

6 Septic Tank ~~Pumpers' Pumping Guidance Manual and~~ Septage Disposal

6.1 Introduction

Revision: ~~April 24, 2000~~September 18, 2014

A septic ~~tank~~ system requires periodic maintenance that includes pumping out the accumulated scum, ~~and~~ sludge, and wastewater, called (cumulatively called) septage) from the septic tank. ~~Septage, because of its source, may give off~~ generates offensive odors and presents public health hazards, ~~including several diseases.~~ To prevent nuisance conditions and public health hazards septage must be collected (pumped), transported, stored, and disposed of in accordance with the following rules:

- IDAPA 58.01.15, Rules Governing the Cleaning of Septic Tanks (section 8.2), and
- IDAPA 58.01.16, Wastewater Rules, and
- 40 CFR Part 503, Standards for the Use or Disposal of Sewage Sludge.

~~The s~~Septic tank pumpers ~~has~~have the important task of not only helping the homeowner maintain the system by pumping the septic tank, but protecting the ~~homeowner~~property owner and public from the various health hazards associated with septage. To protect and help the homeowner~~property owner,~~ ~~the a~~ pumper needs to understand how the ~~sewage~~septic system operates and proper procedures for pumping the septic tank and septage disposal.

6.2 Septage and Public Health

~~Many d~~Pathogens~~iseases, including any~~ that will pass in urine ~~and,~~ feces, or bodily fluids can be found in sewage. Septage may contain ~~some or all of the~~many number of these pathogens. The following list provides an example of the types of pathogens present in septage including, but not limited to:

- Bacterial ~~diseases~~organisms of diarrhea such as (*Salmonella*, *Shigella*, and *Clostridium*) and typhoid (*Salmonella typhi*) ~~may be present.~~
- Parasites, such as pinworm, roundworm, and hookworm ~~are often found in septage,~~ (especially in the scum layer):
- Organisms that cause amoebic dysentery, polio, and hepatitis~~can also exist in septage.~~

Proper management of septage upon its removal from the septic tank through its ultimate disposal or beneficial reuse is critical in ensuring the protection of public health from the pathogens present in septage.

6.2.1 Classifications of Septage

While all wastewater that enters a septic tank is septage the source of the wastewater prior to the septic tank determines the classification of the septage. All septage that comes from domestic or residential activities is classified as domestic septage. Examples of wastewater sources that result in domestic septage include, but are not limited to, single and multi-family residential housing, restrooms (including shower facilities), and break rooms. Domestic septage includes the contents removed from septic tanks, portable toilets, privy vaults, wastewater holding tanks, type III marine sanitation devices, recreational vehicle holding tanks, very small wastewater treatment plants, or semipublic facilities (e.g., schools, motels, mobile home parks, campgrounds, and small commercial endeavors) that receive wastewater from domestic sources.

Industrial or commercial process wastewater is classified as nondomestic septage. Nondomestic septage includes the contents removed from septic tanks or wastewater holding tanks that receive wastewater from industrial or commercial sources. Nondomestic septage also includes, but is not limited to, the contents removed from grease traps or sand oil separators. If industrial or commercial wastewater is mixed in any ratio with domestic wastewater the entire mixture is classified as industrial or commercial wastewater. If nondomestic septage is mixed in any ratio with domestic septage the entire mixture is classified as nondomestic septage.

The classification of septage can have an impact on the allowable disposal or beneficial reuse of the septage. Septic tank pumpers need to be aware of the septage classifications of the materials they pump and haul so the proper disposal of the septage can be achieved. Additionally, it is recommended that facilities that produce domestic and nondomestic wastewater isolate the wastewater plumbing and discharge these wastewater sources to separate septic tanks. This allows the domestic and nondomestic septage to be segregated so that the disposal and beneficial reuse options are maximized.

6.3 Parts and Mechanics of a Septic System Components

The most common septic ~~tank~~ system consists of ~~the a~~ septic tank, ~~either rectangular or round and usually made out of concrete,~~ and a ~~disposal field~~ drainfield. Septic tanks are commonly constructed of concrete, polyethylene, polypropylene, or fiberglass (see section 5.2 for approved products). Drainfields are installed at varying depths under the ground, usually in the form of trenches (up to six feet wide and 100 feet long) or an absorption bed (greater than six feet wide and up to 100 feet long) filled with gravel containing a perforated plastic pipe. Drainfields may also be filled with gravelless system components (see section 5.7 for approved products). Figure 6-1 shows the components of a standard ~~sewage~~ septic system.

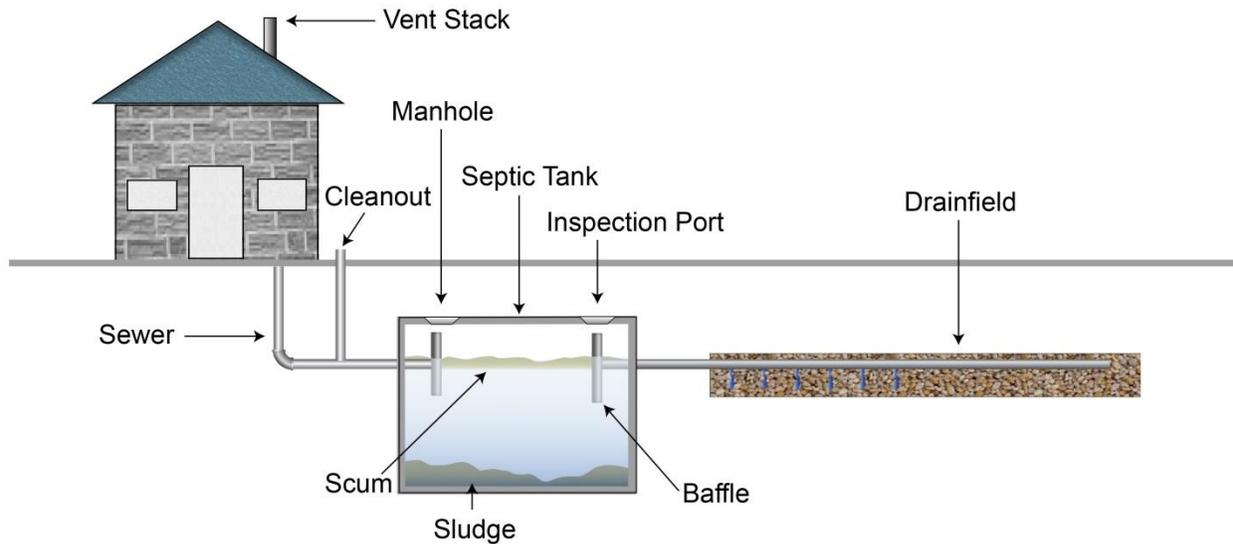


Figure 6-1. Components of a standard sewage-septic system.

Several alternative system designs may have additional tanks referred to as dosing chambers, recirculating chambers, or extended treatment package systems (ETPS). These types of tanks typically contain less accumulation of scum and sludge but are recommended to be pumped to remove these accumulations whenever the septic tank is pumped. These types of tanks also contain mechanical components that must be considered prior to pumping of the tank's contents. It is highly recommended that the component manufacturer's recommendations be followed when these alternative tanks are pumped. In the case of ETPS the property owner's operation and maintenance entity should be contacted for approval prior to pumping the unit's tank.

6.4 Mechanics of a Septic System

Wastewater from ~~the a~~ home or business enters the septic tank where the flow-velocity slows quickly. Because of the slowing, (with a loss of energy) material in the wastewater that is heavier than water, such as feces and garbage, settle to the bottom as sludge. Material in the wastewater that is Lighter/lighter -than- water matter, such as grease and plastics, float to the top as scum. The liquid in the center of the tank, now with the sludge and scum removed/settled out, is called effluent and is the liquid that flows from the septic tank to the drainfield. Upon being dispersed to the drainfield the effluent for treatment is treated by the soil and organisms in the groundsoil. For a septic tank to function properly (scum and sludge settling and retention) the inlet and outlet baffles within the tank must be intact and in good condition. Proper baffle design is described in IDAPA 58.01.03.007.10 and 58.01.03.007.11 (section 8.1). Anytime a septic tank is pumped or a drainfield is repaired the inlet and outlet side of the septic tank should be uncovered and the baffles should be inspected to ensure the septic tank is in good working order.

The septic tank ~~and drainfield~~ will work-function satisfactorily until the sludge fills over 40% of the volume of the tank (as measured from the bottom of the septic tank to the invert of the tank outlet) or the scum fills the air space/reaches the top of the inlet or outlet baffle in the tank.

Before the tank reaches these levels it should be pumped by a permitted pumper. If the tank is not pumped, it will be unable to perform its wastewater separation function and will let which will allow the solids and greases to be carried out into the drainfield. ~~There the~~ If solids and greases reach the drainfield they will fill and clog the soil pores causing the drainfield to fail resulting in sewage ~~to backing~~ up into the house-home or business, ~~or to even overflow~~ the tank to overflow, or effluent to reach the surface of the ground around the drainfield. Under regular use (two people in the first bedroom and one person in every other bedroom) it is recommended that the septic tank be pumped every 3-5 years.

6.45 Checking the Level of Scum and Sludge in a Septic Tank

The scum and sludge levels in the septic tank should be checked at least once every 3 years under regular use. and, preferably, once a year, if the sewage-septic system receives heavy-more than regular use the scum and sludge levels should be checked annually. The A homeowner property owner, or a permitted septic tank pumper, or permitted septic system installer can check the scum and sludge levels in the septic tank.

The following outlines a procedure for ~~checking the scum and sludge~~ locating a septic tank.

1. First, locate the septic tank Review the final as-built drawing located on the final inspection form for the property owner's septic permit. If the ~~homeowner~~ property owner does not have a plot plan of the tank location, often the health district will have its location on file.
2. If no drawings can be found, a guess as to where the tank is located can be made by finding the 3- or 4-inch vent stack on the roof, or a cleanout near the foundation. The tank is often located directly out from ~~that~~ the stack or cleanout.
3. Also ~~if the previous methods do not work~~ the building sewer can also be located under-in the crawl space and the place where it exits under the house foundation can be noted.
4. With a steel rod, probe the ground to locate the tank. The tank, or the manhole cover on a riser, should be within 18 inches of the ground surface. Once located, excavate to the top of the tank and pull off the manhole cover.

The following outlines a procedure for checking the scum and sludge levels in the septic tank:

1. With a shovel, break through the scum layer, making a hole about 1 foot in diameter.
2. Wrap a strip of terry cloth toweling spirally around a pole and lower the pole into the tank. If the pole is fitted with a hinged flapper about 2 feet from its bottom, the flapper swings down and the scum level can be checked.
3. Lower the pole into the septic tank liquid until the flapper is about 1 foot below the scum. Pull the pole towards you a little to get the flapper under the scum, then raise the pole until the scum begins to move up, indicating that the flapper has made contact with the scum. Mark the pole at the top of the scum so that the depth of the scum can be measured from the pole after it is removed.
4. Continue to lower the pole into the septic tank until it meets the bottom. Tap the bottom of the tank two or three times with a sharp rap, which permits the sludge to enter into the

coarse weave of the terry cloth. Slowly remove the pole. The depth of the sludge will then be seen in the terry cloth.

4.5. Alternatively, manufactured products are available for obtaining a representative profile of the septic tank sludge, liquid, and scum depths in place of the tool described above. These manufactured products are recommended for septic tank pumping or septic system installing professionals due to the ability to clean and maintain the tool for repeated use.

Calculate the depth of the sludge as a percent of the liquid depth (measured from the bottom of the tank to the top of the liquid/bottom of the scum layer). Equation 6-1 can be used to determine if a septic tank needs pumping.

$$\text{Percent sludge depth} = \frac{\text{Depth of sludge, in inches}}{\text{Liquid depth of tank, in inches}} \times 100 \quad \text{Equation 6-1. Percent sludge depth.}$$

When sludge is greater than 40% of the liquid volume, or the scum layer is at or above the top of the inlet or outlet baffle, the tank should be pumped.

Figure 6-2 illustrates methods used to check scum and sludge depths.

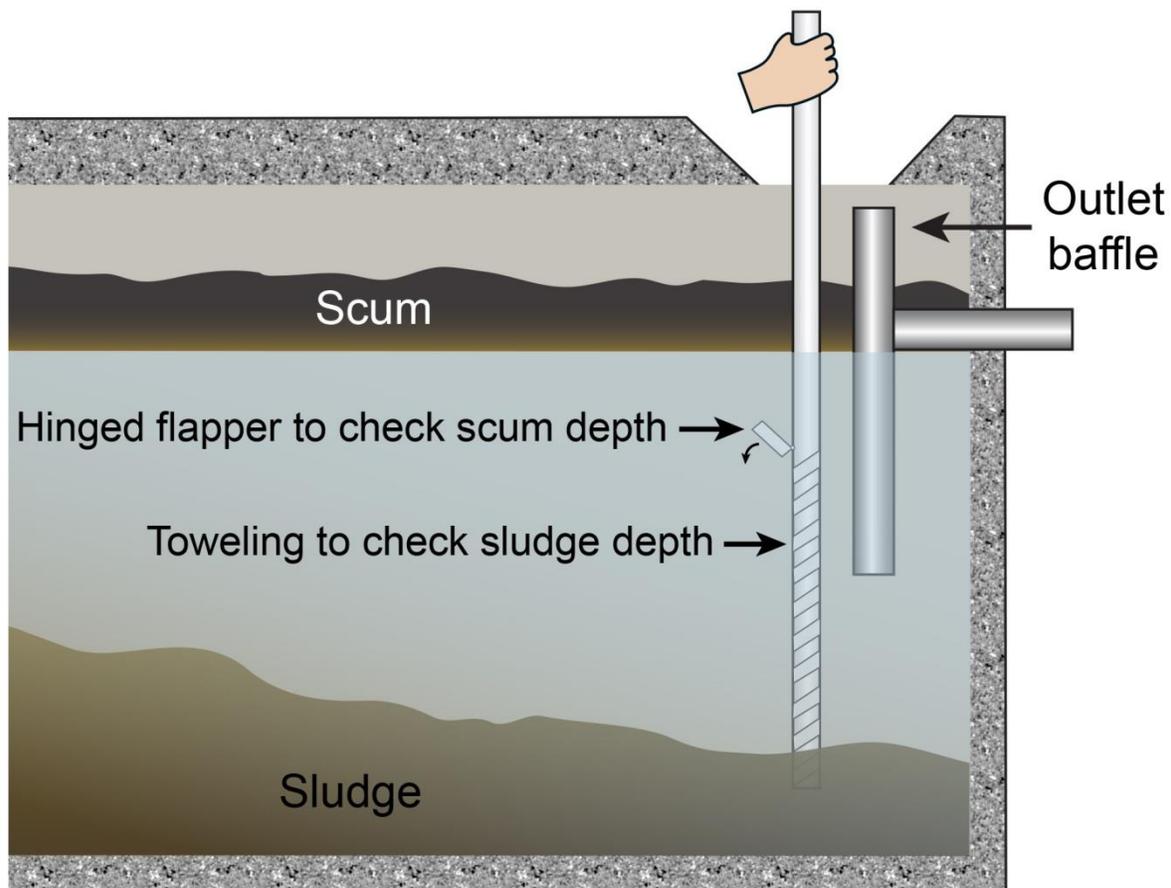


Figure 6-2. Methods used to check scum and sludge depths.

6.56 Practices of the Septic Tank ~~Septage~~ Pumpinger

All persons, firms, or corporations operating any tank truck, device, or equipment used or intended to be used for the purpose of pumping and transporting septage must comply with IDAPA 58.01.15, Rules Governing the Cleaning of Septic Tanks. The following subsections provide guidance and recommendations on septage pumping and transporting equipment and requirements.

6.56.1 Equipment for Pumping and Transporting Septage

The major and most expensive piece of equipment necessary to pump septage is the pumper's truck. Capacity of a truck used to pump septic tanks, RV dump stations, or wastewater holding tanks should be at least 1,000 gallons. Capacity of a truck used to pump portable toilets or vault privies should be at least 500 gallons. The truck should also have:

- An access port for the periodic inspection, maintenance, and cleaning of its interior. The truck should also have a gauge to indicate the volume of liquid it contains.
- ~~The tank should also have a~~ gravity drainage valve that can be safely locked during transportation and storage. The discharge valve used to dispose of the septage should be at least 2.5 inches in diameter and equipped with a cam-lock quick couple or screw cap. The valve should be located so that the discharge stream is not blocked in any way, unless it is necessary for disposal.
- The pumping equipment on the truck should be sized to provide at least 15 feet of suction lift and should be able to reverse flow.
- There should be a water trap between the tank and pump to prevent liquid from entering the pump in case the pump pulls a vacuum on the tank.
- Several lengths of hoses capable of stretching from the pumping vehicle to a client's tank. ~~The hoses from the tank and pump should be at least 3 inches in diameter.~~

All equipment used to pump or transport septage must be watertight and constructed so that spilling or leaking of septage during pumping, transportation, or unloading is prevented (IDAPA 58.01.15.003.01). Additionally, all equipment used to pump or transport septage must be constructed in a manner that allows every portion of the interior or exterior of the equipment to be cleaned and maintained in a clean condition when not in use (IDAPA 58.01.15.003.02). All permitted vehicles used to pump or transport septage must also have the permit number for each vehicle displayed at all times on the door of the vehicle in a manner that is easily legible (IDAPA 58.01.15.004.03). Easily legible is considered to be in letters at least 3 inches high on both sides of the truck. It is also recommended that the name of the firm, address, business phone number, and tank capacity be displayed on the side of the truck. ~~On the side of the truck, the name of the firm, address, business phone number, and tank capacity should be displayed. All the information should be in letters at least 3 inches high on both sides of the truck. The tank capacity should be at least 1,000 gallons. It should have an access port for the periodic inspection and maintenance of its interior and some sort of gauge to indicate the volume of liquid it is to contain. The tank should also have a gravity drainage valve that can be safely locked during transportation and storage. The pumping equipment on the truck should be sized to provide at least 15 feet of suction lift and should be able to reverse flow. If the pump pulls a vacuum on the~~

~~tank there should be a water trap between the tank and pump to prevent liquid from entering the pump. The hoses from the tank and pump should be at least 3 inches in diameter. The discharge valve used to dispose of the septage should be at least 2.5 inches in diameter and equipped with a cam lock quick couple or screw cap. The valve should be located so that the discharge stream is not blocked in any way, unless it is necessary for disposal.~~

~~Septage pumpers may also want to consider the inclusion of several other pieces of equipment with their pumping and transportation vehicles. These recommended pieces of equipment will help a pumper complete their job and provide their clients with information regarding the condition of their septic tank. Other recommended equipment includes: An additional piece of equipment that should be included is a spray bar or splash plate for use in land spreading. There are also several other small pieces of equipment that should be included in the truck:~~

- Flashlight
- Steel lid probes
- Manhole sealer
- Bucket
- 50-foot garden hose
- Long-handled shovel
- Pry bar or pick
- Container of Quick Lime
- Pole, hoe, or rake for scum mixing
- A pole or equipment that allows the depth of scum and sludge to be determined
- Extension mirror used to inspect the tank's inlet and outlet baffles
- A spray bar or splash plate for use in domestic septage land application (if contracted with an approved site and approved by the health district)

6.56.2 Permits and Licenses Requirements

~~A Septic Tank Pumpers' Permit permit is required throughout Idaho for the pumping, transportation, and disposal of septage (IDAPA 58.01.15.003 and 58.01.15.004). A permit can be obtained from any health district within Idaho and allows the permittee to pump, transport, and dispose of septage throughout the state. Permits must be renewed annually and applications for renewal must be submitted to the health district on or before March 1 of each year (IDAPA 58.01.15.004). The permit is good for 1 year and must be renewed at the end of the year. It can be obtained from the health district. An application must be submitted to obtain a permit from a health district for pumping, transportation, and disposal of septage (IDAPA 58.01.15.004.01). Permit applications must include the following information:~~

- Number of tank trucks operated
- Vehicle license number of each tank truck
- Name and address of the owner and/or operator of the tank trucks

- Name and address of the business
- Method of septage disposal to be used in all areas of the operation
- Location of all disposal sites used by the applicant (location information must be accompanied by a signed approval of the disposal site operator indicating that all the trucks included in the application are able to dispose of septage at that location)
- Payment of the permitting fee as set by each health district

Upon submission of a permit application to a health district An environmental health specialist ~~at the health district~~ will inspect the tank trucks and associated equipment prior to issuing the permit. A permit will not be issued until all the requirements of IDAPA 58.01.15 are met by the applicant.

6.56.3 Pumping ~~the~~ a Septic Tank

Once ~~the~~ a septic tank has been located and the manhole cover exposed and removed the depth of scum and sludge should be determined. Next, draw down the liquid level 6 inches to 1 foot, then break the scum up using a pole, rake, or hoe and mix it and the rest of the tanks contents. Continue pumping the tank until most of the contents are removed. It may be necessary to force septage back into the tank to mix up and remove the sludge on the bottom of the tank. After the tank's contents have been mixed be sure not to let the septage come back up to the outlet as sludge may then run into the drainfield. Leave a few inches of sludge in the bottom of the tank as seed to restart bacterial action as the tank refills. Do not ~~clean or~~ disinfect the interior of the tank.

When pumping is completed, thoroughly inspect the tank and note the following on a pumping receipt for the client:

- The date
- The volume of septage removed from each tank
- The depth of scum and sludge in each tank
- The condition of the inlet and outlet baffle in each tank
- ~~Is the outlet baffle in good condition?~~
- ~~Is the inlet baffle in good condition?~~
- Is water running back into the tank from the drainfield? (Possible sign of high ground water in the drainfield or back pressure from a failing drainfield)
- Is water running in through the sides of the tank? (Sign of a leaking tank in high ground water)
- ~~How much septage was pumped out?~~
- Does the sewer line from the house appear to be free-flowing? (~~Flush a toilet~~ Turn a fixture on inside the ~~structure~~ house to ensure that there is no obstruction.)

NEVER enter ~~the~~a tank as the methane gas produced by the septage can kill quickly! Entry into any tank requires a confined space entry permit through the Occupational Safety and Health Administration and proper personal protective equipment.

If ~~the~~a manhole cover of ~~the~~a tank ~~was~~is found to be more than 18 inches belowground (as may be the case with older tanks or tanks serving basements), the ~~homeowner~~property owner should be advised to add a concrete or plastic standpipe/riser that would place the manhole cover within 18 inches of the ground surface. This is recommended to be done for both the inlet and outlet side of a tank.

After the lid-manhole cover is replaced, replace soil and sod if the manhole ~~was~~is belowground. Put a little Quick Lime on any places where septage ~~has~~may have spilled.

6.7 Septage Storage

Some septage pumpers, transporters, or land application site operators may find it necessary for their operation to store septage prior to disposal or beneficial reuse. If a pumper, transporter, or land application site operator desires to store septage, the facility they construct to accomplish this must meet the requirements of IDAPA 58.01.16.519, Septage Transfer Stations. Any proposed septage transfer station must be reviewed by the applicable DEQ Regional Office. A party proposing a septage transfer station must also meet the following Wastewater Rule (IDAPA 58.01.16) requirements and submit the associated documents to the DEQ Regional Office along with their septage transfer station plans:

- Review of plans for municipal wastewater treatment or disposal (IDAPA 58.01.16.400)
- Demonstration of technical, financial, and managerial capacity (IDAPA 58.01.16.409)
- Facility plans (IDAPA 58.01.06.410)
- Preliminary engineering reports (IDAPA 58.01.16.411)
- Submission of plans and support documents (IDAPA 58.01.16.420)
- Operation and maintenance manuals (IDAPA 58.01.16.425)
- If a screening facility is also to be constructed in association with a septage transfer station the designs for that component must also be included with the transfer station plans but is exempt from the requirements of IDAPA 58.01.16.460, Screening and Grit Removal.

The act of screening septage is defined as treatment (IDAPA 58.01.16.010.85). Based on the designation of screening as treatment any facility with a septage transfer station must have a properly licensed wastewater operator in charge of the wastewater system and screening facility (IDAPA 58.01.16.203). DEQ exempts all stand-alone septage transfer stations and associated septage screening facilities from the licensed operator requirement as long as the septage transfer station is:

- Located at a permitted pumper's place of business, or
- Located at a permitted domestic septage land application site, and

- Is owned, operated, and maintained by the permitted pumper or land application site operator, and
- No additional wastewater treatment components or processes are included in the septage transfer station design.
- Septage transfer stations located at, or associated with, a wastewater treatment plant are not subject to these exemptions.

6.68 Septage Disposal of Septage

One of the conditions for a license to pump septic tanks is the approval of all sites where septage is disposed. Therefore, the pumper must use only those methods approved by the health district or DEQ. Septage may only be disposed of in conformance with the methods allowed by IDAPA 58.01.15.003.03. Those methods include:

1. Discharging to a public sewer;
2. Discharging to a sewage treatment plant;
3. Burying under earth in a location and by a method approved by DEQ; or
4. Drying in a location and by a method approved by DEQ.

The first two methods of disposal require approval from a wastewater treatment plant or the owner/operator of the public sewer. It is important for a pumper to note that discharging to a public sewer without the proper approvals puts the pumper in violation of National Pollutant Discharge Elimination System pretreatment requirements and associated federal codes. Disposal at a wastewater treatment plant should be used whenever practical.

Disposal methods 3 and 4 are associated with one-time disposal or land application of domestic septage. Nondomestic septage may not be approved for one-time disposal or beneficial reuse (see section 6.9). Approval for one-time disposal of domestic septage must be obtained through the health district that the one-time disposal site is located within. Written approval from the property owner must be supplied to the health district along with the request for one-time domestic septage disposal.

One-time disposal accomplished through burial shall ensure that:

- Complete burial is accomplished within 6 hours of domestic septage disposal, and
- The disposal depth meets the separation distance requirements of IDAPA 58.01.03.008.02.c for ground water and IDAPA 58.01.03.008.02.d for surface water in soil design group C soils.

One-time disposal accomplished through drying shall ensure that:

- The domestic septage is pH adjusted to a pH of at least 12 for a full 30 minutes prior to domestic septage disposal, and

- The disposal depth meets the separation distance requirements of IDAPA 58.01.03.008.02.c for ground water and IDAPA 58.01.03.008.02.d for surface water in soil design group C soils.

Septage may be disposed of in several ways:

1. At a municipal wastewater treatment plant. Some plants have special facilities just for the disposal of septage. These should be used whenever practical.

6.9 Beneficial Reuse of Domestic Septage

DEQ recognizes the value of domestic septage as a soil amendment product and/or fertilizer supplement for agricultural operations. This beneficial reuse of domestic septage is referred to as Land Application of Domestic Septage. Only septage that is classified as domestic septage is allowed to be land applied. Land application occurs by repeatedly spreading domestic septage on agricultural land in accordance with IDAPA 58.01.15 and 40 CFR Part 503. Agricultural land used for the land application of domestic septage is subject to public access, grazing, and crop harvesting restrictions as described in 40 CFR Part 503. Prior to land application of domestic septage a pumper or land application site operator must obtain approval through the DEQ Regional Office that the land application site is located within. Approval is accomplished by submitting an acceptable Septage Management Plan for Land Application (SMPLA). To assist an interested party in developing a SMPLA DEQ has developed a document titled *Guidance for the Land Application of Domestic Septage* that is available through DEQ's website or any DEQ State or Regional Office. Refer to this document for further information and guidance on the land application of domestic septage.

2. By land spreading on private or public land in accordance with 40 CFR Part 503. If septage spreading is done on private land, the pumper should have written permission of the landowner and a permit from the health district. Check with the local health district on any restrictions. The following general rules should be observed:

a. Do not apply septage to any land used for root crops, such as potatoes, unless that land will not be used for growing those kinds of crops for 20–38 months depending on the method of land application.

b. Do not apply septage in a floodplain.

c. Do not apply septage on porous soils or where it can contaminate ground water or surface water.

d. Do not let animals, whose products (milk, meat) will be eaten, use land where septage has been applied for 1 month.

e. Populations of vectors, such as flies, should be minimized by rapidly drying the septage, adding lime, covering, or other appropriate techniques as per 40 CFR Part 503 Subpart D.

Be aware that the property owners next to the disposal site can cause enforcement action and have been successful in court when odors create a problem for them.

Public sites for septage disposal on land are preapproved by the health districts and DEQ. Such sites may be a municipal sludge management farm or farm areas leased or rented for sludge disposal.

~~After dumping the sludge, clean the truck inside and out. The wastewater from such cleaning should be considered the same as septage and handled accordingly.~~