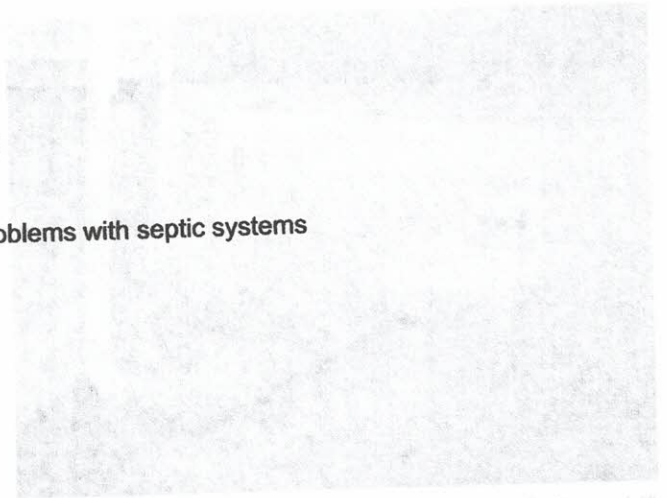


# Septic Systems

## Online guide, library, resources

- POST a QUESTION or READ FAQs about troubleshooting problems with septic systems



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Septic system design, installation, maintenance & repair guides:

How to Install, inspect, troubleshoot & repair septic tanks & fields.

These septic system articles explain how to buy, inspect, install, test, diagnose maintain and repair septic tanks, drainfields, and all other components of all types of septic systems.

We discuss how septic systems work, and how to provide septic system care to avoid replacing the septic system unnecessarily.

We provide septic cleaning and septic maintenance procedures, septic inspection methods, septic repair guides, and septic system design information. Page top: a peat mound septic system in Two Harbors, MN.

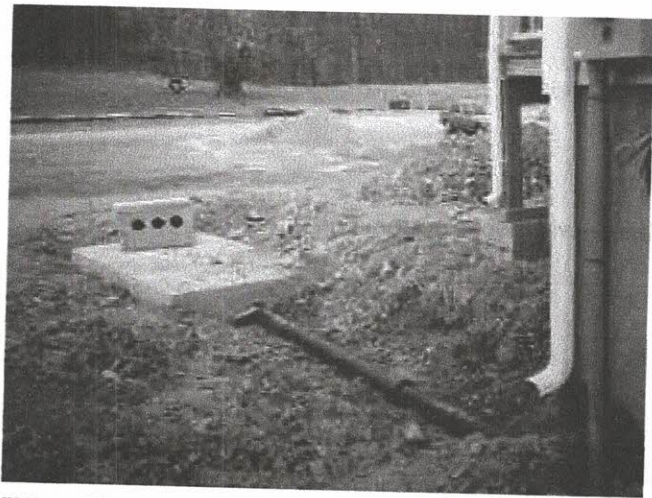
We also provide a MASTER INDEX to this topic, or you can try the page top or bottom SEARCH BOX as a quick way to find information you need.

## Septic Systems - ST/SAS Septic Tanks & Soil Absorption Systems: installation, inspection, diagnosis, maintenance & repair

Here we give in-depth information about conventional septic tanks, septic digesters, drain fields, soakaway beds, reed beds, seepage pits, cesspools, drywells, soakpits, and also septic pipes, and septic waste handling.

We describe and explain the need for and how to install alternative septic system designs for problem sites where the need is to save water or where it is difficult to dispose of septic waste.





We include tables for septic tanks: pumping frequency, septic tank size, septic tank design, and clearances between septic systems, wells, and other site features and boundaries.

This page organizes and links to our detailed septic system inspection, test, repair, and design articles, including our online septic systems book.

Septic testing class presentations, septic system photos, septic system design sketches, septic care tables, links to products and consultants are provided.

"How-To" Articles at our Septic System Information Website are in these groups: (these links are also at the "More Reading" links at the bottom of this article )

Shown above: a building main drain has just been connected to a concrete septic tank that has no yet been covered with backfill. *[Click to enlarge any image]*

To find what you need quickly, if you don't want to scroll through this index you are welcome to use the page top or bottom SEARCH BOX to search InspectApedia for specific articles and information.

1. SEPTIC SYSTEM DESIGN BASICS, septic maintenance and septic care instructions for home owners and home buyers; steps to take when buying a home with a septic tank and septic fields, and basics septic system information about: |

Septic soil & percolation tests, septic tank size, septic tank depth, septic tank tees, filters, graywater, clearances septic system to other site features, drainfield size, drainfield shape, tank pumping frequency, tank pumping procedure, tank repair, septic treatments & chemicals, steep slope systems

2. SEPTIC SYSTEM DESIGN ALTERNATIVES, septic system designs, designers, suppliers & products for Aerobic, Alternating Bed, Biogas, Cesspools, Disinfection, Drywellos, Evaporation-Transpiration, Filters, Fixed-Film, Gravelless, Greywater, Lagoon, Latrines, Media Filter, Mound, Outhouses, Pressure dosing, raised bed, sand bed, sequencing batch reactor, sewage treatment, toilet alternatives, vegetative submerged bed, wastewater treatment, & wetland septic systems

3. SEPTIC SYSTEM DESIGN & INSTALLATION articles on how to design & install an on-site private wastewater treatment system, that is, in normal-talk: a septic system.

4. SEPTIC SYSTEM INSPECTION & TESTING how to find and diagnose septic system problems

5. SEPTIC SYSTEM MAINTENANCE & REPAIR septic system care, maintenance, repair or replacement procedures and products

6. SEPTIC COMPONENT & PRODUCT SUPPLIERS lists of suppliers and repair experts for septic systems - where to buy septic system parts

7. SEPTIC SYSTEM VIDEOS "how to" videos describe how to find the septic tank, how to find the drainfield, dealing with septic pump alarms, and other septic system inspection, maintenance, and repair tutorials in short videos hosted at You Tube



## 8. SEPTIC TANK FAQs frequently-asked questions about septic tanks



We discuss just about every septic system topic and product at this website: septic tank and septic system drainfield or soakaway bed design, septic tank size, septic tank pumping frequency, septic tank cleaning, and septic tank inspection.

We also discuss cesspools and drywells, aerobic septic systems, septic system repairs, treatments, and additives or chemicals. If you find that something is missing from this website just CONTACT us and ask for it.

"Septic tanks" are what home owners or home buyers think of when buying or maintaining a home with a private septic system. But we should be thinking about the whole septic system - since the drain field or leach field makes up half of a typical septic system cost.

Septic tank care and septic tank cleaning need to be done on a regular frequency (we provide a septic tank pumping schedule table) in order to avoid ruining the drainfield.

Septic tank maintenance is not enough. Proper septic system design for the level of usage and soil conditions is critical if the system is going to have a long useful life.

We are also quite concerned with septic system health and safety since there are potential collapse hazards which can be fatal, and there are bacterial and pathogen hazards for both site occupants and for the environment if a septic system is not working properly.

The articles listed at this website form an extensive guide to septic systems care, inspection, testing, and installation. We welcome questions and suggestions for content.

### Information for Home Buyers or Owners

#### Septic System Basics - How Septic Systems Work, Septic Inspection, Septic Maintenance, Septic Repairs

- ABANDON a SEPTIC TANK - how to safely find & abandoned unused septic tanks, cesspools, drywells
- ABANDONED or NEW SEPTIC SYSTEM inspection & testing suggestions



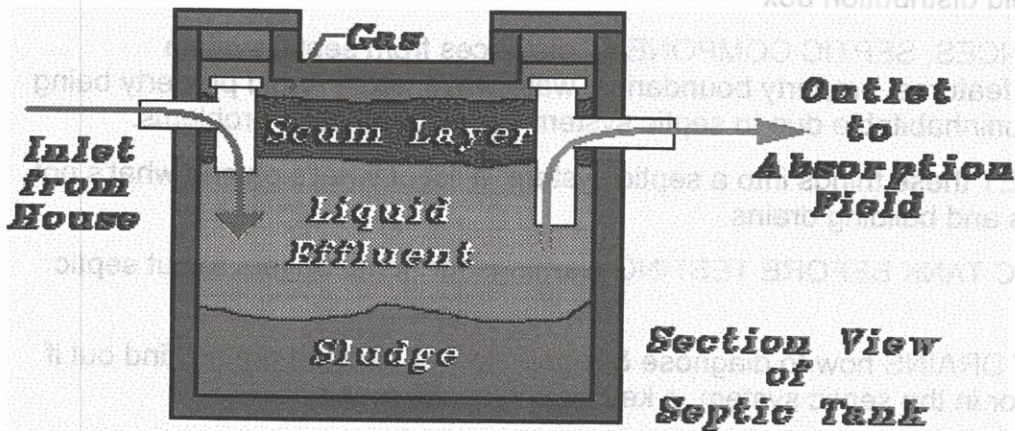
- **ADDITIVES & CHEMICAL TREATMENTS** products for septic system maintenance. Are septic products needed? Are septic treatments legal?
- **ALTERNATING BED SEPTIC SYSTEMS** may provide a retrofit repair for a failing drainfield or a means of extending drainfield life
- **ALTERNATIVE DESIGNS** for SEPTIC SYSTEMS with problem sites, poor soil percolation, limited space: aerobic, dosing, evaporation, gravelless, greywater, lagoon, media filter, septic filters, mounds, raised beds, waterless toilets
- **AGE of PLUMBING MATERIALS & FIXTURES** including piping, plumbing fixtures, septic systems, cesspools, drainfields
- **ANIMALS GRAZING OVER SEPTIC FIELDS** is it a problem?
- **BACKUPS & CLOGGED DRAINS** diagnosing septic backups and septic system failures versus clogged drains - key step in septic repair
- **BACKUP PREVENTION, SEPTIC or SEWER** extra steps to avoid a septic backup such as during a party or when you anticipate heavy use of the septic system
- **BACKUP REPAIR, SEPTIC or SEWER** what to do when the toilets or drains are backing up
- **BASIC DESIGNS** for SEPTIC SYSTEMS for septic systems, tank size, field size, design notes
- **BIO-FUEL PRODUCTION & USE** describes the production and use of methane produced by sewage or manure
- **BUY SEPTIC BOOKS ONLINE** at Amazon.com - books for septic system design. septic system education materials
- **BUYERS GUIDE** for HOMES with SEPTIC TANKS Home Buyer's Guide to Septic Systems inspection & testing - what to do, step by step to inspect and test a septic system when buying a home
- **BIOMAT FORMATION** in a SEPTIC SYSTEM in the Septic System Drainfield Absorption System - what leads to drain field clogging and expensive drainfield repairs
- **BLOCKED DRAIN REPAIR METHODS** - do-it-yourself steps you can try to clear a clogged drain before calling a professional plumber
- **CESSPOOLS** home buyer's or Owner's cesspool maintenance advice
- **CESSPOOL SAFETY** warnings about cesspool, drywell, seepage pit collapse dangers
- **CONTAMINANTS** in SEWAGE which may be released from sewage spills from residential septic systems and wastewater disposal systems
- **CURTAIN DRAINS** or intercept drains can protect septic drainfields in areas of wet soils or surface and subsurface groundwater
- **DEFINITIONS** of SEPTIC SYSTEM TERMS of septic system terms, an online septic system dictionary
- **DESIGN SPECIFICATIONS** for SEPTIC SYSTEMS complete list of detailed "how to" articles
- **DESIGN TYPES** for SEPTIC SYSTEMS a master list of Septic System Designs & Types, named and described



- **DISTRIBUTION BOX, SEPTIC D-BOX INSPECTION** provides for help in finding and inspecting the septic system drainfield distribution box
- **DISTANCES & CLEARANCES, SEPTIC COMPONENT** distances from septic system components to other site features, property boundaries, waterways, etc. - Avoid property being declared insalubrious or uninhabitable due to septic system space or function problems.
- **DON'T FLUSH** into TOILET these things into a septic system: a list of what's ok and what's not ok to put into septic tanks and building drains
- **DON'T PUMP** the SEPTIC TANK BEFORE TESTING warnings for home buyers about septic tank pumping
- **DRAIN CLOGS & CLOW DRAINS** how to diagnose & repair slow or clogged drains; find out if the problem is in a drain or in the septic system, a key step in septic repair
- **PLUMBING DRAIN NOISE DIAGNOSIS** may indicate defective or clogged plumbing: how to diagnose and cure drain sounds like gurgling or dripping
- **DRAIN LINE SEWER LINE REPLACEMENT** diagnosing a clogged drain leads to drain line replacement - step by step photo-illustrated guide to drain replacement
- **SEPTIC DRAINFIELD SHAPE** septic drainfield, soakaway bed, soakbed, leach field, or leaching bed shape and placement considerations
- **DRAINFIELD LOCATION** how to find the septic drain field or leaching bed
- **DRIVING or PARKING** over the SEPTIC SYSTEM? is it ever acceptable to drive or park over septic system piping, tanks, or drainfields?
- **DRYWELL DESIGN & USES** home buyer's or owner's advice for drywell installation, testing, and maintenance
- **DRAWING LIBRARY, SEPTIC ©** drawings of septic system components, fields, layouts. These are educational, not engineering drawings and are © protected. Sample engineering drawings and plans wanted for the website.
- **FILTERS** for SEPTIC TANKS & GRAYWATER DRYWELLS to protect septic drainfields and soakpits or drywells, & to reduce drainfield clogging
- **FLOODED SEPTIC SYSTEMS, REPAIR** what to do after a septic system has been exposed to flooding, key septic maintenance and repair tips
- **GARBAGE GRINDERS / DISPOSERS** and garbage disposal units - effects on septic systems and septic maintenance requirements
- **GASES, SEPTIC METHANE** and other septic system gas hazards such as hydrogen sulfide
- **INSPECTION & TESTING** of SEPTIC SYSTEMS complete list of detailed "how to" articles
- **SEPTIC SYSTEM INSPECTION LEVELS** describes the parameters of visual inspections, tank and field inspections, dye tests
- **SEPTIC INSPECTION WORKSHEETS** for use with various types and levels of onsite septic inspection and testing
- **SEPTIC INSPECTION BOOK ONLINE** online text describes septic system inspection, diagnosis, repair, design
- **SEPTIC INSPECTION COURSE ONLINE** online documents, classes, notes, free



• **SEPTIC TANK PUMPING SCHEDULE FAQs**



(C) 2005-1985 Daniel Friedman

- **LIFE EXPECTANCY of SEPTIC SYSTEMS, TANKS, FIELDS and septic system components**
- **MAINTENANCE & REPAIR of SEPTIC SYSTEMS** complete list of detailed "how to" articles
- **NEIGHBORING SEPTIC SYSTEM PROBLEMS** advice for dealing with a neighboring septic system producing odors or seepage
- **OUTHOUSES & LATRINES** types, design, inspection, safety warnings
- **OUTHOUSE / LATRINE FIRE & EXPLOSION** methane gas explosion and fire
- **PLANTING OVER SEPTIC SYSTEMS** trees, shrubs, gardens, groundcover over or near the septic system tank, pipes, soakbeds, fields: what can you plant over or near septic system components without causing a problem?
- **PLANTING GARDENS NEAR SEPTIC COMPONENTS** vegetables, fruits, other types of gardens
- **PUMPS for SEPTIC SYSTEMS** Septic pumps, sewage ejector pumps, grinder pumps, effluent pumps, sump pumps, & septic pumping stations compared; pump alarms. Advice.
- **REFERENCE BOOKS, CODES, DESIGN GUIDES, SEPTIC SYSTEM** for septic system maintenance, repair, design, installation
- **SEWAGE & SEPTIC CONTAMINANTS** - what contaminants are found in sewage or septic effluent
- **SEWAGE CONTAMINANTS in FRUIT / VEGETABLES** is it OK for you eat fruits and vegetables grown over a septic drainfield?
- **SEPTIC & CESSPOOL SAFETY** septic system, septic tank, & cesspool safety warnings for septic inspectors, septic pumps, and homeowners.
- **Septic System Manufacturers, Suppliers, Supplies**
  - SEPTIC SYSTEM SUPPLIERS
  - AEROBIC SEPTIC SYSTEM SUPPLIERS
  - ALTERNATIVE SEPTIC Product Suppliers List



- **SEPTIC D-BOX INSTALL REPAIR** provides for help in finding and inspecting the septic system drainfield distribution box
- **SEPTIC TANK ABANDONMENT GUIDE** how to safely find & abandoned unused septic tanks, cesspools, drywells
- **SEPTIC TANK BACK FLOODING** how to diagnose abnormal sewage levels in septic tanks
- **SEPTIC TANK DEPTH** how deep will we find or install a septic tank
- **SEPTIC TANK GRASS or SNOWMELT** what is the significance of greener grass over the septic tank, brown grass over the septic tank, or melting snow over the septic tank or drainfield?
- **SEPTIC TANK INSPECTION PROCEDURE** how to inspect septic tanks and evaluate the septic tank condition, baffles, sludge levels, damage, evidence of septic failure, etc.
- **SEPTIC TANK LEAKS** can prevent a valid septic loading and dye test and can damage the drainfield
- **SEPTIC TANK, HOW TO FIND** How to Find the Septic Tank, how deep will the cover be, how to document its location
- **SEPTIC TANK PUMPING FREQUENCY SCHEDULE** for septic tanks: when, how, what to watch for when pumping or cleaning septic tanks
- **SEWAGE ODORS in COLD or WET WEATHER** Odor Diagnosis & Repair Guide for diagnosing and eliminating cold weather sewer gas odors
- **SEPTIC TANK PUMPIN NO-NO's** When Not to Pump a Septic Tank to avoid damage, unsafe conditions, or wasting money. Don't pump the tank right before a septic test.
- **SEPTIC TANK PUMPING REASONS** why relying on the septic tank pumping schedule table or advice from pumping contractors isn't enough
- **SEPTIC TANK SIZE** septic tank size and capacity vs. usage determine the required septic tank size, calculate size of an existing septic tank
- **SEPTIC TANK TYPES & MATERIALS** characteristics and inspection guide for steel, concrete, plastic, fiberglass, and home made septic tanks
- **SEPTIC TANK LEVELS of SEWAGE** what are normal and abnormal sewage levels in septic tanks and what do they mean about tank condition, leaks, etc.
- **SEWAGE ODORS in COLD or WET WEATHER** Odor Diagnosis & Repair Guide for diagnosing and eliminating cold weather sewer gas odors
- **SEWAGE PUMP DAMAGE & REPAIR** list of items that clog and damage or destroy different types of sewage pumps, grinder pumps, and ejector pumps
- **SEWER GAS ODORS** diagnosing, finding, and curing septic tank and sewer line smells
- **SEWER GAS, METHANE HAZARDS & other septic system gas explosion or asphyxiation** hazards such as hydrogen sulfide
- **SEWER LINE REPLACEMENT** diagnosing a clogged drain leads to drain line replacement - step by step photo-illustrated guide to drain replacement
- **SINKHOLES, WARNING SIGNS** sudden collapses in soils or yards may be a sign of dangerous sink-holes as well as dangerous septic component collapses



- **STEEP SLOPE SEPTIC DESIGNS** how to install sewer lines from building to septic tank; how to install septic drainfields, leach field systems at steep or sloped sites.
- **SWIMMING POOL DISTANCE to SEPTIC** distance between a swimming pool and septic components
- **TEN STEPS to KEEPING a SEPTIC SYSTEM WORKING** septic maintenance suggestions from the U.S. EPA, edits with additions by DJF
- **ALTERNATIVE & WATERLESS TOILETS** camping toilets, chemical toilets, emergency-use toilets, waterless toilets, graywater systems, composting toilets, home health care toilets, incinerating toilets, outhouses, and latrines.
- **TOILET OVERFLOW EMERGENCY** how to stop a toilet from overflowing
- **TOILET REPAIR GUIDE** how to diagnose and fix problems with toilets
- **WHAT IS A SEPTIC SYSTEM? An Engineer's View & Septic System FAQ's**

## Directory Lists of Septic System Parts & Supplies

- **AEROBIC SEPTIC SYSTEM SUPPLIERS**
- **ALTERNATIVE SEPTIC DESIGN SUPPLIERS**
- **SEPTIC FILTERS & Wastewater Treatment Systems Using Filtration Methods Products Directory**
- **GRAVELLESS NO-ROCK SEPTIC Leach Field Septic Systems Products Directory List**
- **WASTEWATER TREATMENT Other Septic Wastewater Treatment Products List**
- **PLUMBERS & Septic Repair Companies List**
- **SEPTIC EFFLUENT DISTRIBUTION Products Directory List**
- **SEPTIC TANK SUPPLIERS** concrete, fiberglass, plastic, steel septic tanks
- **TOILETS, WATERLESS ALTERNATIVES** Composting Toilets, Biological Toilets, No-water/Low water toilets, Waterless toilets, Chemical Toilets, Incinerating Toilets and related products list
- **Listing submissions welcome**, there is no listing fee. **DIRECTORY LISTING & LINK EXCHANGE** Instructions. Add your listing & support InspectAPedia.com by exchanging links - no listing fee & no conflicts of interest.

## General reader comments about this septic system install, inspect, troubleshoot, repair article series

(Jan 22, 2014) Paul G said: Hey this is a great resource. Thanks.

### Question: septic tanksize determination

(Feb 24, 2014) cyvrn8822@yahoo.com said: what size of septic system would be needed for a 5000 sure ft home?

Reply:



Hi CYVRN

Reply:

If you take a look in the ARTICLE INDEX given at the end of any of our septic system pages you'll find this article live link

**SEPTIC TANK SIZE: septic tank size and capacity vs. usage determine the required septic tank size, calculate size of an existing septic tank**

(May 16, 2014) Fran said:

We own a lake home with a holding tank. We thought it was a septic when we purchased the home but our septic man told us it was a holding tank when he came to pump it out... We have it pumped regularly but we only see one tank. Is there a second tank? How would we find it, if so? We see no holes, pipes, nothing going into this tank when it's open for cleaning.

Also, our home was built in 1982. Is there any way to get the sewer & drain plots for this house? And are holding tanks legal for a permanent residence?

Reply:

that will answer you - there is a bit more that needs to be said than just the size of a home - after all we might have a big house with a single occupant.

**Question: septic tank fails when it rains**

(Mar 16, 2014) debbie said:

We have a septic tank that is fairly new but every time it rains, no matter how lightly, our toilet won't flush correctly and when it rains all day we have the septic odor in our house but not outside and the toilet fills to the rim when you try to flush it.

**Reply:**

Debbie it's a troubling question - it sounds as if rain runoff, perhaps from groundwater, surface runoff, or roof runoff is entering and flooding the septic tank, or worse, the drainfield. Even if the tank is new a failed older drainfield could be at fault;

I'd ask your septic contractor to excavate and open the septic tank access ports to see if the tank level is flooding from surface runoff; And if you pump the tank and water runs back into the tank from the drainfield that'd diagnose a flooded drainfield. Either can back up into the house.

If the problem is really controlling surface runoff then you'll fix it by directing water away from the tank and drainfield.

See SEPTIC TANK BACK FLOODING or for drainfield flooding to read details.

**Question: sewage storage tank distance from well**

(Mar 18, 2014) Kim Hall said:

What is the distance a storage tank for sewage be from a well. We have a cabin and space is limited.



## Reply:

Kim please see CLEARANCE DISTANCES, SEPTIC SYSTEM

## Question:

(May 16, 2014) Fran said:

We own a lake home with a holding tank. We thought it was a septic when we purchased the home but our septic man told us it was a holding tank when he came to pump it out.. We have it pumped regularly but we only see one tank. Is there a second tank? How would we find it, if so? We see no holes, pipes, nothing going into this tank when it's open for cleaning.

Also, our home was built in 1962. Is there any way to get the sewer & drain plots for this house? And, are holding tanks legal for a permanent residence?

## Reply:

Fran, your local building department might have plans on file, but often those agencies don't. Even if there was a filed plan, we can't know if the plan shows what was approved or instead, what was actually built. Nor do we know what repairs or changes may have rearranged things in the intervening decades.

This article shows how to find buried septic tanks and piping

SEPTIC TANK, HOW TO FIND

## Question: filter bed septic tank leaks

(June 11, 2014) wanda said:

I have a filter bed septic tank, water was coming on the top of the ground for about a month. Then it stopped, and my toilet stop flushing, and I couldn't wash clothes. We took the lid off the sewer and it was filled up with alot of water(it's only 5 years old and it's a 500gal.

## Reply:

Sounds as if the outlet is blocked or the field is blocked. It's time to investigate the effluent absorption system or drainfield. Meanwhile stop using water as much as you can and pump the septic tank - that will give a few days of relief during which the problem can be diagnosed by your septic contractor or septic engineer.

## Question: leaks at septic system D box

(July 12, 2014) matt with the d box leak! said:

New septic put in 6 years ago. I have a pump chamber after my septic tanks (twin 750 gals), the chamber pump (100 or 150 gal ) kicks on when the level gets high enough. The grey water is pumped to my d- box about 25 feet. The d box has 2 outflow pipes leading to a leach field with baffles etc.



The d box seems level and the problem is no matter what we have used to keep the cover on the box ( a piece of blue stone 1 " thick as it sits in the middle of a brick patio ) the d box leaks. Again on the 4th of July with 12 -15 folks over ( part of my problem??? ) , I heard the pump chamber kick on, 15 seconds later could smell it and then about 3 to 5 ounces of water came out. The leaks came from the corners opposite the inflow.

I can't get it to stop leaking, every time the pump chamber kicks on. This is the 3 time in 6 years that I am faced with a dbox with a cover ( modified cover since its blue stone ) that leaks. If we cement the blue stone onto the d box how can this keep happening? Can the water just "eat" the concrete seal over a year? pls let me know by email when there is a response - - many THANKS!  
mattheskier@gmail.com

**Reply:**

Matt,

You could convert to a more-easily sealed D-box but I don't think that's the problem. I suspect that the D-box is too small AND that with the small size, the effluent (it's not graywater) is not being accepted into the drainfield rapidly-enough. The result is the pump is filling the D-box faster than its outflow rate, causing backup and odor complaints.

A much larger D-box, sufficient to receive and then drain by gravity into the drainfields the whole pump cycle volume would be one approach that may tempt you but I don't recommend it.

Rather, you need to look at the inflow capacity of the drainfield - it may be that the drainfield is under-sized, or worse, that it is poorly designed / installed and is flooding, or possibly the line balancing openings in the D-box that balance flow into different drainfield lines are too small.

In sum, if you watch the D-box when the effluent pump cycles you'll probably see that around 125 gallons of effluent are surging into the D-box and overflowing it because the in-flow rate is faster than the outflow rate.\

If the D-box overflows only at the very end of the pump cycle you could see if your pumping system rate can be adjusted to send effluent to the D-box more slowly.

Matt

Please see our article on Distribution box (drop box) install, inspect, troubleshoot & repair advice at D-BOX INSTALL REPAIR where I will include your question and our comments



## Question: outlet end of septic tank smaller than inlet end

(July 26, 2014) Steve said:

I have a two compartment septic tank. The outlet end tank is smaller then the inlet tank . my inlet tee is 16 inches long down the tank . The outlet drain pipe is in the centre of the bottom of the tank . How far or how long should my drain pipe be up in the tank ?

### Reply:

Maybe if you send me a sketch I can try to find an answer; from just the e-text I'm a bit confused about what's installed. Generally however the septic tank drain outlet is lower than the bottom of the inlet pipe's bottom surface.

...

**Continue reading at SEPTIC MAINTENANCE INSTRUCTIONS or select a topic from closely-related articles below, or see our complete INDEX to RELATED ARTICLES below.**

Or see SEPTIC SYSTEM INSPECT DIAGNOSE REPAIR FAQs - questions & answers posted originally at this page.

### Suggested citation for this web page

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**INDEX to RELATED ARTICLES: ARTICLE INDEX to SEPTIC SYSTEMS**

Or use the SEARCH BOX found below to Ask a Question or Search InspectApedia