

1 Pollution Control Agency

2

3 Adopted Permanent Rules Relating to Individual Sewage Treatment

4 Systems Design Criteria

5

6 Rules as Adopted

7 7080.0010 PURPOSE AND INTENT.

8 The improper design, location, installation, use, and
 9 maintenance of individual sewage treatment systems adversely
 10 affects the public health, safety, and general welfare by
 11 discharge of inadequately treated sewage to surface and ground
 12 waters. In accordance with the authority granted in Minnesota
 13 Statutes, chapters 104, 105, 115, and 116, the Minnesota
 14 Pollution Control Agency, hereinafter referred to as the agency,
 15 does hereby provide the minimum standards and criteria for the
 16 design, location, installation, use, and maintenance of
 17 individual sewage treatment systems, and thus protect the
 18 surface and ground waters of the state, and promote the public
 19 health and general welfare. These standards are most effective
 20 when applied in conjunction with local planning and zoning that
 21 considers the density of the systems that are discharging to the
 22 groundwater. These standards are not intended to cover systems
 23 treating industrial waste or other wastewater that may contain
 24 hazardous materials.

25 Further, it is intended that the administration and
 26 enforcement of these standards be conducted by municipalities,
 27 since experience has shown that sanitary ordinances can most
 28 effectively be administered at the local level.

29 7080.0020 DEFINITIONS.

30 Subpart 1. **Certain terms.** For the purposes of these
 31 standards, certain terms or words used herein shall be
 32 interpreted as follows: the words "shall" and "must" are
 33 mandatory, the words "should" and "may" are permissive. All
 34 distances, unless otherwise specified, shall be measured
 35 horizontally.

1 Subp. 1a. **Absorption area.** "Absorption area" means the
2 area below a mound that is designed to absorb effluent.

3 Subp. 1b. Additive, individual sewage treatment system.

4 "Additive, individual sewage treatment system" means a product
5 which is added to the wastewater or to the system to improve the
6 performance of an individual sewage treatment system.

7 Subp. 2. to 12. [Unchanged.]

8 Subp. 13. **Distribution pipes.** "Distribution pipes" means
9 perforated pipes that are used to distribute sewage tank
10 effluent in a soil treatment system.

11 Subp. 14. and 15. [Unchanged.]

12 Subp. 15a. **Drainfield rock.** "Drainfield rock" means ~~clean~~
13 ~~rock~~, crushed igneous rock, or similar insoluble, durable, and
14 decay-resistant material with no more than five percent by
15 weight passing a number 4 sieve and no more than one percent by
16 weight passing a number 200 sieve. The size shall range from
17 three-fourths inch to 2-1/2 inches.

18 Subp. 16. [Unchanged.]

19 Subp. 17. [See Repealer.]

20 Subp. 18. **Greywater.** "Greywater" means liquid waste from
21 a dwelling or other establishment produced by bathing, laundry,
22 culinary operations, and from floor drains associated with these
23 sources, and specifically excluding toilet waste.

24 Subp. 18a. **Hazardous materials.** "Hazardous materials"
25 means any substance which, when discarded, meets the definition
26 of hazardous waste in chapter 7045.

27 Subp. 19. [Unchanged.]

28 Subp. 20. **Impermeable.** "Impermeable," with regard to
29 bedrock, means a bedrock having no cracks or crevices and having
30 a vertical permeability slower than one inch in 24 hours shall
31 be considered impermeable. With regard to soils, a soil horizon
32 or layer having a vertical permeability ~~less~~ slower than 0.025
33 inch in 24 hours shall be considered impermeable.

34 Subp. 21. **Individual sewage treatment system.** "Individual
35 sewage treatment system" means a sewage treatment system, or
36 part thereof, serving a dwelling, or other establishment, or

1 group thereof, which uses subsurface soil treatment and disposal.

2 Subp. 21a. Invert. "Invert" means the lowest point of a
3 channel inside a pipe.

4 Subp. 22. [See Repealer.]

5 Subp. 22a. **Maximum monthly average daily flow.** "Maximum
6 monthly average daily flow" means the 30-day average daily flow
7 for the highest consecutive 30-day period during the year.

8 Subp. 23. and 24. [Unchanged.]

9 Subp. 24a. **Municipality.** "Municipality" means any county,
10 city, town, the Metropolitan Waste Control Commission
11 established in chapter 473, the Metropolitan Council when acting
12 under the provisions of that chapter, or any other governmental
13 subdivision of the state responsible by law for the prevention,
14 control, and abatement of water pollution in any area of the
15 state.

16 Subp. 24b. **Ordinary high water level.** "Ordinary high
17 water level" means the boundary of public waters and wetlands,
18 that is an elevation delineating the highest water level
19 maintained for a sufficient period of time to leave evidence
20 upon the landscape, commonly that point where the natural
21 vegetation changes from predominantly aquatic to predominantly
22 terrestrial. For watercourses, the ordinary high water level is
23 the elevation of the top of the bank of a channel. For
24 reservoirs and flowages the ordinary high water level must be
25 the operating elevation of the normal summer pool.

26 Subp. 24c. **Original soil.** "Original soil" means naturally
27 occurring inorganic soil that has not been moved, smeared,
28 compacted, nor manipulated with construction equipment.

29 Subp. 25. [Unchanged.]

30 Subp. 25a. **Owner.** "Owner" means all persons having
31 possession of, control over, or title to an individual sewage
32 treatment system.

33 Subp. 26. [Unchanged.]

34 Subp. 27. **Permitting authority.** "Permitting authority"
35 means any state agency or municipality which administers the
36 provisions of these standards.

1 Subp. 28. **Plastic limit.** "Plastic limit" means a soil
2 moisture content below which the soil may be manipulated for
3 purposes of installing a soil treatment system, and above which
4 manipulation will cause compaction and puddling. The soil
5 moisture content at the plastic limit can be measured by
6 American Society for Testing and Materials (ASTM) test number
7 D4318-84.

8 Subp. 28a. **Public waters.** "Public waters" means any
9 public waters or wetlands as defined in Minnesota Statutes,
10 section 105.37, subdivisions 14 and 15 or identified as public
11 waters or wetlands by the inventory prepared pursuant to
12 Minnesota Statutes, section 105.391.

13 Subp. 28b. **Required ~~basal~~ absorption width.**
14 "Required ~~basal~~ absorption width" means that width, measured in
15 the direction of the original land slope and perpendicular to
16 the original contours, which is required for the sewage tank
17 effluent to infiltrate into the original soil according to the
18 allowable loading rates of Table V in part 7080.0170, subpart 2,
19 item G.

20 Subp. 28c. **Restaurants.** "Restaurants" means
21 establishments that prepare and serve meals and at which
22 multiple use dishes and utensils are washed.

23 Subp. 29. **Sand.** "Sand" means a soil texture composed by
24 weight of at least 25 percent very coarse, coarse, and medium
25 sand varying in size from 2.00 millimeters (sieve size 10) to
26 0.25 millimeters (sieve size 60), less than 40 percent fine or
27 very fine sand ranging in size between 0.25 millimeters and 0.05
28 millimeters (sieve size 270), and no more than ten percent
29 particles smaller than 0.05 millimeters.

30 Subp. 30. to 32. [Unchanged.]

31 Subp. 33. **Sewage.** "Sewage" means any water carried
32 domestic waste, exclusive of footing and roof drainage, from any
33 industrial, agricultural, or commercial establishment, or any
34 dwelling or any other structure. Domestic waste includes liquid
35 waste produced by toilets, bathing, laundry, culinary
36 operations, and the floor drains associated with these sources,

1 and specifically excludes animal waste and commercial or
2 industrial waste water.

3 Subp. 34. to 40. [Unchanged.]

4 Subp. 41. **Soil characteristics, limiting.** "Soil
5 characteristics, limiting" means those soil characteristics
6 which preclude the installation of a standard system, including
7 ~~but-not-limited-to,~~ evidence of water table or bedrock ~~closer~~
8 ~~than-three-feet-to-the-ground-surface,~~ and percolation rates
9 faster than one-tenth or slower than 120 minutes per inch.

10 Subp. 42. [Unchanged.]

11 Subp. 43. **Soil treatment area.** "Soil treatment area"
12 means that area of trench or bed bottom which is in direct
13 contact with the drainfield rock of the soil treatment system,
14 and for mounds, that area to the edge edges of the required
15 ~~basal~~ absorption width and extending five feet beyond the ends
16 of the rock layer.

17 Subp. 44. **Soil treatment system.** "Soil treatment system"
18 means a system where sewage tank effluent is treated and
19 disposed of below the ground surface by filtration and
20 percolation through the soil, and includes those systems
21 commonly known as seepage bed, trench, drainfield, disposal
22 field, and mounds.

23 Subp. 45. **Standard system.** "Standard system" means an
24 individual sewage treatment system employing a building sewer,
25 sewage tank, and the soil treatment system consisting of
26 trenches, seepage beds, or mounds which are constructed on
27 original soil which has a percolation rate equal to or faster
28 than 120 minutes per inch.

29 Subp. 46. to 50 ~~48~~. [Unchanged.]

30 Subp. 49. **Valve box.** "Valve box" means any device which
31 ~~can-stop~~ stops sewage tank effluent from flowing to a portion of
32 the soil treatment area, and includes, but is not limited to,
33 caps or plugs on distribution or drop box outlets, divider
34 boards, butterfly valves, gate valves, or other mechanisms.

35 Subp. 50. [Unchanged.]

36 Subp. 51. [See Repealer.]

1 Subp. 52. Watertight. "Watertight" means a sewage tank
 2 constructed so that no water can get into or out of the sewage
 3 tank except through the inlet and outlet pipes.

4 Subp. 53. [Unchanged.]

5 7080.0030 ADMINISTRATION BY STATE AGENCIES.

6 ~~For an individual sewage treatment system that either has a~~
 7 ~~soil treatment system designed to treat an average daily flow~~
 8 ~~greater than 10,000 gallons per day, or that is designed to~~
 9 ~~treat a maximum monthly average daily flow of 15,000 gallons per~~
 10 ~~day or more, the owner shall make application for and obtain a~~
 11 ~~state disposal system permit from the agency.~~ For an individual
 12 sewage treatment system, or group of individual sewage treatment
 13 systems, that are located on adjacent properties and under
 14 single ownership, the owner or owners shall make application for
 15 and obtain a state disposal system permit from the agency if
 16 either of the following conditions apply:

17 A. the individual sewage treatment system or systems
 18 are designed to treat an average daily flow greater than 10,000
 19 gallons per day; or

20 B. the individual sewage treatment system or systems
 21 are designed to treat a maximum monthly average daily flow of
 22 15,000 gallons per day or more.

23 The systems must, at a minimum, conform to the requirements of
 24 these standards.

25 For dwellings such as rental apartments, townhouses, resort
 26 units, rental cabins, and condominiums, ~~and so forth~~, the sum of
 27 the flows from all existing and proposed sources under single
 28 management or ownership will be used to determine the need for a
 29 state disposal system permit.

30 ~~The commissioner shall, to the extent that staff resources~~
 31 ~~are available, provide technical assistance for individual~~
 32 ~~sewage treatment systems that have a soil treatment system~~
 33 ~~designed to treat a maximum monthly average daily sewage flow~~
 34 ~~greater than 5,000 gallons per day. The local permitting~~
 35 ~~authority may submit soil and site data, design procedures, and~~

~~1 construction-specifications-to-the-commissioner-for-technical
2 review-and-comment---Comments-from-the-commissioner-to-the-local
3 permitting-authority-must-be-made-within-30-days-of-receipt-of
4 the-above-materials.~~

5 Individual sewage treatment systems serving establishments
6 or facilities licensed or otherwise regulated by the state of
7 Minnesota shall conform to the requirements of these standards.

8 Any individual sewage treatment system requiring approval
9 by the state of Minnesota shall also comply with all local codes
10 and ordinances.

11 7080.0040 ADMINISTRATION BY MUNICIPALITIES.

12 Subpart 1. **Shoreland and floodplain areas, and wild scenic**
13 **river land use districts.** Pursuant to Minnesota Statutes,
14 sections 104.04, 104.36, and 105.485, certain counties and
15 cities must enact ordinances which comply with the appropriate
16 regulations of the Minnesota Department of Natural Resources,
17 some of which in turn require compliance with the regulations of
18 the Minnesota Pollution Control Agency.

19 Subp. 2. [Unchanged.]

20 Subp. 3. **Localized standards.** Nothing in these standards
21 shall prevent municipalities from enacting ordinances which
22 provide more adequate sewage treatment under local conditions.

23 Subp. 4. **Inspection and approval.** ~~An-individual-sewage
24 treatment-system-that-is-permitted-by-a-municipality-under-these
25 standards-must-be-inspected-and-approved-according-to-these
26 standards-by-the-municipality-or-its-authorized-representative-
27 The-municipality-must-maintain-records-of-the-location-and
28 design-of-the-systems.~~ If a municipality issues construction
29 permits under these standards for individual sewage treatment
30 systems, the municipality or its authorized representative must
31 inspect and approve systems according to these standards. The
32 municipality must maintain records of the location and design of
33 the systems.

34 7080.0060 TREATMENT REQUIRED.

35 The system, or systems, shall be designed to receive all

1 sewage from the dwelling, building, or other establishment
2 served. Footing or roof drainage shall not enter any part of
3 the system. Products containing hazardous materials must not be
4 discharged to the system other than a normal amount of household
5 products and cleaners designed for household use. Substances
6 not used for household cleaning, including ~~but-not-limited-to~~
7 solvents, pesticides, flammables, photo finishing chemicals, or
8 dry cleaning chemicals, must not be discharged to the system.

9 Systems that were installed according to all applicable
10 local standards adopted and in effect at the time of
11 installation shall be considered as conforming unless they are
12 determined to be failing, except that systems using cesspools,
13 leaching pits, or seepage pits, or systems with less than three
14 feet of unsaturated soil or sand between the distribution device
15 and the limiting soil characteristics shall be considered
16 nonconforming.

17 7080.0080 PROHIBITED INSTALLATIONS.

18 Cesspools, seepage pits, dry wells, and leaching pits shall
19 not be installed.

20 7080.0100 ADVISORY COMMITTEE.

21 Subpart 1. Creation. There is created an advisory
22 committee on individual sewage treatment systems (ISTS)
23 hereinafter referred to as the committee.

24 Subp. 2. Duties. The committee shall, subject to the
25 approval of the agency, review and advise the agency on:

26 A. revisions of standards and legislation relating to
27 ISTS;

28 B. technical data relating to ISTS;

29 C. a technical manual on ISTS;

30 D. educational materials and programs for ISTS;

31 E. the administration of standards and ordinances
32 pertaining to ISTS at the state and local levels; and

33 F. other ISTS activities considered appropriate by
34 the committee.

35 Subp. 3. Membership. The committee shall consist of 16

1 voting members. Of the 16 voting members:

2 A. one shall be a citizen of Minnesota,
3 representative of the public;

4 B. one shall be from the Minnesota Extension Service
5 of the University of Minnesota;

6 C. six shall be county administrators (such as zoning
7 administrators, sanitarians, etc.), one from each of the five
8 agency regions and one from the seven-county metropolitan area;

9 D. one shall be a municipal building inspector;

10 E. six shall be sewage treatment contractors, one
11 from each of the five agency regions and one from the
12 seven-county metropolitan area; and

13 F. one shall be a water well contractor.

14 Subp. 4. **Ex officio members.** The following agencies and
15 associations shall each have one nonvoting ex officio member to
16 assist the advisory committee and to be advised, in turn, on
17 matters relating to ISTS: the agency, the DNR, Department of
18 Health, the United States Department of Agriculture Soil
19 Conservation Service, the Metropolitan Council, the Association
20 of Minnesota Counties, the Minnesota Association of Townships,
21 the League of Minnesota Cities, and the Minnesota Society of
22 Professional Engineers.

23 Subp. 5. **Appointment; terms.** All members shall be
24 appointed by the agency board from recommendations by the
25 affected groups. All members shall serve for four years, with
26 terms staggered so as to maintain continuity.

27 In the case of a vacancy, an appointment shall be made for
28 the unexpired balance of the term. The administrators,
29 inspectors, and contractors shall have been bona fide residents
30 of this state for a period of at least three years before
31 appointment, and shall have had at least three years' experience
32 in their respective businesses.

33 Subp. 6. **Robert's rules.** Robert's Rules of Order shall
34 prevail at all meetings of the advisory committee.

35 7080.0110 SITE EVALUATION.

1 Subpart 1. **Evaluation factors.** All proposed sites for
2 individual sewage treatment systems shall be evaluated as to:

3 A. depth to the highest known or calculated ground
4 water table or bedrock;

5 B. soil conditions, properties, and permeability;

6 C. slope;

7 D. the existence of lowlands, local surface
8 depressions, and rock outcrops;

9 E. all legal setback requirements from: existing and
10 proposed buildings; property lines; sewage tanks; soil treatment
11 systems; water supply wells; buried water pipes and utility
12 lines; the ordinary high water level of public waters; and the
13 location of all soil treatment systems and water supply wells on
14 adjoining lots within 150 feet of the proposed soil treatment
15 system, sewage tank, and water supply well; and

16 F. surface water flooding probability.

17 Subp. 2. to 4. [Unchanged.]

18 Subp. 5. **Additional site.** ~~Wherever-possible,~~ If a
19 suitable additional site should-be is available, it must be
20 identified in the site evaluation.

21 7080.0120 BUILDING SEWERS.

22 Subpart 1. **Plumbing and Well Codes.** The design,
23 construction, and location of, and the materials for use in
24 building sewers are ~~presently~~ governed by the Minnesota State
25 Building Code, chapter 1300, which incorporates by reference
26 portions of the Minnesota Plumbing Code, chapter 4715, and by
27 specific provisions of the Minnesota Water Well Construction
28 Code, chapter 4725.

29 Subp. 2. **Water meter.** A new individual sewage treatment
30 system that is intended to serve a new ~~dwelling-or~~ other
31 establishment, as defined in part 7080.0020, subpart 25, must
32 not be installed unless a water meter is provided to measure the
33 flow to the treatment system. For metered systems that have
34 septic tank effluent pumped to a soil treatment area, an
35 electrical event counter must also be installed.

1 7080.0130 SEWAGE TANKS.

2 Subpart 1. In general. All tanks, regardless of material
3 or method of construction, must:

4 A. be watertight;

5 B. be designed and constructed to withstand all
6 lateral earth pressures under saturated soil conditions with the
7 tank empty;

8 C. be designed and constructed with adequate tensile
9 and compressive strength to withstand a minimum of seven feet of
10 saturated earth cover above the tank top and manhole cover;

11 D. not be subject to **excessive** corrosion or decay;
12 and

13 E. have the manufacturer's name, model number, and
14 tank capacity in gallons permanently displayed on the tank above
15 the outlet pipe.

16 Any tank not having an integrally cast bottom shall not be
17 installed when the water table is closer than three inches to
18 the bottom of the excavation at the time of construction.

19 Subp. 2. Design of septic tanks. All tanks, regardless of
20 material or method of construction, shall conform to the
21 following criteria:

22 A. to E. [Unchanged.]

23 F. Baffles must be integrally cast with the tank,
24 affixed with a permanent waterproof adhesive, or affixed with
25 stainless steel connectors, top and bottom. Sanitary tees,
26 which are used as baffles, shall be affixed to the inlet or
27 outlet pipes with a permanent waterproof adhesive.

28 G. to L. [Unchanged.]

29 M. Access to the septic tank shall be as follows:

30 (1) There shall be one or more manholes, at a
31 minimum of 20 inches least dimension, and located within six
32 feet of all walls of the tank. The manhole shall extend through
33 the tank cover to a point within 12 inches of finished grade.
34 If the manhole is covered with less than six inches of soil, the
35 cover must be secured to prevent unauthorized access.

1 (2) There shall be an inspection pipe of at least
2 four inches diameter over both the inlet and outlet devices.
3 The inspection pipe shall extend through the tank cover or the
4 manhole cover and be capped flush or above finished grade. A
5 downward projection of the center line of the inspection pipe
6 shall be directly in line with the center line of the inlet or
7 outlet device.

8 (3) An inspection pipe at least four inches in
9 diameter must be located between the inlet and outlet baffles
10 for the purpose of evaluating scum and sludge accumulations.
11 The inspection pipe must extend through either the tank cover or
12 manhole cover and must be capped flush with or above finished
13 grade.

14 N. Compartmentation of single tanks.

15 (1) to (5) [Unchanged.]

16 (6) Adequate access to each compartment shall be
17 provided by one or more manholes, at least 20 inches least
18 dimension, and located within six feet of all walls of the
19 tank. The manhole shall extend through the tank cover to a
20 point within 12 inches of finished grade. If the manhole is
21 covered with less than six inches of earth, the cover must be
22 secured to prevent unauthorized access.

23 O. [Unchanged.]

24 P. Outlet pipe from septic tank.

25 (1) The outlet pipe from the septic tank must not
26 be cast iron.

27 (2) The outlet pipe extending from the septic
28 tank must be of sound and durable construction, not subject to
29 **excessive** corrosion or decay.

30 (3) The outlet pipe extending from the septic
31 tank to the undisturbed soil beyond the tank must meet the
32 strength requirements of American Society for Testing and
33 Materials (ASTM), schedule 40 plastic pipe and must be supported
34 in a manner that there is no deflection during the backfilling
35 and subsequent settling of the soil between the edge of the
36 septic tank and the edge of the excavation.

1 (4) The soil around the pipe extending from the
2 septic tank must be compacted to original density for a length
3 of three feet beyond the edge of the tank excavation.

4 Subp. 3. Capacity of septic tanks. Capacity of septic
5 tanks:

6 A. Dwellings. The liquid capacity of a septic tank
7 serving a dwelling shall be based on the number of bedrooms
8 contemplated in the dwelling served and shall be at least as
9 large as the capacities given below (see part 7080.0020, subpart
10 8 7):

11	Number of Bedrooms	Tank Liquid Capacities (gallons)
12	2 or less	750
13	3 or 4	1,000
14	5 or 6	1,500
15	7, 8 or 9	2,000
16		
17		

18 For ten or more bedrooms, the septic tank shall be sized as
19 another establishment. See item B.

20 B. Other establishments. The liquid capacity of a
21 septic tank serving an establishment other than a dwelling shall
22 be sufficient to provide a sewage detention period of not less
23 than 36 hours in the tank for sewage flows less than 1,500
24 gallons per day, but in no instance shall the liquid capacity be
25 less than 750 gallons. For sewage flows greater than 1,500
26 gallons per day the minimum liquid capacity shall equal 1,125
27 gallons plus 75 percent of the daily sewage flow.

28 ~~Establishments-discharging-sewage-containing-a-biological-oxygen~~
29 ~~demand-higher-than-normal-sewage-must-consider-increasing-septic~~
30 ~~tank-liquid-capacity.~~ For restaurants and laundromats, twice
31 the liquid capacity shown above must be provided. For
32 laundromats the outlet baffle of the septic tank must be
33 submerged to a depth of 50 percent.

34 C. Garbage disposals. If a garbage disposal unit is
35 ~~added-to~~ installed in a residence or other establishment at any
36 time, septic tank capacity must be at least 50 percent greater
37 than that required in items A and B and either multiple
38 compartments or multiple tanks must be provided.

39 D. Pumping of raw sewage. A ~~solids-handling~~ sewage

1 pump must not deliver sewage to a one tank system if the pump
2 cycle delivers more than one percent of the liquid capacity of
3 the tank. For systems with multiple tanks, at least two tanks
4 in series must be used, each having at least the liquid capacity
5 specified in this subpart. The volume of sewage delivered in
6 each pump cycle must not exceed five percent of the liquid
7 capacity of the first tank. Owners of multiple tank systems
8 having more than two tanks ~~must-consider-increasing~~ may increase
9 the volume of the sewage delivered in each pump cycle.

10 Subp. 4. **Location of septic tanks.** The sewage tank shall
11 be placed so that it is accessible for the removal of liquids
12 and accumulated solids.

13 The sewage tank shall be placed on firm and settled soil
14 capable of bearing the weight of the tank and its contents.

15 Sewage tanks shall be set back as specified in Table IV,
16 part 7080.0170, subpart 2, item B.

17 Sewage tanks shall not be placed in areas subject to
18 flooding or in flood plains delineated by local ordinances
19 adopted in compliance with the "Statewide Standards for
20 Management of Flood Areas of Minnesota" (chapter 6120), or in
21 areas for which regional flood information is available from the
22 DNR, except that in areas where ten year flood information is
23 available from and/or approved by the DNR, sewage tanks may be
24 installed in accordance with all provisions of part 7080.0210,
25 subpart 3, item D.

26 Subp. 5. **Maintenance of septic tanks.**

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

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

4 B. Individual sewage treatment system additives which
5 contain hazardous materials must not be used in individual
6 sewage treatment systems in Minnesota.

7 C. Individual sewage treatment system additives must
8 not be used as a means to reduce the frequency of proper
9 maintenance and removal of septage from the septic tank as
10 specified in item A.

11 Subp. 6. [Unchanged.]

12 7080.0150 DISTRIBUTION OF EFFLUENT.

13 Subpart 1. Gravity distribution.

14 A. Drop boxes or valve boxes must be used to
15 distribute effluent to individual trenches in a soil treatment
16 system unless the necessary elevation differences between
17 trenches for drop boxes cannot be achieved by natural topography
18 or by varying the excavation depths, in which case a
19 distribution box or a valve box may be used. The drop boxes
20 must meet the following standards.

21 (1) The drop box shall be watertight and
22 constructed of durable materials not subject to **excessive**
23 corrosion or decay.

24 (2) The invert of the inlet pipe shall be at
25 least one inch higher than the invert of the outlet pipe to the
26 next trench.

27 (3) The invert of the outlet pipe to the next
28 trench shall be at least two inches higher than the invert of
29 the outlet pipe of the trench in which the box is located.

30 (4) When sewage tank effluent is delivered to the
31 drop box by a pump, the pump discharge shall be directed against
32 a wall or side of the box on which there is no outlet.

33 (5) The drop box shall have a removable cover
34 either flush or above finished grade or covered by no more than
35 six inches of soil.

1 B. Systems using valve boxes shall comply with the
2 requirements in part 7080.0170, subpart 2, item D. The valve
3 boxes shall meet the standards in subitems (1) to (4).

4 (1) The valve boxes shall be watertight and
5 constructed of durable materials not subject to corrosion or
6 decay.

7 (2) The invert of the inlet pipe shall be at
8 least one inch higher than the inverts of the outlet pipes to
9 the trenches.

10 (3) When sewage tank effluent is pumped to a
11 valve box, either a baffle wall must be installed in the valve
12 box or the pump discharge must be directed against a wall or
13 side of the box on which there is no outlet. The baffle must be
14 secured to the box and extend at least one inch above the crown
15 of the inlet flow line.

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

19 C. The distribution boxes must meet the following
20 standards:

21 (1) The box must be watertight with either a
22 removable cover or a cleanout pipe extending to finished grade
23 and must be constructed of durable materials not subject to
24 excessive corrosion or decay.

25 (2) The inverts of all outlets must be at the
26 same elevation ~~as-measured-from-a-liquid-surface-in-the-bottom~~
27 ~~of-the-box.~~

28 (3) The inlet invert must be either at least one
29 inch above the outlet inverts or be sloped such that an
30 equivalent elevation above the outlet invert is obtained within
31 the last eight feet of the inlet pipe.

32 ~~(4) The-outlet-inverts-must-be-at-least-four~~
33 ~~inches-above-the-distribution-box-floor.~~

34 (5) Each drain field trench line must be
35 connected separately to the distribution box and must not be
36 subdivided.

1 (6) (5) When sewage tank effluent is delivered to
2 the distribution box by pump, either a baffle wall must be
3 installed in the distribution box or the pump discharge must be
4 directed against a wall or side of the box on which there is no
5 outlet. The baffle must be secured to the box and must extend
6 at least one inch above the crown of the inlet flow line.

7 E. D. Distribution pipes.

8 (1) Distribution pipes used in trenches or beds
9 for gravity distribution must be at least four inches in
10 diameter and must be constructed of sound and durable material
11 not subject to corrosion or decay or to loss of strength under
12 continuously wet conditions.

13 (2) Perforated pipe used for sewage distribution
14 pipes must have one or more rows of holes of no less than
15 one-half inch in diameter spaced no more than 40 inches apart.
16 Holes must be spaced to prevent failure due to loads.
17 Distribution pipes must have a load bearing capacity of not less
18 than 1,000 pounds per lineal foot.

19 (3) The distribution pipes for gravity
20 distribution must be laid level or on a uniform slope away from
21 the distribution device of no more than four inches per 100 feet.

22 (4) Gravity distribution pipes in beds must be
23 uniformly spaced no more than five feet apart and not more than
24 30 inches from the side walls of the bed.

25 (5) Other devices such as corrugated tubing
26 wrapped with a permeable synthetic material or a chambered
27 trench or bed may be used to distribute sewage tank effluent
28 over the soil treatment area upon approval of the permitting
29 authority.

30 Subp. 2. Pressure distribution.

31 A. Pressure distribution must be used for ~~all-mound~~
32 ~~systems, and for soil-treatment systems where effluent is pumped~~
33 ~~to a seepage bed or to trenches which are all at the same~~
34 ~~elevation if the soil-treatment area is located where the soil~~
35 ~~percolation rate is 0.1 to 5 minutes per inch~~ the following soil
36 treatment systems:

- 1 (1) all mound systems; and
- 2 (2) systems where the soil percolation rate is
- 3 0.1 to five minutes per inch if the effluent is pumped to a
- 4 seepage bed or to trenches that are all at the same elevation.

5 B. Distribution pipes used for pressure distribution

6 must be constructed of sound and durable material not subject to

7 **excessive** corrosion or decay or to loss of strength under

8 continuously wet conditions.

9 C. All pipes and associated fittings used for

10 pressure distribution must be properly joined together. The

11 pipe and connections must be able to withstand a pressure of at

12 least 40 pounds per square inch.

13 D. Perforations must be no smaller than 3/16 inch

14 diameter and no larger than one-quarter inch diameter. The

15 number of perforations, perforation spacing, and pipe size for

16 pressure distribution laterals must be as shown in table I. The

17 friction loss in any individual perforated lateral must not

18 exceed 20 percent of the average pressure head on the

19 perforations.

20 TABLE I

21 Maximum Allowable Number of One-Fourth Inch Diameter, or

22 Smaller, Perforations Per Lateral

23 Pipe Diameter, Nominal and Inside

24 Perforation	1"	1-1/4"	1-1/2"	2"
25 Spacing in feet	1.049	1.380	1.610	2.067
26 2.5	8	14	18	28
27 3	8	13	17	26
28 3.3	7	12	16	25
29 4	7	11	15	23
30 5	6	10	14	22

31 E. Perforation holes must be drilled straight into

32 the pipe and not at an angle. The perforated pipe laterals must

33 be installed level with the perforations downward.

34 F. Laterals must be spaced no further than 60 inches

35 apart and must be spaced no further than a horizontal distance

36 of 30 inches from the bottom edge of a drainfield rock layer.

37 G. Laterals must be connected to a header or manifold

1 pipe that is of a diameter such that the friction loss in the
 2 header or manifold will be no greater than five percent of the
 3 average head at the perforations. The header or manifold pipe
 4 must be connected to the supply pipe from the pump.

5 H. Perforated laterals must be designed and installed
 6 in such a way that no perforations are located closer than 12
 7 inches from the edge of the drainfield rock.

8 7080.0160 DOSING OF EFFLUENT.

9 Subpart 1. [Unchanged.]

10 Subp. 2. Dosing devices for gravity distribution. Dosing
 11 devices for gravity distribution:

12 A. to C. [Unchanged.]

13 D. If the dosing device is a siphon, a maintenance
 14 inspection shall be made every six months by the owner or the
 15 owner's agent. The siphon shall be maintained in proper
 16 operating condition.

17 E. to G. [Unchanged.]

18 Subp. 3. Dosing devices for pressure distribution. Dosing
 19 devices for pressure distribution:

20 A. [Unchanged.]

21 B. The pump discharge capacity shall be based upon
 22 the perforation discharges for an average head of 1.0 feet for
 23 residential systems and 2.0 feet for other establishments.

24 Perforation discharge will be determined by ~~a standard orifice~~
 25 ~~formula using a discharge coefficient of 0.60~~ the following

26 formula:

27
$$Q = 19.65 \text{ cd}^2 \text{ h}^{1/2}$$

28 where: Q = discharge in gallons per minute

29 c = 0.60 = coefficient of discharge

30 d = perforation diameter in inches

31 h = head in feet.

32 C. to E. [Unchanged.]

33 F. A siphon will not be allowed as a dosing device to
 34 deliver effluent to a pressure distribution system.

35 G. The dosing chamber for a pressure distribution

1 system shall either include a two pump system or shall be sized
2 to include a minimum reserve capacity of 75 percent of the daily
3 design flow.

4 7080.0170 FINAL TREATMENT AND DISPOSAL.

5 Subpart 1. In general. Final treatment and disposal of
6 all sewage tank effluent shall be by means of soil treatment and
7 disposal.

8 Subp. 2. Standard system.

9 A. Sizing:

10 (1) The required soil treatment area shall be
11 determined by the daily sewage flow and the percolation rate of
12 the soil.

13 (2) Acceptable methods for estimating sewage flow
14 for dwellings are given in Table II. The minimum daily sewage
15 flow estimated for any dwelling shall provide for at least two
16 bedrooms. For multiple residential units, the estimated daily
17 sewage flow shall consist of the sum of the flows of each
18 individual unit.

19 Table II. Sewage flow (gallons per day).

20 Number of 21 Bedrooms	22 Classification of Dwelling*			
	I	II	III	IV
23 2	300	225	180	-
24 3	450	300	218	-
25 4	600	375	256	-
26 5	750	450	294	-
27 6	900	525	332	-

28
29 *Table II is based on the following formulas:

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

31 The total floor area of the residence divided by the number
32 of bedrooms is more than 800 square feet per bedroom, or more
33 than two of the following water-use appliances are installed:
34 automatic washer, dishwasher, water softener, garbage disposal,
35 or self-cleaning humidifier in furnace.

36 Classification II: Sewage Flow = 75 x (No. of Bedrooms +1)

37 More than 500 square feet of total residence floor area per
38 bedroom and no more than two of the water-use appliances listed
39 in Classification I.

1 Classification III: Sewage Flow = 66 + 38 x (No. of
2 Bedrooms +1)

3 Less than 500 square feet of total residence floor area per
4 bedroom and no more than two of the water-use appliances listed
5 in Classification I.

6 Classification IV: Classification I, II, or III but with
7 no toilet wastes discharged into the sewage system. If a
8 greywater system is employed pursuant to part 7080.0210, subpart
9 4, item B, Appendix A, estimated sewage flow shall equal 60
10 percent of the amount provided in column I, II, or III of Table
11 II.

12 (3) For other establishments, the daily sewage
13 flow shall be determined as provided in part 7080.0020, subpart
14 ~~42~~ 34.

15 (4) Table III gives the required trench bottom
16 area assuming six inches of drainfield rock below the
17 distribution pipe. The required bottom area may be reduced, for
18 trenches only, by the following percentages: 20 percent for 12
19 inches of drainfield rock below the distribution pipe; 34
20 percent for 18 inches; and 40 percent for 24 inches. Unless
21 pressure distribution is used, all seepage bed bottom areas must
22 be 1.5 times the soil treatment areas required in Table III.

23 Table III.

24 Percolation Rate	25 Required Soil Treatment
26 (Minutes per inch)	27 Area in Square Feet of Trench Bottom
	28 (Per Gallon of Sewage Flow per Day)
28 Faster than 0.1*	-
29 0.1 to 5**	0.83****
30 6 to 15	1.27
31 16 to 30	1.67
32 31 to 45	2.00
33 46 to 60	2.20
34 61 to 120***	-
35 Slower than 120*****	-

37 *See items F and G for special requirements for these soils.

38 **See items F and G for special requirements for these
39 soils.

40 ***See items E and G for special requirements for these
41 soils.

42 ****For soils having more than 50 percent of very fine sand

1 by weight, plus fine sand having a particle size range of 0.05
 2 millimeters (sieve size 270) to 0.25 millimeters (sieve size
 3 60), the required soil treatment area is 1.67 square feet per
 4 gallon of sewage flow per day.

5 *****See item E and part 7080.0210, subpart 5, item A, for
 6 special requirements for these soils.

7 B. Location:

8 (1) and (2) [Unchanged.]

9 (3) Soil treatment systems shall be located as
 10 specified in Table IV.

11 Table IV. Minimum setback distances (feet).

12 Feature	13 Sewage Tank	14 Soil Treatment Area
15 Water Supply well less 16 than 50 feet deep and not 17 encountering at least ten 18 feet of impervious material	19 *	20 *
21 Any other water supply well 22 or buried water suction 23 pipe	24 *	25 *
26 Buried pipe distributing 27 water under pressure	28 *	29 *
30 Buildings	31 10	32 20
33 Property Lines	34 10	35 10
36 The Ordinary High Water 37 Level of Public Waters	38 **	39 **

34 *Setbacks from water supply wells and buried water pipes
 35 are presently governed by chapter 4725.

36 **Setbacks from lakes, rivers, and streams are presently
 37 governed by chapters 6105 and 6120.

38 (4) Soil treatment areas shall not be placed in
 39 areas subject to flooding or in flood plains delineated by local
 40 ordinances adopted in compliance with the "Statewide Standards
 41 and Criteria for Management of Flood Plain Areas of Minnesota"
 42 (chapter 6120), or in areas for which regional flood information
 43 is available from the DNR, except that in areas where ten year
 44 flood information is available from and/or approved by the DNR,
 45 soil treatment systems may be installed in accordance with the
 46 provisions of Appendix A, part 7080.0210, subpart 3, item D.

1 (5) Soil treatment areas of individual sewage
2 treatment systems that are designed to treat an estimated daily
3 sewage flow greater than 3,000 gallons per day must be separated
4 from other similarly sized systems by at least 300 feet ~~unless~~
5 ~~evaluation-of-geologic-and-subsurface-conditions-indicates-that~~
6 ~~a-closer-spacing-is-allowable.~~

7 C. Design and construction:

8 (1) The bottom of trenches and beds shall be at
9 least three feet above the water table or bedrock.

10 (2) The trenches shall be not less than 18 inches
11 nor more than 36 inches wide. Any excavation wider than 36
12 inches shall be considered a bed. No bed may be wider than 25
13 feet and parallel beds must not be located closer than ten feet
14 apart.

15 (3) Trenches and beds shall be not more than 100
16 feet in length.

17 (4) The bottom of the trench or bed excavation
18 shall be level.

19 (5) The bottom and sides of the soil treatment
20 system to the top of the ~~filter-material~~ drainfield rock shall
21 be excavated in such a manner as to leave the soil in a natural,
22 unsmearred, and uncompacted condition. Excavation shall be made
23 only when the soil moisture content is at or less than the
24 plastic limit.

25 (6) When the percolation rate is slower than 15
26 minutes per inch, excavation shall be by backhoe or other means
27 that allow the equipment wheels or tracks to remain on the
28 surface soil. Excavation equipment or other vehicles shall not
29 be driven on the soil treatment area.

30 (7) There shall be a layer of at least six but no
31 more than 24 inches of ~~filter-material~~ drainfield rock in the
32 bottom of the trenches and beds.

33 (8) Where disposal trenches are constructed
34 within ten feet of trees six inches or larger in diameter, or
35 dense shrubbery, or where it can reasonably be anticipated that
36 such vegetation will be present during the expected life of the

1 system, at least 12 inches of ~~filter-material~~ drainfield rock
2 shall be placed beneath the distribution pipe.

3 (9) The drainfield rock shall completely encase
4 the top and sides of the distribution pipes to a depth of at
5 least two inches. The top of the drainfield rock in trenches,
6 beds, and mounds must be level in all directions.

7 (10) ~~The drainfield rock shall be covered with~~
8 ~~untreated building paper or a four-inch layer of hay, straw, or~~
9 ~~a layer of permeable synthetic materials. Where a sandy loam or~~
10 ~~coarser textured soil is used for backfilling,~~ The drainfield
11 rock must be covered with either a permeable synthetic fabric or
12 a four-inch compacted layer of hay or straw covered with
13 untreated building paper. Where a drop box distribution system
14 is used to fill a trench to within two inches of the top of the
15 drainfield rock, a permeable synthetic fabric must be used to
16 cover the drainfield rock.

17 (11) The trenches or beds shall be backfilled and
18 crowned above finished grade to allow for settling. The top six
19 inches of soil shall have the same texture and density as the
20 adjacent soil.

21 (12) The minimum depth of cover over the
22 distribution pipes shall be at least eight inches. The maximum
23 depth of cover over the distribution pipes shall be no more than
24 36 inches and preferably no more than 24 inches.

25 (13) A grass cover shall be established by the
26 owner or the owner's agent over the soil treatment system.

27 (14) A vertical inspection pipe at least 1-1/2
28 inches in diameter must be installed in each drainfield rock
29 layer of every trench or seepage bed. The inspection pipe must
30 be located at an end opposite from where the sewage tank
31 effluent enters the rock layer. The inspection pipe must have
32 3/8 inch or larger perforations spaced vertically no more than
33 six inches apart. At least two perforations must be located in
34 the rock layer. The inspection pipe must extend to the bottom
35 of the rock layer and must be capped flush with or above
36 finished grade.

1 D. Dual field systems:

2 (1) Dual field systems shall be used only where
3 the percolation rate is slower than five minutes per inch.

4 (2) Dual field systems shall be sized, designed,
5 and constructed as set forth above for standard systems except
6 as follows:

7 (a) The soil treatment area shall be divided
8 into two or more parts.

9 (b) Alternating soil treatment areas shall
10 each be connected to a valve box outlet.

11 (3) A part of the soil treatment area shall be
12 used no more than one year unless inspection of the effluent
13 level indicates that a longer duration can be used.

14 E. Slowly permeable soils.

15 (1) Excavation for the purpose of constructing a
16 soil treatment system must not be made in any soil layer having
17 a percolation rate slower than 120 minutes per inch.

18 (2) Excavation for the purpose of constructing a
19 soil treatment system must not be made in a soil layer having a
20 percolation rate slower than 60 minutes per inch unless the
21 moisture content is lower than the plastic limit of the soil.

22 (3) Drainfield rock must not be placed in contact
23 with original soil having a percolation rate slower than 60
24 minutes per inch.

25 (4) Where the percolation rate of the original
26 soil is slower than 60 minutes per inch, at least 12 inches of
27 fill material having a texture defined as sand must be placed
28 between the drainfield rock and the original soil along the
29 excavation bottom.

30 (5) Construction equipment wheels or tracks must
31 not be placed in contact with the bottom of the excavation
32 during the construction of a soil treatment system in soils
33 having a percolation rate slower than 15 minutes per inch.

34 (6) The size of the soil treatment system must be
35 based on an acceptance rate of 0.24 gallons per square foot,
36 which is equivalent to a sizing factor of 4.2 square feet per

1 gallon per day.

2 F. Rapidly permeable soils.

3 (1) Drainfield rock for a soil treatment unit
4 must not be placed in contact with original soil having a
5 percolation rate faster than one-tenth minute per inch.

6 (2) For coarse soils having a percolation rate
7 faster than one-tenth minute per inch, at least 12 inches of
8 loamy sand textured soil having a percolation rate between six
9 and 15 minutes per inch in-situ at the original site must be
10 placed between the drainfield rock and the coarse soil along the
11 excavation bottom and sidewalls. The size of the soil treatment
12 system must be based on the required treatment area for a soil
13 having a percolation rate of 16 to 30 minutes per inch as
14 specified in item A, subitem (4).

15 (3) For soils with percolation rates between
16 one-tenth and five minutes per inch, at least one of the
17 following treatment techniques must be used:

18 (a) distribute the sewage tank effluent by
19 pressure flow over the treatment area as specified in part
20 7080.0150, subpart 2;

21 (b) divide the total soil treatment area
22 into at least four equal parts connected serially; and or

23 (c) provide at least 12 inches of loamy sand
24 textured soil with a percolation rate between six and 15 minutes
25 per inch in situ between the drainfield rock and the coarse
26 soil. Trenches must be used with this liner system. The size
27 of the soil treatment system must be based on the required
28 treatment area for a soil having a percolation rate between 16
29 to 30 minutes per inch as specified in item A, subitem (4),
30 Table III.

31 G. Mounds.

32 (1) Mounds must be constructed on original soils
33 so that there is at least 36 inches of separation between the
34 bottom of the drainfield rock layer and limiting soil
35 characteristics as defined in part 7080.0020, subpart 41.

36 (2) There must be at least 12 inches of original

1 soil with a percolation rate faster than 120 minutes per inch
2 above the limiting soil characteristics as defined in part
3 7080.0020, subpart 41.

4 (3) Where the original soil has a depth of at
5 least 12 inches to the water table as the limiting soil
6 characteristic but has a percolation rate of five minutes per
7 inch or faster, a layer of at least 12 inches of loamy sand
8 textured soil with a percolation rate between six and 15 minutes
9 per inch in-situ at the original site must be placed before
10 placing the clean sand layer of the mound. The required base±
11 absorption width must be determined for a soil having a
12 percolation rate between 16 and 30 minutes per inch as specified
13 in subitem (5), Table V.

14 (4) If original soil conditions do not exist on a
15 site proposed for a mound, as defined in part 7080.0020, subpart
16 24, the site is unsuitable for a mound.

17 (5) The allowable base± absorption area loading
18 rate must be determined according to Table V by the percolation
19 rate of the 12 inches of original or fill soil immediately under
20 the sand layer.

21 Table V.

22 Percolation rate of 23 original soil under 24 sand layer, minutes 25 per inch	26 Allowable <u>base± absorption</u> 27 area loading rate	
	28 gallons per day 29 per square foot	30 square feet per 31 gallon per day
32 6 to 15	0.79	1.27
33 16 to 30	0.60	1.67
34 31 to 45	0.50	2.00
35 46 to 60	0.45	2.20
36 61 to 120	0.24	4.20

37 (6) The required base± absorption width of mounds
38 constructed on ground sloping from zero to 2.9 percent must
39 include the width of the rock layer plus a distance measured
40 between the outer edges of the upslope and the downslope dikes
41 banks. The required base± absorption width for mounds
constructed on ground sloping between three and 12 percent must
include the width under the drainfield rock layer plus a portion
of the width of the downslope dike bank.

(7) Mounds may be located on natural slopes

1 exceeding 12 percent if ~~it is demonstrated that sufficient basal~~
2 ~~area will be provided on the basis of an absorption rate of 0.24~~
3 ~~gallons per day per square foot of basal area~~ the absorption
4 area is designed to be at least 25 percent larger than that
5 required in Table V.

6 (8) The bottom area of the drainfield rock layer
7 must be sized on the basis of 0.83 square feet per gallon of
8 waste per day.

9 (9) The width of the drainfield rock layer in a
10 single bed must not exceed ten feet.

11 (10) A rubber tired tractor may be used for
12 plowing or discing but must not be driven on the ~~basal~~
13 absorption area after the surface preparation is completed. A
14 crawler or track type tractor must be used for mound
15 construction where the soil percolation rate is slower than 15
16 minutes per inch.

17 (11) The discharge pipe from the pump to the
18 mound area must be installed before soil surface preparation.
19 The trench must be carefully backfilled and compacted to prevent
20 seepage of effluent.

21 (12) All vegetation in excess of ~~two~~ four inches
22 in length and dead organic debris must be removed from the
23 surface of the total area selected for the mound, including the
24 area under the ~~dikes~~ banks. The total area must be roughened by
25 plowing to a depth of at least eight inches or the sod layer
26 broken and roughened by backhoe teeth. Furrows must be thrown
27 uphill and there must be no dead furrow under the mound. The
28 soil must be plowed or roughened when the moisture content of a
29 fragment eight inches below the surface is below the plastic
30 limit. The soil under a mound, including the area under
31 the ~~dikes~~ banks, must not be roughened by rototilling or
32 pulverizing. In soils having percolation rates faster than 15
33 minutes per inch (sandy loam) in the top eight-inch depth,
34 discing may be used for surface preparation as a substitute for
35 plowing. Mound construction must proceed immediately after
36 surface preparation is completed. The original soil must not be

1 excavated or moved more than one foot from its original location
2 during soil surface preparation.

3 (13) A minimum of 12 inches of soil defined as
4 sand must be placed where the drainfield rock is to be located.
5 This sand must be placed by using a construction technique that
6 minimizes compaction. If the sand is pushed into place, a
7 crawler tractor with a blade or unloaded bucket must be used to
8 move push the sand into place. At least six inches of sand must
9 be kept beneath equipment to minimize compaction of the plowed
10 layer. When placing sand with a backhoe that has rubber tires,
11 the tractor must not drive over the drainfield rock or banks of
12 the mound. The sand layer upon which the drainfield rock is
13 placed must be level.

14 On slopes of three percent or greater, the long axis of the
15 level drainfield rock layer must not diverge up or down the
16 slope by more than 12 inches of elevation from the natural
17 contour line. The depth of the sand layer along the upper edge
18 of the level drainfield rock layer must not vary by more than 12
19 inches.

20 On slopes of three percent or greater, and where the
21 percolation rate in the top foot of original soil is in the 61
22 to 120 minutes per inch range, mounds must not be located where
23 the ground surface contour lines directly below the long axis of
24 the drainfield rock layer represent a swale or draw, unless the
25 contour lines have a radius of curvature greater than 100 feet.
26 Mounds must never be located in swales or draws where the radius
27 of curvature of the contour lines is less than 50 feet.

28 (14) A depth of at least nine inches of
29 drainfield rock must be placed over the bed area below the
30 distribution pipe.

31 (15) Distribution of effluent over the drainfield
32 rock layer must be by perforated pipe under pressure.

33 (16) The drainfield rock shall completely encase
34 the top and sides of the distribution pipes to a depth of at
35 least two inches. The top of the drainfield rock must be level
36 in all directions.

1 (17) The drainfield rock must be covered with
2 either a permeable synthetic fabric or a four-inch layer of hay
3 or straw covered with untreated building paper.

4 ~~(17)~~ (18) Construction vehicles must not be
5 allowed on the drainfield rock until backfill is placed.

6 ~~(18)~~ (19) Sandy loam soil must be placed on the
7 drainfield rock to a depth of one foot in the center of the
8 mound and to a depth of six inches at the sides.

9 ~~(19)~~ (20) A maximum of two ten-foot wide beds may
10 be installed side by side in a single mound if the original soil
11 percolation rate is between five and 60 minutes per inch to a
12 depth of at least 24 inches below the sand layer. The beds must
13 be separated by four feet of clean sand.

14 ~~(20)~~ (21) When two beds are installed side by
15 side the sandy loam fill must be 18 inches deep at the center of
16 the mound and six inches deep at the sides.

17 ~~(21)~~ (22) Six inches of top soil must be placed
18 on the fill material over the entire area of the mound.

19 ~~(22)~~ (23) A grass cover must be established over
20 the entire area of the mound.

21 ~~(23)~~ (24) Shrubs must not be planted on the top
22 of the mound. Shrubs may be placed at the foot and side slopes
23 of the mound.

24 ~~(24)~~ (25) The side slopes on the mound must not
25 be steeper than three to one.

26 ~~(25)~~ (26) Whenever mounds are located on slopes,
27 a diversion must be constructed immediately upslope from the
28 mound to intercept and direct runoff.

29 ~~(26)~~ (27) A pump must be used as specified in
30 part 7080.0160, subpart 3.

31 ~~(27)~~ (28) A vertical inspection pipe at least
32 1-1/2 inches in diameter must be installed in each drainfield
33 rock layer of every mound. The inspection pipe must have
34 three-eighths inch or larger perforations spaced vertically no
35 more than six inches apart. At least two perforations must be
36 located in the rock layer. The inspection pipe must extend to

1 the bottom of the rock layer and must be capped flush with or
2 above finished grade.

3 7080.0200 VARIANCE.

4 In any cases where a permit or review is required by a
5 state agency and, upon application of the responsible person or
6 persons, that agency finds that by reason of exceptional
7 circumstances the strict enforcement of any provision of these
8 standards would cause undue hardship, that disposal of the
9 sewage, industrial waste, or other waste is necessary for the
10 public health, safety, or welfare, or that strict conformity
11 with the standards would be unreasonable, impractical, or not
12 feasible under the circumstances, the agency in its discretion
13 may permit a variance upon conditions as it may prescribe for
14 prevention, control, or abatement of pollution in harmony with
15 the general purpose of these standards and the intent of
16 applicable state and federal laws.

17 7080.0210 APPENDIX A: ALTERNATIVE SYSTEMS.

18 Subpart 1. [Unchanged.]

19 Subp. 2. **Adoption and use.** Where parts 7080.0010 to
20 ~~7080.0240~~ 7080.0210 are administered by a municipality, those
21 municipalities may adopt this appendix, in whole or in part, as
22 part of a local code or ordinance. Nothing in parts 7080.0010
23 to 7080.0210 or this appendix, however, shall require the
24 adoption of any part of this appendix as local ordinance or code.
25 Further, nothing in parts 7080.0010 to 7080.0210 or this
26 appendix shall require municipalities to allow the installation
27 of any system in this appendix.

28 This appendix defines the minimum requirements for
29 alternative systems serving establishments or facilities
30 licensed or otherwise regulated by the state of Minnesota or
31 this agency pursuant to part 7080.0030.

32 Subp. 3. **Class I alternatives, modified standard systems.**

33 A. and B. [Unchanged.]

34 C. **Bedrock proximity.** In no case shall drainfield
35 rock of the soil treatment system be placed closer than three

1 feet to creviced bedrock or to consolidated permeable bedrock.
2 When all horizons of the original soil profile have percolation
3 rates slower than 60 minutes per inch, ~~filter-material~~
4 drainfield rock of the soil treatment system shall be placed no
5 closer than seven feet to consolidated impermeable bedrock. A
6 maximum depth of 24 inches of sand may be used under the
7 drainfield rock. Where additional fill is required to achieve
8 the required separation distance, a soil having a percolation
9 rate between five and 45 minutes per inch (loamy sand to silt
10 loam) 12 months after placement shall be used. If it is not
11 possible to allow the soil to settle for 12 months after
12 placement, mechanical methods may be used to settle the fill to
13 within ten percent of its "in-situ" density at the original site.

14 D. Floodplain areas.

15 (1) The soil treatment area shall be a trench
16 system with at least 12 inches of drainfield rock below the
17 distribution pipe. There shall be no pipe or other installed
18 opening between the ~~filter-material~~ drainfield rock and the soil
19 surface.

20 (2) to (6) [Unchanged.]

21 (7) If a holding tank is utilized for a dwelling,
22 its liquid capacity shall be equal to 100 gallons times the
23 number of bedrooms times the number of days between the ten-year
24 stage on the rising limb of the regional flood hydrograph and
25 the ten-year stage on the falling limb of the hydrograph, or
26 1,000 gallons, whichever is greater. For other establishments,
27 storage equal to at least five times the estimated daily flow
28 must be provided.

29 (8) [Unchanged.]

30 Subp. 4. Class II alternatives, reduced area systems.

31 A. [Unchanged.]

32 B. Separate toilet waste and greywater systems.

33 (1) [Unchanged.]

34 (2) Toilet waste treatment devices.

35 (a) [Unchanged.]

36 (b) Type I, privies. Pit privies shall not

1 be installed where the bottom of the pit is less than three feet
2 above the water table. A vault privy shall be used in areas of
3 high ground water. The vault of a vault privy shall be
4 constructed in the same manner as a septic tank. See part
5 7080.0130, subpart 1.

6 Privies shall be set back from surface waters the same
7 distance as required for buildings and from property lines and
8 water supply wells the same distance as required for soil
9 treatment areas.

10 Pits or vaults shall be of sufficient capacity for the
11 residence they serve, but shall have at least 50 cubic feet of
12 capacity.

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

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

18 Privies shall be adequately vented.

19 When the pit is filled to within one foot of the top the
20 solids shall be removed or a new pit shall be constructed. The
21 abandoned pit shall be filled with clean earth and slightly
22 mounded to allow for settling. Removed solids shall be disposed
23 of by land application in accordance with agency guidelines for
24 septage disposal and all local ordinances and codes.

25 (c) and (d) [Unchanged.]

26 (3) Greywater system.

27 (a) and (b) [Unchanged.]

28 (c) Sewage tank. Greywater septic tanks
29 shall meet all requirements of part 7080.0130, subpart 1, except
30 that the liquid capacity of a greywater septic tank serving a
31 dwelling shall be based on the number of bedrooms contemplated
32 in the dwelling served and shall be at least as large as the
33 capacities given in table A-1. See parts 7080.0020, subpart 8
34 7, and 7080.0090.

35 Table A-1.

36 Number of Bedrooms Tank Liquid Capacity

1		(gallons)
2		
3	2 or less or hand pump	300
4	3 or 4	500
5	5 or 6	750
6	7, 8 or 9	1,000
7		

8 For ten or more bedrooms or other establishments, the
 9 greywater septic tank shall be sized as for any other
 10 establishment (see part 7080.0130, subpart 3, item B) except
 11 that the minimum liquid capacity shall be at least 300 gallons.

12 Greywater aerobic tanks shall meet all requirements of part
 13 7080.0130, subpart 6.

14 (d) [Unchanged.]

15 (e) Final treatment and disposal. Standard
 16 system. A standard greywater system shall meet all requirements
 17 of part 7080.0170.

18 Alternative system. A greywater mound system shall meet
 19 all requirements of part 7080.0170, subpart 2, item G.

20 C. [Unchanged.]

21 Subp. 5. Class III: alternatives, advanced alternative
 22 system.

23 A. Mounds may be allowed on original soils with
 24 percolation rates slower than 120 minutes per inch if the
 25 following special design requirements, in addition to those
 26 listed in part 7080.0170, subpart 2, item G, are used:

27 (1) the width of the drainfield rock layer must
 28 not exceed five feet;

29 (2) beds shall not be installed side by side; and

30 (3) all vegetation in excess of two inches in
 31 length must be removed from the total area under the banks.

32 B. Collector systems.

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

37 Plans and specifications shall comply with local ordinances
 38 on such issues as zoning, joint ownership of land, joint
 39 maintenance responsibilities, easements, and other

1 considerations and shall be approved by the municipality.

2 (2) Design.

3 (a) The size of a common soil treatment
4 system for two to four dwellings connected to a single
5 drainfield shall be based on the sum of the areas required for
6 each residence. Where ~~five~~ three or more dwellings are
7 connected to a single drainfield, Classification I dwellings may
8 be considered as Classification II dwellings by the owner for
9 the purpose of determining the flow required for the size of the
10 common soil treatment system. Classifications and flow rates
11 are found in Table II, contained in part 7080.0170, subpart 2,
12 item A, subitem (2).

13 (b) The system shall be designed with each
14 residence having a sewage tank or with a common sewage tank. In
15 the case of a common tank, the capacity of the tank shall be
16 sized according to part 7080.0130, subpart 3, item B, ~~except~~
17 ~~that the minimum capacity shall be at least 3,000 gallons,~~ and
18 shall be compartmented if in a single tank.

19 (c) to (1) [Unchanged.]

20 (3) [Unchanged.]

21 ~~B~~ C. Other systems. Where unusual conditions exist,
22 special systems of treatment and disposal other than those
23 specifically mentioned in ~~item~~ items A and B, may be employed
24 provided:

25 (1) reasonable assurance of performance of the
26 system is presented to the permitting authority;

27 (2) the engineering design of the system is first
28 approved by the permitting authority;

29 (3) there is no discharge to the ground surface
30 or to surface waters;

31 (4) treatment and disposal of wastes is in such a
32 manner so as to protect the public health and general welfare;

33 (5) the systems comply with all applicable
34 requirements of these standards and with all local codes and
35 ordinances.

36 Subp. 6. Class IV alternatives, holding tanks. Holding

1 tanks:

2 A. Holding tanks may be allowed only as replacements
3 for existing nonconforming systems or on existing parcels or
4 lots as of the date of the enactment of these standards and only
5 where it can conclusively be shown that a standard, Class I,
6 Class II, Class III, or mound system cannot be feasibly
7 installed.

8 B. to H. [Unchanged.]

9 Subp. 7. [Unchanged.]

10 Subp. 8. [See Repealer.]

11 Subp. 9. to 15. [Unchanged.]

12

13 REPEALER. Minnesota Rules, parts 7080.0020, subparts 17,
14 22, and 51; 7080.0210, subpart 8; 7080.0220; 7080.0230; and
15 7080.0240 are repealed.