

THE HOME

A survey conducted in 1992 of 1300 rural wells in Ontario found:

- ▶ **25% with fecal bacteria contamination**
- ▶ **15% with unacceptable levels of nitrates**
- ▶ **12% with detectable levels of pesticides (less than 1% over the maximum acceptable level).**

Older wells (over 60 years) and dug or bored wells had the highest frequency of contamination.

Plenty of clean drinking water is something most of us in Ontario take for granted. Each day, greater demands are being made on our water supplies. In fact, 15,000 to 20,000 new wells are installed each year in Ontario.

A recent survey of rural wells in Ontario raised some concerns about the quality of the water we're drinking.

Wise management of your home's water will help to ensure ample and safe water for everyone. You'll also realize some energy savings, and help your septic system function properly.

This chapter takes a look at:

- ▶ water sources
- ▶ water uses
- ▶ water disposal.

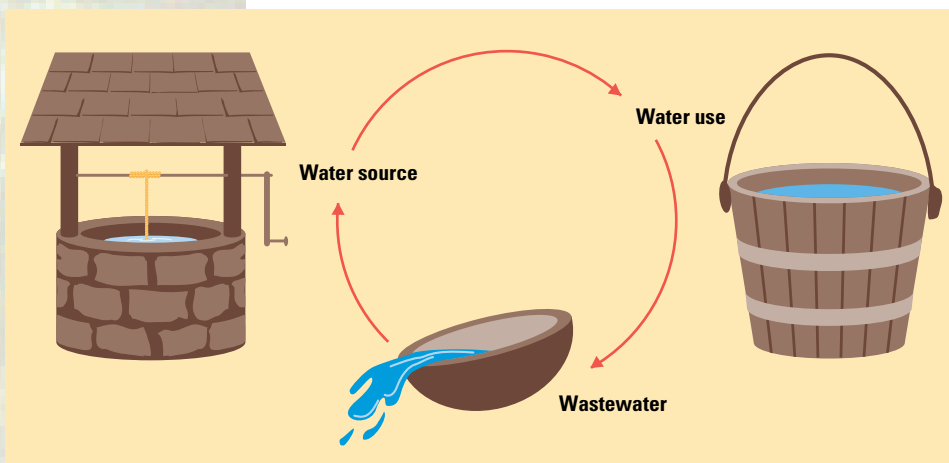
The last part of the chapter describes best management practices for:

- ▶ the well
- ▶ home water efficiency
- ▶ the septic system
- ▶ household hazardous wastes.

PATHWAYS OF WATER

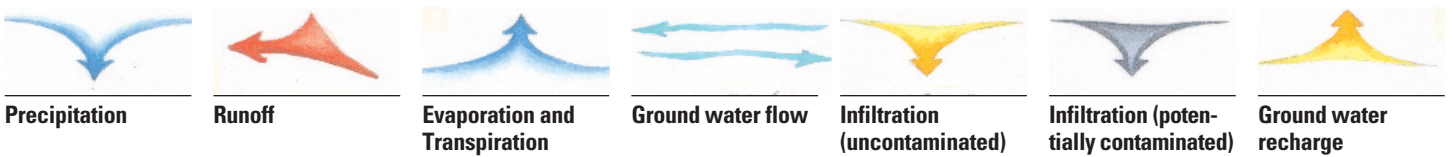
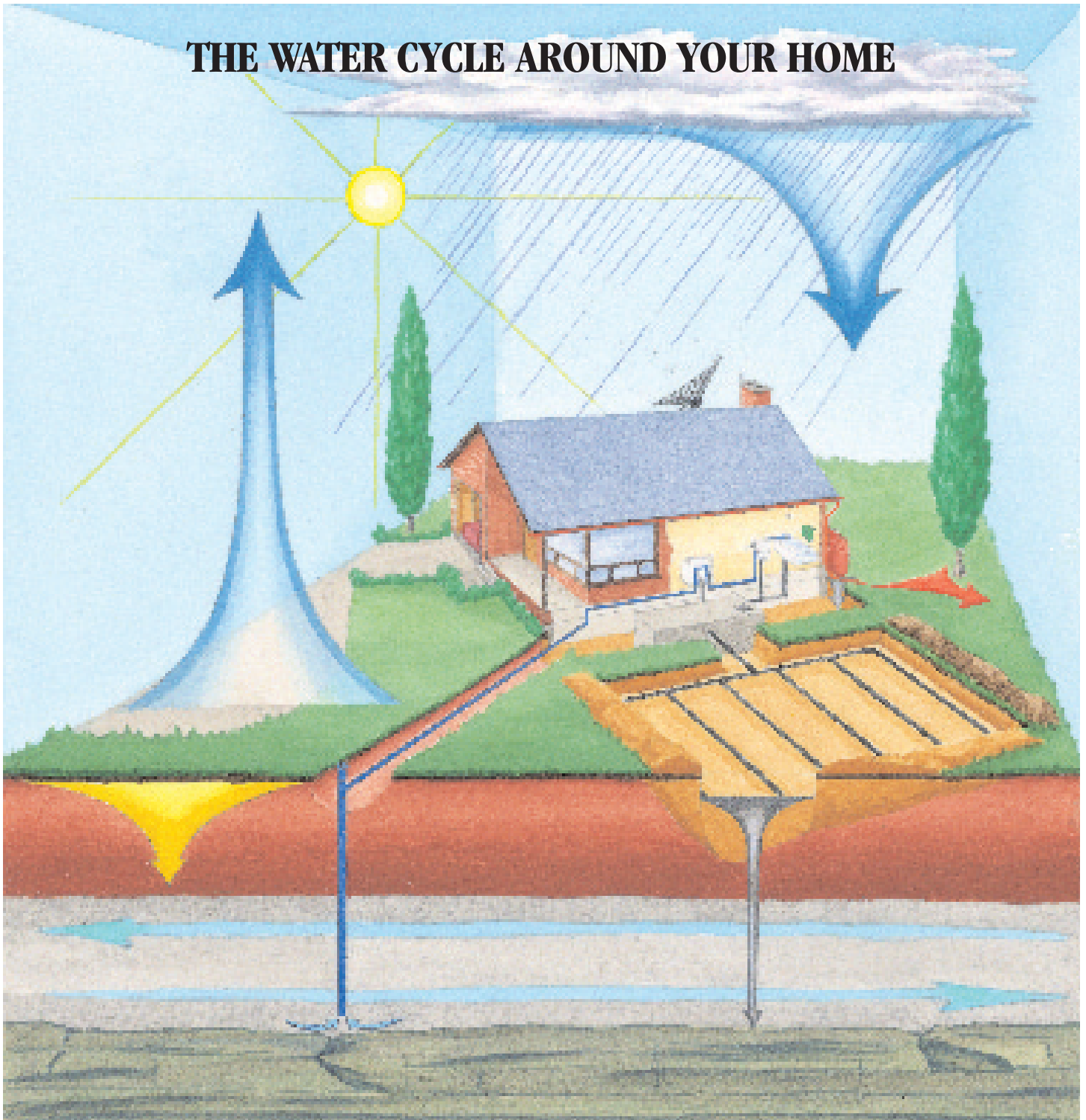
Every time a tap is turned on and water goes down the drain, the water cycle is affected. There's a direct link between the wastewater you create and the water you pump into your home.

What you do with your home's water can have an impact on both the quantity and quality of ground and surface water.



Following the cycle of water from water source to water use to wastewater helps to identify the potential pathways of contaminants and water inefficiencies at your home.

THE WATER CYCLE AROUND YOUR HOME



Around the home, the water cycle is concentrated in a very small area. The source of your family's water (usually a well) is often close to the wastewater system.

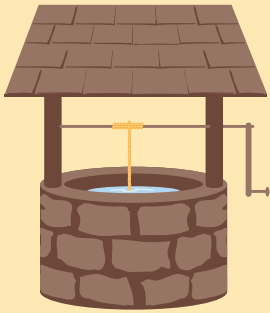
Unless properly managed, sources of contaminants, such as the septic system, concentrated runoff from paved driveways and eavestroughs,

or fuels and pesticides used around the home, can infiltrate ground water and harm your drinking water. And the more water you use, the greater the potential for contaminants to reach ground water.

Best management practices will help you safeguard and conserve water resources.

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WATER SOURCE



WATER SOURCES

Surface water from lakes and rivers is sometimes used as a water source for rural homes. Its quality is variable and it generally requires treatment. Many urban water supplies come from treated surface water.

Cisterns are used as a water source in some homes, but the water is usually not fit for drinking and must be treated. Rainfall collected from the roof is stored in concrete tanks in the basement. It should only be used for watering the lawn and garden or for laundry.

Wells supply drinking water to most rural homes. With proper management, ground water is normally of more consistent quality, temperature and quantity than surface water.

LOOKING BENEATH THE SURFACE: GROUND WATER AND YOUR WELL

Ground water is formed by rain and snowmelt that infiltrate the ground. Infiltration varies according to soil type and conditions.

In materials such as sand or gravel, 40 to 50% of rain and snowmelt can readily move through to form ground water. However, in clay soils, or when soil is frozen, or in compacted areas around the home and farmyard, you'll find less infiltration and greater surface runoff.

As water seeps down (technically, "percolates"), the soil and organisms in your soil help to filter and purify the water. Farther below, water stockpiles in a saturated zone. The top of this zone is called the **water table**.

The water table will rise and fall depending on water infiltration and water use. It can be significantly lowered locally when we remove excessive amounts of water.

Depending on the depth of your well, different zones of underground water can be accessed to supply your home's water. Each of these depths of ground water has a specific surface infiltration area, or recharge area, that supplies its water.

In terms of quality, a shallow well is affected by local contamination. A deeper well may be affected by distant pollution sources.

In terms of quantity, generally deeper drilled wells have more dependable supplies of water because of the larger recharge area.

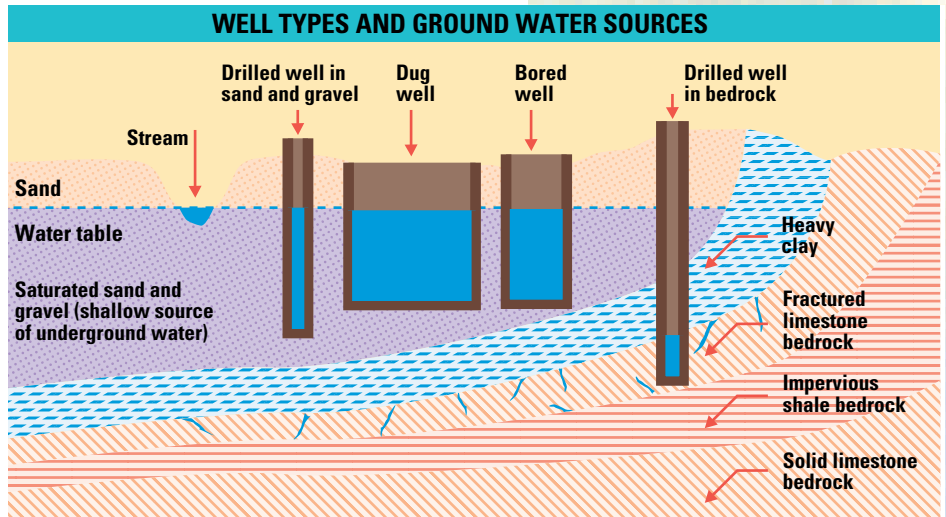
The flow rate from any well will be greater if the material surrounding it is porous, allowing water easy access to the well.

Infiltration to ground water is greatest in the spring and fall when the ground is not frozen. There is less evaporation by the sun, and plants use less water in these seasons.

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Here are three common well types:

-
- BORED** large-diameter wells constructed by using specialized earth-boring equipment. Casing material is usually concrete or steel.
-
- DRILLED** wells not dug or driven, normally 10-20 centimetres (4-8 in) across.
-
- DUG** large-diameter wells often constructed by power shovel, back-hoe, or by hand.



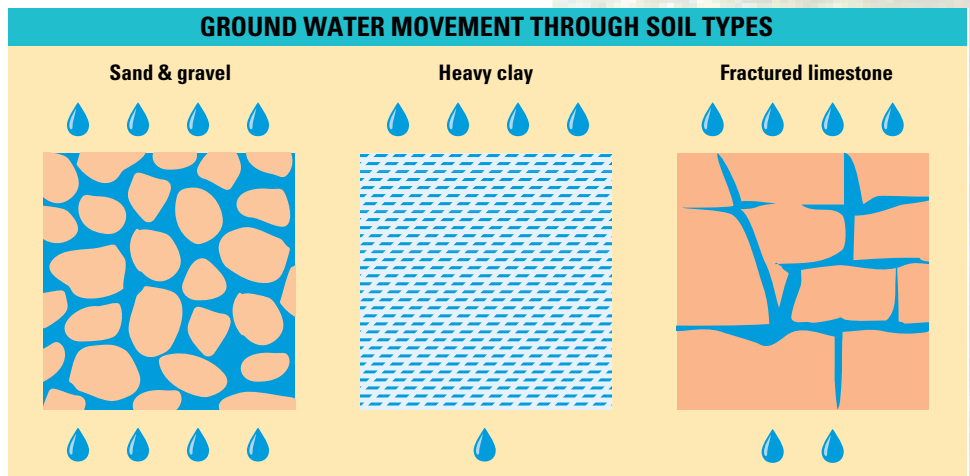
The type and depth of your well determine the water you can access.

THE FLOW OF GROUND WATER

Ground water flows fastest through coarse sands and gravels and through large cracks in bedrock. Fast-flowing ground water may travel laterally a few metres a day.

Slower-moving ground water, in tight clay soils for example, may travel a few centimetres to a few metres in a year.

This means that the water you are using today may have been precipitation or part of your neighbour’s wastewater several years ago. It also means that the effects of long-lasting contaminants may be delayed, but will not go away.



Ground water moves more slowly in clay soils than in sands, gravels, or shallow soils over fractured bedrock.

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WATER USE

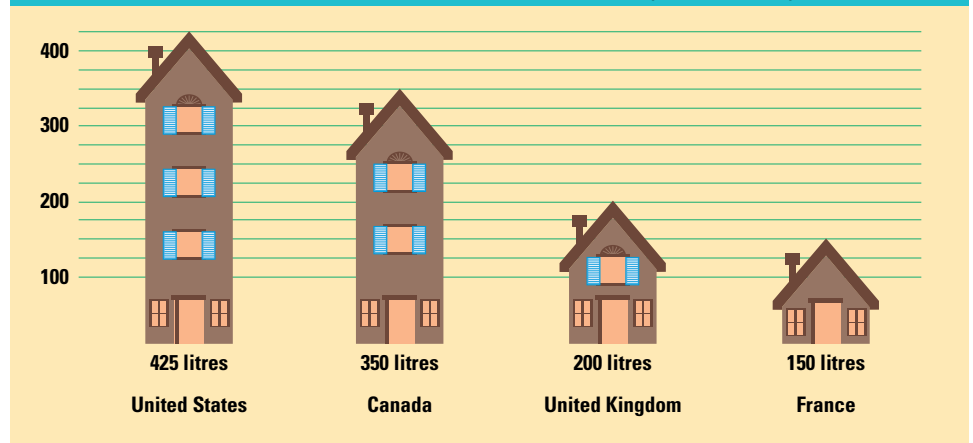


WATER USE

Ground water is accessed by your well for many household uses, such as cooking, bathing, laundry, and outdoor watering.

Because water has been a plentiful and inexpensive resource for Ontarians, we're accustomed to using a lot of water. Many of our water-using appliances were not designed for water efficiency.

AVERAGE DAILY HOUSEHOLD WATER USE (PER CAPITA)



The average Canadian uses over twice as much household water per day as a European.

Times are changing. With a growing population in many rural areas and greater demands on ground water supplies, increased water efficiency is becoming a necessary part of everyday life.

The benefits of using water efficiently are many:

- ▶ less wastewater volume to the septic system reduces the risk of overloading the system, allowing it to function better
- ▶ less risk of a water shortage
- ▶ less draw from ground water, which reduces the risk of distant contaminants moving toward the well
- ▶ less energy used to pump and heat the water
- ▶ less local transport of contaminants to the water supply (e.g. overwatering a lawn after a pesticide application can carry contaminants to your water supply).

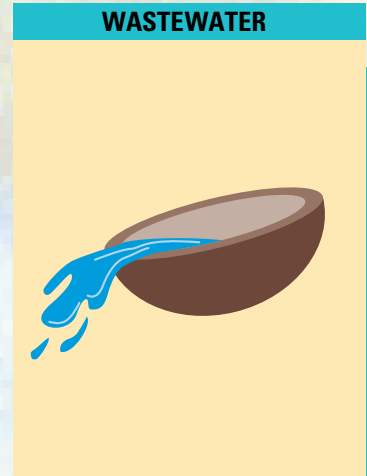
Determining the amount of water used in the home will help you identify target areas for your water efficiency efforts. Household water use rates and suggestions for using less water are outlined on page 23.

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WASTEWATER

Water used in and around the house is put back into the water cycle as wastewater. Since much of it was used for washing and waste disposal, it will carry a number of contaminants.

Minimizing the harmful contaminants that are added to your water supply reduces the risk of polluting well water, lakes, and rivers.



THE FLOW OF WASTEWATER

AREA OF CONCERN	POTENTIAL CONTAMINANTS	POTENTIAL PATHWAY TO A WATER SOURCE
Septic Systems (includes grey water)	<ul style="list-style-type: none"> • bacteria, viruses and other disease organisms • nitrates • phosphorus (soaps) • chlorine • organic compounds 	<ul style="list-style-type: none"> • infiltration below filter bed • illegal connections to field tile • seepage from leaking tank • surface ponding and runoff
Household Hazardous Waste	<ul style="list-style-type: none"> • paints, solvents • cleaners • furniture polish • medicine • disinfectants 	<ul style="list-style-type: none"> • improper disposal to septic system • infiltration or runoff through improper disposal • contamination directly at the well
Lawn/Garden Products	<ul style="list-style-type: none"> • insecticides • herbicides • other chemicals • fertilizer nutrients 	<ul style="list-style-type: none"> • infiltration, runoff • contamination directly at the well
Fuel Oil Storage	<ul style="list-style-type: none"> • petroleum products 	<ul style="list-style-type: none"> • spills, leakages • infiltration, runoff • improper disposal
Used and Abandoned Wells	<ul style="list-style-type: none"> • bacteria • organic compounds • pesticides • fertilizer nutrients • petroleum products 	<ul style="list-style-type: none"> • improper disposal • contamination directly at the well

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One gram of the common lawn-and-garden herbicide, 2,4-D, can render 10-million litres of water unfit for drinking – equal to the amount of water used by 78 Canadians in one year.

A properly designed septic system should adequately treat traditional household wastes such as washroom and laundry wastewater. Your septic system was not designed to handle hazardous household wastes.

As water moves overland or seeps into soil, some filtering action and contaminant breakdown will occur naturally. However, hazardous wastes are less likely to be purified by biological processes. Once contaminants reach the water table, they are very difficult and extremely costly to clean up.

Yearly testing of your water supply will help to ensure the safety of your drinking water. And if tests show a problem, you can consider changing the way you manage your water supply and wastewater.

Here are some sample guidelines from the Ontario Ministry of Environment and Energy. (The following figures are taken from the 1992 Ontario Drinking Water Objectives: please note these are subject to change at any time. Some standards are stricter in the U.S.A. and Europe at time of publication.)

SELECTED DRINKING WATER OBJECTIVES – 1992

PARAMETER	DRINKING WATER MAXIMUM ACCEPTABLE LEVELS*	PROBABILITY OF CONTAMINATION	TESTING
BACTERIA Total coliforms Fecal coliforms	5 per 100 ml (no more than 2 consecutive samples should show the presence of coliforms) 0 per 100 ml	most common form of contamination is bacterial	available at local Public Health Unit, free of charge
INORGANIC PARAMETERS Nitrates Lead Sulphate	10 mg/L .01 mg/L 500 mg/L	occasional	private lab for moderate fee
PESTICIDES Atrazine 2,4-D Metribuzin Metolachlor	.005 mg/L** .1 mg/L .08 mg/L .05 mg/L	rare unless spills	private lab for high fee

*milligrams per litre = parts per million

**as of 1994

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Wastewater from showers, baths, dishwashers, and washing machines is called **grey water**. Wastewater from toilets is known as **black water**.

You may be surprised to learn that grey water is as harmful to the environment as black water. Both contain similar amounts of fecal bacteria. These bacteria can cause diarrhoea, stomach cramps, and eye, ear, and nose infections if consumed by humans in drinking water.

Both black and grey water must be treated through a septic system as required by the Environmental Protection Act. This regulation is in place to protect your water supply, downstream water users, and the environment.

Reducing the volume of wastewater will enable the filtering process in the septic bed to do a better job.

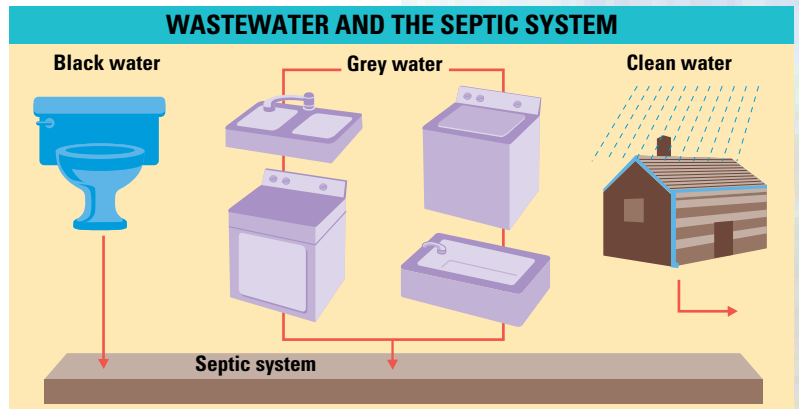
Clean water should be diverted away from the septic system through careful placement of eavestroughs.

High nitrate levels in your drinking water can be a health threat, particularly for infants. The Ontario Drinking Water Objectives for nitrates in drinking water set a maximum acceptable level of 10 milligrams (or 10 ppm) per litre. Excess nitrates in infants under six months of age can cause blue baby syndrome, in which the blood loses its capacity to carry essential oxygen.

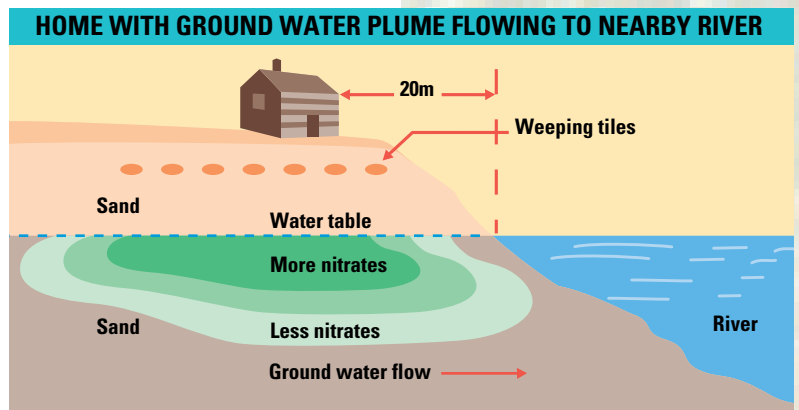
Ontario research has indicated that nitrate contamination (plumes) can be a problem. Concentrated areas of nitrate contamination move with the flow of ground water below septic systems. Nitrates, which come from septic waste, food waste, and soaps, move easily with water flow.

Ground water was monitored below a septic system at a rural home in Simcoe County. Contaminant discharge to a river 20 metres away occurred after the septic system was used for a year and a half.

In a septic system, phosphorus-based soaps can have less impact on the environment than nitrate-based soaps. Nitrates are water soluble and tend to move easily with water. Phosphorus will tend to attach to the soil in the filter bed.



It's important to know which wastes to treat in a septic system...and which ones to keep out.



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BEST MANAGEMENT PRACTICES

THE WELL

Your well is a direct access point to ground water. As such, the way it's constructed and how you use it can directly affect ground water quality and quantity.

WELL CONSTRUCTION

Best management practices for well construction are intended to protect the water supply from contamination at or below the soil surface.

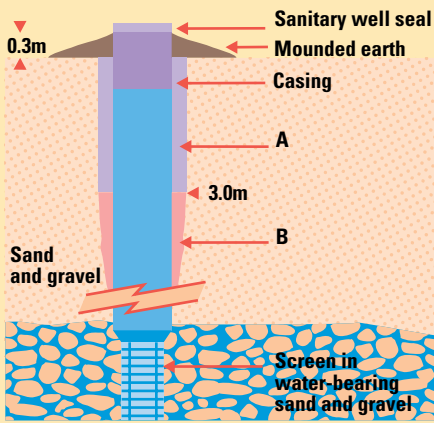
To prevent contamination from the surface, your well:

- ▶ must be capped and sealed
- ▶ should divert surface water away from the well head and avoid ponding around the well
- ▶ must be properly located.

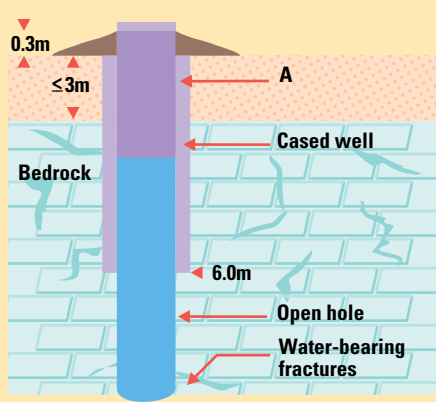
To prevent contamination below ground level, your well must be:

- ▶ enclosed
- ▶ sealed in the space outside the tile casing (see diagram).

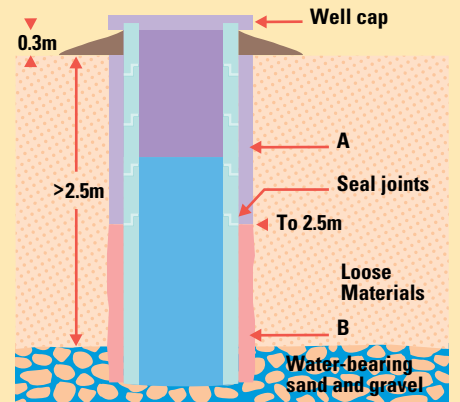
THREE WELL TYPES & THEIR CONSTRUCTION



Drilled well in sand gravel



Drilled well completed in less than 3m of loam soil over bedrock



Bored or dug well >2.5m deep in loam or clay soil with high water table

A. Formation seal in space between hole and casing B. Formation stabilizer in space between hole and casing

Shown here are best management practices for the construction of three well types.



Approximately 500,000 rural homes in Ontario use private wells as a source of drinking water; 14% of these homes are on farm operations.

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COMPONENTS	MATERIALS	WELL TYPE	REASON
SANITARY WELL SEAL	rubber disk between 2 metal plates, bolted to make watertight seal	drilled	to prevent contamination from surface
FORMATION SEAL	non-porous material in space between hole & casing (clay, cement grout, concrete, bentonite)	drilled bored dug	to prevent contaminated surface and shallow sub-surface waters from infiltrating the well
FORMATION STABILIZER	porous material in space between bore hole and casing (sand, gravel, clean soil, or well cuttings)	drilled (not in bedrock) bored dug	to stabilize the formation seal where well is located in loose material (not bedrock)

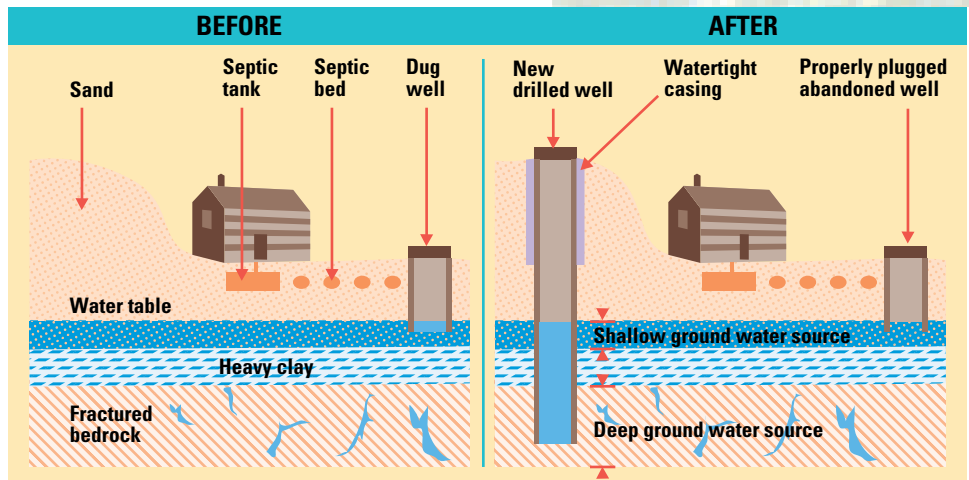
Remember that if you're installing a well, it must meet standards established by the Ontario Ministry of Environment and Energy. Contact your local licensed well driller.

LOCATION

Your well should be located upslope and away from any potential contamination sources, such as:

- household septic systems
- pesticide storages
- manure storages
- fuel tanks
- roads and highways
- silos.

In general, the Ontario Environmental Farm Plan Worksheets recommend at least a 91-metre (300 ft) distance from potential contaminants. (This may not be practical at your farmstead.)



Locate your well upslope and away from any potential contaminants.

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Your local Public Health Unit and your licensed well driller can help you choose a safe site for your well.

Here are some minimal legislative requirements for new wells.

New drilled wells:

- ▶ should have a watertight casing to a depth greater than 6 metres (20 ft) below the ground surface
- ▶ must be located at least 15 metres (50 ft) from any part of a sewage disposal system.

New dug or bored wells:

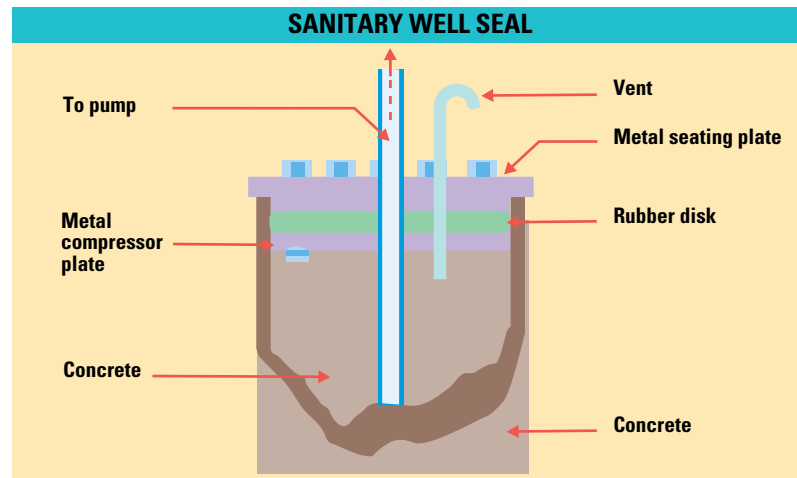
- ▶ should have a watertight casing to a depth greater than 2.5 metres (8 ft)
- ▶ must be located at least 15 metres (50 ft) from the septic tank and 30 metres (100 ft) from the leaching bed, or any other source of contamination.

MAINTENANCE

Check the well head every spring to ensure that the well seal is intact, the vent is screened, and the casing is not cracked or rusted through. Many cases of well contamination result from surface water infiltrating a poorly sealed well.



Every year you should check that the sanitary seal and well cap are secure and watertight.



A common type of well seal is a rubber disk sandwiched between two metal plates with a number of holes to allow the pump discharge pipes, cables, and a vent pipe to pass through.

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CHECKLIST FOR YOUR WELL

Each year make sure that:

- ▶ surface drainage around your well is directed away from the well casing
- ▶ water doesn't pond on the ground near the well
- ▶ the sanitary seal and well cap are securely in place and watertight
- ▶ the well cap is at least 30 centimetres (12 in) above normal ground level
- ▶ all joints, connections, or cracks in the well casing are sealed with cement, grout, or other commercial materials
- ▶ well pump and distribution systems are in good condition
- ▶ a permanent grass buffer of a minimum 4-metre (12 ft) width is maintained around the well head
- ▶ water is tested for bacteria (contact your local Health Unit office – see the blue pages of your telephone directory for the phone number).

OTHER TIPS

- ▶ never allow vehicles and other equipment over the well head. They can damage the well casing, and wheel ruts can alter the drainage pattern.
- ▶ never handle or dispose of any hazardous chemicals or pollutants near the well
- ▶ keep the application of pesticides and fertilizers as far from the well as possible. Never treat the area around your well. Follow label directions for proper application rates.
- ▶ install backflow prevention devices on your faucets with hose connections to prevent water from draining back into the well
- ▶ ensure your records clearly note the location and status of all wells on your property.



An anti-backflow device (such as a check valve) on a faucet prevents water from drawing back into the well and causing contamination. If you don't have one, get one!

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ABANDONED AND UNUSED WELLS

If you have an unused or abandoned well on your property, it is your legal responsibility to ensure it is properly plugged. Grout and cement are commonly used. A licensed well contractor can do the job to meet Ontario Ministry of Environment and Energy regulations.

Be sure to keep an accurate record of the location of the plugged well for reference if water supply problems occur in the future.

WATER TESTING

Get your drinking water tested every year. It's the only way to ensure the safety of your water.

If your drinking water tastes poorly, smells badly, or is coloured, you know you have a water quality problem.

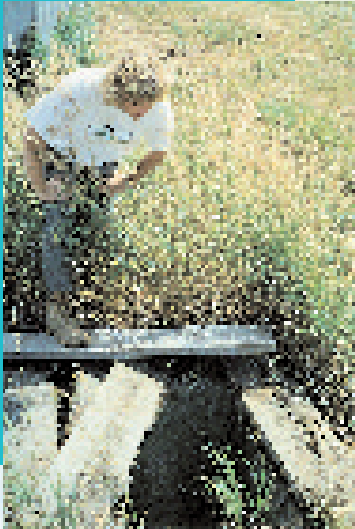
Unfortunately, taste, odour, and colour don't tell the whole story. Some unsafe levels of contaminants cannot be detected by the senses.

Your local Public Health Unit will help you test your water for bacterial contamination.

To test for other contaminants, contact your local office of the Ontario Ministry of Environment and Energy for information.

BACTERIA

The best time for testing for bacterial contamination is late spring, when surface water infiltration is most likely to occur. Your local Public Health Unit will provide sample bottles, advice on how to sample, and an explanation of the test results. The service is free (at time of publication).



Unprotected wells are a high risk location for contaminated surface water to directly pollute the ground water through surface runoff.

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Your local Public Health Unit will help you interpret water test results.

Your water sample will be tested for total coliform and fecal coliform bacteria. Fecal coliform bacteria originate in animals and humans.

Should your water test positive for these bacteria, have your water tested a second time, just to make sure.

If retesting proves positive, this may mean that your water was contaminated by a source such as a faulty septic system or manure runoff. It also indicates a risk of disease organisms.

The best treatment is locating and cleaning up the pollution source.

Here are some additional considerations:

- ▶ if you have a short-term problem, you might be able to improve your water quality with a single application of chlorine
- ▶ if your problem is long-term, you'll need a continuous water treatment system, or you may have to consider a new well
- ▶ check the condition of your well
- ▶ how long it will take to improve your well water quality depends on many factors – particularly the nature of the problem and the amount of water used
- ▶ consult your local Public Health Unit for help in solving problems with your well.

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DETECTING WATER QUALITY PROBLEMS

PROBLEM	POSSIBLE CAUSE	POSSIBLE TREATMENT OF WATER SUPPLY
ILLNESS <ul style="list-style-type: none"> • diarrhoea • stomach cramps 	<ul style="list-style-type: none"> • fecal bacteria • viruses • parasites 	<ul style="list-style-type: none"> • chlorination (filtration unit) • ultraviolet system (water passes through an ultraviolet light to kill bacteria) • chlorination (injector unit)
INFANT ILLNESS <ul style="list-style-type: none"> • blue baby syndrome 	<ul style="list-style-type: none"> • nitrates 	<ul style="list-style-type: none"> • reverse osmosis units (removes chemicals by passing the water through a selective membrane)
POOR ODOUR AND TASTE <ul style="list-style-type: none"> • rotten egg odour 	<ul style="list-style-type: none"> • hydrogen sulphide gas 	<ul style="list-style-type: none"> • chlorination (filtration unit) • greensand filters • aeration • charcoal filters
CLOUDY WATER	<ul style="list-style-type: none"> • clay particles 	<ul style="list-style-type: none"> • filters • alum treatment (settles out particles in water)
RUSTY BLACK STAINS <ul style="list-style-type: none"> • on fixtures and laundry 	<ul style="list-style-type: none"> • iron and/or manganese 	<ul style="list-style-type: none"> • filtration • greensand filters • water softeners • chlorination (filtration)
IRON STAINING <ul style="list-style-type: none"> • red/brown coating in toilet tank • poor taste and odour • slime buildup in well 	<ul style="list-style-type: none"> • iron bacteria 	<ul style="list-style-type: none"> • chlorination (filtration unit) • iron filters
SCALE BUILDUP IN KETTLES AND WATER HEATERS	<ul style="list-style-type: none"> • hard water 	<ul style="list-style-type: none"> • water softener*
SALTY TASTE <ul style="list-style-type: none"> • corrosive 	<ul style="list-style-type: none"> • chloride 	<ul style="list-style-type: none"> • reverse osmosis
GAS SMELL AND GAS BUBBLES IN WATER	<ul style="list-style-type: none"> • methane gas 	<ul style="list-style-type: none"> • aeration • activated carbon filter (filters out chemicals in the water)

*Note: You should leave 1 tap off the softened supply to provide drinking water that isn't elevated in sodium content.

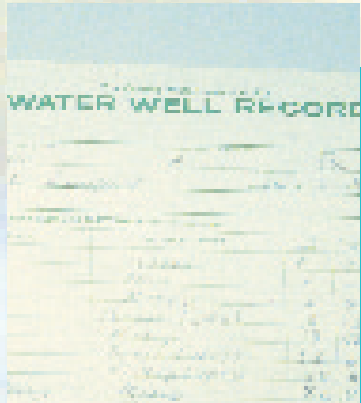
Adapted from *How Well is Your Well*, Waterloo Regional Health Unit.

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WELL WATER SUPPLY

Ensure that your well has enough water to accommodate your needs. Overpumping can ruin a well by drawing sediment into it.

Check your Water Well Record to determine the pumping capacity of your well, or have it tested by a licensed contractor.



If you need a copy of your Water Well Record, contact the Ontario Ministry of Environment and Energy's Water Well Records Division, or a local licensed water well technician.

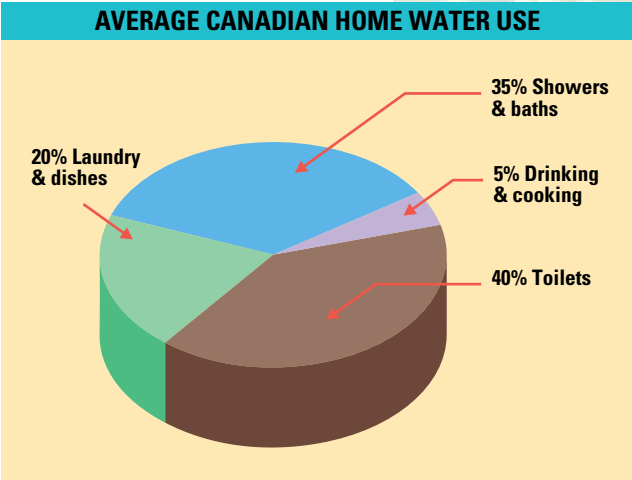
BEST MANAGEMENT PRACTICES HOME WATER EFFICIENCY

Using too much water can lower surface and ground water levels. This affects all water users, including aquatic life in streams and wetlands. Lower water levels also mean there's less water to dilute contaminants.

Many older septic systems were not sized for the additional water used in today's households. Keeping the volume of wastewater to a minimum may be all that is needed to keep a septic system working.

WATER USE

Keeping track of household water use for one week can help to identify the main areas of water use and where to target water efficiency efforts.



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It's estimated that 25% of households have leaking toilets. One leaking toilet can waste 200,000 litres of water in a single year.

REPAIRING WATER LEAKS

Most water leaks in a home's plumbing system are simple to find and easily repaired at little or no cost. Inspect each water-using facility to identify wasted water.

A leaking toilet can be detected by adding food colouring to the holding tank. If, after 10 minutes, it spreads to the toilet bowl without flushing, you have a leak.

Often, leakage results from a worn or misaligned flapper valve at the bottom of the toilet tank. The valve can be cleaned or inexpensively replaced. The float setting may also need some adjusting to prevent slow leaks.

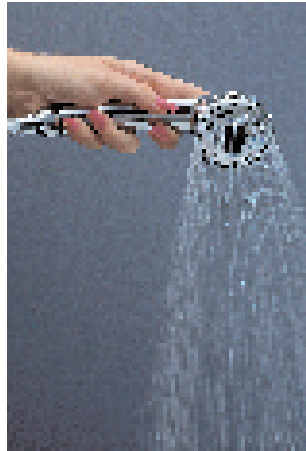
A leaking tap is easily detected; replacement of a worn-out washer or cartridge will usually solve the problem.



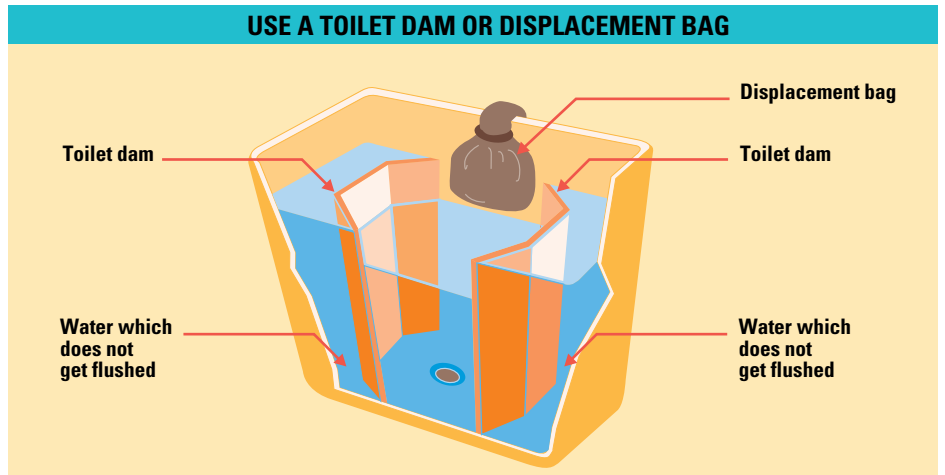
A timer for your lawn sprinkler is a convenient way to save water, time and money.



Low-flush toilets and toilets with dams and displacement bags will use less water.



Install a water-saving low-flow shower head.



This diagram shows the proper placement of both a toilet dam and displacement bag. In real life, you would choose one or the other.

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Here are some water-saving ideas for your home.

FIXTURE	AVERAGE WATER USE PER PERSON PER DAY	WATER-EFFICIENT MEASURE	WATER SAVINGS PER PERSON PER DAY
SHOWER	85 litres	<ul style="list-style-type: none"> install a water-efficient shower head (cost \$10 to \$40) 	35 litres
TOILET	114 litres	<ul style="list-style-type: none"> install a toilet dam in a toilet. (saves 4 litres per flush; approx \$7) install a water-efficient toilet that uses 6 litres per flush (cost \$150-\$300) 	24 litres 78 litres
DISHWASHER	9 litres	<ul style="list-style-type: none"> wash full loads only 	
WASHING MACHINES	45 litres (assumes a family of 4 does 5 loads of laundry per week)	<ul style="list-style-type: none"> do one less load of laundry per week use a 'suds saver' feature that allows rinse water to be reused (saves 50% of water used on second load) 	10 litres
KITCHEN FAUCET	40 litres	<ul style="list-style-type: none"> install a kitchen faucet aerator that maintains spray while using less water (cost \$3) 	15 litres
BATHROOM FAUCET	26 litres	<ul style="list-style-type: none"> install a bathroom faucet aerator (cost \$3) 	9 litres
LAWN WATERING	36 litres per minute	<ul style="list-style-type: none"> don't water your lawn water in evening or early morning choose grass varieties or ground cover that are drought-tolerant use drip or trickle method install a timer to avoid overwatering (cost \$12 to \$60) 	

THE HOME

Faulty septic systems accounted for one-third of the bacterial contamination to surface water in a recent study of the Upper Thames River Watershed in Southwestern Ontario.

BEST MANAGEMENT PRACTICES

THE SEPTIC SYSTEM

Faulty septic systems pose significant pollution problems to our water in Ontario.

Common causes of malfunctioning septic systems include old and undersized systems, and a lack of maintenance of both new and old systems.



Treatment trench leaching bed installation.



Raised beds are installed over shallow bedrock in many areas in Eastern, Northern, and Central Ontario as well as in areas with heavy clay soils.

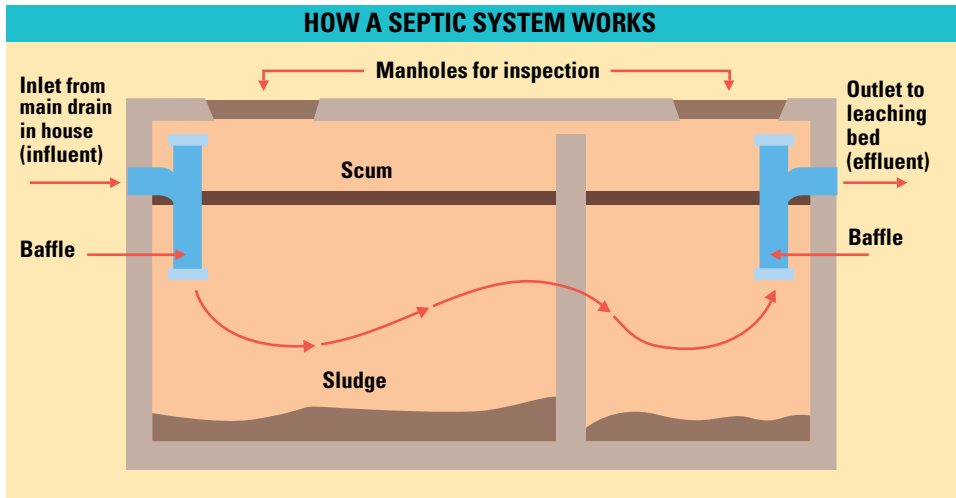
ALL wastewater produced in the house must be disposed of through the septic system. This includes toilets, showers, baths, dishwashers, and washing machines.

Water softener backwash should be diverted away from the septic system and treated in a separate leaching pit. Otherwise, if your water softener malfunctions, it can cause a total malfunction of the septic system.

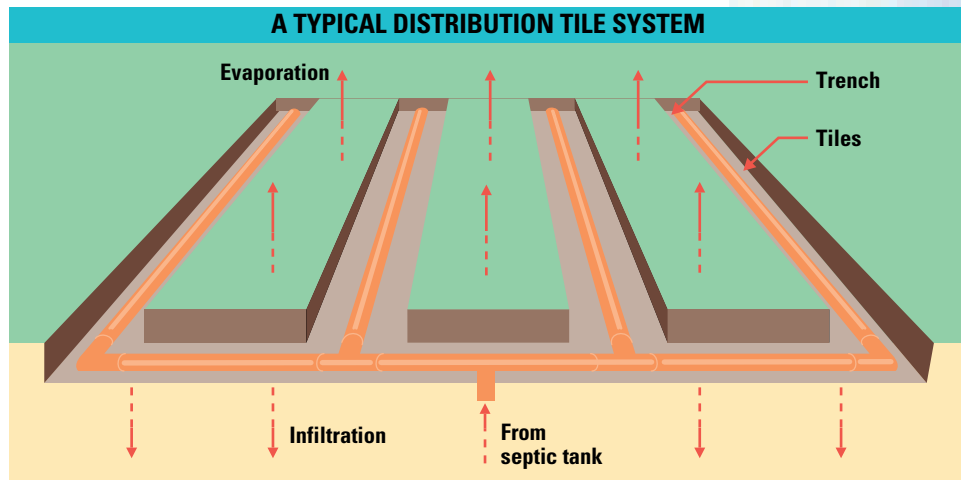
Keep storm or drainage water out of the septic system. Eavestroughs, foundation drains, and footing drains should be drained away from the septic system.

Keep household hazardous wastes out of the septic system. It is not designed to treat these wastes. (Refer to page 28 for ways to dispose of household hazardous wastes.)

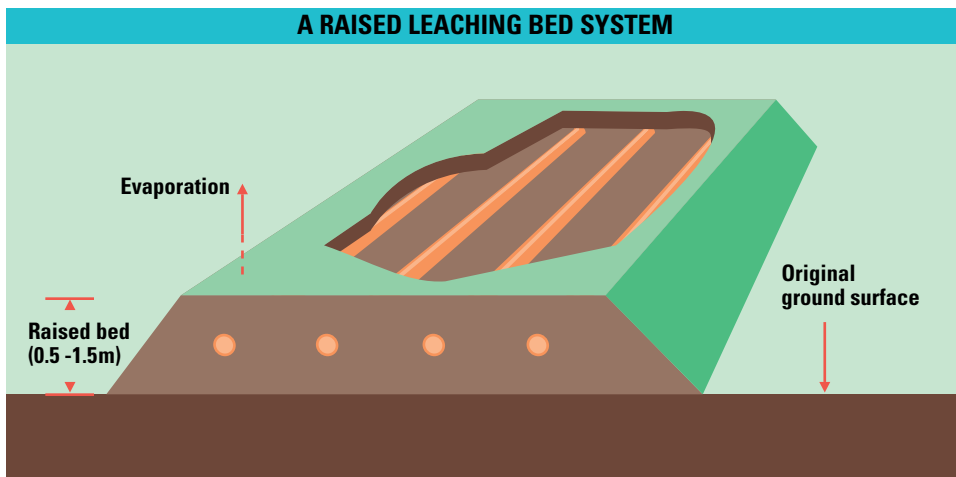
THE HOME



Solids settle out and bacteria work to break down the sewage. Liquids flow to the leaching bed.



How a leaching bed works: liquids from the septic tank flow through the perforated tile and into the soil.



Raised bed septic systems provide suitable soil for the liquid from the septic tank to disperse over a large area. This encourages evapo-transpiration and seepage into the local soil.

THE HOME

LOCATION

Your septic tank must be at least:

- ▶ 15 metres (50 ft) away from a well, lake, stream, watercourse, tile drain inlet, pond, or spring
- ▶ 1.5 metres (5 ft) from your house, deck, swimming pool, or any other building or structure – this prevents structural damage to the system.

Your leaching bed must be at least:

- ▶ 15 metres (50 ft) away from a lake, stream, watercourse, tile drain inlet, pond, swimming pool, or spring not used as a source of potable water
- ▶ 30 metres (100 ft) from a dug or bored well, a spring used as a source of potable water, or any well with a watertight casing less than 6 metres (20 ft) below the ground surface
- ▶ 15 metres (50 ft) away from a drilled well with a watertight casing to at least 6 metres (20 ft) below ground
- ▶ 5 metres (16 ft) away from your house or any other building or structure. This allows maximum sunlight for evaporation from the bed and prevents seepage under buildings.

Note: the Ontario Environmental Farm Plan Worksheets recommend that a septic system be more than 91 metres (300 ft) from a well and 152 metres (500 ft) from a watercourse to better protect water supplies.

The greater the depth between the bottom of the treatment trench and saturated soil or bedrock, the better the treatment potential of your system. Greater than a .9-metre (3-ft) distance is required.

A good grass cover over the bed will help to use up excess water and nutrients. But, watch for excessive and rapid grass growth over the tile lines. It could be an indication that the system is not performing properly, and is possibly overloaded.

HOW TO LOCATE YOUR SYSTEM

Look for the main drain in the basement (100 mm or 4-inch pipe), the pipe stack (100 mm or 4-inch pipe running up through the floor), and the main roof vent. These will normally be on the same side of the house. The septic tank is generally 1.5 to 3.0 metres (5 to 10 ft) from the foundation and will usually line up with the roof vent pipe.

The leaching bed is most evident in dry summer periods when grass may be greener over the tile runs. These runs are generally 1.6 metres (5 to 6 ft) apart.

To locate the septic tank and leaching tiles, you can use a metal rod (carefully) to tap below ground.



The septic tank will generally be located in line with the main roof vent on your house.

THE HOME

TROUBLESHOOTING	POSSIBLE PROBLEM
Odours	<ul style="list-style-type: none"> • holes or leaks in the septic tank • air currents over roof vent • surface outbreaks in leaching bed area
Ponding or Wet, Spongy Areas	<ul style="list-style-type: none"> • overloading of the tank or leaching bed caused by overuse or adding facilities • poor surface drainage • high water table
Backed-Up Toilet	<ul style="list-style-type: none"> • septic tank full of sludge • blockage in tile bed (e.g. tree roots) • blocked intake pipes to septic system

CARE, MAINTENANCE AND USE

- ▶ have your septic tank pumped out once every three years by a licensed contractor (this is the average length of time for solids to accumulate in the tank to a level where pumping is necessary)
- ▶ if the access port to your tank is completely buried, you may consider a more convenient cap to allow easier periodic inspection and pumping
- ▶ use water efficiently in the home and repair all leaks
- ▶ keep storm and drainage water out of the septic system: eavestroughs, foundation drains, and footing drains should be diverted from the septic system
- ▶ keep trees and shrubs away from the leaching bed
- ▶ keep hazardous household wastes as well as fats and food wastes out of the septic system
- ▶ reduce your use of harmful solvents and cleaners – switch to environmentally friendly products
- ▶ inspect your septic system to see whether it's connected to any field tile drainage system – such connections are illegal
- ▶ make sure there's a good grass cover over the leaching bed – never add fill over the leaching bed or use the area as a garden.

BEFORE YOU START

Before constructing, installing, or altering a septic system or building in any way, a Certificate of Approval is needed. You can get one from your local Public Health Unit, Ontario Ministry of Environment and Energy, or Conservation Authority. (Phone numbers of the first two are in the blue pages of your telephone book.)

Before using a new or altered septic system, a Use Permit is needed. Contact your Local Health Unit, Conservation Authority, or the Ontario Ministry of Environment and Energy.



Have your septic tank pumped every three years.

THE HOME



CORROSIVE:
Substances that eat and wear away at many materials.



FLAMMABLE:
Flammable vapours produced by liquids that can ignite.



EXPLOSIVE:
Pressurized aerosol containers that may explode if incinerated or stored above 50°C



POISON:
Materials that are poisonous or lethal to you, your children and your pets, even in small quantities.

Be aware of the danger symbols on products. Products such as pesticides are designed to kill specific pests. They can also be toxic to people.

Don't flush hazardous wastes down your toilet. Your septic system isn't designed to dispose of them.

BEST MANAGEMENT PRACTICES

HOUSEHOLD HAZARDOUS WASTE DISPOSAL

Many products used daily in the home can be harmful to the environment. They contain a wide array of chemicals. If not disposed of properly, they can end up in your water supply – and have very serious impacts on your family's health.

Hazardous wastes used around the home include:

PESTICIDE AND GARDEN PRODUCTS	fertilizers, insecticides, weed killers, rat poisons, mothballs, flea collars and sprays
HEALTH PRODUCTS	unused medicine
VEHICLE PRODUCTS	batteries and battery acid, transmission fluid, antifreeze, car wax with solvents, motor oil
PAINTS AND GLUE PRODUCTS	brush cleaners, enamel or oil-based paints, paint strippers, primers, stains/finishes, thinners, turpentine, wood preservatives
CLEANING PRODUCTS	chlorine bleach, disinfectants, floor and furniture polish, oven cleaners, metal cleaners, rug and upholstery cleaners
OTHER WASTES	dry-cell batteries, butane lighters and cylinders, lighter fluid, swimming pool chemicals

WASTE MANAGEMENT

Common sense prevails in properly managing household hazardous wastes:

- ▶ never dispose of hazardous wastes down a drain or a toilet
- ▶ use alternatives to hazardous products
- ▶ buy only the amount you will use
- ▶ don't over-water your lawn after using pesticides and fertilizers. Runoff to streams or infiltration to ground water can occur.
- ▶ securely store any excess in a well-ventilated place for transport to a Hazardous Waste Collection Depot.

THE HOME

DISPOSAL

Take excess household hazardous products to your recycling depot (for specific products such as batteries, paints, or oil), or to a Hazardous Waste Depot.

Many communities are holding special collection days for hazardous wastes. Contact your municipality for information. If there is no collection program in place, encourage your municipality to apply to the Ontario Ministry of Environment and Energy's Household Hazardous Waste Collection Program (as of July 1993). Contact:

Program Co-ordinator
 Household Hazardous Waste Collection Program
 Program Development Branch
 Ontario Ministry of Environment and Energy
 40 St. Clair Avenue West, 11th flr.
 Toronto, Ontario M4V 1M2
 (416) 314-7878 in Toronto, 1-800-268-4483 toll free

SOME SAFE ALTERNATIVES	
COMMON HOUSEHOLD PRODUCT	SAFER ALTERNATIVES FOR IN AND AROUND THE HOME
CLEANERS All-Purpose Cleaner Disinfectant Floor and Furniture Polish Window Cleaner Laundry Bleach	<ul style="list-style-type: none"> • mix 250 ml ammonia, 250 ml white vinegar, 125 ml baking soda, 2 litres water • 250 ml of borax with 4 litres of water • a spray bottle with one part lemon juice and two parts olive or vegetable oil • a mixture of vinegar (1/4) and water (3/4) • borax or washing soda instead of chlorine bleach
PESTICIDES Insecticides Herbicides Fertilizer Mothballs Roach Killers Ant Killers	<ul style="list-style-type: none"> • insecticidal soap, diatomaceous earth products for indoors, spray plants with mild dishwashing liquid in water (1/2 capful in 500 ml) • hoeing or hand weeding • use well-composted manure or bonemeal • cedar chips, newspaper • traps or baking soda and powder sugar mix • chili powder to hinder entry

Adapted from *Hazardous Wastes in Your Home*, Environment Ontario