

97 APR -4 AM 9:22  
ADMINISTRATIVE  
HEARINGS  
RECEIVED

1 Pollution Control Agency  
2 Adopted Permanent Rules Relating to Sewage Sludge

3 7001.0020 SCOPE.

4 Except as otherwise specifically provided, parts 7001.0010  
5 to 7001.0210 apply to the following:

6 A. An agency permit required for the storage,  
7 treatment, utilization, processing, transfer, intermediate  
8 disposal, or final disposal of solid waste. Part 7001.0040  
9 applies to permits for solid waste transfer facilities,  
10 recycling facilities, refuse-derived fuel processing facilities,  
11 and compost facilities, except that the time period referred to  
12 in part 7001.0040, subparts 1 and 3, shall be 90 days instead of  
13 180 days.

14 B. An agency permit required for the treatment,  
15 storage, or disposal of hazardous waste.

16 C. An agency permit required for the treatment,  
17 distribution, utilization, storage, or disposal of sewage sludge.

18 D. An agency permit required for the construction,  
19 installation, or operation of a disposal system. Part  
20 7001.0040, subparts 1 and 3, apply to permits for sewer  
21 extensions, except that the time period referenced in those  
22 subparts shall be 60 days instead of 180 days. Parts 7001.0100,  
23 subparts 4 and 5; 7001.0110; and 7001.0150 do not apply to  
24 permits for sewer extensions.

25 E. An agency permit required for the discharge of a  
26 pollutant into the waters of the state from a point source.

27 F. An agency permit required for the construction or  
28 operation of a feedlot; however, parts 7001.0040 to 7001.0070 do  
29 not apply to these permits. Parts 7001.0100, subparts 4 and 5,  
30 and 7001.0110 do not apply to animal feedlot interim permits.

31 G. An agency permit required for the construction or  
32 operation of a liquid storage facility. Part 7001.0040,  
33 subparts 1 and 3, apply to these permits except that the time  
34 period referenced in those subparts shall be 90 days instead of  
35 180 days. Parts 7001.0100, subparts 4 and 5; 7001.0110; and

1 7001.0150 do not apply to these permits.

2 H. An agency permit required for the construction of  
3 a facility, building, structure, or installation that attracts  
4 or may attract mobile source activity that results in emissions  
5 of an air pollutant for which there is a state standard. Parts  
6 7001.0100, subparts 4 and 5, and 7001.0110 do not apply to  
7 permits for parking facilities described in part 7001.1270,  
8 subpart 2, with a new or increased parking capacity of 5,000  
9 vehicles or less. Part 7001.0150, subparts 1 and 2, do not  
10 apply to these permits.

11 I. The processing of certifications under section 401  
12 of the Clean Water Act, United States Code, title 33, section  
13 1341, to the extent provided by parts 7001.1400 to 7001.1470.

14 7001.0050 WRITTEN APPLICATION.

15 A person who requests the issuance, modification,  
16 revocation and reissuance, or reissuance of a permit shall  
17 complete, sign, and submit to the commissioner a written  
18 application. The person shall submit the written application in  
19 a form prescribed by the commissioner. The application shall  
20 contain the items listed in items A to I unless the commissioner  
21 has issued a written exemption from one or more of the data  
22 requirements. After receiving a written request for an  
23 exemption from a data requirement, the commissioner shall issue  
24 the exemption if the commissioner finds that the data is  
25 unnecessary to determine whether the permit should be issued or  
26 denied. The application must contain:

27 [For text of items A to H, see M.R.]

28 I. other information relevant to the application as  
29 required by parts 7001.0550 to 7001.0640, 7001.1050, 7001.1290,  
30 7001.3175 to 7001.3475, or 7041.0700.

31 7001.3050 PERMIT REQUIREMENTS.

32 [For text of subpart 1, see M.R.]

33 Subp. 2. **Exclusions.** A solid waste management facility  
34 permit is not required for a backyard compost site as defined in  
35 part 7035.0300.

1 Subp. 3. **Permits-by-rule.** The owner or operator of the  
2 following facilities is deemed to have obtained a solid waste  
3 management facility permit without making application for it,  
4 unless the commissioner finds that the facility is not in  
5 compliance with the listed part:

6 [For text of items A to F, see M.R.]

7 G. facilities receiving solid waste from the  
8 exploration, mining, milling, smelting, and refining of ores and  
9 minerals provided that:

10 [For text of subitem (1), see M.R.]

11 (2) the owner or operator has obtained a permit  
12 in accordance with part 7001.0020, item D; and

13 [For text of subitem (3), see M.R.]

14 [For text of item H, see M.R.]

15 [For text of subp 4, see M.R.]

16 7002.0210 SCOPE.

17 Parts 7002.0210 to 7002.0310 apply to all persons required  
18 to obtain a permit from the Minnesota Pollution Control Agency  
19 as described in part 7001.0020, items C, D, and E.

20 7035.2525 SOLID WASTE MANAGEMENT FACILITIES GOVERNED.

21 [For text of subpart 1, see M.R.]

22 Subp. 2. **Exceptions.** Parts 7035.2525 to 7035.2915 do not  
23 apply to the following solid waste management facilities or  
24 persons, except as indicated:

25 [For text of items A to F, see M.R.]

26 G. solid waste from the extraction, beneficiation,  
27 and processing, of ores and minerals stored, collected,  
28 transferred, transported, utilized, processed, and disposed of  
29 or reclaimed, provided the facility is permitted for such use  
30 under part 7001.0020, item D, and chapter 6130.

31 7035.2535 GENERAL SOLID WASTE MANAGEMENT FACILITY REQUIREMENTS.

32 Subpart 1. **Unacceptable wastes.** The owner or operator of  
33 a solid waste management facility must not accept the following  
34 wastes for treatment, storage, processing, or disposal:

1 [For text of item A, see M.R.]

2 B. sewage sludge, septic tank pumpings, sewage sludge  
3 compost, or sewage unless it has been treated or will be treated  
4 by a process to significantly reduce pathogens pursuant to part  
5 7035.2835 and chapter 7041;

6 [For text of items C to G, see M.R.]

7 [For text of subps 2 to 4, see M.R.]

8 Subp. 5. **Industrial solid waste management.** All  
9 industrial solid waste delivered to a solid waste management  
10 facility must be managed by the owner or operator to protect  
11 human health and the environment. The industrial solid waste  
12 management plan required under part 7001.3300 must address items  
13 A to C, except that the industrial solid waste management plan  
14 for a municipal solid waste combustor ash land disposal facility  
15 need not comply with items B and C.

16 [For text of items A to C, see M.R.]

17 D. The owner or operator need not address the  
18 following wastes in the plan:

19 [For text of subitems (1) to (4), see M.R.]

20 (5) dewatered sewage sludge that has been treated  
21 by a process to significantly reduce pathogens pursuant to  
22 chapter 7041;

23 [For text of subitems (6) to (8), see M.R.]

24 [For text of item E, see M.R.]

25 [For text of subp 6, see M.R.]

26 7041.0100 DEFINITIONS.

27 Subpart 1. **Scope.** For the purpose of this chapter, the  
28 following terms have the meanings given them.

29 Subp. 2. **Agency.** "Agency" means the Minnesota Pollution  
30 Control Agency.

31 Subp. 3. **Agricultural land.** "Agricultural land" means  
32 land on which a food crop, feed crop, cover crop, or fiber crop  
33 is grown as well as land managed for the production of hay,  
34 pastureland for grazing of livestock, or rangeland.

35 Subp. 4. **Agronomic rate.** "Agronomic rate" means the

1 sewage sludge application rate (dry weight basis) designed to:

2           A. provide the amount of nitrogen which can be  
3 utilized by the food crop, feed crop, fiber crop, cover crop, or  
4 vegetation grown on the land; and

5           B. minimize the amount of nitrogen in the sewage  
6 sludge that passes below the root zone of the crop or vegetation  
7 grown on the land to the groundwater.

8           Subp. 5. **Annual pollutant loading rate.** "Annual pollutant  
9 loading rate" means the maximum amount of a pollutant that can  
10 be applied to a unit area of land during a 365-day period.

11           Subp. 6. **Apply sewage sludge or sewage sludge applied to**  
12 **the land.** "Apply sewage sludge" or "sewage sludge applied to  
13 the land" means applying sewage sludge by spraying or spreading  
14 sewage sludge on the surface of the land, injecting sewage  
15 sludge below the surface of the land or incorporating sewage  
16 sludge into the soil for beneficial use.

17           Subp. 7. **Available nitrogen.** "Available nitrogen" means  
18 nitrogen which is present in inorganic forms and the amount of  
19 organic nitrogen that can be mineralized to plant available  
20 forms.

21           Subp. 8. **Beneficial use.** "Beneficial use" means any  
22 application of sewage sludge to the land to improve soil  
23 physical and chemical properties by supplying nutrients, organic  
24 matter, and other components of this material.

25           Subp. 9. **Bulk sewage sludge.** "Bulk sewage sludge" means  
26 sewage sludge that is not sold or given away in a bag or other  
27 container for application to the land.

28           Subp. 10. **Cave.** "Cave" means any naturally formed,  
29 subterranean open area or chamber, or series of chambers.

30           Subp. 11. **Commissioner.** "Commissioner" means the  
31 commissioner or other designated representative of the Minnesota  
32 Pollution Control Agency.

33           Subp. 12. **Cover crop.** "Cover crop" means a small grain or  
34 other close growing vegetation not grown for harvest such as  
35 vegetation growing on land set aside for conservation purposes.

36           Subp. 13. **Cropping year.** "Cropping year" means a year

1 beginning on September 1 of the year prior to the growing season  
2 and ending August 31 the year the crop is harvested. For  
3 example, the 1994 cropping year began September 1, 1993, and  
4 ended August 31, 1994.

5 Subp. 14. **Cumulative pollutant loading rate.** "Cumulative  
6 pollutant loading rate" means the maximum amount of an inorganic  
7 pollutant that can be applied to an area of land.

8 Subp. 15. **Dewatered sewage sludge.** "Dewatered sewage  
9 sludge" means any sewage sludge with a total solids content of  
10 20 percent or greater or which can be transported and handled as  
11 a solid material.

12 Subp. 16. **Domestic septage.** "Domestic septage" means  
13 either liquid or solid material removed from a septic tank,  
14 cesspool, portable toilet, Type III marine sanitation device, or  
15 similar treatment works that receives only domestic sewage.  
16 Domestic septage does not include liquid or solid material  
17 removed from a septic tank, cesspool, or similar treatment works  
18 that receives either commercial wastewater or industrial  
19 wastewater and does not include grease removed from a grease  
20 trap at a restaurant.

21 Subp. 17. **Domestic sewage.** "Domestic sewage" means waste  
22 and wastewater from humans or household operations that is  
23 discharged to or otherwise enters a treatment works.

24 Subp. 18. **Dry weight basis.** "Dry weight basis" means  
25 calculated on the basis of having been dried at 105 degrees  
26 Celsius until reaching a constant mass, or essentially 100  
27 percent solids content.

28 Subp. 19. **EPA.** "EPA" means the United States  
29 Environmental Protection Agency.

30 Subp. 20. **Exceptional quality sewage sludge.** "Exceptional  
31 quality sewage sludge" means sewage sludge which has been  
32 prepared to meet one of the Class A pathogen reduction  
33 requirements in part 7041.1300, subpart 2; the pollutant  
34 concentrations in part 7041.1100, subpart 4, item C; and one of  
35 the vector attraction reduction requirements in part 7041.1400,  
36 subpart 2, items A to H.

1 Subp. 21. **Feed crops.** "Feed crops" means crops produced  
2 primarily for consumption by animals.

3 Subp. 22. **Food crops.** "Food crops" means crops consumed  
4 by humans. These include, but are not limited to, fruits,  
5 vegetables, and tobacco.

6 Subp. 23. **Forest.** "Forest" means a tract of land thick  
7 with trees and underbrush.

8 Subp. 24. **Groundwater.** "Groundwater" means water below  
9 the land surface in the saturated zone.

10 Subp. 25. **Highly permeable soils.** "Highly permeable soils"  
11 means soils whose soil leaching potentials are rated as severe,  
12 poor filter for soil pesticide loss, by the Natural Resources  
13 Conservation Service using the procedure found in part 620, Soil  
14 Interpretation Rating Guides of the United States Department of  
15 Agriculture-Natural Resources Conservation Service National Soil  
16 Survey Handbook.

17 Subp. 26. **Industrial wastewater.** "Industrial wastewater"  
18 means wastewater generated in a commercial or industrial process.

19 Subp. 27. **Land application site.** "Land application site"  
20 means an area of land which receives application of sewage  
21 sludge for beneficial use.

22 Subp. 28. **Long-term storage.** "Long-term storage" means  
23 the storage of dewatered bulk sewage sludge for a period greater  
24 than 30 days but not exceeding seven months at a land  
25 application site.

26 Subp. 29. **Material derived from sewage sludge.** "Material  
27 derived from sewage sludge" means sewage sludge received from a  
28 treatment works whose quality is changed either through  
29 treatment or mixing with a nonhazardous material prior to being  
30 applied to the land.

31 Subp. 30. **Mine.** "Mine" means an excavation for minerals.

32 Subp. 31. **NPDES permit.** "NPDES permit" means a National  
33 Pollutant Discharge Elimination System permit issued by the  
34 agency that authorizes under certain conditions the discharge of  
35 pollutants to surface waters of the state. Combined NPDES/SDS  
36 permits issued by the agency will be considered NPDES permits

1 under this chapter.

2 Subp. 32. **Natural Resources Conservation Service.**

3 "Natural Resources Conservation Service" means the Natural  
4 Resources Conservation Service of the United States Department  
5 of Agriculture, formerly known as the Soil Conservation Service.

6 Subp. 33. **Other container.** "Other container" means either  
7 an open or closed receptacle. This includes, but is not limited  
8 to, a bucket, box, carton, or vehicle or trailer with a load  
9 capacity of one metric ton (2205 pounds) or less.

10 Subp. 34. **Pathogens.** "Pathogens" means organisms that are  
11 capable of producing an infection or disease in a susceptible  
12 host.

13 Subp. 35. **Perched water condition.** "Perched water  
14 condition" means the soil is saturated with water in one or more  
15 layers within 200 centimeters (78.7 inches) of the mineral soil  
16 surface and has one or more unsaturated layers, with an upper  
17 boundary above 200 centimeters (78.7 inches) in depth, below the  
18 saturated layer. The zone of saturation, i.e., the water table,  
19 is perched on top of a relatively impermeable layer. The  
20 Natural Resources Conservation Service also classifies this as  
21 "epi-saturation."

22 Subp. 36. **Permitting authority.** "Permitting authority"  
23 means either the EPA or a state with an EPA-approved sewage  
24 sludge management program.

25 Subp. 37. **Person.** "Person" has the meaning given it in  
26 Minnesota Statutes, section 116.06, subdivision 17.

27 Subp. 38. **Person who prepares sewage sludge.** "Person who  
28 prepares sewage sludge" means the person who generates sewage  
29 sludge during the treatment of domestic sewage in a treatment  
30 works or the person who derives a material from sewage sludge.

31 Subp. 39. **pH.** "pH" means the logarithm of the reciprocal  
32 of the hydrogen ion concentration measured at 25 degrees Celsius  
33 or measured at another temperature and then converted to an  
34 equivalent value at 25 degrees Celsius.

35 Subp. 40. **Pollutant.** "Pollutant" means an organic  
36 substance, an inorganic substance, a combination of organic and



1 inorganic substances, or a pathogenic organism that, after  
2 discharge and upon exposure, ingestion, inhalation, or  
3 assimilation into an organism either directly from the  
4 environment or indirectly by ingestion through the food chain,  
5 could, on the basis of information available to the  
6 administrator of EPA, cause death, disease, behavioral  
7 abnormalities, cancer, genetic mutations, physiological  
8 malfunctions including malfunction in reproduction, or physical  
9 deformations in either organisms or offspring of the organisms.

10       Subp. 41. **Pollutant limit.** "Pollutant limit" means a  
11 numerical value that describes the amount of a pollutant allowed  
12 per unit amount of sewage sludge, such as milligrams per  
13 kilogram of total solids, or the amount of a pollutant that can  
14 be applied to a unit area of land, such as pounds per acre.

15       Subp. 42. **Public contact site.** "Public contact site"  
16 means land with a high potential for contact by the public.  
17 This includes, but is not limited to, public parks, ball fields,  
18 cemeteries, and golf courses.

19       Subp. 43. **Quarry.** "Quarry" means a surficial mine used to  
20 obtain building stone, limestone, gravel, or sand.

21       Subp. 44. **Realistic yield goal.** "Realistic yield goal"  
22 means the most recent five-year average of crop yields,  
23 excluding the worst year, or the most recent three- to five-year  
24 average yield increased by ten percent or if the crop has never  
25 been grown, the realistic yield goal based on soil productivity  
26 and level of management as determined by the county Natural  
27 Resources Conservation Service, county extension agent, or a  
28 crop consultant.

29       Subp. 45. **Reclamation site.** "Reclamation site" means  
30 drastically disturbed land that is reclaimed using sewage sludge.  
31 This includes, but is not limited to, strip mines and  
32 construction sites.

33       Subp. 46. **Residential development.** "Residential  
34 development" means ten or more places of habitation concentrated  
35 within ten acres of land. The term also includes schools,  
36 churches, hospitals, nursing homes, businesses, offices, and

1 apartment buildings or complexes having ten or more living units.

2 Subp. 47. **SDS permit.** "SDS permit" means a State Disposal  
3 System permit issued by the agency that authorizes under certain  
4 conditions the subsurface disposal or on-land disposal of  
5 pollutants and the operation of a disposal system.

6 Subp. 48. **Seasonal high water table.** "Seasonal high water  
7 table" means the highest level the water table reaches during a  
8 given year. Methods of determining the seasonal high water  
9 table are given in part 7041.3400, subpart 3.

10 Subp. 49. **Sewage sludge.** "Sewage sludge" means solid,  
11 semisolid, or liquid residue generated during the treatment of  
12 domestic sewage in a treatment works. Sewage sludge includes  
13 but is not limited to, scum or solids removed in primary,  
14 secondary, or advanced wastewater treatment processes; and a  
15 material derived from sewage sludge. Sewage sludge does not  
16 include ash generated during the firing of sewage sludge in a  
17 sewage sludge incinerator or grit and screenings generated  
18 during preliminary treatment of domestic sewage in a treatment  
19 works. Sewage sludge that is acceptable and beneficial for  
20 recycling on land as a soil conditioner and nutrient source is  
21 also known as biosolids.

22 Subp. 50. **Short-term storage.** "Short-term storage" means  
23 the storage of dewatered bulk sewage sludge for a period of less  
24 than 30 days at a land application site.

25 Subp. 51. **Sinkhole.** "Sinkhole" means a closed depression  
26 in an area of Karst topography that is formed either by solution  
27 of surficial limestone or by collapse of underlying caves.

28 Subp. 52. **Soil horizon.** "Soil horizon" means a layer of  
29 soil that is approximately parallel to the soil surface and has  
30 some set of properties that have been produced by soil-forming  
31 processes, and has some properties that are not like those of  
32 the layers above and beneath it. These properties include  
33 color, structure, texture, consistency, and bulk density.

34 Subp. 53. **Soil texture.** "Soil texture" means the relative  
35 portion of the soil separates sand, silt, and clay. It can be  
36 measured using methods described in part 7041.3400, subpart 1.

1 Coarse texture is United States Department of Agriculture  
2 textural classifications sand, loamy sand, and sandy loam.  
3 Medium texture is United States Department of Agriculture  
4 classifications loam, silt, silt loam, and sandy clay loam.  
5 Fine texture is United States Department of Agriculture  
6 classifications clay loam, silty clay loam, sandy clay, silty  
7 clay, and clay.

8 Subp. 54. **Specific oxygen uptake rate (SOUR).** "Specific  
9 oxygen uptake rate (SOUR)" means the mass of oxygen consumed per  
10 unit time per unit mass of total solids (dry weight basis) in  
11 the sewage sludge.

12 Subp. 55. **Surface waters.** "Surface waters" means waters  
13 of the state including streams, lakes, ponds, marshes,  
14 watercourses, waterways, springs, reservoirs, and all other  
15 bodies or accumulations of water, natural or artificial, public  
16 or private, which are contained within, flow through, or border  
17 upon the state.

18 Subp. 56. **Total solids.** "Total solids" means the  
19 materials in sewage sludge that remain as residue when the  
20 sewage sludge is dried at 103 to 105 degrees Celsius.

21 Subp. 57. **Treatment works.** "Treatment works" means either  
22 a federally owned, publicly owned, or privately owned device or  
23 system used to treat, recycle, or reclaim either domestic sewage  
24 or a combination of domestic sewage and industrial waste of a  
25 liquid nature. This includes a septage treatment or septage  
26 storage facility which receives domestic septage from multiple  
27 sources. For the purpose of this chapter, a treatment works  
28 does not include septic tanks unless they are part of a  
29 wastewater treatment facility operated by a municipality or  
30 sanitary district which is required by the agency to have a  
31 NPDES or SDS permit.

32 Subp. 58. **Type IV certified operator or inspector.** "Type  
33 IV certified operator or inspector" means a person certified  
34 according to chapter 7048 for the land application of sewage  
35 sludge or the inspection of sewage sludge land application sites.

36 Subp. 59. **Unstabilized solids.** "Unstabilized solids"

1 means organic materials in sewage sludge that have not been  
2 treated in either an aerobic or anaerobic treatment process.

3 Subp. 60. **Vector attraction.** "Vector attraction" means  
4 the characteristic of sewage sludge that attracts rodents,  
5 flies, mosquitoes, or other organisms capable of transporting  
6 infectious agents.

7 Subp. 61. **Volatile solids.** "Volatile solids" means the  
8 amount of the total solids in sewage sludge lost when the sewage  
9 sludge is combusted at 550 degrees Celsius in the presence of  
10 excess air.

11 Subp. 62. **Wetland.** "Wetland" means those areas that are  
12 inundated or saturated by surface water or groundwater at a  
13 frequency and duration sufficient to support, and that under  
14 normal circumstances do support, a prevalence of vegetation  
15 typically adapted for life in saturated soil conditions.

16 Wetlands generally include swamps, marshes, bogs, and similar  
17 areas. Constructed wetlands designed for wastewater treatment  
18 are not waters of the state. Wetlands must:

19 A. have a predominance of hydric soils;

20 B. be inundated or saturated by surface water or  
21 groundwater at a frequency and duration sufficient to support a  
22 prevalence of hydrophytic vegetation typically adapted for life  
23 in a saturated soil condition; and

24 C. under normal circumstances, support a prevalence  
25 of such vegetation.

26 7041.0200 PURPOSE AND POLICY.

27 The purpose of this chapter is to establish requirements  
28 for the storage and land application of sewage sludge that  
29 protect public health and the environment. The policy of the  
30 agency is to encourage the beneficial use of sewage sludge as a  
31 fertilizer or soil conditioner.

32 7041.0300 APPLICABILITY AND EXCLUSIONS.

33 Subpart 1. **Applicability.** Except as provided in subpart  
34 2, item I, the requirements of this chapter apply to any person  
35 who prepares sewage sludge that is applied to the land, to any

1 person who applies sewage sludge to the land, to sewage sludge  
2 applied to the land (including sewage sludge remaining in a  
3 treatment works that is a wastewater treatment pond when the  
4 pond is emptied or ceases to be used to receive wastewater), and  
5 the land on which sewage sludge is applied.

6 Subp. 2. Exclusions. This chapter does not establish  
7 requirements for:

8 A. processes used to treat domestic sewage or for  
9 processes used to treat sewage sludge such as thickening,  
10 stabilization, and dewatering prior to final application to the  
11 land, except as provided in parts 7041.1300 and 7041.1400.  
12 Treatment processes do not include storage;

13 B. the use or disposal of sludge generated at an  
14 industrial facility during the treatment of industrial  
15 wastewater, including sewage sludge generated during the  
16 treatment of industrial wastewater combined with domestic  
17 sewage;

18 C. the use or disposal of sewage sludge determined to  
19 be hazardous according to Code of Federal Regulation, title 40,  
20 part 261;

21 D. the use or disposal of sewage sludge with a  
22 concentration of polychlorinated biphenyls (PCBs) equal to or  
23 greater than 50 milligrams per kilogram of total solids (dry  
24 weight basis);

25 E. the use or disposal of ash generated during the  
26 firing of sewage sludge in a sewage sludge incinerator;

27 F. the use or disposal of grit, for example, sand,  
28 gravel, cinders, or other materials with a high specific  
29 gravity, or screenings, for example, relatively large materials  
30 such as rags, generated during preliminary treatment of domestic  
31 sewage in a treatment works;

32 G. the use or disposal of sludge generated during the  
33 treatment of either surface water or groundwater used for  
34 drinking water;

35 H. a material derived from exceptional quality sewage  
36 sludge; and

1 I. the land application or storage of domestic,  
2 commercial, industrial septage, a mixture of domestic septage  
3 and commercial septage, or a mixture of domestic septage and  
4 industrial septage unless the domestic septage or mixture is  
5 generated or stored at a treatment works, in which case it is  
6 subject to the requirements of this chapter.

7 7041.0400 EXCEPTIONAL QUALITY SEWAGE SLUDGE.

8 Subpart 1. **Conditions.** The conditions in subpart 2 for  
9 exceptional quality sewage sludge do not apply until they are  
10 included in a permit or approved management plan as required in  
11 part 7041.0600.

12 Subp. 2. **General requirements and management practices.**  
13 The general requirements in part 7041.1000 and the management  
14 practices in part 7041.1200 do not apply to exceptional quality  
15 sewage sludge which is applied to the land, except as follows:

16 A. the management practices in part 7041.1200,  
17 subpart 2, item B, for liquid bulk sewage sludge applied to  
18 frozen or snow covered ground apply to liquid bulk exceptional  
19 quality sewage sludge; and

20 B. the total nitrogen, phosphorus, and potassium  
21 content must be supplied by the person who prepares the sewage  
22 sludge to the person who applies or distributes the sewage  
23 sludge for that person's use in recommending application rates.

24 Subp. 3. **Storage.** The requirements in part 7041.1200,  
25 subpart 8, items D and E, apply to the storage of dewatered bulk  
26 exceptional quality sewage sludge on agricultural land, forest,  
27 or a reclamation site and the storage must not exceed seven  
28 months. Persons who prepare sewage sludge shall inform in  
29 writing persons who receive the bulk exceptional quality sewage  
30 sludge of these storage requirements.

31 7041.0500 BASIC PROVISIONS.

32 Subpart 1. **Responsibility.** Persons who prepare sewage  
33 sludge are responsible for ensuring that the applicable  
34 requirements in this chapter are met when the sewage sludge is  
35 prepared, distributed, or applied to the land.

1           Subp. 2. **Direct enforceability.** No person shall use or  
2 dispose of sewage sludge through any practice for which  
3 requirements are established in this chapter except in  
4 accordance with such requirements.

5           Subp. 3. **Additional or more stringent requirements.** When  
6 necessary to protect the public health or the environment from a  
7 potentially adverse effect of a pollutant in sewage sludge, the  
8 commissioner may include in a permit or site approval additional  
9 or more stringent requirements than established in this chapter.

10          Subp. 4. **Variance.** Any person may apply for a variance  
11 from requirements of this chapter in accordance with chapter  
12 7000, Minnesota Statutes, section 116.07, subdivision 5, and  
13 other applicable statutes and rules; however, the agency shall  
14 not grant a variance from any federal requirement.

15          Subp. 5. **Land application approvals.** Permits, including  
16 expired permits, and approvals, which expire after the effective  
17 date of this chapter, issued by procedures under chapter 7040  
18 before its repeal for the application of sewage sludge, remain  
19 effective for the land described in them for 180 days from the  
20 effective date of this chapter or their expiration date,  
21 whichever is later, provided the requirements of this chapter  
22 are met and the permit or approval is not revoked according to  
23 part 7001.0170. After that time, these areas of land must be  
24 reapproved according to the procedures in part 7041.0600,  
25 subpart 3, before sewage sludge is applied.

26          Subp. 6. **Treatment works not regulated under chapter 7040**  
27 **before its repeal.** Persons who prepare sewage sludge at  
28 treatment works previously not regulated under chapter 7040  
29 before its repeal but regulated under this chapter may continue  
30 to apply sewage sludge on sites not approved by the commissioner  
31 for up to 12 months from the effective date of this chapter  
32 after which time they must have approved sites.

33          Subp. 7. **Compliance with change of management practices.**  
34 Preparers and appliers of bulk sewage sludge may continue to  
35 apply sewage sludge to frozen or snow covered ground and on  
36 approved sites with highly permeable soils and soils with

1 greater than 400 pounds extractable phosphorus as allowed under  
2 chapter 7040 before its repeal for up to 12 months from the  
3 effective date of this chapter. After that time they must be in  
4 compliance with part 7041.1200, subparts 2, item B; 3, item A,  
5 subitem (3); and 5, unless construction is necessary for  
6 compliance, in which case compliance must occur within 24 months  
7 of the effective date of this chapter.

8 7041.0600 REQUIREMENT TO OBTAIN PERMITS AND SITE APPROVAL.

9 Subpart 1. Permits for inclusion of the sewage sludge  
10 requirements. A NPDES or SDS permit which includes sewage  
11 sludge requirements must be applied for and obtained from the  
12 agency by persons specified in items A to C. Persons who do not  
13 have a permit must apply for and obtain a permit before land  
14 applying or distributing sewage sludge for application to the  
15 land. Permit application requirements are set out in part  
16 7041.0700.

17 A. Persons who prepare sewage sludge in Minnesota.  
18 For persons who have NPDES or SDS permits issued by the agency,  
19 the requirements for sewage sludge shall be incorporated into  
20 those permits when they are reissued unless the requirements are  
21 included in a separate permit or modification of a permit at the  
22 request of a permittee. Information required in part 7041.0700  
23 shall be submitted with an application to obtain, renew, or  
24 modify a permit.

25 B. Persons who prepare sewage sludge in another state  
26 which is applied to the land or distributed for application to  
27 the land in Minnesota, unless the person who prepares the sewage  
28 sludge produces exceptional quality sewage sludge or sewage  
29 sludge that is sold or given away in a bag or other container  
30 and has a permit issued by another state or EPA which includes  
31 the requirements for its preparation.

32 If a permit from the agency is not required, the person who  
33 prepares the sewage sludge must obtain written approval of a  
34 management plan from the commissioner before the sewage sludge  
35 is distributed or applied to the land. The plan must include



1 the information in part 7041.0700, item I. An approved  
2 management plan shall be enforceable to the same extent and the  
3 same manner as a permit.

4 C. Persons who prepare sewage sludge which is applied  
5 to the land or distributed for application to the land in  
6 Minnesota who propose methods to utilize sewage sludge which are  
7 not addressed by this chapter.

8 Subp. 2. **Permits for sewage sludge storage.** Persons who  
9 store bulk sewage sludge or construct storage for bulk sewage  
10 sludge at locations other than at a permitted wastewater  
11 treatment facility must apply for and obtain a NPDES or SDS  
12 permit from the agency prior to storage or construction.  
13 Persons who have permits may apply to have their permits  
14 modified to include conditions for storage or construction of  
15 storage. Permit application requirements are set out in part  
16 7041.0700. A permit is not required for:

17 A. short-term or approved long-term storage of  
18 dewatered bulk sewage sludge at a land application site; or

19 B. storage of dewatered bulk exceptional quality  
20 sewage sludge when:

21 (1) the storage meets the requirements in part  
22 7041.0400, subpart 3;

23 (2) the storage is at a facility permitted under  
24 Minnesota Statutes, section 18C.305, for fertilizer;

25 (3) the storage is located at public contact  
26 sites, plant nurseries, turf farms, or other locations where it  
27 is used for landscaping or horticultural purposes; or

28 (4) it is stored by persons using it for  
29 landscaping or horticultural purposes.

30 Subp. 3. **Site approval.** Persons who prepare bulk sewage  
31 sludge must obtain approval of the sites on which bulk sewage  
32 sludge is applied before it is applied unless it is exceptional  
33 quality sewage sludge. Application procedures are set out in  
34 part 7041.0800.

35 7041.0700 APPLICATION REQUIREMENTS FOR NPDES AND SDS PERMITS.

1       The agency's procedural and permitting rules, chapters 7000  
2 and 7001, apply to all permits required by this chapter. In  
3 addition to information required by part 7001.1050, permit  
4 applications must include the information listed in items A to  
5 L, except that items I and J need only be included when  
6 applicable, on a form provided by the commissioner. Information  
7 in item I is required when exceptional quality sewage sludge or  
8 sewage sludge which is sold or given away in a bag or other  
9 container is prepared. Item J is required when the application  
10 is for storage or construction of a storage facility for bulk  
11 sewage sludge.

12           A. A description of the process used to meet Class A  
13 or Class B pathogen and vector attraction reduction  
14 requirements, including any information needed to make these  
15 determinations including temperatures, retention times,  
16 salmonella, virus, and viable helminth data, volatile solids  
17 reduction calculations and management practices.

18           B. Sewage sludge chemical characteristics determined  
19 from a sample or samples taken within one year of application  
20 submittal, analyzed, at a minimum, for the parameters listed in  
21 part 7041.1500, subpart 2, items A to E, unless the sewage  
22 sludge is generated from septic tanks in which case an analysis  
23 is not necessarily required. The commissioner shall determine  
24 and notify the permit applicant if an analysis is required to  
25 protect human health or the environment after review of the  
26 permit application. In order to make this determination, the  
27 permit application must include information on the size and  
28 location of the septic tanks and a description of any commercial  
29 (such as a restaurant) or industrial discharges to the treatment  
30 works.

31           C. A description of how and when representative  
32 samples of sewage sludge applied to the land will be taken.

33           D. Information necessary to evaluate the laboratory  
34 quality assurance and quality control procedures including  
35 analytical methods, detection limits, and holding times of the  
36 laboratory doing the analysis in item B and the sampling

1 techniques, preservation method, and shipping technique used by  
2 the preparer.

3 E. Any groundwater monitoring data, with a  
4 description of the well locations and approximate depth to  
5 groundwater for land application sites if this data is not  
6 already on file at the agency.

7 F. A description of the applicant's sewage sludge  
8 use, disposal, or distribution practices.

9 G. The location to which sewage sludge is transferred  
10 and the names of applicators, contractors, or distributors who  
11 will use or dispose of the sewage sludge, if applicable.

12 H. Annual sewage sludge production.

13 I. A management plan that describes how the person  
14 who prepares the sewage sludge will ensure that the proposed  
15 distribution or land application of the sewage sludge meets the  
16 requirements of this chapter. The following items shall be  
17 included or addressed in the plan:

18 (1) a copy of any permits issued to the applicant  
19 which contain conditions for the treatment of sewage sludge  
20 which are not issued by the agency;

21 (2) a certification statement appropriate to the  
22 type of sewage sludge prepared as required in part 7041.1600;

23 (3) a copy of the analysis of the sewage sludge  
24 as required by part 7041.1500;

25 (4) the proposed method of use and distribution  
26 of the sewage sludge;

27 (5) a copy of any labels or information sheets to  
28 be supplied to users or distributors of the sewage sludge, if  
29 applicable;

30 (6) the quantity of sewage sludge to be  
31 transported and the transportation schedule; and

32 (7) what information will be submitted on the  
33 annual report and when the annual report will be submitted.

34 J. Information describing storage or construction of  
35 storage which includes:

36 (1) the location on a topographic map depicting

1 the area one mile beyond the proposed location;

2 (2) the size of the storage facility or area;

3 (3) the type of sewage sludge to be stored;

4 (4) operating conditions for receiving and  
5 removing sewage sludge and handling spills if liquid sewage  
6 sludge is stored;

7 (5) the type of storage structure or impermeable  
8 pad if proposed; and

9 (6) the plans and specifications for constructed  
10 storage facilities.

11 K. Any information required to determine the  
12 appropriate standards for permitting under this chapter.

13 L. Any other information the commissioner may request  
14 and reasonably require to assess the sewage sludge land  
15 application practices, to determine whether to issue a permit,  
16 or to ascertain appropriate permit requirements such as detailed  
17 product description and proposed distribution.

18 7041.0800 APPLICATION AND APPROVAL PROCEDURE FOR LAND  
19 APPLICATION SITES.

20 Subpart 1. **Site application.** Persons who are required by  
21 part 7041.0600, subpart 3, to obtain a site approval from the  
22 commissioner must apply for the approval as provided in this  
23 part. Applications for approvals must be completed and signed  
24 by a Type IV certified operator or inspector. An approval is  
25 only valid for the conditions stated in the approval, including  
26 management practices and acreage authorized. If a change in  
27 acreage is proposed, a new application must be submitted and  
28 approval obtained. If a change in management practices included  
29 in the site approval is proposed, the change shall be authorized  
30 by the **agency commissioner** through a letter to the person who  
31 applies for the change before the person initiates the change.

32 The application must include a copy of the notification  
33 described in subpart 6 and the specific information given in  
34 subparts 2 to 5 submitted on a site application form obtained  
35 from or approved by the commissioner.

1           Subp. 2. **Site characterization.** Site applications must  
2 contain site characterization that includes the following:

3           A. a copy of Natural Resources Conservation Service  
4 soil survey maps from the official soil survey, if available, or  
5 comparable soil maps prepared by a soil scientist with mapping  
6 experience, delineating the boundaries of the specific land  
7 application site, and:

8                   (1) the depth, spacing, and location of tile  
9 lines;

10                   (2) the location of tile inlets; and

11                   (3) a list of soil types on the site that are  
12 highly permeable;

13           B. a legal description of the land application site,  
14 including township, range, section, quarter section, township or  
15 city name, and county;

16           C. the following characteristics of the soil  
17 determined from samples obtained within six months of site  
18 application submittal using collection and analysis procedures  
19 in parts 7041.3300 and 7041.3400:

20                   (1) United States Department of Agriculture  
21 textural classification;

22                   (2) percentage of organic matter;

23                   (3) extractable phosphorus in parts per million;

24                   (4) exchangeable potassium in parts per million;

25                   (5) water pH; and

26                   (6) soluble salts expressed in millimhos per  
27 centimeter;

28           D. the approvable acreage of the land application  
29 site;

30           E. the name and address of the landowner and a copy  
31 or description of any contracts or agreements the landowner has  
32 with persons other than the applicant for the land application  
33 of bulk sewage sludge or other waste products such as industrial  
34 sludge, wastewater, and animal manure, at the land application  
35 site; and

36           F. the name and address of any renter, lessee, or

1 occupier of the land application site.

2 Subp. 3. Site management. Applications must include site  
3 management, including:

4 A. a description of the proposed method or methods of  
5 bulk sewage sludge application;

6 B. a description of the crops to be grown and  
7 realistic yield goals or dominant vegetation at the site and the  
8 intended use of the crops or vegetation;

9 C. the maximum available nitrogen application rate,  
10 in pounds of nitrogen per acre and the agronomic rate in dry  
11 tons of bulk sewage sludge solids per acre per cropping year;  
12 and

13 D. a description of how public access to the site is  
14 proposed to be controlled if necessary.

15 Subp. 4. Application requirements for long-term storage of  
16 dewatered bulk sewage sludge at the site at which the bulk  
17 sewage sludge is applied. Applications must include the  
18 following information if approval of long-term storage at the  
19 land application site is requested:

20 A. a description of the necessity for storage at the  
21 land application site;

22 B. the location of the storage area delineated on  
23 maps submitted according to subpart 2, item A;

24 C. the dimensions of the bulk sewage sludge storage  
25 area;

26 D. the quantity of bulk sewage sludge to be stored;

27 E. boring logs from at least two soil borings taken  
28 to a depth of ten feet at the perimeter of the proposed storage  
29 area. The boring logs must include:

30 (1) texture and thickness of each soil horizon  
31 encountered;

32 (2) color and presence or absence of mottling for  
33 each soil horizon encountered;

34 (3) depth to seasonal high water table, if  
35 encountered; and

36 (4) depth to bedrock, if encountered;

1 F. the expected duration of storage before land  
2 application; and

3 G. the description of precautions or practices to  
4 minimize or prevent drainage, runoff, or nuisance conditions at  
5 the storage area.

6 Subp. 5. **Modification of management practices.** If any  
7 modification of the suitable soil conditions, slopes, or  
8 separation distances in part 7041.1200, subpart 3, are requested  
9 for nonagricultural uses, the site application must indicate  
10 what the nonagricultural use is; which conditions, slopes, or  
11 separation distances should be modified; and what environmental  
12 benefits will result from bulk sewage sludge application under  
13 the proposed conditions.

14 Subp. 6. **Approval procedure; public notification.** Persons  
15 who prepare bulk sewage sludge shall provide notice by mail of  
16 the proposed land application site on the same date to the  
17 commissioner, the owner and occupier of the site, the city or  
18 township and county official of the area where the land  
19 application site is located, and any person known by the  
20 preparer to be interested in the approval of the site. The  
21 notice must include:

22 A. that the purpose is to notify local officials of  
23 the intent to apply to the commissioner for approval of the site  
24 for the beneficial use of sewage sludge;

25 B. site ownership and location and the name of the  
26 lessee, renter, or occupier of the site if applicable;

27 C. the preparer's name and how the preparer can be  
28 reached for more information;

29 D. a general site management and conditions  
30 information sheet prepared or approved by the commissioner;

31 E. that a Type IV operator or inspector certified by  
32 the commissioner in handling sewage sludge has reviewed the  
33 sites for compliance with this chapter;

34 F. that application is being mailed on the same date  
35 to the commissioner for a final determination on site  
36 suitability and site management for those sites;

1 G. that if there are comments or questions regarding  
2 approval of the sites, the agency's Water Quality Division must  
3 be contacted within 30 days of the date the notification was  
4 sent;

5 H. that the commissioner will approve or deny the  
6 application in writing after the 30-day comment period; and

7 I. that the commissioner reviews land application  
8 reports submitted annually by the preparer of sewage sludge.

9 Subp. 7. **Review.** Applications shall be reviewed for  
10 completeness by the commissioner. If the application is  
11 incomplete, the commissioner shall promptly advise the applicant  
12 of the incompleteness. Further processing of the application  
13 shall be suspended until the applicant has supplied the  
14 necessary information to the commissioner.

15 Subp. 8. **Approval or denial.** Notice of approval or denial  
16 and reasons for a denial shall be issued by the commissioner to  
17 the persons listed in subpart 6 no sooner than 30 days from the  
18 date the notification of the land application site was sent to  
19 those persons.

20 Subp. 9. **Final determination.** The commissioner shall  
21 attempt to resolve all comments prior to a final determination  
22 concerning the application. If the comments have been resolved,  
23 the commissioner shall issue or deny the approval. If all  
24 comments cannot be resolved, the application shall be presented  
25 to the agency board, which shall issue or deny the approval.

26 Subp. 10. **Enforcement.** A site approval issued to the  
27 person who prepares sewage sludge under this part shall be  
28 enforceable to the same extent and in the same manner as a  
29 permit.

30 Subp. 11. **Revocation of ~~letters-of-approval~~ site approvals.**  
31 A ~~letter-of~~ site approval may be revoked in accordance with the  
32 requirements of part 7001.0170.

33 7041.0900 STORAGE CONSTRUCTION REQUIREMENTS.

34 The minimum construction requirements in items A and B  
35 apply to storage facilities required to be permitted under part



1 7041.0600, subpart 2.

2 A. Any basin, tank, pit, or lagoon used to store  
3 liquid sewage sludge must not seep at a rate greater than 500  
4 gallons per acre per day.

5 B. Any area used to store dewatered sewage sludge  
6 must be paved with asphalt, concrete, or other material meeting  
7 the seepage requirement in item A to a depth sufficient to bear  
8 the weight of unloading and loading trucks and equipment without  
9 cracking. The pad must be sloped and curbed to collect all  
10 runoff water. Runoff water must be routed to a wastewater  
11 treatment facility or used in a manner approved by the  
12 commissioner.

13 7041.1000 GENERAL REQUIREMENTS.

14 Subpart 1. **Cumulative pollutant loading rates.** No person  
15 shall apply bulk sewage sludge to agricultural land, forest, a  
16 public contact site, or a reclamation site if any of the  
17 cumulative pollutant loading rates in part 7041.1100, subpart 4,  
18 item B, have been reached.

19 Subp. 2. **Notice and necessary information for compliance.**  
20 Notice and necessary information needed to comply with the  
21 requirements of this chapter must be given or obtained by  
22 preparers, applicers, and users of bulk sewage sludge according  
23 to items A to D.

24 A. Preparers of bulk sewage sludge must provide  
25 written notification of the concentration of total nitrogen (as  
26 N on a dry weight basis) and available nitrogen (in pounds per  
27 wet ton or pounds per 1,000 gallons, whichever is appropriate)  
28 to applicers of bulk sewage sludge.

29 B. Before bulk sewage sludge subject to the  
30 cumulative pollutant loading rates in part 7041.1100, subpart 4,  
31 item B, is applied to the land, the person who proposes to apply  
32 the bulk sewage sludge must contact the permitting authority for  
33 the state in which the bulk sewage sludge will be applied to  
34 determine whether cumulative pollutant loading rates have been  
35 reached. If bulk sewage sludge which has pollutant

1 concentrations greater than those listed in part 7041.1100,  
2 subpart 4, item C, has been applied since July 20, 1993, and the  
3 cumulative amount is not known, no additional bulk sewage sludge  
4 may be applied to that land.

5 C. The person who prepares bulk sewage sludge, or an  
6 applicer under contract to the preparer to do so, is responsible  
7 for notifying and providing the necessary information for  
8 compliance with this chapter to the users of bulk sewage sludge  
9 by specifying appropriate agronomic application rates, site  
10 restrictions, and other management practices.

11 D. A person who prepares sewage sludge must give  
12 notice and necessary information to comply with this chapter to  
13 other persons who prepare sewage sludge or derive a material  
14 from the sewage sludge.

15 Subp. 3. **Sewage sludge applied to land in another state.**  
16 Any person who prepares bulk sewage sludge in Minnesota that is  
17 applied to land in another state is responsible for providing  
18 written notice to the permitting authority for the state in  
19 which the bulk sewage sludge is proposed to be applied prior to  
20 the initial application of bulk sewage sludge. The notice must  
21 include:

22 A. the legal description of each land application  
23 site;

24 B. the approximate time period bulk sewage sludge  
25 will be applied to the site;

26 C. the concentration of the pollutants listed in part  
27 7041.1100, subpart 4, item C, for the bulk sewage sludge which  
28 will be applied to the land; and

29 D. the name, address, telephone number, and National  
30 Pollutant Discharge Elimination System permit number, if  
31 appropriate, for the person who prepares the bulk sewage sludge.

32 7041.1100 POLLUTANT LIMITS.

33 Subpart 1. **Ceiling concentrations.** Bulk sewage sludge or  
34 sewage sludge sold or given away in a bag or other container  
35 must not be applied to the land if the concentration of any

1 pollutant in the sewage sludge exceeds the ceiling concentration  
2 for the pollutant in subpart 4, item A.

3 Subp. 2. **Cumulative loading rates.** If bulk sewage sludge  
4 is applied to agricultural land, forest, a public contact site,  
5 or a reclamation site, either the cumulative loading rate for  
6 each pollutant must not exceed the cumulative pollutant loading  
7 rate for each pollutant in subpart 4, item B, or the bulk sewage  
8 sludge must be exceptional quality sewage sludge.

9 Subp. 3. **Pollutant concentrations.** The conditions in  
10 items A and B apply to pollutant concentrations in bulk sewage  
11 sludge and sewage sludge sold or given away in a bag or other  
12 container.

13 A. If bulk sewage sludge is applied to a lawn or a  
14 home garden, the concentration of each pollutant in the sewage  
15 sludge must not exceed the concentration for the pollutant in  
16 subpart 4, item C.

17 B. If sewage sludge is sold or given away in a bag or  
18 other container for application to the land, either:

19 (1) the concentration of each pollutant in the  
20 sewage sludge must not exceed the concentration for the  
21 pollutant in subpart 4, item C; or

22 (2) the product of the concentration of each  
23 pollutant in the sewage sludge and the annual whole sludge  
24 application rate for the sewage sludge must not cause the annual  
25 pollutant loading rate for the pollutant in subpart 4, item D,  
26 to be exceeded. The procedure used to determine the annual  
27 whole sludge application rate is outlined in part 7041.3100.

28 Subp. 4. **Pollutant concentrations and loading rates.**  
29 Pollutant concentrations and loading rates are given in items A  
30 to D.

31 A. **Ceiling concentrations.**

	Ceiling Concentration (mg/kg) <sup>1</sup>
32	
33	
34	Pollutant
35	
36	Arsenic 75
37	Cadmium 85
38	Copper 4300
39	Lead 840
40	Mercury 57

1	Molybdenum	75
2	Nickel	420
3	Selenium	100
4	Zinc	7500

5  
6 <sup>1</sup>Dry weight basis

7 B. Cumulative pollutant loading rates.

8	Pollutant	Rate (kg/ha)	Rate (lbs/ac)
9			
10	Arsenic	41	37
11	Cadmium	39	35
12	Copper	1500	1339
13	Lead	300	268
14	Mercury	17	15
15	Nickel	420	375
16	Selenium	100	89
17	Zinc	2800	2500

18  
19 C. Pollutant concentrations.

20		Monthly
21		Average
22		Concentrations
23	Pollutant	(mg/kg) <sup>1</sup>
24		
25	Arsenic	41
26	Cadmium	39
27	Copper	1500
28	Lead	300
29	Mercury	17
30	Nickel	420
31	Selenium	100
32	Zinc	2800

33  
34 <sup>1</sup>On a dry weight basis, the arithmetic mean of all  
35 measurements taken during the month.

36 D. Annual pollutant loading rates per 365-day period.

37	Pollutant	Rate (kg/ha)	Rate (lbs/ac)
38			
39	Arsenic	2.0	1.8
40	Cadmium	1.9	1.7
41	Copper	75.0	67.0
42	Lead	15.0	13.0
43	Mercury	0.85	0.76
44	Nickel	21.0	19.0
45	Selenium	5.0	4.5
46	Zinc	140.0	125.0

47 7041.1200 MANAGEMENT PRACTICES AND LIMITATIONS.

48 Subpart 1. Endangered species. Bulk sewage sludge must  
49 not be applied to the land if it is likely to adversely affect a  
50 threatened or endangered species listed under section 4 of the  
51 Endangered Species Act of 1973, United States Code, title 16,  
52 section 1533, as amended, or its designated critical habitat.

53 Subp. 2. Frozen or flooded ground.

54 A. Bulk sewage sludge must not be applied to  
55 agricultural land, forest, a public contact site, or a

1 reclamation site that is flooded, frozen, or snow covered so  
2 that the bulk sewage sludge enters a wetland or other surface  
3 waters.

4           B. In addition to the requirements in subpart 3, item  
5 B, land application of dewatered or liquid bulk sewage sludge to  
6 frozen or snow covered ground is restricted to land with zero to  
7 two percent slopes. The application of liquid bulk sewage  
8 sludge is also restricted to a 15,000 gallon per acre hydraulic  
9 loading rate for the period when the ground is frozen or snow  
10 covered and must take place no closer than 600 feet from  
11 downgradient surface waters listed in subpart 3, item B.

12           C. Bulk sewage sludge must be injected or  
13 incorporated within 48 hours of surface application on ground  
14 which is subject to flooding unless specified otherwise in a  
15 site approval.

16           **Subp. 3. Suitable soil conditions, slopes, and separation**  
17 **distances.** The suitable soil conditions in item A and the  
18 suitable slopes and separation distances in item B must be met  
19 when bulk sewage sludge is applied to agricultural land  
20 application sites. These conditions and limitations must also  
21 be met when bulk sewage sludge is applied to nonagricultural  
22 sites such as reclamation, forest, or public contact sites  
23 unless approved by the commissioner under the requirements of  
24 part 7041.0800, subpart 5. Bulk sewage sludge must not be  
25 applied to agricultural land, forest, a public contact site, or  
26 a reclamation site that is 33 feet or less from surface waters  
27 or wetlands unless specified otherwise in a permit.

28           A. Suitable soil conditions are as follows:

29                   (1) the soil texture, United States Department of  
30 Agriculture classification, at the zone of sewage sludge  
31 application must be fine sand, loamy sand, sandy loam, loam,  
32 silt, silt loam, sandy clay loam, clay loam, sandy clay, silty  
33 clay loam, silty clay, or clay;

34                   (2) the pH of the soil must be 5.5 or greater;

35                   (3) bulk sewage sludge application to a site must  
36 be suspended when the soil extractable phosphorus content

1 determined by the Brays P-1 test exceeds 200 parts per million  
 2 (400 pounds per acre) in the surface six inches of soil unless  
 3 it is demonstrated through a management plan approved by the  
 4 commissioner that all resource management system level erosion  
 5 control practices as determined necessary by the Natural  
 6 Resources Conservation Service are in place and maintained;

7 (4) bulk sewage sludge application to a site must  
 8 be suspended when the electrical conductivity of the saturation  
 9 extract of the soil exceeds four millimhos per centimeter as  
 10 determined by the soluble salt test;

11 (5) soil samples must be collected and analyzed  
 12 for parameters in part 7041.0800, subpart 2, item C, at a  
 13 minimum of once ~~every-three-years~~ in the three-year time period  
 14 prior to the land application of bulk sewage sludge unless  
 15 stipulated otherwise in a site approval;

16 (6) liquid bulk sewage sludge must not be applied  
 17 to soils with surface permeabilities of less than 0.2 inch per  
 18 hour unless the sewage sludge is injected or incorporated within  
 19 48 hours of surface application; and

20 (7) organic soils or peat soils must not be used  
 21 for bulk sewage sludge application unless subsurface drainage is  
 22 provided by a system designed according to or equivalent to  
 23 Natural Resources Conservation Service engineering criteria.

24 B. Suitable slopes and separation distances must be  
 25 as described in this item. If applied through irrigation  
 26 equipment, aerosol drift shall not be in contact with the  
 27 feature specified.

28 BULK SEWAGE SLUDGE APPLIED TO THE LAND

29 SUITABLE SLOPES AND SEPARATION DISTANCES

30		31 Incorporation		
32	Criteria	Surface	within 48	
33		Applied	hrs.	Injection
34	Depth to bedrock	3 <sup>1</sup> ft.	3 <sup>1</sup> ft.	3 <sup>1</sup> ft.
35				
36	Depth to seasonal			
37	high water table <sup>2</sup>			
38	or drain tile <sup>3</sup>	3 <sup>1</sup> ft.	3 <sup>1</sup> ft.	3 <sup>1</sup> ft.
39				
40	Allowable			
41	slopes	0% to 6%	0% to 12%	0% to 12%
42				

1	Distance to wells			
2	Private supply	200 ft.	200 ft.	200 ft.
3	Public supply	1000 ft.	1000 ft.	1000 ft.
4	Irrigation	50 ft.	25 ft.	25 ft.
5				
6	Distance to			
7	residences <sup>4</sup>	200 ft.	200 ft.	100 ft.
8				
9	Distance to			
10	residential			
11	development <sup>4</sup>	600 ft.	600 ft.	300 ft.
12				
13	Distance to public			
14	contact site	600 ft.	600 ft.	300 ft.
15				
16	Down gradient <sup>5</sup> lakes, rivers, streams, type 3, 4, and 5			
17	wetlands, intermittent streams <sup>6</sup> , or tile inlets connected			
18	to these surface waters, and sinkholes			
19				
20	Slope 0% to 6%	200 ft.	50 ft.	50 ft.
21	Slope >6 to 12%	N/A	100 ft.	100 ft.
22				
23	Grassed Waterways <sup>7</sup>			
24	Slope 0% to 6%	100 ft.	33 ft.	33 ft.
25	Slope 6% to 12%	N/A	33 ft.	33 ft.
26				

27 <sup>1</sup>The depth is calculated from the zone of sewage sludge  
28 application and the separation distance for highly permeable  
29 soils is 5 feet.

30 <sup>2</sup>For the purpose of this item, a perched water condition  
31 shall not be considered a seasonal high water table.

32 <sup>3</sup>The depth to subsurface drainage tiles shall be considered  
33 the depth to the seasonal high water table for sites with tile  
34 drainage systems that are designed according to or equivalent to  
35 Natural Resources Conservation Service engineering standards and  
36 criteria.

37 <sup>4</sup>Separation distances may be reduced with written  
38 permission from all persons responsible for residential  
39 developments and places of recreation and all persons inhabiting  
40 within the otherwise protected distance.

41 <sup>5</sup>If downgradient surface water does not receive runoff  
42 because the site is bermed, separation distances can be reduced  
43 to 33 feet.

44 <sup>6</sup>For the purpose of this item, intermittent stream means a  
45 drainage channel with definable banks that provides for runoff  
46 flow to any of the surface waters listed in this item during  
47 snow melt or rainfall events.

1       <sup>7</sup>Separation distances are from the centerline of grassed  
2 waterways. For grassed waterways which are wider than these  
3 separation distances, application is allowed to the edge of the  
4 grass strip. Grassed waterways are natural or constructed,  
5 typically broad and shallow, and seeded to grass as protection  
6 against erosion.

7       Subp. 4. Agronomic rates.

8           A. Bulk sewage sludge must be applied to agricultural  
9 land, forest, a public contact site, or a reclamation site at an  
10 application rate that is equal to or less than the agronomic  
11 rate, unless, in the case of a reclamation site, otherwise  
12 specified by the commissioner.

13           B. Bulk sewage sludge application rates, combined  
14 with other known sources of nitrogen such as manure, carry-over  
15 nitrogen from previous sewage sludge applications, or  
16 fertilizer, must supply no more available nitrogen than the  
17 rates as described in subitems (1) to (5).

18           (1) The maximum available nitrogen application  
19 rates calculated by methods provided by the commissioner which  
20 are based on realistic yield goals, soil organic matter content,  
21 and previously grown crops.

22           (2) For alfalfa and clovers which do not have  
23 recommended nitrogen application rates either:

24           (a) the maximum available nitrogen  
25 application rate must not exceed 200 pounds per acre for alfalfa  
26 and 100 pounds per acre for clover, alfalfa grass, and clover  
27 grass mixtures; or

28           (b) the maximum available nitrogen  
29 application rates may be calculated based on realistic yield  
30 goals and measured yields in tons per acre multiplied by 50  
31 pounds of nitrogen per ton.

32           (3) For soybeans, the maximum available nitrogen  
33 application rate shall be calculated by multiplying the  
34 realistic yield goal in bushels per acre times 3.5 pounds of  
35 nitrogen per bushel.

36           (4) The maximum available nitrogen application



1 rate for cover crops must not exceed 50 pounds per acre per year.

2 (5) The available nitrogen applied after the  
3 second cutting of a hay crop must be no more than 50 percent of  
4 the maximum available nitrogen application rate for the current  
5 cropping year.

6 C. Bulk sewage sludge must not be applied to the land  
7 during the months of June, July, and August unless a crop is  
8 growing on the land or a crop is seeded within fourteen days  
9 following the bulk sewage sludge application.

10 D. Bulk sewage sludge must not be applied to fallow  
11 land, which is land that is uncropped and kept cultivated  
12 throughout a growing season and has a vegetative cover of less  
13 than 25 percent. Any land that is uncropped and cultivated  
14 during the months of September through May where a crop will be  
15 grown the following growing season is not considered fallow land.

16 E. The calculation of available and carry-over  
17 nitrogen in sewage sludge must be performed as described in part  
18 7041.3000.

19 Subp. 5. **Highly permeable soils.** In addition to those  
20 specified in subparts 3 and 4, the separation distances in item  
21 A and agronomic management practices in items B and C must be  
22 met when bulk sewage sludge is applied to highly permeable soils.

23 A. The minimum separation distance between the zone  
24 of bulk sewage sludge application and the seasonal high water  
25 table and bedrock is five feet.

26 B. Bulk sewage sludge must not be applied to the land  
27 during the months of June, July, August, or September unless a  
28 crop is growing on the land or a crop is seeded within 14 days  
29 following the bulk sewage sludge application.

30 C. Bulk sewage sludge applied in October shall be  
31 surface applied or applied with a nitrification stabilizer which  
32 extends the time the nitrogen component remains in the soil in  
33 the ammoniacle form.

34 Subp. 6. **Prohibited sites and other limits.** The  
35 prohibited sites and other limits in items A to G apply to bulk  
36 sewage sludge applied to the land.

1           A. Bulk sewage sludge must not be applied on areas  
2 ponded with water or sewage sludge.

3           B. Bulk sewage sludge must not be applied or run onto  
4 adjoining property, roads, and the shoulders and drainage  
5 ditches alongside a road.

6           C. The boundary of a land application site must be  
7 identified prior to and during application with the use of  
8 conspicuous flags placed to achieve a clear and positive  
9 identification of the suitable site boundary unless apparent  
10 boundaries, such as fence rows, roads, tree lines, type of  
11 vegetation, or steep slopes, exist.

12           D. Bulk sewage sludge must not be applied on any land  
13 without the permission of the owner.

14           E. Bulk sewage sludge must be applied to land in such  
15 a manner as to provide uniform application.

16           F. Bulk sewage sludge must not be disposed of or  
17 placed into any cave, or sinkhole. Except as part of a  
18 reclamation project, sewage sludge must not be disposed of or  
19 placed on any mine or quarry.

20           G. Daily surface applications of liquid sewage sludge  
21 must not exceed the following: coarse-textured soils, 25,000  
22 gallons per acre; medium-textured soils, 15,000 gallons per  
23 acre; or fine-textured soils, 10,000 gallons per acre.

24           **Subp. 7. Short-term storage.** Items A to C apply to the  
25 short-term storage of dewatered bulk sewage sludge.

26           A. The short-term storage of bulk sewage sludge shall  
27 not exceed 30 days.

28           B. Separation distances for short-term bulk sewage  
29 sludge storage areas shall be those provided in subpart 3, item  
30 B, except that short-term storage of bulk sewage sludge shall  
31 not occur within 100 feet of any adjoining property without the  
32 written permission of the owner or within 100 feet of any road  
33 or drainage ditch.

34           C. Short-term storage of bulk sewage sludge shall not  
35 take place on land with a slope greater than two percent unless  
36 measures are taken to control water runoff or the bulk sewage

1 sludge is being spread concurrent with the unloading of bulk  
2 sewage sludge delivery trucks and will not be stockpiled  
3 overnight.

4 Subp. 8. Long-term storage. Items A to G apply to the  
5 long-term storage of dewatered bulk sewage sludge.

6 A. Long-term storage of bulk sewage sludge is only  
7 allowed at land application sites where the stored bulk sewage  
8 sludge is to be applied. Long-term storage of bulk sewage  
9 sludge that is intended for application at several land  
10 application sites is allowed provided that all sites are owned  
11 by the same person and all sites are within a one-half mile  
12 radius.

13 B. Long-term storage of bulk sewage sludge for land  
14 application areas of 40 acres or less shall not take place  
15 within 400 feet from any residence. This separation distance  
16 shall increase 100 feet for every additional ten acres of land  
17 application area, or portion thereof, up to a maximum of 1,000  
18 feet. Separation distances may be reduced if written permission  
19 is obtained from all persons residing within the otherwise  
20 protected distance.

21 C. Long-term storage of bulk sewage sludge shall not  
22 take place within 1,000 feet of any residential development or  
23 public contact site.

24 D. Long-term storage of bulk sewage sludge shall not  
25 take place within 1,000 feet of any downgradient surface waters  
26 and wetlands listed in subpart 3, item B, tile inlets, or  
27 sinkholes unless measures are taken to control runoff in which  
28 case the separation distance may be reduced to 200 feet.

29 E. Long-term storage of bulk sewage sludge shall not  
30 be allowed on land with greater than a two percent slope.

31 F. Long-term bulk sewage sludge storage areas shall  
32 be located in areas where the texture of all the horizons in the  
33 soil profile to a depth of five feet is sandy loam or finer  
34 unless an impervious pad with a drainage collection system is  
35 constructed.

36 G. Long-term bulk sewage sludge storage shall not

1 take place on the same area for two or more consecutive years  
2 unless an impervious pad with a drainage collection system is  
3 constructed.

4 Subp. 9. **Labeling.** A label must be affixed to the bag or  
5 other container in which sewage sludge is sold or given away for  
6 application to the land or an information sheet must be provided  
7 to the person who receives sewage sludge in an other container.  
8 The label or information sheet must contain the following  
9 information:

10 A. the name and address of the person who prepared  
11 the sewage sludge that is sold or given away in a bag or other  
12 container;

13 B. a statement that application of the sewage sludge  
14 to the land is prohibited except according to the instructions  
15 on the label or information sheet; and

16 C. the annual whole sludge application rate for the  
17 sewage sludge that does not cause any of the annual pollutant  
18 loading rates in part 7041.1100, subpart 4, item D, to be  
19 exceeded.

20 7041.1300 OPERATIONAL STANDARDS; PATHOGEN REDUCTION.

21 Subpart 1. **General.** Bulk sewage sludge must meet the  
22 requirements of Class A pathogen reduction or Class B pathogen  
23 reduction and the site restrictions in subpart 3, item D, when  
24 it is applied to agricultural land, forest, a public contact  
25 site, or a reclamation site. Bulk sewage sludge applied to a  
26 lawn or home garden and sewage sludge sold or given away in a  
27 bag or other container must meet Class A pathogen reduction  
28 requirements.

29 Subp. 2. **Pathogens in sewage sludge; Class A.** To be  
30 classified Class A with respect to pathogen reduction, the  
31 requirements in items A and B must be met.

32 A. One of the Class A pathogen requirements in items  
33 C to H must be met either prior to or at the same time the  
34 vector attraction reduction requirements in part 7041.1400,  
35 subpart 2, are met except when the vector attraction reduction

1 requirements in part 7041.1400, subpart 2, item F, G, or H, are  
2 met.

3 B. Either the density of fecal coliform in the sewage  
4 sludge must be less than 1,000 most probable number per gram of  
5 total solids (dry weight basis), or the density of Salmonella sp.  
6 bacteria in the sewage sludge must be less than three most  
7 probable number per four grams of total solids (dry weight basis)  
8 at the time the sewage sludge is applied to the land, at the  
9 time the sewage sludge is prepared for sale or giveaway in a bag  
10 or other container for application to the land, or at the time  
11 the sewage sludge or material derived from sewage sludge is  
12 prepared to meet the requirements of exceptional quality sewage  
13 sludge.

14 C. Class A, Alternative 1. (Not applicable for  
15 composting.) The temperature of the sewage sludge shall be  
16 maintained at a specific value for a period of time.

17 (1) When the percent solids of the sewage sludge  
18 is seven percent or higher, the temperature of the sewage sludge  
19 shall be 50 degrees Celsius or higher, the time period shall be  
20 20 minutes or longer, and the temperature and time period shall  
21 be determined using the equation in this unit, except when small  
22 particles of sewage sludge are heated by either warmed gases or  
23 an immiscible liquid.

24  
25 
$$D = \frac{131,700,000}{10 \cdot 0.1400t}$$
  
26  
27

28 Where,

29 D=time in days.

30 t=temperature in degrees Celsius.

31 (2) When the percent solids of the sewage sludge  
32 is seven percent or higher and small particles of sewage sludge  
33 are heated by either warmed gases or an immiscible liquid, the  
34 temperature of the sewage sludge shall be 50 degrees Celsius or  
35 higher, the time period shall be 15 seconds or longer, and the  
36 temperature and time period shall be determined using the  
37 equation in subitem (1).

38 (3) When the percent solids of the sewage sludge

1 is less than seven percent and the time period is at least 15  
2 seconds, but less than 30 minutes, the temperature and time  
3 period shall be determined using the equation in subitem (1).

4 (4) When the percent solids of the sewage sludge  
5 is less than seven percent, the temperature of the sewage sludge  
6 is 50 degrees Celsius or higher, and the time period is 30  
7 minutes or longer, the temperature and time period shall be  
8 determined using the equation in this unit.

9  
10 
$$D = \frac{50,070,000}{10^{0.1400t}}$$
  
11  
12

13 Where,

14 D=time in days.

15 t=temperature in degrees Celsius.

16 D. Class A, Alternative 2. The pH of the sewage  
17 sludge shall be raised to above 12 and shall remain above 12 for  
18 72 hours.

19 (1) The temperature of the sewage sludge shall be  
20 above 52 degrees Celsius for 12 hours or longer during the  
21 period that the pH of the sewage sludge is above 12.

22 (2) At the end of the 72-hour period during which  
23 the pH of the sewage sludge is above 12, the sewage sludge shall  
24 be air dried to achieve a percent solids in the sewage sludge  
25 greater than 50 percent.

26 E. Class A, Alternative 3. The sewage sludge shall  
27 be analyzed prior to pathogen treatment to determine whether the  
28 sewage sludge contains enteric viruses and helminth ova.

29 (1) When the density of enteric viruses in the  
30 sewage sludge prior to pathogen treatment is less than one  
31 plaque-forming unit per four grams of total solids (dry weight  
32 basis), the sewage sludge is Class A with respect to enteric  
33 viruses until the next monitoring episode for the sewage sludge.

34 (2) When the density of enteric viruses in the  
35 sewage sludge prior to pathogen treatment is equal to or greater  
36 than one plaque-forming unit per four grams of total solids (dry  
37 weight basis), the sewage sludge is Class A with respect to  
38 enteric viruses when the density of enteric viruses in the

1 sewage sludge after pathogen treatment is less than one  
2 plaque-forming unit per four grams of total solids (dry weight  
3 basis) and when the values or ranges of values for the operating  
4 parameters for the pathogen treatment process that produces the  
5 sewage sludge that meets the enteric virus density requirement  
6 are documented.

7 (3) After the enteric virus reduction in subitem  
8 (2) is demonstrated for the pathogen treatment process, the  
9 sewage sludge continues to be Class A with respect to enteric  
10 viruses when the values for the pathogen treatment process  
11 operating parameters are consistent with the values or ranges of  
12 values documented in subitem (2).

13 (4) When the density of viable helminth ova in  
14 the sewage sludge prior to pathogen treatment is less than one  
15 per four grams of total solids (dry weight basis), the sewage  
16 sludge is Class A with respect to viable helminth ova until the  
17 next monitoring episode for the sewage sludge.

18 (5) When the density of viable helminth ova in  
19 the sewage sludge prior to pathogen treatment is equal to or  
20 greater than one per four grams of total solids (dry weight  
21 basis), the sewage sludge is Class A with respect to viable  
22 helminth ova when the density of viable helminth ova in the  
23 sewage sludge after pathogen treatment is less than one per four  
24 grams of total solids (dry weight basis) and when the values or  
25 ranges of values for the operating parameters for the pathogen  
26 treatment process that produces the sewage sludge that meets the  
27 viable helminth ova density requirement are documented.

28 (6) After the viable helminth ova reduction in  
29 subitem (5) is demonstrated for the pathogen treatment process,  
30 the sewage sludge continues to be Class A with respect to viable  
31 helminth ova when the values for the pathogen treatment process  
32 operating parameters are consistent with the values or ranges of  
33 values documented in subitem (5).

34 F. Class A, Alternative 4.

35 (1) The density of enteric viruses in the sewage  
36 sludge shall be less than one plaque-forming unit per four grams

1 of total solids (dry weight basis) at the time the sewage sludge  
2 is applied to the land, at the time the sewage sludge is  
3 prepared for sale or give away in a bag or other container for  
4 application to the land, or at the time the sewage sludge or  
5 material derived from sewage sludge is prepared to meet the  
6 requirements of exceptional quality sewage sludge, unless  
7 otherwise specified by the permitting authority.

8 (2) The density of viable helminth ova in the  
9 sewage sludge shall be less than one per four grams of total  
10 solids (dry weight basis) at the time the sewage sludge is  
11 applied to the land; at the time the sewage sludge is prepared  
12 for sale or give away in a bag or other container for  
13 application to the land, or at the time the sewage sludge or  
14 material derived from sewage sludge is prepared to meet the  
15 requirements of exceptional quality sewage sludge, unless  
16 otherwise specified by the permitting authority.

17 G. Class A, Alternative 5. Sewage sludge shall be  
18 treated in one of the processes to further reduce pathogens in  
19 subitems (1) to (7).

20 (1) Composting. Using either the within-vessel  
21 composting method or the static aerated pile composting method,  
22 the temperature of the sewage sludge is maintained at 55 degrees  
23 Celsius or higher for three days. Using the windrow composting  
24 method, the temperature of the sewage sludge is maintained at 55  
25 degrees or higher for 15 days or longer. During the period when  
26 the compost is maintained at 55 degrees or higher, there shall  
27 be a minimum of five turnings of the windrow.

28 (2) Heat drying. Sewage sludge is dried by  
29 direct or indirect contact with hot gases to reduce the moisture  
30 content of the sewage sludge to 10 percent or lower. Either the  
31 temperature of the sewage sludge particles exceeds 80 degrees  
32 Celsius or the wet bulb temperature of the gas in contact with  
33 the sewage sludge.

34 (3) Heat treatment. Liquid sewage sludge is  
35 heated to a temperature of 180 degrees Celsius or higher for 30  
36 minutes.



1 (4) Thermophilic aerobic digestion. Liquid  
2 sewage sludge is agitated with air or oxygen to maintain aerobic  
3 conditions and the mean cell residence time of the sewage sludge  
4 is ten days at 55 to 60 degrees Celsius.

5 (5) Beta ray irradiation. Sewage sludge is  
6 irradiated with beta rays from an accelerator at dosages ~~or~~ of  
7 at least 1.0 megarad at room temperature (ca. 20 degrees  
8 Celsius).

9 (6) Gamma ray irradiation. Sewage sludge is  
10 irradiated with gamma rays from certain isotopes, such as Cobalt  
11 60 and Cesium 137, at room temperature (ca. 20 degrees Celsius).

12 (7) Pasteurization. The temperature of the  
13 sewage sludge is maintained at 70 degrees Celsius or higher for  
14 30 minutes or longer.

15 H. Class A, Alternative 6. Sewage sludge that is  
16 applied to the land shall be treated in a process that is  
17 equivalent to a process to further reduce pathogens in item G,  
18 as determined by the permitting authority.

19 Subp. 3. **Sewage sludge; Class B.** The requirements in item  
20 A, B, or C must be met for sewage sludge to be classified as  
21 Class B with respect to pathogen reduction and when Class B  
22 sewage sludge is applied to agricultural land, forest, a public  
23 contact site, or a reclamation site, the site restrictions in  
24 item D must also be met.

25 A. Class B, Alternative 1.

26 (1) Seven representative samples of the sewage  
27 sludge that is applied to the land shall be collected.

28 (2) The geometric mean of the density of fecal  
29 coliform in the samples collected in subitem (1) shall be less  
30 than either 2,000,000 most probable number per gram of total  
31 solids (dry weight basis) or 2,000,000 colony forming units per  
32 gram of total solids (dry weight basis).

33 B. Class B, Alternative 2. Sewage sludge shall be  
34 treated in one of the Processes to Significantly Reduce  
35 Pathogens in subitems (1) to (5).

36 (1) Aerobic digestion. Sewage sludge is agitated

1 with air or oxygen to maintain aerobic conditions for a specific  
2 mean cell residence time at a specific temperature. Values for  
3 the mean cell residence time and temperature shall be between 40  
4 days at 20 degrees Celsius and 60 days at 15 degrees Celsius.

5 (2) Air drying. Sewage sludge is dried on sand  
6 beds or on paved or unpaved basins. The sewage sludge dries for  
7 a minimum of three months. During two of the three months, the  
8 ambient average daily temperature is above zero degrees Celsius.

9 (3) Anaerobic digestion. Sewage sludge is  
10 treated in the absence of air for a specific mean cell residence  
11 time at a specific temperature. Values for the mean cell  
12 residence time and temperature shall be between 15 days at 35 to  
13 55 degrees Celsius and 60 days at 20 degrees Celsius.

14 (4) Composting. Using either the within-vessel,  
15 static aerated pile, or windrow composting methods, the  
16 temperature of the sewage sludge is raised to 40 degrees Celsius  
17 or higher and remains at 40 degrees Celsius or higher for five  
18 days. For four hours during the five days, the temperature in  
19 the compost pile exceeds 55 degrees Celsius.

20 (5) Lime stabilization. Sufficient lime is added  
21 to the sewage sludge to raise the pH of the sewage sludge to 12  
22 after two hours of contact.

23 C. Class B, Alternative 3. Sewage sludge shall be  
24 treated in a process that is equivalent to a process to  
25 significantly reduce pathogens, as determined by the permitting  
26 authority.

27 D. Site Restrictions.

28 MINIMUM DURATION BETWEEN APPLICATION AND  
29 HARVEST/GRAZING/PUBLIC ~~CONTACT~~ ACCESS FOR  
30 CLASS B SEWAGE SLUDGE APPLIED TO THE LAND

31	32	33	34	35	36	37	38	39	40	41
	Criteria	Surface	Applied <u>and or</u>	Injected						
		Incorporated								
	Food crops whose harvested									
	part may touch the soil/sludge									
	mixture (melons, squash,									
	tomatoes, etc.)	14 mos.		14 mos.						
	Food crops whose harvested									
	parts grow in the soil									

1	(potatoes, carrots, etc.)	20/38 mos. <sup>1</sup>	38 mos.
2			
3	Feed, other food crops		
4	(field corn, sweet corn,		
5	etc.) hay, or fiber crop	30 days	30 days
6			
7	Grazing of animals	30 days	30 days
8			
9	Public <del>contact</del> <u>access</u> to the		
10	land		
11	- High potential <sup>2</sup>	1 year	1 year
12	- Low potential <sup>3</sup>	30 days	30 days
13			

14 <sup>1</sup>The 20-month duration between application and harvesting  
15 applies when the sewage sludge that is surface applied stays on  
16 the soil surface for four months or longer prior to  
17 incorporation into the soil. The 38-month duration is in effect  
18 when the sewage sludge remains on the soil surface for less than  
19 four months prior to incorporation.

20 <sup>2</sup>This includes, but is not limited to, a public contact  
21 site and reclamation site located in populated areas, for  
22 example, a construction site located in a city, turf farms, and  
23 plant nurseries.

24 <sup>3</sup>Land the public uses infrequently which includes, but is  
25 not limited to, agricultural land, forest, and a reclamation  
26 site located in an unpopulated area.

27 7041.1400 OPERATIONAL STANDARDS; VECTOR ATTRACTION REDUCTION.

28 Subpart 1. **Agricultural and other lands.** One of the  
29 vector attraction reduction requirements in subpart 2 must be  
30 met when bulk sewage sludge is applied to agricultural land,  
31 forest, a public contact site, or a reclamation site.

32 Subp. 2. **Home use and land application.** One of the vector  
33 attraction reduction requirements in items A to H must be met  
34 when bulk sewage sludge is applied to a lawn or a home garden or  
35 when sewage sludge is sold or given away in a bag or other  
36 container for application to the land.

37 A. The mass of volatile solids in the sewage sludge  
38 shall be reduced by a minimum of 38 percent.

39 B. When the 38 percent volatile solids reduction  
40 requirement in item A cannot be calculated for an anaerobically  
41 digested sewage sludge, vector attraction reduction can be  
42 demonstrated by digesting a portion of the previously digested

1 sewage sludge anaerobically in the laboratory in a bench-scale  
2 unit for 40 additional days at a temperature between 30 and 37  
3 degrees Celsius. When at the end of the 40 days the volatile  
4 solids in the sewage sludge at the beginning of that period is  
5 reduced by less than 17 percent, vector attraction reduction is  
6 achieved.

7 C. When the 38 percent volatile solids reduction  
8 requirement in item A cannot be calculated for an aerobically  
9 digested sewage sludge, vector attraction reduction can be  
10 demonstrated by digesting a portion of the previously digested  
11 sewage sludge that has a percent solids of two percent or less  
12 aerobically in the laboratory in a bench-scale unit for 30  
13 additional days at 20 degrees Celsius. When at the end of the  
14 30 days the volatile solids in the sewage sludge at the  
15 beginning of that period is reduced by less than 15 percent,  
16 vector attraction reduction is achieved.

17 D. The specific oxygen uptake rate (SOUR) for sewage  
18 sludge treated in an aerobic process shall be equal to or less  
19 than 1.5 milligrams of oxygen per hour per gram of total solids  
20 (dry weight basis) at a temperature of 20 degrees Celsius.

21 E. Sewage sludge shall be treated in an aerobic  
22 process for 14 days or longer. During that time, the  
23 temperature of the sewage sludge shall be higher than 40 degrees  
24 Celsius and the average temperature of the sewage sludge shall  
25 be higher than 45 degrees Celsius.

26 F. The pH of sewage sludge shall be raised to 12 or  
27 higher by alkali addition and, without the addition of more  
28 alkali, shall remain at 12 or higher for two hours and then at  
29 11.5 or higher for an additional 22 hours.

30 G. The percent solids of sewage sludge that does not  
31 contain unstabilized solids generated in a primary wastewater  
32 treatment process shall be equal to or greater than 75 percent  
33 based on the moisture content and total solids prior to mixing  
34 with other materials at the time the sewage sludge is applied to  
35 the land, at the time the sewage sludge is prepared for sale or  
36 given away in a bag or other container for application to the

1 land, or at the time the sewage sludge is prepared to meet the  
2 requirements of exceptional quality sewage sludge.

3 H. The percent solids of sewage sludge that contains  
4 unstabilized solids generated in a primary wastewater treatment  
5 process shall be equal to or greater than 90 percent based on  
6 the moisture content and total solids prior to mixing with other  
7 materials, at the time the sewage sludge is applied to the land,  
8 at the time the sewage sludge is prepared for sale or given away  
9 in a bag or other container for application to the land, or at  
10 the time the sewage sludge is prepared to meet the requirements  
11 of exceptional quality sewage sludge.

12 I. Sewage sludge shall be injected below the surface  
13 of the land.

14 (1) No significant amount of the sewage sludge  
15 shall be present on the land surface within one hour after the  
16 sewage sludge is injected.

17 (2) When the sewage sludge that is injected below  
18 the surface of the land is Class A with respect to pathogens,  
19 the sewage sludge shall be injected below the land surface  
20 within eight hours after being discharged from the pathogen  
21 treatment process.

22 J. Sewage sludge applied to the land surface shall be  
23 incorporated into the soil within six hours after application to  
24 the land unless specified otherwise by the permitting  
25 authority. When sewage sludge that is incorporated into the  
26 soil is Class A with respect to pathogens, the sewage sludge  
27 shall be applied to or placed on the land within eight hours  
28 after being discharged from the pathogen treatment process.

29 7041.1500 MONITORING REQUIREMENTS.

30 Subpart 1. **Sampling of sewage sludge.** Representative  
31 samples of sewage sludge that is applied to the land must be  
32 collected and analyzed by the person who prepares the sewage  
33 sludge. The following minimum requirements apply for the  
34 sampling of parameters except pathogens and pathogen indicator  
35 organisms:

1           A. in the case of digesters and liquid storage tanks,  
2 a representative sample must be composed of at least four grab  
3 samples composited over a 24-hour period; and

4           B. in the case of lagoons, stockpiles, drying beds,  
5 and compost piles, a representative sample must be composed of  
6 at least ten grab samples composited from the sewage sludge  
7 prior to land application.

8           Subp. 2. **Analysis.** Sewage sludge must be analyzed  
9 according to the analytical procedures in part 7041.3200 or  
10 other EPA approved methods for the parameters in items A to F.  
11 All analytical values, except pH and total solids, must be  
12 recorded on a dry weight basis:

13           A. percentage of total solids;

14           B. volatile solids as percentage of total solids;

15           C. pH;

16           D. major plant nutrients, including the percentages  
17 of kjeldahl nitrogen, ammonia nitrogen, phosphorus, and  
18 potassium;

19           E. concentration of metals in milligrams per kilogram  
20 of zinc, copper, lead, nickel, cadmium, mercury, arsenic,  
21 molybdenum, and selenium; and

22           F. polychlorinated biphenyls (PCBs) if the sewage  
23 sludge is being removed from a wastewater treatment pond  
24 described in part 7041.0300, subpart 1.

25           Subp. 3. **Additional analysis or parameters.** If the  
26 commissioner concludes that additional analysis or monitoring  
27 for additional parameters is needed to protect the public health  
28 or the environment, the commissioner shall require this analysis  
29 based on considerations about the sewage sludge in question,  
30 including the age of the sewage sludge, the size of the  
31 treatment facility, the processes used to treat the sewage  
32 sludge, the methods of land application, and the characteristics  
33 of industrial discharges to the sewer system.

34           Subp. 4. **Frequency of monitoring.** The minimum monitoring  
35 frequency for the parameters listed in subpart 2, the pathogen  
36 or indicator organism density requirements in part 7041.1300,

1 subparts 2 and 3, and the vector attraction reduction  
 2 requirements in part 7041.1400, subpart 2, items A to D and F to  
 3 H, shall be the frequency in this item.

4 MINIMUM SAMPLING FREQUENCIES

5	6	7	8	9
	<u>Sewage Sludge</u> Applied <sup>1</sup>	<u>Sewage Sludge</u> Applied <sup>1</sup>		Frequency (times/ 365-day period)
	(metric tons/ 365-day period)	(tons/365-day period)		
10	>0 but <290	>0 but <320		1
11	≥290 but <1,500	≥320 but <1,650		4
12	≥1,500 but <15,000	≥1,650 but <16,500		6
13	≥15,000	≥16,500		12

14  
 15 <sup>1</sup>Either the amount of bulk sewage sludge applied to the  
 16 land or the amount of sewage sludge received by a person who  
 17 prepares sewage sludge that is sold or given away in a bag or  
 18 other container for application to the land (dry weight basis).

19 Subp. 5. Greater frequency of sewage sludge monitoring and  
 20 analysis. Parameters exceeding concentrations in subpart 6,  
 21 based on the average of all analyses made during the previous  
 22 cropping year, must be analyzed for at least two times the  
 23 minimum frequency given in subpart 4.

24 Subp. 6. Greater frequency of sewage sludge sampling and  
 25 analysis.

26 GREATER FREQUENCY OF SEWAGE SAMPLING

27 Concentration Expressed in  
 28 Milligrams/Kilogram of Dry Weight

29	30	31	32	33	34	35	36	37	38	39
Parameter										2X Frequency
	Arsenic									38
	Cadmium									43
	Copper									2150
	Lead									420
	Mercury									28
	Molybdenum									38
	Nickel									210
	Selenium									50
	Zinc									3750

40  
 41 Subp. 7. Reduction in monitoring frequency. After the  
 42 sewage sludge has been monitored for two years at the frequency  
 43 in subparts 4 and 6, the commissioner may reduce the frequency  
 44 of monitoring for the parameters listed in subpart 2 and the  
 45 pathogen density in part 7041.1300, subpart 2, item E, but in no  
 46 case shall the frequency of monitoring be less than once per  
 47 year when sewage sludge is applied to the land.

1 7041.1600 RECORDKEEPING.

2 Subpart 1. General requirements. A recordkeeping system  
3 must be initiated and maintained by the person who prepares  
4 sewage sludge. Records required to be kept by an applicer who is  
5 different than the preparer must be supplied to the preparer for  
6 recordkeeping purposes.

7 Subp. 2. Exceptional quality sewage sludge. The preparer  
8 of exceptional quality sewage sludge applied to the land either  
9 in bulk or sold or given away in a bag or other container must  
10 develop and retain the following information for five years:

11 A. the concentration of each parameter listed in part  
12 7041.1500, subpart 2, items A to E;

13 B. the following certification statement:

14 "I certify, under penalty of law, that the information that  
15 will be used to determine compliance with the Class A pathogen  
16 requirements in Minnesota Rules, part 7041.1300, subpart 2, and  
17 the vector attraction reduction requirement in [insert one of  
18 the vector attraction reduction requirements in Minnesota Rules,  
19 part 7041.1400, subpart 2, items A to H] has been prepared under  
20 my direction and supervision in accordance with the system  
21 designed to ensure that qualified personnel properly gather and  
22 evaluate the information used to determine that the pathogen  
23 requirements and vector attraction reduction requirements have  
24 been met. I am aware that there are significant penalties for  
25 false certification including the possibility of fine and  
26 imprisonment.";

27 C. a description of how the Class A pathogen  
28 requirements in part 7041.1300, subpart 2, are met;

29 D. a description of how one of the vector attraction  
30 reduction requirements in part 7041.1400, subpart 2, items A to  
31 H, is met;

32 E. a copy of written information required to be given  
33 as required in part 7041.0400, subpart 3; and

34 F. the quantity of exceptional quality sewage sludge  
35 provided to distributors or users if supplied in bulk and the



1 quantity sold or given away in a bag or other container per  
2 365-day period.

3 Subp. 3. Other Class A and Class B bulk sewage sludge.

4 The preparer of other Class A and Class B bulk sewage sludge  
5 that is applied to the land must develop and retain the  
6 information in items A to G and subpart 5 for five years and the  
7 information in items H to N indefinitely.

8 A. The concentration of each parameter listed in part  
9 7041.1500, subpart 2, items A to E.

10 B. The following certification statement:

11 "I certify, under penalty of law, that the information that  
12 will be used to determine compliance with the pathogen  
13 requirements in Minnesota Rules, part 7041.1300, subpart 2,  
14 [insert if Class A requirements are met] or Minnesota Rules,  
15 part 7041.1300, subpart 3, [insert if Class B requirements are  
16 met] and the vector attraction reduction requirement in [insert  
17 one of the vector attraction reduction requirements in Minnesota  
18 Rules, part 7041.1400, subpart 2, items A to H, if one of those  
19 requirements is met] has been prepared under my direction and  
20 supervision according to the system designed to ensure that  
21 qualified personnel properly gather and evaluate the information  
22 used to determine that the pathogen requirements [and vector  
23 attraction reduction requirements, if applicable] have been  
24 met. I am aware that there are significant penalties for false  
25 certification including the possibility of fine and  
26 imprisonment."

27 C. A description of how the Class A or Class B  
28 pathogen requirement is met.

29 D. A description of how one of the vector attraction  
30 reduction requirements in part 7041.1400, subpart 2, items A to  
31 J, is met.

32 E. A record of soil test data as required by part  
33 7041.0800, site approvals, or permits.

34 F. The maximum available nitrogen application rate  
35 based on the realistic yield goal and vegetation grown on the  
36 site during the cropping year.

1 G. The known amount of available nitrogen applied  
2 during the cropping year from all sources expressed in terms of  
3 pounds per acre.

4 H. The location of the land application and stockpile  
5 sites on a United States Geological Survey quadrangle or soil  
6 survey map.

7 I. The legal description of the land application site  
8 and the number of acres to which bulk sewage sludge was applied.

9 J. The amount of bulk sewage sludge applied that  
10 cropping year and cumulatively expressed in terms of tons of  
11 sewage sludge solids per acre.

12 K. The amount of arsenic, cadmium, copper, lead,  
13 mercury, molybdenum, nickel, selenium, and zinc applied that  
14 cropping year and cumulatively expressed in terms of pounds per  
15 acre.

16 L. The date bulk sewage sludge is applied to each  
17 site.

18 M. The following certification statement:

19 "I certify, under penalty of law, that the information that  
20 will be used to determine compliance with the requirements to  
21 obtain information in Minnesota Rules, part 7041.1000, subpart  
22 2, item B, has been prepared for each site on which bulk sewage  
23 sludge is applied under my direction and supervision according  
24 to the system designed to ensure that qualified personnel  
25 properly gather and evaluate the information used to determine  
26 that the requirements to obtain information have been met. I am  
27 aware that there are significant penalties for false  
28 certification including fine and imprisonment."

29 N. A description of how the requirements to obtain  
30 information in part 7041.1000, subpart 2, item B, are met.

31 **Subp. 4. Class A sewage sludge not meeting pollutant**  
32 **concentrations.** The person who prepares Class A sewage sludge  
33 which does not meet the pollutant concentrations in part  
34 7041.1100, subpart 4, item C, and is sold or given away in a bag  
35 or other container for application to the land, must develop and  
36 retain the following information for five years:

1           A. the annual whole sludge application rate for the  
2 sewage sludge that does not cause the annual pollutant loading  
3 rates in part 7041.1100, subpart 4, item D, to be exceeded;

4           B. the concentration of each parameter listed in part  
5 7041.1500, subpart 2, items A to E, in the sewage sludge;

6           C. the following certification statement:

7           "I certify, under penalty of law, that the information used  
8 to determine compliance with the labeling requirements in  
9 Minnesota Rules, part 7041.1200, subpart 9, the Class A pathogen  
10 requirement in Minnesota Rules, part 7041.1300, subpart 2, and  
11 the vector attraction reduction requirement in [insert one of  
12 the vector attraction reduction requirements in Minnesota Rules,  
13 part 7041.1400, subpart 2, items A to H] has been prepared under  
14 my direction and supervision according to the system designed to  
15 ensure that qualified personnel properly gather and evaluate the  
16 information used to determine that the management practice,  
17 pathogen requirement, and vector attraction reduction  
18 requirements have been met. I am aware that there are  
19 significant penalties for false certification including the  
20 possibility of fine and imprisonment.";

21           D. a description of how the Class A pathogen  
22 requirements in part 7041.1300, subpart 2, are met; and

23           E. a description of how one of the vector attraction  
24 reduction requirements in part 7041.1400, subpart 2, items A to  
25 H, is met.

26           **Subp. 5. Applicers of bulk sewage sludge.** The applicer of  
27 bulk sewage sludge must provide the preparer with the  
28 information in items A and B.

29           A. The following certification statement:

30           "I certify, under penalty of law, that the information that  
31 will be used to determine compliance with the management  
32 practices in Minnesota Rules, part 7041.1200, the site  
33 restrictions in Minnesota Rules, part 7041.1300, subpart 3, item  
34 D [insert if Class B sewage sludge is applied to the land], and  
35 the vector attraction reduction requirement in [insert Minnesota  
36 Rules, part 7041.1400, subpart 2, item I or J, if met] for each

1 site on which bulk sewage sludge is applied has been prepared  
2 under my direction and supervision according to the system  
3 designed to ensure that qualified personnel properly gather and  
4 evaluate the information used to determine that the management  
5 practices and site restrictions have been met. I am aware that  
6 there are significant penalties for false certification  
7 including the possibility of fine and imprisonment."

8 B. A description of how the management practices,  
9 site restrictions, and vector attraction reduction requirements,  
10 if options in part 7041.1400, subpart 2, item I or J, are met  
11 for each site on which bulk sewage sludge was applied.

12 7041.1700 REPORTING.

13 Subpart 1. **Annual reporting requirements.**

14 A. The information in part 7041.1600 must be  
15 recorded, as applicable, by the person who prepares the sewage  
16 sludge on a form provided or approved by the commissioner and  
17 submitted annually to the agency no later than December 31  
18 following the end of the cropping year unless specified  
19 otherwise in a permit or approved management plan if  
20 applicable. If bulk sewage sludge is applied, the form must be  
21 prepared by or under the supervision of a Type IV certified  
22 operator or inspector employed by the person who prepares the  
23 bulk sewage sludge.

24 B. If bulk sewage sludge is applied on a site in  
25 Minnesota, the legal description of the site and the information  
26 in part 7041.1600, subpart 3, items M and N, do not have to be  
27 reported.

28 C. For the purpose of annual reports, the month  
29 instead of the date referenced in part 7041.1600, subpart 3,  
30 item L, shall be reported on the form provided or approved by  
31 the commissioner.

32 Subp. 2. **Special reporting requirements.** The preparer of  
33 bulk sewage sludge which is not exceptional quality sewage  
34 sludge must notify the agency, in writing, when 90 percent or  
35 more of any of the cumulative pollutant loading rates in part

1 7041.1100, subpart 4, item B, has been reached for a site.

2 7041.1800 PROVISIONS FOR SEWAGE SLUDGE FROM SEPTIC TANKS.

3 Subpart 1. General. The requirements in subparts 2 to 4  
4 for application at agronomic rates, pathogen and vector  
5 attraction reduction, monitoring, recordkeeping, and reporting,  
6 unless specified otherwise in a permit, shall be met by persons  
7 who prepare the sewage sludge from septic tanks which is  
8 referred to in this part as septage.

9 Subp. 2. Agronomic rates. The agronomic application rate  
10 for septage applied to agricultural land, forest, or a  
11 reclamation site for a cropping year must be calculated using  
12 the equation in this subpart unless specified otherwise by the  
13 commissioner. The commissioner may specify the rate based on an  
14 actual nitrogen analysis.

15  
16 
$$AR = \frac{N}{0.0026}$$
  
17  
18

19 Where,

20 AR = Application rate in gallons per acre for the cropping year.  
21 N = The maximum available nitrogen application rate in pounds  
22 per acre per cropping year required by the crop based on  
23 realistic yield goals or nitrogen uptake by vegetation grown on  
24 the land minus the amount supplied by other sources such as  
25 manure or fertilizer.

26 Subp. 3. Pathogen and vector attraction reduction. To  
27 meet pathogen and vector attraction reduction requirements, the  
28 site restrictions in part 7041.1300, subpart 3, item D, must be  
29 met and either:

30 A. the pH of the septage must be raised to 12 or  
31 higher for 30 minutes by alkali addition and, without the  
32 addition of more alkali, shall remain at 12 or higher for 30  
33 minutes;

34 B. the septage is injected and no significant amount  
35 of the septage is present on the land surface within one hour  
36 after it is injected; or

37 C. the septage is incorporated below the surface of

1 the land within six hours after application unless specified  
2 otherwise by the permitting authority.

3 Subp. 4. **Monitoring, recordkeeping, and reporting.** The  
4 permittee must obtain and keep on record for five years, the  
5 information required to be in compliance with this chapter  
6 including:

7 A. the following certification statement for all  
8 septage applied to the land:

9 "I certify, under penalty of law, that the information that  
10 will be used to determine compliance with the pathogen and  
11 vector attraction reduction requirements in subpart 2, item A,  
12 B, or C [insert either subpart 3, item A, B, or C] the  
13 management practices in part 7041.1200, and the site  
14 restrictions in part 7041.1300, subpart 3, item D, has been  
15 prepared under my direction and supervision according to the  
16 system designed to ensure that qualified personnel properly  
17 gather and evaluate the information used to determine that the  
18 pathogen and vector attraction reduction requirements have been  
19 met. I am aware that there are significant penalties for false  
20 certification including the possibility of fine and  
21 imprisonment.";

22 B. a description of how the pathogen and vector  
23 attraction reduction requirements are met. If alkali addition  
24 is used, records must indicate each container of septage applied  
25 is monitored for compliance with subpart 3, item A;

26 C. a description of how management practices and site  
27 restrictions are met;

28 D. a record of soil test data as required by part  
29 7041.0800, site approvals, or permits;

30 E. the maximum available nitrogen application rate  
31 based on the realistic yield goal of the crop or vegetation  
32 grown on the site during the cropping year;

33 F. the amount of septage in gallons per acre applied  
34 that cropping year;

35 G. the legal description of the land application  
36 site;

- 1 H. the number of acres used;
- 2 I. the date septage is applied to the land; and
- 3 J. any other analysis or information required by the
- 4 commissioner.

5 The information in items A to J must be recorded by the  
 6 permittee on a form provided or approved by the commissioner and  
 7 submitted annually to the agency no later than December 31  
 8 following the end of the cropping year.

9 7041.3000 CALCULATION OF AVAILABLE AND CARRY-OVER NITROGEN.

10 Subpart 1. Available nitrogen. The formulas in this  
 11 subpart shall be used for the calculation of available nitrogen  
 12 for the cropping year sewage sludge is applied to the land  
 13 unless it has been demonstrated to the satisfaction of the  
 14 commissioner with data from laboratory and/or field tests that  
 15 another calculation based on sewage sludge or site-specific  
 16 mineralization rates is more appropriate.

17 POUNDS OF AVAILABLE NITROGEN PER TON  
 18 OF SEWAGE SLUDGE SOLIDS

19 Type of	20 Application	21 Formula
22 Stabilization	23 Method	
24 Digested		
25 Anaerobic	26 Surface	(% organic-N x 4) + (%NH <sub>3</sub> -N x 10)
27 Anaerobic	28 Incorporated <sup>1</sup> or injected	(% organic-N x 4) + (%NH <sub>3</sub> -N x 20)
29 Aerobic	30 Surface	(% organic-N x 6) + (%NH <sub>3</sub> -N x 10)
31 Aerobic	32 Incorporated <sup>1</sup> or injected	(% organic-N x 6) + (%NH <sub>3</sub> -N x 20)
33 Stabilized		
34 primary and	35 Surface	(% organic-N x 8) + (%NH <sub>3</sub> -N x 10)
36 waste	37 Incorporated <sup>1</sup> or injected	(% organic-N x 8) + (%NH <sub>3</sub> -N x 20)
38 activated		
39 Composted	40 Surface	(% organic-N x 2) + (%NH <sub>3</sub> -N x 10)
41	42 Incorporated <sup>1</sup>	(% organic-N x 2) + (%NH <sub>3</sub> -N x 20)

43 <sup>1</sup>Incorporated within 48 hours

44 Subp. 2. First year carry-over nitrogen. First year  
 45 carry-over nitrogen from the initial application of sewage  
 46 sludge shall be calculated using the formulas in this subpart.

47 FIRST YEAR CARRY-OVER NITROGEN FROM INITIAL  
 48 SEWAGE SLUDGE APPLICATION

49 Type of	50 Pounds per Acre
51 Stabilization	
52	

1 Anaerobically  
 2 digested (% organic-N) x (1.6) x (tons per acre applied)  
 3  
 4 Aerobically  
 5 digested (% organic-N) x (2.1) x (tons per acre applied)  
 6  
 7 Stabilized  
 8 primary and  
 9 waste  
 10 activated (% organic-N) x (2.4) x (tons per acre applied)  
 11  
 12 Composted (% organic-N) x (0.9) x (tons per acre applied)  
 13

14 Subp. 3. Second year carry-over nitrogen. Second year  
 15 carry-over nitrogen from the initial application of sewage  
 16 sludge must be calculated for aerobically digested and  
 17 stabilized primary and waste activated sewage sludge if the  
 18 initial application provided greater than or equal to 100 pounds  
 19 of available nitrogen per acre. The following formula shall be  
 20 used:

21 Second year carry-over nitrogen = (% organic-N) x (1.0) x  
 22 (tons/acre applied).

23 7041.3100 PROCEDURE TO DETERMINE ANNUAL WHOLE SLUDGE APPLICATION  
 24 RATE (AWSAR).

25 A. This part contains the procedure used to determine  
 26 the AWSAR for a sewage sludge that does not cause the annual  
 27 pollutant loading rates in part 7041.1100, subpart 4, item D, to  
 28 be exceeded. The relationship between the annual pollutant  
 29 loading rate (APLR) for a pollutant and the AWSAR for a sewage  
 30 sludge is shown in the equation in this subpart.

31 
$$\text{APLR} = \text{C} \times \text{AWSAR} \times 0.001$$

32 Where,

33 APLR = Annual pollutant loading rate in kilograms per hectare  
 34 per 365-day period.

35 C = Pollutant concentration in milligrams, per kilogram of total  
 36 solids (dry weight basis).

37 AWSAR = Annual whole sludge application rate in metric tons per  
 38 hectare per 365-day period (dry weight basis).

39 0.001 = A conversion factor.

40 B. To determine the AWSAR, the equation in subpart  
 41 one is rearranged as follows:

42 
$$\text{APLR}$$



$$\text{AWSAR} = \frac{\quad}{\quad} \\ \text{C} \times 0.001$$

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37

The procedure used to determine the AWSAR is described in subitems (1) to (4).

(1) Analyze a sample of the sewage sludge to determine the concentration for each of the pollutants listed in part 7041.1100, subpart 4, item D, in the sewage sludge.

(2) Using the pollutant concentrations from subpart 1 and the APLRs from part 7041.1100, subpart 4, item D, calculate an AWSAR for each pollutant using the equation in this subpart.

(3) The AWSAR for the sewage sludge is the lowest AWSAR calculated in this subpart.

(4) To convert the AWSAR to pounds per acre, multiply the AWSAR (in Kg/ha) by .892.

7041.3200 ANALYTICAL PROCEDURES FOR DETERMINING CONSTITUENTS IN SEWAGE SLUDGE SAMPLES.

The documents in items A to I are incorporated by reference and are available through the Minitex interlibrary loan system. They are not subject to frequent change.

A. Analytical Procedures for Determining Organic Priority Pollutants in Municipal Sludge, issued by the United States Environmental Protection Agency as EPA 600/2-80-030 (1980), also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 80-198401), 1-800-553-6847.

B. Method Development for Determination of Polychlorinated Hydrocarbons in Municipal Sludge, issued by the United States Environmental Protection Agency as EPA 600/2-80-029 (1980), also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161 (PB 80-200793), 1-800-553-6847.

C. Enteric Viruses, ASTM Designation: D 4994-89, "Standard Practice for Recovery of Viruses From Wastewater Sludges," 1992 Annual Book of ASTM Standards: Section 11 --

1 Water and Environmental Technology, ASTM, 1916 Race Street,  
2 Philadelphia, Pennsylvania 19103-1187.

3 D. Fecal Coliform, Part 9221E or Part 9222D,  
4 "Standard Methods for the Examination of Water and Wastewater,"  
5 18th Edition, 1992, American Public Health Association, 1015  
6 15th Street NW, Washington, DC 20005.

7 E. Helminth Ova, Yanko, W.S., "Occurrence of  
8 Pathogens in Distribution and Marketing Municipal Sludges," EPA  
9 600/1-87-014, 1987, National Technical Information Service, 5285  
10 Port Royal Road, Springfield, Virginia 22161 (PB 88-154273/AS).

11 F. Inorganic pollutants, "Test Methods for Evaluating  
12 Solid Waste, Physical/Chemical Methods," EPA Publication SW-846,  
13 Second Edition (1982) with Updates I (April 1984) and II (April  
14 1985) and Third Edition (November 1986) with Revision I  
15 (December 1987). Second Edition and Updates I and II are  
16 available from the National Technical Information Service, 5285  
17 Port Royal Road, Springfield, Virginia 22161 (PB 87-120-291).  
18 Third Edition and Revision I are available from Superintendent  
19 of Documents, Government Printing Office, 941 North Capitol  
20 Street NE, Washington, DC 20002 (Document Number  
21 955-001-00000-1).

22 G. Salmonella sp. bacteria, Part 9260D, "Standard  
23 Methods for the Examination of Water and Wastewater," 18th  
24 Edition, 1992, American Public Health Association, 1015 15th  
25 Street NW, Washington, DC 20005; Kenner, B.A. and H.P. Clark,  
26 "Detection and enumeration of Salmonella and Pseudomonas  
27 aeruginosa," Journal of the Water Pollution Control Federation,  
28 Vol. 46, No. 9, September 1974, pp. 2163-2171, Water Environment  
29 Federation, 601 Wythe Street, Alexandria, Virginia 22314.

30 H. Specific oxygen uptake rate, Part 2710B, "Standard  
31 Methods for the Examination of Water and Wastewater," 18th  
32 Edition, 1992, American Public Health Association, 1015 15th  
33 Street NW, Washington, DC 20005.

34 I. Total fixed, volatile solids, Part 2540G,  
35 "Standard Methods for the Examination of Water and Wastewater,"  
36 18th Edition, 1992, American Public Health Association, 1015

1 15th Street NW, Washington, DC 20005.

2 7041.3300 COLLECTION OF SOIL SAMPLES.

3 At a minimum, one soil sample shall represent an area of no  
4 more than 40 acres. Additional soil samples may be required if  
5 there are areas differing greatly in previous fertilization,  
6 liming, cropping history, land management, or soil texture. The  
7 soil must be sampled to a depth of six to nine inches from at  
8 least 15 to 20 random locations in the sampling area. The  
9 samples must be composited, thoroughly mixed, and subsampled for  
10 analysis. Approximately one pint of soil is necessary for  
11 analysis.

12 7041.3400 ANALYSIS OF SOILS.

13 Subpart 1. **Analytical methods.** Acceptable analytical  
14 methods for United States Department of Agriculture textural  
15 classification, organic matter, extractable phosphorus,  
16 exchangeable potassium, pH, and soluble salts are found in one  
17 or more of the publications in items A to C which are  
18 incorporated by reference. These documents are not subject to  
19 frequent change and are available through the Minitex  
20 interlibrary loan system or the addresses given.

21 A. Recommended Chemical Soil Test Procedures for the  
22 North Central Region, issued by the North Dakota Agricultural  
23 Experiment Station, North Dakota State University as North  
24 Central Regional Publication No. 221 (Revised) October 1988.

25 B. Methods of Soil Analysis, Chemical and  
26 Microbiological Properties edited by Alan Page et al., issued by  
27 the American Society of Agronomy as Agronomy Monograph No. 9  
28 (Madison, Wisconsin, Part 2, second edition, 1982).

29 C. Procedures for Collecting Soil Samples and Methods  
30 of Analysis for Soil Survey, issued by the Natural Resources  
31 Conservation Service as Soil Survey Investigations Report 1  
32 (revised) (Washington, D.C., United States Government Printing  
33 Office, 1984).

34 Subp. 2. **Soil permeability.** The documents in items A and  
35 B are incorporated by reference for determining soil

1 permeability measurements for different soil types and soil  
2 horizons when the information is not available from the Natural  
3 Resources Conservation Service. These references are not  
4 subject to frequent change and are available through the Minitex  
5 interlibrary loan system or addresses given.

6           A. Determination by direct measurements in the field  
7 as outlined in chapter 29, Hydraulic Conductivity of Saturated  
8 Soils: Field Methods, in Methods of Soil Analysis, Physical and  
9 Mineralogical Methods, edited by Klute, issued by the American  
10 Society of Agronomy, 677 South Segoe Road, Madison, Wisconsin  
11 53711, as Agronomy Monograph No. 9, Part 1, (Madison, Wisconsin,  
12 second edition 1986).

13           B. Determination in the laboratory using undisturbed  
14 soil samples as outlined in chapter 28, Hydraulic Conductivity  
15 and Diffusivity: Laboratory Methods in Methods of Soil  
16 Analysis, edited by Klute, issued by the American Society of  
17 Agronomy, 677 South Segoe Road, Madison, Wisconsin 53711, as  
18 Agronomy Monograph No. 9, Part 1, (Madison, Wisconsin, second  
19 edition 1986).

20           Subp. 3. **Seasonal high water table.** The documents in  
21 items A and B are incorporated by reference for determining the  
22 depth to and type of seasonal high water table for different  
23 soil types when the information is not available from the  
24 Natural Resources Conservation Service. These references are  
25 not subject to frequent change and are available through the  
26 Minitex interlibrary loan system or addresses given.

27           A. Determination of the depth of soil having mottles  
28 with a chroma of two or less as discussed on pages 15 to 17 of  
29 Keys to Soil Taxonomy, Sixth Edition (1994), issued by the  
30 Natural Resources Conservation Service (Washington D.C., United  
31 States Government Printing Office).

32           B. Measurement of water levels at monthly intervals  
33 over the course of one year in piezometers. The highest water  
34 level measurement obtained is acceptable as the seasonal high  
35 water table. Piezometers must be installed according to the  
36 Minnesota Department of Health Well Code, chapter 4725,

1 available from Office of State Register, Minnesota Bookstore,  
2 117 University Avenue, Saint Paul, Minnesota 55155.

3 7077.0105 DEFINITIONS.

4 [For text of subps 1 to 24, see M.R.]

5 Subp. 25. **Need.** "Need" means a new or upgraded wastewater  
6 treatment system is necessary for a municipality to comply with  
7 chapter 7041, 7050, 7060, or 7080.

8 [For text of subps 25a to 50, see M.R.]

9 **REPEALER.** Minnesota Rules, parts 7002.0220, subpart 8;  
10 7040.0100; 7040.0200; 7040.0300; 7040.0400; 7040.0500;  
11 7040.0600; 7040.0700; 7040.0800; 7040.1500; 7040.1600;  
12 7040.1700; 7040.1800; 7040.1801; 7040.1802; 7040.1803;  
13 7040.1804; 7040.1805; 7040.1806; 7040.1807; 7040.1808;  
14 7040.1900; 7040.2000; 7040.2500; 7040.2600; 7040.2700;  
15 7040.2800; 7040.2900; 7040.3000; 7040.3100; 7040.4000;  
16 7040.4100; 7040.4200; 7040.4300; 7040.4400; 7040.4500;  
17 7040.4600; and 7040.4700, are repealed.