items A₇ and 6 B, are intended to
24 apply to ISTS and systems that do not qualify as an ISTS, but
25 receives sewage such as cesspools, drywells, leaching pits, or
26 other pits.

1 Subp. 2. Frequency of assessment. The owner of an ISTS or
2 the owner's agent shall regularly, but in no case less
3 frequently than every three years:

4 A. assess whether sewage tanks leak below the
5 designed operating depth and whether sewage tank tops, riser
6 joints, and riser connections leak through visual evidence of
7 major defects; and

8 B. measure or remove the accumulations of scum,
9 grease, and other floating materials at the top of each septic
10 tank and compartment, along with the sludge, which consists of
11 the solids denser than water.

12 Subp. 3. Removal of material.

13 A. All solids and liquids must be removed by pumping
14 from all tanks or compartments in which the top of the sludge
15 layer is less than 12 inches from the bottom of the outlet
16 baffle or transfer hole or whenever the bottom of the scum layer
17 is less than three inches above the bottom of the outlet baffle
18 or transfer hole. Total sludge and scum volume must not be
19 greater than 25 percent of the tank's liquid capacity.

20 B. Removal of accumulated sludge, scum, and liquids
21 from septic tanks and dosing-chambers pump tanks must be through
22 the maintenance hole, ~~except for holding tanks that can be~~
23 ~~pumped through the cleanout pipe.~~

24 ~~C. -- If no maintenance hole exists on a sewage tank~~
25 ~~that is perceived to be watertight below the designed operating~~
26 ~~depth, the owner or the owner's agent shall install one or more~~
27 ~~maintenance holes in sewage tanks according to part 7080.1970 to~~

1 ~~allow-for-maintenance-to-take-place-through-the-maintenance~~
2 ~~hole.~~ The removal of solids from any location other than the
3 maintenance hole is not a compliant method of solids removal
4 from a sewage tank, and this method does not fulfill the solids
5 removal requirement of this part or a management plan. Liquid
6 and solids removal from clean-out pipes is allowed for holding
7 tanks.

8 B C. After removal of solids and liquids, the system
9 shall be brought into compliance with part 7080.1970, ~~items-B~~
10 and item C. Covers secured by screws shall be refastened in all
11 screw openings. If the maintenance hole does not extend to
12 finish grade, it must be brought into compliance with part
13 7080.1970, item C, or secured by covering with a minimum of 12
14 inches of soil.

15 ~~E.--Bosing-chambers~~ D. Pump tanks must be maintained
16 according to this part. Sludge must be removed if within one
17 inch of the pump intake.

18 Subp. 4. Toilet waste treatment devices and privies.

19 A. For primitive dwellings using toilet waste
20 treatment devices in low dwelling density areas, septage
21 disposal from these devices by the owner must be in accordance
22 with local ordinances. If no ordinance exists, the septage must
23 not be discharged to surface waters, drainageways, steeply
24 sloping areas, or wet areas in a manner or volume that is
25 harmful to the environment or public health or that creates a
26 nuisance. The material must be buried or covered with soil.
27 For site conditions not met in this subpart, the solids disposal

1 from toilet waste treatment devices shall be according to
2 subpart 6 by a licensed maintenance business.

3 B. When the privy is filled to one-half of its
4 capacity, the solids must be removed. Abandoned pits must have
5 the sewage solids and contaminated soil removed and must be
6 filled with clean earth and slightly mounded to allow for
7 settling. Removed solids shall be disposed of according to
8 subpart 6.

9 Subp. 5. **Additives.** ISTS additives, which are products
10 added to the sewage or to the system with the intent to lower
11 the accumulated solids in sewage, must not be used as a means to
12 reduce the frequency of proper maintenance and removal of sewage
13 solids from the sewage tanks as specified in this part. The use
14 of additives does not fulfill the solids removal requirement of
15 this part or a management plan. ISTS additives that contain
16 hazardous materials must not be used in an ISTS.

17 Subp. 6. **Septage disposal.** Septage or any waste mixed
18 with septage must be disposed of in accordance with state,
19 federal, or local requirements for septage and other wastes. If
20 septage is disposed of into a ~~municipal~~ sewage or septage
21 treatment facility, a written agreement must be provided between
22 the accepting facility and the maintenance business.

23 Subp. 7. **Use of soil treatment site.** Activities on the
24 current soil dispersal and treatment ~~and-dispersal~~ system or the
25 reserve soil dispersal and treatment ~~and-dispersal~~ area as
26 specified in part ~~7082.01007-subpart-37-item-B7-subitem~~
27 ~~(5)~~, as published in the State Register, volume 31,

1 page ~~1083~~ ..., and as subsequently adopted, that may impair the
2 current or future treatment abilities or hydraulic performance
3 of the soil treatment and dispersal system are prohibited. This
4 includes, but is not limited to, covering all or part of the
5 soil treatment system with an impermeable surface as determined
6 by the local unit of government.

7 Subp. 8. **System remediation.** Any maintenance activity
8 used to increase the acceptance of effluent to a soil treatment
9 and dispersal system must:

10 A. not be used on a system failing to protect
11 groundwater as defined in part 7080.1500, subpart 4, item B,
12 unless the activities meet the requirements of parts 7080.2350
13 and 7080.2400;

14 B. not cause preferential flow from the soil
15 treatment and dispersal system bottom to the ~~seasonally~~
16 periodically saturated soil or bedrock; and

17 C. be conducted by an appropriately certified
18 qualified employee or an appropriately licensed business as
19 specified in ~~chapter-7083~~ part 7083.0790, as published in the
20 State Register, volume 31, page 1088, and as subsequently
21 adopted.

22 Any substance added with the intent to increase the
23 infiltration rate of the soil treatment and dispersal system
24 must not contain hazardous substances.

25 7080.2500 SYSTEM ABANDONMENT.

26 Subpart 1. **Tank abandonment.** All systems with no future
27 intent for use must be abandoned according to this part. Tank

1 abandonment procedures for sewage tanks, cesspools, leaching
2 pits, drywells, seepage pits, vault privies, pit privies, and
3 distribution devices must meet the requirements in items A to C.

4 A. All solids and liquids must be removed and
5 disposed of according to part 7080.2450, subpart 6, by a
6 licensed maintenance business.

7 B. All electrical devices and devices containing
8 mercury must be removed and disposed of according to applicable
9 regulations.

10 C. Abandoned tanks or any other underground cavities
11 must be removed or remain in place and crushed with the
12 remaining cavity filled with soil or rock material.

13 Subp. 2. Future discharge. Access for future discharge to
14 the system must be permanently denied.

15 Subp. 3. Removal of system. If soil treatment and
16 dispersal systems are removed, contaminated materials shall be
17 properly handled to prevent human contact. Contaminated
18 materials include distribution media, soil or sand within three
19 feet of the system bottom, distribution pipes, tanks, and
20 contaminated soil around leaky tanks. Contaminated material
21 also includes any soil that received sewage from a surface
22 failure. Contaminated materials must be disposed of according
23 to items A to D.

24 A. Contaminated materials disposed of off-site must
25 be disposed of according to part 7080.2450, subpart 6.

26 B. If contaminated material is to be spread or used
27 on-site within one year of contact with sewage, the material

1 must be placed in an area meeting the soil and setback
2 requirements described in part 7080.2150, subpart subparts 2,
3 item F, Table VII, and 3, item D C, and the material must be
4 covered with a minimum of six inches of uncontaminated soil and
5 protected from erosion. After one year following contact with
6 sewage, the material may is allowed to be spread in any location
7 meeting the setback requirement of part 4725.4450, covered with
8 a minimum of six inches of uncontaminated soil, and protected
9 from erosion. After one year following contact with sewage, the
10 material may is allowed to be used to fill in the abandoned
11 in-place sewage tanks.

12 C. Contaminated pipe, geotextile fabric, or other
13 material must be dried and disposed of in a mixed municipal
14 solid waste landfill.

15 D. The person or business abandoning the system must
16 complete and sign a record of abandonment that states the system
17 was abandoned according to this part. The record must be sent
18 to the local unit of government within 90 days of abandonment.

19 7080.2550 SEEPAGE PITS, DRYWELLS, AND LEACHING PITS.

20 Subpart 1. Intended use of this part. This part must be
21 used when conducting existing system compliance inspections.
22 This part defines what constitutes seepage pit, drywell, or
23 leaching pit systems. Seepage pit, drywell, or leaching pit
24 systems are not considered compliant systems as determined in
25 part 7080.1500, subpart 4, item B, but these existing systems
26 may be allowed continued use under Minnesota Statutes, section
27 115.55, subdivision 5a, paragraph (f), by local units of

1 government that have adopted alternative local standards for
2 these systems under part ~~7082.0040~~ 7082.0050, subpart 5, as
3 published in the State Register, volume 31, page ~~1079~~ 1081, and
4 as subsequently adopted.

5 Subp. 2. Requirements for seepage pits, drywells, and
6 leaching pits. A seepage pit, drywell, or leaching pit is a
7 system that:

8 A. has a sewage tank that does not obviously leak
9 below the designed liquid capacity preceding the pit;

10 B. has a pit that is not located in a geologic
11 formation that is used as a source of drinking water;

12 C. has at least three feet of vertical separation
13 from the bottom of the pit to the ~~seasonally~~ periodically
14 saturated soil or bedrock;

15 D. has an absorption area that has been determined by
16 ~~multiplying-the-average-daily~~ dividing the design flow under
17 ~~Table-IV in part-7080.1860~~ parts 7080.1850 to 7080.1885 by the
18 soil ~~sizing-factor~~ loading rate under Table IX or IXa in part
19 7080.2150, subpart 3, item F E, based on the weighted average of
20 each vertical stratum penetrated by the seepage pit, drywell, or
21 leaching pit;

22 E. has a pit that has not been placed in a soil
23 stratum with a ~~sizing-classification~~ texture group of 1 or 4 in
24 Table IX in part 7080.2150, subpart 3, item F E;

25 F. has a pit with a minimum inside diameter of five
26 feet; and

27 G. meets all setback requirements.

10/18/07

[REVISOR] CKM/JC AR3601

1 REPEALER. Minnesota Rules, parts 7080.0010, 7080.0020,
2 7080.0025, 7080.0030, 7080.0060, 7080.0065, 7080.0110,
3 7080.0115, 7080.0120, 7080.0125, 7080.0130, 7080.0150,
4 7080.0160, 7080.0170, 7080.0172, 7080.0175, 7080.0176,
5 7080.0178, 7080.0179, 7080.0305, 7080.0310, 7080.0315,
6 7080.0600, 7080.0700, 7080.0705, 7080.0710, 7080.0715,
7 7080.0720, 7080.0800, 7080.0805, 7080.0810, 7080.0815,
8 7080.0820, 7080.0830, 7080.0850, 7080.0855, 7080.0860,
9 7080.0900, 7080.0920, and 7080.0950, are repealed.