



# STAFF REPORT

## MORGAN COUNTY PLANNING COMMISSION

### PETITION FOR: TEXT AMENDMENT

Applicant: Sam Florence, Jr.  
Applicant's Agent:

**Copy of August staff report**  
**See attached memo for update**

Zoning Ordinance: Article 3 Definitions,  
Article 4 Districts & Maps  
Article 7 Regulations for Specific Uses

#### Summary

The applicant approached Planning & Development about a location in the county to move his septic tank receiving and dewatering service, as well as his portable toilet rental business. The business is currently being operated out of his home on Briar Creek Road and Farmer's Hardware in Madison. Staff explained that the use was not currently in the Morgan County Zoning Ordinance and would have to be added. Due to the complexity of the use, Staff volunteered to write the proposed language. The applicant supplied a list of the uses he wanted for the business.

#### Current and Proposed Language

See attached for proposed Septage Receiving and Processing ordinance.

Use is proposed to be Permitted in Heavy Industrial (I2).

#### Staff Comments

Both Staff and the applicant is aware of the undesirability of the use as a neighbor. Staff was confronted by citizens when rumors began to circulate about where the use may be located. However, it cannot be denied that the use is necessary and must have a location. The applicant has found a property on Woodcraft Road next to poultry houses and in an industrially zoned area. Although it may seem unusual to propose the use as permitted, instead of conditional, with the current zoning and sewer lines, the ordinance is written to apply to the proposed location only. Although it may be possible for another location with the same criteria to exist in the future, it is unlikely that the City of Madison will accept waste from a second facility without expansion of city wastewater facilities. Expansion will not happen unless sewer lines are extended into the county, which will reduce or eliminate the need for a second septic tank receiving location. Furthermore, research has shown that these types of facilities are not typically located within 50 miles of another facility, again making the possibility of another such facility in the county highly unlikely. For these reasons, Staff is proposing the use as permitted in I-2.



## MORGAN COUNTY PLANNING AND DEVELOPMENT

---

150 East Washington Street, Suite 200  
P.O. Box 1357  
Madison, Georgia 30650  
(706)342-4373 Office · (706)343-6455 Fax

### Memorandum

Date: December 3, 2008  
To: Morgan County Planning Commission  
Cc: Morgan County Board of Commissioners  
From: Tara Cooner, Secretary  
RE: Florence Text Amendment

At the time this Staff Report update was written, there were still several unanswered questions regarding Mr. Florence's application.

The Planning Commission, along with staff, Commissioner Donald Harris, representatives from Madison's waste water treatment facilities and the applicant travelled to the City of Emerson to see a variation of the applicant's proposed equipment in use. The visitors received an education in waste water treatment, but the equipment was smaller than the proposed unit. It was noted that odor was limited or nonexistent. At the time of writing, the applicant and Madison representatives were attempting to have a demonstration set up at Madison's waste water treatment facility with the exact equipment proposed.

The applicant also intended the project, related to the proposed text amendment, to be located at 1231 Woodkraft Road. That property has sold and now the applicant is looking at a couple of other properties on Woodkraft Road. As noted in the August Staff Report, the only place in the county that the proposed language will work is on Woodkraft Road, due to the zoning designation and the proximity to Madison's sewer line. If the applicant chooses to locate the project somewhere else, the proposed text amendment, as written, will not work.

Another consideration is whether the language should be changed to be a conditional use instead of a permitted use. Staff opinion in the August Staff Report was that the use should be permitted, given that the language supported the location in only one place. It seemed redundant to make the applicant get a text approval for a singular location, then come back for a conditional use for that same location. Staff opinion has not changed for Woodkraft Road. However, if the applicant cannot secure a location on Woodkraft Road, then Staff recommends that the application be tabled again so that the language may be amended to address the treatment of waste water (if not going into Madison's system) and to change the use to conditional.

## Septage Receiving and Processing Center

### Definitions

**Biosolid** - Organic matter recycled from sewage, especially for use in agriculture.

**Composting** – The process of decomposing organic matter into a useable soil conditioner.

**Dewatering** – The removal of water from solid material or soil by wet classification, centrifugation, filtration, or similar solid-liquid separation processes, such as removal of residual liquid from a filter cake by a filter press as part of various processes.

**Land Application** – The spreading of septage on land at controlled rates to fertilize crops and improve the tilth of soils.

**Septage** – a waste that is a fluid mixture of partially treated or untreated sewage solids, liquids, and sludge of human or domestic waste, present in or pumped from septic tanks, malfunctioning on-site sewage management systems, grease traps, or privies.

**Septage Receiving Station** – A facility designed solely for the treatment of septage.

### Site and Design Criteria

#### **General**

- Located in a Heavy Industrial (I2) zoning district.
- Minimum lot area of ten (10) acres
- Have immediate access to a municipal sewer line.
- Have written agreement from the municipality to accept septage liquid from the dewatering process.
- Facility must have all Federal, State and local permits and approvals.
- Processing and composting areas must be fenced to prohibit unauthorized entry.

#### **Pre-treatment holding tanks**

- Holding tanks shall be sized appropriately to handle estimated daily intake.
- Holding tanks must be placed underground.
- Open pits and lagoons are prohibited.

#### **Septage Receiving Area**

- Must be setback a minimum of 50 feet from any property line.
- Area must be concrete to provide for the ability to be washed down and sanitized.
- Drains from receiving area must discharge into a storage tank.
- Receiving ports must be leak proof with quick-connect fittings.
- Area must be designed to prevent run-off.

### **Dewatering Area**

- Must be setback a minimum of 50 feet from any property line.
- Area must be concrete to provide for the ability to be washed down and sanitized.
- Drains from dewatering area must discharge into a storage tank.
- Receiving ports must be leak proof with quick-connect fittings.
- Dewatering discharge must be piped directly to the nearest municipal sewer line.
- Area must be designed to prevent run-off.
- Screened trash and debris must be treated and disposed of at an approved sanitary landfill.

### **Composting Area**

- Must be setback a minimum of 50 feet from any property line.
- Composting area must be designed so all run off is captured in a lined sediment basin.
- Sediment basin must be designed to hold a hundred-year storm event.
- Sludge and silt captured in the sediment basin must be recycled into the process.
- Storage of bulk compost, bulking agents, hydrated lime, pulverized quicklime or other additives must be maintained in a neat and orderly manner.

### **Nuisance Abatement**

- Facility must have a detailed plan to abate odors associated with the treatment and composting process.
- Biofilters or other odor treatment alternatives must be used to control odors on the property.
- Facility must have a detailed plan to abate vectors, such as flies, mosquitoes, rodents and other undesirable pests, associated with the treatment and composting process.

### **Associated Uses**

- Sales and service of plumbing supplies
- Rental and service of related equipment
- Rental and service of portable toilets and portable bathrooms
- Storage of equipment and supplies must be located in the rear yard and screened from public road.

## Cooner, Tara

---

**From:** Jarrell, Chuck  
**Sent:** Tuesday, September 04, 2018 8:30 AM  
**To:** Cooner, Tara  
**Subject:** FW: Proposed septage dewatering facility on Woodkraft Rd

**From:** Adam Mestres  
**Sent:** Tuesday, September 4, 2018 8:22 AM  
**To:** Ron Milton <RMilton@morganga.org>; Harris, Donald <DHarris@morganga.org>; Ben Riden <briden@morgancountyga.gov>; Ainslie, Andy <AAinslie@morganga.org>; Philipp von Hanstein <pvonhanstein@morganga.org>; Brandt, Leslie <lbrandt@morgancountyga.gov>; Jarrell, Chuck <cjarrell@morgancountyga.gov>  
**Subject:** FW: Proposed septage dewatering facility on Woodkraft Rd

See below

Adam Mestres, MPA  
County Manager  
Morgan County  
150 East Washington Street  
Madison, GA 30650  
706-342-0725



**From:** rhonda bell <rhonda.bell1966@yahoo.com>  
**Sent:** Friday, August 31, 2018 11:52 AM  
**To:** Adam Mestres <amestres@morgancountyga.gov>  
**Subject:** Proposed septage dewatering facility on Woodkraft Rd

Dear Commissioner,

I attended a meeting last evening August 30, 2018 in reference to a text amendment being added to the county ordinance to allow individuals to establish septage processing facilities in the county. Currently a facility is being proposed on a 2.5 acre property on Woodkraft Rd.

It has been stated that this facility will be a dewatering facility only. The proposal is to bring septage into the facility, dewater it and release it back into the City of Madison sewer system. I have done some research and spoken with the EPD in reference to said proposal. Because the Proposer has stated that this facility will be receiving less than 25,000 gallons of septage per day they DO NOT have to be permitted by the EPD. The EPD stated that the burden of regulation will fall back on the County and the City. If there were to be a spill or runoff into the near by creek that resulted in a violation the EPD would cite the County. If there were to be contaminated material that entered the city sewer system, the EPD would cite the City.

Sewage and Septage are two different things. Septage is an accumulation of years worth of sewage. It is liquid and solid material that is pumped from a septic tank. It has an offensive odor and contains significant levels of grease, grit, hair and debris. It is a host for many disease causing organisms. Septage treatment is a detailed process and needs to be strictly regulated and managed. It is not simply dumping septage into a holding tank, letting it separate and pumping the liquid back into the City sewer system. There are very stringent guidelines that have to be followed to CLEAN this liquid. The

resulting liquid will have to be tested to make sure it meets the requirements set forth by the EPA for clean municipal water. Based on the ongoing condition of the Proposers current business, I don't foresee that this facility would be maintained and managed any differently. That should be a huge concern to both the County and the City, since they will be responsible for regulating this site.

It was stated that Septic tank pumpers from surrounding counties would also be allowed to dump at this facility. At some point the 2.5 proposed acres will not be sufficient to house the operation. Also at some point, the Proposer will not want to continue to pay to dump the solid waste the facility will be producing, so he will expand the facility to include composting. Which creates another dynamic.

Those of us who reside within a 1 mile radius of this facility are opposed for a number of reasons. Traffic on the Greensboro Hwy, Morris Rd and Woodkraft Rd will be greatly increased. You are adding septic tank pump trucks and porta potty trucks in the mix with the Log trucks. Increased traffic generates increased accidents and additional wear and tear on the affected roads. Septic tank trucks and porta potty trucks STINK. So, even IF they can contain the smell at the facility, there will still be a consistent stench because of the truck traffic. Insect and rodent control are another concern. I am especially concerned because my elderly Mother-in-law lives directly across the road from the site. She has been at that property for 50+ years. She loves her "little home" as she calls it. She enjoys sitting outside on her swing. She doesn't have central heating and air conditioning, so she utilizes window fans in the spring and fall. Because of the smell and the insects she won't be able to enjoy her property as much.

I urge you as a commissioner to dig into this issue. Educate yourself about how this facility has to operate to be compliant. Ask yourself if the county wants to be responsible for regulating the facility and be accountable to the EPD if something goes wrong. Look at the Proprietor and their current operations to see if you think things will be done properly. Think about the residents that will be affected.

As a concerned citizen, and a resident of the proposed site, I ask that you vote NO to allowing this type of facility in our county.

Thank You,  
Rhonda Bell  
1411 Greensboro Rd  
Madison, GA 30650

Georgia Open Records Act: Under Georgia law, all information, including e-mail, written letters, documents and phone messages, sent to the County Board of Commissioners and County offices and employees is subject to Public Records law. This includes the sender's e-mail address, home address or phone number if shown in the message, the content of the message and any associated attachments to the mail.

Please discontinue the use of "@morganga.org" henceforth and change any correspondences to the recipients updated email domain "@morgancountyga.gov".

Georgia Open Records Act: Under Georgia law, all information, including e-mail, written letters, documents and phone messages, sent to the County Board of Commissioners and County offices and employees is subject to Public Records law. This includes the sender's e-mail address, home address or phone number if shown in the message, the content of the message and any associated attachments to the mail.

Hello,

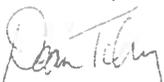
My name is Dean Tillery and I live at 1840 Greensboro Road. I am writing to voice concern for the proposed text amendment to allow a septage processing station on Woodkraft Road. I was in attendance at the meeting on August 30. EPA (see attached EPA fact sheet) recommends such facilities be built on "large remote land areas." No one can argue that the proposed site is in a remote area. The reason EPA suggests utilizing a remote setting is not only because it emits foul odors, attracts vermin, flies and mosquitoes, but also because "septage is also a host for many disease-causing viruses, bacteria, and parasites."

During the meeting on August 30, the statement was made "there are only a few residents around the area," which begs the question, don't we matter? What about Mrs. Joann Bell, a widow who lives approximately 400 feet from the proposed site and has been there since 1967, who likes to spend afternoons in her front yard swing, and who will likely be rendered a prisoner in her own home. There's Randy Parks who lives approximately 900 feet from the property, and who has been diagnosed with emphysema. How will airborne bacteria and viruses, both long and short term, affect him as well as others who live close by? Everyone in the area has a well for water supply. Can you guarantee that no seepage or environmental accident will ever occur? I ask you to consider the Chuck Spinks family who recently renovated a farmhouse to raise their kids in the country or the Tripp Pickles family with the same dream. Do they matter? Or are all of us in the area to be considered collateral damage for the sake of "progress"?

City and county government will have to decide if this is a type of business we want here... if we want truck after truck wheeling into—and through— Madison, which could become the septage receiving center for several counties. The proposed site was termed "a necessary evil," but I can think of no business necessary enough to subject even "a few residents" to questionable air quality, disease-causing viruses, bacteria and parasites. My argument is that the proposed site is just not the best location. I see no good reason for a business of this kind to be located anywhere near a residential neighborhood. I have studied the county zoning map and found several locations that are better suited – that are in remote areas, far away from the nearest residence and less likely to cause environmental and health liabilities. I think I speak for all the residents on Wookdraft Road, the immediate Greensboro Highway area and the residents on Log Cabin Road when I ask you to please consider opposing, not necessarily the business, but its location on Woodkraft Road.

Thank you for your time.

Sincerely,



Dean Tillery



# Decentralized Systems Technology Fact Sheet Septage Treatment/Disposal

## DESCRIPTION

In 1990 the U.S. Department of Commerce, Census Bureau, estimated that the number of housing units with septic tanks or cesspools in the U.S. was 24.6 million and approximately 5.5 billion gallons of septage were being generated each year. "Septage" is the liquid and solid material pumped from a septic tank, cesspool, or other primary treatment source. Scum accumulates on the surface while the sludge settles at the bottom, comprising 20 to 50% of the total septic tank volume when pumped. A septic tank will usually retain 60 to 70% of the solids, oil, and grease that passes through the system.

Septage is classified according to the environment in which it is generated. This fact sheet will focus solely on domestic septage. Treatment and disposal of domestic septage is governed by the U.S. Code of Federal Regulations (40 CFR) Part 503. Municipalities can also establish local regulations for septage handling, treatment, and disposal in addition to the federal and state regulations.

There are several approaches to septage treatment and disposal which include private or public ownership. Larger municipalities are capable of managing the whole process from handling and treatment to disposal, while other municipalities opt to use privately owned facilities that alleviate some of the responsibilities of operating a facility. Land disposal of septage after adequate treatment is also a popular option.

## Septage characteristics

Factors that affect the physical characteristics of septage are: climate, user habits, septic tank size, design, and pumping frequency, water supply characteristics, piping material, and the use of water-conservation fixtures, garbage disposals, household chemicals, and water softeners. Table 1 lists the characteristics and limits of domestic septage.

**TABLE 1 CHARACTERISTICS OF  
SEPTAGE CONVENTIONAL  
PARAMETERS**

Parameter	Concentration	
	Minimum	Maximum
Total solids	1,132	130,475
Total volatile solids	353	71,402
Total suspended solids	310	93,378
Volatile suspended	95	51,500
Biochemical oxygen demand	440	78,600
Chemical oxygen demand	1,500	703,000
Total Kjeldahl nitrogen	66	1,060
Ammonia nitrogen	3	116
Total phosphorus	20	760
Alkalinity	522	4,190
Grease	208	23,368
pH	1.5	12.6
Total coliform	10 <sup>7</sup> /100 mL	10 <sup>9</sup> /100 mL
Fecal coliform	10 <sup>6</sup> /100 mL	10 <sup>8</sup> /100 mL

Note: The measurements above are in mg/L unless otherwise indicated.

Source: U.S. EPA, 1994.

**TABLE 2 SOURCES OF SEPTAGE**

Description Rate	Removal Pump-out	Characteristics
Septic tank	2-6 years, but can vary with location local ordinances	Concentrated BOD, solids, nutrients, variable toxics (such as metals), inorganics (sand), odor, pathogens, oil, and grease
Cesspool	2-10 years	Concentrated BOD, solids, nutrients, variable toxics, inorganics, sometimes high grit, odor, pathogens, oil, and grease
Privies/portable toilets	1 week to months	Variable BOD, solids, inorganics, odor, pathogens, and some chemicals
Aerobic tanks	Months to 1 year	Variable BOD, inorganics, odor, pathogens, and concentrated solids
Holding tanks (septic tank with no drain-field, typically a local requirement)	Days to weeks	Variable BOD, solids, inorganics, odor, and pathogens, similar to raw wastewater solids
Dry pits (associated with septic fields)	2-6 years	Variable BOD, solids, inorganics, and odor
Miscellaneous May Exhibit Characteristics of Septage		
Private wastewater treatment plants	Variable	Septic tank
Boat pump-out station	Variable	Portable toilets
Grit traps	Variable	Oil, grease, solids, inorganics, odor, and variable BOD
Grease traps	Weeks to months	Oil, grease, BOD, viscous solids, and odor

Source: Septage Handling Task Force (1997), copyright Water Environment Federation, used with permission.

**APPLICABILITY**

Septage is highly variable and organic, with significant levels of grease, grit, hair, and debris. The liquids and solids pumped from a septic tank or cesspool have an offensive odor and appearance, a tendency to foam upon agitation, and a resistance to settling and dewatering. Septage is also a host for many disease-causing viruses, bacteria, and parasites. As a result, septage requires special handling and treatment. However, the polymers and chemical conditioners available today have considerably reduced these requirements.

The handling and disposal of septage are based on the characteristics and volume of septic waste. Knowledge of this information is also useful for design purposes and determining typical design values for treatment and disposal. Table 2 summarizes the sources of septage.

**ADVANTAGES AND DISADVANTAGES**

**Advantages**

The advantage of using treatment plants is that they provide regional solutions to septage management.

**Disadvantages**

- May need a holding facility during periods of frozen or saturated soil.
- Need a relatively large, remote land area for the setup of the septic system.
- Capital and operation and maintenance costs tend to be high.
- Skilled operators may be required.
- Some limitations to certain management options of untreated septage include lack of available sites and potential odor and pathogen problems. These problems can be reduced by pretreating and stabilizing the septage before it is applied to the land.
- Septage treated at a wastewater treatment facility has the potential to upset processes if the septage addition is not properly

controlled, and increased requirements for handling and disposing of residuals.

## DESIGN CRITERIA

### Surface application

Septage can be applied to the land as a fertilizer and soil conditioner. Application rates depend on the slope, soil type, depth of application, drainage class, and hydraulic loading. Septage must not be applied before or during rainfall or on frozen ground. Thus, an interim storage facility is needed. Some states require septage to be disinfected before application.

- Spray Irrigation-pretreated (e.g., screened) septage is pumped at 80 to 100 psi through nozzles and sprayed directly onto the land. Spray irrigation can be used on steep or rough land and minimizes disturbances to the soil by trucks. It is important to consider the wind patterns and the site location when using spray irrigation because of the offensive odors associated with septage.
- Ridge and Furrow Irrigation-this is used for relatively level land, with slopes no greater than 0.5 to 1.5%. In this disposal method, pretreated septage is applied directly to furrows or to row crops that will not be directly consumed by humans.
- Hauler Truck Spreading-septage is applied to the soil directly from a hauler truck that uses a splash plate to improve distribution. The same truck that pumps out the septic tank can be used for transporting and disposing the septage.
- Farm Tractor and Wagon Spreading-liquid septage or septage solids are transferred to farm equipment for spreading. This allows for application of liquid or solid septage. However, if the septage was not lime stabilized, then the septage must be incorporated into the soil within 6 hours.

### Subsurface Incorporation

Subsurface incorporation places untreated septage just below the soil surface, reducing odors and health risks while fertilizing and conditioning the soil. Septage can only be applied to slopes less than 8%, and the soil depth to seasonal high water table must be at least 20 inches (or as mandated by local regulations). A holding facility is required during periods of wet or frozen ground. To prevent soil compaction and allow sufficient infiltration, equipment must not be driven over the site until 1 to 2 weeks after application.

- Plow and Furrow Cover-typically, a moldboard plow is used with furrow wheels and coulters. The coulter blade slits the ground ahead of a plow. Liquid septage is discharged from a tank into a narrow furrow about 15 to 20 cm deep and is then covered by a second plow.
- Subsurface Injection-liquid septage is injected in a narrow cavity created by a tillage tool. The opening is about 10 to 15 cm below the surface. Some equipment uses a forced closure of the injection swath.

### Burial

Septage burial includes disposal in holding lagoons, trenches, and sanitary landfills. There is a high odor potential during septage application until a final cover is placed on top. It is essential to select an appropriate site for disposal not only to control odors, but to avoid groundwater pollution.

- Holding Lagoons- these disposal lagoons are a maximum of 6 feet deep, with septage placed in small incremental lifts of 15 to 30 cm and no infiltration. Multiple lagoons are loaded in sequential order for optimum drying. To decrease odors, the lagoon inlet pipe can be placed below liquid level.
- Trenches-multiple trenches are filled sequentially with septage in small lifts of 15 to 20 cm for optimum drying. Each trench is then covered with soil (2 feet), and new trenches are opened. Another option is to

leave a filled trench uncovered to enable some solids to settle and liquids to evaporate and leach out. The solids, along with some bottom and sidewall material, are removed and the trench can be reused.

- Sanitary Landfills- the primary problems that need to be considered when septage is added to a sanitary landfill are the production of leachate, treatment, and odor. Therefore, septage must not be disposed of in landfills with areas that have over 90 cm of rainfall, landfills that do not have leachate prevention and control facilities, or those not having isolated underlying rock. Each area that is filled with septage should be covered with 15 cm of soil each day and 2 feet of final cover within 1 week after the placement of the final lift. In general, sanitary landfills are not cost-effective disposal options for septage.

Septage is resistant to dewatering and as a result conditioning chemicals are used. The amount of chemical used is based on the load and its characteristics. A combination of lime and ferric chloride has been successfully used, along with certain polymers. Septage treatment plants also use other processes to dewater conditioned septage such as screw presses, plate and frame presses, belt presses, rotary vacuum filters, gravity and vacuum-assisted drying beds, and sand drying beds.

Another feasible option for septage treatment facilities is composting in locations where bulking agents are available and the humus product is needed as a soil conditioner. If the necessary bulking agents are not accessible, this method can be expensive. For this reason, it is preferable to dewater septage before composting.

## **OPERATION AND MAINTENANCE**

The three basic alternatives for septage treatment and disposal are land application, treatment at wastewater treatment plants, and treatment at independent septage treatment plants.

## **Treatment at independent septage treatment plants**

- Stabilization lagoon.
- Chlorine oxidation.
- Aerobic digestion.
- Anaerobic digestion.
- Biological and chemical treatment.
- Conditioning and stabilization.
- Composting

## **Treatment at wastewater treatment plants**

- Addition to upstream sewer manhole.
- Addition to plant headworks.
- Addition to sludge handling process.
- Addition to both liquid stream and sludge handling processes.

## **Land application**

- Surface application.
- Subsurface incorporation.
- Burial.

Selecting the appropriate septage management option depends on technical issues and regulatory requirements. Some of the factors that influence the process of selection include: land availability and site conditions, buffer zone requirements, hauling distance, fuel costs, labor costs, costs of disposal, and other legal and regulatory requirements.

## **Treatment at Independent Septage Treatment Plants**

Independent septage treatment plants use such processes as chlorine oxidation, aerobic digestion, anaerobic digestion, and biological and chemical

treatment. Many septage treatment plants also use lime to provide both conditioning and stabilization before the septage is dewatered. The liquid residual can be discharged to a privately owned treatment facility or undergo further treatment and then be discharged. Septage solids are then sent to either a landfill, composted, applied to the land, or incinerated.

When suitable land is unavailable and wastewater treatment facilities are too distant or do not have adequate capacity, independent septage treatment plants can be of use. Such treatment plants have been designed exclusively for treating septage and have many unit processes to handle both the liquid and solid portions of septage.

Stabilization is a treatment method that decreases odors, the levels of disease-causing organisms, and the potential for putrefaction of septage. Pretreatment/stabilization is achieved by physical, chemical, or biological processes. Some methods of stabilizing septage are discussed below.

#### *Alkali (Lime) Stabilization*

Lime or other alkaline material is added to liquid septage to raise the pH to 12.0 for a minimum of 30 minutes. Although there is a lot of variation in septage characteristics and lime requirements, mixing is not very difficult, and approximately 20 to 25 pounds of lime are used for every 1,000 gallons of septage. The three main stabilization approaches before land application are to add lime slurry: 1) to the pumper truck before the septage is pumped, 2) to the pumper truck while the septage is being pumped, or 3) to a tank that is storing septage that was discharged from a pumper truck. The septage and lime may sometimes be mixed by a coarse bubble diffuser system located in the tank or truck. In some states, it is prohibited to use hauler trucks for the stabilization process. A separate storage tank is necessary for lime and septage mixing. This is beneficial because a separate holding tank allows for more uniform mixing and easier sampling, monitoring, and control.

#### *Aerobic Digestion*

Septage is aerated for 15 to 20 days in an open tank to achieve biological reduction in organic solids and odor potential. The time requirements increase with lower temperatures. Normally, this is not a cost-effective option.

#### *Anaerobic Digestion*

Septage is retained for 15 to 30 days in an enclosed vessel to achieve biological reduction of organic solids. Anaerobic digestion is generally not used except for co-treatment with sewage sludge. However, one advantage is that anaerobic digestion generates methane gas, which can be used for digester heating or other purposes.

#### *Composting*

Liquid septage or septage solids are mixed with a bulking agent (e.g., wood chips, sawdust) and aerated mechanically or by turning. Biological activity generates temperatures that are sufficiently high to destroy pathogens. The composting process converts septage into a stable, humus material that can be used as a soil amendment. This process tends to create odors that can be a problem if not handled properly.

After the septage is stabilized, it is then sent for further treatment or disposal, which is described in the sections that follow.

#### **Land application**

Land application of septage is currently the most commonly used disposal method in the U.S. It is relatively simple and cost-effective, uses low energy, and recycles organic material and nutrients to the land.

With proper management, domestic septage is a resource containing nutrients that can condition the soil and decrease the reliance on chemical fertilizers for agriculture. Septage management maximizes these benefits of septage while protecting public health and the environment.

Land application includes spreading septage from septage hauler trucks, specially designed land application vehicles, or tank wagons onto sites using spray irrigation, ridge and furrow irrigation, and overland flow.

### **Treatment at Wastewater Treatment Plants**

A convenient and attractive option for septage treatment is performing the treatment at a wastewater treatment facility. The constituents of septage are similar to domestic sewage, even though septage is stronger and more concentrated. The advantages of treating septage at wastewater treatment plants are that many plants are capable of handling some septage and that it centralizes waste treatment operations. The four main approaches to treating septage at a wastewater treatment plant are:

#### *To Upstream Sewer Manhole*

When septage is added to a sewer upstream of the wastewater treatment plant, substantial dilution of septage occurs prior to it reaching the wastewater treatment plant. This method is only feasible with large sewers and treatment plants. It is economical due to the very simple receiving station design. However, there is the potential for grit and debris to accumulate in the sewer and for odor problems near the manhole.

#### *To Plant Headworks*

Septage can be added to sewage immediately upstream of the screening and grit removal processes. This method, like the one mentioned above, is economical because of the very simple receiving station design. It also allows the wastewater treatment plant staff to have control of the septage discharge.

#### *To Sludge Handling Process*

Septage can also be handled as sludge and processed with wastewater treatment plant sludge after pretreatment in the receiving station. This method reduces the loading to liquid stream processes, and it eliminates the potential for affecting effluent quality. However, there could be an adverse effect on the sludge treatment processes,

such as dewatering. Adding septage to the sludge handling process may also cause clogging of the pipes and increase wear on the pumps if the septage is not screened and dewatered in the receiving station.

#### *To Both Liquid Stream and Sludge Handling Processes*

Septage can also be pretreated to separate liquid and solid fractions, which are then processed accordingly. This provides more concentrated sludge for processing and reduces the organic loading to liquid stream processes and the hydraulic loading to sludge processes. Increased operations are required for septage pretreatment at the receiving station.

### **COST**

Cost considerations cannot be generalized because of the wide range of options available for septage management. The cost of a septage management system is dependent on the treatment and disposal method used and the regulatory requirements of a particular area.

Administrators of a septage management program should be aware of disposal options and the cost involved. The median cost of disposal (or tipping fee) typically ranges from 3 to 6 cents per gallon.

### **REFERENCES**

1. Brown, D. V. and R. K. White. December 1977. "Septage Disposal Alternatives in Rural Areas." Ohio Agricultural Research and Development Center. Research Bulletin 1096. Cooperative Extension Service. The Ohio State University Extension Bulletin 624.
2. Septage Handling Task Force. 1997. Septage Handling. Water Environment Federation (WEF) Manual of Practice No. 24. WEF. Alexandria, Virginia.

3. Ungvarsky, J. and K. Mancl. 1982. "Septage Use and Disposal." Special Circular 317. The Pennsylvania State University. College of Agriculture, Extension Service.
4. U.S. EPA, 1984. *Handbook: Septage Treatment and Disposal*. EPA Municipal Environmental Research Laboratory. Cincinnati, Ohio. EPA-625/6-84-009.
5. U.S. EPA, 1994. *Guide to Septage Treatment and Disposal*. EPA Office of Research and Development. Washington, D.C. EPA/625/R-94/002.

### ADDITIONAL INFORMATION

Lisa Dvello  
Director at Large  
Town of Flower Mound  
2121 Cross Timbers Road  
Lewisville, TX 75028

Daniel Balboa  
Director at Large  
Balboa Septic Design  
3470 Jack C. Hays Trail  
Buda, TX 78610

The mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Environmental Protection Agency.

For more information contact:

Municipal Technology Branch  
U.S. EPA  
Mail Code 4204  
401 M St., S.W.  
Washington, D.C., 20460

**OWM**  
**MTB**

Excellence in compliance through optimal technical solutions  
MUNICIPAL TECHNOLOGY BRANCH

