South Shore Drive, Bear Lake, MI
Homeowner's Guide Disclaimer

This Homeowner's Septic Guide is intended for information purposes only and is provided as a public service. While the University of Minnesota has made reasonable efforts to ensure the accuracy of the information provided in this homeowner's guide, it is not responsible for any damages resulting from reliance on the information. Please consult a septic professional or permitting agency if you have specific questions about your system and its management needs. The University of Minnesota reserves the right to make additions, changes, or corrections to this guide at any time and without notice.

This operation and maintenance (O&M) guide was developed using a tool funded by the National Institute of Food and Agriculture and created by the University of Minnesota. For more information on the University of Minnesota please see H2OandM.com and www.septic.umn.edu.

The developer of the guide is C.G.Schindler. Please contact the developer at info@wastewatereducation.org, (231) 864-2922 for more information or to have this O&M guide updated.
This community system owner's guide is for South Shore Drive, Bear Lake, MI.

This guide was created on June 19, 2016.
The septic system is located at 6974 South Shore Drive, Bear Lake MI US 49614.
The parcel identification number is 9808.
Primary Contact for your system: C.G.Schindler.
Phone: (231) 864-2922
Email: info@wastewatereducation.org
Mailing Address: 6974 South Shore Drive, Bear Lake MI US 49614
Introduction

This community septic system owner's guide will help you:

1. understand the basic principles of how your septic system works,
2. learn how to operate your system efficiently and effectively,
3. know how to maintain the system to prevent costly repairs and water contamination,
4. resolve problems with the system, and
5. know where to go if you need more information or assistance.

Health and safety - Why we need good wastewater treatment

A wastewater system is professionally designed to treat wastewater for a specific home, business or group of properties. Proper treatment of wastewater recycles water back into the natural environment with reduced health risks to humans and animals and also prevents surface and groundwater contamination as shown in the figure.

Wastewater management involves:

- collection and transport of wastewater to a treatment process,
- removal of the waste products that are suspended and/or dissolved in the water,
- returning the water back to the environment, and
- management of processes to ensure that a wastewater system is fully functional.
The primary goal of all wastewater management systems is to remove waste products from water and to safely return the water back into the environment. Every day, society generates a significant volume of wastewater because we depend on water to transport wastes away from our bodies, our clothes, and our homes. Once water comes in contact with waste products, the water becomes wastewater. It contains pathogens (viruses and bacteria), solids, nutrients and other waste products we add into the system as demonstrated in the diagram. This wastewater can impact the quality of ground and surface water resources. Used water does not simply go away. We must clean it before we can safely recycle it back into the natural environment. Proper handling and treatment of wastewater will protect our waters and ourselves from contamination.

**Risks to human and animal health**

It is unhealthy for humans, pets, and wildlife to drink or come in contact with surface or groundwater contaminated with wastewater. Inadequate treatment of wastewater allows bacteria, viruses, and other disease-causing pathogens to enter surface and groundwater. Hepatitis, dysentery, and other diseases may result from pathogens in drinking water. Disease-causing organisms may make lakes or streams unsafe for recreation. Flies and mosquitoes that are attracted to and breed in wet areas where wastewater reaches the surface may also spread disease.

Inadequate treatment of wastewater can raise the nitrate levels in groundwater. High concentrations of nitrate in drinking water are a special risk to infants. Nitrate affects the ability of an infant's blood to carry oxygen, a condition called methemoglobinemia (blue-baby syndrome).
Risks to the environment

A septic system that fails to fully treat wastewater also allows excess nutrients (phosphorus and nitrogen) to reach nearby lakes and streams, promoting algae and plant growth. Algal blooms and abundant weeds may make the lake unpleasant for swimming and boating, and can affect water quality for fish and wildlife habitat. Many synthetic cleaning products, pharmaceuticals, and other chemicals used in the house can be toxic to humans, pets, and wildlife. If allowed to enter a septic system, these products may reach groundwater or nearby surface water.

Treatment options

There are two primary methods to treat and disperse wastewater back into the environment - centralized and decentralized. It is easy to describe a centralized approach to wastewater management - all the community's wastewater drains to a common collection network and is transferred to a centralized treatment and disposal facility. With a decentralized approach, the wastewater treatment infrastructure is distributed across a community. This may be accomplished by building individual onsite septic systems, having small residential clusters of homes on shared systems, and/or by some combination of both to serve multiple wastewater management zones. This guide will focus on YOUR decentralized septic system.

A properly designed, installed, operated and maintained septic system will provide economical and effective wastewater treatment. Pathogens and solids are removed and destroyed by filtration and naturally occurring microscopic organisms. Nutrients are removed, absorbed by soil particles or taken up by plants.
Organization of the System

Basic System Information

Number of Properties or Structures
There are 3 home(s) or commercial properties/buildings hooked up to the septic system.

Future Plans for Hook Ups
In the future it is anticipated that 1 additional homes or commercial properties will be added to this system. The system was either designed to deal with this addition or may need future modifications due to the increased flow. Please contact your primary project contact under Additional Assistance for more information.

Daily Design Flow for the System
Your system was designed for a maximum flow of 2,000 gpd. Your average flows should be 70% of this value or less for system longevity. Check with your septic system professional to determine your average flows.

Population
There are 7 seasonal, 1 year round people connected to this septic system. If the number or type of users changes, you should inform your septic system professional to determine if changes in your system or management are needed.

Initial Construction Date
Your system was constructed in 1991.

Repairs
Repairs were made to the system in 2015.

Sources of Drinking Water

Public or Private Water Supply Well Location
Your property has a public or private water supply well located in excess of 50' from that location.

Regulatory Body

State Permit
Your system has a state permit: Michigan Department of Environmental Quality.
County Permit
Your system has a county permit: District Health Department #10 #9808.

Additional Assistance and Contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Website</th>
<th>Phone Number</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Manager</td>
<td>CG Schindler</td>
<td></td>
<td>(231) 864-2922</td>
<td></td>
</tr>
<tr>
<td>State Regulations &amp; information</td>
<td>Janice Heuer</td>
<td></td>
<td>(231) 876-4473</td>
<td><a href="mailto:HEUERJ@michigan.gov">HEUERJ@michigan.gov</a></td>
</tr>
<tr>
<td>Installer or contractor</td>
<td>Gary McBride</td>
<td></td>
<td>(231) 920 1682</td>
<td></td>
</tr>
<tr>
<td>Maintainer or pumper</td>
<td>Forbes Sanitation &amp; Excavating</td>
<td></td>
<td>(231) 723-2311</td>
<td></td>
</tr>
<tr>
<td>County Regulator</td>
<td>Manistee County Health Department</td>
<td></td>
<td>(231) 845-7381</td>
<td></td>
</tr>
<tr>
<td>National regulations</td>
<td>EPA</td>
<td>water.epa.gov/infrastructure/septic/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education Resource</td>
<td>WasteWater Education 501c3</td>
<td>WasteWaterEducation.org</td>
<td>(231) 233-1806</td>
<td></td>
</tr>
</tbody>
</table>
Wastewater Treatment System

Location

This section provides site-specific information about your system's location.

Diagram of the System

The system's location in relation to your property is critical information. The arrangement of system components may affect the operation and maintenance of the system and the use of the property for other purposes.

The system serves 3 homes as marked. It is located on the south side of the road. Parcel ID lot lines for Bear Lake Township, Manistee County, MI are marked.

In Relation to the Community

Location of the system in relation to Bear Lake and adjacent cottages.
The system's location in relation to your community is shown in the diagram.

**Additional Image**

![Diagram showing the location of the treatment area and homes served](image)

**From Bear Lake looking South**

**Sources**

All wastewater treatment systems, both individual onsite and municipal, are designed for a specific capacity, flow and type of wastewater. There are many variations in how health jurisdictions regulate these discharges and you should contact them to determine your options (see Additional Assistance - Regulatory). All wastewater in a home must be treated including both black and gray water as shown in the figure.

**Residential**

You have residential system which collects, transports and treats normal domestic wastewater.
System Setbacks

Your system has been located so that it does not adversely affect neighboring property or the local environment. Such 'setbacks' are part of your local regulations. Here are the relevant setbacks and easements for your system:

<table>
<thead>
<tr>
<th>Component</th>
<th>Setback from system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lakes lakefront/riparian</td>
<td>50'</td>
</tr>
<tr>
<td>Property line</td>
<td>15'</td>
</tr>
<tr>
<td>Well</td>
<td>50'</td>
</tr>
</tbody>
</table>
Expenses

Various System Expenses

All waste water treatment systems, both individual onsite and municipal have capital costs, replacement costs, administrative costs plus operation and maintenance costs. All wastewater treatment systems require regular maintenance.

Capital expenses are the costs of a new system including the cost of design, permitting, purchase of collection and treatment components, land and installation. For example the capital expense of a new septic system may be $3,500 - $20,000+ for a single family home.

Replacement expenses include both the costs to keep the system running plus possibly repeating the capital costs in the future. This also includes the costs of replacing and repairing parts in the system i.e. pumps, wiring, switches etc.

Administrative costs are all the fees and reporting costs associated with your system such as permitting, reporting, and billing.

Final costs include the actual care, operation and maintenance of the system. These include regular service visits and all the activities to keep your system technology working. The specifics will be identified later.

Capital Expense

The capital expense of your septic system is $18,000.

Annual Unscheduled

Unscheduled replacement expenses of your septic system is $1,200.

Scheduled

This system has an operation and maintenance contractual agreement to provide regularly scheduled service at an estimated cost of $200 per year.

Electrical for the System

This system includes electrical components. The cost to operate your electrical components is estimated at $150 per year.

Terms of Payment (Frequency)

Your payments are due Annually.
Submittal of Fees

Your fee should be sent to CG Schindler.
Interior Plumbing

Wastewater Treatment Plumbing

Plumbing is the system of pipes, drains fittings, valves, valve assemblies, and devices installed in a building for the distribution of water for drinking, heating and washing, and the removal of wastes. The wastewater is taken away by a system of gravity, pumps and connections, also called 'traps'. Traps retain a small amount of water which acts as a barrier preventing gasses from coming back into your home. In most cases, both incoming and outgoing piping has shut off valves and stop cocks.

Interior Sewage Pump

Non Sewage Discharges

The following are considered unacceptable discharges from your home that will increase excess flow to the system. Each should be routed out of your collection system if present. There are many variations in how jurisdictions regulate these discharges and you should contact your regulator or designer to determine your options.

Sump Pumps (Clearwater)

Your system has a sump pump. Sump pumps can discharge 100s or 1,000s of gallons of water in a very short period of time. This water should not enter your treatment system and if there is a surface discharge it should be directed away from the system components.
Rain Gutters
Your home(s) or structure(s) have roof rain gutters. To prevent an unacceptable discharge to your system they should be directly away from your system.

Garage Floor Drains
Your system has garage floor drains which may flush oils and chemicals. To prevent an unacceptable discharge to your system they should be directly away from your system.
Access to the Plumbing

Type of Access

Your plumbing system is accessible with a multiple man hole access points for each property.
Collection of Wastewater

Your Collection System

Septic Tank Effluent Pressure

Your home or structure is connected to a septic tank effluent pressure (STEP) system. Your wastewater is first treated in a septic tank and then is pumped through a small pressure line to the next treatment component. Maintenance of this septic tank is critical. See septic tank section of this manual for more information.

Installation of new 1500 gallon septic tank at Bluhm cottage
Access

All systems require regular maintenance service. It is important to know where the access points are and how to reach them.

Access Type

There are multiple man hole access points for each property.

Location

Collection System Location

Your treatment system is located partly within and outside your property boundaries.

Easement for Access

There are no recorded easements for access to perform service or periodic inspections on the system.

Access Location

The access point for your collection system is located above grade.
Tanks

Septic Tanks

A septic tank is a watertight, covered receptacle for treatment of sewage from a building. The purpose of the septic tank is to provide an environment for the first stage of treatment in an onsite wastewater treatment system by promoting physical settling, flotation, and the anaerobic digestion of sewage. Additionally, the tank allows storage of both digested and undigested solids until they are removed.

Image

Location

The location of your septic tank is a combination of on and off your property and is located on both sides of South Shore Drive as shown in the attached Health Department drawing.
Material
Your septic tank is made of concrete. In areas of high water tables, tanks can be prone to flotation, so in this situation protection against flotation is needed depending on the weight of the tank, wastewater and soil cover.

Capacity
Your septic tank holds 1500 gallons (all 3).

Your septic tank meets local codes.

Effluent Screen
Your septic tank does not have an effluent screen. Unless there is one at another location in your system, consider adding an effluent screen to the septic tank because large chunks of material may escape the septic tank and cause future harm further in downstream components. The effluent screen needs to be one designed to handle the waste in the septic tank.

Screen Alarm
Your septic tank has no high-water alarm. Consider adding a mechanical or electrical alarm to your septic tank as it can notify you BEFORE costly back-ups occur.

**Pump**

Your septic tank has a pump. Your pump may have additional maintenance requirements. Check the O&M section for more information.

**Access**

The type of access to your septic tank is a manhole and is above grade which makes maintenance easier to perform.
Red rectangles show septic tank locations
Pump Tanks
A pump tank provides storage of effluent and houses a pump and associated parts used to convey effluent to another pretreatment process or a final treatment and dispersal component (typically the soil).

Image
There are 2 pump tanks marked as bright blue. One located on Bluhm one on Schindler property. Bluhm tank may be relocated in basement in 2016

Material
Your pump tank is made of concrete.

Capacity
Your pump tank holds 1000 gallons.

Your pump tank meets local codes.

Pump Alarm
The pump for your pump tank has no high-water alarm. Consider adding a mechanical or electrical alarm to your pump tank as it can notify you BEFORE costly back-ups occur and let you know when servicing is required.

Access
The type of access to your pump tank is a manhole and is above grade which makes maintenance easier to perform.
Final Treatment and Dispersal

Beds
Your final treatment and dispersal system consists of one or more beds. A bed is a below-grade excavation in the soil that is typically more than 3-ft in width and contains distribution material (like rock or gravel) and more than one distribution pipe. It receives wastewater from the septic tank or other pretreatment component and distributes it to the native soil for final treatment and dispersal.

Number of Systems
You have 1 system(s).

Location
Your final treatment & dispersal unit(s) is/are a combination of on and off your property at See image below showing both bed and replacement location.

Distribution Media
Your distribution media is rock or gravel. The purpose of the rock or gravel media is to convey and distribute wastewater over or through the soil treatment area, and is the most common type of distribution media.

Distribution Method
Your unit(s) use(s) gravity distribution. Gravity distribution is the most common type of soil dispersal system, and the main function of gravity distribution is to distribute wastewater to the soil treatment system using
gravity to move the wastewater rather than a pump.

**Configurations**
Your unit(s) is/are located below grade.

**Replacement Area**
Your replacement area is a combination of on and off your property and is located The replacement area is directly adjacent to the west..

**Access**
The type of access to your unit(s) is a manhole and is above grade which makes maintenance easier to perform.

**Image**
Maintenance

Requirements and Recommendations

Your onsite system is a vital part of your property's infrastructure. Taking care of it, just as you would your roof or windows, will ensure longevity and save you money. Depending on your system type there may be specific guidance listed elsewhere in this guide. For conventional systems, a schedule of suggested pumping and cleaning will depend on the size of your property, number of residents, size of tank and type of treatment field. Your current system requires regular service to prevent early failure or poor treatment performance. Below are the components of your system and the suggested maintenance activities, frequencies and responsible parties.

Seasonal

Many regions of the US have extreme seasonal climate variations which will influence maintenance events and schedules. In addition, yours is a seasonally used property.

2 of the properties have seasonal usage.

Limiting water use and being careful of what you send down your drains, together with regular maintenance can greatly extend the useful life for your system. Information below gives some specific suggestions.

Extra Tank Capacity

Your current tank may not be large enough for your future needs. You have 2 options, plan to install a larger primary tank or add another one in sequence when the need arises.

Effluent Screens

An effluent screen may increase your system life by preventing solids, fats and scum from discharging to the treatment field and fouling the media. In certain jurisdictions and system types, an effluent screen may be required by code. To work effectively, screens must be regularly inspected and cleaned. Cleaning should take place into the tank itself.

Advanced Treatment

A number of technologies discussed elsewhere in this Guide offer an additional level of treatment, especially when local soils are limited. Advanced treatment can limit phosphorus migration to ground or surface waters; provide a higher level of disinfection; control pathogens by elevated aeration. Local health jurisdictions may require the addition of advanced treatment at certain locations.
Rotation of Soil Treatment Systems
Over time soils' ability to absorb and treat biologically may become compromised or exhausted. If there is sufficient space on your property, having a secondary treatment area, which you rotate to on an annual or semiannual basis, will greatly prolong system life by giving each time to rest and remediate itself.

Protecting Primary & Future Expansion Site
It is important to know where the primary treatment area is to protect it from such damage, such as compaction, root intrusion or excess water from landscaping or drainage. It is equally important to protect the 'reserve' area the space your site permit has designated as being set aside should you need to expand or relocate your system. Many local health jurisdictions require a 'reserve' area if space is available on your property.

Interior Plumbing Operations & Maintenance
Who Pays for These Expenses?
CG Schindler, on behalf of the joint owners, pays for these Operations & Maintenance expenses.

Phone Number: (231) 864-292

<table>
<thead>
<tr>
<th>Component</th>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior Plumbing</td>
<td>Clean drains and plumbing pipes. Avoid using caustic drain cleaning products which can damage the system. Plumbers snakes are preferred.</td>
<td>As needed</td>
<td>Owner</td>
</tr>
<tr>
<td>Interior Plumbing</td>
<td>Make sure all plumbing traps which prevent sewer odors in the house are not dry.</td>
<td>As needed</td>
<td>Owner</td>
</tr>
<tr>
<td>Interior Plumbing</td>
<td>Changes in plumbing - if a water generating device is added to home assure it is plumbed property either into septic or out of septic depending on the source.</td>
<td>As needed</td>
<td>Both</td>
</tr>
<tr>
<td>Interior Plumbing</td>
<td>Pipes can become clogged. Kitchen paper, plastic wrapping, grease and ‘flushable wipes’ should go in your garbage not down the drain.</td>
<td>All the time</td>
<td>Owner</td>
</tr>
<tr>
<td>Interior Plumbing</td>
<td>Frozen pipes can occur from infrequent use or a sag in the line. Property owners can winterize. Frozen lines require a service professional to investigate the cause.</td>
<td>Seasonally</td>
<td>Owner</td>
</tr>
<tr>
<td>Component</td>
<td>Activity</td>
<td>Frequency</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Interior Plumbing</td>
<td>Basement service pipes have a ‘trap’ or U bend which can dry out. This leads to a sewer gas odor.</td>
<td>As needed to ensure the trap has water in it</td>
<td>Owner</td>
</tr>
<tr>
<td>Interior Plumbing</td>
<td>All interior sewage pumps should be seated correctly and wired to code.</td>
<td>Annually</td>
<td>Both</td>
</tr>
<tr>
<td>Interior Plumbing</td>
<td>Check to ensure all legal diversions of water (i.e from water softeners, sump pumps or rain gutters) are properly moving water away from the treatment field.</td>
<td>Spring inspect for winter damage/Fall to prepare for snow and ice cover</td>
<td>Service Provider</td>
</tr>
</tbody>
</table>

### Collection of Wastewater Operations & Maintenance

<table>
<thead>
<tr>
<th>Component</th>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection of Wastewater</td>
<td>Clean the line</td>
<td>As needed</td>
<td>Service Provider</td>
</tr>
</tbody>
</table>

### Tanks Operations & Maintenance

<table>
<thead>
<tr>
<th>Component</th>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septic Tanks</td>
<td>Tank structural condition. Check to make sure that the tank is watertight (no visual leaks), no rebar is exposed, no corrosion or spalling is present, no cracks are present, no roots are present, no tank deflection is found.</td>
<td>At the time of pumping or annually - whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Tank operating condition. Check to make sure that there is no evidence that the liquid level has been higher or lower than operating level. Check to make sure that there are 3 layers. Check to make sure that the combined scum and sludge layer is less than 25% of the total liquid depth.</td>
<td>At the time of pumping or annually - whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Tank cleaning. Septic tanks need to be pumped/cleaned periodically.</td>
<td>When the total volume of scum and sludge exceeds 25% of the total tank volume. Every 2-4 years is typical.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Component</td>
<td>Activity</td>
<td>Frequency</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Access. A riser is recommended if the lid is not accessible from the ground surface. Check to make sure there is no infiltration in the risers. Insulate the riser cover for frost protection. Make sure that lids are securely fastened and in operable condition.</td>
<td>Annually</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Inspection pipes. Replace damaged caps.</td>
<td>Annually</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Baffles. Check to make sure the inlet, outlet, and compartment (if a multi-compartment tank) baffles are in place.</td>
<td>At the time of pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>In cold climates remember that the most frequent causes of tank and building sewer freeze-ups. Ensure that there are no “micro-sources” of water such as a high efficiency furnace or other dripping devices.</td>
<td>Annually</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Water use. Pay attention to when you use water and how much you use daily. Conserving water saves you money!</td>
<td>Seasonally</td>
<td>Owner</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Leaks. Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.</td>
<td>Seasonally</td>
<td>Owner</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Caps. Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.</td>
<td>Annually</td>
<td>Owner</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Access. Make sure that your service provider has clear access to the septic tank.</td>
<td>Each visit</td>
<td>Owner</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>Tank cleaning. Make sure the service provider completely empties the tank.</td>
<td>Each visit</td>
<td>Owner</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Pump. Check to make sure that a pull chain or rope is present.</td>
<td>At the time of pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Pump operation. Ensure that the pump is operating properly. This may include measuring the amps and volts and making sure the pump turns on and off. Check the pump operation independently from the controls.</td>
<td>At the time of pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Component</td>
<td>Activity</td>
<td>Frequency</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Pump operation. The pump discharge rate should be checked by timing the period it takes the pump to empty the chamber. If the time has increased significantly, the pump should be removed and inspected for wear, clogging, or impeller damage.</td>
<td>At the time of pumping or annually - whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Discharge assembly. Check the condition of the air release device and that it is located below the check valve. Ensure that following devices are present: the backflow prevention (check valve), drainback device, quick disconnect, isolation valve, and inline filters.</td>
<td>At the time of pumping or annually - whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Access. A riser is recommended if the lid is not accessible from the ground surface. Check to make sure there is no infiltration in the risers. Insulate the riser cover for frost protection. Make sure that lids are securely fastened and in operable condition.</td>
<td>Annually</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Pump tanks need to be pumped/cleaned periodically.</td>
<td>At time of other tank cleaning.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Electrical. Check to make sure electrical components are sealed and watertight.</td>
<td>At the time of pumping or annually - whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Caps. Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.</td>
<td>Annually</td>
<td>Owner</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Access. Make sure that your Service provider has clear access to the pump tank.</td>
<td>Each visit</td>
<td>Owner</td>
</tr>
<tr>
<td>Pump Tanks</td>
<td>Tank cleaning. Make sure the Service Provider completely empties the tank.</td>
<td>Each visit</td>
<td>Owner</td>
</tr>
</tbody>
</table>

**Final Treatment and Dispersal Operations & Maintenance**

<table>
<thead>
<tr>
<th>Component</th>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>Activity</td>
<td>Frequency</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Beds</td>
<td>Odor as you approach soil treatment area. Evaluate the presence of odor as you approach the soil treatment area. There should be no strong odors near the drainfield if the venting system is operating properly and there is no surfacing effluent.</td>
<td>At the time of septic tank pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Beds</td>
<td>Vegetation. Vegetation management on and around the soil treatment area is important for proper performance.</td>
<td>At the time of septic tank pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Beds</td>
<td>Root intrusion. Check for root intrusion into orifices in the lateral line (while snaking and flushing laterals).</td>
<td>At the time of septic tank pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Beds</td>
<td>Access. A riser is recommended if the lid is not accessible from the ground surface. Check to make sure there is no infiltration in the risers. Insulate the riser cover for frost protection. Make sure that lids are securely fastened and in operable condition.</td>
<td>At the time of septic tank pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Beds</td>
<td>Switching valves (if present). Record the type of switching valve and record if any actions were taken for maintenance. Switching valves are used to automatically or manually divert the flow of effluent to another field or a different part of the field.</td>
<td>At the time of septic tank pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Beds</td>
<td>Inspection pipes. Check to make sure they are properly capped. Replace caps that are damaged.</td>
<td>Annually</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Beds</td>
<td>Surfacing of effluent. Check for surfaced effluent or other signs of problems.</td>
<td>At the time of septic tank pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
<tr>
<td>Beds</td>
<td>Surfacing effluent. Regularly check for wet or spongy soil around your soil treatment area. If surfaced sewage or strong odors are not corrected by pumping the tank or fixing broken caps, call your Service Provider.</td>
<td>Seasonally or several times per year</td>
<td>Owner</td>
</tr>
<tr>
<td>Component</td>
<td>Activity</td>
<td>Frequency</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Beds</td>
<td>Caps. Make sure all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.</td>
<td>Annually every fall</td>
<td>Owner</td>
</tr>
<tr>
<td>Beds</td>
<td>Make sure that your Service provider has clear access to all of the components for the final treatment and dispersal system.</td>
<td>Each visit</td>
<td>Owner</td>
</tr>
<tr>
<td>Beds</td>
<td>Lateral flushing. Check lateral distribution; if cleanouts exist, flush and clean as needed.</td>
<td>At the time of septic tank pumping or annually – whichever is the shorter time period.</td>
<td>Service Provider</td>
</tr>
</tbody>
</table>
Problems and Troubleshooting

What to Do?

If you have having a problem with your system your best plan of attack is to contact a septic professional to evaluate the problem and recommend a course of action. See the Additional Assistance and Contacts to determine who can best assist you with your problem. Some of the most typical general and specific issues are identified below.

Common problems

The three most common causes of septic system failure are:

1. Overuse of water. Abnormally high water use above or close to the amount your system was designed for, leaks, or short periods of very high water use can all cause failure. Even normal water volumes delivered to a partially damaged system may be too much.
2. Improper maintenance. When too many solids are allowed to accumulate in the septic tank, they will be carried out into the soil treatment area and cause plugging. This usually happens because the owner did not have the septic tank pumped regularly.
3. Improper design or installation. This could result from bad choices or mistakes made by designers, installers and inspectors, or homeowners who have remodeled their home increasing or changing the water use without making appropriate adjustments to their septic system.

Septic System Troubleshooting Guide for Homeowners

Diagnosing the specific causes of failure may be difficult for the owner and often requires the skills of a professional. The following chart shows common problems, possible causes and remedies.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Risk</th>
<th>Potential Causes</th>
<th>Potential Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewage surfacing in yard</td>
<td>Human contact with sewage is a serious public health risk. Many watert</td>
<td>- Excess water use</td>
<td>• Fix leaks</td>
</tr>
<tr>
<td></td>
<td>borne diseases exist in household sewage. Avoid Contact</td>
<td>- System blockages</td>
<td>• Install water-saving fixtures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Improper system elevations</td>
<td>• Clean septic tank and check pumps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Undersized soil treatment system</td>
<td>• Consult professionals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Pump failure or improper operation</td>
<td>• Fence off area until problem is fixed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Improper separation from limiting condition</td>
<td></td>
</tr>
</tbody>
</table>
## Troubleshooting Guide

<table>
<thead>
<tr>
<th>Problem</th>
<th>Risk</th>
<th>Potential Causes</th>
<th>Potential Remedies</th>
</tr>
</thead>
</table>
| Sewage odors — indoors      | Toxic gases can cause discomfort and illness. Do not light matches/lighters or use appliances that may spark. | - Improper plumbing  
- Sewage backup in house  
- Unsealed basement sewage pump  
- Roof vent pipe blocked | • Repair plumbing by checking traps and vent penetrations  
• Clean septic tank and check pumps  
• Replace water in drain traps  
• Check and tighten seals on pumps and cleanouts  
• Clear roof vent |
| Sewage odors — outdoors     | Major nuisance, but no serious health risk      | - Source other than owner’s system  
- Sewage surfacing in yard  
- Inspection pipe caps damaged or removed  
- Unsealed manhole cover  
- Short roof vent pipe(yours/neighbors) | • Clean tank and check pumps  
• Check and replace damaged caps  
• Repair or replace system  
• Seal manhole cover  
• Extend roof plumbing vent pipe  
• Add carbon filter to plumbing roof vent |
| Contaminated surface waters  | Swimming in contaminated water can cause health problems such as dysentery, hepatitis, etc. Lowered water quality can negatively impact aquatic life and promote the growth of algae and other weeds. | - System too close to water table, or fractured bedrock  
- Cesspool or seepage pit in use  
- Sewage discharges to surface or groundwater  
- High levels from other sources  
- Broken sewage lines | • Contact your local government to investigate other potential sources  
• Work with community to upgrade septic systems that are not providing proper wastewater treatment |
# Troubleshooting Guide

<table>
<thead>
<tr>
<th>Problem</th>
<th>Risk</th>
<th>Potential Causes</th>
<th>Potential Remedies</th>
</tr>
</thead>
</table>
| Distribution pipes and/or soil treatment system freezes in winter | The system may be inoperable | - Cold temperature with lack of snow cover  
- Water standing in pipes, sags, lack of draining back, undersized pump  
- Foot or vehicle traffic over pipes, trenches, mound or bed  
- Low flow rates or lack of use  
- Lack of vegetative cover  
- Leaking plumbing fixture(s)  
- Low flow [drip] from high efficiency furnace  
- Open or cracked manhole or inspection pipes  
- Saturated system | • Check piping and pumps  
• Consult a professional  
• Keep people and vehicles off area  
• Increase water use and temperature  
• Have someone use water in house if you are away  
• Don’t use automobile antifreeze, salt, or other additives  
• Fix leaking fixtures  
• Add insulation over tanks, pipes and soil treatment area  
• Do NOT run water continuously  
• Operate septic tank as a holding tank  
• Do NOT build a fire over system |
| Pest or rodents are living or borrowing into system | Pests can be dangerous such as bees, spiders, snakes. Rodents can burrow into system and damage components & cause surfacing of sewage. Vegetation over system can be damaged | - The system is located in an area prone to pest or rodents | • Make sure all components are tightly sealed to limit intrusion  
• Eliminate pests and rodents  
• Have a septic professional fix any areas where the soil and vegetation have been impacted |
| Power failure | If electricity is needed to power pumps or treatment components they will not operate during the outage. Could result in improper sewage treatment, surfacing of effluent or back-up of effluent into the home | - Nature disaster  
- Electrical line being cut  
- Fuse breaker being tripped | • Verify fuse breaker has not been tripped  
• Report power outage to electrical company  
• After power is restored if issues persists, have a septic professional evaluate panels, pumps or other components to determine if damaged |
## Troubleshooting Guide

<table>
<thead>
<tr>
<th>Problem</th>
<th>Risk</th>
<th>Potential Causes</th>
<th>Potential Remedies</th>
</tr>
</thead>
</table>
| Roots plugging pipes or      | If roots are excessive in pipes or components they can cause         | - Components not sealed properly                      | • Confirm where roots are growing into system  
| components                     | blockages resulting in improper sewage treatment, surfacing of        | - Old piping or components are in need of replacement  | • Seal up or replace areas where roots are getting into the system                                                                                   |
|                               | effluent or back-up of effluent into the home                       | - Components located near water loving trees          | • Copper sulfate is a short term Band-Aid but not the solution and should only be a temporary solution                                               |
| Trees uprooting near or on    | Damage to system components  
| septic system                  | Compaction due to trees or equipment used to remove trees  Loss of | - Natural disaster   
|                               | system components                                                   | - Water logged soils  
|                               |                                                                           | - High winds                                              | • Keep heavy equipment off of septic system components  
|                               |                                                                           |                                                        | • Re-establish vegetation                                                                                 |
|                               |                                                                           |                                                        | • Have a septic professional evaluate system to determine if damaged                                                                                   |
| Lack of vegetation over system| System may look unappealing Erosion of soil cover which may result in | - Vegetation was not properly established  
|                               | damage to system components                                           | - Cover material may not be suitable to support      | • Consult local septic professional or landscaping expert about proper establishment of vegetation over septic system   
|                               |                                                                           | vegetation                                             | • Plant and maintain vegetation appropriate for climate, location and soil conditions                                                              |
|                               |                                                                           | - The vegetation planted may not be appropriate       |                                                                                                                                                     |
| Contaminated well             | Health risks are magnified by possible ingestion of contaminated     | - System too close to well, water table, or fractured  | • Replace your well and/or septic system  
|                               | water. Drinking contaminated water can cause health problems such as  | bedrock                                               | • Contact your local government to investigate other potential sources                                                                               |
|                               | dysentery, hepatitis, and, for infants, methemo-globinemia.           | - Cesspool or drywell in use                           |                                                                                                                                                     |
|                               |                                                                           | - Sewage discharges to surface or groundwater         |                                                                                                                                                     |
|                               |                                                                           | - Improper well construction                           |                                                                                                                                                     |
|                               |                                                                           | - Broken water supply pipe                            |                                                                                                                                                     |
|                               |                                                                           | - High levels from other sources                      |                                                                                                                                                     |
|                               |                                                                           | - Broken sewage lines                                  |                                                                                                                                                     |
## Your Alarm Is Going Off, Sewage Is Coming to the Surface or Backing up

<table>
<thead>
<tr>
<th>Problem</th>
<th>Risk</th>
<th>Potential Causes</th>
<th>Potential Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm activated</td>
<td>Could result in improper sewage treatment, surfacing of effluent or back-up of effluent into the home</td>
<td>- Pump failed&lt;br&gt;- Fuse breaker tripped&lt;br&gt;- Pump unplugged&lt;br&gt;- Controls malfunctioning&lt;br&gt;- Ground or rainwater infiltration&lt;br&gt;- High water use&lt;br&gt;- Effluent screen plugged&lt;br&gt;- Advanced treatment unit not working properly&lt;br&gt;- Frozen component</td>
<td>• Control water use&lt;br&gt;• Check breaker and plugs&lt;br&gt;• Check controls and pump&lt;br&gt;• Fix leaks in plumbing, tank and piping&lt;br&gt;• Hire a professional to evaluate the system</td>
</tr>
</tbody>
</table>
General Use and Operation

Improving Septic System Performance: Room by Room

The homeowner can improve performance of the septic system and avoid major problems by controlling water use, selecting appropriate products, and making wise disposal decisions. A typical person uses from 60 to 100 gallons of water per day. About 60 percent of that water is used in the bathroom. Reducing water use conserves water resources and helps the septic system. In the course of daily living, many materials used in the home enter the sewage system for disposal and treatment. Some belong down the drain and others belong in the trash.

Home Management Ideas to Improve Septic System Performance:

All Rooms

- Be conservative with water usage. Spread out the usage as much as possible to avoid large volumes of water entering the system.
- Install aerators on faucets to cut down on water use.
- Do not use antibacterial soaps and cleansers.
- Limit use of bleach-based cleansers and detergents. Use more elbow grease.
- Read the label on your cleaning products. Recommended non-toxic cleaners include: baking soda, borax, white vinegar, castile soap and other natural products free of harsh disinfectants, dyes, phosphates, petroleum compounds and artificial perfumes.
- Repair leaky faucets and toilets.
- Do not use septic system additives, feeders or starters. These products make all kinds of claims to improve your system, but lack third party research supporting their use. Simply using your system provides all the good bacteria needed and no additive can replace proper maintenance.

Bathroom

- Repair leaking toilets. A basic repair kit costs about $5 and can save you hundreds of gallons of water per day.
- Only human waste and moderate amounts of plain toilet paper
South Shore Drive, Bear Lake, MI
6974 South Shore Drive

should go down the toilet – nothing else. Toilet paper should break down easily.

- Do not flush any other products or items. The toilet is not a garbage can!
- Do not use “every flush” toilet bowl disinfectants; they introduce a chemical each time you flush.
- Do not use disposable toilet brushes. If you must, throw them in the trash – do not flush down the toilet as shown on packaging.
- Install low-flow showerheads and low-flush toilets. Look for EPAWaterSense labeled models.
- No not use drain cleaners, instead a plumbers snake should be used to clear obstructions.
- Do not use cleaners meant to spray on shower stalls after each use – this also introduces chemicals with every use.
- Use bath oils, soaps, shaving creams and other products sparingly.
- Large whirlpool bathtubs use large volumes of water which may overload the system. Be sure the tank has additional capacity. Avoid laundry or other large water uses at the same time.
- Shut off water while shaving and brushing teeth (save up to five gallons per minute).
- Quick showers use less water than tub baths – particularly big Jacuzzi style tubs.
- Do not flush unwanted medications. Return to the pharmacy, or place in zip-lock bags in the original containers, place in the trash (be sure to remove identifying information from labels).

Kitchen

- Scrape plates into garbage or compost.
- Use gel or highly biodegradable dish washing detergents. Read labels and purchase those with no phosphorus content.
- When replacing a dishwasher, consider a low-water use model. Scrape dishes well before placing in the dishwasher. New models advertised as “no-scraping needed” have a built-in garbage disposal. Scraping dishes into the trash reduces solids in the tank.
- Do not use a garbage disposal or dispose of vegetables, meat, fat, oil, coffee grounds, and other undigested food products in the septic system- it adds solids to your tank and uses large amounts of water. Compost kitchen wastes or throw them in the garbage.
- Be sure there is a shutoff valve on the drinking water treatment device so the system does not run continuously when the reservoir is full.
- Keep a pitcher of drinking water in the refrigerator instead of running the tap for cool water.
- Reduce clogs in piping by minimizing the amount of grease and food that go down the drain.
Laundry

- Use liquid or highly biodegradable powdered detergents with no clay filler.
- Do not use liquid fabric softeners. They add petroleum into your system. Instead, use dryer sheets, vinegar or “dryer balls” to soften your clothes.
- Only use detergents containing bleach when absolutely necessary - not every load.
- Use the minimum amounts of detergents or bleach required to do the job.
- Select a front-loading washing machine which uses 40 — 65% less water and less electricity to dry the clothes, or a new water efficient top loader when replacing your washer. Look for EPAAWaterSense label.
- Distribute wash loads evenly throughout the week to avoid overloading the system in a short period of time. A good rule of thumb is one load of laundry per day.
- Wash only full loads when possible; adjust the water level to fit the load.
- Install a filter on the washer to remove lint and an effluent screen on the septic tank outlet baffle.
- Avoid installing second-floor laundry. It will reduce tank performance due to the rapid speed of water entering the tank. If laundry is on 2nd floor, extra septic tank capacity and an effluent screen are recommended.

Basement, Utility Rooms and Lawn Sprinkling

- Reroute water softener, iron filter and other treatment filter recharge outside of the septic system. Consider using an old drainfield or dig a dry well. The salts used in these systems are hard on concrete septic tanks.
- Route condensation water from a high-efficiency furnace outside of the septic system to prevent freezing problems. It can run to a sump pump, be directed to an old drainfield or dry well or be vented directly out of the house onto the ground.
- Recharge the water softener as infrequently as possible. If replacing, look for an on-demand unit so the system recharges only as needed.
- Be sure sump pumps, floor drains, garage drains, roof drains and
other methods of routing water away from your house are not going into the septic system. This is clean water and can easily overload the system due to the high volume.

- Route chlorine treated water from hot tubs and pools outside of the septic system.
- Install a water meter to monitor water use.
- Dispose of solvents, paints, antifreeze and chemicals through recycling and hazardous waste channels. Do not wash paint brushes in the sink. Disposable paint brushes are a good idea.
- Be sure your automatic lawn sprinkler system does not water the soil treatment area.

**Landscaping Your Septic System**

Landscaping near, around, and on septic systems is of concern to many homeowners. To ensure a properly functioning soil-based septic system, a suitable vegetative cover must be established. The right vegetation cover helps the soil to stay in place, helps the septic system to function optimally by removing moisture and nutrients from the soil treatment area, and makes the area more attractive. Minimizing irrigation is critical for long-term performance of the system.

Herbaceous plants such as turf grasses, wildflowers, and native grasses are suitable cover for septic systems. Turf grasses have fibrous root systems that hold soil in place, require maintenance similar to a lawn, and are available in a variety of mixes designed to suit site conditions. Wild flowers and native grasses are an attractive alternative to turf grass while providing many of the same benefits including fibrous roots, low maintenance (once established), and tolerance of dry soil conditions. Do not place trees and shrubs on the septic system, their roots may invade the piping and cause damage.

Look for good advice on how to landscape your septic system from your local Conservation District or Extension.

**Electricity in the System**

Refer back to the O&M Section concerning the pumps and control panels as they should have alarm devices to warn or problems. Be prepared in case of a power outage. For most homes with a private well the well pump will also be not operating limiting the use of water, but if you have a public drinking water supply be sure to self limit usage unless you have a back-up generator to run your septic system. If the wiring is damaged or accessible there is also a danger of electrocution so be sure if at any time the wiring is damaged it is repaired appropriately.

**Property Transfer Requirements**

In your jurisdiction, a change in ownership triggers an inspection requirement to determine if the system has any significant flaws or
problems. In most cases the inspection will be a report of current conditions not a projection of future use or concerns. An inspection should check the entire system. Individual jurisdictions may place a requirement on the seller, the buyer or both. You should determine where such an inspection report should be filed and who the regulatory body certifies to complete the work.

A change in ownership of one of the system properties may trigger a Manistee County Point of Sale Inspection.