



Second Edition

## On the inside...

What Is the Tay Watershed?.....	2
Map of the Tay Watershed .....	2
Where Does Our Water Come From and Where Does It Go? .....	2
Watershed Wizard Quiz .....	3
Water Quality and Water Quantity— Protecting What We've Got.....	4-5
Water Quality in the Tay— What the Bugs Tell Us.....	4
Communities Drive Healthy Lake Plans .....	5
What Is a Water Budget?.....	5
Do You Want to Save Money? Conserve Water!.....	5
The Tay and the Town of Perth.....	6
What Does the <i>Clean Water Act</i> Mean for Perth?.....	6
Stormy Weather .....	7
Protecting Drinking Water .....	7
Perth Facts.....	7
Protecting Our Common Groundwater.....	8
Groundwater and Your Well.....	8
The <i>Clean Water Act</i> and Private Wells .....	8
Wonderful Wetlands— Nature's Water Filter .....	9
Communities Foundation Sets Up Environmental Trust .....	9
Enemy Aliens—Invasive Species in the Tay Watershed .....	10
My Tay .....	11
Local Resources for Better Living.....	12
Water—A Legacy for Now and the Future .....	12



"Hi, I'm Wendy. I'm a water droplet and I live in the Tay Watershed.

Watch for me throughout the *Tay Watershed Times*. I'll introduce helpful tips you can use to help protect and improve our watershed."

Dear Citizens of the Tay Watershed,

Welcome to the *Tay Watershed Times, Second Edition*, brought to you by the Friends of the Tay Watershed. Many things have happened in the Tay Watershed since the last edition of *The Times* was published in 2006. The good news is that the overall quality of water and water ecosystems—in an already healthy watershed—has gotten better.

The Ontario government has passed the *Clean Water Act (CWA)* which protects water sources for municipal drinking water. (See more about the CWA on page 6.) The CWA emphasizes the important relationship between Town of Perth residents and the Tay River. The Tay provides Perth with its water and eventually receives treated sewage water from the Town. The Town of Perth has the largest human impact on the river.

As part of the CWA, specific actions are being taken to improve and protect the quality of water taken from the Tay before it is treated in the Town's treatment facility. Intake Protection Zones (IPZs) and a plan to improve and protect the Town's source water will be developed and implemented over the next few years.

But that's not all that has happened. Over the last few years, lake associations for many of the 46 lakes in the watershed (most of which are upstream from Perth) have been busy developing improvement plans for their lakes that are resulting in greater protection of lake ecosystems and improved water quality. Likewise, the farming community has taken steps to restrict livestock access and reduce the amount of undesirable material seeping into the river.

All these actions combined improve water quality in the Tay and put a greater value on the water we use. But our growing population and changing climate put additional stressors on the watershed. Everyone living in the watershed can contribute by taking some of the actions suggested in the following pages, and by using our water more wisely.

As anyone who lives in Perth or has visited knows, the Tay also adds beauty to the Town. Whether flowing through Stewart Park or the Tay Basin, it is the centrepiece of many of the Town's recreational and tourist attractions.

Please take some time to learn more about this wonderful river and what you can do to help keep it one of Eastern Ontario's gems.

Yours truly,  
Carol Dillon, Christopher Stone, Gillian Scobie  
Friends of the Tay Watershed

## Friends of the Tay Watershed A Grassroots Community Group on the Go!

We are a group of volunteers dedicated to providing stewardship for the Tay Watershed. Our members come from all parts of this 95-kilometre-long watershed and from many of its beautiful lakes. Our goal is simple—to raise awareness of the Watershed: its beauty, the roles it plays in our lives, what it needs to survive, and how to protect it.

It all began in 1995 when the Tay was identified in the Perth Community Strategic Plan as one of the important economic and social features of the region. To protect and improve the Watershed, a Tay River Watershed Management Plan (the Plan) was developed. But who was going to monitor the Plan and ensure that it was followed? A local community group—the Friends of the Tay Watershed—was formed to promote the Plan's recommendations.

The Plan suggested 24 priority actions. These actions addressed the most pressing problems in the Watershed, such as a lack of scientific data to support decision-making.

A lot of progress has been made since then. To see the complete list of recommendations, please go to the Friends' website at [www.tayriver.org/documents/watershed\\_mgt\\_plan.php](http://www.tayriver.org/documents/watershed_mgt_plan.php) and click on the plan, under "Background."

The Friends have a very active program of outreach activities including the very popular "Perspectives on Water" series that has featured such notable speakers as Paula Sherman, Algonquin co-chief and Maude Barlow, water advisor to the United Nations. We host an annual Watershed Discovery event with fun activities for all the family. We get our hands dirty and wet by planting shorelines and doing research projects. We are the human voice for the Tay Watershed when we deal with municipalities, companies and anyone who has an impact on the Watershed.

We are always looking for new members and we'd be happy to have you join the Friends and become a part of this dynamic association. You can contact us at: P.O. Box 2065, Foster Street, Perth, ON, K7H 3M9 or send an email to [info@tayriver.org](mailto:info@tayriver.org).



**Wendy says:**

*"These are all the lakes in the Tay Watershed:*

*Abbott, Andrew, Atwood, Barton, Beaver, Bobs, Burns, Carnahan, Christie, Clow, Crosby, Crow, Danby, Davern, Deer, Doctor, Doran, Duncan, Eagle, Elbow, Farrell, Leggat, Little Beaver, Little Crosby, Little Mud, Little Silver, Long, Lynn, McLaren, Miller, Mills, Mud, O'Brien, Oconto, Otty, Pike, Rock, Salman, Scanlin, Spruce, Sucker, Thompson, Thorns Mud, Victoria, Watson, Weatherhead. See how many you can find on a map."*

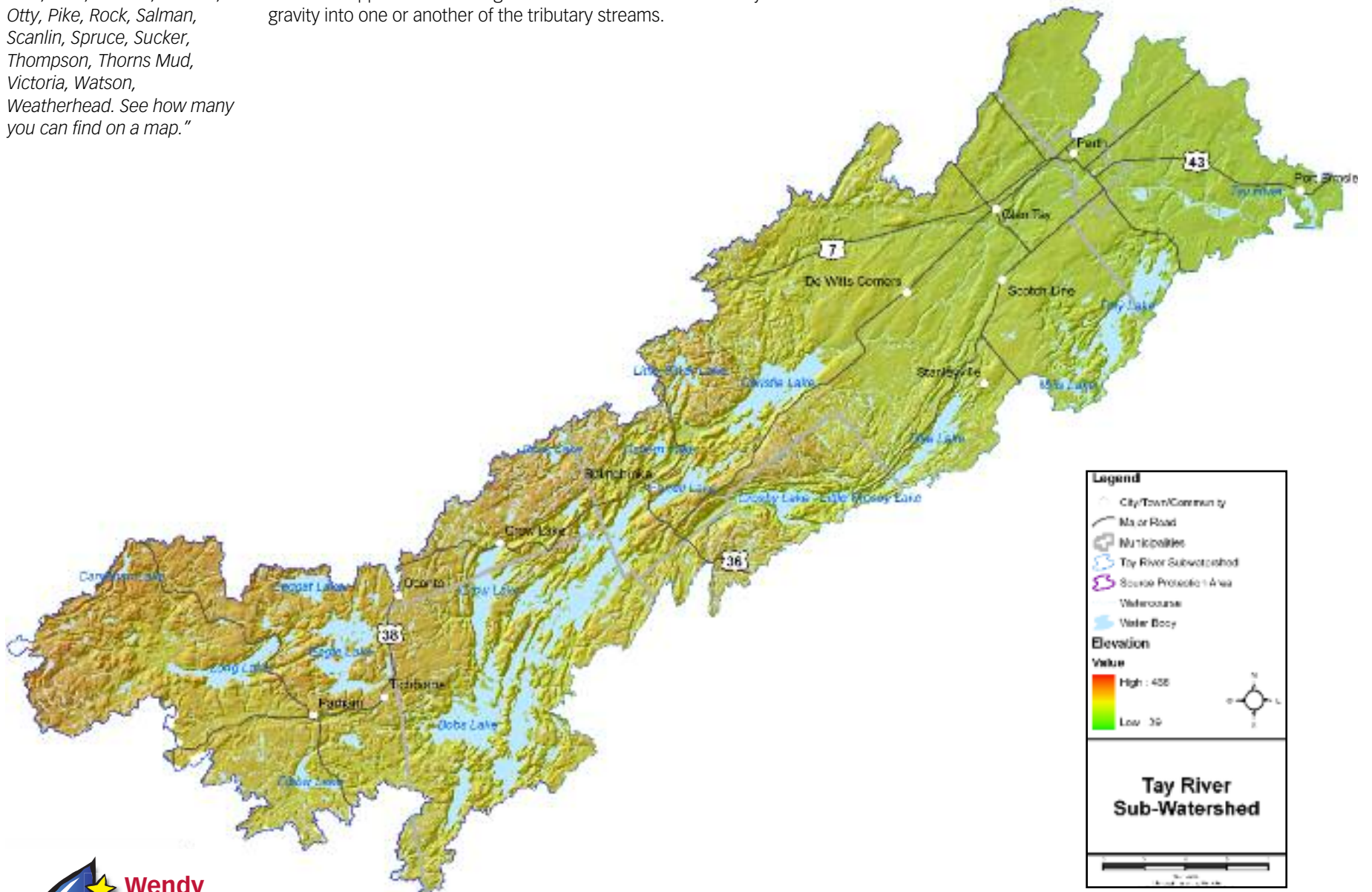
# What is the Tay Watershed?

A watershed is the drainage area of a river. It's like a huge natural basin that collects water and directs it downhill towards lower elevations. Rain and snowmelt drain through the soil into small streams and end up in a major creek or river or in underground aquifers. This is the only way water can flow. Creeks and streams generally get bigger and wider as they flow downstream where more and more tributary streams contribute water.

The Tay Watershed is the largest sub-watershed of the Rideau River basin. The dividing line between watersheds is sometimes hard to see. Where does the Tay Watershed stop? Where does the Mississippi Watershed begin? Water knows. It has to flow by gravity into one or another of the tributary streams.

Watershed boundaries cut across municipal boundaries. The Tay Watershed encompasses parts of six municipalities: Central Frontenac, South Frontenac, Tay Valley, Rideau Lakes, Drummond-North Elmsley and the Town of Perth.

No matter how you get your drinking water, from a private well or a municipal system, you can be sure that it has all been collected, filtered, and washed downhill during its cleansing passage through a natural watershed. The Watershed is nature's water management system—it can't be beat!



2



**Wendy says:**

*"We're pure water. Every one of us is*

*precious. All you really need is about 50 litres a day. So we don't like it when we get wasted. Can you believe Canadians use, on average, about 343 litres of water each a day? That's 7 bathtubs full. Compare that to Ethiopians, who use less than 15 litres a day."*

# Where Does Our Water Come From and Where Does It Go?

When you turn on your tap, do you know where your water has come from? All the water we use in our area—for growing, drinking, cooking, washing, cleaning, flushing, and industrial purposes—comes from the Tay Watershed. The Watershed's lakes, streams, wetlands, the river itself, and the groundwater below are the source of the water we use.

The surface water has to be treated before we can use it. The raw water is taken directly from the Tay River through an intake pipe just behind the Stewart School. It is cleaned and treated at the water treatment plant before it is distributed to homes and businesses through a network of pipes operated by the Town of Perth.



**Wendy says:**

*"You know how water usually comes out in a*

*thick stream—millions of water droplets at once being shot out of a tap? How wasteful is that? Instead, you can use a faucet aerator and reduce your water use by as much as 60%. It's the single most effective way to conserve water in your home."*

Our water starts in the hilly headlands of the Tay, in the Township of Central Frontenac, around Carnahan and Long Lakes. There the rainfall and snowmelt seep into the ground, rush down the hillsides, pool in wetlands, form the lakes, and begin the Tay River's headlong push to the Rideau River. The falls at Bolingbroke mark roughly the midpoint of this Watershed, which has an area of 800 square kilometers and stretches almost twice the length of the 45-km-long Tay River.

Once we have used our water, it goes down the drain into another network of sewage pipes and travels five kilometres south of town where it is discharged into a three-cell sewage lagoon. In the lagoon, the sewage water is naturally treated in three ways: first, by sedimentation—the solids sink to the bottom of the lagoon; second, by sunlight and the bacterial breakdown of pathogens. And third, by evaporation—the wind and the sun's warmth remove much of the water vapour from the surface of the lagoon, putting the water back into natural circulation. The water that is left over goes back into the Tay through the huge Tay Marsh where bulrushes and other aquatic plants help filter out remaining contaminants. The Tay continues flowing, eventually joining with the Rideau River, and finally flowing into the Ottawa River at Rideau Falls.

In the Tay Watershed, about half the population gets its drinking water from wells sunk into groundwater. Many of those people are able to drink their water "raw," with no treatment. The rest of us get our water from surface water—from the Tay River in the Town of Perth.



# Watershed Wizard

Are you a watershed wizard? Try your hand at the following questions, then check your answers at the bottom of the page.

## Conservation

- What's the best way to save water when you shower?**
  - Install a low-flow showerhead.
  - Take less than 5 minutes to shower.
  - Turn water off while washing.
  - All of the above.
- The Clean Water Act is a plan to**
  - Help rural communities to conserve water
  - Protect the source of our water
  - Give industries control over our water
  - Charge for water
- What is the single biggest user of water in the home?**
  - A refrigerator
  - A reverse-osmosis water purification system
  - A toilet
  - A bathtub
- What is a faucet aerator?**
  - A plan to ship Tay Watershed water to California
  - The most effective way to conserve water in your home
  - A leaky pipe
  - A leaky tap
- When you use a water-saving washing machine, you save**
  - up to 20 litres of water a load
  - up to 5 litres a load
  - up to 80 litres a load
- To save watering your lawn, keep your grass at a height of**
  - 6.5 cm
  - 10 cm
  - 2 cm
- What is the best kind of lawn to plant, to conserve water?**
  - Dutch white clover
  - Wheatgrass
  - Bent grass
  - Kentucky blue grass
- Why are native plants the best ones to plant?**
  - They grow in harmony with one another.
  - They don't spread out of control.
  - They encourage native species of birds and butterflies.
  - All of the above.
- What is a good way to conserve water in your soil?**
  - A rain barrel
  - Mulching with grass clippings and wood chips
  - Having a weed-free garden
- A tap leaking at the rate of one drop a second wastes how much water a year?**
  - 4 tablespoons
  - 1 litre
  - 12,000 litres

## Groundwater

- Groundwater is**
  - An underground lake
  - An underground stream
  - Water stored in small spaces in soil and rocks
  - All of the above
- Which of the following can threaten the health of the Tay Watershed? Circle any that apply.**
  - Aging septic systems
  - Stormwater runoff
  - Snow melt
  - All of the above

- How do contaminants get into groundwater?**
  - Through cracks in rocks
  - Via a broken cap or unsealed well casing
  - Solvents spilled onto the ground
  - All of the above
- You can protect your well from contamination by**
  - Keeping your septic system functioning properly
  - Keeping any fuel or solvent far away from well
  - Regularly inspecting your well
  - All of the above
- What is another name for "nature's kidneys"?**
  - Streams
  - Wetlands
  - The Rideau Canal

## The Tay Watershed

- The Tay Watershed is**
  - 5 kilometres long
  - 50 kilometres long
  - 95 kilometres long
- The Tay Watershed drains an area of**
  - 1,065 square kilometres
  - 865 square kilometres
  - 65 square kilometres
- The Tay Watershed begins in the high land near**
  - Carnahan Lake
  - Christie Lake
  - Bobs Lake
- Where is the Tay Marsh?**
  - Christie Lake
  - Downstream of Perth
  - Upstream of Perth
- Approximately how many people live in the Tay Watershed?**
  - 1,000
  - 10,000
  - 100,000
- Invasive species get into our waterways from**
  - Bilge water from boats
  - Agricultural products
  - Genetically modified seeds
- Circle the incorrect answer. Wetlands**
  - Act as a natural water filter
  - Sustain more life than any other ecosystem
  - Do not provide animal breeding grounds
  - Play a major role in maintaining the stability of the environment
- How much of the Tay Watershed is covered by wetlands?**
  - 12 percent
  - 85 percent
  - 30 percent
- What is the main cause of wetland losses?**
  - Beavers
  - Human activity
  - Drought
- Which of the following do wetlands do?**
  - Trigger earthquakes
  - Send carbon into the air
  - Help to reverse global warming

22. c  
23. c  
24. b  
25. c

15. b  
16. c  
17. b  
18. a  
19. b  
20. b  
21. a

8. d  
9. b  
10. c  
11. d  
12. d  
13. d  
14. d

1. d  
2. b  
3. c  
4. b  
5. c  
6. a  
7. a

**Wendy says:**  
 "A big saver is a rain barrel placed under a downspout. One good rain is all it takes to fill it to the brim."

# Water Quality

## Water Quality in the Tay

**Wendy says:**

"Who doesn't like a hot shower? Challenge yourself and your family to take showers that take less than five minutes! Set a timer. You could save up to 4,000 litres a month. Not to mention saving up to 50% in the energy cost of heating the water."

**Wendy says:**

"The Tay Watershed continues to be one of the cleanest in Eastern Ontario, with overall water quality improving in the last few years, according to recent results from sampling sites throughout the Watershed that are actively monitored by the Rideau Valley Conservation Authority."

Your water habits affect both local water quality and quantity. Since the quantity of water can greatly affect the quality of that water, it is important to protect both. The Town of Perth draws its drinking water from the Tay River on the upstream side of town. When people look at the river they see lots of water flowing by, and there is lots of water flowing by. But water is a system and we must consider both the water flowing in and the water flowing out. The problem in Perth is not the water coming in from the Tay River, but the water that the town discards. The quality concerns are about the two types of water outflow from the town: the wastewater coming from the sewage treatment system and the pollutants carried by rain and snowmelt into the sewer system or the river. Surprisingly, it is the runoff that is the more serious problem. Why?

In Perth, wastewater from homes, schools and businesses flows to the sewage treatment operation near the Perth Marsh, where it is cleansed through a series of three settling ponds. By the time the water leaves the ponds—about three months later—it is actually cleaner than the street runoff!

As more people in town use more water, capacities at both ends of the water system—intake and output—can become stressed. When the "output" sewage capacity is stretched either by human usage or natural causes such as severe weather events, there is potential for untreated waste water escaping into surface water or groundwater and eventually into the river.

This is why protecting both water quality and water quantity are so important. Most people understand the need to protect water quality from pollutants, but it is equally true that the less water we use, the less water we abuse.

Everyone has a role to play in protecting water quality and quantity. Read over the suggestions in this tabloid. If you make just one change in your water habits, you will make a difference in the water legacy you leave.

## Water Quality in the Tay: What the Bugs Tell Us—and More

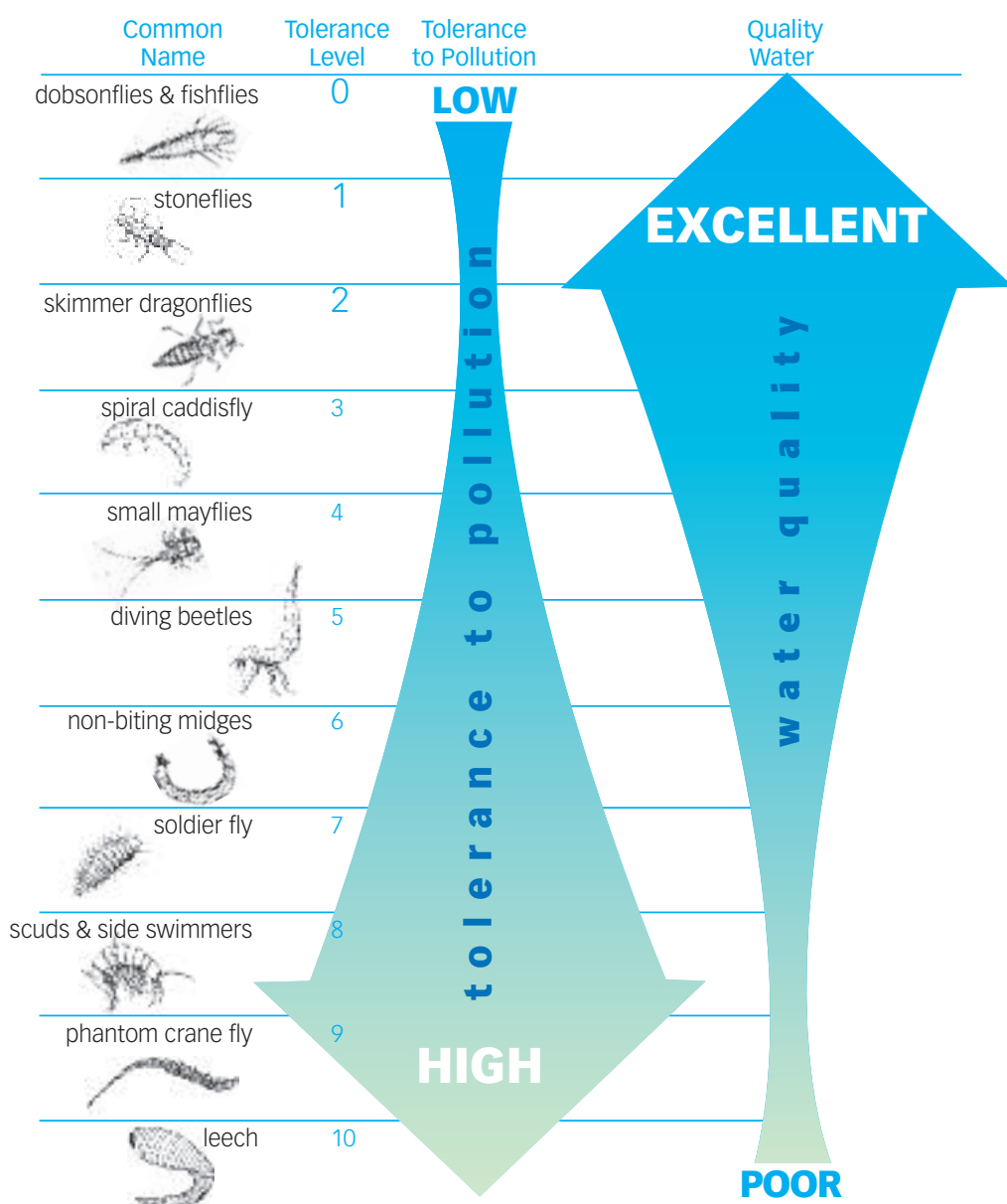
Bugs, or more specifically, Benthic Invertebrates, are great bioindicators of water quality. Some can tolerate pollution; others disappear as pollution increases. The types and numbers of stream-bottom invertebrates in a certain section and at a given time can help biologists identify changes in stream water conditions.

Chemical and bacterial analyses are also part of the RVCA's monitoring program. One major indicator of water health is the amount of total phosphorous. High levels of phosphorous contribute to excessive aquatic plant growth, which leads to oxygen depletion in waterways and lakes, making them age quickly.

The results of these analyses mean we can swim in our lakes and there are thriving fish populations. However, there are problem areas that need further improvement. Some of the Tay's tributary streams and creeks, such as Grants, Rudsdale and Jebbs, have consistently lower water quality than the rest of the Watershed. Likewise, results from the three sampling sites in Perth show lower water quality compared with other sites on the main river. The cause of these problem spots is a combination of natural factors (weather or low water flow) and human factors (contaminated runoff, faulty septic systems).

So, while our water is in pretty good shape, everyone in the watershed can contribute to improving water quality.

**Wendy says:**  
 "You can do your own bug sampling. Use this chart; go lift the rocks along a shoreline and see who lives there!"



# and Water Quantity:

## Protecting What We've Got



### Wendy says:

"You can learn more

about Lake Management Planning by going to: [www.livinglakeplans.com](http://www.livinglakeplans.com) and [www.tayriver.org](http://www.tayriver.org). And, if you want some assistance, contact the Lake Planning/Shoreline Stewardship Technician at [postmaster@rvca.ca](mailto:postmaster@rvca.ca)."

### Wendy says:

"Listen up. This could be the single most important water decision you ever make.

What's the single biggest water user in your home? Yes, it's your toilet. Install a water-efficient toilet and save water AND money."

### Wendy says:

"Lawns and gardens can use up to 50% of a household's annual water consumption. An easy way to cut back is to mulch your garden with grass clippings, composted wood chips, or shredded bark to conserve moisture in the soil. And bonus—mulches keep out most of the weeds."

### Wendy says:

Repair those leaky pipes, toilets and taps around your house. It's cheap, it's simple and it can save over 500 litres of water a week.

## Communities Drive Healthy Lake Plans

The 46 lakes in the Tay watershed are reservoirs of fresh, cool water that feed the Tay River. The health of these lakes largely contributes to the quality of water in the main Tay. Over the past years, volunteer lake groups have banded together to make sure that there are long-term plans in place to keep their lakes healthy. Currently within the Tay Watershed, Bobs and Crow, Otty, Christie, Pike and other lake associations including Long, Farren and Elbow are in one stage or another of the lake planning process as a way to improve their lakes.

From 2005 to 2008, these groups got some help from the Lake Management Planning Program, which provided information and guidance to lake groups interested in developing lake plans. The program's activities were guided by a collaborative that included the Friends of the Tay Watershed, Community Stewardship Council of Lanark County, Mississippi Valley Conservation, Otty Lake Association, Rideau Valley Conservation Authority, and Tay Valley Township.

The Lake Management Planning Program provided:

- Information packages on the benefits and process of lake planning;

- Workshops aimed at sharing information about lake issues;
- Support and assistance in the development of State of the Lake Reports and Lake Plans; and
- A comprehensive website offering helpful lake planning resources and templates.

Although the funding for this successful program has ended, the partners remain committed to providing support for the development of lake plans and protecting the health of local lakes and the Watershed.

Get out and see just how clean the Tay is! You can enjoy a paddle on the pristine upper Tay by accessing the river at the bridges on the Menzies Munro Side Road and the Bathurst 2nd Concession or the boat launch on the Hanna Side Road above Christie Lake.

When you get back, think about this: The lake groups are doing their part, what about a plan for the river? If you are interested in being part of a group to work on improving the quality of the Tay in Perth and elsewhere, drop the Friends an email at [info@tayriver.org](mailto:info@tayriver.org).

## What Is a Water Budget?

Can you imagine taking care of your family without knowing your budget? Not knowing how much money is coming in each month, how much you need to spend on various essentials, and how much you can reasonably save for a rainy day? Not knowing would be an invitation to disaster because if you don't know how much money you have, how will you know when you've spent too much?

The same holds true for taking care of our local water resources. How much water do we get from rain and snow? Where is the water? How does it travel through the Watershed? How much is stored underground and where? How much evaporates and is used by plants? How much water is now being taken from our rivers, streams, lakes and groundwater reserves? What are the trends? A water budget is one of the main tools needed to effectively manage our water resources into the future. It's just

like your household budget. The amount coming in (your income) must equal the total of everything going out (your expenses) plus any change in storage (your savings). By analyzing all this information, water specialists try to understand the "big picture" of our water supplies. More work has to be done to understand local important details, such as how each municipal drinking water source gets replenished and how long it takes, seasonal shortages and normal in-stream ecological needs for water, how a changing climate may affect water supplies, how much we need for future drinking needs, and how much can be used for other purposes.

The Mississippi-Rideau Source Protection Region has determined water budgets for our watersheds and these will be used to produce plans for better water management.

5

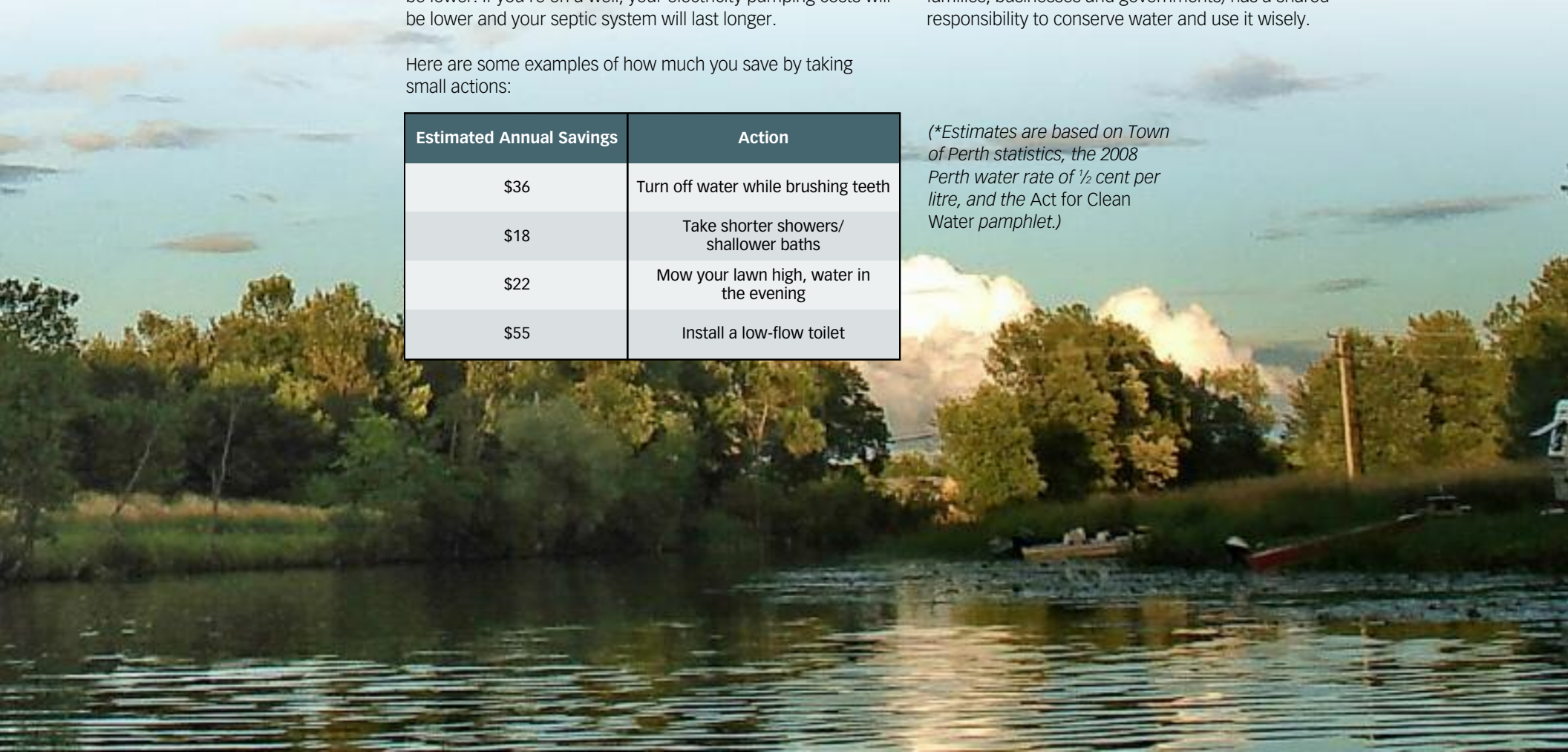
## Do You Want to Save Money? ... Conserve Water!

Saving money can be hard to do. It means paying attention to all sorts of little things, and counting up the pennies and the loonies. But conserving water is one of the easiest ways to save money. And you'll save whether you are on Perth municipal water or on a well. In Perth, your water and sewer charges will be lower. If you're on a well, your electricity pumping costs will be lower and your septic system will last longer.

Here are some examples of how much you save by taking small actions:

Estimated Annual Savings	Action
\$36	Turn off water while brushing teeth
\$18	Take shorter showers/shallower baths
\$22	Mow your lawn high, water in the evening
\$55	Install a low-flow toilet

(\*Estimates are based on Town of Perth statistics, the 2008 Perth water rate of ½ cent per litre, and the Act for Clean Water pamphlet.)



# The Tay &



## What Does the *Clean Water Act* Change?

Sometimes it takes a tragedy to bring about much needed change. The water crisis in Walkerton in 2000, with the deaths of six citizens and lifetime health problems for hundreds of others, opened our eyes to the importance of safe drinking water. That's why the *Clean Water Act* was introduced in 2006.

The CWA focuses on prevention, protecting drinking water sources from pollution and depletion. Because water often crosses municipal boundaries—the CWA works on a watershed basis—a simple and natural framework for water protection. (The Friends of the Tay Watershed also works on a watershed basis and that's why this volunteer group and the CWA work together so well.)

The CWA applies primarily to municipal drinking water supplies, not private well systems. In the Tay Watershed, that means the Act applies directly only to the Town of Perth, its municipal water treatment system, and the source of the water supplying that system.

The Act sets out a new process for source protection planning that requires collaboration among local municipalities, conservation authorities, provincial ministries, communities and stakeholders. Every community is involved in developing a local plan to protect its drinking water source. Local source water protection committees are helping to develop and implement plans that are fair, reasonable, cost effective, and successful.

The source protection process includes identifying drinking water threats, assessing the risks from those threats, preventing threats, and monitoring remaining threats. Examples of possible threats are waste disposal sites, sewage collection systems, the handling and storage of fuel, and commercial fertilizer, pesticides, or road salt.

The Tay Watershed is part of the Mississippi-Rideau Source Protection Region. You can learn more about your source protection region at [www.mrsourcewater.ca](http://www.mrsourcewater.ca).

## What Does the *Clean Water Act* Mean for Perth?

As you recall from page 2, the water intake for the Town of Perth is a pipe into the river behind the water treatment plant on Sunset Boulevard. The area around a drinking water intake is a vulnerable area and the CWA provides the means to protect the water in and around this area.

The area of land and water immediately surrounding a water intake is called an Intake Protection Zone (IPZ). Three IPZs have been established for each municipal water intake. They require different levels of protection based on different levels of vulnerability.

For Perth, IPZ 1 is a 200-metre semi-circle upstream from the intake in the Tay River, and includes the surrounding land within that semi-circle. Certain activities, such as waste disposal, will be prohibited within this area.

IPZ 2 is based on a minimum two-hour travel time for a substance in the water to reach the intake. The travel time is based on the minimum response time for the water treatment plant to respond to an emergency, such as a spill into the river.

IPZ 3 includes the remaining watershed area upstream and is also called the Total Water Contributing Area. This means the whole Tay Watershed is involved in protecting Perth's water intake.

Technical assessments provide maps and information about the IPZs, identify any issues and threats, and contribute to the development and implementation of source water protection plans for Perth's municipal water supply.



**Wendy says:**

*"Do you want a beautiful green lawn that resists drought? Keep your grass at a height of over 6 cm and it'll hold the water in the soil better because it shades the roots and encourages them to grow deeper. Water only when you need to—either early or late in the day. And don't water for a week after a good rain."*

6

# the Town of Perth

## Stormy Weather

Stormy weather leads to stormwater and that's a problem in Perth and most of the rest of Ontario. Let's wade into a discussion about stormwater.

We've all seen it—water gushing and rushing along the street and finally disappearing down a storm sewer. In some parts of Perth, the stormwater mixes with sewage water and heads for the sewage lagoon; in other parts, stormwater is directed as a separate stream into the Tay River. Both outcomes can be problematic!

When storm water and sewage water are mixed, they get the same level of treatment at the lagoon. Severe precipitation events can cause an overloading of the sewage system; in the past, this has resulted in unwelcome outflows of untreated sewage water.

Stormwater that is kept separate goes directly into the Tay River at different locations. This water receives no treatment at all, and so carries with it pollutants such as pet and pigeon droppings, oil slicks from vehicles, and salty runoff from streets and driveways.



### Wendy says:

"Runoff from streets is probably the worst source of water contamination. It can contain salt, vehicle fluids, pet waste, pesticides, detergents, paints, old medicines, and many other things that poison the fish, frogs and birds that live in or from our river. These pollutants can get in the River either indirectly through the sewer system or directly into the River. All contaminants should be disposed of properly at Household Hazardous Waste depots."

The solution is to mimic the natural way water moves:

- Slow it down;
- Spread it out;
- Soak it in.

Every homeowner can help by following these three simple rules. Take a walk around your property and look for places where you can slow down stormwater, then spread it out and soak it in. Try to avoid large areas of hard surfacing: instead of a concrete walk, try paving stones interspersed with ground cover. Make sure downspouts are directed into a rain barrel or at least onto a surface where the water can soak in. We need to manage stormwater where it falls so that it can replenish our valuable groundwater aquifers and not be a problem for the river.

As we go to press, the Town of Perth plans to install measures to deal with storm runoff as part of the Wilson Street Improvement project. While this action will only bring partial treatment to some of the Town's storm water, it is a good, hopeful start.

## Protecting Drinking Water— From Source to Tap

In the past, emphasis was placed on treating water to ensure it was safe to drink. Today, the emphasis is on prevention—protecting drinking water from becoming contaminated at its

source. This is the first step in a multi-barrier approach and an important part of ensuring not only our personal health but the health of our environment and economy.

### Source to Tap Protection of Drinking Water includes Five Barriers:

#### Source Protection

Keeping the raw water as clean as possible to lower the risk that contaminants will get through or overwhelm the treatment system, and reduce the amount of chemical treatment needed.

#### Water Treatment

Removing or inactivating contaminants - filtration may be followed by chlorination, ozonation, or ultraviolet radiation.

#### Distribution

Ensuring the distribution system can deliver safe water.

#### Monitoring/Testing

Detecting contaminants beyond acceptable limits and correcting.

#### Emergency Response

Specific responses to emergencies or when other processes fail.

Each barrier offers protection, but no single one is perfect. The multi-barrier approach uses the balanced presence of all five types of barriers.

## Perth Facts

- The Town of Perth draws all of its drinking water from the Tay River.
- Perth uses more than 4,000 cubic meters of water every day or 3,000 litres per minute.
- Water is fed to approximately 2,300 customers in Perth through a 42-km network of cast iron, ductile iron, and PVC pipes.
- Perth's water quality is constantly monitored and consistently surpasses the standards set by the Ministry of the Environment.
- Average monthly household water consumption in Perth is 18,000 litres. The average household bill is \$75 per month and includes a delivery charge and wastewater treatment costs.
- The cost of bottled water can be more than \$2/litre. The cost of Perth tap water is about ½ cent/litre. In other words, you could drink more than 400 litres of tap water for the same price as one bottle of water!
- Wastewater is treated in a three-cell lagoon built in 1961, with an overall surface area of 80 acres. It takes about 90 days for the wastewater to work its way through the three cells.
- The lagoon handles an average of 6 million litres of wastewater a day.
- Every year, a section of the Town's sewer network is video-inspected to identify any rehabilitation work required and eliminate water infiltration.

Source: [www.town.perth.on.ca](http://www.town.perth.on.ca)



**Wendy says:**

*"Okay, you're about to run a nice hot bath for yourself. Don't just let the water run until it gets to the right temperature for you. Plug the bathtub before you turn it on. You can adjust the temperature as the tub fills up."*

**Wendy says:**

*"Whether you wash dishes by hand or in a dishwasher, think about how much water you're using. Use a water-efficient dishwasher and only do full loads. When washing by hand, use a half-full second sink for rinsing, rather than running water."*

**Wendy says:**

*"Don't just check for energy efficiency when you're buying new clothes or dishwashers. Check for water efficiency too. Front-loading washing machines can save up to 80 litres of water per load."*

**Wendy says:**

*"Check your well surround at least once a year. Walk a 30-metre radius around it."*

**Wendy says:**

*"Test your well water at least twice a year—spring and fall."*

**8**

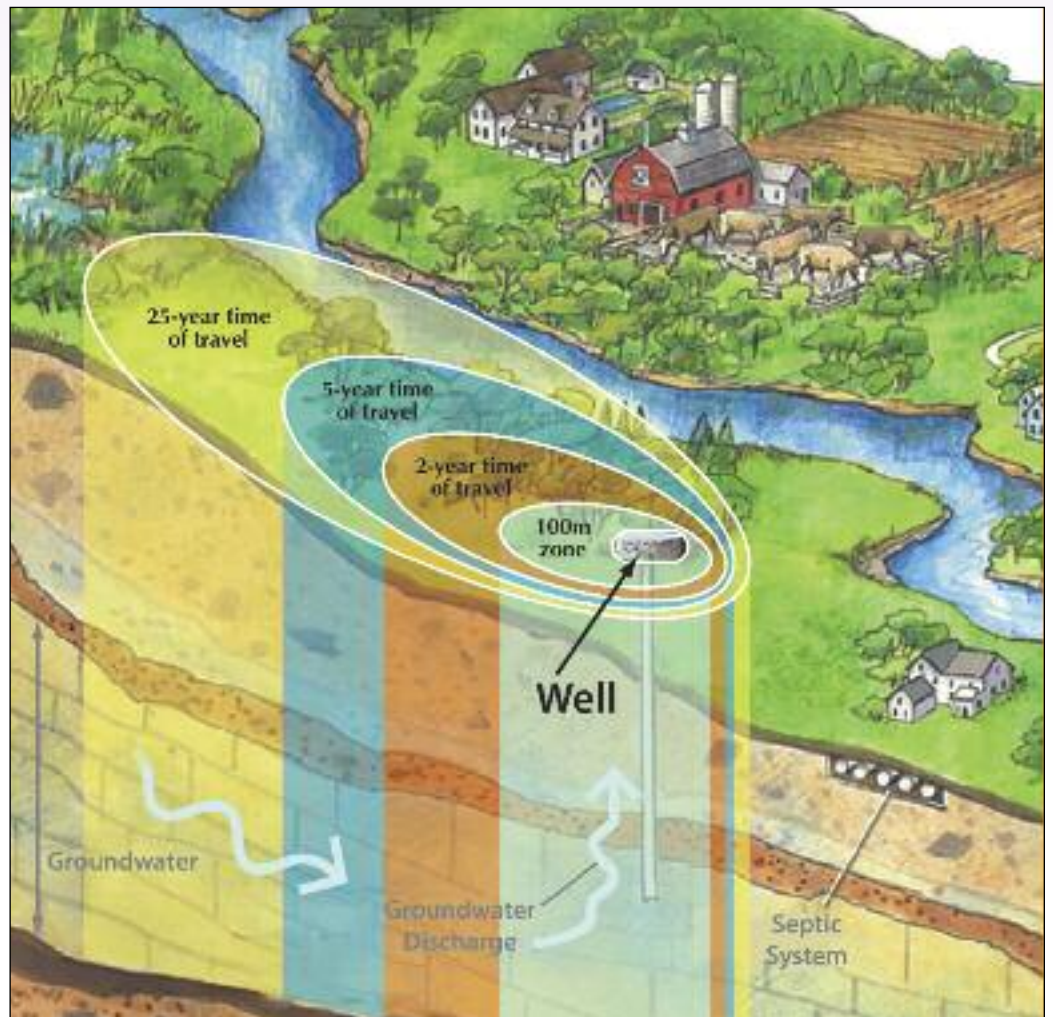
# Groundwater and Your Well

We all depend on the water under our feet. And, although we can't see it, groundwater is as much a part of the Tay Watershed as all its lakes. All the water we use in the Tay Watershed comes from either surface or underground sources. Rain and snowmelt fall on the ridges and high areas of the upper Tay Watershed near Carnahan Lake, and seep through furrows and cracks in the soil and rock to reach underground aquifers—the cracks and crannies between layers of rock that store water under the ground. In the Tay system, some groundwater flows out from the aquifers to replenish the lakes, the marshes and the Tay River itself.

But rain and snowmelt can also carry contaminants into groundwater. Whether you live on the shores of Bobs Lake or right in the middle of Perth, whatever you put on or in the ground can make its way into groundwater and wells—drinking water for more than half the population in the Watershed—and eventually into the lakes, the marshes, and the river. Even if you live some distance from a shoreline, your actions can affect our common groundwater, and eventually the lakes and rivers. And once certain contaminants get into groundwater, it can be decades, even thousands of years before that groundwater can be used again. Contaminated groundwater can also make its way to surface water and contaminate it, too.

Keep your groundwater clean and safe by taking a walk at least once a year around a 30-metre radius of your well(s) and think about what might be leaking into the groundwater: vehicle fuels, septic effluent, lawnmower gas, boat gas, paints and solvents, pesticides, fertilizers, household cleaners, pet waste, manure, road salt, etc. Make sure your well water is tested regularly and that the well is capped and sealed properly so contaminants can't get into the groundwater via your well.

You can learn how to protect your own well(s) and our common groundwater—and possibly get some grants to help—by contacting local organizations that are knowledgeable about these issues. The Rideau Valley Conservation Authority monitors groundwater in the Watershed to observe trends and establish guidelines for groundwater use, and it provides some grants for protecting groundwater through its Rural Clean Water Program. The Rideau Environmental Action League offers the Well Aware education and home visit program. Mississippi Valley Conservation led the region's groundwater study. As well, the Source Water Protection Committee for the Mississippi-Rideau is producing information on groundwater for the region that will help inform groundwater protection.



## I'm on a Private Well The Clean Water Act and Private Wells

The *Clean Water Act* applies primarily to municipal residential drinking water. However, the Act also provides some benefits for the private-well owner. For example, the technical assessments, completed as part of the process, are providing more information about water and watersheds than was ever known before. This information about water quality and water quantity, and the preparation of water budgets, helps all water users use water in an informed and wise way.

For example, knowledge and understanding of the thinness of the soil overburden in the Tay Watershed, and the resulting high risk to groundwater contamination, can help groundwater users take greater precautions.

People who draw their drinking water from a private well are wholly responsible for maintaining that well and testing the water regularly to ensure it is safe to drink.





# Wonderful Wetlands



## Wendy says:

*"I don't like being wasted but I'm okay with recycling. Recycle everything you can. Recycling paper products, glass, metals and plastics reduces the amount of water we use in manufacturing. Recycled paper uses 58% less water than making water from wood pulp. Think of all the trees you're saving, too!"*

## Wendy says:

*"Keep a bag of bio-degradable cat litter on hand to sop up any spills from filling gas tanks for cars, boats, tractors, and lawnmowers."*

## Wendy says:

*"It's easy to feel good and clean with non-toxic cleaning products, detergents, and environmentally friendly soaps and shampoos. Keep toxic cleansers out of the water cycle."*

## Nature's Water Filter

Do you filter your drinking water at home? Lots of people do to take out unwanted metals and minerals, or additives such as chlorine. Wetlands are nature's filters and they cleanse water better than any man-made filter. Water passes more slowly through a wetland, allowing time for most of the sediment to settle out and the thick plant life to filter and absorb large amounts of pollutants from the water. Wetlands allow water to filter down into underground aquifers, cleaning and restoring water supplies for the towns and families that draw their drinking water from wells.

Swamps, marshes, and bogs—they're all types of wetlands found in the Tay Watershed, with swamps being the most common by far. In the Tay Watershed, four wetland areas have been identified as having special features and designated as "ANSIs" — Areas of Natural or Scientific Interest. The four ANSIs in the Tay Watershed are Blueberry Marsh, Tay Marsh, Maberly Bog, and Christie Lake Marsh. These special types of landscapes provide all the right ingredients for a huge number and assortment of plants and animals: heat, light, shelter, water,

food and nest materials. Scientists tell us that 90% of the plants and animals in a lake or river need wetlands or flood plains at some critical point in their life cycle.

Wetlands and children are natural friends. Poking around in the mud, observing turtles or evidence of beaver activity, sighting birds and their nests, or listening to frogs will bring a wetland adventure to life. And, if free recreational opportunities and water purification aren't enough, we know too that wetlands reduce flooding in communities farther down the Watershed by storing water during floods or high rain and snowmelt periods. The stored water is released slowly back into the surface streams or down into the aquifers throughout the summer and fall.

Flood reduction, wildlife habitat, recreation opportunities, water cleaning service, water recharge to aquifers ... the wetlands in the Tay Watershed provide major, irreplaceable, cost-effective services to all.



Photo: Simon Lunn



Photo: Simon Lunn

## Community Foundation Sets Up Environmental Trust

Another active organization in the Tay Watershed, The Perth and District Community Foundation has established an Environmental Trust Fund, with the support of the McConnell Foundation, OMYA Canada, and local residents. The focus of the Fund is on collective action to provide a legacy for future generations—a sustainable, healthy environment in which to live and raise families. Through the development of broad-based partnerships, the Fund's mandate is to:

1. Help sustain and enhance the local environment through direct involvement and funding support;
2. Increase awareness of environmental issues—the challenges and opportunities;
3. Strengthen the capacity of local environmental organizations through collaboration and funding support.

The Environmental Fund is a logical extension of the Foundation's work, which is to enrich the quality of life throughout the western half of Lanark County. As a community-based, registered charitable foundation, it encourages philanthropy and provides a focus for those who want to make a lasting contribution to their community.

The Environmental Trust Fund currently provides grants for local environmental initiatives, based on income earned on the invested assets. With continued philanthropic support from members of this community, the Fund will grow and the increased earnings generated will expand the Fund's capacity to support environmental projects in perpetuity.

For further information, please visit [www.pdcf.ca](http://www.pdcf.ca).





**Wendy says:**

"Please don't infect pristine waters. You may

be carrying an alien invader in your bait bucket, on your boat, on your scuba gear or other equipment. Take the time to stop and clean before going into another water body. It may literally mean life or death for many native species."

# Enemy Aliens








## Invasive Species in the Tay Watershed

Enemy aliens are attacking our water! Sound like a science fiction movie? You may recognize some starring evil characters from this list: Purple loosestrife, zebra mussel, spiny water flea, European frog-bit, rusty crayfish, dog-strangling vine and Eurasian milfoil.

They're all invasive species that have arrived in the Tay Watershed to wreak havoc on our ecosystem. They displace native species and, with no natural predators, start taking over. The United Nations says invasive species are the second greatest threat to biodiversity, second only to habitat destruction.

Where did these plants and creatures come from? How did they get here? And what effect are they having on native species and our water supply?

Foreign species can get into our watershed in lots of ways: ballast water from boats, unwashed boats moved from an infected water body, live bait released into the water, and live food fish trades, to name a few. They have no natural predators so they can run rampant through our ecological system and destroy native species. Here are some details about each of these foreign species and what you can do about them.

Name of species	Appearance	Where found	Effect on water	Effect on native species	How to control
<b>Purple loosestrife</b>  <small>Permission of Michigan Sea Grant Archives www.miseagrant.umich.edu</small>	Pink-purple flowers clustered on 2-metre-high long spike	Fields, gardens, everywhere	Clogs irrigation canals; blocks water intakes	Uses most of available nutrients; creates monoculture as it chokes out native plants	Two specialized leaf-eating beetles and two weevils are being used for control. Do not allow in your garden. Yank plants from your shoreline
<b>Zebra mussel</b>  <small>Permission of Michigan Sea Grant Archives www.miseagrant.umich.edu</small>	Tiny 3 cm brown-striped shellfish; produces 1 million eggs per season	All hard surfaces in water: rock, metal, boat hulls, even clams	Filters 1 litre of water a day but absorbs contaminants in tissues; contributes to toxic blue-green algae; colonizes water intake pumps, reducing or stopping water flow	Contaminants in zebra mussels accumulate in ducks or loons that eat them, affects survival/reproduction; colonizes native clams so they can't breathe or feed; kills entire species of freshwater mussels; light-sensitive fish forced to move to darker parts of water body; destroys fish-spawning habitats	Prevention only way to control spread. Boaters must inspect boats, drain water, empty it on land, not in water, and wash equipment and boat with hot tap water or high pressure water, dry for 1 day before traveling to another water body
<b>Eurasian milfoil</b>  <small>Permission of Michigan Sea Grant Archives www.miseagrant.umich.edu</small>	Submerged, rooted plant with long, feathery narrow leaves with 12-21 segments along each side of leaflets; thick and matted at surface	Thrives in disturbed areas or where humans have altered environment	Prevents sunlight to plants below surface; thick surface mats add phosphorous and nitrogen to water and alter pH and temperature	Becomes monoculture as it chokes out aquatic invertebrates that serve as food for fish, fish can starve; stagnant water created can provide breeding ground for mosquitoes; decrease oxygen, degrading habitat for fish and waterfowl. They have been known to hybridize with our native Common water milfoil. Prevention only way to	Control spread. <i>See zebra mussel</i>
<b>European Frog-bit</b>  <small>Permission of Michigan Sea Grant Archives www.miseagrant.umich.edu</small>	Single white flower 1.5 cm in diameter with 3 rounded petals and yellow centre, undersides of leaves dark red, looks like small water lily	Quiet bays, wetlands, backwaters, near purple loosestrife or cattail stands	Interlocking plants form impenetrable mat near surface. <i>See milfoil</i>	Dominant plant in wetlands; prevents sunlight from getting to submersed plants; reduces plant biodiversity; thick mats impede movement of diving ducks and large fish	Prevention. <i>See zebra mussel</i>
<b>Spiny water flea</b>  <small>Permission of Michigan Sea Grant Archives www.miseagrant.umich.edu</small>	About 1 to 1.5 cm long with long red-striped tail spine with barb-like projections and one large black eye spot	More common in deep cool lakes, but also found in warmer lakes	Has caused 20% reduction in lake biodiversity; indirectly causes increase in algae blooms in lakes	Feeds on small animal life called zooplankton — this limits food available for native fish and concentrates mercury higher up in food chain; eats up to 3 times as much as native zooplankton; small fish can't eat them because of their long barbed tails so they starve	Perch may be able to control spread, otherwise prevention only way to control. <i>See zebra mussel</i>
<b>Dog-strangling vine</b> 	2 m high, dark, twining shiny-green oval leaves 5-10 cm long with 5-lobed purple flowers; pods spread seeds far and wide; Easiest to identify in late summer when plants turn bright yellow	Ravines, hillsides, waste areas, fence lines, hedges, beside streams, shorelines; thrives in sun, shade and all kinds of soils	Can choke off woodlands and marshes	Forms dense patches that destroy all other ground vegetation; monarch butterfly mistake it for milkweed, eggs die if laid on dog-strangling vines; this also affects birds and wildlife around area; kills plants around it by changing acidity of soil	Dig out if first year. Place the seeds (or whole plants) in a heavy-duty plastic garbage bag, add water to soak well, close the bag and leave it in the sun for a few months, then dispose of in compost piles (or garbage). Scientists hope a Russian beetle that eats the vine can keep it in check
<b>Rusty crayfish</b>  <small>Jeff Gunderson Michigan Sea Grant</small>	Brown body and greenish-rust-coloured claws with black bands near the tip, can grow up to 10 cm long, look similar to native crayfish	Lakes, rivers, ponds, streams with enough rock, log and debris cover; prefers bottoms of clay, silt and gravel	Reduces wetlands by destroying aquatic plants which destroys aquatic invertebrates and juvenile fish that depend on habitat — the equivalent of clear-cutting forests	Consumes twice as much food as native species, competes with juvenile fish for food; chases native crayfish out of best hiding locations so more at risk of being eaten by birds and fish	Prevent spread to other water bodies; must be used in same water body where caught; dump any unused crayfish bait in the garbage

# My Tay



Back in the simpler Sixties, my family had a cottage across from Rideau Ferry. By the time I was nine, I was allowed to go off exploring in my little Springbok boat and to take a tour up the Tay – solo – for a sleepover in Perth. Through Beveridges Locks the lockmasters would salute and fuss, making me feel like the captain of a yacht. Then I'd putt-putt up the Tay to the Basin, to be met by my cousin Sharon, sitting on her front steps – now the site of the Crystal Palace!

*Annie Dalton*

My Tay is an all-seasons Tay. In spring, as the ice melts, returning geese congregate briefly on the floodplain behind our house. Their flying Vs and high altitude honking herald the beginning of spring. The new season brings a profusion of wildflowers blooming to announce the leafing of the trees. In summer, the comforting drone of flies and bees attracts insect-seeking birds that swoop over the water collecting their evening meal. Fall brings the return of the geese. We share their excitement as they prepare for the long flight south. When they leave, all is quiet as the river once more freezes and the land is blanketed with snow – resting before repeating the show.

*Carol Dillon*

A couple of years ago, a friend and I drove back to my place on the Tay after a few days fly-fishing on the Bruce Peninsula.

There, we had been treated to some of the most spectacular waterscapes in the world. In the late spring evening, as I fired up the grill on my deck overlooking the Tay, I looked upriver, took a deep breath and a spontaneous smile crept across my face. My friend said, "It's sure clear you're home and love this river." He was too right.

*Chris Stone*

My Tay supports many personalities: hungry herons, spawning suckers, kayakers, canoeists, a bagpiper, the Perth Fire Department upgrading their skills, an amazing Tom Sawyer (Lee) on his homemade raft, humungous turtles in search of a soft spot for their eggs, and the damn beaver that has an annual feast on my willow tree. My Tay is a teeming life system that never bores.

*Marilyn Devolin*

Go to the banks of the Tay and close your eyes. Imagine what our ancestors might have seen long ago. Visualize the course of the Tay with its rich beauty, its pools and rapids that convinced our ancestors to put down roots. Imagine the flotillas of logs as pioneers floated their timber to market. Can you see and hear the mills that thrum with the power of the wheel turned by the Tay waters? Now open your eyes and see the Tay as if for the first time. Paddle the Tay and you will get a visceral sense of our ancestors' experience for so much of it remains unspoiled and open to the thrill of discovery.

*Colin Stephenson*

These photos are from our dock where Pike Lake enters Grant's Creek. We are so fortunate to have an ice-free area all year! We enjoy seeing turtles sunning on logs on the creek, having our toes tickled by minnows, and watching loons toting their newborns on their backs in the summer. Our extended family and grandchildren enjoy each summer, and the water appeals to them immensely. Some memories from our spot on the Tay are of Auntie Erin and three-year-old Hanna canoeing, the twins swimming from the dock, Hanna and her Mom tubing, Michael and Grandma picking zucchinis from the garden and Michael running to the house with his harvest. We are blessed!

*Caroline Wilson*



I think that I live alone. But then I remember all the other creatures who live here with me and whose patterns, year after year, have become more familiar than my own: the doe who gives birth every spring in the back yard, the Cardinal couple that bring their demanding young to my feeder, the Osprey pair that chivvies their wobbly, terrified, bawling chick out of the nest and into the air on a particular day of thermals, the murder of crows that watch over me and my scraps from a tall, old pine, the bury of rabbits that camp just close enough, but not too close, to the neighbour's chained dog to be safe. And, the chickadees, whose happy chirps and smiling faces keep me smiling through the dead of winter.

*Susan Brandum*

In 1959, having purchased a river property on Harvey Street in Perth, we had a bungalow built, and in 1974, added a family room with two picture windows and a beautiful view of the dam which was at the centre of our lot. Growing up, our children, along with some neighbours' kids, would play in the river, walking under the flow of the dam. In the 1970s, the old wooden dam let go and had to be rebuilt in a hurry. A cofferdam was built at the narrows and the dam area completely drained. When it was well dried, I walked the bottom of the riverbed and found the remains of two dams. When writing my book, I had seen a Perth map of 1863 that showed two different mills at the site – now the mystery was solved. The River Tay plays an important part in our lives and I can claim that I have the only dam lot in Perth.

*Gus Quattrocchi*

My father, Harold Hokanson, is a member of the Friends of the Tay. We live in Pennsylvania and take a yearly fishing trip to Perth. He has been fishing the Tay River since the 1960s. All of the fish in the photographs were released. The Tay River is a special part of our lives.

*Eric Hokanson*



# Local Resources

## For Better Living in the Tay Watershed

### Municipalities

Six municipalities have responsibilities for the Tay Watershed. Contact your municipality with questions and concerns:

- Township of South Frontenac**  
www.township.southfrontenac.on.ca  
613-376-3027
- Central Frontenac Township**  
www.centralfrontenac.com  
613-279-2935
- Tay Valley Township**  
www.tayvalleytwp.ca  
613-267-5353 or 1-800-810-0161
- Town of Perth**  
www.perthcanada.com  
613-267-3311
- Township of Rideau Lakes**  
www.twprideaulakes.on.ca  
613-928-2251 or 1-800-928-2250
- Township of Drummond/  
North Elmsley**  
www.drummondnorthelmsley.com  
613-267-6500

### Tay Watershed

Learn About the Tay Watershed—History, Research Reports, Activities

- Friends of the Tay Watershed**  
www.tayriver.org  
613-264-0094
- Rideau Valley Conservation Authority**  
www.rvca.ca  
613-692-3571 or 1-800-267-3504
- Mississippi-Rideau Source Protection**  
www.mrsourcewater.ca

### Canoeing Opportunities

- Friends of the Tay**  
http://www.tayriver.org/canoeing.php
- Mississippi Valley Field Naturalists**  
www.mvfn.ca

### Walking & Hiking Opportunities

- Tay River Trail Tour**  
www.town.perth.on.ca
- Rideau Valley Conservation Authority Conservation Areas**  
www.rvca.ca  
613-692-3571 or 1-800-267-3504

### Waste Disposal & Hazardous Waste

Municipalities vary in their waste disposal, recycling and hazardous waste systems. Contact your local municipality to determine the best options and contact local non-profit organizations, which may take back or receive materials that the municipality does not.

### Well Water Testing

- Leeds, Grenville & Lanark District Health Unit**  
www.healthunit.org  
613-283-274
- Kingston, Frontenac and Lennox & Addington Health Unit**  
www.kflapublichealth.ca  
613-549-1232

### Residential Well Education

- Rideau Environmental Action League Well Aware**  
www.reaction.ca  
613-283-9500

### Septic System Information & Education

Municipalities vary in their approaches to regulating septic systems, providing information and conducting septic re-inspection programs. Many use the services of Health Units, some use the services of Conservation Authorities, and some deliver services themselves. Contact your municipality to determine who to talk to.

### Leeds, Grenville & Lanark District Health Unit

www.healthunit.org  
613-283-274

### Kingston, Frontenac and Lennox & Addington Health Unit

www.kflapublichealth.ca  
613-549-1232

### RVCA Ottawa Septic System Office/ Mississippi-Rideau Septic System Office

www.rvca.ca/osso  
613-692-3571 or 1-800-267-3504

### Well, Septic, Shoreline Restoration Funding Assistance

#### RVCA—Rural Clean Water Program

www.rvca.ca  
613-692-3571 or 1-800-267-3504

#### Canada-Ontario Environmental Farm Plan

www.omafra.gov.on.ca  
1-877-424-1300

### Private Land Reforestation Assistance and Butternut Recovery Program

#### RVCA Trees for Tomorrow Program

www.rvca.ca  
613-692-3571 or 1-800-267-3504

### Lake Management Planning

www.rvca.ca  
1-800-267-3504  
www.rvca.ca/programs/LMP\_Program/index.html  
www.foca.on.ca  
www.livinglakesplans.com

## Water

### A Legacy for Now and the Future

People often think of leaving a legacy for their children and grandchildren. This legacy might be a way of life, a prized possession, land, or money. But perhaps the best legacy that we can all leave is the gift of abundant, clean water. Water is the gift of life, for without it there can be no life. What we do today, in small ways and large, determines the legacy we leave for future generations. Make sure that you include "water" in your legacy.



The Tay Watershed Times was published by the Friends of the Tay Watershed and directed by the Tabloid Committee of Carol Dillon, Christopher Stone and Gillian Scobie. Photos provided by members of the Friends of the Tay Watershed, Lanark Camera Club and Simon Lunn. Editorial assistance by Susan Brandum. Design and layout by Laurie Dool, Rideau Valley Conservation Authority.

Production of this edition of The Tay Watershed Times was supported by:

