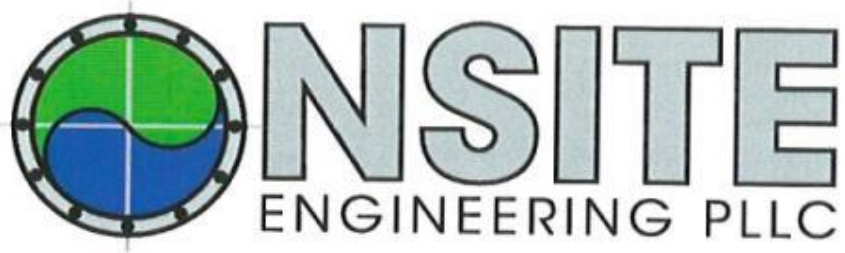




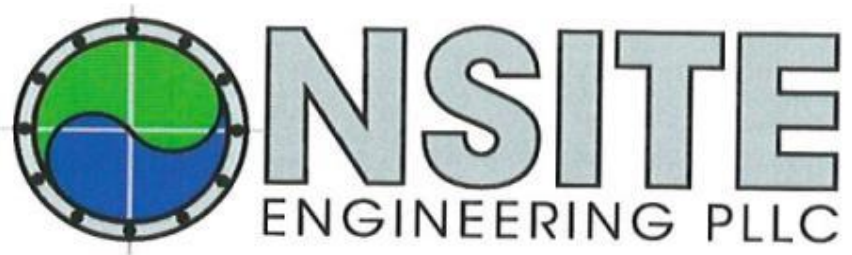
Homeowner Education Workshop
Richfield Springs – April 20, 2013
Residential Septic Systems Overview
by Bob Eichinger

- **Brief History of Residential Septic System Types.**
- **Overview of Residential Septic Systems Components.**
- **Residential Septic System Treatment Process.**
- **Enhanced Treatment Units –ETU (aka) Alternative Treatment Units – ATU.**
- **Early Warning Signs of Septic System Problems.**
- **How To Maintain Your Septic System.**
- **Inspections of Residential Septic Systems.**
- **Questions & Answers.**



Evolution of Conventional Septic Systems

- **Barrels, Drums and Metal Tanks.**
- **Straight Pipe to Lake, Stream or Ditch.**
- **Cesspool.**
- **Septic Tank with Seepage Pit (aka Dry Well).**
- **Concrete or Plastic Septic Tank (Single or 2-Compartment Tank).**
- **Septic Tank with Effluent Filter and Access Riser(s).**
- **Dispersal Field – Distribution Box to Pipe & Stone or Gravel-Less Chambers.**
- **NYS-Health Department Regulation 75-A for New Construction.**
- **Enhanced Treatment Units – ETU (aka) Alternative Treatment Units – ATU.**

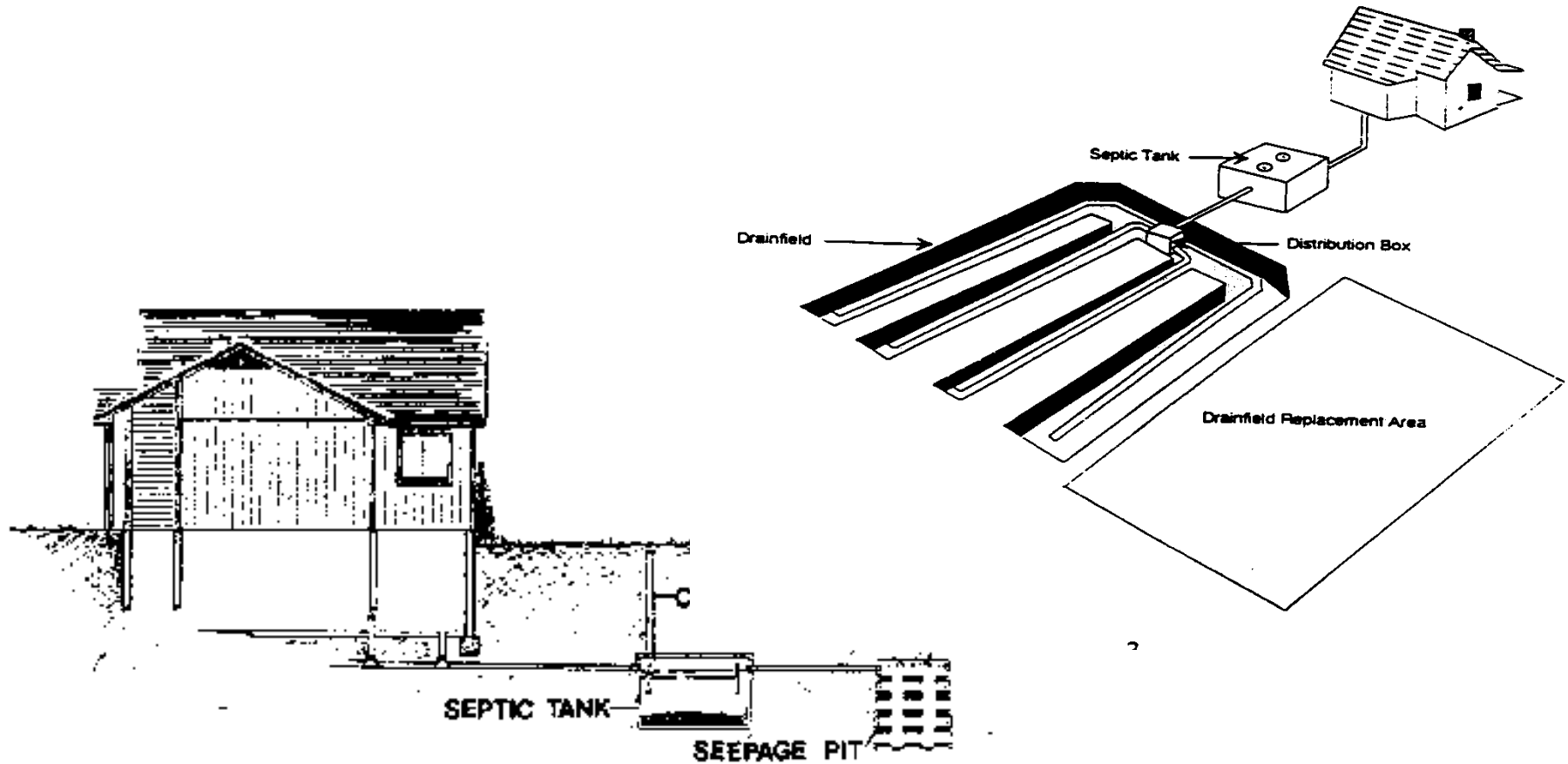


www.onsite-engineering.us



Concrete 1,000 Gallon Septic Tank with Risers

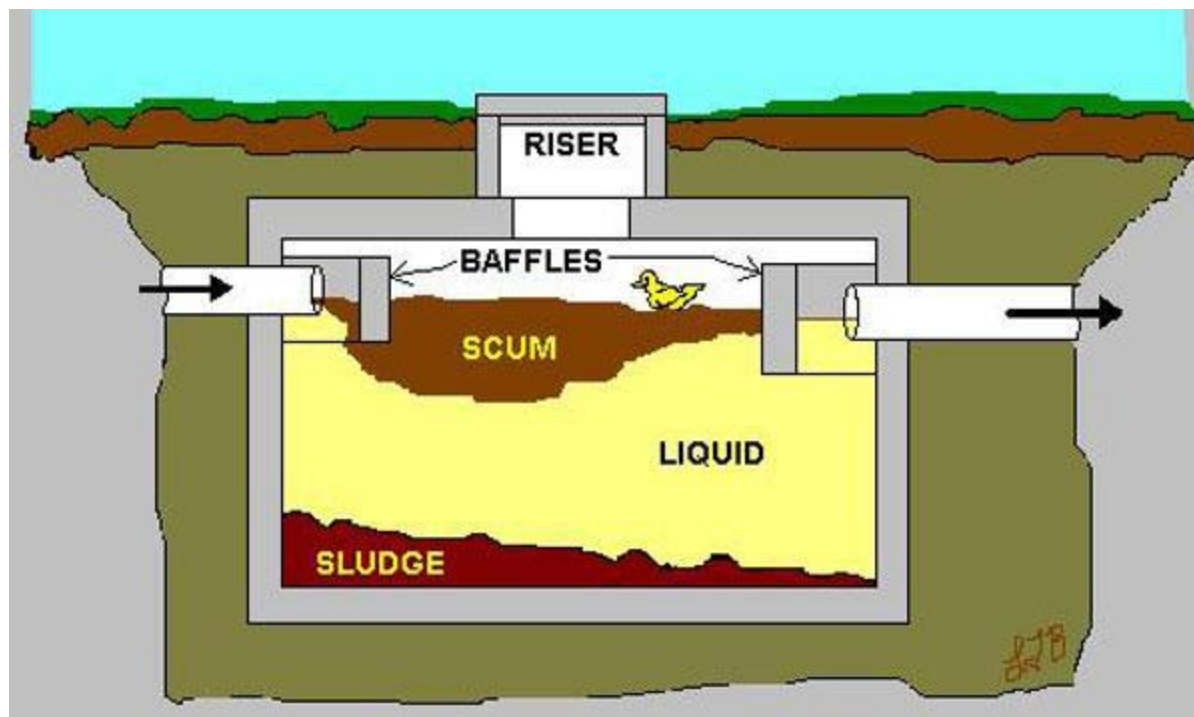
Conventional / Traditional System Components





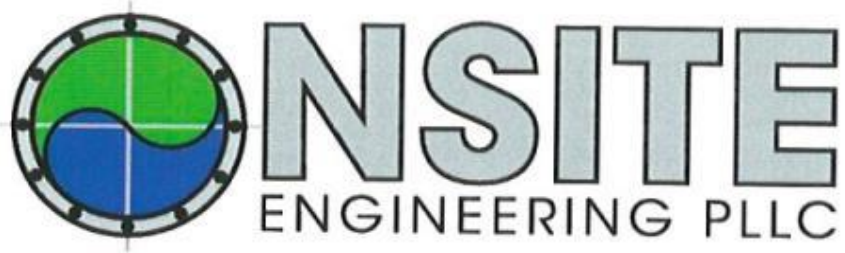
NSITE

ENGINEERING PLLC



Effluent Filter



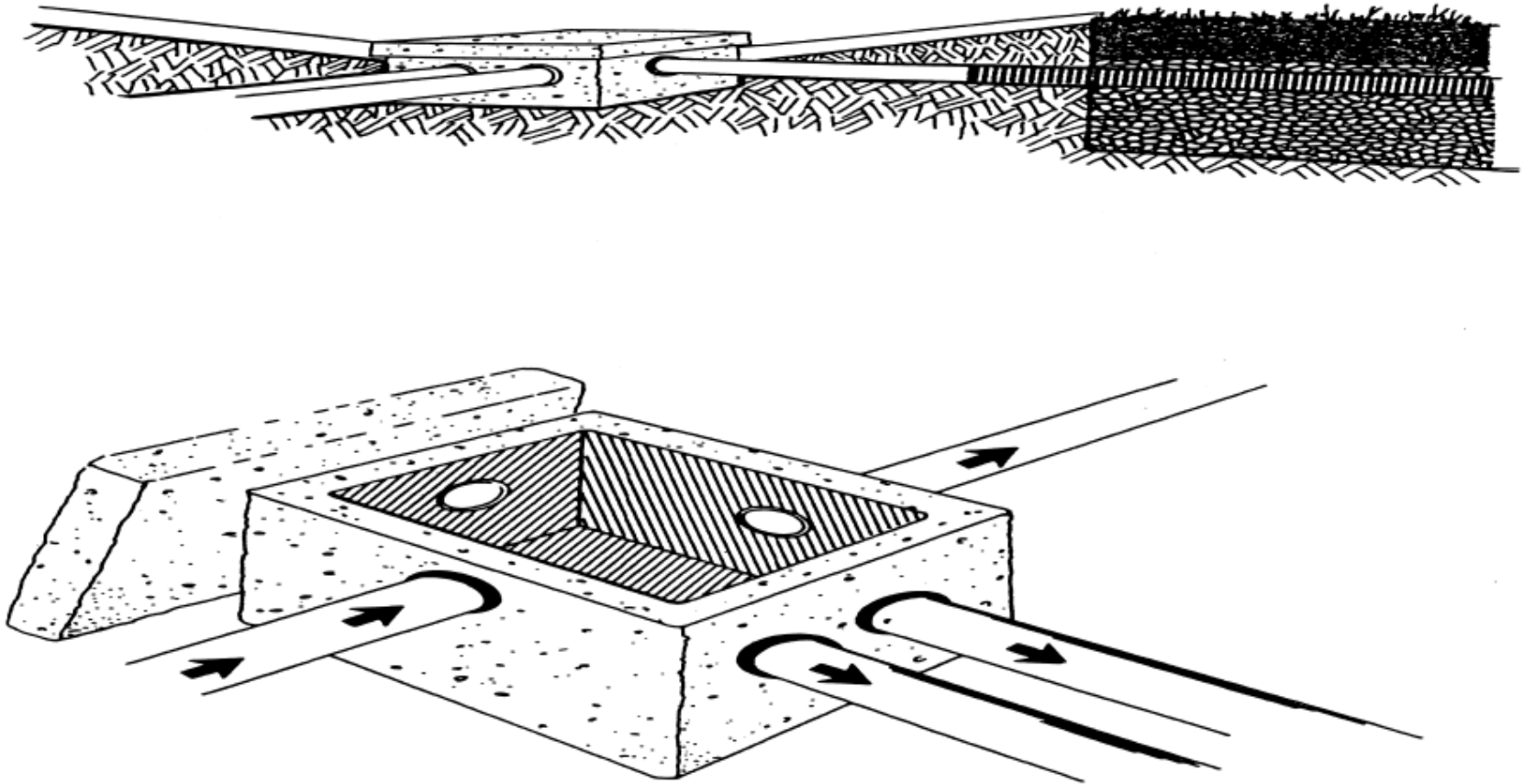


Effluent Filter Maintenance



- **Remove Solids That Could Clog the Dispersal Field.**
- **A Clogged Filter May Cause Backup Into the House Even If the Dispersal Field is Fine.**
- **Recommend That Effluent Filter Is Taken Out and Cleaned by Spraying with a Hose Back Into Septic Tank Every 6-12 Months and Whenever the Septic Tank is Pumped.**

Distribution Box



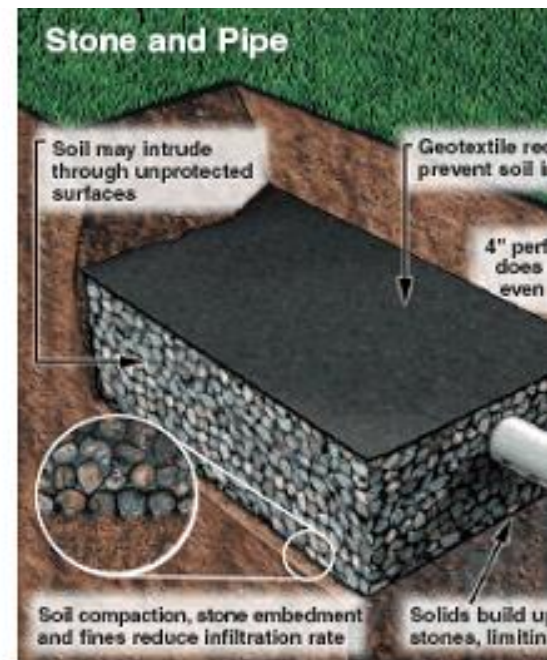
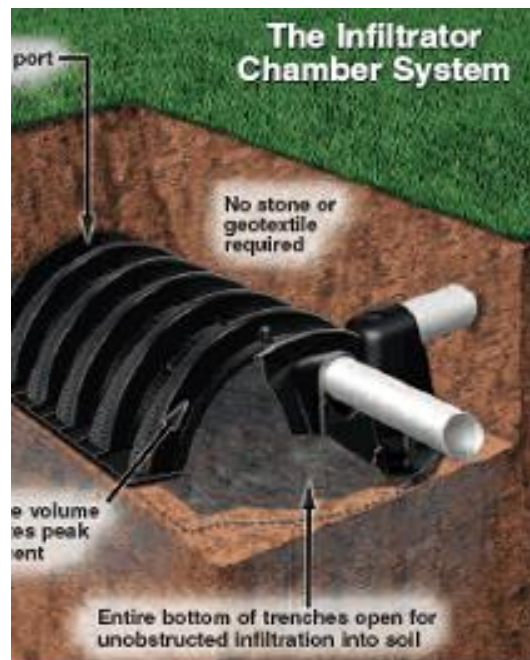


Typical Trench Distribution



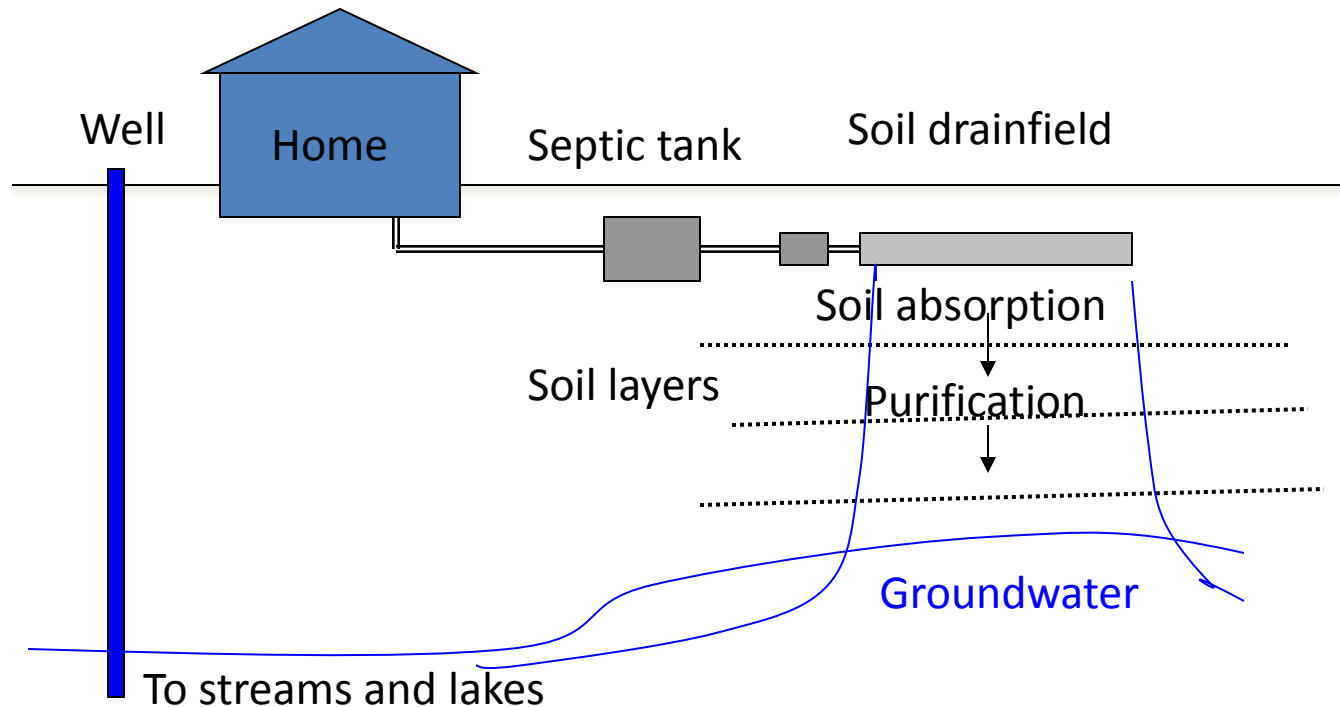
NSITE

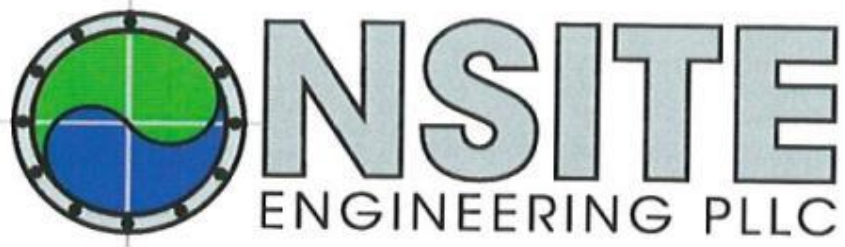
ENGINEERING PLLC



Treatment & Water Dispersal in Soil

- The water discharged to the drain field must be able to flow through ground away from the drain area
- Is surface and subsurface stormwater away from drain field?





Primary and Secondary Residential Wastewater Treatment

- **Typical Residential Raw Sewage = 300 mg/L BOD₅.**
- **Septic Tanks Provide “Primary Treatment” and Treat to 30-50%.**
- **Primary Treatment = 150 mg/L BOD₅.**
- **Secondary Treatment = >30 mg/L BOD₅.**
- **Secondary Treatment Must Treat to At Least 90%.**
- **ETU & ATU Provide Secondary Residential Wastewater Treatment.**
- **NYS Department of Health Regulation 75-A Residential Septic Systems.**
- **EPA ETV Certification Program.**
- **NSF 40 Certification Is Required In NYS For Residential ETU/ATU Systems.**
- **NSF 245 Certification for ETU/ATU with 50% + Reduction in Nitrogen.**
- **Tertiary Systems Available for Both Nitrogen & Phosphorus Reduction.**





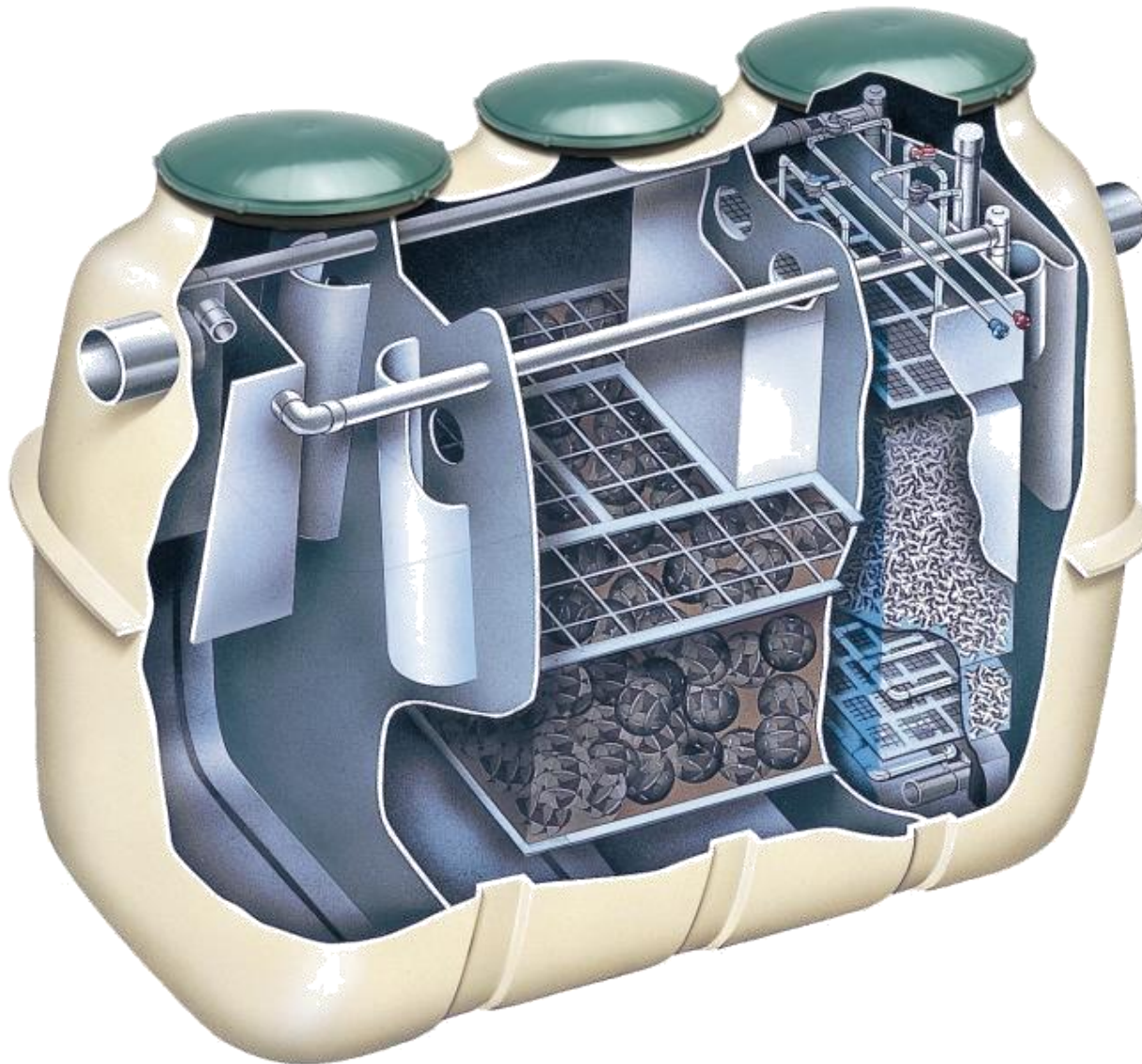


Textile Sheets

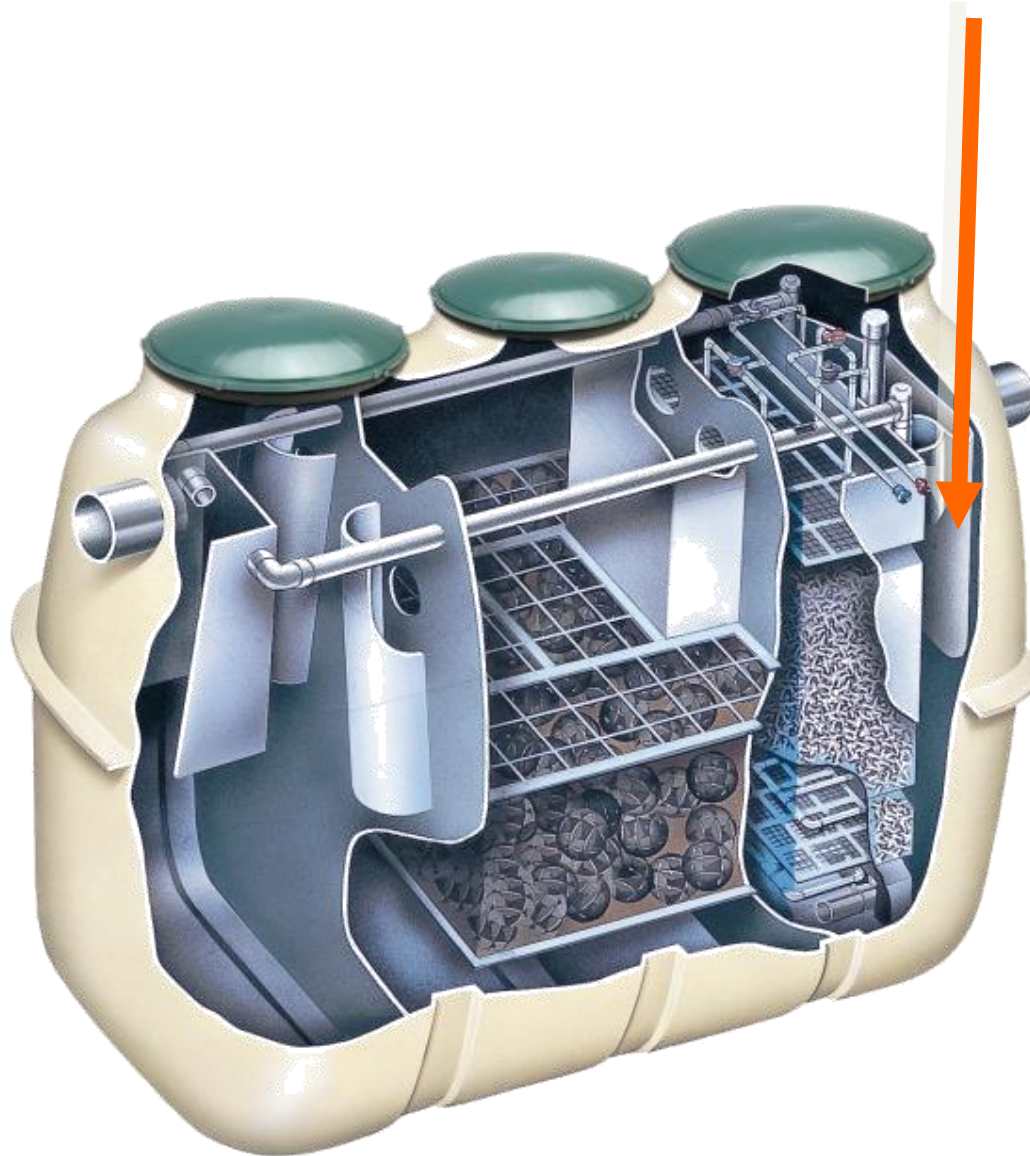


Fusion Series Treatment Systems

Overview



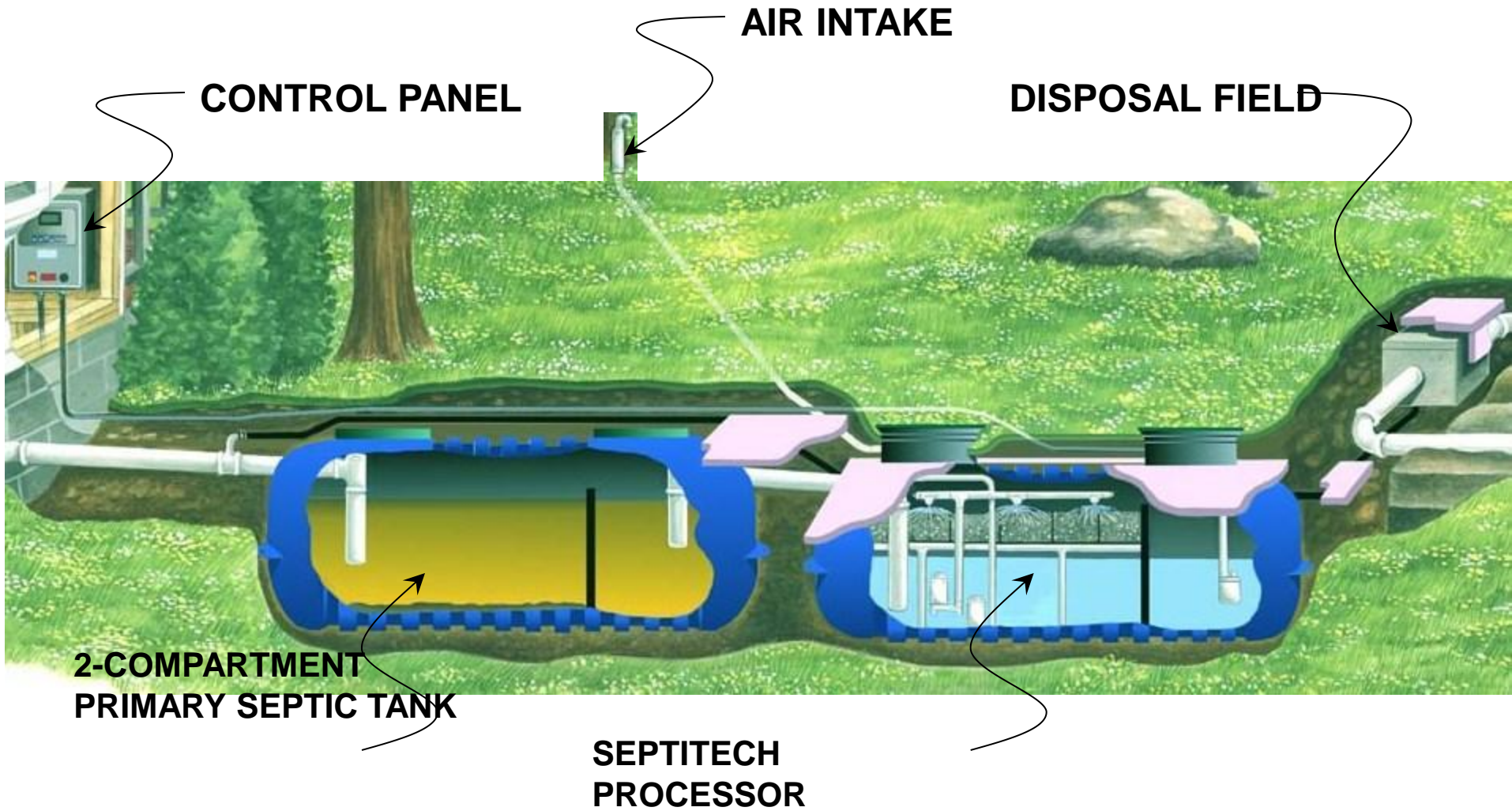
4. Storage Chamber



- Final Settling
- Clear Water Storage
- Optional Chlorinator
- Recirculation
 - 24hrs/day – 10 min



TYPICAL INSTALL LAYOUT



RESIDENTIAL TREATMENT MEDIA



Bord na Mona Peat Filter



Narrow Lot

Peat Filter Bottom Dispersal





Septic System Problems – Early Warning Signs

- **Gurgling Sounds From Toilets.**
- **Slow Draining Sinks, Tubs, Showers...**
- **Wastewater Backing Up Into Household Drains or Basement.**
- **Strong Foul Odors Around Septic Tank, D-Box or Dispersal Field**
- **Surface Ponding Around Septic Tank , D-Box or Dispersal Field.**
- **Soft or Soggy Soil Where Dispersal Field is Located.**
- **Long Strips of Darker Green Grass in Dispersal Field Even in Dry Weather.**
- **Aquatic Vegetation Growth in Waterfront Properties.**

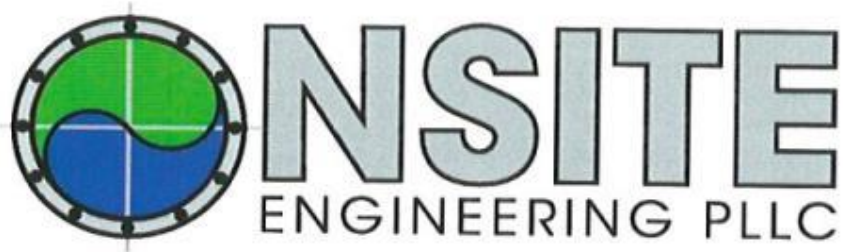
Sewage Breakout





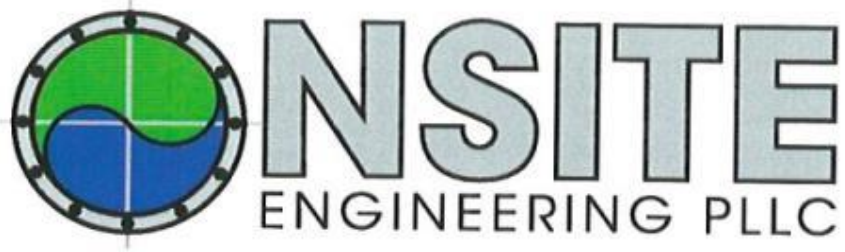
Maintaining Your Septic Tank from EPA Septic Smart

- **Four Major Factors Influence the Frequency of Septic Tank Pumping: Household Size; Total Wastewater Generated; Volume of Solids in Wastewater and Septic Tank Size.**
- **When You Call a Septic Service Provider They Should Inspect for Leaks and Examine the Scum & Sludge Layers in Your Septic Tank.**
- **If the Bottom of the Scum Layer is Within Six Inches of the Bottom of the Tank Outlet, or if the Top of the Sludge Layer is Within 12 Inches of the Tank Outlet, Your Tank Will Need to Be Pumped.**



Preventative Maintenance for Your Septic System

- **Do A Brief Visual Inspection of Your Septic System Including: Looking For: Visual Leaks; Strong Odors; Surface Ponding Around Septic Tank, Distribution Box & Dispersal Field .**
- **Do Not Drive or Park Cars, Trucks & Any Heavy Objects On Septic System Components.**
- **Do Not Put the Following Down Your House Drain: Hair Combing; Coffee Grounds; Dental Floss; Disposable Diapers; Diaper Wipes; Kitty Litter; Feminine Hygiene Products; Cigarette Butts; Condoms; Gauze Bandages; Fats; Grease; Oil; Paper Towels; Paints; Varnishes; Paint Thinners; Waste Oils; Photographic Solutions or Pesticides.**
- **Don't Strain your Drain: Use Water Efficiently; Fix Household Leaks; Run Dishwasher & Clothes Washer Only On Full Loads; Spread Washing Clothes Out Over the Entire Week; Install High-Efficiency Appliances & Low-Flow Fixtures.**
- **Check and Clean Effluent Filter and Make Sure Risers are Secured.**
- **Keep Records of Your Septic System Maintenance, Pump-Outs and a Schematic.**

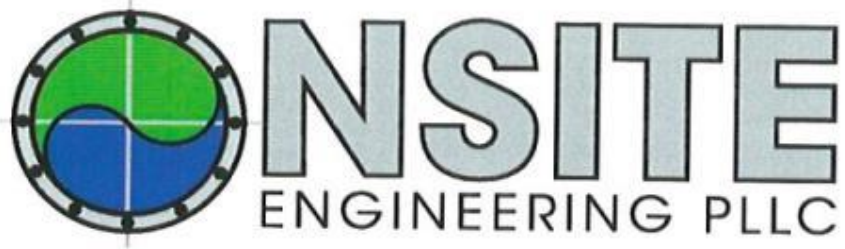


Inspect for Surface Infiltration

- **Inspect Roof Drains.**
- **Look For Any Infiltration Flows From Swales.**
- **Sump Pump Discharges.**
- **Storm Water Run-Off From Major Weather or Flooding Events.**

Inspect for Groundwater Intrusion

- **Look For House Footer Drains with Hidden Discharges to Septic System.**
- **Look for High Groundwater From Leaking Underground Pipes.**



Inspect Household Plumbing

- **Check Basement: Observe Where Plumbing Exits House.**
- **Locate Any Other Plumbing Exits.**
- **Check For and Ask About All Leaks.**
- **Look For Fixtures Including Toilets, Washing Machine In Basement.**
- **Look for High Impact Connections: Garbage Disposal, Hot Tubs, Grinder Pumps etc.**
- **Locate System Vent: Roof or Ground?**



Residential Septic System Inspections

- **Confirm All Septic System Components.**
- **Determine Condition and Functionality of Each Component.**
- **Inspect Household Collection System.**
- **Inspect Septic Tank and Accessories – Risers, Effluent Filter.**
- **Locate and Inspect Distribution or Drop Boxes.**
- **Locate and Inspect Dispersal Field.**
- **Document Results of Inspection Including Schematic of System.**
- **Follow Manufacturers Maintenance Requirements for All ETU & ATU.**



Thank-You for Your Time!

Questions?

Bob Eichinger

www.onsite-engineering.us

Bob@onsite-engineering.us

WP #845-803-1571