SONAR Book

Minnesota Pollution Control Agency

August 18, 1994

Ms. Maryanne Hruby
Leg. Commission to Review Admin. Rules
55 State Office Building
100 Constitution Avenue
St. Paul, Minnesota 55155

Dear Ms. Hruby:

Enclosed please find a copy of the Statement of Need and Reasonableness for the revision of Minn. Rules ch. 7080, Individual Sewage Treatment Systems. This statement is being submitted in accordance with Minn. Stat. § 14.23. The Notice of Intent to Adopt Without a Public Hearing was mailed in accordance with Minn. Stat. § 14.22 on August 17, 1994, and published in the State Register on August 22, 1994.

If you have any questions about this submittal, please call me at (612) 296-7223.

Sincerely,

Debbie Olson

Debbie Olson
Rule Revision Coordinator
Assessment and Planning Section
Water Quality Division

DO:jmg

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STATE OF MINNESOTA
POLLUTION CONTROL AGENCY

In the Matter of the Proposed Revisions to Minnesota Rules Chapter 7080, Individual Sewage Treatment System Standards

STATEMENT OF NEED AND REASONABLENESS

July 26, 1994

I. NOTE ON 1994 LEGISLATION

In addition to the current ISTS rulemaking addressed in this Statement of Need and Reasonableness (SONAR), the agency will be proceeding with a second ISTS rulemaking later this year based on the 1994 Individual Sewage Treatment Systems (ISTS) Act, Minn. Laws ch. 617, Sec. 1 (to be codified at Minn. Stat. § 115.55).

As the SONAR supports, the current rulemaking is for purposes of updating and clarifying the standards and addressing problems identified by ISTS professionals or ISTS owners. Later this year after this rulemaking is promulgated, Chapter 7080 will be further revised to address the 1994 ISTS Act mandates.

One goal of the current rulemaking is to reorganization the Chapter so that information is easier to find and is in a more logical and process related order. A large portion of the existing rule language is being moved within the Chapter to accomplish the needed reorganization. The majority of this language is underlined in the rule draft and erroneously appears to be new language. This makes it difficult for affected or interested parties to differentiate between relocated language with no substantial change and newly proposed language reflecting new requirements. This potential confusion is one reason the agency decided not to add the 1994 ISTS Act mandates to this rulemaking.

In addition to the language relocation factor, there is the timing issue. Staff have been working closely with ISTS professionals for more than two years to develop the proposed rules. The issues addressed in this rulemaking have been included in ISTS training conducted by the agency this past year. ISTS professionals expect the proposed standards to be in effect for the 1995 construction season. Incorporating the 1994 ISTS Act mandates would delay this rulemaking. Staff determined that a segmented rulemaking approach for chapter 7080 revisions was the best way to proceed.

For information purposes and future reference, the 1994 ISTS Act mandates that will be addressed in the second rulemaking are:

1) to determine how the agency will ensure that ordinances adopted by local units of government to regulate ISTS comply with Minn. Rules ch. 7080;
2) to determine how local units of government will enforce their ISTS ordinances, including permits and inspection programs;
3) to determine how the advisory committee will participate in review and implementation of the rules;

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3) to determine how the advisory committee will participate in review and implementation of the rules;

4) to establish provisions for alternative systems;
5) to establish provisions for handling and disposal of effluent;
6) to establish provisions for system abandonment;
7) to establish provisions allowing local units of government to adopt alternative standards and criteria; and
8) to establish procedures for variances.

For clarification, this rulemaking addresses abandoned tanks, one of the issues identified in the 1994 ISTS Act. Abandoned tanks are addressed in this rulemaking as a solution to a problem of public and environmental safety and not in response the the new statute. The agency can address problems like this under its general authority to adopt rules to prevent water pollution and address disposal system issues (Minn. Stat. § 115.03, subd. 1, item (e)). In addition to abandoned tanks, some of the issues identified in the 1994 ISTS Act are already addressed in the existing version of Minn. Rules ch. 7080. Revisions will be made to these issues in varying degrees during the second rulemaking.

Part of the rulemaking process is to evaluate the economic impacts of proposed rules. The 1994 ISTS Act may have a significant economic impact on local governments. However, these impacts are not discussed within this SONAR because they are the result of the Act rather than the proposed rules and are outside this rule revision effort.

II. INTRODUCTION

Minn. Rules ch. 7080 are the rules of the Minnesota Pollution Control Agency (hereinafter "Agency") that establish standards for Individual Sewage Treatment Systems (ISTS). The purpose of these rules is to prevent the improper location, design, installation, use, maintenance and abandonment of ISTS, which could adversely affect water quality and the public health, safety and general welfare by the discharge of inadequately treated sewage to surface and ground waters of the state.

The goals of the Agency in revising these rules are to: 1) reflect current technology, 2) add specifications to cover common situations not currently addressed in the rule, 3) clarify ambiguous language, 4) remove obsolete standards, 5) relax standards which were overly conservative and, 6) revise and strengthen standards which were deficient.

These rules are primarily technical rather than administrative standards. Their purpose is to provide minimum standards for the location, design, installation, use, maintenance and abandonment of ISTS. Chapter 7080 contains some administrative rules; however, it is the agency's goal to provide municipalities maximum flexibility to create an administrative process in conjunction with their planning and zoning activities and strategies. It is intended that the administration of these standards be conducted by local units of government for all systems except for those which are designed to treat an average design flow greater than 10,000 gallons per day.

Systems over the 10,000 gallon per day threshold are required to have a permit issued by the agency.

The Agency published a notice to solicit outside opinion in the State Register on June 1, 1992. Since this time, the Agency has received written correspondence regarding the proposed revisions from: Multi-Flo, Prinsco, Hancor, Olmsted County, City of Orono, Crow Wing County, Century Plastics, Infiltrator Systems, Inc., Exxon, Minnesota Department of Health, Advanced Drainage Systems Inc., CMI, Dakota County, Goodhue County and Todd County.

Most, but not all, of these proposed changes to the rule are in response to recommendations from the general public, ISTS professionals and local inspectors. These proposals were brought before the ISTS Advisory Committee for review, comment and refinement. The ISTS Advisory Committee (hereinafter Committee) was created under Minn. Rules pt. 7080.0100 to advise the Agency on revisions of standards and legislation relating to ISTS. The voting membership of the Committee is specified in the rule as follows:

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

B. one shall be from the Agricultural Extension Service of the United States Department of Agriculture and the University of Minnesota;

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

D. one shall be a municipal building inspector;

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

F. one shall be a water well contractor.

In addition, the following agencies and associations each have one non-voting ex-officio member to assist the Committee and to be advised in turn, on matters relating to ISTS: the Agency, Department of Natural Resources, Department of Health, United States Department of Agriculture Soil Conservation Service, Metropolitan Council, Association of Minnesota Counties, Minnesota Association of Townships, League of Minnesota Cities and the Minnesota Society of Professional Engineers.

The Committee has met nine times between August of 1992 and June of 1994. Two ISTS Committee meetings were held prior to this time period in its efforts to develop a list of proposed changes for Minn. Rules ch. 7080. Please refer to the Exhibits 1-1 through 1-9 for ISTS Committee meeting minutes. (SEE EXHIBIT #1.)

The Committee has voted to recommend the changes contained in this revision.

III. STATEMENT OF STATUTORY AUTHORITY

The Agency's statutory authority to adopt individual sewage treatment standards is found in Minn. Stat. § 115.03, subd. 1 item (e) under which the Agency is given and charged with the power and duty to adopt and modify rules to prevent, control or abate water pollution or for the installation or operation of disposal systems or parts thereof. Under this statute the Agency has the necessary statutory authority to adopt the proposed rules.

IV. NEED FOR AMENDMENTS

Minn. Stat. ch. 14 (1992) requires the Agency to make an affirmative presentation of facts establishing the need for and reasonableness of the rules as proposed. In general terms, this means that the Agency must set forth the reasons for its proposal and the reasons must not be arbitrary or capricious. However, to the extent that need and reasonableness are separate, need has come to mean that a problem exists which requires administrative attention and reasonableness means that the solution proposed by the Agency is appropriate. The need for the rule revisions is discussed below.

Minn. Rules ch. 7080, Individual Sewage Treatment System Standards were first adopted in 1978 and known at that time as WPC-40. In 1983 these rules became known as Minn. Rules ch. 7080. In 1989, Minn. Rules ch. 7080 were revised and have not been revised since that time. Changes are proposed for the following reasons:

* To revise and strengthen inadequate standards.

* To relax overly conservative standards.

* To eliminate obsolete standards.

* To provide standards where no standard currently exists and are necessary.

  To clarify ambiguous standards.

  To add criteria and standards for new ISTS technology.

The report "Wastewater Treatment Needs in Unsewered Areas" done for the Legislative Water Commission (1993) indicates twenty-seven percent (27%) or 491,925 of the housing units in Minnesota are not connected to a public sewer. These figures reflect a twenty-two percent (22%) increase in the number of unsewered housing units from the 1980 to the 1990 census. The majority of these unsewered housing units are located in small cities, rural subdivisions and unincorporated areas of the state. In addition, numerous individual sewage treatment systems are used for seasonal cabins, many of which are concentrated in lakeshore areas. Other systems are being built on urban lots located within cities, but outside of the boundaries for providing cost-effective sewer service.

Failures of ISTS are the result of errors in the location, design, construction and maintenance of these systems. New language is proposed to specifically prevent the most common of these mistakes. Some examples of problems that this revision is intended to prevent are:

1) construction of systems in disturbed soils;

2) incorrect identification of saturated soil conditions;

3) no replacement area for a failing system;

4) under-sized systems for seasonal establishments;

5) improper electrical work; and

6) lack of an approval procedure for systems using agricultural drainage tile to lower the water table.

Agency staff's experience in the administration of these rules since the 1989 revision has shown that there are parts of the rules that need to be consolidated, simplified, clarified, deleted or added to allow more consistent administration of the rules. To address that problem, these revisions are intended to improve the readability of these rules. Many parts of the rule have been relocated to other areas for the purpose of consolidating related areas of the rule. The purpose of consolidating similar areas is to make the rule more usable. The rule revision presents information in chronological order of system development, making it easier to find information. As a result, this chapter will be able to be used more as a "how-to guide." (SEE EXHIBIT #12.)

New parts are proposed to be added to provide a more complete chapter on these systems. For example, a new part is proposed that deals with the proper steps to be followed when abandoning an ISTS. Also, a new part is proposed which provides a design protocol for experimental systems.

V. STATEMENT OF REASONABLENESS

The Agency is required by Minn. Stat. ch. 14 to make an affirmative presentation of facts establishing the reasonableness of the proposed rules. Reasonableness is the opposite of arbitrariness or capriciousness. It means that there is a rational basis for the Agency's proposed action. The reasonableness of the proposed rules is discussed below. Each of the provisions that are proposed to be changed is discussed in the order it appears in the proposed revision.

PART 7080.0010 PURPOSE AND INTENT.

The purpose statement has been revised to make it more readable, and to add the concepts of safety and voluntary advanced treatment.

The word "location" is proposed to be moved and placed ahead of the word "design" to depict the proper sequence of events during ISTS development. This change has been made throughout the rule.

Reference to Minnesota Statutes are proposed to be updated to provide the most current reference to Minn. Stat. chs. 104 and 105.

The word "safety" has been added to the concept of promoting public health and general welfare thereby emphasizing that safety during construction, use and maintenance is covered under the standards. Safety is an integral part of public health and welfare and is an important consideration in construction and inspection activities. As an example of the need to include safety, a new part is being proposed in this rule dealing with proper procedures to be followed for abandoning a system, which includes the filling of the tank to prevent collapse or creation of a "sinkhole". Safety measures are addressed in other parts of the rule, both existing and proposed. Therefore, it is reasonable to include the concept of safety in the purpose and intent statement.

The Agency is encouraging the testing, development and use of advanced treatment methods to further reduce the discharge of contaminants to surface and ground water. These advanced methods are intended to provide a foundation for use of

methods that may not be considered as standard, but have the potential to improve the quality of the discharge from an ISTS. Treatment methods found to be reliable and cost-effective with reasonable maintenance are contained in the rule. However, there are many innovations under development, or being tested which may greatly improve the performance of these systems. If proven reliable, the agency encourages the use of these systems before the next revision of the rule. Adding experimental system criteria in the rule allows for consistent management when selecting advanced treatment methods.

It is proposed that term "animal waste" be added to the list of wastes that this standard does not cover.

Chapter 7080 provides standards for normal domestic waste and not animal waste. Animal waste consists of higher strength and higher solids content than domestic waste. Because of these characteristics, animal waste cannot be appropriately treated in the designs offered in the rule. Animal waste is regulated by Minn. Stat. 115 and 116.

PART 7080.0020 DEFINITIONS.

Subp. 2. "Aerobic tank." The word "utilizes" is proposed to be replaced by the word "uses". This change in word choice is solely for the purpose of clarity and is made periodically throughout the rule.

Subp. 4a. "At-grade system." This definition is proposed to be added because this term and technology is used in the body of the rule and is currently not defined. The proposed definition is reasonable because it describes in general terms the provisions of Minn. Rules pt. 7080.0170, subp. 6 "At-Grade Systems".

Subp. 6. "Bedrock." The agency proposes to change the definition of bedrock, deleting reference to consolidated and unweathered parent material and adding a descriptive statement about the material present. The revised definition is more precise, giving better guidance to site evaluators, designers and system contractors. Bedrock provides little or no treatment of sewage, so it is necessary to properly identify bedrock and establish a proper setback. Typically, in nature, there is not a distinct boundary between bedrock and the overlying soil. Currently, site evaluators have no guidance in determining the point at which treatment would be minimal due to the presence of bedrock. The proposed revision identifies bedrock as unweathered, in place, consolidated material, larger than 2 millimeters in size and more than 50 percent by volume. The 2 millimeters in size and 50 percent by volume figures are being proposed because as soil particles become larger, the surface area is diminished. When soil particles become larger than 2 millimeters in size, the surface area available for treatment of septic tank effluent is diminished to the point that treatment becomes minimally effective. The 2 millimeter size is consistent with the maximum size used for clean sand used for mound systems.

The presence of sandstone bedrock is proposed to be determined based on the consolidation of the material. Unacceptable consolidation is encountered when the material is sufficiently coherent to resist penetration of a knife blade in an exposed pit. Sandstone bedrock contains sand size particles cemented by geologic processes. The weathering of the cementing agent results in unconsolidated sand size particles. This is reasonable because unconsolidated material would provide treatment the same as soil.

Subp. 7. "Bedroom." This definition is proposed to be revised by defining that a bedroom also includes those unfinished areas of a dwelling that may be a sleeping room now or in the future. ISTS are sized on flow and soil acceptance rates. The flow is determined by the number of bedrooms in the dwelling. The number of bedrooms is used for flow volumes because it is an indicator of the number of people that could live in a dwelling at capacity. Flows increase with more people living in the house.

If areas exist in the dwelling that can be converted to bedrooms, it is reasonable to size the system for the anticipated flow. If not designed in this manner, the system will be undersized if these rooms were to be finished and inhabited. Many systems would not have the ability to be expanded due to system design.

Subp. 7a. "Building." This term is proposed to be added to provide a definition of the structures which require a setback from an ISTS. Currently, the rule can be interpreted to require setbacks from utility sheds, doghouses etc. It was not intended to have setbacks from these structures therefore, a clarification is needed to resolve this problem. It is reasonable to add a definition for "building" so the permitting authority has some basis for establishing setback requirements.

Subp. 10. "Capacity." This term is proposed to be deleted and replaced by the term "liquid capacity". Septic tanks are designed with a space for gas exchange to the building vent. It is unclear whether the capacity requirements found in the current standards include this gas exchange volume. The new standard uses the term "liquid capacity" which is measured from the tank bottom to the outlet invert.

Subp. 11. "Cesspool." This term is proposed to be revised to clarify the definition of cesspools. The agency proposes that seepage tanks be added to the definition because they were a common method used in cesspool design. The agency proposes to strike the word "household" because cesspools are not exclusive to households. They have been used for "other" establishments as well. Also, this subp. is proposed to be revised by deleting reference to "other untreated liquid waste" because this rule applies only to systems designed to treat domestic sewage.

Subp. 11a. "Chambered system." This term is proposed to be added due to the addition of this device as a standard distribution medium. This term and technology is used in the body of the rule but, is not currently defined. The proposed definition is reasonable because it describes in general terms the provisions for camber systems in 7080.0170.

Subp. 11b. "Clean sand." Current subp. 29 "Sand" is proposed to be modified by adding the word "Clean" prior to "sand". This change is reasonable because a distinction needs to be made between native sand textures used in sizing as compared to sand used for mound systems. Sand for mound systems must be within certain gradations to provide proper treatment (less than 2 mm in size) and to hydraulically perform (less than 40 percent fine or very fine sand). The word "particles" is proposed to be struck because it is not needed in the definition.

Subp. 12a. "Distribution box." This term is proposed to be added to the rule because the term is used in the body of the rule and it is not currently defined. The proposed definition is reasonable because it describes in general terms, the purpose and function of a distribution box.

Subp. 12b. "Distribution device." This term is proposed to be added to the rule. There are several types of devices that distribute effluent from the supply pipe to the distribution pipe or downslope supply pipe. These devices are referred to collectively in the rule to aid in readability when a general term can be used to cover all types of devices.

Subp. 12c. "Distribution medium." This term is proposed to be added because the revised rule contains more than one type of distribution medium. These media are referred to collectively in the rule, and the use of a general term aids in readability.

Subp. 13. "Distribution pipes." This definition is proposed to be revised by stating that distribution pipes discharge effluent into a "distribution medium." The current language states that the effluent from these pipes is discharged into "a soil treatment system". This change is a refinement of where the pipes specifically discharge and incorporates the use of the new term "distribution medium".

Subp. 15a. "Drainfield rock." It is proposed to allow non-crushed rock as suitable drainfield rock. This change is reasonable because non-crushed rocks have the same distribution properties as crushed rock.

The existing requirement for using a number 4 sieve is proposed to be replaced by a 3/4 inch sieve when referring to the percent of weight of decay resistant material passing through the sieve. This change is reasonable because a 3/4 inch sieve is more accurate measurement of the minimal size allowed as compared to a number 4 sieve which is about 3/16th of an inch.

New language is proposed to reflect that materials greater than 2 1/2 inches in size shall not exceed 5 percent by weight. This standard is reasonable because the current wording indicates that no amount of rock is allowed to be greater then 2 1/2 inches in size. This change gives guidance to the local inspector on the maximum amount of rock that can be greater than 2 1/2 inches. Material greater than 2 1/2 inches in size causes excessive rock shadow which reduces the effective exposed surface area available for sewage treatment.

Subp 15b. "Drop box." This term is proposed to be added because the term is used in the body of the rule and it is not currently defined. The proposed definition is reasonable because it describes in general terms the purpose and function of a drop box.

Subp. 17a. "Gas deflecting baffle." This term is proposed to be added to the rule because this term and technology is used in the body of the rule and is currently not defined. This definition is reasonable because it describes the function of the gas deflecting baffle.

Subp. 17b. "Gravelless drainfield pipe." This term is proposed to be added to the rule because of the addition of gravelless drainfield pipe as a standard distribution medium. This definition is reasonable because it describes in general terms, the characteristics of gravelless pipe.

Subp. 18a. "Hazardous waste." The term, hazardous materials is proposed to be changed to "Hazardous waste" to make it consistent with the term defined in Minn. Rules ch. 7045. It is reasonable to provide clarity and consistency throughout the agency rules.

Subp. 19. "Holding tank." This definition is proposed to be revised by deleting the word "watertight," and referencing pt. 7080.0060, subp. 2. pt. 7080.0130 describes the design requirements for all tanks. This description includes the requirement that the tank be watertight. This revision is being proposed to eliminate redundancy with pt. 7080.0130 and is therefore reasonable.

Subp. 20. "Impermeable bedrock." The term "impermeable" is proposed to be modified to "Impermeable bedrock." The current rule was describing the term "impermeable" as it pertained to bedrock. The wording was imprecise and confusing. This grammatical change is being proposed solely for clarification. Also, the last sentence of this subpart referencing soil permeability has been deleted because soil permeability requirements are included in subsequent portions of the rule.

Subp. 21. "Individual sewage treatment system." This term is proposed to be revised by deleting the word "subsurface". This change is being proposed because the current rule, as well as the proposed amendments to the rule, address subsurface systems, at-grade systems and above-grade systems. Also, this subpart is proposed to be revised to include the entire treatment system (i.e. tanks, pipes, pumps and soil treatment system). This is reasonable because it presents a more complete identification of an ISTS.

Subp. 22a. "Maximum monthly average daily flow" With the change in the flow definitions, maximum monthly average daily flow will no longer be used in the rule and is proposed to be deleted.

Subp. 22b. "Liquid capacity." This term is proposed to replace the existing term of "Capacity" in subp. 10. See discussion under subp. 10 "Capacity" for further information.

Subp. 23. "Mottling." This definition is proposed for revision by striking the word "orange" when describing the color of mottled soil. The colors red, brown and gray describe mottling more precisely. Also, additional information on color hue, value and chroma are proposed for inclusion to further describe soils which are saturated for significant periods of time and therefore, require a setback from the system bottom. This change is necessary to highlight that not only mottling determines wet soil, but gray soil matrix as well. The proposed language specifically identifies what qualifies as a gray soil matrix.

Soil colors are used as indicators for organic matter (typically dark colored soils). Natural materials (for example, red colored soils in northeast Minnesota) and wet soils (combinations of gray, brown and/or

yellow). Color notations and color chips are standardized in the Munsell color book and are defined by three variables: hue, value and chroma. Hue is the dominant spectral color (such as red, yellow, green, blue or purple), value is a measure of the degree of darkness or lightness of color and relates to the total amount of light developed. Chroma is a measure of the purity or strength of color, or its departure from a neutral of the same lightness. This proposed change identifies a gray matrix as having value of four or more with a chroma of 2 or less. This measurable criteria is critical for designers/site evaluators. The United States Department of Agriculture (USDA) Soil Conservation Service uses this criteria in determining the depth to saturated soil. Also, Minn. Rules ch. 7040 (Sludge Rules) uses this method of determining saturated soils. If this tool is used properly, an accurate determination can be made. Keys to Soil Taxonomy 5th Edition 1992 Soil Management Support Services, technical monograph No. 19 issued by the Agency for International Development, U.S. Department of Agriculture is proposed to be incorporated by reference and used as a reference to assist in determining mottled soils.
(SEE EXHIBIT #2.)

Subp. 24. "Mound system." The definition is proposed for revision by replacing the obsolete term "ground" with "soil" and replacing the obsolete term "water table" with the term "saturated soil." (See discussion under subp. 29a "Saturated soil"). These revisions are reasonable because they provide a consistent use of standard terms.

Subp. 24a. "Municipality." The definition is proposed for revision by striking the reference to the Metropolitan Waste Control Commission because of the reorganization of the Metropolitan Council. This is an editorial revision made for clarity.

Subp. 28a. "Public waters." The references to Minn. Stat. § 105.37 has been replaced by 103G.005. The reference to subdivision 14 has been replaced by subdivision 15 and subdivision 19 has been added. Minn. Stat. § 105.391 is proposed to be replaced by 103G.201. These changes are proposed to reflect changes as a result of re-codificaton.

Subp. 28b. "Required absorption width." The phrase, "according to the allowable loading rates of Table V in pt. 7080.0170, subp. 2, item G." is proposed to be deleted due to restructuring of the rule. The section that was referenced is proposed to be deleted in these revisions.

Subp. 29. "Sand." This subpart was moved to subp. 11b and has been renamed and renumbered to "Clean sand".

Subp. 29a. "Saturated soil." This term is proposed to replace the term "water table" currently subp. 50. The definition is revised to precisely identify the factors to be considered when determining saturated soil conditions. There is a misconception, widely held by the general public and the engineering profession, that the term "water table" means a "ground water aquifer". The result is that systems are being designed based on the depth to the aquifer instead of the depth to saturated soils. Changing the term to "saturated soil" will raise consciousness to the differences between "aquifer" and "seasonally saturated soils." The agency is also proposing to revise this subpart by striking some extraneous language to improve readability.

Subp. 29b. "Seepage bed." This definition has a definition specific to its use in the rule. The definition is reasonable because it describes in general terms, the characteristics of a seepage bed as specified in 7080.0170.

Subp. 30. "Seepage pit, or leaching pit, or dry well." The phrase "or other liquid waste" is proposed to be deleted. This phrase was struck to divorce this standard (which is written for domestic sewage only) from the treatment and disposal of other liquid wastes. In addition, the phrase "through the bottom and openings in the side of the pit" is also proposed for deletion because it is unnecessary to describe the location of the areas where effluent leaves the system.

Subp. 31. "Septage." This definition of this term is revised to describe the liquids and solids from the entire treatment system, including stilling tanks, lift stations and drop boxes, as well as from the septic tank. Currently, the rule identifies only the solids and liquids removed from the septic tank as septage, although it has been interpreted to include all liquids and solids from the system. The proposal is reasonable because all liquids removed from the system need to be treated and disposed the same manner.

Subp. 33. "Sewage" This definition is proposed to be revised by clarifying that sewage does not include chemically-treated hot tub or pool water". Chemically treated hot tub or pool water poses little threat to human health because it has been chemically treated prior to use; however, it can pose a threat to the treatment capabilities of a septic tank and drainfield. ISTS's rely on organic bacteria to breakdown the sewage. Chemicals typically used in treated hot tubs and pools are selected specifically to destroy bacteria. Excluding these water sources from the definition of sewage highlights that these sources should not enter the ISTS waste stream. It has been discussed in agency staff meetings whether allowing a detention time for chemicals to dissipate before disposing of treated hot tub or pool water into an ISTS would be appropriate. Following this latter route of logic would require the ISTS to be significantly oversized to be able to handle the periodic and disposal of that waste, which is unreasonable and could not be justified in a state rule.

In addition, a maximum biochemically oxygen demand strength is specified to distinguish domestic sewage from other waste sources and to minimize excessive clogging of the soil treatment system. The 350 milligram per liter (mg/l) total suspended solids and 400 mg/l biological oxygen demand values are concentrations of high strength domestic waste water as described in "Waste water Engineering: Treatment Disposal Reuse" third edition, Metcaf & Eddy, Inc., 1991.

Subp. 34. "Sewage flow." Due to the proposed changes regarding flow definitions this term is no longer needed and is proposed to be deleted.

Subp. 35. "Sewage tank." The word "watertight" is proposed to be deleted because it is redundant of pt. 7080.0130. See subp. 19 for further information.

Subp. 41. "Soil characteristics, limiting." This definition is proposed to be deleted because there are only two limiting soil characteristics which require a setback. These characteristics are saturated soil and bedrock. Therefore, it is proposed to replace this term with "saturated soil" or "bedrock".

Subp. 42. "Soil textural classification." The 1951 reference to the Soil Survey Manual, Agricultural Handbook No. 18 from the U.S. Department of Agriculture is proposed to be revised to the 1993 edition to direct the user to the most current version of the manual. This manual is proposed to be incorporated by reference. (SEE EXHIBIT #3.)

Subp. 43. "Soil treatment area." This definition is proposed to be revised by defining the soil treatment area as that area which is in direct contact with the "distribution medium". The current rule defines the soil treatment area, as the area in contact with the "drainfield rock". This change is reasonable because there is other distribution mediums allowed by the rule besides drainfield rock. The definition of soil treatment area for mounds has been deleted from this section and included under the definition of absorption area Minn. Rules pt. 7080.0020, subp. 1a.

Subp. 44. "Soil treatment system." This definition is proposed to be revised by replacing obsolete terms with terms that have become standard terms used when describing a soil treatment area. The term "ground" has been replaced with "soil". (See subp. 24 for further information.) The term "filtration" has been replaced by "percolation" to more accurately describe the process that takes place. In addition, it is proposed that the seepage bed, and drainfield all have become plural for readability purposes. It is also proposed that this subp. be revised to indicate that effluent is disposed "into" the soil so as to include at-grade and mound systems which discharge "on top of" and not "below" the soil surface.

Subp. 45. "Standard System." This subp. is proposed to be revised by adding a reference to parts 7080.0125 through 7080.0170 in specifying a "standard system" to assist the reader by providing specific references. This proposed change is reasonable because it makes a clear distinction that a standard system must contain components as outlined in 7080.0125 - 7080.0170, as compared to an alternative system as prescribed in 7080.0210.

Subp. 45a. "Supply pipe." This definition is proposed to be added to identify the pipes used for the purpose of transporting sewage tank effluent. This term is used in the rule, and has a specific meaning within the context of the rule. It is reasonable to add this definition because these pipes currently have not been a labeled component of an ISTS.

Subp. 47. "Ten-year flood." The definition is proposed to be revised by replacing the word "level" with "elevation." This revision is reasonable because elevation is the standard term to use when describing the height of flood waters.

Subp. 48. "Toilet waste." The definition is proposed to be revised by excluding sanitary napkins and tampons from the definition of toilet waste. Discharge of these materials into the commode can cause clogged pipes or excessive solids accumulation in the septic tank.

Subp. 48a. "Toilet waste treatment devices." This term was defined in 7080.0210 Appendix A subp. 4 B 2a. "Toilet waste treatment devices" and was then moved to the definitions portion of the rule. Editorial changes were made to this definition for clarity and ease of understanding.

Subp. 48b. "Trench." This definition is proposed to be added because the term is used in the body of the rule and it is not currently defined in the rule. The proposed definition is reasonable because it identifies the properties associated with a trench, including the width and types of distribution medium which was not presently provided.

Subp. 49. "Valve box." This definition is proposed to be revised by striking the words "any device which stops sewage tank effluent from flowing to a portion of the soil treatment area, and includes, but is not limited to, caps or plugs on distribution or drop box outlets, divider boards, butterfly valves, gate valves, or other mechanisms." As a replacement, the phrase "a watertight structure designed for alternate distribution of effluent to a soil treatment system" is proposed. This change is being proposed to generalize the methods that can be used to alternate between parts of the soil treatment system. This definition does not result in the change in the intent or meaning of the rule.

Subp. 50. The Current subp. 50 "Water table" was revised and moved to subp. 29a "Saturated soil."

Subp. 52. "Watertight." The words "or distribution device or supply pipe" are proposed to be added to reflect that the distribution device or supply pipe also need to be watertight and not just the sewage tank.

PART 7080.0030 ADMINISTRATION BY STATE AGENCIES.

Part 7080.0030 presently consists of items A and B and is proposed to include items A, B and C.

Item A. The first paragraph in this Part is proposed to become item A. The agency proposes to strike the word "an" to be replaced by "a single" in reference to an individual sewage treatment system. This change is intended to improve readability of this part. The term "average daily flow" is proposed to be changed to "average design flow" to be consistent with new pt. 7080.0125.

Item B. The first two paragraphs of original item B are proposed to be deleted because the 15,000 gallon per day flow threshold for a permit is no longer necessary due to changes in the flow definition as described in new pt. 7080.0125. The terms average daily flow and maximum monthly average daily flow are no longer used.

Item C. This item is proposed to be added to provide greater detail pertaining to the design of a system greater than 10,000 gallons per day (gpd). This item will require that a set of plans and specifications be submitted to the permitting authority. This change is consistent with Minn. Stat. § 115.03 subd. 1 paragraph (f) and Minn. Rules pt. 7001.0050 and reasonable because a permit cannot be issued without design assurances.

It is proposed that submitted plans and specifications include the information as listed in the following subitems.

Subitem (1). Justification of the need for a large system. Systems which put a large amount of sewage into the soil have not been adequately researched and must receive special review. Treatment and disposal of nitrogen, chlorides and organic chemicals is uncertain for soil systems. Other treatment systems may be preferred and justification is needed to compare the treatment capabilities of a large soil system over other types of treatment systems.

Subitem (2). A site evaluation which includes detailed soil descriptions in accordance with the Soil Survey Manual, Agricultural Handbook No. 18, 1993 which is incorporated by reference. See discussion in 7080.0020, subp. 42 for specific references. It is critical that the soil investigation account for factors that will affect sewage treatment and disposal. Some of the more important factors that need to be considered are water movement abilities and attenuation capacities of the soils. A soil classification system has been developed that describes the important soil characteristics for water movement and attenuation. This classification is found in the United States Department of Agriculture Handbook 18, Soil Survey Manual which was published in 1993. It is reasonable to use this manual because it is the standard method used to describe and identify soils for water movement and attenuation capacities. (SEE EXHIBIT #3.)

Subitem (3). Methods to meet or exceed permit standards for downgradient ground water quality. Before a permit can be issued by the agency, the designer of the proposed system must reasonably assure that the system can theoretically meet drinking water standards at the property boundary. Not meeting permit standards during operation may cause adverse ground water contamination and may result in system modifications or abandonment. Therefore, it is reasonable to require a prior investigation of these possible impacts.

Subitem (4). An evaluation of ground water conditions and impacts and development of a ground water monitoring plan. In accordance with the permit standards included in the State Disposal System permit, drainfields must be constructed in such a manner as to insure that the drinking water quality standard is met at the property boundary. Items in (3) and (4) are intended to demonstrate that the system will meet these standards.

Subitem (5). A plan to identify and eliminate discharges of nondomestic wastewater. The agency is proposing that a plan to identify and eliminate nondomestic flows to large soil systems be developed. This provision is reasonable because some non-domestic wastes may not be treatable in an ISTS and could contaminate ground water. Costs to recover contaminated ground water can be excessive. It is reasonable to require prior investigation to avoid negative impacts.

Subitem (6). Meter readings of flow. To assess whether the design capacity is adequate, the actual flow to the system must be measured. It can be difficult to accurately determine design flows for an existing unsewered communities. Metering of the flow is reasonable to ensure that the system will be capable of treating the flow and to offer operational flexibility to optimize the treatment capabilities and performance of the system.

Subitem (7). An operation and maintenance plan. Development of an operation and maintenance plan is reasonable because the system's long term performance is based on the adequacy of the maintenance program.

Subitem (8). A septage disposal plan. Development of a septage disposal plan is proposed to facilitate proper disposal of residuals so as not to become a health or environmental hazard. Requiring a septage disposal plan is reasonable because improper disposal of septage is a public health and environmental hazard. Septage produced from permitted systems is classified with municipal sewage sludge by state and federal authorities and therefore, is subject to additional regulatory controls.

Subitem (9). For joint systems, it is proposed that all owners of dwellings or other establishments planned to be connected to a joint system agree to be connected, participate in the construction of the systems and to participate in the financing of future operation, maintenance, and replacement of the system.

It is reasonable to require these assurances because the system requires regular maintenance. A joint assurance can require that systems be operated by a single entity, such as a business or municipality. There is a greater chance of failure if the responsibilities for operation and maintenance are unclear. In addition, if a permit is required, the permit would most appropriately be issued to the entity responsible for the system.

PART 7080.0040 ADMINISTRATION BY MUNICIPALITIES.

Subpart 1. Shoreland and floodplain areas, and wild scenic river land use districts. The agency proposes to revise this subpart due to recodification of Minnesota Statutes and by replacing the word "cities" with "municipalities" for consistency with other areas of the rule.

Subpart 3. Localized standards. The agency proposes grammatical changes to this subpart to clarify that municipalities may enact ordinances which provide additional sewage treatment. This proposal does not change the meaning or intent of the rule.

Subpart 4. Inspection and approval. This proposed requirement would be in addition to the existing inspection and approval responsibilities of the municipality. The proposed language emphasizes that the municipality or its authorized representative is responsible to inspect all facets of system development to reasonably assure that the system will meet these standards. The proposed language does not change the current rule, but only provides emphasis.

It is reasonable to require the municipality to be actively involved throughout the development of the ISTS. For example, many counties currently enforcing Chapter 7080 do not review or inspect the accuracy of the soils investigation. Furthermore, some county programs do not require a soils investigation before design. If systems are installed in areas with unsuitable soils, the system could be non-conforming and vulnerable to failure.

PART 7080.0050 SURFACE DISCHARGE. It is proposed that this Part be renumbered, revised and merged with 7080.0060 Treatment Required.

PART 7080.0060 TREATMENT REQUIRED.

Subpart 1. Surface discharge. Information in this new subpart was moved from the former 7080.0050 Surface Discharge. This subp. refers to obtaining an agency permit for a surface discharge of treated sewage. Minor grammatical changes are proposed to eliminate redundancy and for clarification.

Subpart 2. Subsurface discharge. The first sentence in this subpart was moved from the 7080.0060. This sentence has been revised to strike the word "building" since flows are only identified to be generated from "dwellings" or "other establishments". The term "building sewer" is proposed to be deleted as part of the ISTS because the ISTS actually starts at the inlet of the first sewage tank. Requirements for building sewers are found in the plumbing code.

The agency further proposes that this subpart be revised to reflect that effluent shall not be discharged to abandoned wells or discharged into other areas not in compliance with the chapter. It is reasonable to include this general provision to gain an overall perspective of proper sewage treatment practices. Discharges to abandoned wells are not allowed because of the direct connection to the ground water aquifer. This is consistent with nondegradation controls found in Minn. Rules chs. 4715, 7060 and 7050 and Minn. Stat. chs. 115 and 145A.

Subpart 3. Lot requirements. The Agency proposes to require one or more additional soil treatment system sites on property parcels subdivided after the effective date of this rule. This requirement is being proposed to address the problem currently being faced by many home owners that have small lots and failed ISTS.

Staff receive phone calls nearly every day from people facing costly treatment alternatives because of the size of their lot or soil conditions on their property. These conditions usually require system fixes or system designs that are cost prohibitive for the average household. In some cases, home owners have no viable treatment alternatives because of prohibitive costs, no access to central treatment or additional land, or an inability to reach an agreement with neighboring property owners. These problems have received the most publicity in lake shore areas.

Malfunctioning ISTS are a potential hazard. These systems can pollute ground water and surface water by discharging untreated or improperly treated sewage into these resources. Improperly treated sewage is also a threat to public health. Sewage is often found pooled on the soil surface

when ISTS become overloaded. These pools can contain pathogens. Children are likely to come into contact with these pools because they often play in areas where ISTS are located.

Staff's experience has shown that treatment systems usually fail because of excessive age or improper construction. Removing a failed system and constructing a new one in the same location is not feasible because the soils are compacted. This means a new site for the system must be located. Staff has found that a new site is usually not available because of inadequate lot size.

Since lot size is the most common reason on-site treatment problems cannot be solved, it is reasonable to establish a standard that would require lots in unsewered areas and established after the effective date of this rule to be large enough to accommodate at least one backup treatment system. This position has also been proposed by the Metropolitan Council in the Policies for the Rural Service Area. Exhibit 9, page 5. Two methods were identified by staff for establishing a lot size that would provide adequate sewage treatment: 1) require a minimum number of acres or 2) require two or more viable sites for a treatment system.

A report regarding ISTS prepared by the Agency and the Department of Agriculture and the Metropolitan Council Policies for the Rural Service Area recommends establishing a specific number of acres to accommodate on-site wastewater needs. (SEE EXHIBITS #9 AND #10.) The report prepared by the Agency and Department of Agriculture recommends minimum lot sizes to be between one and three acres for conventional systems. (SEE EXHIBIT #10, page I-29.)

After evaluating the two options for establishing an appropriate lot size, staff determined that requiring one or more alternative system sites per lot will provide more flexibility than a set acreage requirement. On-site treatment is dependent on soil characteristics and these characteristics vary from lot to lot. The alternative site requirement will allow the size of the lots to vary with the soil conditions. This will allow smaller lots to be developed in areas where soil conditions provide efficient treatment and provide a safeguard for areas with less efficient soils.

Staff acknowledge that little can be done to change the size of lots already subdivided. However, home owners with small lots can consider treatment options before the servicing system fails to operate. Staff developed a different requirement to facilitate this planning. ISTS have been proven to provide adequate sewage treatment for a long period of time, but the dwelling will most likely be used for a longer period. Therefore, construction contractors and home owners should be evaluating treatment options so they are prepared in the event the servicing system fails. Staff propose to require a site evaluation to identify additional areas for a soil treatment system on lots established before the effective date of the proposed rules, if any are available. This provision is proposed under pt. 7080.0110, subp. 5a, item I.

Subpart 4. Primitive dwellings. The agency does not propose to require individual sewage treatment systems for primitive dwellings that rely on outdoor hand pumps. However, it is proposed to regulate the disposal of

grey water (i.e. washwater) so that grey water will not be discharged to surface waters or drainageways or in a manner harmful to the environment or public health. The current standard provides no guidance for waste disposed from primitive dwellings and therefore, it is reasonable to add these provisions when considering the contaminates and volumes involved.

Subpart 5. Prohibited wastes. This subpart currently paragraph 1 of 7080.0060 beginning with the second sentence and is proposed to be revised by clarifying that prohibited wastes are not limited to the solvents, pesticides, flammables, photo finishing chemicals, or dry cleaning chemicals which are included in the present language of the rule. This is reasonable because it is impossible to provide an exhaustive list of all prohibited discharges.

Subpart 6. Failing systems. This subpart is based on existing language from current 7080.0060. In addition, it is proposed to include sewage back-up into homes and systems that impact drinking water supply wells as failing systems. These were included due to obvious health and safety issues. This new language will allow a more complete assessment of the system performance and impacts.

Subpart 7. Conforming systems. This subpart contains language from current 7080.0060 which has been moved to this subpart for consolidation and clarity. No substantive revisions are proposed for this subpart, but does propose grammatical changes.

PART 7080.0070 SYSTEM COMPONENTS.

7080.0070 has been merged with 7080.0060, subp. 2.

PART 7080.0080 PROHIBITED INSTALLATIONS.

7080.0080 has been deleted to eliminate redundancy because it is covered in 7080.0060, subp. 2.

PART 7080.0090 SYSTEM SIZING.

Current 7080.0090 has been moved to new 7080.0125 subp. 1 to consolidate the methods used to determine flow. One minor grammatical change was made which does not change the meaning or intent of the current language.

PART 7080.0100 ADVISORY COMMITTEE.

No revisions to this Part are being proposed.

PART 7080.0110 SITE EVALUATION.

Part 7080.0110 is intended to identify the procedure used when evaluating the site for sewage treatment and disposal. These steps include a preliminary evaluation, field evaluation and site reporting. The preliminary evaluation is intended to identify likely sites that would conform to applicable laws and regulations. This is a desk top evaluation using existing information. The field evaluation physically determines whether a particular site is suitable and specifically locates the site on the lot.

Subpart 1. Evaluation factors. The agency proposes that this subpart in the existing rule be deleted because of restructuring of the rule. The contents of this subpart have been moved to various portions of this part for consolidation and clarity.

Subpart 1a. Necessity of Evaluation. The agency proposes that a preliminary and field evaluation be conducted for all proposed sites for an ISTS.

Without a proper site evaluation the system is likely to be improperly located and designed. Improper site evaluations increase the likelihood of ISTS failure and can negatively impact the useful life of the system. The specific requirements for these evaluations are identified in the following subparts.

Subpart 2. Preliminary evaluation. The agency proposes to delete this subpart because the majority of the requirements are proposed to be relocated to other parts of the rule for clarity. Most of these provisions are proposed under subp. 2a. The provision of this subpart that was deleted and not relocated is the sole use of publicly available, existing data to determine the suitability of a site. Existing data does not typically provide meaningful results or provide sufficient information to insure proper system placement. Therefore, preliminary and a field evaluation are needed for each site as described in subps. 2a and 3a.

Subp. 2a. Preliminary evaluation. This subpart identifies the components of a preliminary evaluation. The purpose of the preliminary evaluation is to gather publicly available, existing data for a proposed ISTS site. It is reasonable to require this evaluation because this information is necessary to design and locate a system that would satisfy these requirements. Also, information such as local code requirements, lot descriptions, state soil surveys, etc., are readily available and allow initial screenings of sites. Sites can be rejected in a preliminary evaluation thereby, eliminating unnecessary site visits. Data obtained during a preliminary evaluation makes subsequent field evaluations easier and faster for local personnel. The agency proposes that a preliminary evaluation consist of the following provisions.

> **Item A.** The agency proposes that the preliminary evaluation provide a flow determination for the dwelling or other establishment. It is reasonable to include this information to provide assurances that the system will be designed properly. Flows can be estimated during the preliminary evaluation from existing records indicating the number of bedrooms in a dwelling or facility description of other establishments. The data used for flow determination must then be verified during the field evaluation as described in 7080.0110 subp. 4 A. Verification is reasonable because dwellings or other establishments may have been expanded or misrepresented in local records.
>
> **Item B.** The agency proposes that the preliminary evaluation consist of the investigation of the proposed or existing location of:

Subitem (1). Water supply wells within 100 feet of the proposed system. Identification of wells and proposed well locations within 100 feet are necessary because it will ensure that the 50 or 100 foot setback established by the Water Well Construction Code is met. Coordination between local requirements and multiple state requirements is critical to protect the property owner from unnecessary relocation costs. Well locations are especially singled out because contamination of drinking water can occur if these systems are located too close. Identifying well and ISTS locations in preliminary planning will also prevent potential health risks. The proposed addition is reasonable because the area of investigation need only extend to the required setback distance.

Subitem (2). Existing and proposed buildings on the lot. This provision is based on existing language that was moved from pt. 7080.0110, subp. 1 item E. The only change in the existing language is that reference is made to "on the lot" for clarification.

Subitem (3). Existing and proposed buried water pipes within 50 feet of the proposed system. This provision is based on existing language that was moved from 7080.0110 subp. 1 E. This change is reasonable because the area of investigation need only extend to the required setback distance. Identifying the location of these pipes is necessary to meet the setback requirements from these pipes as stipulated in the Water Well Construction Code.

Item C. Easements on the lot. Locating easements of the lot is necessary because easements may prohibit construction of any type and therefore, installation of an ISTS may not be allowed.

Item D. Ordinary high water level of public waters. This provision is unchanged and existing language moved from 7080.0110 current subp. 1 E.

Item E. Surface flooding elevations. This requirement is being modified from 7080.0110, subp. 1 E which requires surface flooding probability. Ten-year flooding probability and corresponding surface flooding elevation is necessary to locate the system above the flood elevation and to clearly define the flooding event of concern. It this is not possible, systems placed in these areas are subject to the additional design criteria in 7080.0210 Appendix A, subp. 3 D.

Item F. Property lines. This provision is existing and unchanged language which was moved from 7080.0110 former subp. 1 E.

Item G. The agency proposes that a determination of all required setbacks from the system be provided. The proposed language is reasonable to provide assurances that setback distances are known at the time of the preliminary evaluation.

Item H. The agency proposes that determination of the soil map unit along with the soil characteristics and soil suitability as described in the soil survey report (if available), be provided. Including this information is reasonable to check the subsequent field borings against published data.

Item I. The agency proposes that the legal description and lot dimensions be provided. See discussion under item G above.

Item J. The agency proposes that the name(s) of property owner(s) be provided. Requiring the name(s) of property owner(s) is reasonable because the names of property owners are needed to insure that non-resident property owners are identified as the official contacts for the proposed improvements. This provision also identifies the property owner at the time of the site evaluation. Identification of the property owner is helpful when an area is being subdivided prior to the sale of lots.

It is reasonable to require that the information in subp. 2 a Preliminary Evaluation be provided because these features must be taken into consideration when locating a system. This information is needed to provide assurances that the system will function properly and protect the public health and safety of individuals and not cause nuisance conditions.

Subpart 3. Procedures for soil borings. The agency proposes that this subpart be deleted because of restructuring of the rule. The contents of this subpart have been moved and merged with new language in subp. 4 Field Evaluation.

Subpart 4. Field evaluation. The agency proposes that a field evaluation be conducted on each site where an ISTS is proposed. This new subpart provides a description of the field information necessary to satisfy this portion of the rule. It is reasonable to include this information as a part of the field evaluation procedure because this information is necessary to properly locate a system. The agency proposes that a field evaluation for each site consist of:

Item A. A field determination of lot lines, lot improvements, required setbacks and easements. The agency proposes that all required setbacks from the system be identified. Providing this information is reasonable because these areas must be located to establish the remaining usable areas. See 7080.0110 subp. 2a item A for flow determination justification.

This provision is based on existing language that was moved from 7080.0110 current subp. 1 E. It is reasonable to include this information because abiding by proper setbacks will provide assurances that the proposed system can physically be located on the site and at the same time be in compliance with all applicable requirements.

Item B. A description of the following surface features:

Subitem (1). A determination of the percent and direction of the slope at the proposed ISTS location. Providing this information is reasonable because the design of the ISTS is heavily dependent on the steepness of the slope.

Subitem (2). Vegetation type. Observing the vegetation type is reasonable because it provides a simple check if seasonally saturated soil conditions exist.

Subitem (3). Any evidence of disturbed or compacted areas and flooding or runon potential. Providing this information is reasonable because systems placed in these areas have a high probability of hydraulic failure. In compacted/disturbed areas, failure can occur because of reduced porosity. In flood-prone areas, failure can occur when flood waters inundate the system.

Subitem (4). Landscape position. Landscape position is an important factor in determining the surface and subsurface flow of water and is a major consideration when locating or evaluating a system. Common landscape positions include upland knolls and depressions, terraces, floodplains, and swales. Certain landscape positions invite problems with sewage treatment and disposal. For example, swamps, marshes, potholes, sinkholes, swales, drainage ways, etc. Soil survey reports can help determine the landscape in which the soil is positioned. It is reasonable to provide the landscape position because it provides a simple check if excess surface run-on or saturated soil conditions could be present.

Item C. Soil observations. The agency proposes that a minimum of one soil observation per site be performed to adequately characterize the site. Typically four to five borings are necessary for each site, however in areas with homogenous soils with small lots, fewer may be needed. The number of borings needed to adequately identify the site is left to the professional judgment of the site evaluator or local ordinance.

The soil observation is performed in an exposed pit or by hand auguring or probing. This provision is reasonable because they are the only suitable methods to properly identify the soil. It is proposed that underground utilities be identified prior to conducting soil observations in compliance with Minn. Stat. ch. 216 D and that safety precautions be followed if entering soil pits in compliance with OSHA requirements on confined space entry. The agency is proposing to disallow the use of flite augers for soil observations. This provision is reasonable due to smearing and compacting the sample with the use of a flite auger. The agency proposes to require soil observations be conducted prior to percolation tests to determine whether the soils are suitable to warrant percolation tests and if suitable, at what depths the percolation tests be conducted. This provision is reasonable because this chronological sequence is the only way to properly conduct the soils evaluation and eliminates unnecessary retesting.

The agency proposes that the depth of the soil boring be to the seasonally saturated layer, bedrock or three feet below the proposed depth of the system, whichever is less.

This provision is reasonable because three feet is the minimum distance necessary to insure adequate sewage treatment from the system bottom to the level of saturated soil or bedrock. These provisions are based on 7080.0110 subp. 3 A but, were revised for grammatical purposes to improve the readability of the information. This revised language contains no new requirements.

Item D. Soil description. The agency proposes to require a soil description to be written for each soil observation within the proposed area and that the soil be evaluated under adequate light conditions with the soil in a moist state.

It is reasonable to require only those soil observations that are to be within the proposed area to have a written record of the soil conditions. The intent of the provision is not to require written soil descriptions for the initial observations used to narrow down the suitable area. A detailed written soil description is needed in the proposed area so that the local inspector can adequately review the system design, and for future reference to determine if the system conforms to the requirements to applicable rules. It is important that the observation take place under adequate light and moisture conditions to correctly determine the hue, chroma and value of the soil. This is the criteria used to determine if saturated soil conditions exist. It is extremely difficult to determine soil colors without adequate light.

Subitem (1). The agency proposes to require that each soil horizon be measured from the ground surface. Soil horizons are distinguishable by changes in soil texture, soil color, mottling, bedrock or other characteristics which may affect water percolation or treatment of effluent. Therefore, it is important to measure these horizons from the same reference point to determine depth and capabilities of each horizon.

Subitem (2). The agency proposes to require that the soil matrix and mottled color be described per horizon by the Munsell color notation. It is reasonable to use the Munsell color notation as a reference because it is the generally accepted technical standard which is used exclusively for describing soil color by the United States Department of Agriculture (USDA) Soil Survey Program and other trained soil scientists. The Munsell color notation provides color chips with varying shades of soil colors that can be compared to actual soil samples. Due to the many shades of major hues, the determination of soil colors is impossible without the use of the standard color chips. In addition, individual biases exist on what constitutes brown, gray or olive colors. Adding the color notation will make descriptions more consistent and reliable. The use of this notation is already taught to site evaluators at the on-site workshops provided by University of Minnesota and the agency. (SEE EXHIBIT #11.)

Subitem (3). The Agency proposes that the soil texture be described using the United States Department of Agriculture soil classification system as modified below:

Minnesota		USDA
Clay	=	Clay, sand clay, silty clay
Clay loam	=	Clay loam, sandy clay loam, silty clay loam
Loam	=	Loam
Sandy loam	=	Sandy loam

Minnesota		USDA
Silt loam	=	Silt loam, silt
Loamy sand	=	Loamy sand
Coarse sand	=	Coarse sand
(Medium) sand	=	(Medium) sand
Fine sand	=	Fine and very fine sand;

This provision is reasonable because the U.S. Department of Agriculture's classification was developed to relate to the water movement and attenuation capabilities of soils. The distinction between some of the USDA classification types of fifteen textures is overly refined when applying it to designing ISTS. This proposed system has been used for many years at the sewage treatment workshops and has served its purpose adequately.

Subitem (4). The agency proposes to have the determination of bedrock made as per pt. 7080.0020, subp. 6. which is the revised definition of the term bedrock.

Subitem (5). The agency proposes to require that the depth of standing water in the hole as measured from the soil surface be recorded if this measurement is observed. This is reasonable because it indicates the water table level at the time of observation. This measurement can be compared to the estimated height of the seasonally saturated soil as determined by soil color/mottles. The purpose of this comparison is to provide a simple check on the accuracy of the estimated height of the saturated soil.

Subitem (6). The agency proposes to require that any other soil characteristic be described and classified in accordance with Chapter 3 of the Soil Survey Manual, Agricultural Handbook No. 18, USDA, 1993. (SEE EXHIBIT #3.)

It is reasonable to include this proposed requirement because other soil features may exist (i.e. hardpans, plowpans, lithologic discontinuity, abrupt textural changes etc.). The other criteria is based on the Soil Survey Manual, Chapter 4 and therefore, it is consistent that other criteria should be described by standard methods so it may be understood by those reviewing the work.

Item E. Percolation test procedures. This item is current subp. 4. This proposed change restructures subp. 4, minor grammatical and renumbering changes are proposed in current A, B and C.

Subitem (6). Percolation rate measurement. This provision is current subp. 4 D. The agency proposes that the drop in water level in sandy soils be measured in inches to the nearest one-sixteenth of an inch which is a change from the existing requirement that the drop be measured to the nearest one-eighth of an inch. The proposed change requiring more precision in the measurement is reasonable because it will likely decrease the

number of readings necessary. In addition, increased precision will more adequately predict the soils which could experience surface ponding or accelerated percolation rates. Either one of these conditions may disqualify a proposed drainfield site due to unsuitable soil capabilities.

The agency proposes that time requirement for measuring the drop in water level be changed from 30 minutes to 20 minutes. This change is reasonable because 20 minutes is a sufficient time period between readings to gain an adequate reading. For example, for a soil with a percolation rate of 100 minutes per inch (this would be considered a slow percolation rate) the drop in water level would be approximately 3/16 of an inch in 20 minutes which can be easily measured.

The agency proposes that if the water in the percolation hole seeps away before the reading is taken, faster readings must be taken for sandy soils but, in no case shall the water depth exceed 8 inches in the hole. This new language is reasonable because the purpose of the percolation test is to mimic an operating soil treatment system. If too much head is placed over the percolation hole bottom, the tests would observe faster rates which would not be reflective of percolation in an operating system.

Subitem (7). Calculating the percolation rate. The proposed subitem (7) is currently subp. 4 item E. This subitem is proposed to be revised to clarify that the time interval for measuring the drop in water level must be divided in minutes and expressed in inches. This revision is reasonable because Tables V and VI which are used to design systems, expresses the percolation rate in minutes per inch.

The agency is proposing language to clarify that three consecutive percolation rates, which are within the 10% of each other, shall be averaged for design purposes. This modification is reasonable because the current language allows the averaging of all percolation rates taken. The danger with this method is that initial readings can greatly fluctuate from the final readings. Therefore, averaging only readings that have stabilized within 10 percent is proposed. The averaging of only the stabilized readings has been taught at the training workshops on these systems for many years and is accepted by the industry.

New language is being proposed to require that the slowest average percolation rate for all holes shall be used for design. This new proposed language is reasonable because it takes the most conservative approach to sizing which would afford the greatest degree of reliability. For example, if three percolation tests were conducted indicating average percolation rates of 17 minutes per inch, averaging these rates would result in a percolation rate of 17 minutes per inch with a soil sizing factor of 1.67 feet square per gallons per day. However, this method assumes an equal distribution of soils over the site. Due to the variability of soils over a short distance in Minnesota, it is prudent to size the system on the most limiting soil.

Item F. Reporting percolation rates. The Agency proposes to delete the existing language under item F. This is reasonable because expanded information regarding site reporting is proposed to be relocated to the new subp. 5a Site Evaluation Reporting.

The agency proposes new language that requires that the areas for the soil treatment system and absorption areas be protected from compaction and disturbance. This proposed language is reasonable because compaction will have a negative effect on the percolation capability of the ISTS thereby, reducing the ability of the system to transport effluent as indicated by soil borings and verified by the percolation test. Disturbance of the soil results in destruction of the soil structure. The soil structure provides the necessary porosity so water can be transported throughout the soils. If this porosity is destroyed, the system would not be able to adequately transmit the wastewater. This change is in concert with the new provision in 7080.0170 subp. 2 item D (1) and 7080.0170 subp. 5 A (1) which requires that standard systems must be located on original soils.

Subpart 5a. Site evaluation reporting. The agency proposes that the information gathered during the site evaluation be recorded in the site evaluation report to assist in documenting the factors that went into the decision to construct the system at a particular location. It is reasonable to include this data because this information can be reviewed in the future if problems arise with the system or to determine if the system is in compliance.

Item A. The agency proposes that the information gathered as a result of performing the activities required in subp. 2a Preliminary evaluation, items A through J and subp. 4 Field evaluation items B through E be included in the written Site Evaluation report. Requiring this information is reasonable because this information is needed by the designer in order to properly locate and design the system as well as provides documentation for review and approval by the permitting authority.

Item B. The agency proposes that the dates of the preliminary and field evaluations be provided. This is reasonable because the dates when certain activities took place will help to present a chronology of activities during the planning of an ISTS. This provision will also aid in determining if the site has been altered in the past or if the evaluation was subject to climatic related problems such as the possibility of frost during percolation tests.

Item C.

Subitem (1). The agency proposes to require that a map drawn to scale or dimension including a north arrow be provided in the site evaluation report. Requiring the provision of a site map is reasonable because a map provides a visual description of the reference points of soil observations, percolation tests and distance to all setbacks, lot improvements, easement, ordinary high water mark of public waters, property lines, direction and

percent slope. This visual description clearly identifies the factors to be used in design, thereby reducing the possibility of error. Scale or dimensions are required because it will provide the only method of measuring distances on the site.

Subitem (2). The agency proposes that the written report identify the location of unsuitable, disturbed/compacted areas. This information is necessary because disturbed/compacted areas are not suitable for an ISTS and the report should clearly identify these areas so that a system is not erroneously located now or in the future in one of these areas.

Subitem (3). The agency proposes that access route for tank maintenance be located. This is reasonable because future maintenance is critical for long term performance of a system. Written documentation provides a quick reference to locate sewage tanks for maintenance and prevents time consuming and unnecessary probing to find the tank at a later date.

Item D. The agency proposes that the site evaluation report identify the estimated height of seasonally saturated layer, bedrock or flood elevation, if appropriate. This proposed requirement is reasonable because the depth of seasonally saturated layer, bedrock or flood elevation is critical to set the correct elevation for the system bottom to maintain the required three foot separation distance. In many instances the evaluator reports the soil information but, provides no judgment on the estimated height of the limiting soil layer. This judgment should be made by the site evaluator/designer.

Item E. The agency proposes that the elevation of the bottom of the soil treatment system be provided. It is reasonable to include this because the distance between the bottom of the system and the seasonally saturated layer as explained above is one of the determining factors to be considered in locating a proposed system. This is important because many other factors also need to be considered when determining system depth such as the percolation rate and treatment abilities of the different soil layers, the surface elevations, the distribution system and the relationship between the elevation of the building sewer and the ISTS.

Item F. The agency proposes that the final soil sizing factor be provided. The soil sizing factor is needed because some evaluators only provide the percolation test calculations. The site evaluator should make judgments on the final sizing because of their knowledge of the soil's vertical and spatial variability.

Item G. The agency proposes that the written report provide a description of anticipated construction related issues. This information is reasonable because it provides valuable information to the designer and contractor on problem soil conditions. If warranted, the designer can modify the design accordingly. It also provides valuable information to the contractor so that the appropriate construction equipment is used and the timing of the construction can be determined. Identifying construction related issues at this stage will result in fewer problems during and after construction of the system, resulting in reduced cost to the owner.

Item H. The agency proposes that the name, address, telephone number and signature of the site evaluator/designer be included in the report. This information is reasonable because this person may need to be contacted at a later time for information, answering questions or for performing maintenance activities.

Item I. The agency proposes that if a suitable additional area for a soil treatment system is available on lots created before the effective date of these rules, it must be identified in the site evaluation. The agency also proposes that a minimum of one additional suitable soil treatment area be identified on lots created after the effective date of this rule. This language is reasonable because the additional site can be set aside, protected and used later if the initial system experiences problems and needs to be abandoned. If an existing system fails and an additional site is not available, alternatives are limited, expensive or unproven. This proposed provision is reasonable because it is consistent with the additional language proposed in 7080.0060 subp. 3 which requires one additional soil treatment area. (SEE EXHIBITS #9 AND #10.)

PART 7080.0120 BUILDING SEWERS.

The agency proposes that the outdated reference to "Water Well Construction Code" be replaced by the updated reference to these rules which is "Rules Related to Wells and Borings." This revision is reasonable because it removes confusion regarding the appropriate reference to this rule.

Subpart 2. Water Meter. This subpart was moved to 7080.0125 Sewage Flow Determination for Dwellings and Other Establishments.

PART 7080.0125 SEWAGE FLOW DETERMINATION FOR DWELLINGS AND OTHER ESTABLISHMENTS.

Part 7080.0125 is a combination of new and existing language relocated from other areas of this chapter. This new part is proposed to consolidate the methods of determining sewage flow into one part.

The agency proposes that the terms "minimum daily sewage", "estimated daily sewage flow", "sewage flow" and other terms relating to flow be replaced by the term "design flow". The term "design flow" will be used consistently throughout the rule as the flow to be used for sizing ISTS's for any type of dwelling, group of dwellings or other establishments. The method for determining flow from dwellings has not changed, however the method for calculating flow from other establishments has changed. This change is described in this part. The replacement of terms is found throughout the rule. The current rule uses a myriad of flow terms. The change is reasonable because one consistent term to describe flow would be used which will be less confusing to the user.

Subpart 1. System sizing. This new subpart was relocated from current 7080.0090 System sizing. A grammatical change is proposed which does not affect the meaning or intent of the rule.

Subpart 2. Dwellings.

Item A. The second and third sentences were moved from 7080.0170 subp. 2 item A. This subpart is proposed to be revised to reflect the change in flow terminology.

Table I. This Table and Classifications I, II, III, and IV were moved from 7080.0170 subp. 2A (2) and is proposed to be revised to reflect the change in flow terminology. A grammatical change is also proposed in the column "Number of Bedrooms" for clarity which does not affect the meaning or intent of the rule.

Classification I. This section was moved from Minn. Rules pt. 7080.0170, subp. 2A (2) and is proposed to be revised to reflect the change in flow terminology. Grammatical changes are proposed for clarity which will not affect the meaning or intent of the rule. The present rule requires that installed water using devices be included in the design. The present rule identifies these water using devices as being an automatic washer, dishwasher, water conditioning unit, whirlpool bath, garbage disposal or self-cleaning humidifier in the furnace and be factored into the design of the initial system. The agency proposes that flows from "anticipated" water using devices also be included in the design of the initial system.

It is reasonable to require that the flow from anticipated water using devices be included in the initial system sizing because of the increased water use by these devices. Systems such as mounds or at-grade systems cannot be easily increased in size, so major increases in water use would hydraulically overload existing systems, or it would be very costly to increase the capacity. If the anticipated water using devices are not installed, the increased capacity would be beneficial and result in increased longevity of the system.

In addition, the agency proposes that whirlpool baths be included in the list of water using devices. It is reasonable to add whirlpool baths to the list of high water using devices. When added to dwellings, this device can increase the flow above what is normally expected or may have been factored into the initial design of the system.

Classification II. This section was moved from Minn. Rules pt. 7080.0170, subp. 2A (2) and is proposed to be revised to reflect the change in flow terminology. A grammatical change is proposed for clarity which does not affect the meaning or intent of the rule.

Classification III. This section was moved from Minn. Rules pt. 7080.0170, subp. 2A (2) and is proposed to be revised to reflect the change in flow terminology. A grammatical change is proposed for clarity which does not affect the meaning or intent of the rule.

Subpart 3. Other establishments. The agency proposes that for "other establishments", the term "average design flow" be used to size the soil treatment system. It is also proposed that the term "maximum design flow" be used to size sewage tanks. The agency proposes that design flows be calculated using estimated or measured values for other establishments according to item A and B. It is reasonable to use average design flow to

size the soil treatment system because liquid holding capacity is available in soil treatment systems to handle fluctuations in flows during peak periods. It is reasonable to use maximum design flow to size the sewage tanks because sewage tanks must be designed on peak flows due to their static liquid capacity.

Item A. This item is currently subp. 34 of 7080.0020 which generally discusses estimated average and maximum design flows. The agency is proposing that estimated flows be based on the best available data provided by the agency.

This method is reasonable because the agency has documentation in which to base an estimated flow. If no basis is provided, systems could be undersized which could result in failure or oversized which would result in unnecessary costs.

Item B. Measured Average and Maximum Design Flows. The agency is proposing this item because flow values for upgrading systems for existing establishments can be based on actual flow measurements.

Subitem (1). The agency proposes that the average design flow be determined by averaging the measured daily flows for the highest consecutive 7-day flow period during the year and multiplying the resultant number by 1.5. It is reasonable that this approach be taken for determining these flow figures because the drainfield needs to be sized to hydraulically perform at peak flow volumes. If sized on the basis of annual average daily flow, the system will be undersized during peak flows. The 1.5 factor is proposed to cover the peak single day flow, provide a safety factor and to provide suitable area to allow for resting of the system. It should be noted that all safety factors are in the flow amounts and not in the soil sizing factors.

Subitem (2). The agency proposes that the maximum design flow be determined by averaging the measured daily flows for the highest consecutive 7-day flow period during the year and multiplying the resultant number by 2.0. It is reasonable that the maximum design flow be determined by using this approach because sewage tank performance is very sensitive to spikes in flow. Large increases in flow agitates and suspends the settled soils in the tank bottom which results in their passage into the soil treatment system which in turn, results in excessive clogging and premature failure.

Subpart 4. Seasonal use; other establishments. Language in this subpart is based on language moved from 7080.0210 Appendix A subp. 4 item C.

The agency proposes that the average design flow be used to size soil treatment systems. It is also proposed that maximum design flow be used to size sewage tanks. The agency proposes that design flows be calculated using either estimated or measured values according to item A and item B of this subpart. It is reasonable to arrive at flows by these methods because they are the only two means available to determine flows.

Item A. Estimated average and maximum design flows. The agency proposes that the best available data as provided by the agency be used to estimate the average and maximum design flows. See discussion under subp. 3 A of this Part for rational.

Item B. Measured average and maximum design flows.

Subitem (1). The agency proposes that the average design flow be determined by averaging the measured daily flows for the highest consecutive 7-day flow period during the year.

Determining the average design flow in this manner is reasonable because seasonal establishments have extreme fluctuations in flow amounts. Therefore, the drainfield needs to be sized on a peak value to insure hydraulic performance. A 1.5 safety factor is not proposed because drainfields serving seasonal establishments are rested during other seasons of the year.

Subitem (2). The agency proposes that calculating the maximum design flow from a measured flow be determined by averaging the measured daily flows for the highest consecutive 7-day flow period during the year and multiplying the resultant number by 2.0. See comment for 7080.0125 subp. 3 B (2).

Subpart 5. Water meter. The agency proposes to revise this subpart which was relocated from 7080.0120 subp. 2. The proposed revisions would allow other methods of measuring flow besides an electrical event counter as presently required by this chapter. This is reasonable because other methods are available which can accurately measure the flow. The agency does not wish to limit the use of other acceptable measuring devices.

PART 7080.0130 SEWAGE TANKS.

Subpart 1. In general.

Item F. The term "integrally cast bottom" makes this item confusing because it is not a commonly used construction term for constructed tanks that are poured-in-place. The agency proposes to reword the item to make the standard easier to understand. The proposed clarification does not change the meaning or intent of the paragraph.

Item G. This item requires a tank to be protected against flotation under high water conditions. This proposal does not change the meaning or intent of the item. This requirement is proposed to be moved from pt. 7080.0210 subp. 6 item D (first sentence).

Item H. The agency proposes that a written and graphic warning label be permanently displayed on manhole covers of sewage tanks warning of the hazardous conditions inside the tank.

It is reasonable to provide a warning label for maintenance personnel because sewage tanks contain toxic gasses which are life threatening. Some of these gasses are heavier than air and are not easily evacuated from an open manhole. Agency staff met with several septic tank

manufacturers to discuss changes to the rule. The manufactures recommended the addition of this language. The warning labels would be provided by the manufacturers. Requiring warning labels is consistent with standard safety practices for sewage treatment facilities.

Subpart 2. Design of septic tanks.

Item C. The agency is proposing to delete the current language which requires that the inlet and outlet connections of the tank shall be submerged by means of baffles because it is confusing. The agency proposes to replace this current language with new language proposing that baffles be installed at each inlet and outlet of the tank and each compartment. Deleting the current language is reasonable for two reasons. First, the existing language can be misinterpreted as a requirement to have the inlet and outlet pipes submerged in liquid when the intent should be that the baffles be submerged. Baffles must be submerged to adequately prevent scum and solids from plugging the inlet pipe and causing sewage backups in the home and plugging the outlet pipe, causing premature failure of the soil treatment system. Second, baffles are necessary at each inlet and outlet. Compartmented tanks need baffles at every inlet and outlet, as if each compartment were a single tank. The existing rule is not clear on this requirement, although it has been clearly described in the training workshops and corresponding training manual.

Item E. The agency proposes language that clearly states that materials used for inlet and outlet baffles are not to be subject to corrosion or decay. New language is also proposed that requires inlet baffles be conducive to the movement of solids.

It is reasonable to include this language to insure that these materials will be made to last long periods of time. Baffles and sewage tank sizing are the two major factors impacting the effectiveness of the sewage tank to protect the soil treatment system from receiving excess solids and protecting the homeowners from sewage backups. Sewage is highly corrosive and can destroy the integrity of a baffle, if the baffle is not specifically designed to withstand sewage tank conditions. Corrosion and decay-resistant baffles have been the industry standard and taught in the workshops for several rears. The rule, however was not clear. Baffles come in many shapes and forms: half-circle arches, straight 1/2-walls, tees, etc. Experience has shown that ninety degree tees should not be used as a baffle because larger solid particles get caught on the abrupt bend and plug the line. Also, the 90 degree bend is difficult to "rod" or "snake" and the baffle is often broken in the process. Sanitary tees can be used in lieu of the 90 degree tee because they have a smooth and gradual curve from the inlet or outlet pipe into the tank. Sanitary tees are readily available and are comparably priced. The rule allows additional technological advancements by stating only that the baffle must be conducive to the movement of solids rather than requiring a sanitary tee. This requirement has been taught in the on-site workshop for several years.

Item H. The agency proposes that gas deflecting baffles be installed on the outlet of the final tank of other establishments. It is reasonable to include this provision because of the increased need to trap the escaping solids due to higher strength waste and large flows from other establishments. Any method to retain additional solids in the sewage tank, rather than allowing them to go to the soil treatment system will extend the life of a system. Other establishments typically have excess solids (restaurants, laundries, slaughterhouses, etc. all fall into the "other establishment" category). Gas deflecting baffles are an extremely inexpensive way to retain additional solids. They can be as simple as a 45/30 degree V attached to the side of the tank beneath the outlet baffle.

Items I, K and M, subitem (2). The agency proposes the word "devices" be replaced by the word "baffle." The revision consists of replacing an obsolete term with a standard term. This proposal does not change the meaning or intent of the rule.

Item I. The agency proposes to delete current item I which provides the requirement for the inlet baffle's highest point be at least one-inch from the top of the tank. As replacement language, the agency proposes that the top of the inlet baffle may extend through the top of the tank or manhole cover. The agency also proposes that the cap must be easily accessible. When odor problems occur in a system, it is best to force the gasses into the soil treatment system rather than rely on the roof vent to handle excessive odors. It is required that baffles be accessible for viewing and maintenance. Consequently, contractors have typically installed baffles so they come through the top of the tank and capped. The reason for the extension is so cleanout activities can still take place in the event of blockage. If venting is needed for the system, it can be provided by other design methods. Venting is required for dosing chambers. It is reasonable to eliminate the one-inch requirement for inlet baffles so that odors can be better managed.

Item J. The agency proposes that the minimum vertical drop between the inlet and outlet invert be changed from not less than 3 inches to at least 2 inches in a single compartment tank. The proposed change of a 2 inch drop in a single compartment tank is reasonable because it is consistent with the American Society of Testing Materials (ASTM) standard for septic tanks. (SEE EXHIBIT #4.)

Item M. Requirements for access to the septic tank.

Subitem (2). Minor grammatical changes are proposed for clarity and consistency with other rule changes.

In addition, it is proposed that inspection pipes be secured. Securing inspection pipes is reasonable because the inspection pipe should remain in place when removing the inspection cap. These pipes are often not secure and may be pulled completely out of the tank during cap removal. If the pipe is pulled out, the surrounding soil and vegetation can fall into the tank and possibly be carried to the drainfield. Once removed, it is

difficult to place the inspection pipe back in its original state because sloughing of the surrounding soil gets in the way. Gaps between the tank and inspection pipe allow rainwater to penetrate and enter the tank which would reduce the needed hydraulic capacity of the tanks. Tanks hydraulically underdesigned cannot withhold solids from the soil treatment system. Also, if the inspections pipe are not secured, children or vandals can easily remove the pipe and drop miscellaneous items into the sewage tank. Caps are not as easily removed. Securing the inspection pipe requires a minor change in construction practice and should not affect the final cost of a system.

Item N. Compartmentation of single tanks.

Subitems (1) and (2). Grammatical changes are being proposed in these subitems for clarification which do not change the meaning or intent of the rule. It is proposed to remove the word fabricated as a single unit from the existing rule language because it can be easily misinterpreted. The intent of this language is to subdivide large tanks. Any tank with a total capacity of 3,000 gallons is, and has been the cutoff point. "Fabricated as a single unit" can be misinterpreted to mean only precast tanks when the intent is for any tank over 3,000 gallons to be subdivided. Division of larger tanks is necessary for additional solids settling and cooling.

Subitem (4). A minor grammatical change is proposed which does not change the meaning or intent of the rule. The agency also proposes that in compartmented tanks, a minimum 2-inch drop shall occur between the inlet and outlet of each compartment. The 2 inch drop requirement in compartmented tanks is to ensure the same settlement process as individual tanks.

Item G. Item G is proposed to be deleted as a reference because this item specifies the characteristics of an inlet baffle. However, the references to item H will remain because it specifies that all baffles between compartments be designed the same as outlet baffles.

Subitem (6). Grammatical changes are being proposed in this part for clarification. It is proposed that the term "between zero to" be added to clarify that the tank compartment cover can be between zero to 12 inches and not limited strictly to 12 inches. The new words "between zero and" are also being proposed to illustrate that the manhole does not need to be placed at six inches but, could be between zero and six inches. In addition, "finished grade" is proposed to replace the word "earth" for clarification purposes. The term "earth" has no standard defining elevation from which to measure from. The term "finished grade" is typically used in construction and is the ultimate measure to determine the depth of the manhole cover. These revisions consist of language clarifications and do not change the meaning or intent of the item.

Item O. Multiple tanks.

Subitem (2). This subitem is proposed to be deleted because it is redundant with 7080.0130 subp. 1.

Subitem (3). This subitem is proposed for revision by adding "equal to or larger" and striking "no smaller" pertaining to the size of the first tank in a series of tanks. The revision consists of language clarification and does not change the meaning or intent of the item.

Item P. Outlet pipe from septic tank.

Subitem (4). This subitem is proposed to be changed by adding "at least" to clarify that compaction needs to be at least to the original soil density. The revision consists of language clarification and slightly changes the meaning or intent of the item. The existing language infers that only densities exactly the same as the original density are acceptable. Density is achieved by compacting the soil at a certain moisture content. Typically, an acceptable range is specified that will be able to bear the weight of a tank, prevent sloughing around pipes, etc. For example, densities are often specified as 95 percent of a particular soils' standard proctor density. This rule does not specify in detail what the allowable density must be because that would require a soil testing firm to verify densities in the field. The rule does indicate at least the original density which means the area must be systematically returned to its original form or better. Being more dense provides greater assurance that pipe stability will be maintained.

Subpart 3. Liquid capacity of septic tanks. This subpart is proposed to be revised by modifying the term "capacity" by preceding this term with the term "liquid". Adding the term "liquid" is consistent with changes in pt. 7080.0020 subp. 22b Liquid capacity and does not change the meaning or intent of the rule.

This language is currently the second sentence of subp. 2 item A of this part. One grammatical change is proposed which changes "six and one half feet" to "78 inches". This change converts the same distance from feet to inches for precision and consistency.

Item A. Dwellings. This item is currently item A. The agency proposes to clarify that existing and anticipated number of bedrooms be used in the calculation for the sizing of tanks. This provision is reasonable because the number of bedrooms is the basis for sizing the tank. Therefore, any portion of a dwelling that is an existing or anticipated bedroom should be included in the initial design. This is prudent because it is difficult to increase tank capacity in the future. This is a clarification of an existing requirement.

"TABLE II" is the proposed heading to the table specifying liquid capacities of septic tanks in relation to the number of bedrooms. The present rule does not provide any heading for this area. Table I is

found under pt. 7080.0125 subp. 2 Dwellings. Numbering the tables will provide easier reference when staff answers questions. The word "Septic" is proposed to be placed in front of "Tank Liquid Capacities (gallons)" to clarify that the design capacities are for septic tanks and not other sewage tanks.

Item B. Other establishments. This item is proposed for revision by striking the term "sewage" and the term "daily sewage" and replacing these terms with "maximum design." This revision will clarify that maximum design flow as determined by 7080.0125, is the correct flow to use in sizing septic tanks. The word change is consistent with the standard use of the term "maximum sewage flow" when referring to sizing of septic tanks.

Item C. Garbage disposals. It is proposed to determine the size of septic tanks on the anticipated use of a garbage disposal unit for a residence or other establishment. The anticipated garbage disposal requirement for residences or other establishments is reasonable because it may be difficult or impossible to increase septic tank capacity when a garbage disposal is installed in the future. The agency proposes that restaurants not be subject to increased tank capacity if a garbage disposal is used. The exemption to increasing tank sizing for restaurants with garbage disposals is reasonable because septic tank capacity for restaurants is already doubled due to the increased retention time required for cooling restaurant wastes. This additional capacity for cooling will provide the necessary solids storage from a garbage disposal unit.

Item D. Pumping of raw sewage. The agency proposes that if waste containing toilet waste is pumped under pressure to a septic tank that either subitems (1) or (2) must be used. Subitems (1) and (2) are a combination of current and new language. The specification that a minimal amount can be pumped into a single compartment tank has been deleted.

Subitem (1). This subitem provides new language to allow the use of a compartmented tank.

These revisions are reasonable because pumping of toilet waste directly to the septic tank results in solids being suspended in fast moving water during the pump cycle. This results in the solids not settling during this turbulent time. The solids would then be discharged to the drainfield where they would cause excessive clogging of the drainfield. New language provides a second option to minimize the disturbance of solids in the tank. The original method of limiting the pump out volume will remain. An additional option is to provide extra tank capacity to dissipate the energy of the discharge. This additional option will provide more flexibility to the designer of the system.

The subitem also specifies that the total tank capacity as determined in Table II be increased by 50 percent. This provision is reasonable because extra capacity is needed to provide an adequate quiescent zone in the second tank or compartment for

settling to occur. The item in its entirety should be used to adequately assure proper settling of solids by proper sizing of the tank, specifying pump cycle capacity and requiring compartments or series tanks.

Subitem (2). New language is proposed to allow the use of a compartmented tank as in subitem (1). See justification in subitem (1).

Item E. Garbage disposal and pumping of raw sewage. The agency proposes that the liquid capacity of septic tanks be twice the amount as specified in items A or B and be at least two tanks in series or a compartmented tank. This addition is reasonable because if both pumping of raw sewage and garbage disposal are combined, extra capacity and separate tanks of compartments are needed to provide extra solids retention plus providing a quiescent zone for settling.

Subpart 4. Location of sewage tanks. It is proposed that the term "septic" in this heading be struck and replaced by the term "sewage" which includes septic and aerobic tanks. Also, it is proposed that the word "easily" be added in reference to the degree of accessibility for the removal of liquids and accumulated solids. These terms are intended to promote consistency in word usage and to indicate that tank placement should not result in complications when removing the contents of the tank during maintenance.

The phrase "as an alternative system" is proposed to be added to define that sewage tanks may be installed as an alternative system in areas where the ten-year flood information is available from or approved by the DNR. The proposed language defines that sewage tanks may be installed as an alternative system in accordance with all provisions of pt. 7080.0210, subp. 3, item D.

All of 7080.0130 subp. 5 Maintenance of Septic Tanks, items A, B and C were moved to 7080.0175 Maintenance items A, B and C as a part of restructuring of the rule.

Subpart 6. Aerobic tanks.

Items B through H. These items are proposed to be deleted. The current language of item B requires that raw sewage be intercepted by a trash trap prior to entering the aeration compartment, the trash trap have a net holding capacity of not less than 20 percent of average daily flow, the invert level of the trap be above the liquid level and discharge directly to the trap and that the aeration compartment be baffled or equipped with a tee or long ell.

Item C. This item currently requires that the trash trap be accessible for inspection and effective cleaning and be constructed to prevent unauthorized entry.

Item D. This item currently requires that the aeration compartment have a minimum holding capacity of 500 gallons or 120 gallons per bedroom, whichever is greater.

Item E. This item currently requires that the method of aeration be accomplished by mechanical aeration, diffused air, or both and that the method used maintain aerobic conditions at all times.

Item F. This item currently requires that the settling compartment have a minimum net holding capacity equal to 20 percent of the volume of the aeration compartment, the design provide for effective settling and continuous return of settled sludge to the aeration compartment.

Items B through G. These items are being deleted to make the aerobic tank specification performance based. The National Sanitation Foundation (NSF) has a standardized testing and approval process for aerobic tank systems. Systems which meet NSF 40 Specifications require specific effluent quality. The sizing and method of aeration currently in the rule restrict the advancement of new technology in aeration. The ultimate goal is treatment of sewage. By specifying effluent quality, methods do not need to be specified. (SEE EXHIBIT #5.)

Proposed Items.

Item B. Current item H is proposed to be revised and become item B. The existing language is proposed to be revised by making grammatical changes which do not change the meaning or intent of the rule. The agency proposes to require that effluent quality shall meet or exceed National Sanitation Foundation Class II standards. Requiring this additional provision is reasonable because a standardized testing and approval process exists. NSF 40 performance criteria for Class II aerobic tanks requires maximum effluent biochemical oxygen demand concentrations of 60 milligrams per liter (mg/l) and maximum effluent suspended solids concentrations of 100 mg/l. These maximum values must not be exceeded more than ten percent of the time. Standardized performance criteria is much preferred to specifying sizing or method. Since standardized criteria exists for aerobic tanks, it is reasonable to use it. Selecting Class II (less restrictive than Class I) is reasonable because a reduced size soil treatment system is not allowed and septic tank effluent also approaches Class II standards.

Item C. Item C is currently item A of 7080.0210 Appendix A subp. 4 A. This item has been moved from reduced area systems of Minn. Rules pt. 7080.0210, subp. 4 section to subp. 6 Aerobic tanks to consolidate related areas of the rule. Minor grammatical changes are proposed which do not change the meaning or intent of the rule. Existing language in this item specifies that no additional reduction in soil treatment or absorption area shall be allowed with the use of an aerobic tank.

Item D. The agency proposes that a maintenance service contract acceptable to the permitting authority be maintained at all times. Aerobic tanks require electricity and routine maintenance to continue functioning. NSF 40 recognizes the need for maintenance by requiring a two year initial service policy furnished to the purchaser by the manufacturer or the distributor and requires the option for a continued service contract. The agency expanded upon the maintenance requirement to require the continued service contract for all systems.

This new language is reasonable because without proper maintenance premature failure of the soil treatment system will occur.

PART 7080.0150 DISTRIBUTION OF EFFLUENT.

Subpart. 1. General. The agency proposes that supply pipes must be protected from freezing where the pipe passes under driveways, sidewalks, roadways or other areas where pipes are laid in a frost penetration zone. In Minnesota, frost penetration zones can extend six feet or more depending on soil type, soil saturation, traffic, soil protection, etc. It is consistent with standard engineering practice to protect pipes beneath roadways, sidewalks and driveways. Costs are typically labor related and range greatly because it depends on the length of pipe that needs protection. Most driveway and roadway widths are a short span which would not significantly impact the total cost of the system. Also, there are insulated pipe products on the market now which cost approximately $4.00 to $5.00 per foot. This subpart is a new requirement and all existing subparts are proposed to be renumbered accordingly. This new language is reasonable because freezing may cause damage to the pipes and cause sewage back-ups into the dwelling.

Subpart 2. Gravity distribution.

Item A. Requirement for using drop boxes or valve boxes for effluent distribution.

Subitems (2) and (3). Minor changes in language is being proposed to clarify the meaning of the construction standards and do not affect the meaning or intent of the rule. The use of "trench" under subitems (2) and (3) could cause the rise in the installed inlet and outlet pipes to be miscalculated. Replacing "trench" with "drop box" clarifies that a drop box is required and provides a more detailed description of the distance in the installation standard. Invert has been replaced by crown in subitem (3) to correct a previous error in the rule. The separation should be measured from invert of the outlet pipe to a drop box to the crown of the outlet pipe to a trench which corresponds directly to the two inch rock cover required over the distribution pipe in the trench.

Subitem (5). This subitem currently establishes construction standards for a removable drop box cover either flush or above grade or covered by no more that six inches of soil. Requiring a removable cover is too restrictive when the intent is merely access. The agency proposes to modify the language to clearly state that the intent is for access, whether the method be removable covers, inspection pipes, or some other method. In addition, the agency proposes that if the top of the box is deeper than six inches, access must be provided above, at, or within six inches of finished grade which is consistent with the access requirements for sewage tanks. It is reasonable that access to the drop box be provided for system inspection if hydraulic problems occur. The current requirement of a maximum soil cover

of six inches cannot be routinely met in most construction instances. Drop boxes are installed to allow the gravity flow of sewage. This requires each subsequent drop box to be at a lower elevation. On minimally sloping ground, the drop boxes must be installed at deeper elevations and the final drop box may need to be deeper than that allowed in the rule with the maximum six inches of soil cover. The depth of the drop box matters only in two ways. First, for access. The proposed rule change clearly requires access. Second, shallow trenches treat sewage more effectively because oxygen is more accessible by being closer to the ground surface. Deep drop boxes infer deep trenches. This concern is addressed in 7080.0170 subp. 2a D (1) which requires the maximum depth of a soil treatment system to be 48 inches from final grade.

Subitem (6). The agency proposes that the drop box be placed on firm and settled soil. This provision is reasonable because firm and settled soil is necessary so the drop box will not shift, settle or tip which could cause cracking or crushing of distribution pipes. Seepage of untreated or partially treated effluent would result which could negatively impact ground water.

Item B. The first paragraph of this item is proposed for minor revision by deleting the reference to subitem (4) and replacing it with subitem (5) to reflect the addition of a subitem under this item.

Subitem (3). It is proposed that the phrase "flow line" be deleted and replaced by "pipe" since it is a more commonly used term and should improve the readability of the proposed rule.

Subitem (4). The existing language under subitem (4) is proposed to be revised by providing more specific language in this subitem. The agency proposes that valve boxes be covered by a minimum of six inches of soil. These changes parallel the changes proposed under item A subitem (5). See item A subitem (5) for the discussion of need and reasonableness.

Subitem (5). The agency is proposing that the valve box be placed on firm and settled soil. This requirement parallels the requirement under item A subitem (6). See item A subitem (6) for the discussion of need and reasonableness.

Item C. Distribution box standards.

Subitem (1). The requirement of distribution boxes having "a removable cover or a clean-out pipe extending to finished grade" is proposed to be deleted because the topic of access will be included under proposed language in item C subitem (2).

Subitem (2). Subitem (1) currently requires a distribution box to have an access through either a removable cover or a clean-out pipe extended to finished grade. The agency proposes to move this requirement from subitem (1) to a new subitem (2) and use the same wording that is proposed under items A subitem (5) and B subitem

(4) as the requirement to have access to drop boxes and valve boxes. It is reasonable that the same requirement is used for all three types of boxes for consistency and because they all facilitate flow in a treatment system and may require inspection or maintenance.

This language also proposes that the distribution box be covered by a minimum of six inches of soil. See item A subitem (5) for the discussion of need and reasonableness. The existing subitems will be renumbered to reflect the addition of this subitem.

Subitem (3). This subitem is proposed to be renumbered from (2) to (3) because of the addition of a new subitem (2). The phrase "set and maintained" has been added to subitem (3). Distribution boxes function as follows: Sewage tank effluent enters the box and is equally divided by flowing out of a number of distribution pipes (usually 3). The distribution pipes must be at equal elevation for a distribution box to function as designed. If one distribution pipe is at a lower elevation, the sewage tank effluent will seek the lowest point and subsequently overload that trench. Requiring the invert elevations to be set during installation will ensure equal division of flow. If freeze/thaw conditions occur or settling of soil beneath the box occurs, the distribution pipes can come out of alignment. Requiring invert elevations to be maintained ensures equal division of flow over the life of the system. Adding the firm and settled soil requirement of previous subitems will also help to ensure equal division of flow. Maintenance of elevations requires minimal time and can be done during routine maintenance of the system, typically a three year cycle.

Subitem (5). This subitem is proposed to be renumbered from subitem (4) to (5) to reflect the addition of new subitem (2). The agency is proposing that distribution boxes must not be connected to one another if each box has distribution pipes. A series of trenches served by a distribution box must be the same length. This new language is reasonable because distribution boxes do not provide equal distribution and cause trench overloading. Therefore, connecting distribution boxes to one another will amplify this problem. The theory of distribution by a distribution box assumes equal flow to each portion served. Therefore, a requirement is necessary that each portion of the trench be the same size.

Subitem (6). The term "flow line" is proposed to be changed to "pipe". See item B subitem (3) for a discussion of need and reasonableness.

Item D. Distribution pipes.

Subitem (1). The agency proposes to move the last sentence of subitem (2) which specifies the load bearing capacity of distribution pipes into this subitem. This proposed change is for clarity purposes and does not change the meaning or intent of the rule.

Subitem (2). Minor grammatical changes are proposed for clarity and do not change the meaning or intent of the rule. "Perforated pipe" is proposed to be changed to "distribution pipes." "Distribution pipes" is a term used throughout the chapter and is defined under pt. 7080.0020 subp. 13. The term "sewage distribution pipes" is proposed to be changed to "gravity distribution pipes" because "gravity" provides a more specific description of the type of hydraulic system being identified in the subitem more than "sewage".

Subitem (4). For clarification purposes, it is proposed to revise references to bed(s) to "seepage bed(s)." This does not change the meaning or intent of the rules, but does provide a consistent term to be used throughout the rule.

Subitem (5). The agency proposes that this subitem be deleted because of the delineation between distribution pipes and distribution medium currently proposed. Distribution pipes are solely perforated pipes. Distribution medium is defined under pt. 7080.0020 subp. 12 C as a method to distribute sewage tank effluent. The medium can be drainfield rock, corrugated tubing encased in a geotextile wrap or a chambered system which are defined in 7080.0170, subp. 2a.

The agency also proposes to delete the requirement for acceptance of a chambered trench or bed or corrugated tubing only upon approval of the permitting authority. Both systems have been proven effective methods of sewage treatment and have been used in Minnesota and other states without significant documented problems.

Subpart 3. Pressure distribution. This subpart is currently subp. 2.

Item A. Required use of pressure distribution.

Subitem (2). The agency proposes to renumber the existing subitem (2) to subitem (3) add the phrase "all at-grade systems" under subitem (2) to and clearly state which systems must be pressurized. A definition for "at-grade system" is proposed under pt. 7080.0020, subp. 4a. This addition is reasonable because above ground systems such as mounds and at-grades, need to be pressurized so there is no over loading of effluent near the distribution manifold. When this occurs, surface seepage of sewage occurs at the downslope toe of the system.

Item D. The heading for Table I is proposed to be changed to Table III due to restructuring of the rule. No other changes to this Table are proposed.

Item E. The agency proposes that perforation holes be free of burrs. Burrs are raised areas found on the inside of pipes which may accumulate particles and eventually restrict the sewage flow in the pipe. This new language is reasonable because solids which have left the sewage tank(s) can cling to the burrs and cause plugging which limits the treatment capacity of the system.

Item F. Minor grammatical changes are proposed for clarity which do not change the meaning or intent of the rule. The agency proposes to clarify the parts of the system being used as points of measure for the placement of the lateral pipes.

PART 7080.0160 DOSING OF EFFLUENT.

Subpart 1. Dosing chamber. The agency is proposing to strike the sentence which states that dosing devices are not necessary in all situations. This statement is redundant to other portions of the rule. For example, mound systems require a dosing device and is so stated in 7080.0170, subp. 5, B, (11); at-grade systems require a dosing device as stated in 7080.0170, subp. 6, B, (3).

Item A. The agency is proposing that dosing chambers be vented and must be designed and constructed to withstand lateral pressures when the tank is empty. The tank must have adequate strength to overcome lateral pressures from either the surrounding soil on standing water from a compartmented tank used both as a septic tank and dosing chamber. Venting is necessary to purge the dosing chamber of dangerous and corrosive gasses. Gasses can be deadly for maintenance workers and can destroy electrical connections and limit the life of the chamber and related appurtenances because of its corrosive properties. It is reasonable to require venting for proper operation of the dosing device. The proposed requirements are consistent with standard engineering principles.

Item C. The agency proposes to delete the existing requirement for the minimum size of the effluent dose as being no less than 75 gallons. The agency proposes to change from a single dose size requirement to specific mechanical and design methods for ensuring continued water use in a system such as requiring two pumps. Removing this provision is reasonable because the minimum dose volume should be set by the flow and the size of the system as described in 7080.0160 subp. 3.

The language for a new item C was moved from 7080.0160 subp. 3 item G and revised. The agency proposes to revise this item to delete the 75 percent reserve capacity requirement, add the option for an alternating two pump system, and add the option for a total liquid capacity of 100 percent of the average design flow or 500 gallons, whichever is greater. Item G currently allows the option for a two pump system but, does not require that the two pump system consist of alternating pumps.

These changes are reasonable because all dosing chambers not just those providing pressure distribution and all should provide some method of continued water use in the treatment system in the event of pump failure. This method can be an alternating dual pump system or adequate storage capacity allowing time for pump replacement. The term alternating is used for the dual pump system to indicate that both pumps are installed in the pumping chamber and are functioning. Dual pumps does not mean one functioning pump and one in the maintenance garage on standby. Reserve storage capacity allows time for a failed pump to be replaced. The amount of reserve capacity has been reduced from 75 percent of the average daily flow. Conversations with on-site

professionals and inspectors indicated that the 75 percent reserve capacity was excessive. Five-hundred gallon tanks are most frequently used in the ISTS industry and that sized tank is readily available, whereas dosing chambers with 75 percent reserve capacity are often not readily available and must be constructed on the site. Prefabricated tanks are much preferred to better control strength and water tightness standards. Also, the current requirement was unclear because average daily flow was not defined.

This item also changes the term "daily average flow" with "average design flow" to be consistent with other changes in the rule.

Item D. The language for item D was moved from 7080.0160 subp. 2 item G. This item states that where the dosing device is a pump, an alarm device must be installed to warn of pump failure. Moving the alarm requirement to this item is proposed to consolidate related areas of the rule.

Item E. The agency proposes that pumps be elevated from the bottom of the dosing chamber to protect the pump from settled solids. The pump, pump controls and pump discharge line shall be installed so as to be accessible for servicing without entering the dosing chamber. This additional language is reasonable because maintenance of the tank components can be performed outside of the tank. Conducting repairs inside the tank is extremely hazardous due to the combination of toxic and explosive gasses, lack of oxygen, corrosion of ladders, sewage and electricity. This provision is reasonable for three reasons. First, because if pumps are surrounded by solids they can pick up those solids and pass them into the drainfield which will cause excess clogging of the system. Second, pumps are designed to handle specific solid diameters clumps of settled sludge often exceed the specified diameter and can clog and permanently damage the pump. Third, excess solids can act as an insulator and heat can build up around the pump forcing the pump to run hotter, thereby shortening the life of the pump.

Additional language is proposed to emphasize accessibility for servicing and maintenance.

Item F. The agency proposes that electrical installations comply with applicable laws and ordinances including the latest codes, rules and regulations of public authorities having jurisdiction and with rules and regulations of Chapter 1315 Department of Administration, Minnesota State Building Code, Electrical Code. This new language is reasonable because agency staff have observed many systems with improperly designed electrical supply. Improper electrical installations pose safety threats to those who come in contact with them and decrease the useful life of the system. For example, electrical installations inside a dosing chamber will cause corrosion of the wires.

Subpart 2. Dosing devices for gravity distribution.

Item A. A minor change is proposed where "soil treatment unit" is proposed to be revised to "soil treatment system." This revision does not change the meaning or intent of the rule.

Item G. The agency proposes to strike item G because the standard is proposed to be moved to subp. 1 item D where identical language is proposed. See subp. 1, item D for a discussion of need and reasonableness.

Subpart 3. Dosing devices for pressure distribution.

Item B. Minor grammatical changes are proposed for clarity which do not change the meaning or intent of the rule. "Feet" is proposed to be changed to "foot" to accurately correspond to the measurement of one. "Residential systems" is proposed to be changed to "dwellings". Dwelling is defined under pt. 7080.0020, subp. 16 as a building or place used by human occupants and is used in the body of the rule. "Residential systems" has the same meaning. It is reasonable to use defined terms when possible and maximize the clarity of the rule by eliminating ambiguous terms.

Item D. The agency proposes to replace the term "one day's sewage" with "the average design" to be consistent with the proposal.

Item E. The existing requirement under this item is proposed to be deleted from this subpart and moved to subp. 1 item D. See subp. 1, item D for a discussion of need and reasonableness. Therefore, item F is proposed to be relettered to item E.

Item G. The requirements under item G is proposed to be revised and moved to subp. 1 item C. See subp. 1 item C for a description of these modifications and the corresponding discussion of need and reasonableness.

PART 7080.0170 FINAL TREATMENT AND DISPOSAL.

Many changes are proposed under this part to better organize the requirements by consolidating related information and to make this information easier to find.

Subpart 1. In general. This subpart is proposed to be revised by replacing the phrase "by means of soil treatment and disposal" with "by means of discharge into the soil." This grammatical change is for clarification which does not affect the meaning or intent of the rule. "Soil treatment" and "disposal" are general terms and the proposed change provides a clearer description of the final action of the soil treatment system.

Item A. Item A of subp. 2 is proposed to be made item A under subpart 1 because it contains general requirements which is the purpose of subp. 1.

It is proposed that the term "daily sewage flow" be replaced with "average design flow." This change is being made throughout the rule. It is also proposed to be replace the term "percolation rate of the soil" with "soil sizing factor."

Subitem (2). The second and third sentences of this subitem are proposed to be moved to the new section on flow calculation in Minn. Rules pt. 7080.0125, subp. 2. This language refers to the determination of flow amounts from dwellings or commercial establishments. Relocating this language will consolidate the flow determination information into one section of the rule.

The first sentence which provides a reference to Table II is proposed to be deleted because this language is no longer necessary due to restructuring of the rule.

Current Table II Sewage flow (gallons per day), Classification I, II and III were revised and moved to pt. 7080.0125 subp. 2. Classification IV has been revised and moved to part 7080.0210, subp. 3, item F subitem (d) beginning with the second sentence.

Subitem (3). The existing subitem (3) has been deleted to reduce redundancy.

Subitem (4). The existing subitem (4) has been revised and relocated to subp. 2 item C, Sizing (1) Drainfield rock media.

Current Table III has been relocated to subp. 2 item C, Sizing and has been been renumbered to Table V.

Item B. The agency proposes that distribution be made in accordance with all applicable requirements of pt. 7080.0150. This change is made to provide a general reference for the distribution requirements which must be met before discharge from an individual sewage treatment system into the soil.

Subpart 2. Trenches and seepage beds.

It is intended that all references to trench and seepage bed systems be contained in this subpart. The word "seepage" is proposed to better define that these beds are seepage beds.

Item A. Location. This item is currently item B (1) through (5). It is also proposed that the term "in excess of" be replaced with "greater than" when referring to the percent of slope. This grammatical change is for clarification and does not affect the meaning or intent of the rule.

Subitem (2). The agency proposes that beds not be placed in soils with percolation rates faster than 60 minutes per inch or in flood plain areas. It is reasonable to not allow seepage beds in soils with percolation rates slower than 60 minutes per inch due to the slower diffusion of oxygen underneath the bed system. This lack of oxygen increases biomat thickness and reduces infiltration. In addition, bed construction may rely on driving on the bed bottom. These soils would be adversely impacted by increased compaction. Not allowing beds in flood plains is consistent with current rule language in 7080.0210, subp. 3, item D (1).

Table IV. Minimum setback distances (feet). It is proposed that the language classifying the depth of the well units under the "Feature" category be struck. These well depths are not needed because Minn. Rules ch. 4725 contains the appropriate classification for water supply wells and is referenced in Table IV. Grammatical changes are being proposed to improve the readability of this language.

The agency proposes that setbacks for structures other than buildings, can be reduced if necessary due to site conditions but, in no case will any part of the proposed sewage treatment system be located under or within the structure. This new language is reasonable because reduced setback distances to structures other than buildings, will not result in environmental or public health problems. It is intended that setbacks be reduced for structures that do not qualify as buildings (as defined in 7080.0020 subp. 7a) such as wood sheds, dog houses, etc. However, it is critical that structures not be placed over the ISTS. This is may result in the following affects on the system:

1. soil compaction due to construction activities and increased traffic over the area may reduce the treatment capabilities of the system,

2. placement of the structure may make inspection and maintenance more difficult and

3. reduced oxygen transfer from the atmosphere to the system which may impair its treatment capabilities.

Subitem (5). It is proposed that current subitem (5) be deleted. This subitem required that systems designed to treat 3,000 gallons per day be separated from similarly sized systems by at least 300 feet. It is reasonable to delete this language because hydraulic or construction related problems will not result if systems are placed closer than 300 feet. The only problem with closer spacing is negative impacts on the ground water due to closer spacing. However, this issue is better addressed on a site specific basis dependent on local hydrogeologic conditions. This issues can be addressed by local ordinance as specified in pt. 7080.0010 and 7080.0030. Language is proposed for systems exceeding 10,000 gallons per day average design flow to conduct a ground water analysis to determine if systems can be placed closer together.

Item B. Distribution medium. The agency proposes to add item B "Distribution medium."

Subitem (1). General. The agency proposes to expand the types of distribution medium to include gravelless drainfield pipe or a chambered system. Currently, only drainfield rock is considered a standard distribution medium. See SONAR 7080.0020 subp. 12c for additional information.

Subitem (2). Drainfield rock.

Unit (a). The agency proposes that drainfield rock meet the requirements of 7080.0020 subp. 15a. This language is added to reference the specifications which are part of the definition of drainfield rock.

Unit (b). This information is currently subp. 2 C (7). The agency proposes to delete the phrase "in the bottom of the trenches and beds" and add the phrase "below the distribution pipe" in reference to a layer of at least six, but no more than 24 inches of drainfield rock. An installer could incorrectly interpret the existing rule to allow the distribution pipe to be laid in the bottom of the trench and then covered with rock because it does not specify relationship between the rock and the pipe. The drainfield rock is used as a distribution and storage medium within the soil. Sewage tank effluent enters the drainfield rock, percolates down to the rock/soil interface, and is treated as it passes through the biomat and the subsequent three feet of unsaturated soil. As the biomat builds, effluent cannot pass as quickly into the soil and is stored temporarily in the rock filled trench. When flows are low, the sewage has time to move through the soil. If the distribution pipe is placed at the bottom of the rock-filled trench, it will be placed directly in the storage area. The potential for filling and submerging is a concern because it can cause basement backups. A pipe full of water cannot accept additional water.

The proposed language clarifies how the distribution pipe must be installed in relation to the distribution rock to ensure the system operates properly by proposing that the drainfield rock completely encase the top and sides of the distribution pipes to a depth of at least 2 inches. The distribution pipe must be encased on all sides. If the pipe was adjacent to a soil surface (such as trench walls or bottom), the flow of sewage would erode the trench walls and the system would gradually deteriorate. Sewage discharging to the ground surface from sloughed soil and solids settling around the holes of the distribution pipe which can cause plugging and basement backups are also concerns when the distribution pipes are not adequately encased with protective rock. The agency also proposes the total thickness of the rock-filled trench is not to exceed 30 inches. This thickness corresponds with the desired maximum system depth of 48 inches. The 48 inches includes the total trench thickness (six to twenty-four inches drainfield rock, two inches distribution pipe and at least two inches drainfield rock above distribution pipe) and soil cover. The maximum trench of 30 inches assures a minimum amount of trench area and the 48 inches assures shallower systems are installed to provide better treatment through effective air exchange.

Subitem (3). Gravelless drainfield pipe. The agency is proposing to add subitem (3) gravelless drainfield pipe to the rule. The addition of gravelless drainfield pipe to the standard section of the rule is reasonable because research conducted by Dr. Roger Machmeier and Dr. James Anderson of the University of Minnesota indicates that gravelless drainfield pipe is an effective method for distributing sewage tank effluent. This material has been approved for use by many counties in Minnesota and problems have not been reported to the agency concerning the use of this material. (SEE EXHIBITS #6 and #13.)

Gravelless pipe offers a cost-effective alternative for areas of the State that have difficulty obtaining drainfield rock or in areas where it is too costly to have drainfield rock. Gravelless pipe is easy to transport to a site because it is lightweight and is easier to install on irregular sites because rock hauling equipment is not needed. Gravelless pipe also creates a new technology that provides a better control of quality control and quality assurance because manufacturer specifications must be met (versus the inconsistent sizing and cleanliness of drainfield rock).

The agency proposes to specify that gravelless drainfield pipe including appurtenances shall under units (a) to (d).

Unit (a). This unit will require the use of commercially fabricated corrugated plastic pipe completely encased by the manufacturer in a geotextile wrap specific to this purpose. This provision is reasonable because it will prohibit the combining of corrugated plastic tubing and geotextile wrap by persons not familiar with either the construction techniques or materials needed to manufacture a product that will hydraulically perform. Geotextile wrap is available in a multitude of weights, permeabilities, strengths, etc. The wrap must be specifically able to pass sewage, build a biomat, restrict plugging, transfer oxygen and be able to withstand the rigors of installation and degradation from sewage. Manufacturer testing and approving a specific wrap for sewage distribution purposes is the quickest and most cost-effective way for the State to be assured of performance.

Unit (b). This unit will require the use of an 8 inch or 10 inch nominal internal diameter (ID) corrugated polyethylene pipe meeting the requirements of ASTM F 667. This language is reasonable because the ASTM specification is the standard for corrugated plastic pipe. It takes into account durability and strength requirements. Requiring eight or ten inch corrugated pipe is consistent with the research done by Dr. Roger Machmeier and Dr. James Anderson. Pipe specifications are readily available to installers from their local distributor. (SEE EXHIBIT #7.)

Subunit (i). This subunit will require the pipes to be marked with an alignment stripe visible through the geotextile wrap and to be installed with this stripe at top center. This provision is added to insure that the holes in the pipe are aligned downward for proper distribution of effluent. Manufacturers currently provide this stripe on the pipe.

Subunit (ii). This subunit will require the pipes to contain two rows of cleanly cut 3/8-inch to 1/2-inch diameter holes located 120 degrees apart, with each row 120 degrees to each side of the alignment stripe. Each row will also contain a hole in every other corrugation valley, staggered such that every corrugation valley contains one hole. These measurements are reasonable because it has been shown by manufacturer test data and the research done by Dr. Roger Machmeier and Dr. James Anderson that this hole configuration provides adequate effluent distribution. (SEE EXHIBIT #6.)

Unit (c). The agency proposes that geotextile wraps must be specifically designed and tested for use with gravelless pipe and for installation and use in individual sewage treatment systems. Geotextile wraps must be designed to transmit sewage at a long-term acceptance rate which corresponds to the sizing factor as prescribed in item C (2). The provision is reasonable because of the wide variety of geotextile wraps available. The wraps must provide adequate transmission of sewage based on the long-term acceptance rate of the fabric. If the fabric is too restrictive as compared to the specific sizing requirements, the system will be too small to transmit the flow from the dwelling or other establishment. This is a reasonable performance specification which includes typical requirements for geotextile wrap. Currently, there are no standardized quality control/quality assurance practices for geotextile wraps and no standardized unit measurements so a performance specification was selected rather than minimum average roll values or some other specification method. A minimum specification could not be written that would not be proprietary.

Unit (d). The agency proposes that the product be protected from heat and ultraviolet rays prior to installation. This is a reasonable requirement because the product needs to be protected from degradation from ultraviolet radiation or it may experience a shorter useful life.

Subitem (4). Chambered systems.

The expanded standards for chambered systems in the standard section of the rule is reasonable because minimum standards have been identified and this material has been used in other states and some counties in Minnesota and problems have not been reported to the agency concerning the use of this material.

Units (a) to (g). The agency is proposing that chamber media, including all piping and appurtenances, be constructed.

(a) of commercially fabricated materials specific to this purpose;
(b) of materials resistant to sewage tank effluent;
(c) with an open bottom;
(d) to support the load of overburden and sidewall soil;
(e) with slotted or perforated sides to allow sewage to move laterally into the soil and prevent soil penetration into the chamber;
(f) no greater than 3 feet in width; and
(g) with vertical outside dimensions less than 30 inches.

This language is reasonable because this is the necessary specification to insure that the product was developed and manufactured for the intended use. In addition, the product needs to be of sufficient strength to support the weight of the overburden and lateral soil pressures because it will be buried under the soil. The product needs to be slotted in such a manner to utilize the trench sidewall for absorption of effluent without soil material filling the chamber causing them to become sealed and reducing storage capacity. The product needs to be less than 3 feet wide to qualify as a trench system under 7080.0020 subp. 48b. It is proposed that this product be used only in trenches to allow oxygen transfer from the atmosphere to the soil directly below the chamber. The specification of a maximum vertical dimension of less than 30 inches is proposed to minimize the hydraulic head of the water over the soil to promote unsaturated flow of the effluent and to be consistent with thickness of 30 inches required in subitem (2) unit (b).

Item C. Sizing. The agency is proposing this as a new item C. Item C is proposed to consolidate all sizing requirements into one item.

Subitem (1). The agency is proposing a new subitem (1) Drainfield rock media requirements and moving Table III currently under subitem (4) under this heading. These revisions reflect restructuring of the rule and are proposed to enhance clarity and ease of use of the rule.

Table V. Current Table III is proposed to be renamed to Table V. References to various portions of the rule have been updated. The word "sewage" is proposed to be struck from the phrase "sewage flow per day" and "average design" added to be consistent with the flow terminology proposed.

Subitem (2). Gravelless drainfield pipe media. Due to the standards expansion of gravelless pipe as a standard distribution medium, sizing requirements are also proposed. The agency proposes that sizing for gravelless drainfield pipe media be based

on pt. 7080.0170 subp. 2a item C subitem (1) with some exceptions as presented in subitem (1). The agency proposes that an 8-inch inside diameter pipe be equivalent to a two-foot wide rock bed with six inches of drainfield rock below the distribution pipe and a ten-inch ID pipe be equivalent to a three-foot wide rock bed with six inches of drainfield rock below the distribution pipe. This specification is reasonable because the total surface area of the cylindrical pipe is equivalent to the bottom area provided by a two-foot wide trench (eight-inch ID pipe) or a three-foot wide trench (ten-inch ID pipe). This is based on the research done by Dr. Machmeier and Dr. Anderson.

Subitem (3). Chambered media. Due to the standards expansion of chambered systems as a standard distribution medium, a new subitem (3) Chambered media is proposed. The agency is proposing that sizing be based on 7080.0170 subp. 2a item C subitem (1). Sizing shall be equivalent to rock filled trench with six inches of rock below the distribution pipe. This new language is reasonable because the dimensions and surface area chambered systems is nearly equivalent to a rock filled trench with six inches or rock below the pipe.

Item D. Design and construction. This item is currently item C of subp. 2 of this part.

Subitem (1). The agency proposes that trenches and beds be constructed in original soils to be considered a standard system. Also, it is proposed that the bottom of the distribution medium be no deeper than 48 inches from final grade.

It is reasonable to require that the system must be placed in original soils as defined in pt. 7080.0020 subp. 24c. The design specifications contained in the rule were based on research conducted in original soils. Therefore, these standards may not apply in non-original soils. No attempt is made to develop standards for disturbed soils due to the variability of the fill material (clays, sands, brush/stumps etc.), the variability of the compaction effort (rubber tire equipment vs. tracked equipment), and the moisture state of the soil during the disturbance.

The intent is to clearly define when these standards can be justified so that system owners can be reasonably assured that the system will function hydraulically and adequately treat sewage. Construction of newly platted systems in non-original soils is discouraged. Meeting these design standards requirements in non-original soils may not insure a functioning system.

It is reasonable to set a maximum depth of the distribution medium at 48 inches because oxygen in the soil is required for treatment to occur. This soil oxygen originates from the atmosphere above the drainfield. The deeper the system is placed, the less exchange the soil air has with atmospheric oxygen. Currently, most systems being designed in the State meet this requirement.

Subitem (2). The agency proposes that the width of the excavation for gravelless drainfield pipe and chambered systems be per the manufacturer's recommendation.

It is reasonable to include this language because each manufacturer may have their own requirements for width of excavation; therefore, a general statement is proposed to guide contractors on the recommended width of the excavation.

Subitem (3). The agency proposes to specify that drainfield rock must be used as the distribution medium in seepage beds. Adding this requirement is reasonable because the non-gravelless products, if place closely together, would limit the downward diffusion of oxygen underneath the system. Agency staff is unaware of any data that exists indicating sizing requirements for non-gravelless products in a bed system.

Current subitem (3) is proposed to be deleted. This subitem requires that trenches and beds not be more than 100 feet in length. It is reasonable to delete this subitem because of advanced technology. In the past, surveying methods depended on the accuracy of hand levels and a "trained eye". One-hundred feet was the maximum limit of accuracy to keep a trench or seepage bed level over its entire length. With the advent of laser technology, trenches and seepage can be measured accurately for great distances, thereby making the 100 foot length too restrictive. In addition, many local inspectors expressed difficulties with such a precise requirement in the rule. Sites where 101 feet is necessary technically requires a variance.

Subitem (4). Current subitem (5) is proposed to become subitem (4). This subitem is proposed to be revised by replacing the term "drainfield rock" with "distribution medium" because the rule now includes two other distribution mediums (gravelless drainfield pipe media and chambered media) in addition to drainfield rock.

Subitem (5). Existing subitem (6) is proposed to become subitem (5). It is proposed to modify this subitem which allows construction equipment to be driven on the excavated soil area if the soils have a percolation rate slower than 15 minutes per inch (sandy in nature). The modification prohibits driving on the excavated soil area regardless of texture. Driving on excavated soils areas creates smeared and compacted surfaces which restricts or prohibits movement of sewage through the soil. Surface "blowouts" and a reduction in the service life of the system can be affected.

The agency also proposes a new provision in this subitem that requires that once excavated, the trench or seepage bed not be exposed to rainfall prior to placement of the final backfill. This change is reasonable because rainfall on exposed soil can cause a system to treat less sewage than planned. Rain falling on exposed soil destroys the soil structure and causes surface sealing and crusting. If this occurs, the infiltration rate as

predicted by the percolation rate will not be as expected. Therefore, the system may be undersized if the soil structure is destroyed by rain.

Subitem (7). Existing subitem (7) has been moved to pt. 7080.0170 subp. 2a item B subitem 2 unit (b).

Subitem (8). It is proposed to delete existing subitem (8) which requires a minimum of 12 inches of rock below the distribution pipe if within ten feet of trees.

This deletion is reasonable because tree roots will not encroach upon a trench due to the anaerobic conditions in the trench itself. No other state's codes have a requirement similar to this one. In addition, technology changes have occurred which also restrict encroachment of tree roots. In the past, clay tile pipes were used. Tree roots could follow the pipes and penetrate the clay material much more readily than the polyvinyl chloride pipe typically used today. The ten foot separation requirement is deemed too restrictive.

Subitem (9). This subitem is proposed to be divided and moved to the appropriate chronological location in the revised rule. The first sentence has been moved in its entirety to subp. 2a item B (2) (b). The second sentence has been combined with existing subitem (4) and moved to subitem (7).

Subitem (6), as proposed. Subitem (14) is proposed to be revised and become subitem (6).

Several phrase changes are proposed. The phrase "must be installed in" will be modified to say "installed and secured" when referring to inspection pipes. Also, it is proposed to replace the term "drainfield rock layer" with "the distribution medium." The second and fifth sentences also have this change. The fourth sentence will add the provision that no perforations shall be located above the geotextile cover or wrap.

The proposed change to require that inspection pipes be secured in the drainfield is reasonable because inspection pipes are used to evaluate the system and must be accessible. Caps on inspection pipes are typically difficult to remove if the inspection pipes are not secured. They can be pulled out of the system while trying to remove the cap. Pulling the pipes on the system can cause damage and it is difficult to replace them properly. The proposal to replace the term "drainfield rock layer" with "distribution medium" is reasonable because there are now two more distribution mediums besides drainfield rock. The provision to allow no perforations in the inspection pipes above the permeable synthetic fabric is reasonable because pipe perforations located in the soil may result in the migration of soils into the trench which could seal off the system bottom.

Subitem (7), as proposed. Existing subitem (4) and the second sentence of existing subitem (9) are proposed to be combined and become subitem (7). The combined language stipulates that both the top and bottom of the distribution medium be level in all directions. Combining the requirement for a level top and a level bottom is done for clarity and ease of rule use.

Subitem (8), as proposed. The existing subitem (10) is proposed to be revised and become subitem (8). This proposed revision will require that all drainfield rock be covered with a durable non-woven geotextile cover. This cover must be of sufficient strength to undergo installation without rupture. In addition, the cover must permit passage of water without allowing the overlying soil material into the drainfield rock.

This language is reasonable because the older method to keep overlying material out of the trench rock was by the use of straw and building paper. These materials are biodegradable and over a period of time will decompose, which allows the overlying soil material to fall into the rock. This causes fine soil particles to enter the system which can seal off the system bottom and cause the system to fail prematurely. This condition also causes ruts or channels in the yard which are unsightly to the owner. The use of a durable geotextile cover will eliminate these problems. Since there will be no exceptions, the remainder of the paragraph was deleted because it is redundant.

Subitem (9), as proposed. Existing subitem (12) is proposed to be revised and become subitem (9). The agency proposes that the term "distribution pipes" be replaced by "distribution medium" and that the minimum depth of the cover over the distribution medium be changed from at least eight inches to at least six inches. The last sentence is proposed to be deleted regarding the maximum depth of cover over the distribution pipes.

This proposal is necessary because the proposed rule changes describe more than one distribution medium. The current rule describes only the drainfield rock medium containing the distribution pipes where the depth of cover was measured from the top of these pipes. The depth of cover will now be measured from the top of the medium, instead of the distribution pipe. A specified maximum thickness of distribution medium, used along with the maximum depth of cover, should not result in a maximum depth of distribution medium of greater than 48 inches which is specified in subitem (1).

Subitem (10), as proposed. Existing subitem (11) is proposed to be revised and become subitem (10). The provision requires that the top six inches of soil have the same texture and density as the surrounding soil. However, the surrounding soil will no longer be required to have the same density.

The provision requiring that the backfill material have the same texture as the surrounding soil is reasonable because the infiltration rate over the entire lawn area will then be the same. Putting a sandy backfill material over the trench in a clay soil would result in the channeling of the water to the sand backfill and through the trenches. However, it will no longer be required that the soils have the same density as the adjacent soil. This change is reasonable because determining the density of in-place materials would require soils testing. Soils testing by proctor analysis or field density tests are unreasonable and not cost-effective to perform on the multitude of single family systems installed.

Subitem (12). Existing subitem (12) is proposed to become subitem (9).

Subitem (11), as proposed. The existing subitem (13) is proposed to be revised and become subitem (11). The provision to provide protection until a grass cover is established is reasonable because if not protected, soil erosion could occur on hill slopes and/or freezing may result if an insulating grass cover is not established before winter. This is standard construction practice by responsible contractors.

It is proposed to delete the condition that the owner or the owner's agent be responsible for the establishment of a grass cover. It is reasonable to strike the provision that an owner or owner's agent provide the grass cover because this provision serves no meaningful purpose.

Subitem (12), as proposed. The agency proposes that all joints for gravelless drainfield pipe or chambered systems be secured as recommended by the manufacturer. This language is reasonable because if joints are not secured, extraneous water from precipitation can enter the system, reduce the system's capacity and hydraulically overload the system. In addition, the extraneous water could carry soil particles and other debris which could clog the system.

Subitem (14). The existing subitem (14) is proposed to become subitem (6).

Subitem (13), as proposed. The agency proposes that backfilling for gravelless drainfield pipe and chambered systems shall not crush or damage the medium. This language is reasonable because crushing or damage to the medium will reduce its storage capacity and allow soil material to enter the medium and seal the system bottom.

Subpart 3. Dual field systems. As a part of the restructuring of the rule, existing item D is proposed to become subp. 3. Existing subp. 2 item E was modified and moved to 7080.0210 subp. 3 A.

Subpart 4. Rapidly permeable soils. Existing subp. 2 item F is proposed to become subp. 4 of this part. Existing subp. 2 item F subitems (1) and (2) were moved to pt. 7080.0210 subp. 3 Alternative systems item B. Existing subitem (3) is proposed to be grammatically revised and become the first paragraph under subp. 4. The proposed language does not result in a change in the meaning or intent of the rule.

Item A. This information is currently subp. 2 item F subitem (3) unit (a). No word changes are proposed.

Item B. Subp. 2 item F subitem (3) unit (b) is proposed to be grammatically revised and become item B. The proposed language does not result in a change in the meaning or intent of the rule. The agency proposes new language to state that no part of the soil treatment area can be larger than 25 percent of the area required in subp. 2 item C and the parts constructed for serial application. This new language is reasonable because the 25 percent requirement guarantees at least four parts to the soil treatment system. More parts of shorter lengths are encouraged to promote the rapid and effective formation of the biomat. The biomat formed at the rock/soil interface performs a significant role in sewage treatment so promoting its growth will promote adequate treatment. Also, use of drop boxes to distribute trenches across a lot make equal lengths unnecessary. Equal length trenches are too restrictive when a contractor needs flexibility around trees, etc. The 25 percent requirement provides flexibility, increases treatment and performs the same function as the equal length requirement currently in the rule. The intent and meaning have not changed.

Subp. 2, item F, subitem (3), unit (c) is proposed to be deleted because it is redundant with other areas of the rule.

Subpart. 5 Mounds. Existing subp. 2, item G is proposed to become subp. 5 Mounds.

Item A. "Location" is proposed as the heading for this item to be consistent with the structure describing trench and seepage bed location, sizing and construction.

Subitem (1). This subitem proposes to replace the term "limiting soil conditions" with "saturated soil or bedrock." This change better describes the term limiting soil conditions. This clarification is needed because the definition under pt. 7080.0020, subp. 41 for "limiting soil characteristics" is proposed to be deleted.

Subitem (2). It is proposed to replace the term "limiting soil characteristics" with "saturated soil or bedrock." See subitem (1) for discussion of need and reasonableness.

Subitem (3). The agency proposes to delete the existing subitem (3). This subitem requires that a loamy sand liner be placed under mound systems where the original soil had a percolation rate between six and 15 minutes per inch. This change is reasonable

because the placing of loamy sand liners will likely result in hydraulic problems with the system. This provision also infers that mound sand as specified does not provide adequate treatment. This is inconsistent with allowing mound sand to provide adequate treatment above other soils with high water table conditions.

Subitem (4). The existing subitem (4) is proposed to be deleted because it is redundant of subp. 5 item A (1). Original soils are required and also defined in 7080.0020 subp. 24c.

Subitem (5). The existing subitem (5) is proposed to be deleted and replaced by similar language in item B (4).

Subitem (3), as proposed. The agency proposes that setbacks be in accordance with Table IV of subp. 2 item A subitem (3). This subitem is proposed to reference the table which contains the setback distances for mounds. This new subitem is being added due to restructuring the rule. The agency proposes to require that for mounds on slopes less than or equal to one percent, the absorption area is the required absorption width by rock bed length plus five feet on each end of the rock bed. For mounds on slopes greater than one percent, the absorption area is the required absorption width plus five feet on the upslope side of the rock bed by rock bed length plus five feet on each end side of the rock bed.

Currently, the area downslope of a mound rock bed is designated as the absorption areas only when the slope is greater than three percent. The proposed change is to designate the downslope areas as absorption area if the slope is greater than one percent. This change is premised on the capacity of the water to travel downhill on systems having very little slope.

Subitem (4), as proposed. The agency proposes that absorption areas not be placed in areas subject to flooding as described in 7080.0170 subp. 2a item A subitem (4). This provision is reasonable because flooding can impair the absorption capability of the system.

Subitem (5), as proposed. Item A subitem (5) is currently paragraph 3 of pt. 7080.0170 subp. 2 item G subitem (13). Minor grammatical changes are proposed for clarity and consistency with other portions of the rule. The only technical change is the slope requirement change for absorption areas for mounds consistent with changes in 7080.0170 subp. 5 item A subitem (3).

Item B. Design.

Subitem (1). Existing subp. 2, item G, subitem (8) is proposed to become subitem (1). New language is proposed stating specifically that drainfield rock be used as the distribution medium. Drainfield rock is defined in 7080.0020 subp. 15a. Referencing this definition assures quality materials are used in mound construction. The proposal is to highlight how the bottom area of

the rock bed is calculated. This subitem also contains minor grammatical changes for clarity and consistency throughout the rule.

Subitem (2). Existing subp. 2, item G, subitem (9) is proposed to become subitem (2). Minor grammatical changes are proposed for clarity. The proposed language does not affect the intent or meaning of the rule.

Subitem (3). The first sentence in existing subp. 2, item G subitem (13) is proposed to become subitem (3). Minor grammatical changes are proposed for clarity. The term "clean sand" is used because it is defined specifically in 7080.0020 subp. 11b. The remainder of existing subitem (13) has been modified and relocated to the appropriate mound items.

Subitem (4). Existing subp. 2, item G, subitem (5) is proposed to become subitem (4). It is proposed to delete all the current language in the original subitem (5) and replace it with the following sentences. "The required absorption width is calculated by multiplying the rock bed by the absorption ratio. The absorption ratio shall be determined according to Table VI using the percolation rate of the upper 12 inches of soil in the proposed absorption area". These changes are for clarification purposes because the original language was ambiguous and did not specifically describe how to use the Table.

Table VI. Existing Table V is proposed to be modified and become Table VI due to restructuring of the rule. Table V presented numerical values for percolation rate in minutes per inch, allowable loading rates in gallons per day per square foot, and in square feet per gallon per day. This table is proposed to be modified by striking the "Gallons Per Day Per Square Foot" column and the "Square Feet Per Gallons Per Day" column and replacing these two columns with one column titled "Absorption Ratio". It is also proposed to add a factor for percolation rates less than five minutes per inch and a factor for 120 minutes per inch or greater to the Absorption Ratio column.

The two columns are not necessary because they are merely the reciprocal of one another and cause confusion for designers. The combining of the two allowable absorption area loading rate columns into one column titled "Absorption Ratio" is also reasonable because it eliminates one calculation step in the mound design process.

The current method used to calculate mound absorption width is to divide the rock layer loading rate of 1.20 gallons per day per square foot by the allowable soil loading rate in gallons per day per square foot from existing Table V and multiplying the result by the rock bed width. These steps have never been fully described in the rule and have caused confusion for designers. Converting the table to one column and describing how to use the Table will provide the clarity needed for accurate designs. The

addition of a percolation rate of less than five minutes per inch is reasonable because the mounds are built on soils with percolation rates in this range which have high water table or high bedrock conditions. In the existing rule, it was assumed that the absorption ratio would be one, but now it is clearly stated in the rule which absorption ratio is to be used. One hundred and twenty (120) minutes per inch is a high percolation rate and characteristic of clay soil. The addition of a percolation rate of 120 minutes per inch is reasonable because mounds are the preferred method of sewage treatment in areas that have high percolation rates; therefore, this column is proposed to be added and will refer to the Alternative section of the rule where the mound design criteria for very high percolation rate soils is located.

Subitem (5). Existing subp. 2, item G, subitem (6) is proposed to become subitem (5). The agency proposes that the required absorption width for mounds constructed on slopes from 0 to one percent shall be centered under the rock bed width. The required absorption width for mounds constructed on slopes greater than one percent shall be measured downslope from the upslope edge of the rock bed width. This new language is proposed for consistency with 7080.0020 subp. 1a Absorption area.

Subitem (6). Existing subp. 2, item G, subitem (7) is proposed to become subitem (6) and the reference to Table V is proposed to be changed to Table VI. Both of these changes are due to restructuring of the rule.

Subpart 2, item G, subitems (8) to (13).

Subitem (8). Current subitem (8) is proposed to be revised and moved to (1).

Subitem (9). Current subitem (9) is proposed to be revised and be moved to (2).

Subitem (10). Current subitem (10) is proposed to be revised and moved to item C Surface preparation part of (4).

Subitem (11). Current subitem (11) is proposed to be revised and moved to item C Surface preparation part of (1).

Subitem (12). Current subitem (12) is proposed to be revised and moved to item C Surface preparation part of (2).

Subitem (13). Current subitem (13) beginning with the first sentence is proposed to be revised and moved to (3). The second, third, fourth and fifth sentences are proposed to be revised and moved to item D (1). The sixth sentence is proposed to be revised and moved to item D Mound construction (2).

Item B continued.

Subitem (7). Existing subp. 2, item G, subitem 25 is proposed to revised and become subitem (7). Minor grammatical changes are proposed for clarification. These changes do not affect the meaning or intent of the rule.

Subitem (8). This subitem was moved from Paragraph 2 of 7080.0170 subp. 2 item G of subitem (13). This subitem is proposed to change the requirement from three percent slope to one percent slope. It is also proposed to drop the phase: "the long access of the drainfield rock layer must not diverge up or down the slope by more than 12 inches of elevation from the natural contour line" because it is inconsistent with proposed subitem (2) of subp. 5 D (existing subitem 13, last sentence of paragraph 1). It is also proposed to delete the word "drainfield" and add the word "bed" and add the phrase "in-depth." These are grammatical changes for clarity and the change in slope is consistent with "absorption area" found in 7080.0020, subp. 1a. The proposed language does not affect the meaning or intent of the rule but, is intended to provide clarification.

Subitem (9). Existing subp. 2, item G, subitem (26) is proposed to be revised and become subitem (9). The proposed language "greater than 1 percent" is proposed to be added to provide a measurable value as to when a diversion is required for intercepting and directing runoff. This change is consistent with 7080.0020, subp. 1a "Absorption area." An interceptor for slopes less then one percent would not typically be effective because of the lack of controlled runoff.

Subitem (10). The existing subp. 2, item G, subitem (20) is proposed to become subitem (10) due to restructuring of the rule.

Subitem (11). Existing subp. 2, item G, subitems (15) and (27) are proposed to be revised and become subitem (11). Minor grammatical changes are proposed for clarification. These changes do not affect the intent or meaning of the rule.

Subitem (12). Existing subp. 2, item G, subitem (16) is proposed to be revised and become subitem (12). Changes are proposed for clarity, consolidation and consistency with other parts of the rule. These changes do not affect the meaning or intent of the rule. The requirement for rock to extend nine inches below the pipe is currently located under existing subp. 2, item G, subitem (14).

Installing and securing inspection pipes is reasonable because inspection is important for maintenance purposes and if these pipes are not secured, they may become unstable over time.

Subitem (13). Existing subp. 2, item G, subitem (28) is proposed to be revised and become subitem (13). The proposed revisions consist of language clarification and the addition of two new provisions. The new provisions propose that the inspection pipe be installed and secured and that no perforations shall be located above the permeable synthetic fabric.

The perforation provision is reasonable because fines from the overburden could migrate from above the geotextile fabric down into the rock bed and seal off the bottom of the system causing plugging. Prohibiting holes above the geotextile fabric would not allow fines to pass into the rock bed.

Subitem (14). Existing subp. 2, item G, subitem (17) is proposed to be revised and become subitem (14). The agency proposes that the rock bed be covered with durable non-woven geotextile cover. The agency also proposes to prohibit the use of hay or straw with untreated building paper for covering of the rock bed. Straw and building paper decompose due to the wet conditions surrounding the rock bed. This decomposition allows the migration of the backfill that is located over the bed into the rock filled area which can migrate to the system bottom and cause sealing problems. This change was also proposed under subp. 2 item D subitem (8).

Subitem (15). Existing subp. 2, item G, subitems (19) and (21) are proposed to become subitem (15). Proposed revisions contain minor grammatical changes for clarity. These grammatical changes do not affect the meaning or intent of the rule. The only substantive change pertains to the specifications of the material that is allowed to go over the rock bed of the mound. It is proposed to allow "loamy soil material" above the rock bed of the mound as compared to requiring a specified "sandy loam" material to be put over the rock bed. This change is reasonable because the material over the rock bed is not critical to mound treatment or hydraulic performance; therefore, a less restrictive specification will perform the function of the material which is to shed water away from the top of the rock bed.

Subitem (16). Existing subp. 2, item G, subitem (22) is proposed to be revised and become subitem (16). Minor grammatical changes are proposed for clarity. A new provision specifically excludes peat as a topsoil material. The exclusion of peat as a topsoil material is reasonable because peat oxidizes once it becomes dry. Topsoil, on the other hand, contains a mixture of mineral matter along with humus. This mixture of humus and mineral matter is stable and will provide long-term water holding and nutrient holding capabilities for the vegetation to be grown on the mound.

Subpart 2, item G, subitems (14) to (28).

Subitem (14). Current (14) has been relocated to subitem (12).

Subitem (15). Current (15) has been relocated to subitem (11).

Subitem (16). Current (16) has been relocated to subitem (12).

Subitem (17). Current (17) has been relocated to subitem (14).

Subitem (18). Current (18) has been relocated to subitem (4) of item D.

Subitem (19). Current (19) has been relocated to subitem (15).

Subitem (20). Current (20) has been relocated to subitem (10).

Subitem (21). Current (21) has been relocated to subitem (15).

Subitem (22). Current (22) has been relocated to subitem (16).

Subitem (23). Current (23) has been relocated to subitem (5) of item D.

Subitem (24). Current (24) has been relocated to subitem (6) of item D.

Subitem (25). Current (25) has been relocated to subitem (7).

Subitem (26). Current (26) has been relocated to subitem (9).

Subitem (27). Current (27) has been relocated to subitem (11).

Subitem (28). Current (28) has been relocated to subitem (13).

Subpart 5, continued.

Item C. Surface preparation. This item is proposed as a designated section for issues related to surface preparation for mound systems.

Subitem (1). Existing subp. 2, item G, subitem (11) is proposed to be revised and become subitem (1) of item C Surface preparation. Minor grammatical language changes are proposed for clarity and consistency with other portions of the rule.

Subitem (2). Existing subp. 2, item G, subitem (12) is proposed to be revised and become subitem (2). It is proposed that vegetation in excess of two inches in length be cut and removed from the mound absorption area. The current requirement is to remove vegetation in excess of four inches in length. This change is reasonable because excess vegetation, upon decomposition, will cause a slime layer to occur between the mound sand and the decaying vegetation. This slime mat can cause horizontal movement of the effluent and subsequent discharge of effluent on the toe of the mound. Requiring a maximum of two inches of vegetation would minimize the building up of this slimy mat which restricts water movement.

New language is also proposed in subitem (2) to require that trees must be cut nearly flush with the ground and stumps should not be removed. This change is reasonable because cavities and soil compaction can result if stumps are removed from the absorption area. By requiring the trees to be cut and the stumps remain

would minimize the soil disturbance and compaction over the site, thereby maintaining the anticipated infiltration into the soil. It is also proposed to replace the phrase "surface of the total area selected for the mound, including the area under the banks" with "absorption area" for clarity and consistency with other portions of the rule.

Subitem (3). The agency proposes that soil conditions allow field testing of the plastic limit and that the moisture content below the plastic limit is maintained throughout installation. This is reasonable to ensure that the soil is not frozen. If the soil is at an adequate moisture content but, is frozen the test no longer could be conducted and surface preparation activities must cease. Field testing of moisture content is not possible for frozen soil.

Subitem (4). Existing subp. 2, item G, subitems (10) and (12) are proposed to be merged into new subitem (4). Most of existing subitem (10) is proposed for deletion because the language is now included in new subitem (5).

The absorption area may be roughened by using backhoe teeth (existing subp. 2, item G, subitem (12)) or mold board or chisel plow (proposed). Moldboard or chisel plows can effectively roughen the soil surface without smearing or compacting soils. Requiring backhoe teeth only is too restrictive.

Subitem (5). The requirement stating that no vehicle shall be driven on the absorption area after the surface preparation is completed has been revised and moved from existing subp. 2, item G, subitem (10).

Item D. Mound construction. This is proposed to be a new item to consolidate provisions relating to mound construction.

The proposed requirement for clean sand to be placed by using a construction technique that minimizes compaction is currently required under the second sentence of paragraph one under subp. 2 item G subitem (13).

Subitem 1. Existing subp. 2, item G, subitem (13) Mounds is proposed to be merged with subitem (1). The requirement is proposed to be relocated from existing subitem (13) as part of the reorganization effort and modified to specify that "clean sand" is to be used to be consistent with the definition of clean sand in 7080.0020 subp. 11b.

A proposed change to this subitem is that if the absorption area needs to be driven on for placement of the clean sand, that a crawler or tractor type must be used.

This provision is reasonable because the compaction associated with wheels heavier ground pressures and could cause excessive compaction, thus lowering the infiltration capacity of the soil. In addition, it is proposed to strike the provision which

stipulates that soils with percolation rates slower than 15 minutes per inch require additional measures to protect against compaction. This change is reasonable because all soils, regardless of the percolation rate, need to be protected from excessive compaction during construction.

Subitem (2). This subitem is currently the sixth sentence in paragraph one, subp. 2 of this part. Minor grammatical changes are provided for clarity.

Subitem (3). The agency proposes that the top of the rock bed must be level in all directions. It is reasonable to require that the top rock bed for mound systems be level in all directions, otherwise it could be assumed that the top of the rock bed could be sloped in one or more directions causing sewage to pool in low areas and possibly break out to the ground surface. This language is consistent with that proposed in 7080.0170 subp. 2a D (7).

Subitem (4). Existing subp. 2, item G, subitem (18) is proposed to be revised and renumbered to subitem (4). Minor grammatical changes are provided for clarification.

Subitem (5). Existing subp. 2, item G, subitem (23) is proposed to be renumbered to subitem (5). New language is proposed to require that the soil treatment system be protected until a grass cover is established. See justification under subp. 2, item D (11).

Subitem (6). Subp. 2, item G, subitem (24) is proposed to be renumbered to subitem (6) as a part of the restructuring of the rule.

Subpart 6. At-grade systems. The agency proposes to include at-grade systems as a standard system in this rule. The at-grade system was developed in the State of Wisconsin where it has been used on an experimental basis for many years. The results of the use in Wisconsin have indicated that the systems provide hydraulic and treatment abilities consistent with other designs currently in the rule. The at-grade system is proposed because where these systems can be applied, they are a cost-effective alternative. Currently, there is no system that can be used on soils that have a minimum three feet to the seasonally saturated soil. Therefore, this provides another design option to use in these situations. The proposed design criteria is in accordance with the Wisconsin At-Grade Soil Absorption System Siting, Design and Construction Manual - January 1990, developed by James C. Converse, E. Jerry Tyler and James O. Peterson of the University of Wisconsin's Small Scale Waste Management Project. (SEE EXHIBIT #8.)

Item A. Location.

Subitem (1). The agency proposes that at-grade systems be constructed on original soils so that there is at least 36 inches of separation between the bottom of the rock bed and saturated soil or bedrock. This provision is reasonable because this

requirement is needed for proper treatment to take place and is the same separation distance required for other soil absorption systems such as in subp. 5 for mounds in item A subitem (1) and subp. 2a item D subitem (1) for trenches and beds.

Subitem (2). The agency proposes that where required, percolation tests be conducted in the upper 12 inches of original soil in accordance with pt. 7080.0110, subp. 4, item E. At-grade systems are considered standard if constructed on soils with percolation rates faster than 61 minutes per inch.

The provision requiring percolation tests to be conducted in the upper 12 inches of soil is reasonable because that is where the effluent will be absorbed from the rock bed; therefore, the rock bed should be sized on the absorption capabilities of the upper part of the soil. It is reasonable to require that at-grade systems be placed on original soils because it is not known what infiltration capabilities are on the site once the soil has been manipulated, disturbed or compacted. Due to this uncertainty, the system would then have a lower degree of reliability. Therefore, at-grade systems placed on disturbed soils would be considered experimental systems. For at-grade systems to be considered standard systems, they must be placed on soils that have percolation rates faster than 61 minutes per inch. Soils with slower percolation rates may have problems during construction with excessive sealing and compaction while scarifying the soil before the placement of rock.

Subitem (3). The agency proposes that at-grade systems not be installed in areas having slopes greater than 25 percent. This condition is reasonable because of the rapid rate of flow through the rock bed on steeper slopes. In addition, construction techniques may need to be modified on steep slopes for safety reasons.

Subitem (4). The agency proposes that setbacks must be in accordance with Table IV. The agency also proposes that setbacks be measured from the edge of the rock bed. The provisions are proposed to highlight that these systems are also bound by the setback provisions to prevent drinking water contamination, structural damage to buildings or surface water contamination as specified in Table IV of subp. 2a Trenches and beds item A Location.

Item B. Design.

Subitem (1). The agency proposes that rock bed absorption width be calculated by multiplying the linear loading rate by the soil sizing factor as identified in Table V using the percolation rate of the upper 12 inches of soil in the proposed absorption area. The linear loading rate shall be between 2 and 8 gallons per day per foot (gpd/ft) as determined by the relationship between vertical and horizontal water movement in the soil. Total rock bed width for sloping ground shall consist of the rock bed

absorption width plus enough rock on the upslope side to provide stability. These additions are reasonable because they are derived from accepted technical standards developed by James C. Converse and others as described in the beginning of this subpart. (SEE EXHIBIT #8.)

Subitem (2). The agency proposes that the rock bed length be calculated by multiplying the soil sizing factor by the average design flow and dividing by the rock bed width. These additions are reasonable because they are derived from accepted technical standards developed by James C. Converse and others as described in the beginning of this subpart. (SEE EXHIBIT #8.)

Subitem (3). The agency proposes that at-grade systems be pressurized in accordance with 7080.0150, subp. 3 and 7080.0160, subps. 1 and 3. The agency also proposes that the distribution pipe be installed in the center of the rock bed on slopes less than 1% and on the upslope edge at the rock bed absorption width on slopes 1% or greater.

These revisions are being proposed because pressure distribution is critical in providing even distribution over the entire rock bed area of above ground systems. Gravity distribution provides very poor initial distribution. For above ground systems, this may result in effluent overloading the soil near the manifold which can result in a surface breakout at the toe of the system.

Item C. Construction.

Subitem (1). The agency proposes that surface preparation for at-grade systems be in accordance with subp. 5 item C. The soil surface absorbs the effluent in a similar manner as mound systems. Therefore, it is reasonable to require surface preparation for at-grade systems be the same as mound systems.

Subitem (2). The agency proposes that drainfield rock be used as the distribution medium in at-grades. The proposed language is reasonable because drainfield rock is used in the technical standards developed by James C. Converse and others as described in the beginning of this subpart. Drainfield rock is defined in 7080.0020 subp. 15a. (SEE EXHIBIT #8.)

Subitem (3). The agency proposes that the at-grade system be installed along the natural contour with no more than a 12 inch difference in elevation from the upslope corners of the rock bed. This addition is reasonable because if the system is not constructed parallel with the contours, "shadowing" or overloading of the soil could result from the effluent traveling perpendicular to the contours.

Subitem (4). The agency proposes that the rock bed completely encase the top and sides of the distribution pipe to a depth of at least two inches above the pipe. There shall be at least nine inches of rock below the distribution pipe. This proposed

condition is consistent with the requirements for other rock beds. This same requirement can be found in subp. 5 Mounds item B subitem (12) for trenches and seepage beds subp. 2a B (2) (b).

Subitem (5). The agency proposes that the entire rock bed be covered with a durable nonwoven geotextile cover specific to this purpose. The cover must be of sufficient strength to undergo installation without rupture. In addition, the cover must permit passage of water without allowing the passage overlying soil material into the drainfield rock.

This proposal is consistent with the requirements for rock beds in trenches and seepage beds found in subp. 2 item D (8) and mound rock beds found in subp. 5 B (14).

Subitem (6). The agency proposes that one foot of loamy soil cover be installed over the rock bed. Cover shall extend at least 5 feet from the ends of the rock bed and be sloped to divert surface water. Side slopes shall not be steeper than four horizontal units to one vertical unit. The upper 6 inches of the loamy soil cover must be topsoil. Topsoil must be of a quality that provides a good vegetative cover on the at-grade system and must exclude peaty material. This proposed language is consistent with the requirements for mound systems in subp. 5 item B subitem (16) and Wisconsin's at-grade design manual. (SEE EXHIBIT #8.)

Subitem (7). The agency proposes that three vertical inspection pipes of at least 1.5 inches in diameter be installed and secured along the downslope portion of the rock bed. These pipes shall be located within 3 feet of the downslope edge of the rock bed at the middle and 1/6 of the total rock bed length and placed as measured from the ends of the rock bed. The inspection pipes must have 3/8 inch or larger perforations spaced vertically no more than 6 inches apart. No perforations shall exist above the permeable synthetic fabric. The inspection pipes must extend to the rock bed/original soil interface and must be stabilized and capped flush with or above finished grade. These proposed requirements are consistent with Wisconsin's design manual. (SEE EXHIBIT #8.)

Subitem (8). A grass cover must be established over the entire area of the at-grade. The soil treatment system shall be protected until a vegetative cover is established. This proposed provision is consistent with other areas of the rule. See justification under subp. 2, item D (11).

PART 7080.0175 MAINTENANCE.

The agency proposes this new part to consolidate maintenance information found in various places throughout the current rule. In addition, new provisions are proposed to cover the maintenance requirements of parts of an individual sewage treatment system not included in the current Chapter 7080.

Item A. The agency proposes that the individual sewage treatment system and all components be maintained in compliance with this Chapter and manufacturer's requirements. To maintain system performance, it is reasonable to stipulate that all maintenance be within the provisions as outlined in this rule. It is also reasonable to stipulate that any proprietary product be maintained per manufacturer's requirements. This is because replacing a system component which does not meet manufacturer's specifications may result in inadequate system performance or reliability.

Item B. This item was originally item A of 7080.0130 subp. 5. This item has been revised to include all the system components which need regular maintenance. The current code specifies that only the septic tank need inspection. Also, the agency proposes to relocate the septic tank monitoring requirements to item C of this part. The proposed changes are reasonable because maintenance is needed for other system components besides septic tanks. For example, solids could be discharged to the soil treatment area from a lift station if the station has accumulated solids from the septic/aerobic tank.

Inspection of a treatment system is an important part of a maintenance program. Regular inspection familiarizes the owner with the system and allows problems to be identified and repaired before system failure occurs. An inspection schedule of no less than three years is already established under pt. 7080.0130 subp. 5 item A. However, pt. 7080.0130 only requires inspection of the septic tank. The entire system must be functioning properly for adequate treatment to occur. Therefore, it is reasonable to require all components of the system to be inspected.

It is important that system owners know what to look for to identify a system problem. The agency proposes that item B include the following phrase "signs of corrosion, leakage, accumulation of liquids and solids and any other related items that may indicate the need for maintenance."

Item C. This item is currently 7080.0130 subp. 5 item A. Grammatical changes and rewording are proposed for this item for clarity and consistency. The agency is proposing that all maintenance take place through the manhole. It is reasonable to require maintenance through the manhole because it is not possible to physically remove all the solids and scum from a septic tank inspection pipe. If solids and scum are not removed they can be discharged into the soil treatment system causing premature failure or can plug the tank outlet causing basement backups.

Item D. This item is currently 7080.0130 subp. 5 item C. The language in this item is not proposed to be revised but, rather relocated to reflect restructuring of the rule.

Item E. The agency proposes that whenever inspection of pump stations, distribution devices, valve boxes or drop boxes indicate the accumulation of solids, the accumulations shall be considered septage. It is reasonable to include these materials as septage because they contain the same public health and environmental concerns as the contents from a septic tank.

Item F. The requirements regarding additives which contain hazardous materials was moved from 7080.0130 subp. 5 item B and is not proposed to be revised.

Item G. The agency proposes that if septage is disposed into a municipal sewage treatment facility, a written agreement be provided between the accepting facility and the septage disposal firm. This new item is reasonable because a written agreement will identify that the municipality will allow septage to be discharged to the treatment facility and that the disposal firm has permission to dispose the septage. This agreement will facilitate communication and understanding between the parties on conditions of disposal so that a biological upset of the municipal treatment plant is avoided.

Item H. This proposed language is intended to prohibit the construction of facilities over soil treatment or replacement soil treatment areas and prohibit driving or other activities which may impair the treatment abilities or hydraulic performance of the soil treatment system. This language is a result of complaint calls to the Agency and comments from the Minnesota Department of Health where systems are failing because go-cart tracks, soccer fields, parking lots, driveways, roadways, etc., have been constructed over the soil system. The soil treatment area needs to remain uncompacted and undeveloped. Compaction, which is caused by driving and parking vehicles and other activities, reduces the infiltration capacity of the soil. Soil treatment systems must be able to transfer oxygen and water effectively to adequately treat the sewage. Construction or other compaction activities can modify the soil structure to the extent that percolation is impaired. Sealing the top of the soil treatment system (parking lot, for example) does not allow the transfer of oxygen, a critical factor in treatment. Staff has observed post construction activities which have impaired system performance. This language is reasonable because it adequately protects the system from future abuse and premature failure.

PART 7080.0176 SYSTEM ABANDONMENT.

The agency is proposing this new part due to the large number of inquiries the agency has received concerning proper abandonment of individual sewage treatment systems. Persons requesting information on abandonment are unsure if tank abandonment must be in accordance with federal Underground Storage Tank (UST) regulations. The provisions in this new part provide this distinction and clarification. Typically, individual sewage treatment systems are abandoned during system replacement or connection to a central sewage collection system.

Item A. The agency proposes that all solids and liquids from septic tanks, cesspools, leaching pits, dry wells, seepage pits, privies and distribution devices be removed and disposed of in accordance with 7080.0175 Maintenance. The agency also proposes that the abandoned chambers be removed or have covers removed or crushed and be filled with granular soil material. The agency proposes that the filling leave no voids that will result in future settling.

It is reasonable to require that solids and liquids be disposed in accordance with 7080.0175 item G because the solids and liquids in the tank are a potential health and environmental hazard. Disposing of it properly will prevent localized problems. Also, the liquids and solids will continue to decompose and evaporate which could case localized sinkholes that could be a hazard. It is also reasonable to require that pits, tanks, cavities, etc. be backfilled because degradation could weaken the ability of the septic tank cover to hold the weight of the overburden soil. If the cover is substantially weakened, the weight of persons and/or equipment over this area may cause the cover to collapse causing personal injury. Tanks or pits are to be filled without void space to eliminate future migration of the fill material resulting in the creation of a "sink hole".

Item B. The agency proposes that pipes be abandoned by plugging the ends with cement grout or in such a manner that will not allow further use. It is reasonable to require that existing piping be plugged to prevent discharge of raw sewage or other liquids to a non-functioning tank. Cement grout is the standard material used for this purpose.

Item C. The agency proposes that if soil treatment systems are removed, that contaminated materials be properly handled to prevent human contact prior to disposal.

The soil treatment portion of the ISTS may remain in-place because it does not pose a health or safety threat once abandoned. However, if systems are removed the removal materials must be properly disposed to avoid public contact with possible pathogens.

PART 7080.0200 VARIANCE.

This part is proposed for revision by replacing the words "state agency" and "agency" with "permitting authority". This word change is reasonable because it will guide the power to grant variances to the appropriate authority. The rule currently requires that if a review or permit is required by a state agency, (i.e. the MPCA) that any variances will be granted by the agency. However, counties which have adopted chapter 7080 are responsible for review and permitting activities including the granting of variances. This revision is intended to give the counties and other government entities with the authority to permit individual sewage treatment systems, the power to grant variances which should be under their jurisdiction.

The agency also proposes that the language referring to "industrial waste or other waste" be struck. This change is reasonable because an ISTS is to provide treatment for domestic waste solely and not industrial or other waste. The agency is proposing to add language under pt. 7080.0010 to further this purpose of the chapter.

PART 7080.0210 APPENDIX A - ALTERNATIVE AND EXPERIMENTAL SYSTEMS.

The agency proposes to add experimental systems to this Part. This addition provides a protocol for the adoption of experimental designs. Alternative systems be limited to the prescribed designs located in this Part. The justification for the inclusion of experimental systems is located with the

specification for experimental system found in 7080.0210 subp. 3a. This restructuring is the justification for the deletion of existing Chapter 7080.0180 Alternative Systems.

Subpart 1. General. Minor grammatical changes are proposed for clarity. The deleted portions of this subpart have been relocated in other areas of this Part. Items A, B, C, E and F were moved from former 7080.0180 which has been merged in its entirety with this Part.

Item A. Grammatical changes are proposed for clarity and consistency with other changes to the rule. This item was moved from current 7080.0180 item A.

Item B. This information was moved from current 7080.0180.

Item C. Existing language of this item was moved from 7080.0180 item C. The agency proposes new language prohibiting ground or surface water discharges. Systems designed with a ground surface or surface water discharge are not covered under these rules and must obtain a National Pollutant Discharge Elimination System (NPDES) or State Disposal System (SDS) permit from the agency. This proposed change is reasonable because discharges to surface or ground water must meet water quality standards under Chapter 7050 and 7060 and are issued a permit in accordance with Chapter 7001. This new language, including the standards for alternative systems, clarifies that these designs do not provide standards for systems designed to discharge to the ground surface or surface waters.

Item D. The agency proposes to require that a 3 foot minimum separation be provided between the bottom of the distribution medium and the saturated soil or bedrock. This proposed language is added to emphasize that system components may employ innovative designs, however, suitable soil needs to be utilized for final treatment and disposal.

Item E. Grammatical changes are proposed for clarification. These changes do not affect the meaning or intent of the rule. This item was moved from 7080.0180 which has been deleted and merged in its entirety with this part.

Item F. Grammatical changes are proposed for clarity. In addition to the existing language, it is proposed that systems be subject to periodic inspections by the permitting authority to assure adherence to specifications. This item was moved from 7080.0180 which has been deleted and merged in its entirety with this part.

This language is reasonable because alternative or experimental systems even more than standard systems, require adequate inspection in order to ensure compliance with the proposed design. If adequate inspection does not occur and the system fails, it may not be known if technology or construction was the cause. The inspection should be conducted by the permitting authority.

Subpart 3. Alternative systems. The agency proposes to the title of subp. 3 from: "Class 1 Alternatives, modified standard system" to "Alternative systems" is proposed. The reason for the proposed change is to shorten and simplify the title of this subpart.

The agency proposes that alternative systems in items A to J may be used only in areas where a standard system cannot be installed or is not the most suitable treatment. In the current rule, any type of design (not limited to those described in the rule) were considered alternative designs. The proposed changes will limit alternative design to those included items A through H of this subpart. Any other designs fall into the experimental portion of the rule proposed under subp. 3a. The ISTS advisory committee determined that a standard system with higher reliability should be employed over systems with less reliability.

Item A. Current item A is proposed to be deleted. This item states that extreme caution and careful planning should be employed whenever limiting characteristics exist. It is reasonable to remove this language because careful planning should always be taken with any ISTS.

Current Item B is proposed to be changed from addressing fluctuating ground water to slowly addressing permeable soils. The agency proposes that the methods in subitems (1) and (2) be used for areas with slowly permeable soils. The proposed addition of the first sentence is intended to identify that item A covers soils with a percolation rate between 61 and 120 minutes per inch (MPI).

Subitem (1). The agency proposes to add a sentence clarifying that soil treatment systems placed in soils with percolation rates between 61 and 120 minutes per inch shall comply with 7080.0170 and units (a) and (c) and pt. 7080.0170. This language was added for clarification and does not change the meaning or intent of the rule. Subitem (b) is a requirement for soil with a percolation rate slower than 60 minutes per inch.

Unit (a). Requirements for drainfield rock were relocated from 7080.0170 subp. 2 item E subitem (3). The agency proposes to clarify that the existing language pertains to the drainfield rock for trench systems. This clarification should enhance the understanding of this portion of the rule.

Unit (b). This unit was formerly 7080.0170 subp. 2 item E subitem (4). One grammatical change is proposed for clarity along with changing the fill liner specifications from a "sand" texture to "clean sand" to be consistent with other areas of the rule. This provision is being revised to clarify that unit (b) also pertains to drainfield rock for trench systems.

The clean sand specification change is reasonable because the percolation rate of clean sand is predictable once it has been moved from its original location. Clean sand is defined under pt. 7080.0020. Soil textures classified as sands may contain appreciable fines (silts and clays) along with fine and very fine sand, which would inhibit the percolation rate of the effluent.

Unit (c). The agency proposes that if a mound system is necessary to overcome limitations to consolidated impermeable bedrock and all soil horizons above the bedrock have a percolation rate of slower than 60 minutes per inch, the mound must be designed with a linear loading rate of 4 gallons per square foot or less as described in 7080.0170 subp. 6 item B. This requirement is reasonable because hydraulic performance is increased if the rock bed is narrower in width. This is especially critical when the movement of sewage will be predominately in the vertical direction as would be with this soil condition. The method used to determine the rock bed width is the linear loading rate which is consistent with Wisconsins at-grade design manual.

Unit (d). This unit was moved from 7080.0170 subp. 2 item E (6). Grammatical changes are proposed for clarification. These changes do not affect the meaning or intent of the rule.

Subitem (2). The agency proposes the addition of a new sentence to clarify that soils with percolation rates slower than 120 minutes per inch (MPI) are subject to the requirements under subunits (a) and (b).

Unit (a). This unit is currently 7080.0170, subp. 2 item E (1). A minor grammatical change is proposed for clarification.

Unit (b). This unit is currently 7080.0210 subp. 5 Class III item A (1) and (2). Grammatical changes are proposed for clarification. The absorption ratio value is reasonable because no current value exists in the rule. The value is a 20% increase above soils that have a percolation rate between 61 and 120 MPI.

Subunit (i). Language in this unit is proposed to be revised by removing the requirement that the width of the drainfield rock layer must not exceed five feet. Instead of the requirement of five feet, it is proposed to require that the width of the drainfield rock layer be determined by using a linear loading rate of four gallons per day per square foot or less as described in 7080.0170 subp. 6 item B. This change is reasonable because the rock bed width can now be accurately calculated depending on the severity of the soil condition and the resultant amount of vertical flow. In some cases the rock bed width may need to be narrower in some cases a wider and shorter mound may be appropriate.

Subunit (ii). Subunit (ii) was moved from 7080.0210 subp. 5 item A (2).

Subunit (iii). The agency proposes that the absorption ratio used to calculate the required absorption width is 6.0. Language is proposed to be added to this subunit to specify that the absorption ratio used to calculate the required absorption width is 6.0 for mounds on soils with a percolation rate of greater than 120 minutes per inch (MPI). There is no upper limit to the percolation rate in this group of soils. Therefore, a conservative sizing factor is used to size these systems.

Item B. Soils with percolation rates faster than .1 minutes per inch and soils with a .1 to five minutes per inch percolation rate. This item is currently 7080.0170, subp. 2 item F subitems (1) and (2). Grammatical changes are proposed for clarity. The agency proposes that this criteria may be used as an alternative design for soils with percolation rates between .1 and five minutes per inch. This new language combines the two soil types in which a liner system overcomes fast percolation rates. The combination is provided for clarity and does not change the intent of the rule.

Item C. Artificial drainage. The requirements under item B are proposed to be moved under item C. The agency proposes to change the heading from "Fluctuating ground water" to "Artificial Drainage." This change is for clarity and does not change the meaning or intent of the item. Minor wording changes are proposed which do not affect the meaning or intent of the rule.

The existing item C, Bedrock proximity, is proposed to be deleted and replaced by item A subitem (1) unit (c). Striking these requirements is reasonable because the linear loading rate is a more accurate method to deal with soils with a strong vertical component and is consistent with Wisconsins mound design manual. The loamy sand base is not needed to be placed under the mound for treatment and will likely cause hydraulic transmission problems between the clean sand and loamy sand material.

Subitem (1). This item was revised and moved from 7080.0210, subp. 3 item B (1). Grammatical changes are proposed which do not affect the meaning or intent of the rule. The agency also proposes to require that designs to lower the seasonally high water table be supported by engineering calculations and monitoring after installation. The method of determining the highest level of soil saturation is being deleted over the more accurate method of determining saturated soil levels with the use of soil coloration.

This provision is reasonable because current drain tile systems are constructed without full knowledge as to if they actually provide the needed 3 foot vertical separation to the water table. Most contractors familiar with tiling base their design on the requirements for lowering water tables for agricultural purposes. These purposes are different than what is expected for proper sewage treatment. Monitoring is a proposed requirement to determine if the theoretical calculations do indeed provide the necessary 3 foot vertical separation.

Subitems (2) and (3). Subitems (2) and (3) were revised and moved from 7080.0170, subp. 3 item B subitems (2) and (3). Changes are proposed for clarification and do not affect the meaning or intent of the rule.

Item D. Floodplain Areas.

Subitem (1). Word changes are proposed to be consistent with rule-wide changes. In addition, it is proposed to delete the requirement that trench systems in flood plains have a minimum of 12" of rock below the distribution pipe. This change is reasonable because systems can be placed closer to the ground surface and will dry out more rapidly than the deeper rock filled trenches. The agency proposes that seepage beds shall not be used in flood plain areas. Current language prohibits the use of mound systems in flood plain areas. Proposed language will clearly stipulate that bed systems are prohibited in flood plains.

Subitems (2) to (6). Word changes are proposed for clarity which do not affect the meaning or intent of the subitems.

Subitem (7). Word changes are proposed for clarity which do not affect the meaning or intent of the rule. In addition, the agency proposes to add a provision that holding tanks in flood prone areas must be accessible for removal of tank contents under flooded conditions. Accessibility of the holding tank is reasonable, because the holding tank is used when the soil treatment system does not function during flooded conditions. If the content of the holding tank cannot be emptied during periods of flooding the dwelling would need to be abandoned.

Subpart 4, item A. Current subp. 4 item A Aerobic tanks has been moved to 7080.0130 subp. 6 item I.

Item E. Grey water system. This item was moved from the existing subp. 4, item B (1). It is proposed to retitle this item from "Separate Toilet Waste and Grey Water Systems" to "Grey Water Systems" for clarification and conciseness.

Subpart 4, item B, subitem (2). Existing item B (2) Toilet waste treatment devices. This information is proposed to be revised and relocated to 7080.0020 subp. 48a.

Subitem (1). Plumbing. This provision is currently item 3 (a) under current subp. 4. Minor word changes are proposed which will not change the meaning or intent of the rule.

Subitem (2). Building sewer. This language is currently subp. 4 item B, subitem (3) unit (b) Building sewer. No revisions are being proposed.

Subitem (3). Sewage tank. This provision is currently subitem (c) under subp. 4, item B. The word "contemplated" is proposed to be replaced by the phrase "existing and anticipated" in reference to basing the sizing of a grey water septic tank on the number of bedrooms. The word contemplated is vague whereas existing and anticipated is more specific. The change is reasonable because it will make this provision consistent with other portions of the rule.

Subitem (4). Soil treatment area sizing. This provision was revised and moved from 7080.0170 subp. 2 item A (2) beginning with the second sentence. This subitem is proposed to be revised by making grammatical changes and changes to reflect restructuring of the rule.

Subitem (5). Septic tank sizing. The agency proposes that the septic tank for a grey water system be based on Table A-1 of this subpart. Table A-1 contains existing language currently under subp. 4 item B (3) (c) which provides requirements regarding the number of bedrooms and the tank liquid capacity for sizing of the septic tank for grey water systems. This language is reasonable because it will help to direct the reader to the appropriate Table for sizing of these systems.

Item F. Privies. Word changes are proposed for clarity which do not affect the meaning or intent of the rule. Another new provision would require the removal of solids once the pit is full, or when a pit is to be abandoned. This provision is reasonable because removal of the contaminants from the pit will further protect ground and surface water quality.

Item G. Other toilet waste treatment devices. This information has been revised and relocated from subp. 4 item B (2) (c) of this Part. Many word changes are proposed for clarification. The proposed language does not affect the meaning of intent of the rule.

Item H. This information is currently subp. 4 item B (2) (d) of this part. Word changes do not affect the meaning or intent of the rule.

Subpart 4, item B, subitem (3). Current item B subitem (3) Grey water system units (a), (b), (c) Table A-1 (d) and (e) are of subp. 4 Class II alternatives, reduced area systems item B (3) and is proposed to be relocated to item E (1), (2), (3), Table A-1, (6) and (7).

Subpart 4, item C. Current item C Seasonal use. This item provides language to determine flows from seasonal establishments. This item has been modified and moved to 7080.0125 subp. 4.

Subpart 5. Class III. Alternatives, advanced alternative system. Item A (1) and (2) of this existing subpart are proposed to be relocated to subp. 3 (2) (b) i and ii. Current subp. 5 item A (3) is proposed to be relocated to 7080.0170 subp. 5 Mounds item C surface preparation (2).

Subpart 3, continued.

Item I. Existing dwellings on small lots. The agency proposes to provide alternatives for existing dwellings on lots which cannot support a full size treatment system. It is reasonable to provide as much sewage treatment capability as the lot will support as determined by the amount of usable area and the soil acceptance rate. If small lot options are not used the entire flow would need to be collected in a holding tank. Holding tanks are undesirable due to the cost of pumping and the possibility that the contents could be disposed in an environmentally unsound manner. It should be noted that these provisions are only for existing dwellings and do not provide design options for newly developed undersized lots.

Item J. Collector systems. Subp. 5, item B is proposed to be made item J.

Subitem (2). Design.

Unit (a). The agency proposes to strike the provision that allow the flows for collector systems to be calculated from dwellings classified as Type II. This existing method would downsize the soil treatment system by approximately 33% form 7080.0170. The proposed provision would classify all dwellings on collector systems in accordance with 7080.0125 Sewage Flow Determination for Dwellings and Other Establishments. This provision is reasonable because the system should be sized according to the estimated flow from each dwelling. This is especially critical because nearly all homes today are classified as a Type I due to the number of water using devices in each home. Therefore, classifying homes as Type II for collection systems may result in a hydraulically overloaded system. It should be noted that the safety factors built into the sizing of systems are contained in the flow amount and not in the soil sizing factors.

The agency proposes to make the existing unit (c), unit (a). The sum of all flows for dwellings and other establishments as indicated in 7080.0125 is proposed to be used as the basis to design sewer systems. These provisions are reasonable because collection pipes commonly are not watertight and ground water seeps into the collection system and is introduced into the soil treatment system. The flow valves provided in the rule do not account for this additional flow.

Unit (b). Wording changes are proposed for clarity which do not affect the meaning or intent of the rule. Also, a stipulation is proposed requiring that the tanks meet the requirements of 7080.0130. This change is reasonable because the user may think since the system is an alternate system, that the septic tank may not need to meet the basic tank requirement as outlined in 7080.0130.

Unit (c). The existing unit (c) is proposed to be deleted because it has been moved under unit (a). Therefore, unit (d) is proposed to be unit (c).

The agency proposes that the diameter and grade line be based on a flow equal to 50 percent of the average design flow occurring in a one hour period. This proposed revision is reasonable because the collection system should be able to convey the volume of flow equal to 50% of the average design flow occurring in a one hour period.

Units (d) to (f). Current subp. 5 item B Collector systems (2) Design (e), (f) and (g) are proposed to be re-numbered to subp. 3 item J (d), (e) and (f).

Units (g) and (h). Item J (2) (g) and (h) were renumbered from 7080.0210 subp. 5 item B (2) Design (h) and (i). Wording changes are proposed for clarity and consistency with other rule changes as well as to eliminate redundancy.

Unit (j). This language is proposed to be deleted. This subitem presently requires that manhole covers be constructed as to prevent unauthorized entry. This provision is proposed to be deleted because these provisions are now referenced in 7080.0130 and 7080.0160. Unit (l) is proposed to be renumbered to be unit (j).

Unit (i). This is currently subp. 5 item B (2) (k) and is proposed to be revised. The agency proposes to clearly define the size requirements for pumps and dosing chambers for collection systems. The flow amount to be designed for is fifty percent of the average design flow in a one hour period. Common pump tanks shall have a pump out capacity of ten percent of the average design flow, plus a reserve capacity of 25 percent of the average design flow, or two pumps. This proposal is reasonable because the conveyance system needs to be sized on a peak hourly flow to avoid system backup.

Unit (k). The agency proposes that for systems with individual septic tanks, a stilling tank of at least 1500 gallons liquid capacity or ten percent of the average design flow, whichever is greater, should be provided before the soil treatment system. It is reasonable to require an alternative system to have a stilling tank because a stilling tank will remove some of the suspended solids that are agitated by the pumping process or high flows to the system. If these solids reach the drainfield, they would clog and shorten the useful life of the drainfield.

Subitem (3). Maintenance. Grammatical changes are proposed for consistency with other language changes in the rule.

Subpart 5, item C. Other Systems subitems (1), (2), (3), (4), (5). This existing item and subitems (1) through (5) are proposed to be deleted. This removal is reasonable because these provisions are proposed to be replaced and modified in the new experimental systems section under Minn. Rules pt. 7080.0210, subp. 3a.

Subpart 3, continued.

Item K. Holding tanks. This item is currently subp. 6 Class IV alternatives, holding tanks. The agency proposes to change this title to "Holding Tanks." This change reduces the length of the title and removes unnecessary language.

Subitem (1). This subitem is currently subp. 6 item A. The agency proposes to delete the terms "Class I, Class II and Class III" and replace these terms with the phrase "or alternative system as described in this subpart" in reference to the type of individual systems." This proposal is reasonable because these designations are unnecessary and are being deleted throughout the rule.

Subitem (2). This subitem is currently subp. 6 item B. The agency proposes to delete the reference to watertight septic tanks and specify that holding tanks must meet the requirements under 7080.0130, subp. 1. This proposal is intended to reduce duplication as well as to increase clarity and consistency in the rule.

Subitem (3). This subitem was originally subp. 6 item C. A minor word change is proposed for clarity which does not affect the meaning or intent of the rule.

Subpart 6, item D. Current subp. 6 item D was moved to 7080.0130 Sewage tanks, subp. 1 item F and revised.

Subpart 3, Item K continued.

Subitem (4). This subitem is currently subp. 6 item E. Minor word changes are proposed for clarity which do not change the meaning or intent of the rule.

It is also proposed to strike the phrase "capacity shall be based on measured flow rates or estimated flow rates." This change is proposed because flow estimations are now found in the new section Minn. Rules pt. 7080.0125 and are proposed to be changed to "average design flow" under this part.

It is proposed to reference item E subitem (7) regarding the sizing requirements for holding tanks in floodplains. This proposal is made for convenience of the user.

It is also proposed that holding tank sizing for reduced sized systems as described in item F, "shall be upon the discretion of the permitting authority." This proposed language is reasonable

because the size of the holding tank can be reduced in size based on the absorption capacity of system that can be constructed on the lot. Typical holding tanks are based on receiving 100 percent of the flow.

Subitem (6). This subitem is currently subp. 6 item G. The agency proposes to replace the term "sewage wastes" with the word "septage." This proposal is for clarity and consistency in the rule and does not affect the meaning or intent of the rule.

Subitem (7). This subitem is currently subp. 6 item H. The word "bells" is proposed to be replaced with "audible alarms." This is a word change and does not affect the meaning or intent of the rule.

Subpart 3a. Experimental systems. This subpart is proposed to replace current subp. 6 item C, Other Systems. This section is a modification and amplification of the provisions of current item C. Some of the provisions in item C are now found in the general section of Minn. Rules pt. 7080.0120 building sewers and others are found in this subpart.

The agency proposes that a provision be added specifying that experimental systems may be used in areas where standard systems cannot be installed, or if a system is considered new technology with limited data on reliability.

This provision is proposed to give guidance to municipalities in determining the appropriate conditions for use of experimental systems.

The agency proposes that in addition to the requirements under subps. 1 and 2 experimental systems must also meet the requirements under items A to G.

Item A. The agency proposes that an experimental system must include an installed water meter. This provision is reasonable because the system's hydraulic performance should be measured against a known volume of water that entered a system. This is especially critical in experimental systems with limited data on reliability. Estimated water use is not reliable to assess system performance because of the difference in water use depending upon age, affluence, etc. In addition, estimated water use also includes a safety factor.

Item B. The agency proposes to specify that experimental systems be designed so that no single portion of the system receives over 25 percent of the average design flow in 7080.0125. The proposal to divide the system into smaller sections is to allow monitoring and tracking of the performance of the system.

Item C. The agency proposes to require that a loading rate calculation be provided to the permitting authority. This provision is reasonable so that the permitting authority can adequately assess if the design size is reasonable for the estimated flow.

Item D. The agency proposes to require that a monitoring report be provided to the permitting authority and the agency, indicating what type of monitoring will take place and who is responsible for the

monitoring and time lines. This is being proposed so that the permitting authority and the agency can assess the system's performance over time. It is also proposed to stipulate the party responsible for developing the monitoring plan and time lines and the actual taking of samples be identified. This proposed requirement is reasonable because this delegation needs to be known during the planning process before approval by the permitting authority is granted.

Item E. The agency proposes that a mitigative plan be provided to the permitting authority and the agency, indicating what will be done if the experimental system fails to provide treatment and disposal. The agency also proposes that experimental systems not be allowed in areas where a new system or modifications to the experimental system are not feasible if failure occurs.

This new language requires contingency plans in the event of system failure. It is prudent to provide contingencies for single family dwellings in case the initial system fails. If contingencies are not considered, the dwelling may be left without sewage disposal options, which would result in the use of a holding tank. The use of a holding tank is very expensive and undesirable.

Item F. The agency proposes that the system comply with all conditions established by the permitting authority necessary for the protection of the environment and public health. This provision is provided so that the permitting authority may make decisions on the system in accordance with local ordinances and may make any changes that they deem necessary to protect the environment and public health.

Subparts 7 to 15. Current subps. 7, 8, 9, 10, 11, 12, 13, 14, and 15. The agency proposes to strike all of the diagrams and figures found in subps. 7 through 15. This proposal is necessary because users of the rule were referring to the diagrams instead of referring to the text of the rule. This resulted in many misunderstandings because some of the diagrams did not cover the complete range of sizes, volumes, etc. that are specified in the rule. Therefore, due to the confusion that resulted, it is prudent to delete the diagrams and have the users refer to actual rule language.

VI. SMALL BUSINESS CONSIDERATIONS IN RULEMAKING

Minn. Stat. § 14.115, subd. 2 (1992) requires the Agency when proposing rules which may affect small businesses, to consider the following methods for reducing the impact on small businesses:

(a) the establishment of less stringent compliance or reporting requirements for small businesses;

(b) the establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;

(c) the consolidation or simplification of compliance or reporting requirements for small businesses;

(d) the establishment of performance standards for small businesses to replace design or operational standards required in the rule; and

(e) the exemption of small businesses from any or all requirements of the rule.

The proposed rules may affect small businesses as defined in Minn. Stat. § 14.115, subd. 1 (1992). As a result, the Agency has considered the above-listed methods for reducing the impact of the rule on small businesses and submits the following:

For purposes of this section, businesses are divided into two groups. Group 1 includes businesses which generate more than 10,000 gallons per day of wastewater and are regulated by the agency under a State Disposal System (SDS) permit. Group 2 includes businesses using ISTS for waste disposal with a flow of less than 10,000 gallons per day. Group 2 businesses fall under the regulatory authority of the Minnesota Department of Health (MDH). The MDH reviews plans and specifications for construction of new systems for compliance with Minn. Rules ch. 7080 and provides inspections for hydraulic performance of existing ISTS for licensed facilities.

The effect of the proposed revisions to Minn. Rules ch. 7080 will be scrutinized first for businesses which have a SDS permit from the agency under (a) through (e) above:

GROUP 1

(a) It is not prudent to require less stringent compliance requirements for these businesses. The provisions of Chapter 7080 provide the minimum standards for adequate sewage treatment which should not be compromised. Chapter 7080 does not contain any reporting requirements; however, reporting requirements are required as a condition of the permit. These reporting requirements are aggressive initially, but may be reduced if the system is found to perform adequately.

(b) Minn. Rules ch. 7080 does not contain schedules or deadlines for compliance with these standards.

(c) Chapter 7080 does not contain reporting requirements, however the reporting procedures for large drainfields is designed strictly for drainfields. Typical requirements for reporting may be found in Exhibit 1.

(d) Establishing performance standards for small businesses to replace design or operational standards required in the rules is available under the experimental section (7080.0210 Appendix A) of the rule. However, in most cases, using performance standards would result in higher costs for system design and may require additional monitoring and reporting of system performance.

(e) The wastewater from these businesses could pollute ground and surface waters of the state and create a potential health hazard if not properly treated. Therefore, exempting small businesses from the requirements of this rule would not be consistent with the statutory mandate of the agency to protect the waters of the state.

GROUP 2

The effect of the proposed revisions to Minn. Rules ch. 7080 will be scrutinized for businesses regulated by the Minnesota Department of Health under item (a) through (e) above:

(a) It is not prudent to require less stringent compliance requirements for small businesses. The provisions of Chapter 7080 provide the minimum standards for adequate sewage treatment which should not be compromised. These rules do not contain any reporting requirements for small businesses served by an ISTS.

(b) Minn. Rules ch. 7080 does not contain schedules or deadlines for compliance with these standards.

(c) There are no reporting requirements for small businesses.

(d) Establishing performance standards for small businesses to replace design or operational standards required in the rules is available under the experimental section (7080.0210 Appendix A) of the rule. However, in most cases, using performance standards would result in higher costs for system design and may require monitoring and reporting of system performance.

(e) Many small businesses, such as restaurants and resorts, use ISTS. The wastewater from these businesses could pollute waters of the state and create a potential health hazard if not properly treated. Therefore, exempting small businesses from the requirements of this rule would not be consistent with the statutory mandate of the Minnesota Department of Health to protect public health.

The main effect to small businesses is an increased number that will require a State Disposal System permit from the agency. Currently, businesses with an average daily flow of greater than 10,000 gallons per day or a maximum monthly average daily flow of greater than 15,000 gallons per day are required to obtain an agency permit. The average daily flow for businesses is calculated by dividing the total yearly flow by 365 days. The maximum monthly average daily flow for businesses is calculated by using the flow from the highest average daily flow for a one month period.

The proposed rule drops the 15,000 gallon threshold and keeps 10,000 gallon per day threshold to be consistent with the new flow terminology used throughout the rule. Along with this change, businesses may calculate their flow by using measured flow data. The measured flow data is then averaged over the highest consecutive seven-day flow period during the year. These two changes may result in more businesses that will be required to obtain a State Disposal System permit. The businesses likely to be affected will be seasonal businesses. It is not known how many businesses this will affect, but it is anticipated that it will not be a large number. This is due to most businesses using an estimated flow value for system design versus using a measured value.

Some of the added costs to businesses are associated with permit application fees and engineering costs for development of plans and specifications.

Individual sewage treatment systems are less costly than centralized collection and conveyance to wastewater treatment facilities. Some businesses are too remote from the nearest collection system to consider sewering. In many cases, installing an ISTS is the most cost-effective and environmentally sound alternative for small businesses.

VII. CONSIDERATION OF ECONOMIC FACTORS

Background

In exercising its powers, the agency is obligated by Minn. Stat. § 116.07, subdivision 6, (1992) to give due consideration to economic factors. The statute provides:

> In exercising all its powers, the pollution control agency shall give due consideration to the establishment, maintenance, operation and expansion of business, commerce, trade, industry, traffic, and other economic factors and other material matters affecting the feasibility and practicality of any proposed action, including, but not limited to, the burden on a municipality of any tax which may result therefrom, and shall take or provide for such action as may be reasonable, feasible, and practical under the circumstances.

Minn. Stat. § 115.43, subd. 1 establishes that Minn. Rules ch. 7080 is the state standard for the location, design, installation, use, maintenance and abandonment of individual sewage treatment systems (ISTS). Currently, these standards are mandatory in certain counties and municipalities which must enact ordinances which comply with the appropriate regulations of the Minnesota Department of Natural Resources and county-wide in about one-half of the counties in Minnesota.

Economic Effect

It is anticipated that changes to these rules will have a nonmeasurable impact to Minnesota's economy. Changes to these standards will have minimal impact on the economic climate of the unsewered community and the ISTS construction industry. The only major economic implication would be the new provision which requires one additional site for a replacement ISTS. The economic effects of this provision are contained in this report. Some of the revisions will slightly increase the costs of the systems, while other changes will slightly reduce the cost of the system. The proposed changes to Minn. Rules ch. 7080 are described below in numerical order.

Minn. Rules pt. 7080.0020, subp. 7. It is proposed that any living area within a dwelling that can reasonably be converted to a bedroom, be designated as a bedroom for the purpose of determining design flow. This will result in a larger initial system than would be required for the original number of bedrooms in the dwelling.

This change will result in a slight increase to the system's size for each additional bedroom that is anticipated. This increase in drainfield size would not result in all drainfield components increasing in size. It is felt that this provision does not substantially increase the cost of the system over the

life of the dwelling because the system size would need to be larger if those areas are converted in the future. In addition, if no additional bedrooms are added, the larger system would have increased longevity.

Minn. Rules pt. 7080.0030, item B. The revised 7080 now includes a list of requirements that must be met before issuance of a State Disposal System (SDS) permit for a large drainfield. These provisions as listed are currently required as part of the permit approval process. Therefore, no new economic impact will result from the actual listing of these in the rule itself.

Minn. Rules pt. 7080.0040, subp. 4. It is proposed that municipalities must inspect and approve all facets of system development to reasonably assure that the system meets these standards. Currently, most municipalities review and approve the system design and provide one or more field inspections during construction. This proposed change would also require the review authorities to review and approve the siting of the system. To accomplish this, a soils report will need to be reviewed by the local inspector to insure that the system is designed correctly according to the soil type on the lot. The economic impact would be the time requirement for the review authorities and any subsequent field investigations to follow up on any questionable soils data. However, it should be realized that these reviews of field inspections may result in a cost savings should the evaluation reveal that the system may not be designed or installed correctly or that the location of the proposed ISTS will not allow the system to function properly.

Minn. Rules pt. 7080.0060, subp. 2, item A. This proposed provision would require that all lots created after the effective date of this rule have one or more additional soil treatment sites.

The economic effect would be:

1) The possible increase of lot sizes.
2) Additional soils investigation to identify a second site.

This provision is not expected to increase lot sizes on most developments in Minnesota. This is due to:

1) Municipalities may currently require one or more additional sites.
2) Municipalities requiring larger minimum sizes for drainfield areas.
3) Municipalities planning and zoning ordinances requiring minimum lot sizes.
4) Desire for larger lots.

Typically, the above mentioned conditions will result in identifying one or more additional sites on each lot. However, this provision would have major economic implications in a few areas where development is more dense in nature, and room is provided for just one soil treatment site. Generally, 1.5-acre lot sizes is the minimum necessary to support two on-site systems. For example, increasing lot sizes from one to 1.5 acres would result in a 33 percent decrease in the development density. This decrease in density would have major economic implications to the developer due to the lower number of lots for sale. It should be noted that most rural lots are 1.5 acres or larger. The rule specifies a two-site requirement instead of a minimum lot size due to the variable nature of soils and topography. Areas with sandy soils would require

less available space for two sites and lots with tight clay soils would require larger areas. In addition, there may be portions of the site that are totally unsuitable for an ISTS; therefore, many acres of unsuitable soils still would not result in the availability of two good sites. It should be noted that this provision would likely result in long-term decreased costs to homeowners. This is due to the fact that the dwelling will likely outlast the first ISTS; therefore, if no second site is available, the home would be left with unproven or expensive alternatives. These alternatives include: 1) connection to municipal sewer (if available); 2) an experimental system which may have unproven reliability; or 3) the use of a holding tank which is very expensive to maintain or 4) connection to a large group cluster system. Therefore, it is prudent to require one additional site per lot to ensure adequate long-term sewage treatment for the dwelling.

Minn. Rules pt. 7080.0110, former subp. 2. Currently, the rule states that an investigation of the site suitability can be accomplished by the use of publicly available information. This provision has been deleted. Deleting this provision will likely result in very limited economic impact because very few (if any) site evaluators solely rely on publicly available information. Deleting this provision will likely have a positive economic impact because requiring a field investigation will identify the exact site and soil conditions to be used in the subsequent design. Designing the system with accurate information will eliminate the chance that the system could be located on an unsuitable site.

Minn. Rules pt. 7080.0110, subp. 3a, item D (2). It is proposed to require that site evaluators describe soil coloration using the Munsel color notation. This requirement would result in the site evaluators purchasing a Munsel color chip book. The cost of this book is approximately $70. The other economic cost is the time required for the site evaluator to make these determinations. The time required to describe the soil colors would be minimal and a positive economic impact will result by the use of these color books. Currently, the reason most new systems fail in Minnesota is due to improper siting of the system. This improper siting is the result of incorrectly identifying soil colors which indicate seasonally saturated conditions. Therefore, the systems fail when the soil becomes saturated during periods of high precipitation. At these times, the systems' performance is impaired resulting in sewage backup or sewage surfacing to the dwelling. This would result in the economic burden of relocating and reconstructing a new system.

Minn. Rules pt. 7080.0110, subp. 3a, item F. New provisions are proposed to require that the suitable soil treatment area be protected from compaction and disturbance. This provision can be accomplished with little or no cost. The materials will be minimal in nature to protect this system. It is anticipated that this provision will provide economic savings to the homeowner because if the site is disturbed in any way, there is a great chance that the system will not hydraulically accept the wastewater, therefore rendering the site unsuitable and requiring the relocation of the site or the possibility of constructing a new system.

Minn. Rules pt. 7080.0110, subp. 2, Table 1. It is proposed that the flow calculations for dwellings include anticipated water using devices. This provision is provided so that future increase of flows will be included in the initial system design. If no additional water using devices are anticipated, this provision will have no economic impact. If however, additional water using

devices are anticipated, this requirement will have little economic impact because if water using devices are added in the future, the system would have needed to be larger anyway. Also, if no additional water using devices are added, the system will have increased longevity. It is felt that this is a prudent requirement because many system designs cannot be added on to in the future, resulting in an undersized system for the dwelling.

Minn. Rules pt. 7080.0125, subps. 3 item B and 4 item B. It is proposed to calculate the flow for other establishments based on the peak seven-day consecutive flow. This method is different than the current method which looks at the yearly average daily flow. The peak flow method will likely be higher than an average number, and it may require installation of a larger system.

The following flow data illustrates the variation of flow from a seasonal establishment.

1992 Data

Average daily flow for the peak 7 days	16,000 gpd.
Yearly average daily flow	8,100 gpd.
Peak single day flow	22,000 gpd.

Therefore, if the system was sized at the Average daily flow of 8,100 gallons per day, it would be half the size needed to accept the wastewater during the peak 7 day period and 36 percent of the size needed during the peak day. In addition, this establishment had 140 consecutive days with flows above or near 8,000 gpd. Flows above the yearly average daily flow over this long period of time would result in hydraulic overload and system failure.

If a larger system is required, the initial construction costs may be higher. This sizing criteria could result in positive economic cost savings in the future because systems will last longer and result in fewer hydraulic failures due to the increased size.

Minn. Rules pt. 7080.0130, subp. 1, item G. It is proposed that a written and graphic warning label be placed on manhole covers of sewage tanks warning of the extremely hazardous condition inside the tank. This safety provision will have minimal impacts on the cost of sewage tanks. Septic tank manufacturers have expressed to the MPCA that the additional cost for this label will be less than $10 per tank.

Minn. Rules pt. 7080.0130, subp. 2 item F. It is proposed that gas deflecting baffles be installed on the outlet of the final tank of systems serving other establishments. The addition of gas deflecting baffles could cost less than $10 per tank for the simplest gas deflecting baffle design. This baffle will prevent some solids from leaving the tank resulting in increased system longevity.

Minn. Rules pt. 7080.0130, subp. 2, item J. The current rule requires a minimum of a three-inch drop between the inlet and outlet of septic tanks. The revised code will require a minimum of a two-inch drop between inlet and outlet of septic tanks. This change should have minimal economic impact to septic tank manufacturers because the current method of a three-inch drop will still be allowed; therefore, the current inventory of tanks will still be suitable, plus the current method of manufacturing of three-inch tanks will still be allowed.

Minn. Rules pt. 7080.0130, subp. 3, item D. It is proposed that a two-tank or two compartment tank be used if waste is pumped from the dwelling into the septic tank. Also, total tank capacity would be 1.5 times more than currently specified in the code. This requirement may result in initial increases in the cost of the system; however, the long-term benefit will exceed any initial increase in cost. The cost difference for a four bedroom home would be approximately $300.00.

The use of additional septic tank capacity would result in solids being retained in the septic tank instead of being discharged to the drainfield which would cause excessive clogging of the drainfield.

Minn. Rules pt. 7080.0130, subp. 3, item E. It is proposed that the septic tank capacity be doubled if a garbage disposal is used or anticipated and the waste is pumped to the septic tank. Again, this initial increase in cost to the system will be outweighed by the extra longevity of the system due to increased solids retention in the tanks and fewer solids reaching the drainfield.

Minn. Rules pt. 7080.0130, subp. 5a, item G. It is proposed to require a service contract for aerobic tanks for the life of the system. The current rule requires a service agreement for the first two years of operation. This provision will not increase the cost of operating the system but, would ensure that the system be maintained throughout its life. If the system is not maintained, it would result in excessive solids reaching the drainfield resulting in premature failure.

Minn. Rules pt. 7080.0150, subp. 1. It is proposed to require frost protection for pipes that pass under areas of anticipated deep frost penetration. One method that would commonly be used to protect the pipes is insulation. It is expected that only a small percentage of systems will have pipes which will pass under areas susceptible to frost such as driveways or roadways. It is estimated that approximately 40 feet of insulated pipe would be required for those areas with a $4.00 per foot cost differential between insulated and non-insulated pipe.

Other methods may be employed that do not require insulation such as sloping the pipe. This provision may slightly raise the initial cost of the system but should be offset by lower operational costs.

Minn. Rules pt. 7080.0160, subp. 1, item C. It is proposed to reduce the reserve capacity for lift stations from 75 percent of the daily flow to a total tank size, including pump-out volume, of 100 percent of the daily flow or 500 gallons, whichever is greater. This provision would be a slight cost savings to the system by allowing smaller tanks.

Minn. Rules pt. 7080.0160, subp. 1, item F. It is proposed to require that all electrical installations be in accordance with the latest codes, rules, regulations, of the public authorities having jurisdiction and with rules and regulations of the National Electric Code. This provision will have no cost impact on systems constructed by individuals who now follow this code. These codes are already required under other authorities. This does not add any requirements, but serves to remind these specialty contractors of their obligations.

Minn. Rules pt. 7080.0170, subp. 2a, item B. It is proposed to include gravelless leach bed pipe and plastic chambered systems as suitable distribution medium in trenches in lieu of using drainfield rock. These media are cost comparative to the drainfield rock. This increases the options for the owner of the system to find the most cost-effective and practical alternative available.

Minn. Rules pt. 7080.0170, subp. 2, item D. It is proposed that on-site systems be placed in natural and undisturbed soils. Natural and undisturbed soils are defined as not being disturbed or manipulated by construction equipment and does not include soils where normal agricultural practices have taken place. This provision has economic impacts for those areas which do not have original soils due to soil compaction or other soil disturbance. The economic impacts could result in:

1) Connection to municipal sewer (if available).
2) An experimental system of unproven reliability.
3) Transport of sewage off site for treatment.
4) Use of a holding tank which is very expensive to maintain.

This new provision is prudent because the research which was used for these standards was conducted in natural undisturbed soils. Systems constructed in disturbed soils will likely not perform as anticipated and have a low degree of reliability. Problems have not been reported to the agency regarding systems placed in or above soils where normal farming activities have taken place.

Minn. Rules pt. 7080.0170, subp. 2a, item B. It is proposed that geotextile fabric be used over the drainfield rock as a covering to keep the overburden out of the rock. The current standard allows the use of hay and building paper to be used over the rock. This change will result in an increase to the materials cost of the system; however, the time required to place the paper and the hay will be greater than it would be to place the geotextile fabric. The final cost will be the same if either material is used. The longevity of the geotextile fabric far outlasts the hay and building paper.

Minn. Rules pt. 7080.0170, subp. 5, item 2 (o). It is proposed to allow use of a sandy to loam material as suitable for placement over the rock bed of a mound system. Currently, the material specified is a sandy loam material. This change would broaden the specification of this material; therefore, and would likely result in lower cost of this material.

Minn. Rules pt. 7080.0170, subp. 6. This section contains standards for a new system called an at-grade system. These system can be used where the limiting soil conditions are between three to four feet below the ground surface. Currently, the above mentioned soil conditions require a higher cost mound system. The cost of an at-grade system will be similar to a mound system minus the cost of the clean sand plus the labor cost to install the sand. This has the potential to decrease the costs of installation of systems in areas with less than ideal soil conditions.

Minn. Rules pt. 7080.0175, item C. It is proposed to require that all maintenance of septic tanks take place through the manhole. This would increase the cost to those pumpers who now pump the tank through the inspection pipe. Pumping through the inspection pipe does not remove all the solids and scum from

the tank and results in system performance problems. Therefore, septic tank pumpers who now correctly clean a tank will not increase their labor cost of removing the tank cover, but those septic tank pumpers who do not remove the manhole cover will incur a higher labor cost to dig up the top of the tank. The economic benefit of increased system life far outweighs the additional labor costs.

Minn. Rules pt. 7080.0176, item A. It is proposed that all ISTS pits or cavities be abandoned properly if no longer in use. The lowest cost method was chosen for system abandonment which is simply backfilling the cavity. If not properly abandoned, a safety problem exists if the top of the tank deteriorates and can no longer support the load above the tank.

Minn. Rules pt. 7080.0210, subp. 3 item C. It is proposed that designs using artificial drainage to lower the water table be supported by engineering calculations. It is also proposed that the system be monitored to ensure that the design is performing adequately. The supporting calculations and monitoring will slightly increase the cost of these systems utilizing artificial drainage, but are necessary to ensure proper system operation. Even with these additional costs, this system will be less costly than the standard mound system for overcoming high water table situations.

VIII. IMPACT ON AGRICULTURAL LANDS AND FARMING OPERATIONS

When a proposed rule has the potential of having a "direct and substantial adverse impact on agricultural land", the agency is required to address these impacts as required by the provisions of Minn. Stat. § 14.11 subdivision 2.

A review of the proposed changes to Chapter 7080 was made to determine the effects on agricultural land. The only change in the rule that may affect these lands is the requirement that one additional soil treatment area be available on each lot. This requirement may increase the size of the lots resulting in a potential increase in the amount of agricultural land taken out of production. This proposed requirement would only affect those few developers who plan developments on small lots which cannot support two areas for soil treatment systems. In these instances, the increased conversion of agricultural land may occur due to the larger lot sizes needed to meet the demand for housing.

It is not anticipated that the proposed revisions to these rules will have any significant impacts on agricultural lands or farming operations.

IX. COSTS TO LOCAL PUBLIC BODIES

Minn. Stat. § 14.11, subd. 1, requires the Agency to estimate the cost of rules to local public bodies if the total anticipated costs to all local public bodies in the state would be over $100,000 in either of the first two years immediately following adoption of the rule. According to this rule, municipality "means any county, city, town, the Metropolitan Waste Control Commission established in Minn. Stat. ch. 473, the Metropolitan Council when acting under the provisions of that chapter, or any other governmental subdivision of the state responsible by law for the prevention, control, and abatement of water pollution in any area of the state".

Municipalities are required to adopt the provisions of Chapter 7080 within shoreland and floodplain areas and wild and scenic river land use districts. Outside of these areas, these standards provide recommended guidelines for the adoption of local ordinances and for the location, design, construction, use and maintenance of individual sewage treatment systems. If a municipality has not previously adopted Chapter 7080, some additional costs may be associated with the administration of these rules.

Chapter 7080 provides the minimum standards and criteria that municipalities may administer as a part of their authorities. Should a municipality (as defined in 7080.0020 subp. 24a) administer these rules for areas outside of any required areas, the added activities may collectively exceed the $100,000 threshold to all local public bodies in the state in either of the first two years. These costs would primarily be attributed to staff time associated with site reviews, inspections and permitting activities. Additional staff time associated with these activities is not intended to be costly and are anticipated to be manageable for the municipality. It is expected that a minimal amount of equipment or materials would need to be purchased to carry out the provisions of these rules.

X. REVIEW BY COMMISSIONER OF TRANSPORTATION

Minn. Stat. § 174.05 requires the agency to inform the Commissioner of Transportation of all rulemakings that concern transportation, and requires the Commissioner of Transportation to prepare a written review of the rules. The proposed rule amendments discussed in this document are standards for construction and maintenance and do not involve planning, repair or usage of the state transportation network or its infrastructure. The Commissioner of Transportation is listed on the agency Minn. Stat. §§ 14.14, subd. 1a, and 14.22, subd. 1, list and will therefore receive the agency's notice of intent to adopt. However, not special mailing or request for review and comment will be made to the Commissioner of Transportation because the proposed amendments do not impact transportation.

XI. CONCLUSION

Based on the foregoing, the proposed amendments under Minn. Rules ch. 7080 are both needed and reasonable.

Date: 8/5/94

Gordon E Wyman /for
Charles W. Williams
Commissioner

EXHIBIT LIST

Exhibit Number	Document
1.	Individual Sewage Treatment System (ISTS) Advisory Committee Meeting Minutes.
	1-1. September 19, 1990
	1-2. August 21, 1991
	1-3. August 19, 1992
	1-4. September 21, 1992
	1-5. October 22, 1992
	1-6. February 17, 1993
	1-7. March 31, 1993
	1-8. May 26, 1993
	1-9. August 24, 1993
2.	* U.S. Department of Agriculture; Soil Conservation Service, Soils Management Support Service, technical monograph No. 19. 1992. Keys to Soil Taxonomy, 5th Edition.
3.	* U.S. Department of Agriculture. 1993. Soil Survey Manual Agricultural Handbook No. 18.
4.	American Society of Testing Materials. 1993. Standard Specification for Precast Concrete Septic Tanks, C1227-93a.
5.	* National Sanitation Foundation Standard #40 for Individual Aerobic Wastewater Treatment Plants. 1990.
6.	Dr. James Anderson and Dr. Roger Machmeier. "Evaluation and Performance of Nylon Wrapped Corrugated Tubing in Minnesota" College of Agriculture, University of Minnesota.
7.	* American Society of Testing Materials F 667. 1985. Standard Specification for Large Diameter Corrugated Polyethylene Tubing and Fittings.
8.	Wisconsin At-grade Soil Absorption System Siting, Design and Construction Manual. January 1990.
9.	Metropolitan Council Publication No. 640-92-012. December 5, 1991. "Amendments to the Metropolitan Development and Investment Framework Policies for Rural Service Area".
10.	Minnesota Pollution Control Agency and Minnesota Department of Agriculture. December 1991. Nitrogen in Minnesota Ground Water, Part Two; Chapter IV. Septic Systems I.
11.	* Munsell Color Charts, 1992 Revised Edition.

EXHIBIT LIST
Page 2

12. Minnesota Pollution Control Agency. Cross-reference Chart for Relocated Rule Language.

13. Dr. James L. Anderson, Curriculum Vitae.

* Indicates documents that are incorporated by reference in the body of the rule. These documents are available at the:

Minnesota State Law Library
25 Constitution Avenue
St. Paul, Minnesota 55155