Minnesota Pollution Control Agency

Septage and Restaurant Grease Trap Waste Management Guidelines

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Photo courtesy of COLE Publishing, Inc.

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Definitions

"Agronomic rate for nitrogen" means the amount of septage that will provide the nitrogen required for crops or other vegetation grown on the land.

"Cover crop" means a small grain or other close growing vegetation not grown for harvest (e.g. vegetation growing on the land set aside for conservation purposes).

"Cropping year" means a year beginning on September 1 of the year prior to the growing season and ending August 31 the year the crop is harvested. For example, the 1994 cropping year began September 1, 1993 and ended August 31, 1994.

"Domestic septage" **(federal definition)** means either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

"*Fallow land"* means land that is not cropped and kept cultivated throughout a growing season and has a vegetative cover of less than 25 percent. Any land that is not cropped and cultivated during the months of September through May where a crop will be grown the following growing season is not considered fallow land.

"Feed Crops" mean crops produced primarily for consumption by animals.

"Fiber Crops" mean crops such as flax and cotton.

"Food Crops" mean crops consumed by humans. These include but are not limited to fruits, vegetables, and tobacco.

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

"Pathogens" means organisms that can cause an infection or disease in a susceptible host.

"pH" means the degree of acidity or alkalinity of a solution and is a measure of the strength of an acid or a base. It is expressed as the logarithm of the reciprocal of the hydrogen ion concentration measured at 25 degrees Celsius (77 degrees Fahrenheit) or measured at another temperature and then converted to an equivalent value at 25 degrees Celsius.

"Pumper" means an individual or business holding a Pumper license issued by the Minnesota Pollution Control Agency in accordance with MN rule chap. 7080.

"Residential development" means ten or more places of habitation concentrated within ten acres of land. The term also includes schools, churches, hospitals, nursing homes, businesses, offices, and apartment buildings or complexes having ten or more living units.

"Septage" **(State Definition)** means solids and liquids removed during the periodic maintenance of individual sewage treatment systems, or solids and liquids that are removed from toilet waste treatment devices.

"Vectors" means organisms such as flies, mosquitoes, rats, etc. that have the potential to carry diseases.

"Winter" means the time that soils are frozen or snow covered, so that incorporation or injection are not possible. This time period varies from year to year.

Introduction

These guidelines provide pumpers with information on how to manage septage and restaurant grease trap wastes. Because land application is a common and sometimes complex management option, these guidelines focus on requirements for land application.

These guidelines combine the federal rule requirements and the Minnesota Pollution Control Agency (MPCA) management guidelines for land application of septage into one document. If these guidelines are followed, pumpers will be in compliance with 40 CFR part 503 and the MPCA septage management guidelines. These guidelines also include requirements for land application of restaurant grease trap waste. If these guidelines are followed, pumpers will also be in compliance with MPCA requirements for land application of restaurant grease trap waste. Requirements for land application of commercial wastes, other than restaurant grease trap waste, are not included in these guidelines.

Domestic septage is defined by the Environmental Protection Agency as:

> *"either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant."*

At the federal level, land application of domestic septage is regulated by 40 CFR part 503. At the state level, MN Rule Chap. 7080 requires anyone that pumps individual sewage treatment systems to be licensed by the MPCA.

Commercial wastes are any liquid or solid materials removed from septic tanks, holding tanks, or similar treatment works that receive either commercial or industrial wastewater. A waste is not considered commercial if the wastewater is only from the sanitary facilities from the business. Examples of commercial wastes are: waste pumped from small animal slaughtering operations, pre-treatment wastes from a food processing facility, or waste from a flammable trap at a car wash. Land application of non-hazardous commercial waste is regulated at the federal level by 40 CFR part 257 and at the state level by MN Rules Chap. 7001 and 7035.

It is important for pumpers to be aware that not all commercial wastes can be land applied safely. Before land applying commercial wastes, other than restaurant grease trap waste, the MPCA district office you are located near should be contacted to determine if the waste can be land applied. In most cases, testing of the waste is needed before land application can take place, and in some cases an MPCA permit is required.

1. Background Information on Septage and its Characteristics

Septage is managed in a variety of ways throughout the country and in Minnesota. Common methods of management include: transfer of septage to a Publicly Operated Treatment Works (POTWs); land application; and landfilling.

In Minnesota, the options for management are determined by where you are located in the state. In the larger metropolitan areas, it is common for septage to be discharged into a POTW where it is treated and managed as biosolids. At that point the septage becomes the POTW's responsibility and is subject to the requirements of MN Rule Chap. 7041 (Sewage Sludge Management Rules) and 40 CFR part 503. In smaller communities or areas that are not close to a POTW transfers are not practical and septage is typically land applied. Landfilling of septage is not allowed in Minnesota because it is in liquid form and landfills cannot accept materials containing free liquids.

The quantity of septage removed from septic tanks each year is not tracked by the state or the federal government at this time, however, estimates have been made by using the following assumptions: approximately 600,000 homes in Minnesota have individual sewage treatment systems; these systems should be pumped every three years if maintained properly; and the average septic tank capacity is 1500 gallons. Using these assumptions, about 300,000,000 gallons of septage are pumped each year. Of this total about 207,500,000 gallons of septage are land applied and the remaining 92,500,000 gallons are transferred to POTW's. This makes land application the most common method for managing septage in Minnesota.

Federal requirements for land application provide limited information on how to prevent runoff or contamination of ground water. The federal 503 rule simply states that these things cannot occur. The state guidelines provide pumpers with detailed information on site suitability, separation distances to features such as surface waters and wells, and detailed site management requirements. These are practices commonly used for land application of other by-products and wastes in Minnesota. They have proven to be effective for preventing runoff of wastes and contaminants from application sites and preventing contamination of ground water.

Pumpers are not required to analyze septage before it is land applied. Both state and federal requirements use average septage analysis results to calculate allowable application rates. Table 1 contains concentrations for specific parameters that have been determined by testing. Septage supplies about 5 pounds of nitrogen, and 2 pounds of phosphorus per 1000 gallons.

Table 1. Characteristics of Septage.[1]

Parameter	Concentration (mg/L)		
	Average	Minimum	Maximum
Conventional Parameters			
Total Solids	34,106	1,132	130,475
Total Volatile Solids	23,100	353	71,402
Total Suspended Solids	12,862	310	93,378
Volatile Suspended Solids	9,027	95	51,500
Biochemical Oxygen Demand	6,480	440	78,600
Chemical Oxygen Demand	31,900	1,500	703,000
Total Kjeldahl Nitrogen	588	66	1,060
Ammonia Nitrogen	97	3	116
Total Phosphorus	210	20	760
Alkalinity	970	522	4,190
Grease	5,600	208	23,368
PH	-	1.5	12.6
Metals			
Arsenic	0.141	0	3.5
Barium	5.76	0.002	202
Cadmium	0.097	0.005	8.1
Chromium (total)	0.49	0.01	34
Cobalt	0.406	<0.003	3.45
Copper	4.84	0.01	261
Cyanide	0.469	0.001	1.53
Iron	39.3	0.2	2,740
Lead	1.21	<0.025	118
Manganese	6.09	0.55	17.1
Mercury	0.005	0.0001	0.742
Nickel	0.526	0.01	37
Silver	0.099	<0.003	5
Tin	0.076	<0.015	1
Zinc	9.97	<0.001	444
Organics			
Methyl Alcohol	15.8	1	396
Isopropyl Alcohol	14.1	1	391
Acetone	10.6	0	210
Methyl Ethyl Ketone	3.65	1	240
Toluene	0.17	0.005	1.95
Methylene Chloride	0.101	0.005	2.2
Ethylbenzene	0.067	0.005	1.7
Benzene	0.062	0.005	3.1
Xylene	0.051	0.005	0.72

[1] Taken from "EPA Guide to Septage Treatment and Disposal", EPA/625/R-94/002, September 1994.

2. Restaurant Grease Trap Wastes

Grease traps are used by restaurants to prevent fats, oils, and greases from entering the soil treatment area of an individual sewage treatment system or the collection system of a centralized sewage treatment system. Wastes that are pumped from these traps are very high in fats and oils and may or may not contain sanitary wastes.

Grease traps are set up in two main configurations. One configuration is a separate tank that receives only wastewater from the kitchen that is high in fats, oils, and greases. The effluent from the tank is then discharged to a centralized sewage treatment system or an individual sewage treatment system septic tank. Restaurants that have an individual sewage treatment systems generally install several septic tanks in series to provide a cleaner effluent before discharging it to the soil treatment area. In this set up the first septic tank in the series acts as a grease trap. In these guidelines, the first septic tank in the series will be considered the same as a grease trap, and the remaining tanks in series regular septic tanks.

Grease trap wastes may be transferred to a POTW, however, the same issues exist as those for septage transfers. It is not likely that smaller POTW's will accept this waste because of the high biochemical oxygen demand of fats and oils. Landfills cannot accept this waste because of the liquid content, therefore, land application is a common form of management. Table 2 provides an analysis from a composite of four restaurant grease traps. This data shows that, unlike septage, grease trap wastes are low in nitrogen.

Table 2. Grease Trap Waste Characterization[1]

Parameter	Results on Wet Weight Basis
Total Solids (percent)	6.0
Total Volatile Solids (percent)	88.0
Fats, Oils & Grease (percent)	1.1
pH (SU)	4.4
Total Nitrogen (percent)	0.0056
Total Phosphorus (percent)	0.0029
Potassium (percent)	0.0036

[1]Taken from The Pumper, "Land treatment of grease trap wastes. A beneficial use approach", March 2000.

Limited research has been conducted on the effects of land applied grease trap wastes on the soil or plants. Some studies suggest that the soil can break down this waste and even be beneficial to the soil. The National Association of Waste Haulers conducted a demonstration project and documented observations made on areas receiving grease trap wastes. It was concluded that restaurant grease trap wastes can be land applied safely if rates are limited to 4 dry tons/acre/year (Rohm, 2000). This is approximately 16,000 gallons/acre using a total solids content of 6 percent.

Wastes similar to those from grease traps are permitted for land application in Minnesota. Sludges produced by treating wastewaters from meat and poultry processing industries

can also contain high percentages of fats, oils, and greases. These wastes have been land applied for many years without causing any known problems. Some farmers believe that application of these sludges has actually improved their soil by making it more permeable and better aerated (these are not measured observations).

One of the problems that occurs when grease traps wastes are applied to forage or cover crops is that the above ground portions of the plant are coated with the fats, oils, and greases. This kills the above ground portion of the plant temporarily. Plants do recover since the roots are not damaged, however, yields are likely affected.

Excessive application rates can cause clogging of soil pores. This could lead to problems with soil aeration or runoff, since the soil's infiltration capacity and rate may be reduced. To avoid this problem application rates must be limited, especially when surface applied. The application rate that causes problems like this to occur has not been established, so these guidelines use conservative application rate limits (see section on requirements for land application of restaurant grease trap wastes).

Another concern with land application of grease trap wastes is that they can be very odorous. Odor is not only a nuisance condition but can attract vectors such as flies and rodents to application sites. To reduce the odor problem, it is recommended that incorporation or injection be used as an application method whenever possible and that care be taken when locating sites that will be used for land application of grease trap wastes. If these wastes are surface applied, they must be mixed with septage and lime stabilized.

Some pumpers have noted that restaurant grease traps can contain a lot of floating oils. These oils should be collected in the restaurant and recycled. If there are a lot of oils in the grease trap, the management of the restaurant should be informed and their workers trained on how to collect and manage this oil. Restaurant managers should be encouraged to train their workers to catch as much of the fats, greases, and oils as possible before they go down the drain. This will not only reduce problems with their effluent, it will also limit the amount of this waste that is land applied.

3. Transferring Septage and Restaurant Grease Trap Waste to a Publicly Owned Treatment Works (POTW)

Septage and restaurant grease trap waste can be transferred to a POTW with their permission. Because these two waste types have high biochemical oxygen demands, not all POTW's are willing or able to accept them. POTW's may be more willing to accept domestic holding tank waste because the biochemical oxygen demand averages about 500 mg/l .

Each POTW has the authority to refuse or accept these wastes. This decision is based on how the transfers could affect their system's operation. Information is available to assist POTW's determine whether they can accept septage or holding tank wastes at their facility. The following documents contain useful information for POTW's trying to decide whether they should accept septage at their facility:

- "Accepting Septage at a Wastewater Treatment Plant" (available from MPCA).
- "Septage Handling", (1997). Water Environment Federation Manual of Practice No. 24. Water Environment Federation, 601 Wythe Street, Alexandria, VA 22314-1994, (703) 684-2400.
- "Handbook Septage Disposal Guide", (1984). EPA-625/6-84-009, U.S. Environmental Protection Agency Publication.

If septage or restaurant grease trap waste is transferred to a POTW, this information should be indicated on the haulers daily record log. This type of record is needed to show the final destination of the waste to prove it has been properly managed.

4. Septage Storage Requirements

A structure used to store or treat septage pumped from multiple sources when the structure is not located at a permitted wastewater treatment facility may require an MPCA permit. Requirements for permitting are covered by MN Rules Chap. 7041. Mobile storage units used for the transport of septage do not require an MPCA permit.

To determine if a storage structure requires an MPCA permit, contact Jorja DuFresne at (651) 296-9292.

If a permit is required you will be requested to submit a permit application. There is a permit application fee of $85.00 and an annual fee of $505.00 for this type of permit.

Land Application Requirements for Septage

These requirements are only for land application of septage on areas referred to as non-public contact sites. These are agricultural, forest, and mine lands. Areas that are frequented by the public such as ball fields, cemeteries, etc. must meet the more detailed requirements of 40 CFR part 503 for sewage sludge.

It is important for pumpers to check with local units of government to find out if they have land application requirements or ordinances that must be followed. It is the pumper's responsibility to be up to date on all rules and ordinances related to land application.

1. Requirements for Pathogen Control and Vector Attraction Reduction

All septage that is land applied must meet the requirements for pathogen control and vector attraction reduction. These requirements are intended to provide protection against transfer of diseases from the application area. This is done by reducing the number of pathogens present, preventing vectors such as flies and rodents from being attracted to the application site, and by following restrictions on site use. Pumpers must select from the options described in this section to ensure that pathogen control and vector attraction reduction requirements are met.

1.1 Pathogen Control Requirements

One of the following options for pathogen control must be met when septage is land applied:

Option 1 - Site Restrictions: The site restrictions A through F in Table 3 must be maintained.

Option 2 – Lime Stabilization with Site Restrictions: The pH of the septage must be raised to 12.0 or greater by alkali addition and without the addition of more alkali, must remain at 12.0 or higher for 30 minutes and the site restrictions A through C in Table 3 must be maintained.

Table 3. Minimum duration between time of septage application and harvest, grazing, and public access to the site.

Restriction Reference	Restricted Activity	Waiting Period
A	Food crops whose harvested part may touch the soil / septage mixture (melons, squash, tomatoes, etc.)	14 months
B	Food crops with harvested parts below the surface (potatoes, carrots, etc.)	38[1] months
C	Feed, food, or fiber crops that do not touch the soil surface (field corn, sweet corn, hay, flax, etc.)	30 days
D[2]	Turf harvest	1 year
E[2]	Grazing of animals	30 days
F[2,3]	Public access to land • high potential for exposure • low potential for exposure	 1 year 30 days

[1]This can be reduced to a 20 month duration between application and harvest when the septage is surface applied and stays on the soil surface four months or longer prior to incorporation into the soil.
[2]Not required if lime stabilization used for pathogen control.
[3]Lands with high potential for exposure are public contact sites, reclamation sites located in populated areas, turf farms, or plant nurseries. Lands with low potential for exposure are lands with infrequent public use and include areas such as agricultural land, forests, or reclamation sites located in an unpopulated area.

Pumpers are responsible for ensuring that farmers or other end users are informed of site use restrictions and that appropriate precautions are taken to prevent access to sites. This may require that some sites be posted with signs informing the public to stay off the site.

1.2 Vector Attraction Reduction Requirements

One of the following options for vector attraction reduction must be met when septage is land applied:

Option 1 - Injection: Septage must be injected into the soil. No significant amount of septage can be present on the soil surface within one hour after injection has taken place.

Option 2 - Immediate Incorporation: Septage must be incorporated by tillage within 6 hours after surface application.

Option 3 - Lime stabilization: The pH of the septage must be raised to 12.0 or greater by alkali addition and without the addition of more alkali must remain at 12.0 or higher for 30 minutes.

NOTE: When lime stabilization is used for either pathogen control or vector attraction reduction, the temperature of the septage must be taken into account when measuring pH. The reading must be taken at the standard temperature of 25^{o} C (77^{o} F), or corrected to 25^{o} C (see the Pumpers Manual for a detailed explanation on how to make this correction).

2. Site Suitability Requirements for Septage Application

The pumper must determine whether land application sites are suitable. Sites are considered suitable if the suitable soil conditions in Table 4, slope restrictions in Table 5, and separation distances in Table 6 are met.

Table 4. Suitable Soil Conditions[1].

Characteristic	Minimum requirement
Soil texture	At the zone of septage application (surface horizon or injection depth) the soil texture must be one of the following: fine sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, sandy clay, silty clay loam, silty clay, or clay
Surface horizon permeability	If 0.2 inches/hour or less, this soil is suitable only for surface application with incorporation within 48 hours or injection.
Depth to bedrock[2]	3 feet
Depth to seasonally saturated soil[2,3]	3 feet
Frequency of flooding	Must not be occasional or frequent

[1] This information can be obtained from the soil surveys published by the Natural Resources Conservation Service or by characterization of the site by a state of Minnesota licensed soil scientist or other qualified person.
[2] This depth must be a minimum of 5 feet, if the soil is classified as a "highly permeable soil".
[3] On sites where tile drainage is installed, the depth to tile lines is considered the depth to the seasonally saturated soil. Tiling must be adequate to ensure the separation distance can be maintained.

Table 5. Slope restrictions for application sites where septage is land applied.

Slope (percent) [1]	Surface application	Injection or Immediate Incorporation[2]
Summer:		
0 – 6	Allowed	Allowed
> 6 – 12	Not allowed	Allowed
> 12	Not Allowed	Not Allowed
Winter: Only areas with slopes from 0 to 2 % can be used for winter applications of septage.		

[1] This information can be obtained from the soil surveys published by the Natural Resources Conservation Service or by characterization of the site by a state of Minnesota licensed soil scientist or other qualified person.
[2] Immediate incorporation is mixing of septage into the soil with some form of tillage within 48 hours of application.

Table 6. Minimum separation distances from the land application site.

Feature		Separation Distances in Feet		
		Surface Applied	**Incorporated within 48 hours**	**Injected**
Private drinking water supply wells		200	200	200
Public drinking water supply wells[1]		1000	1000	1000
Irrigation wells		50	25	25
Residences		200	200	100
Residential developments		600	600	300
Public contact sites		600	600	300
Down gradient lakes, rivers, streams, wetlands, intermittent streams, or tile inlets connected to these surface water features[2], and sinkholes	Slope 0 % to 6 %	200	50 feet	50
	Slope 6 % to 12 %	Not Allowed	100 feet	100
	Winter (0 % to 2 %)	600	Not Applicable	Not Applicable
Grassed Water Ways[3]	Slope 0 % to 6 %	100	33	33
	Slope 6 % to 12 %	Not Allowed	33	33

[1] There may be special requirements if the land application site is within the boundaries of a wellhead protection area. Check with the Minnesota Department of Health or local unit of government.

[2] Intermittent stream means a drainage channel with definable banks that provides for runoff flow to any of the surface waters listed in the above table during snow melt or rainfall events.

[3] Grassed waterways are natural or constructed and seeded to grass as protection against erosion. Separation distances are from the centerline of grassed waterways. For a grassed waterway which is wider than the separation distances required, application is allowed to the edge of the grass strip.

3. General Site Management

The following general site management practices must be followed:

a. Application of septage is not allowed on areas of a site ponded with water or septage.

b. Septage cannot be applied by spraying from public roads or across road right of ways.

c. The application area must be clearly identified with flags, stakes, or other easily seen markers at the time of application to identify the site boundaries, separation distances, and unsuitable application areas within the site. Where site boundaries can be identified by field roads, fences, etc., identification is not necessary.

d. All septage that is land applied must be uniformly distributed over the area of the site used during application.

e. A distribution device (splash plate or spreader) is required on the application vehicle so that even application of septage is possible and application rate limits can be met.

f. Measures must be taken to ensure that septage remains where it was applied and does not run off and concentrate in low areas of the field or run off the site.

g. The application vehicle must be moving at all times during application.

h. Winter applications cannot occur unless measures are taken that allow septage to be applied evenly over the application area. This generally means that fields must be plowed or cleared of snow in some way.

4. Allowable Application Rates

Typically, nitrogen is the nutrient used to determine how much septage can be applied to an application site. Septage must be applied at a rate that supplies no more nitrogen than a crop needs. This is referred to as the agronomic application rate. In this guide, the Maximum Allowable Nitrogen Application (MANA) rate is used to calculate the gallons of septage that can be applied to a site over an entire cropping year. Pumpers can choose one of the following options for determining their maximum annual septage application rate:

> **Option 1:** Apply septage at rates that do not exceed the MANA rates identified under Option 1 of Table 7; or
>
> **Option 2:** Apply septage at rates that supply the MANA rates identified under Option 2 of Table 7 by using the following equation:

$$\text{Maximum Allowable Septage Application Rate (gal/ac/yr)} = \frac{\text{MANA rate}}{0.0026}$$

Use of either option will ensure compliance with the state recommendations and federal requirements for annual loading rate limits.

Option 1 uses conservative assumptions for yields and septage loading rates to ensure that the agronomic rate for nitrogen is not exceeded. This option should be used when the pumper does not have enough information to determine MANA rates, such as, yield goals or soil test information.

Option 2 requires the pumper to determine the MANA rate and calculate the maximum allowable septage application rate. This method should only be used when all information is available for determining MANA rates. Realistic yield goals are needed to determine MANA rates when using option 2 and can be determined by one of the following methods:

- Use the most recent 5 year average crop yield, excluding the worst year;
- Use the most recent 3 to 5 year average crop yield and increase this by 10 %; or
- Use information from the Natural Resource Conservation Service, county extension office, or a crop consultant on typical yields for the soil type and management being used in the area.

For both options the MANA rate must be adjusted by subtracting out other nitrogen applied to the site from fertilizers, manure, or other by-products. These are considered nitrogen credits and are subtracted from the MANA rate to determine the amount of nitrogen that can be supplied by the septage.

To ensure that MANA rates are not exceeded, information on rates of applied manure, fertilizer, septage, municipal by-products, and any other material applied to the site that supplies nitrogen to the crop must be obtained. To simplify record keeping and

management, it is recommended that septage not be applied on sites that receive nitrogen from other sources.

Table 7. Maximum Allowable Nitrogen Application Rates (MANA Rates).

Crop	Option 1 MANA Rate (pounds nitrogen/acre/year)	Option 2 MANA Rate (pounds nitrogen/acre/year)
Non-harvested vegetation or cover crops	50 [20,000 gal/acre]	50
Soybeans	120 [45,000 gal/acre]	3.5 lb Nitrogen X Bushel/acre yield goal
Alfalfa	150 [60,000 gal/acre]	50 lb Nitrogen X Tons/acre yield goal
Clover, alfalfa-grass, clover-grass mixtures, or other legumes	100 [40,000 gal/acre]	50 lb Nitrogen X Tons/acre yield goal
All other crops (e.g. corn, oats, wheat, pasture, etc.)	50 [20,000 gal/acre]	University of Minnesota Publication – Recommendations for Agronomic Crops in Minnesota (BU-6240-GO and its updates)

4.1 Specific Nitrogen Management Requirements:

The nitrogen management requirements in this section were developed to prevent nitrogen from being lost by leaching into ground water. All of the requirements in this section must be followed.

a. After the second cutting of a hay crop the septage application rate must be reduced to supply no more than half of the MANA rate for the cropping year.

b. Septage cannot be applied on land that remains fallow for the entire cropping year.

c. When no crop is grown on the application site during the time period July 1 through August 31 (this generally occurs on sites where early maturing crops such as oats, sweet corn, or peas have been harvested), the following requirements apply:

- ❖ Applications of septage are limited to rates that supply no more than 50 pounds of nitrogen per acre (20,000 gallons/acre);
- ❖ All nitrogen applied must be credited to the following cropping year; and

- ❖ A crop must be grown the following cropping year.

4.2 Hydraulic Loading Rate Limits

Hydraulic loading rate limits are set to prevent ponding of septage on the soil surface and runoff of septage from where it was applied. The following requirements must be met:

a. Daily application rates for surface applied septage are limited to 10,000 gallons/acre/day.

b. Field conditions must be taken into account to ensure that the following requirements are met:

- ❖ No runoff of septage from the application site is allowed.
- ❖ No surface ponding of septage is allowed after 6 hours from the time of application.
- ❖ Minimal movement of septage from where it was applied occurs.

c. Application rates are limited to a total of 15,000 gallons/acre over the entire winter period.

5. Pumper Qualifications

All septage must be land applied by a state of Minnesota licensed pumper.

6. Record Keeping Requirements

The pumper must develop and maintain a record keeping system that provides the information described in this section. These records must be kept for a minimum of five years.

6.1 For each land application site, the following information must be kept:

a. Location of each land application site used. This can be recorded as the street address, latitude and longitude of the site, or legal description indicating the quarter section, township coordinate, range coordinate, township name, and county name.

b. A map of the land application site with the site boundaries identified. The map must be from a soil survey when available. If not available, another map with comparable information can be used. Any areas of the site which are not used because they are unsuitable should be indicated on the map by coloring or crosshatching.

c. Total useable acreage of the site (unsuitable areas should not be included in the site acreage, because application rates are based on the actual area septage is applied).

d. Crop grown on the site.

e. Maximum allowable nitrogen application rate for the cropping year in pounds/acre.

f. Maximum allowable septage application rate for the cropping year in gallons/acre.

g. Running total of gallons of septage applied on the site.

h. A written description of how the pathogen reduction requirements have been met.

i. A written description of how the vector attraction reduction requirements have been met.

j. The following signed certification statement:

"I certify under penalty of law, that the information that will be used to determine compliance with the pathogen requirements [insert either 503.32(c)(1) or 503.32(c)(2)] and the vector attraction reduction requirement [insert either 503.33(b)(9), 503.33(b)(10) or 503.33(b)(12)] was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

6.2 For each load of septage applied to a site, the following detailed information must be kept:

a. Source(s) of septage in the load. This means the home or facility the material was removed from and can be indicated by property owner name, or invoice number. The type of material pumped should be identified (septage, grease trap waste, etc.).

b. The date each load of septage is applied on the site.

c. Total gallons land applied.

d. Total acres covered.

Requirements for Land Application of Restaurant Grease Trap Waste

Restaurant grease traps are designed to remove greases, fats, and oils before they enter a centralized sewage treatment system or the soil treatment area of an individual sewage treatment system. The waste that is removed from the tank described in Figure 1 and the first septic tank described in Figure 2 are restaurant grease trap wastes and must be managed by following the special management requirements of this section.

Figure 1 – Tanks designed for the purpose of removing fats, oils, and greases from effluent before discharge to a centralized sewage treatment system or to an individual sewage treatment system septic tank.

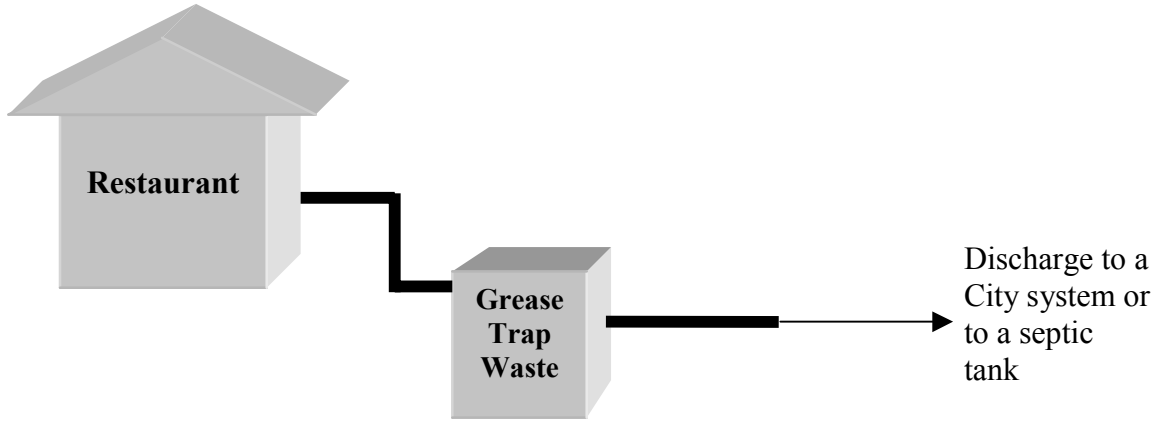
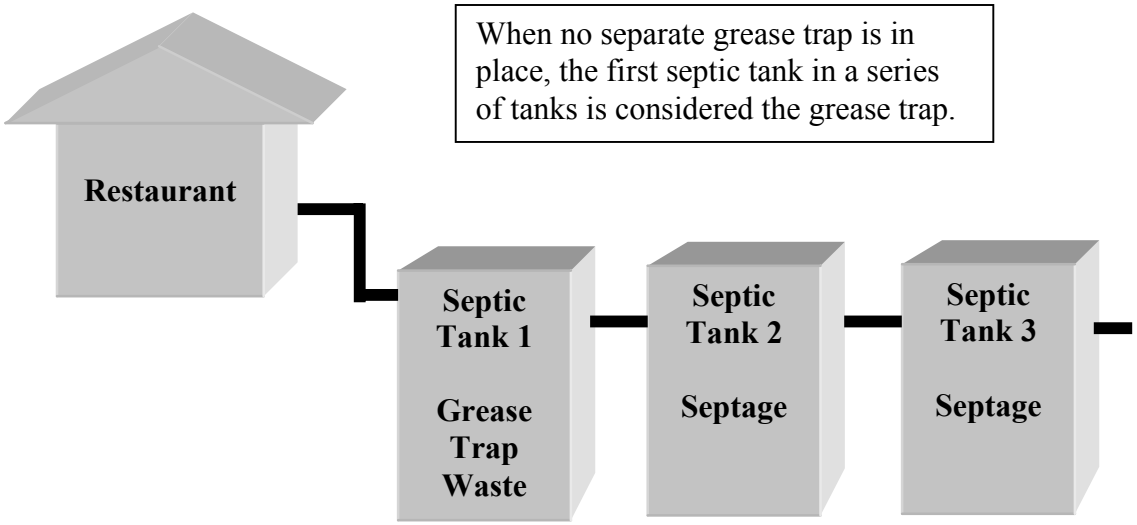


Figure 2 – When there is no tank specifically dedicated to collection of greases, fats, and oils, the first septic tank that receives effluent from a restaurant is considered the grease trap.



Restaurant grease trap waste can be land applied if **all** of the requirements of these guidelines (pages 11 through 19) for the land application of septage are followed. **In addition**, one of the following options for management must be met:

> **Option 1:** Restaurant grease trap waste must be incorporated into the soil within 6 hours of surface application and is limited to an application rate of 15,000 gallons/acre/year.
>
> **Option 2:** Restaurant grease trap waste must be injected into the soil and is limited to an application rate of 15,000 gallons/acre/year.
>
> **Option 3:** Restaurant grease trap waste from a tank, as described by Figure 1, must be mixed with domestic septage prior to land application. The quantity of restaurant grease trap waste mixed with septage cannot exceed 25% of the mixture by volume. Maximum application rates of this mixture are limited to 60,000 gallons/acre/year.
>
> **Option 4:** Restaurant grease trap waste from the first septic tank, as described by figure 2, must be combined with domestic septage and mixed prior to land application. The quantity of restaurant grease trap waste mixed with septage cannot exceed 50% of the mixture by volume. The source of the septage used for diluting the grease trap waste can be from the other tanks in series with the first or from another ISTS system. Maximum application rates of this mixture are limited to 30,000 gallons/acre/year.

In addition to the application rate limits specified for each option, the application rate limits used for septage also apply. This means that the maximum application rate for restaurant grease trap waste cannot cause the annual application rate limit specified for septage to be exceeded.

Additional septage may also be applied to sites receiving restaurant grease trap waste or mixtures of restaurant grease trap waste and septage as long as the sum of all these wastes are counted as part of the year's maximum allowable application rate for septage.

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