



**aero-stream<sup>®</sup>**

—By Karl K. Holt

**Uncover  
the TRUTH  
about your  
SEPTIC  
SYSTEM**



# aero-stream

## The TRUTH About Your Septic System— and How to Maintain and Restore It

—By Karl K. Holt

*This guide is presented to:*

- clear up any and all false information you may have about your septic system;
- help you understand how to restore and maintain your septic system for a lifetime;
- expose an out-of-control industry driven by self interests and fueled by billions of dollars made on homeowners, like you and me, every year;
- describe the breakthrough development that prevents and restores septic system problems. **GUARANTEED.**

*According to the EPA, there are over 26 million septic systems across America. The number continues to grow. It is estimated that nationwide, between 10 and 20 percent of these systems are malfunctioning as a result of inadequate management. Decentralized (septic) systems are identified by State water quality agencies as the second greatest threat to groundwater quality.*

**Aero-Stream®**, LLC

W300 N7706 Christine Lane  
Hartland, WI 53029

[www.aero-stream.com](http://www.aero-stream.com)

Toll-free: 1.877.254.7093

Phone: (262) 538.4000

Fax: (262) 538.4093

Email: [info@aero-stream.com](mailto:info@aero-stream.com)





*I heard  
comments like:*

*“Sorry I can’t  
help you.”*

*“We can try jetting  
the lines.”*

*“You need to put in a  
new system that will  
be much better.”*

*“You’re lucky it  
lasted this long.”*

My first experience with septic systems was just after I graduated from college with a degree in mechanical engineering from one of the best applications-based colleges in the country, the Milwaukee School of Engineering (MSOE). Broke from paying my way through school, I rented a small house. I was pretty handy, so I talked the landlord into discounting my rent in trade for fixing up his “shack.”

After a couple of months the old steel septic tank cover caved in. Not knowing anything about septic systems, I soon found myself digging a large hole in the ground to bury this big plastic septic tank that reminded me of a giant golf ball. After planting the tank and connecting the pipes, I was on to the next project!

A few years later I purchased my first home in the country. The home was relatively new. A few days after moving in, I noticed water pooling and freezing above the septic tank. As you can imagine, I was in a bit of a panic. I told the story to some of my engineering co-workers and not one had a clue as to the cause. I started investigating the problem by removing the septic tank cover. What I found was a layer of wastewater on top of a large sheet of ice that had formed in the tank.

Soon after, I learned that the previous owner had vacated the home in early fall. The wastewater in the tank was stagnant and eventually froze. The problem corrected itself rather quickly after we started adding warm water to the system, which allowed the bacterial action to restart.

My next home was built in the 1920s – and had a few too many similarities to the house I rented after college. But it had two things going for it. The location was great, and it had a new septic system. Over the years I scraped together enough cash for a down payment to build a new house on my lot. I connected the new house to the six-year-old septic system.

Shortly after that, I started an engineering-based design firm and enjoyed the economy of the late 1990s. But unfortunately, in the fall of 2001, the market began to tank in my niche market. We were getting by financially...until my septic system horror story began.

On Memorial Day weekend, we noticed a strong septic odor in the yard. I traced the odor down to the septic tank. After digging up the cover and removing it, I soon discovered that the tank was completely full of wastewater. I frantically called in all the local experts.

I heard comments like:

*“Sorry I can’t help you.”*

*“We can try jetting the lines.”*

*“You need to put in a new system that  
will be much better.”*

*“You’re lucky it lasted this long.”*

Well, after hearing these comments and receiving the \$15,000 bid to replace the system, not including the tree removal (another \$2,500), landscape restoration (another \$2,000) and staircase/deck demolition and rebuild (another \$3,500), I decided that there MUST be a better solution! The quest began – and the rest is history!

## Understanding Your Septic System



*However, if you're reading this article, you know that none of these remedies work!*

If you're like most people, you probably have no idea how your septic system works. You may have been told that your system should be pumped regularly. Or maybe you were taught that they never need pumping! You may have heard a few "old wives tales" about putting a dead chicken in the tank, a couple of yeast cakes, some "magic" bugs, etc. (If you just added any one of these items, "Your septic system will last forever, and it will have an infinite life expectancy!") However, if you're reading this article, you know that none of these remedies work!

Your septic system is a combination of mechanical and biological processes. The mechanical portions of modern systems are very durable. Materials like concrete, PVC plastic, and fired clay pipe will last a long time underground. Previously-used materials like steel, cast iron and asphaltic pipe are not very common anymore. Most of these materials have been replaced with newer and more durable materials.

The biological portion of your septic system is generally robust, but it can be upset by abuse. This includes overloading it and dumping excess materials into the system that it was not designed to handle — paint materials, thinners, bleach, anti-bacterial products, medications, and non-organic materials, such as baby wipes, feminine products and cigarette butts.

In a perfect world the biological process is 100% efficient. However by this time in your life, I'm sure you've come to realize that we live in a less than perfect world. Unfortunate and unexpected things happen — usually at the least opportune moment — and we have to figure out how to deal with them. Septic system problems are no one's favorite, and I would guess you've talked and learned more about your system in the past few weeks than you ever imagined you would.

## Something Stinks — and It Isn't Your Septic System

In the case of your septic system you may have turned to your local specialists — plumbers, pumpers, septic installers and government officials. At best, many of these individuals have only limited knowledge regarding wastewater treatment. At worst, you will have your first encounter with an industry where most people have their own self-interests in mind and are often simply looking to line their wallets. In some cases, rather than a solution, you may end up with additional trouble and more serious problems.

Or perhaps out of frustration you turned to the Internet and did some research on your own. A quick "Google" search will lead you to hundreds and thousands of web pages that make unreliable and unsubstantiated claims to solve your septic system problems. There are a lot of companies out there that would be more than happy to supply "magic bugs" or "chemicals," that do nothing more than cost you money.

*continued . . . . .*

## Something Stinks — and It Isn't Your Septic System



. . . . . continued

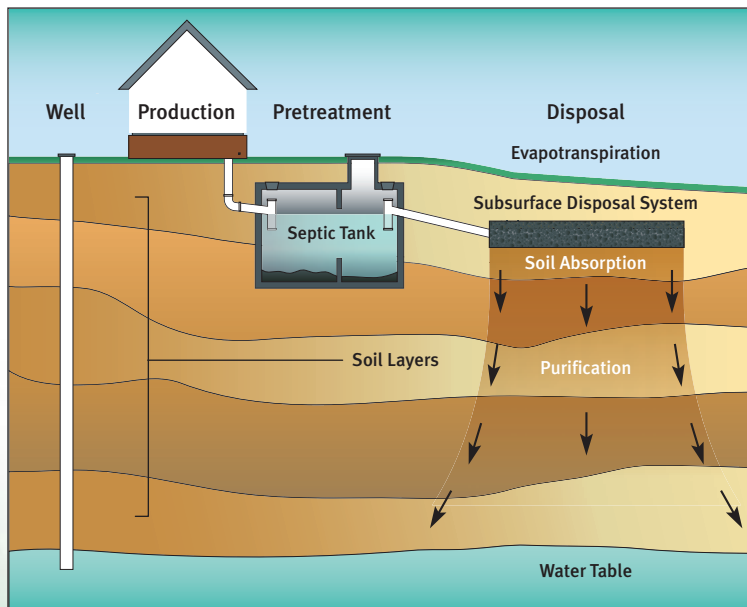
Lloyd Kahn, author of *The Septic System Owner's Manual*, made this comment about the industry you're facing:

*"I've been amazed by the scale, by the lack of accountability, by the hoodwinking of the public and by so many homeowners placidly accepting their fates. If you own a home with a septic system and haven't been pushed to upgrade to an expensive new system yet, I bet you will be in the next five years. The amount of money to be made is just too great for this new industry to slow down on its own accord."*

— *MotherEarth News*, February/March 2008

Kahn served for a year on a county septic advisory committee and has followed the wastewater industry over the past 15 years, starting when his town was confronted with a corrupt \$7 million treatment plan in the late 1980s. In 2000, he wrote, *The Septic System Owner's Manual*, a basic manual for the average homeowner. The new edition, published in 2007, remains the single best book about septic systems for homeowners.

## How Your Septic System Works



There are many septic system design variations. But while the systems may be somewhat different, they all perform the same basic function: To process raw sewage into a cleaner effluent that can be evenly distributed beneath the ground and blended with the groundwater, so as to avoid creating a health hazard.

The four basic parts of the system are the inlet pipe, the septic tank, the outlet pipe and an absorption component. The waste stream is in motion almost constantly. When a toilet is flushed in your home, approximately three gallons of water and waste flows into the inlet pipe connected to the septic tank. An equal amount of waste (three gallons) then flows out of the septic tank through the outlet pipe to the absorption component. Next, an equal amount of waste (three gallons) flows through the absorption unit into the ground.

## The Wastewater Treatment Process



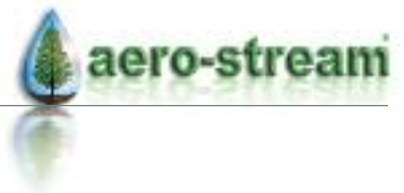
When wastewater first enters the tank from the home, it is held in the tank for approximately two days. In some cases if you have high hydraulic flow rates due to house guests, or excessive amounts of laundry or showering, the holding period is significantly reduced. During this initial holding period, the anaerobic bacteria break down the organic material in the wastewater, reducing the "strength" of the wastewater by about 40%. As explained previously, when three gallons of wastewater enters the tank, it displaces three gallons of wastewater through the outlet pipe. Because of the separation distance between the inlet and outlet pipes, the wastewater that is closer to the outlet pipe has been in the tank the longest period, and therefore is the cleanest. This cleaner water (still containing 60% of its original organic material) flows out into the distribution field for further treatment.

After a short period of time, a layer begins to form at the bottom of the gravel bed (distribution field). This layer is known as the bio-mat. The bio-mat is made of anaerobic bacteria and its by-product, a black slimy substance. This slimy substance protects the bacteria from oxygen. If the anaerobic bacteria were to come in contact with oxygen, it would quickly die. Because the bio-mat contains living organisms (anaerobic bacteria), it requires a food source. The food source is the organic material dissolved or suspended in the water coming from the septic tank. The bio-mat helps to further clean the wastewater, removing an additional 60% of organic material.

However, the anaerobic bacteria (within the bio-mat) are rather slow to digest the organic material. The by-product of the anaerobic bacteria, (the black slimy substance), closes some of the soil pores resulting in a reduction in flow of the water through it. This enables the anaerobic bacteria sufficient time to clean the wastewater. The result is clean water entering the water table, which eventually mixes with ground water.

Another by-product of the anaerobic treatment process is the production of hydrogen sulfide gas. This is the "rotten egg" odor that is emitted from your septic system. In addition to being an obnoxious odor, the hydrogen sulfide gas combines with atmospheric oxygen to form hydrosulfuric acid. This highly corrosive acid forms at and above the water line and destroys the concrete and steel components. This issue can be more prevalent in areas of high sulfur and high iron content in the fresh water supply.

## The Septic System Aging Process



As discussed earlier, the mechanical portion of your septic system is very durable. After many years, some systems may require the repair or replacement of the inlet and/or the outlet baffles. Other than that, nothing mechanical should need service.

However, your system does age biologically. When your septic system is new, it has much more water dispersion capacity. But over time, as the bio-mat matures, the soil pores start to clog excessively. Eventually, the bio-mat can seal off the bottom of the field and the wastewater begins to “pond” in the gravel bed beneath the ground. Then the water begins to be absorbed through the side walls of the gravel bed.

If left unchecked, the bio-mat continues to mature, growing up the side walls, and eventually to the surface or near the surface. ***THIS is the reason why your system does not function as it did when it was new.*** At some point you will be putting more wastewater into the system than the field has the ability to disperse.

This results in ponding on the surface of your yard, elevated tank levels, or sewage back-up into the house. You could experience one or any combination of these situations.

## Myths and Ineffective Methods

### INSUFFICIENT BACTERIA

The bacteria population in your system is self-regulating. As more wastewater (“food” for the bacteria) enters the septic tank, the bacteria population increases very rapidly. As the wastewater flow (“food” for the bacteria) decreases, the population is reduced. For example, when you go on vacation the wastewater flow to your tank stops. The bacteria digest the remaining “food.” When the food is gone, the bacteria begin to starve and die off. By the time you return from vacation, the bacteria count is low. As wastewater enters the tank, the bacteria population increases rapidly until it balances with the amount of available “food.”

### CONCLUSION



The only way for a system to become unbalanced would be an event that killed the septic tank bacteria, such as the excessive use of solvent chemicals, bleach, anti-bacterial products, antibiotic and chemotherapy drugs, etc. Your system is designed to handle any of these substances in small amounts. Therefore, if you don’t abuse your system, you will not need to add bacteria.

*continued . . . . .*

## Myths and Ineffective Methods

. . . . . continued

### THE NEED FOR “SPECIAL BACTERIA” OR BUGS

There are hundreds of brands of septic tank additives on the market today. Many have powerful claims:

*“If you use our product you’ll never have to pump your septic tank again.”*

*“Our product liquefies the waste.”*

*“4 Billion cfu/gm”*

*“Special enzymes that breakdown solids!”*

Many claim they are “Easy to use. Just flush it down the commode.” Some supposedly offer “money-back guarantees” and “No more odors.”

Typically, the bigger the hype, the higher the price. Generally speaking, the packaging and marketing costs are far greater than the manufacturing cost of any “active” material. These companies can afford numerous customer returns and still maintain a substantial profit. Some will even try to convince customers to use more of their product in lieu of returning your money. Many people become frustrated or tired and give up trying to get their \$200 back!

These bacterial “cocktails” typically contain aerobic, anaerobic and facultative bacteria. The aerobic require oxygen to live; the anaerobic must live in an oxygen free environment (septic); and the facultative can survive in either condition by metamorphosis from anaerobic to aerobic. As mentioned earlier, your system is operating in a “septic” anaerobic condition. The aerobic bacteria in the cocktail die rapidly after entering the septic tank, because there is no oxygen in the system. The facultative bacteria change to anaerobic bacteria by metamorphosis and the anaerobic survive well.

As you learned in the “Septic System Aging Process” on the previous page, the cause of your septic system failure is that there is a significant build-up of the bio-mat, a combination of anaerobic bacteria and its by-product in your septic field. You also have learned that the anaerobic bacteria maintain a constant and proportional balance with the supply of “food.” The bacteria increases and decreases in relationship to the amount of “food” available. You simply cannot add more bacteria than available food.

### CONCLUSION



Simply adding more of the same type of bacteria that is already causing problems with your system will have no positive impact!

continued . . . . .





## Myths and Ineffective Methods

. . . . . continued

### FREQUENT PUMPING

Some disreputable pumpers will gladly pump your system anytime you call them. Unfortunately, after pumping the system, it can take weeks for the bacteria in a septic tank to re-populate and stabilize. During this period, the wastewater is not being fully treated and a very strong effluent is flowing to the field. In addition, the added “food” in this wastewater encourages the accelerated growth of the bio-mat.

### CONCLUSION



For the short term you may get some relief – until the tank fills again. However, frequent pumping can do more harm than good. After pumping, the biological process has been disturbed, and the wastewater flowing to the field has more “food” in it because the system has not been given adequate time to stabilize.

### ROOTS

Roots are seldom an issue — regardless of what you may have been told. For the roots to cause a problem, they would have to fill all of the perforation holes in the pipe system.

### CONCLUSION



This is not a likely scenario. Less than 0.5% (*1 out of 200*) systems experience problems related to roots.

## The Patented and Proven Solution by Aero-Stream®



By now you should understand how your septic system works and why it fails. You also should be able to separate the facts from the fiction you receive from any so-called “experts” or read on any self-serving web sites that offer more hype than science and prey on desperate homeowners.

At this point, you will be introduced to a solution that I developed, perfected and patented, which:

- *is scientifically based,*
- *provides excellent benefits for the environment,*
- *offers over a 95% documented success rate,*
- *requires **no** costly excavation,*
- *demands **no** chemicals or additives, and*
- *provides a **money-back guarantee.***

This process is called “Aerobic Bio-Remediation.” The process, application and equipment has been developed and introduced by Aero-Stream®, LLC, and has been awarded several U.S. Patents.



*... the aerobic treatment of the wastewater in your septic tank reduces the strength of the organic material leaving the tank by as much as 90% or more.*

Aerobic treatment is in use at the most advanced municipal wastewater plants. Nearly every wastewater plant utilizes aerobic treatment as one of its primary processes. This process is robust, fast and efficient.

Aero-Stream® applies this same technology to your current septic system with virtually no significant change to your components or system. Just as the large municipal wastewater treatment plants do, the aerobic treatment of the wastewater in your septic tank reduces the strength of the organic material leaving the tank by as much as **90% or more**. This in turn significantly decreases the food source for the bio-mat, which then begins to “starve” and die off. When the bio-mat dies off, it breaks down and the soil becomes permeable again. In addition to the starvation of the bio-mat, oxygen-rich water with aerobic bacteria flows into the field. The aerobic bacteria also have an appetite for the bio-mat, further reducing it.

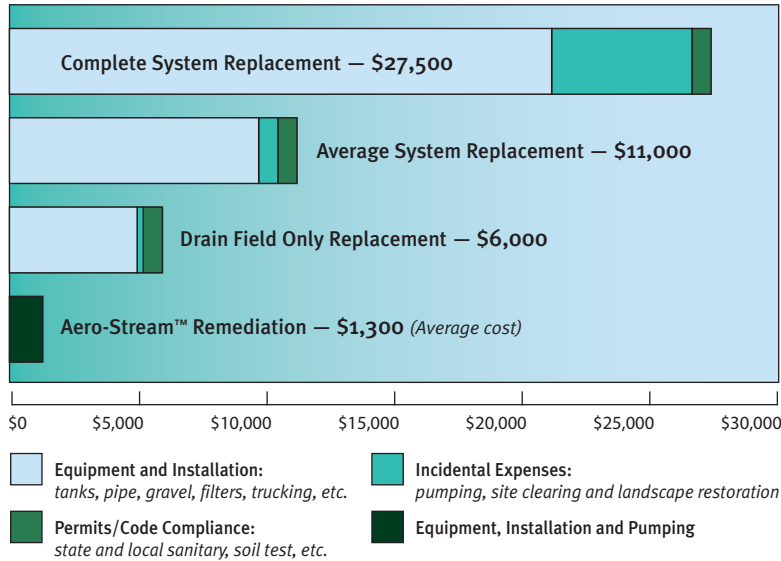
In addition, Aero-Stream® provides outstanding environmental benefits — including a significant reduction in Escherichia coli (E. coli) and fecal coliform bacterias. The following data regarding these benefits is substantiated and based on third party testing. The Aero-Stream® system will produce results for BOD<sub>5</sub> and TSS in the range of 30 mg/L or better. Fecal coliform levels will be in the range of <math>\lt; 5000\text{ cfu/mL}</math>. *(This is huge improvement over an anaerobic system that typically has limits of 220 mg/L for BOD<sub>5</sub>, 150 mg/L for TSS, and Fecal Coli Form of 10,000 cfu/mL.)* In addition, the Aero-Stream® product reduces total ammonia (TKN) by some 23%. A typical Aero-Stream® system will produce effluent with a combined nitrate and nitrite level of <math>\lt; 5\text{ mg/L}</math>. The Environmental Protection Agency (EPA) has set a combined limit of <math>\lt; 10\text{ mg/L}</math> for drinking water.

## Aero-Stream® Success Rate

The Aero-Stream® process equipment has been installed globally in nearly every type of system configuration and soil type. The process maintains a **95% success rate!**

In the few instances when remediation was unsuccessful, there was typically a lack of adequate time for the Aero-Stream® process equipment to work. Sometimes homeowners want or need their system repaired immediately. Even though the Aero-Stream® process provides results in just weeks, sometimes in dire situations, that’s not fast enough!

## Cost Comparison



The Aero-Stream® process and equipment is substantially less expensive than any other proven solution. When comparing the typical Aero-Stream® installation to the lowest cost absorption field replacement, the Aero-Stream® solution is 85% less expensive. When compared to the average cost absorption field, the Aero-Stream® solution is 90% less expensive. It is 93% less expensive than a high cost absorption field replacement.

## What Our Customers Are Saying



*I was having to pump my septic tanks every month at a cost of \$325. I had to pump the system the first month but have not had to since then. Obviously I have saved almost \$5000. Very satisfied.*

★★★★★ — Ken K.

We have received countless letters, emails and phone calls praising the Aero-Stream® solution. To give you, the consumer, complete assurance that what we say is true, we have implemented Customer Lobby the leading provider of customer feedback and online reputation management services. Customer Lobby offers an unbiased third party customer feedback platform. Here's just a tiny sample of what our satisfied customers are saying:

*I just can't believe how well this product WORKS! I'm not a religious person, but this, to me, is close to a miracle. I have never been more relieved in my life.* ★★★★★ — Kevin P.

*I had neighbors laughing at me when I bought your unit. They paid between \$18K - \$22K (cdn) for new systems. They are not laughing now.*

★★★★★ — Barry A.,  
Ottawa, Canada

*My Aero-Stream® unit has been functioning exactly as described in Karl's "White Paper." I'm sure that anyone who deals with his firm will be as satisfied as I am. They are very prompt, knowledgeable, and courteous.* ★★★★★ — Roy S.

*As an environmental consultant I both appreciate your quality and the true benefit to the environmental and ground water protection your system offers. Thanks again so much for your help and quality product in solving our problem. (You were right — the 'flush products' are a total waste of money and don't really fix the problem . . .).* ★★★★★ — Michael G.

*I am extremely happy with this solution. No mess, no stress, I haven't noticed any change in my electric bill & it seems very eco-friendly. The best part is no worries about a backup! After 3 years living on the edge, it's a great relief.*

★★★★★ — Barb P.

## A Cost-Effective Solution



If there's an easy-to-install solution to restore your septic system why haven't you heard about it? Simply stated, an inexpensive septic system repair that saves homeowners thousands of dollars conflicts with the major players of the wastewater industry. As mentioned earlier the majority of the people you will encounter in the wastewater industry regarding your problem will have their own self-interests in mind.

Septic pumpers make a living on septic problems! The frequent pumping which is typical of a failing septic system can pay for a lot of new trucks. Septic system installers make a living replacing systems. They would much rather replace your failing septic system than see you restore it for a fraction of the cost. In addition, the Clean Water Act provides the wastewater industry billions of dollars in grant money. No failing septic systems would mean no government funding for sewer projects.

## Why Aero-Stream®?

We are the pioneers and industry leaders in the aerobic remediation of private septic systems. After several years of research, testing and refinement, we introduced the Aero-Stream® process of converting a conventional septic tank into an aerobic treatment system to the world in 2003. This means we have been fine-tuning and improving our system for over six years. We have thousands of systems installed across North America in all soil conditions and every possible configuration with better than a **95% success rate.**

Aero-Stream® LLC is accredited by the Better Business Bureau with an A+ rating. We also have earned the Handyman Club of America seal of approval. In addition, Customer Lobby, the leading provider of online customer feedback, has given Aero-Stream® BOTH the Business Excellence and the Consumer Approved awards. We invite you to read the unedited testimonials offered by our customers on Customer Lobby and check out our reputation at the Better Business Bureau.

Finally, all Aero-Stream® Remediators™ come with a money-back guarantee.



# aero-stream

## Money-Back Guarantee

---

The goal of Aero-Stream® is to help you resolve your septic system problems forever. We are confident that the Aero-Stream® process will correct the problem and improve the performance of your septic system if you use your septic system in the normal way.

If during the guarantee period you are not satisfied with the improvement in the operation of your septic system you can return it to us for a refund. If the customer is not satisfied with the progress for any reason we will proceed with the refund process at that time or continue the guarantee from the purchase date based on the preference of the customer.

***The bottom line of our money back guarantee is to meet or exceed YOUR satisfaction.***

## Summary

---

To learn more about how the patented Aero-Stream® process can solve your septic issues once and for all, call us toll-free at 1-877-254-7093.

You will be on your way to resolving your issue for good! Please feel free to call and talk to one of our technical experts if you have any questions. We look forward to working with you and providing the most affordable way to fix your septic system — **GUARANTEED.**

---

### Aero-Stream®, LLC

W300 N7706 Christine Lane  
Hartland, WI 53029

[www.aero-stream.com](http://www.aero-stream.com)

Toll-free: 1.877.254.7093

Phone: (262) 538.4000

Fax: (262) 538.4093

Email: [info@aero-stream.com](mailto:info@aero-stream.com)

