

## AN INTRODUCTION TO SEPTIC SYSTEMS

Wastewater, from industrial and domestic sources, contains bacteria, nutrients, and organic matter. Conventional septic systems fail to treat nutrients, such as nitrogen and phosphorus, and cause algae growth in receiving waters. Partially treated sewage puts community health and safety at risk.

All homesteads are required by law to treat their waste water by either 1) discharging their waste into a municipally owned waste water treatment facility (usually within a city), or 2) installing a septic system for their home.

Homes and businesses in un-sewered areas, can install a standard septic system, leach field or mound, or an alternative system, such as a constructed wetland treatment system. All septic systems are required to follow state rules and local ordinances.

### WHAT IS A NAWE WETLAND TREATMENT SYSTEM?

A NAWE Subsurface Flow Wetland Treatment System is a unique and innovative method of treating wastewater. A wetland treatment system consists of two gravel filled wetland cells, one lined treatment cell and one unlined infiltration cell. Water from your house flows horizontally through both wetland beds where treatment occurs via bacteria, growing on the rock surface of the gravel media. Both cells are covered with an insulating mulch layer and are planted with wetland plants to further enhance wastewater treatment and nutrient consumption.

### WHAT IS THE DIFFERENCE BETWEEN A STANDARD SYSTEM AND MY NAWE WETLAND SYSTEM?

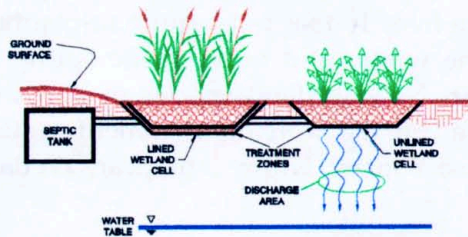
Both standard systems and NAWE Wetland Treatment Systems are designed with a septic tank, to settle out solids and scum before discharge to the soil. However, the systems differ from each other on how the wastewater is treated.

Standard wastewater treatment systems (mounds of drain fields) release water from the septic tank directly into native soils. A bacterial biomat forms which treats the water as it percolates into the ground. The biomat will eventually plug up native soils and the septic system ultimately fails.

A wetland system is a two-stage treatment process to remove pathogens and nutrients prior to discharge to the environment. A NAWE wetland system uses native plants and wildflowers for superior treatment of wastewater and to create an attractive landscape area.

Cell #1 is lined with an impermeable liner to contain partly or untreated water. As water passes through the subsurface flow wetland beds it is pre-treated and thus protective of the infiltration area below Cell #2.

## HOW TO CARE FOR YOUR NAWE WETLAND TREATMENT SYSTEM



## A HOMEOWNERS GUIDE TO EFFECTIVELY MANAGING YOUR WASTEWATER TREATMENT SYSTEM

## WHY USE A NAWE WETLAND TREATMENT SYSTEM INSTEAD OF A STANDARD SYSTEM?

The NAWE subsurface flow wetland treatment system is a simple design with no mechanical parts. Wetlands use a combination of bacteria and plants that act like filters and introduce oxygen into the treatment zone to remove high levels of pollutants in wastewater before it is discharged to the soil. In contrast, a standard system only removes about half of the pollutants then releases the waste directly into native soil. By pre-treating the wastewater your NAWE Subsurface Flow Wetland Treatment System provides a long-term system life.

## WHAT CAN I PUT INTO MY NAWE TREATMENT SYSTEM?

Your treatment system will receive all water from your house. Your system depends upon healthy bacteria and wetland plants for adequate treatment. Certain chemicals, such as solvents, large quantities of cleaners, pesticides, flammables, dry cleaning chemicals and VOC's, can harm the treatment process.

## WHAT ARE VOC'S?

VOC's (Volatile Organic Compounds) are chemicals, including gasoline, kerosene, oil-based paint, acetone, and diesel fuel. They should be disposed of in accordance with State and local regulations, because they can disrupt the biological balance and treatment efficiency of the system. Materials that include VOC's specify them on canisters and labels.

## WHERE CAN I DISPOSE OF VOC'S AND OTHER WASTES?

Homeowners should follow all state regulations and local ordinances. Contact your local county extension office or the Minnesota Pollution Control Agency's Household Hazardous Waste Hotline at (612) 297-8675.

## WHAT KIND OF MAINTENANCE IS REQUIRED OF THE NAWE SUBSURFACE FLOW WETLAND TREATMENT SYSTEM?

As with any other treatment system, your septic tank should be pumped every 1-3 years, depending upon the level of sludge in your septic tank. Contact your local septic tank service company for disposal of sludge. If you are part of a homeowners association, this service may be provided for you.

A NAWE Wetland Treatment System is virtually maintenance free. It does not require re-planting. Selected vegetation species will either persist throughout the winter and grow in the spring, or perennial wetland plants will re-seed themselves every year. New wetland species or perennial wildflowers may be planted anytime from spring to the fall in the wetland treatment system. However, only certain species will grow in the wetland, so contact North American Wetland Engineering for guidance, if you wish to replant.

