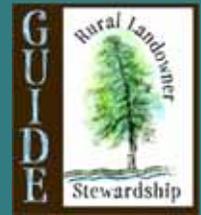


GEORGIAN BAY STEWARDSHIP GUIDE



Self-assessment for your environmental
performance as a property owner

The organizations involved in the development of this guide gratefully acknowledge that several of the worksheets were used, with permission, from the Canada-Ontario Environmental Farm Plan (EFP) Third Edition. Funding for the EFP is provided by Agriculture and Agri-Food Canada and the Ontario Ministry of Agriculture, Food and Rural Affairs under the Agricultural Policy Framework, a Federal-Provincial-Territorial initiative to make Canada's agricultural sector a world leader in environmentally sustainable production. Agricultural support for the EFP is led by the Ontario Farm Environmental Coalition, (Ontario Federation of Agriculture, Christian Farmers Federation of Ontario, Ontario Farm Animal Council, and Agricultural Groups Concerned About Resources and the Environment- AGCare). Local EFP program delivery is carried out by the Ontario Soil and Crop Improvement Association.

An Overview to Using the Guide

1. Familiarize yourself with the Guide (pgs. 7 – 11)
2. Work through the Worksheets that apply to you. Enter your rating in the boxes provided.
(NOTE: If a particular Worksheet does not apply to your situation or property, simply skip over it.)
3. Transfer the “?”, “1” and “2” ratings to the Action Plan sheets at the back of this Guide. The “?” rating identifies where information is needed, and the “1” and “2” ratings identify where certain situations or practices on your property could be improved.
4. Use your Action Plan to help you identify priorities and plan short and long term actions to address them.
5. The Glossary & Resources List (pgs. 187–214) give you a lot of information and sources for further assistance in working through your Action Plan.

Note: If you are on private services, all of the worksheets may apply to your property. If you are on municipal services, worksheets #4 and #5 are not applicable, however, the remaining worksheets should be helpful to you.

Enjoy! This Guide is intended to inform and assist you.

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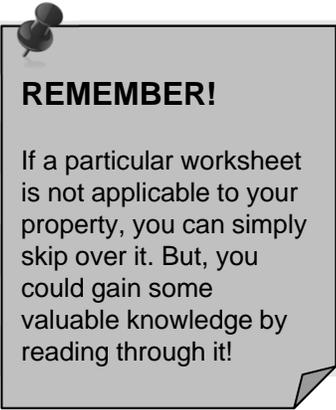
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REMEMBER!

If a particular worksheet is not applicable to your property, you can simply skip over it. But, you could gain some valuable knowledge by reading through it!

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The South-eastern Georgian Bay Stewardship Guide

Introduction

What is the purpose of this Guide?

The South-eastern Georgian Bay Stewardship Guide is a self-evaluation manual that will enable you to better protect and enhance the quality of our natural environment. The guide helps you to identify and implement best practices that will improve area water quality and the surrounding natural landscape.

By protecting our natural resources, you are contributing to our ability to provide a natural heritage legacy for future generations.

By protecting the natural environment, you are also protecting your investment as a property owner or resident in this landscape. You will notice that being a good land steward and by working with the environment will save you time, money and frustration.

This Guide is an important tool designed to help individuals make a difference. It provides a framework to allow you to evaluate your property and its management. Through completion of the worksheets, you will learn what you are doing right and where you can make improvements in protecting our natural environment.

This guide is for you!

If you're a property owner in the South-eastern Georgian Bay Community Stewardship Program Area, this guide has been designed specifically for your needs.

A Bit of Background

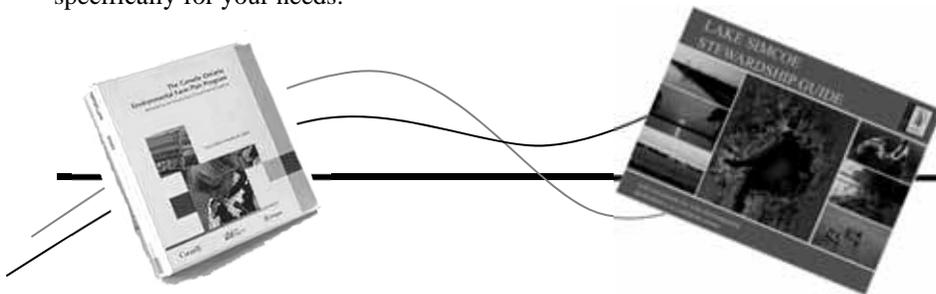
In 1991, farmers in Ontario recognized the need to identify and deal with environmental concerns relating to agricultural production. The Environmental Farm Plan (EFP) is the product of this farmer-driven initiative.

Based on the Environmental Farm Plan, the Rural Landowner Stewardship Guide was developed as a response to the awareness that the health of the rural landscape depends upon the actions of all rural property owners, and not of farmers alone.

The Stewardship Guide for the Lake Huron Coastline, published in 2006, was the first of the Non-farm Rural Landowner Stewardship Guides developed in Ontario. A revised version of the Lake Huron guide was developed for the Lake Simcoe watershed in 2009, which was updated in 2014 for re-use in Lake Simcoe and Georgian Bay stewardship program delivery.

Stewardship Guide programming was developed by and designed to be run by volunteers – people like you who live in your region. As a result, the program specifically addresses the challenges and benefits of life in your landscape.

No individual can single-handedly solve the issue of water quality, but collectively we can make a difference. Your actions may result in an overall improvement in the environment. By going through the worksheets in this guide and devising an **Action Plan**, you are taking an important step for your property, your neighbourhood, your community, the South-eastern Georgian Bay Community Stewardship Program area, and the environment in Ontario and Canada.



How to use the South-eastern Georgian Bay Stewardship Guide

This Guide will help you see your property and your actions in a new way. It asks you to think about your land, the buildings and structures on your land, and how your actions affect the larger landscape, from a new point of view. It asks you to rate how you affect the environment and water quality around your property. Finally, it asks you to consider new ways of using and maintaining your property in order to decrease risks to precious natural resources, and potentially to help save you time and money.

The Guide has three parts – an **Introduction to south-eastern Georgian Bay Ecology**, a **Workbook** and an **Action Plan**. These are explained in the following paragraphs. A **Glossary** at the back of the workbook provides a better understanding of terms used in the worksheets. A **Resources List** at the end of each worksheet and **Contact Information** at the back of the guide will help you seek out further, more detailed information on the topics covered in the workbook. Extension and resource experts are also available through many organizations and agencies in the watershed to provide further information and assistance in developing and implementing your Action Plan. Remember that you are not alone in this process.

The Workbook

The workbook includes worksheets to help you rate your activities on your property. Pick out the worksheets that apply to your property. Read the introductory page and then use the worksheets to rate the topics that apply to you in the right hand column. For topics that don't apply, write the letters 'NA' (not applicable) in the rating box. If you still don't know how you rate, mark the box with a question mark to remind yourself to find out the missing information.

For each topic, there are four descriptions of either natural conditions or current situations. Each has a number rating:

4 (Best)

3 (Good)

2 (Fair)

1 (Poor)

The Best (or 4) rating describes conditions that protect the environment and water quality or have the lowest potential for environmental damage, also known as "Best Management Practices". The Poor (or 1) rating describes conditions that have the highest potential to affect the environment negatively and require priority in an Action Plan.

Circle the condition that best describes your property. Mark the rating number for each topic in the matching box at the right hand side of the worksheet. The purpose of this rating system is not to tally the numbers in the right-hand column, but to identify areas for improvement on your property. A rating of 1 or 2 indicates what elements need improvement.

NOTES:

Bold, italic type indicates conditions that may violate provincial legislation. Federal laws or municipal bylaws may also apply. Contact your local municipal government office for more information.

REMEMBER!: If a particular worksheet does not apply to your property, you can simply skip over it. But, you could still gain some valuable knowledge by reading through it!

The Action Plan

When you have filled in all the worksheets that apply to your property, record the ratings for each topic in the **Action Plan** at the back of this Guide. Remember, some worksheet sections may not apply to your property.

Your 1 and 2 ratings indicate which areas of your property management need some changes to reduce the potential for environmental damage and water contamination.

Use the information in the Action Plan section to help identify your potential problems and decide what you can do to solve or control them. Remember, this is YOUR Action Plan. It must suit you and your property.

Often, the information in columns 3 and 4 can indicate how to improve your practices. As well, you can consult the **Resources List** at the end of each worksheet to find more information for developing your Action Plan.

A sample Action Plan is found on the next page.



Example of how to complete a worksheet question:

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION					
5 Minimizing erosion and/or compaction	Project area is subdivided into smaller projects and done sequentially.	Clear only the area necessary for the project.	Large areas are cleared but vegetation is restored.	Entire property is cleared at once.	2

- PART I -

Introduction to South-eastern Georgian Bay Ecology

Cultural & Physical Geography of South-eastern Georgian Bay

The Georgian Bay basin covers an area of approximately 15,000 square kilometers and comprises almost 25% of the total surface area of Lake Huron. Its water supply is sourced in part from Lake Superior via the North Channel and from several primary and secondary watersheds. Primary watersheds feeding into Georgian Bay include the Nottawasaga and Severn rivers located to the south and southeast, and the Muskoka, French, Magnetawan, Mississagi, and Spanish rivers entering along the eastern and northern shores of the bay. Georgian Bay connects with Lake Simcoe and inland lakes associated with the Kawarthas via the Severn River and the Trent canal system, with Lake Nipissing via the French river, and with many other well-known inland lakes via primary and secondary watershed systems. The cumulative land area that drains into Georgian Bay through primary watersheds is almost 59,000 square kilometers.

Population statistics vary for some of the Georgian Bay watershed areas and are further complicated in distinguishing between permanent and seasonal residents in many locations. Modest estimates suggest that there are close to 1 million permanent residents and an additional 250,000 seasonal residents living within the Georgian Bay watersheds and on the associated island communities. Most permanent residents are concentrated in the areas numerous urban and semi-urban communities and typically have access to municipally sourced water supplies generated through intakes and wells. The majority of rural and cottage residents in the area access their water supply from private or communal wells or through private water intakes. Population trend estimates suggest modest growth for many of the areas adjacent to Georgian Bay with the greatest development pressures being associated with the southern and southeastern shoreline communities.

This guide is designed to contribute to our understanding of how our day to day activities can impact the environment, and to assist in identifying areas where actions and improved awareness can contribute positively to ecosystem and personal health.



Great Lakes Water Quality Agreement

In 1972, Canada and the United States signed the first binational Great Lakes Water Quality Agreement which supported actions that focused primarily on reducing algae through limiting phosphorus inputs. The agreement was revised in 1978, expanding the overall goal to restoring and maintaining the chemical, physical and biological integrity of the waters associated with the Great Lakes Ecosystem Basin; initiating actions to reduce levels of toxic substances found within and entering the Great Lakes basins; and acknowledging an eco-system approach toward achieving this goal. In 1987, agreement amendments introduced the concept of Areas of Concern (AOC) which highlighted the most severely degraded locations within the Great Lakes and which supported several Remedial Action Plans and Programs to restore ecosystems within these priority areas. The Severn Sound Remedial Action Plan and Collingwood harbour represent two Georgian Bay success stories with both locations being de-listed as Areas of Concern. The Agreement was most recently amended in 2012 to better identify, manage and prevent current and emerging environmental issues affecting the Great Lakes.



10 Annexes of the Great Lakes Water Quality Agreement 2012

1. **Areas of Concern:** Re-affirms a commitment to restore beneficial uses of the ecosystem by cleaning up severely contaminated and degraded locations around the Great Lakes within the framework of Remedial Action Plans that help guide restoration and protection efforts.
2. **Lakewide Management:** Re-affirms a commitment to develop standardized, binational lakewide management plans for each Great Lake and further commits to assessing and subsequently developing a framework to address nearshore waters.
3. **Chemicals of Mutual Concern:** Targets the reduction or elimination of harmful chemicals in the Great Lakes through identification and monitoring strategies and processes, and incorporates proactive and adaptive actions to prevent their further release into the environment.
4. **Nutrients:** Seeks to reduce the occurrence of toxic and nuisance algal blooms that are a re-emerging threat to some nearshore ecosystems and more broadly to Lake Erie through study, research, phosphorus and other nutrient reduction planning, and through prioritized and localized actions to reduce nutrient loading.
5. **Discharges from Vessels:** Consolidates efforts to prevent or prohibit all harmful discharges from shipping activities occurring on the Great Lakes including discharge of sewage, garbage, oil, aquatic invasive species, and other harmful residues or polluting substances.
6. **Aquatic Invasive Species:** Seeks to prevent new aquatic invasive species introductions and to control the spread of existing aquatic invasive species through regulation, evaluation, monitoring, rapid response, education, and management strategies.
7. **Habitat and Species:** The provision of ecosystem services that prevents further loss of habitat and species contributing to Great Lakes water quality including the development and implementation of conservation, protection and restoration strategies for native and at risk species.
8. **Groundwater:** Protect Great Lakes water quality from negative impacts associated with changes in groundwater entering the lakes through improved science and understanding, monitoring, and management actions.
9. **Climate Change Impacts:** Enhancing the effectiveness of management strategies for restoring and protecting Great Lakes water quality by understanding and considering climate change impacts.
10. **Science:** Enhancing effectiveness and efficiency of Great Lakes science activities through cooperation and coordination.

Where do you fit in?

Broad Scale - A Watershed Perspective

What is a Watershed?

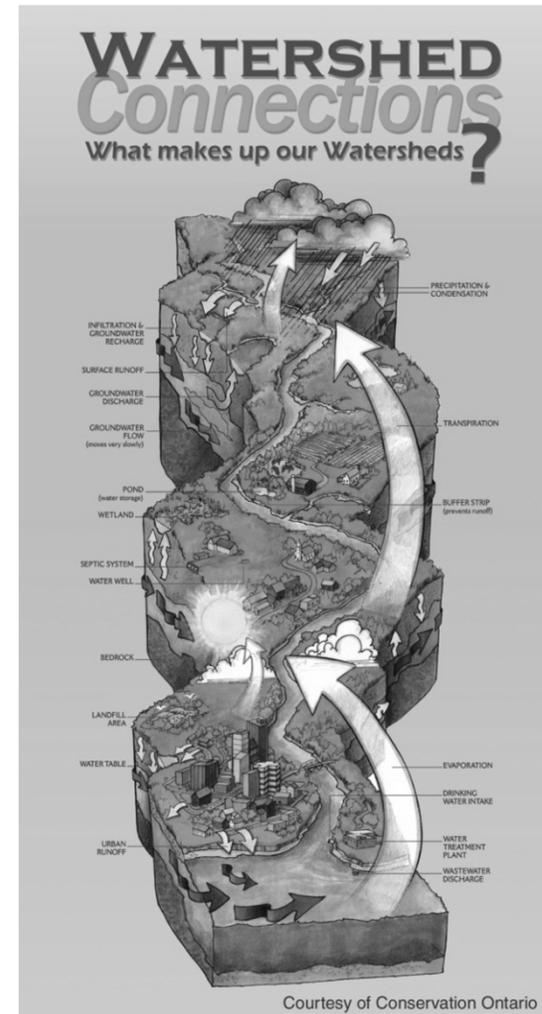
A *watershed* represents the total area of land where water derived mainly from accumulating precipitation eventually flows (drains) to a single water body (basin). Water directly entering Georgian Bay is sourced from both Lake Superior and from 7 primary watershed areas. Water entering Georgian Bay via these watersheds can travel through a variety of landscape features such as streams, rivers, lakes, and wetlands prior to reaching the basin.

The boundaries of a watershed are formed by the highest points in the landscape – they are like the edges of a bathtub or sink – any water that falls within it will drain downwards to the same outlet.

An important step in protecting and improving the water in Georgian Bay is to better understand the interaction of property management practices, land use behaviors and the environment. Using this guide, you will become familiar with local natural features and understand how they function in relation to this watershed.

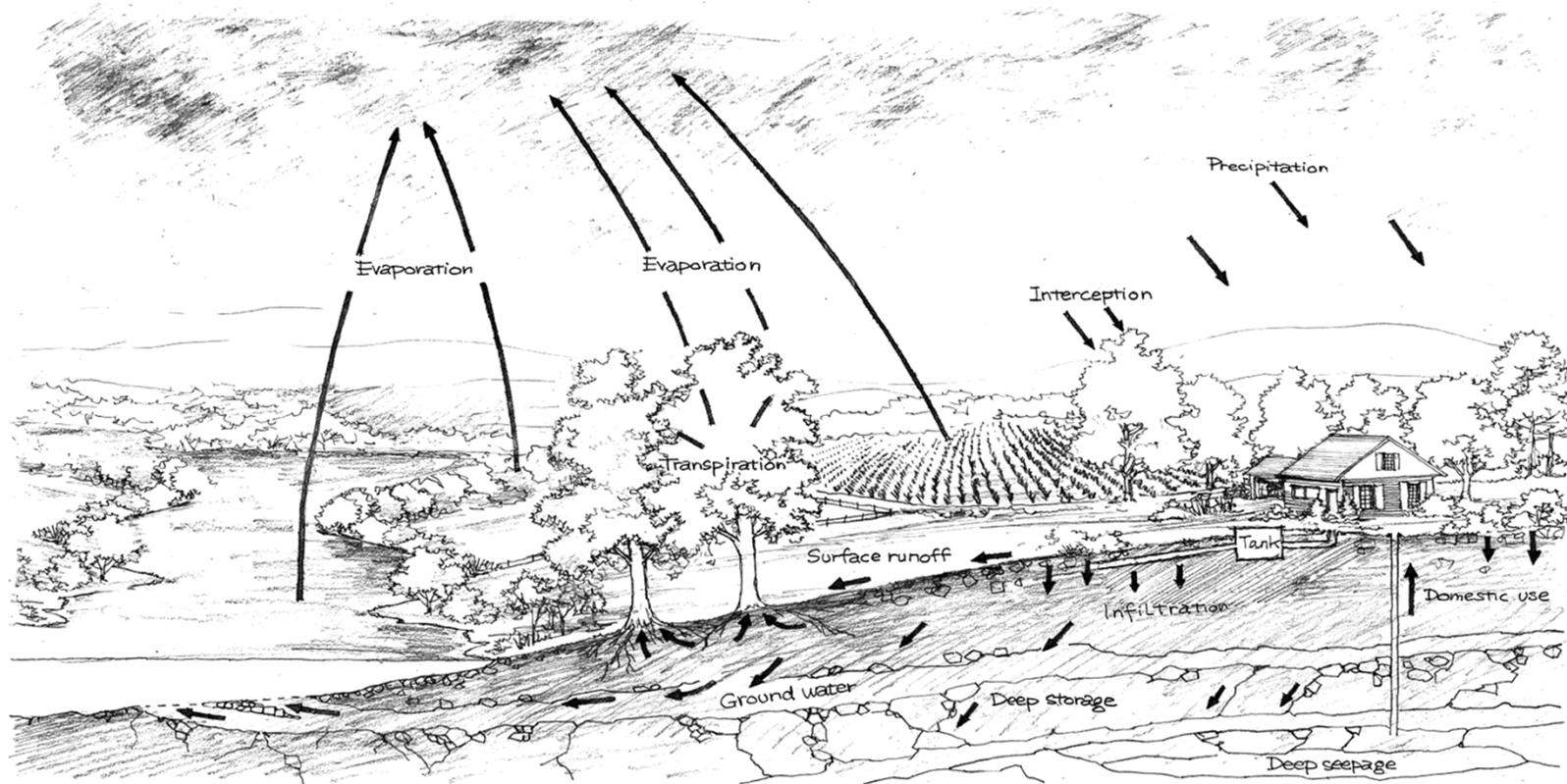
Why should you be concerned?

- Precipitation, evaporation and temperature are major factors that determine the quantity of water in a watershed.
- The amount of water moving through the various landscape features at any given time determines the amount of water available for ecosystems and for human use.
- **YOU** live in the watershed. Your actions and those of your neighbours affect water quality in this watershed.



Where do you fit in?

Broad Scale - A Watershed Perspective



What is the water cycle?

The water cycle - technically known as the hydrologic cycle - is the circulation of water within the earth's environment. This involves changes in water's physical state as it moves between liquid, solid, and vapour phases. The hydrologic cycle refers to the continuous exchange of water between atmosphere, land, surface and ground water as well as organisms.

Where do you fit in?

Local Scale - Inland Features of South-eastern Georgian Bay

Natural Shorelines, Riparian Corridors and Ravines

Connectors and protective buffers

- Shoreline areas of lakes, rivers and streams serve as important ecological corridors, provide habitat and connect natural landscape features. Ravines can provide travel corridors for wildlife and can function as a link between important natural communities.
- Trees, shrubs and grasses in and around watercourses act as filters. They prevent pollutants from getting into surface water and trap sediment that can otherwise affect water quality.
- The irregular shape of the lake's shoreline, helps protect the landscape from wave activity.
- Roots, twigs and leaves help protect the shoreline from erosion, helping to minimize the damage caused by flooding and storm events.
- In upland areas, better drainage allows for larger trees to grow. The roots of these larger trees stabilize the soil and slope.
- Tree, shrub and plant foliage buffers the wind and provides shade which protects against summer drought.
- Buffered riparian areas capture significant water runoff, and recharge water resources within the watershed.
- These features are also important spawning grounds for aquatic life.



Shorelines provide a connection between land and water

Where do you fit in?

Local Scale - Inland Features of South-eastern Georgian Bay

Forested Lands

The forests and woodlands of South-eastern Georgian Bay reside within the Great Lakes-St. Lawrence Forest Region, and are often characterized by species such as eastern white pine, red pine, eastern hemlock, yellow birch, oaks and maples. The more southerly watersheds in the area can often be transitionally influenced by the adjacent Deciduous Forest Region where woodlands exhibit an even greater diversity of species. Forests tend to be characteristic features on the landscape, conjuring images ranging from that of the majestic windswept white pines along the eastern Georgian Bay coastline to a mature sugar maple stand framing the back edge of the family farm. As many rural property owners have some woodlands, we often take them for granted. Consider this:

- Forest tenure (ownership) patterns change across the Georgian Bay landscape, shifting from predominately public (crown) in the north to private in the south. Conservation and stewardship of private forests is largely dependent on the voluntary actions of the rural property owner.
- The amount of natural cover (woodlands and wetlands) varies greatly across the Southeast Georgian Bay landscape. Concern develops when natural areas become increasingly fragmented or isolated as the level of ecological services these areas can provide are also reduced.
- Forests add to Ontario's biodiversity, absorb pollutants, capture carbon and provide habitat for wildlife. The presence of healthy forests is critical to the health of ecosystems, watersheds, and communities of Ontario.
- A well-managed forest provides many benefits. Developing a forest management plan can help set goals and objectives. Your management plan can be as detailed or as simple as you choose.
- Learning more about your forest and developing a plan can ensure that your forest continues to be a source of income and enjoyment, now and in the future.



Forests provide critical habitat to many species

Where do you fit in?

Local Scale - Inland Features of South-eastern Georgian Bay

Wetlands

Wetlands are nature's water filtration and purification system. They provide enormous diversity to the natural landscape and contribute to important ecological functions. The majority of southern Ontario wetlands are comprised of either swamps or marshes. Bogs and fens are more commonly found in central and northern Ontario.

- Wetlands act like giant sponges, absorbing excess water and releasing it slowly. Their ability to store water can reduce the frequency and severity of both floods and droughts.
- They filter nutrients, contaminants, and sediment helping to improve downstream water quality.
- They help to regulate water flow in streams and rivers and contribute to the recharge of groundwater supplies.
- They provide important habitat for hundreds of species of wildlife including critical nesting areas for many of these.
- Wetlands also offer numerous recreational opportunities including fishing, canoeing, wildlife viewing, hunting and nature photography.
- Coastal wetlands (those found along the Georgian Bay shoreline) are especially important waterfowl breeding and fisheries spawning areas.



Marshes contain cattails, grasses and sedges



Swamps are treed wetlands

Where do you fit in?

Local Scale - Inland Features of South-eastern Georgian Bay

Grasslands

Many people are surprised to learn that early settlers arriving in Ontario did not encounter a landscape of endless forest. In fact, Ontario had a variety of landscapes, including meadows and grasslands. Some of these grass landscapes, like tallgrass prairie and savannah, were maintained year after year by periodic fires. Others, such as meadows, were shorter-lived, resulting from disturbances such as flood and drought.



Early summer in an oak savannah

Meadows and Retired Fields

Life in abundance

- Naturally occurring meadows provide habitat for a wide variety of specialized plant, mammal, reptile and bird and insect species.
- There are wet and dry meadows which have characteristic species that are adapted to the varying moisture conditions and soils.
- Wet meadows occur in floodplain areas along rivers and streams, and in moist areas between wetlands and higher, drier land. They are maintained by fluctuating water levels and by intermittent floods, which make it difficult for trees and shrubs to become established.
- Dry meadows grow especially well on ridges and slopes, where the dry conditions prevent the establishment of many trees, which would shade out the meadow species.
- As a meadow is gradually taken over by brush and then woods, meadow species require new meadow landscapes.
- Meadow and natural grass landscapes are becoming increasingly rare in Ontario. As a result, wildlife is moving to retired agricultural fields and other man-made grass landscapes for habitat.

Where do you fit in?

Local Scale - Inland Features of South-eastern Georgian Bay



Tallgrass prairie, mid-summer

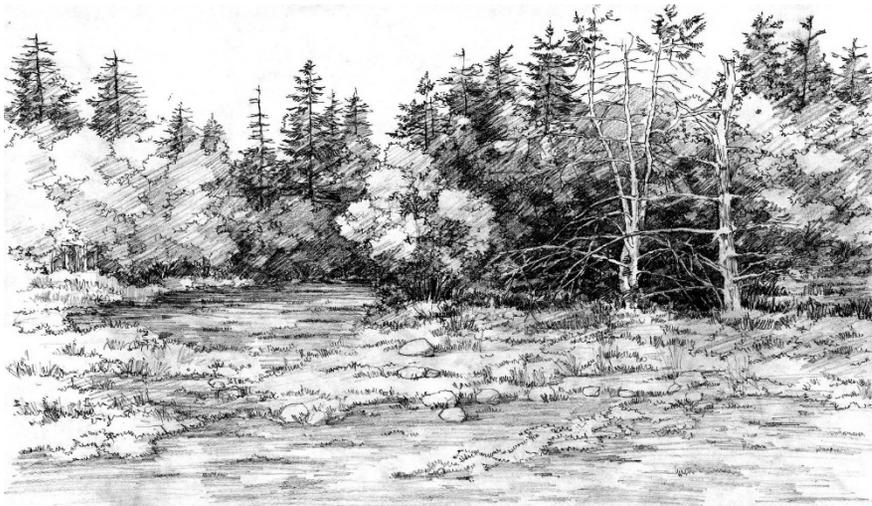
Tallgrass Prairie and Savannah

Ontario's disappearing landscapes of fire

- Tallgrass prairie and savannah are native grasslands are home to a diversity of grasses, wildflowers and animal life. In Ontario, some native grasses can grow to more than 2 metres tall!
- Prairies, by definition, have few trees and shrubs. Savannahs are grasslands with a sparse cover of trees, typically oaks.
- Tallgrass prairie and savannah develop on sites that are periodically disturbed by fire or other stresses that help to keep shrub and tree species from becoming established.
- Ontario once had about 1000 km² of tallgrass. Now, less than 3% remains! Most tallgrass communities have been lost over the past 200 years as land has been converted for agriculture and urbanization, and because we have been so effective at suppressing the fires that are needed to maintain them.
- Consequently, much of the plant and animal life associated with these uncommon sites is considered rare, or even endangered in Ontario. If you have a tallgrass prairie or savannah remnant on your property, you are among a lucky few.
- A remnant prairie or savannah may not look like a grassland at all. In most of these sites, the suppression of fire has allowed shrubs and trees to take over. However, remnants can be identified by the presence of certain indicator plants. If you think you have a tallgrass remnant on your property, contact your local MNR District office.

Where do you fit in?

Local Scale - Inland Features of South-eastern Georgian Bay



An Alvar

Alvars

An increasingly rare ecosystem

- Alvars are natural open areas, characterized by highly specialized and diverse vegetation growing in shallow soils (less than 30 cm, or 12 in) atop flat limestone or dolostone, in dry, fire-prone environments.
- Alvars provide habitat for rare or sensitive species.
- Small, occasional fires have been a historical element of the alvar landscape.
- Many have been degraded to the point where they resemble old fields.
- Overgrazing poses the biggest threat to this type of ecosystem because it removes native plants material from the alvar.
- Alvars situated on the northern Bruce Peninsula and Manitoulin Island are sometimes referred to as “pavement alvars”, where fully exposed rock surfaces support a variety of lichen and moss species.

Where do you fit in?

Local Scale – Coastal Features of South-eastern Georgian Bay

Beaches and Bluffs

- Beaches are dynamic features that change according to wave action and sand availability. Southern Georgian Bay's Wasaga Beach is the world's longest freshwater sand beach, and is situated between two World Biosphere Reserves.
- As wind blows over a beach it picks up fine sand. The sand is carried landward until the wind encounters an obstacle such as a clump of vegetation, usually beach grass. The wind speed is reduced and the sand grains fall out under gravity, resulting in sand deposition.
- Bluffs are continuously changing. Natural erosion is an element of bluff dynamics and a normal part of a shoreline environment. The toe of the bluff is where most of the erosion occurs, depending on the force of the waves and the material of the bluff.
- As waves hit the bluff, material is eroded. Longshore currents often deposit sands far away, in areas where the geography promotes sand deposition. Stones and coarser materials remain, resulting in rocky or cobble beaches, known as cohesive shores. In southeastern Georgian Bay, the best examples of cobble beaches can be found along the west shore of the Penetang Peninsula and on Christian Island.
- The beach at the toe of a bluff protects the bluff from further erosion because beaches absorb wave energy. While some areas are inherently erosion-prone and unstable, natural bluff erosion is increased in areas with little vegetation, narrow sandy beaches or steep offshore slopes. The presence of groundwater in a bluff can also cause instability and slope failure.

Bedrock Shores and Islands

- The shorelines of eastern Georgian Bay and its islands are characterized by large expanses of exposed granite and shallow soils over bedrock associated with the southern edge of the Canadian Shield. The granite shorelines yield to sections of limestone bedrock near the Severn River while the limestone of the Niagara Escarpment dominates the eastern shores of the Bruce Peninsula.
- Bedrock shorelines, particularly granite shorelines, are typically resistant to the forces associated with wind and water erosion. Exposed shoreline bedrock areas can often support lichen and some moss communities while most other forms of vegetation are usually restricted to growing in accumulated soils associated with rock fractures (crevices) and depressions. The re-establishment of lost vegetation along bedrock shorelines can be a difficult and lengthy process.
- Eastern Georgian Bay is renowned for its thirty-thousand islands, an archipelago that forms part of the Georgian Bay Littoral Biosphere Reserve. The islands have inspired poets and artists, conservationists, recreationalists, cottagers, and many others.
- The diversity of plant and animal species decreases on the more exposed outer islands, some of which appear primarily as exposed shoals. Collectively, the islands help mitigate the damaging effects of wind and waves along much of the mainland coast.
- There are many notable islands within Georgian Bay including Manitoulin Island, which is the world's largest freshwater island. Beausoleil is the largest among the 63 islands that help form Georgian Bay Islands National Park while several islands including French River and Moon Islands are part of the provincial park system. Many islands are also home to First Nations communities including Parry Island, Christian Island, and parts of Manitoulin.

Where do you fit in?

Local Scale – Coastal Features of South-eastern Georgian Bay

Estuaries and Coastal Wetlands

- “Estuaries” or “river mouths” represent the final reach where inland waters enter a drainage basin. Estuaries are typically characterized as mixing zones, areas where the differing temperatures and densities of river and lake waters converge, and areas where upstream nutrients and sediments are often deposited.
- Estuaries tend to be both economically and biologically important areas often associated with higher density human populations and with being critical habitats for the life cycles of many species.
- The mouth of the French River is well known for the abundance of small to medium sized islands that direct flow through numerous channels while river mouths such as the Severn are characterized by coastal wetland features.
- The Coastal wetlands of Georgian Bay are the most biologically productive of the shoreline ecosystems, providing staging and nesting areas for over 100 waterfowl and avian species and spawning and rearing habitat for two-thirds of its fish species. These wetlands are also habitat to many plant, reptile, amphibian, mammal and invertebrate species some of which are rare or at risk.
- Coastal wetlands are dynamic, they capture and filter nutrients and sediments and can change in size and in plant composition with the movement of sediment and with changes in water levels.
- Matchedash Bay in the Severn Sound watershed is the largest remaining coastal wetland on Georgian Bay while the Silver creek wetland near Collingwood is considered by many to be the most undisturbed and intact.
- Threats to estuary and coastal wetland habitats include some practices associated with expanding urban and shoreline development such as dredging or shoreline hardening, poor upstream land use practices that increase levels of nutrients and sediments downstream, and threats associated with invasive species that often alter ecology and composition.

Where do you fit in?

Local Scale – Landform Features of South-eastern Georgian Bay

Moraines

- Moraines are landforms created when the retreat of a glacier is temporarily stopped and the melt water from it deposits sand, gravel, boulders and other sediments.
- There are 2 moraines that form the watershed boundaries for southern Georgian Bay.
- The Oak Ridges Moraine extends westward from the Niagara Escarpment to Rice Lake, effectively forming the southern boundary of the Nottawasaga watershed and Georgian Bay.
- The Oro Moraine extends from an to the west of Orillia in a southwesterly direction to Highway 400, forming part of the watershed boundary between Lake Simcoe and the southeast corner of Georgian Bay.

Niagara Escarpment

- The Niagara Escarpment consists largely of shale overtopped by dolomitic limestone and was formed over millions of years through differential erosion processes. Gradual erosion of the softer underlying shale tended to undercut the more erosion resistant dolostone caprock, leaving behind a cliff-like escarpment.
- The Niagara Escarpment spans several U.S. states however in Ontario, it begins at the Niagara Peninsula and closely follows the Lake Ontario shoreline westward to Milton. The escarpment then turns northward extending up the Bruce Peninsula, through Manitoulin Island and eventually turns westward into the upper peninsula of Northern Michigan. The height of the escarpment forms the western watershed boundary for Georgian Bay.



A Natural Sand Dune

Where do you fit in?

Local Scale – Water Levels and Groundwater

Changing Water Levels

The engine of the coastal ecosystem

- Water levels in Georgian Bay, and more generally in Lake Huron, can and do fluctuate on both short and long-term bases. Short-term fluctuations are often caused by wind-related phenomena, such as wind set-up or seiche/storm surge.
- Seasonal and annual fluctuations are due mainly to precipitation, evaporation, groundwater flow, and other factors influencing runoff into the lake.
- Annual and longer-term fluctuations can also be related to any deficit or surplus of water entering from Lake Superior through the St. Mary's River or exiting through the St. Clair River into Lake Erie. The hydrological connection between Lakes Huron and Michigan would similarly mean that water entering or exiting Lake Michigan could also have an influence on Georgian Bay water levels.
- There is significant debate associated with longer-term water level fluctuation, such as with the recent low water level trend over the past decade. Climate change is one of the more broadly accepted explanations linked to declining Georgian Bay water levels, part of overall modelling that forecasts rising ocean levels and declining freshwater levels worldwide. Increases in water consumption linked to growing development and populations, water diversion projects, declines in overall watershed base flows, and wetland loss are other potential contributing factors that have been considered.
- Decreases in stream flow and in overall water levels affect water quality and the quality and quantity of aquatic habitat available. Dredging to enhance water access, improve navigation, or for other development reasons negatively impacts aquatic habitat and water quality in most applications.

Groundwater

A limited resource

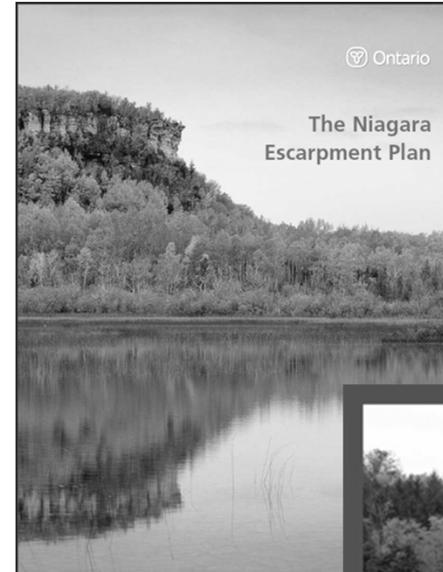
- As rain and melting snow pass through the soil and crevices in the underlying rock, the water is filtered and purified.
- Water will continue to flow downwards through the ground until it reaches an impermeable layer of soil or rock. Here, the water collects, forming an underground reservoir known as an aquifer.
- Aquifers supply water to farms, homes, industry, and businesses. Groundwater is the source of drinking water for many people.
- The size of the aquifer and the movement of underground water is influenced by the type of rock and soil in the area and the amount of rain that falls in that area. If water is removed faster than it is being replenished, the amount of water in the aquifer decreases, and the height of the water table drops.
- The use of large amounts of groundwater and surface water can affect stream flow, lower the water table and reduce the total inflow of water to the lake.
- Groundwater contamination is a serious concern. Contaminated water from over-fertilized lawns, septic tanks, agricultural runoff, and industrial discharge can seep through the ground and make groundwater unfit for human and animal consumption and use.

Where do you fit in?

Local Scale – Legislatively Protected Areas in South-eastern Georgian Bay

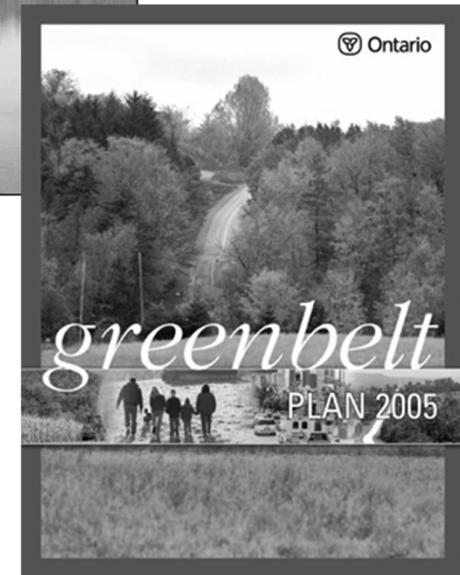
Niagara Escarpment Plan

The Niagara Escarpment includes a variety of topographic features and land uses extending 725 kilometres from Queenston on the Niagara River to the islands off Tobermory on the Bruce Peninsula. With a unique combination of geological and ecological features it is home to some of Ontario's prime rivers and streams and one of the province's principal outdoor recreation areas. In 1990, the United Nations Educational, Scientific and Cultural Organization (UNESCO) named Ontario's Niagara Escarpment a World Biosphere Reserve, recognizing the natural features and ecological importance of the Escarpment. The NEP was published in June, 2005 and was last updated on October 25, 2012 and was Canada's first, large scale environmental land use plan. It balances protection, conservation and sustainable development to ensure that the Escarpment will remain substantially as a natural environment.



The Greenbelt

The Greenbelt Act, passed in 2005, protects 1.8 million acres of environmentally sensitive land and farmlands from urban development. The lands include 800,000 acres of land protected by the Niagara Escarpment Plan and the Oak Ridges Moraine Conservation Plan, and 1 million newly protected acres. The Greenbelt area spans 325 km from the Niagara River in the west to the eastern end of the Oak Ridges Moraine.

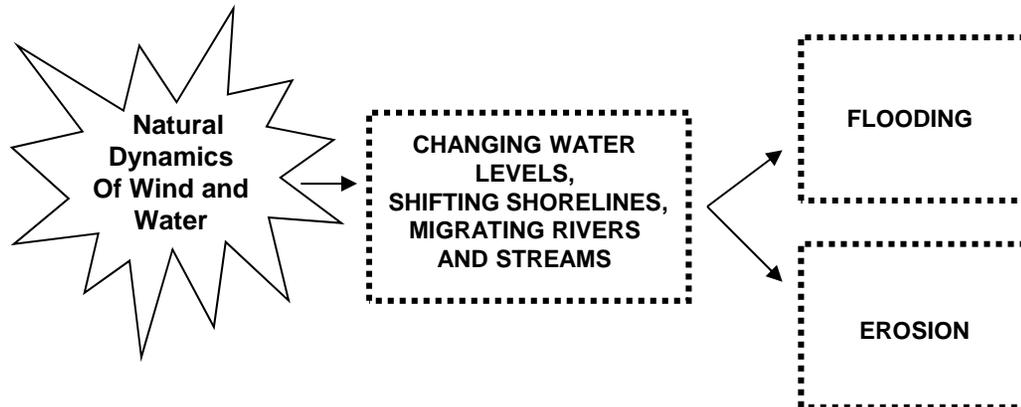


The Dynamic Landscape

Risks and Challenges

Why should you be concerned?

The areas next to a stream, river, lake shore or other water body are affected by seasonal and perpetual changes, due to the dynamic nature of wind and water. Streams and rivers migrate and meander naturally; water levels rise and fall, and banks and shorelines shift with erosion. While this presents risks and challenges for property owners and residents living near water bodies, both personal danger and costly rebuilding and restructuring efforts can be avoided if you take the time to understand, predict and work with the natural processes that affect your property.



Are there any natural hazard areas on your property? Mapping out your property and its features can be a helpful way to understand the risk and challenges involved. (See Making a Map of Your Property *in worksheet #3.*)



Photo credit: John Challis & Gayle Carlyle

Resources List

Your Watershed: Physical and Cultural Landscape



Human influence is evident in the rural landscape.

For more information...

Couchiching Conservancy www.couchichingconser.ca

Environment Canada www.ec.gc.ca

Georgian Bay Association www.georgianbayassociation.com

Georgian Bay Land Trust www.gblt.org

Georgian Bay Littoral Biosphere Reserve www.gbbr.ca

Lake Huron Centre for Coastal Conservation www.lakehuron.ca

Nature Conservancy of Canada www.natureconservancy.ca

Niagara Escarpment Commission www.escarpment.org

Nottawasaga Valley Conservation Authority www.nvca.on.ca

Oak Ridges Moraine Foundation www.moraineforlife.org

Ontario Ministry of Agriculture, Food and Rural Affairs www.omafra.gov.on.ca

Ontario Ministry of Environment www.ontario.ca/ministry-environment

Ontario Ministry of Natural Resources www.mnr.gov.on.ca

Severn Sound Environmental Association www.severnsound.ca

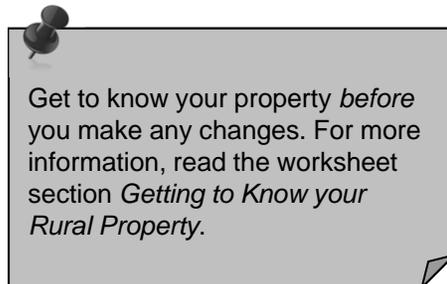
Tallgrass Ontario www.tallgrassontario.org

- PART II -
The Workbook

Worksheet #1 - Buying a Rural Property

Why should you be concerned?

- Rural life involves active participation in monitoring the immediate environment for your well-being.
- Your property may fall within a hazard zone such as a flood plain that is governed by particular regulations.
- Your new property may have a private well and a septic system. You will need to know where these are on the property and how to maintain them properly so as to avoid water contamination and expensive repairs.



What can you do?

- Consider noise, odours and traffic from nearby properties and activities (such as farming and industry) and consider the challenges, maintenance, and legal restrictions that come with rural/hazard land ownership.
- Altering a shoreline or watercourse has legal implications for the owner. If the property is along a shoreline or watercourse, have the current shoreline assessed and budget for improvements and maintenance.
- If purchasing a 'legal non-conforming' property (containing buildings or structures which existed before the current municipal zoning by-law was passed), check to make sure you can obtain any necessary future permits, i.e., septic building.
- Want an open view? Choose a property that already offers one instead of clearing existing trees and shrubs. Alternatively, contact a resource person to help design selective breaks in tree canopies.
- Visit the property during and immediately following a major rainfall event. Note drainage patterns and any evidence of flooding.

Purchaser Checklist

Supplementary Questions for Seller Property Information Statement-Residential.

Adapted, in part, from: On The Living Edge: Your Handbook for Waterfront Living. © 2003. Sarah Kipp and Clive Callaway.

Anyone who is considering purchasing rural and/or hazard land property should ask the seller the following questions in addition to those in the *Ontario Real Estate Association's Seller Property Information Statement-Residential*. This list is only a guide and may not include all possible considerations.

If the property is serviced by a private well or surface supply:	Y	N	?	~
Do you have records of water quality tests?				
Do you have well records?				
Is the well properly sealed?				
Is there an underground cistern?				
Is there seasonal variation in water level?				
Has the well ever run dry?				
Do you know the normal rate of flow?				
Do you know what the draw down data for the well capacity is?				
If the property is serviced by a septic system:				
Is there a permit for the system?				
Is the leaching bed over 30m (100ft) from surface water or well?				
Has the tank been pumped in the last 3 years?				
Does the tank adequately serve the dwelling(s) size?				
Is there an effluent lift pump?				
Is there a second leaching bed or space for it?				
If there is a septic holding tank are there cracks or holes in it?				
Is a community or municipal sewer system planned in the next 3 years?				
Water Levels				
Is any of the property within the 100 year floodplain?				
Is the basement, crawlspace or main floor 0.3m+ above the floodplain?				
Is it in compliance with regulation?				
Is the 100-year flood elevation and wave reach known?				

If there are any unregistered easements or rights of way:	Y	N	?	~
Does access require any unregistered means (historic use, handshake)?				
Does anyone else have unregistered access?				
Are there any adjoining road allowances for public water access?				
Are there any old shoreline road allowances?				
Are there conservation easements on the property?				
Erosion:				
Are you aware of any erosion problems or instability?				
Are you aware of any neighbours with erosion problems?				
Are there erosion control structures/buffers on the property or nearby?				
Are there any runoff control measures in place (water bars, culverts)?				
Are there culverts or creeks that drain onto the property?				
Is the location of the 100-year erosion limit known?				
Does the property fall within a dynamic beach?				
Access to water:				
Is there access to water?				
If so, is it within a reasonable distance for your plans?				
If there is a dock, is it pulled out seasonally?				
Springs and other water source areas:				
Are there springs or other groundwater sources on the property?				
Do you know their location and condition?				
Is your property covered under the Clean Water Act?				

Y Yes
 N No
 ? Not Sure
 ~ N/A

Purchaser Checklist

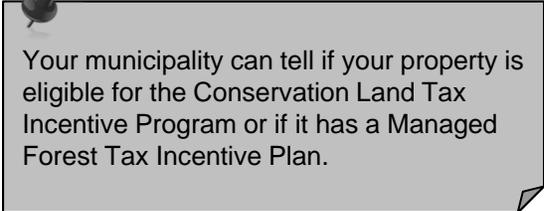
Supplementary Questions for Seller Property Information Statement-Residential.

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Zoning:	Y	N	?	~
Are there any special zoning regulations or setbacks?				
Are there shoreline protection buffers?				
Does all existing development conform to local zoning bylaws?				
Are all buildings/structures located fully on the property?				
Have previous/current land-uses been disclosed?				
Have previous/current land uses of adjacent properties been disclosed?				
Purchasing farm land:				
Do you know what kind of ditch/drain system you have?				
Do you know who is responsible for maintaining the drain/ditch?				
Are there municipal, mutual agreement or private drains?				
Are you aware of how they affect the property and maintenance?				
If there are fields, are they tile drained?				
Is the systems still functioning?				
Are you aware of where the outlets are?				
Do you know what crops are or have been growing on the property?				
Will this affect your goals for the property?				
Are there noxious or toxic weeds growing in the fields?				
Do you know the soil type?				
Do you know if it is fast or slow draining?				
Are there soil sample results?				

Other	Y	N	?	~
Is the existing plumbing system built for year-round use?				
Are there registered or unregistered archaeological relics or burial sites?				
Are there any ESAs, ANSIs or provincially significant wetlands?				
Are there Species-at-Risk?				
Are areas eligible under the Conservation Land Tax Incentive Program?				
Is there a Managed Forest Tax Incentive Plan?				
Are there any easements on the property?				
Are there any hydro or pipeline corridors on the property?				



Your municipality can tell if your property is eligible for the Conservation Land Tax Incentive Program or if it has a Managed Forest Tax Incentive Plan.

Renting Your Farmland

Why should you be concerned?

Leasing and renting farmland is a common practice in rural Ontario. The significant cost of land purchase makes renting an attractive alternative to ownership for farmers. If you're considering renting your farmland to a farmer or are approached by a farmer to rent your land, there are some important things to think about and resolve with the potential renter.

To be successful the lease arrangement must satisfy both the landlord and the tenant. Before entering into a lease the landlord and the tenant should consider more than just price. The compatibility of the landlord and the tenant and the fairness of the lease are important aspects. Some fundamental considerations:

- **Compatibility:** Can you get along and discuss differences?
- **Honesty:** Do you trust the person you're dealing with?
- **Clarity:** Do you both know the terms of the lease and are they in writing?
- **Equitable Terms:** Are you both happy with the terms?
- **Flexibility:** Can you adjust the lease if changes occur?
- **Suitability:** Does the lease fit the crop and encourage good agricultural practices?

Things to consider...

- Remember – it's your land and you are the steward. Ensure you are knowledgeable and comfortable with the renter's agricultural practices and methods. Has the farmer done an Environmental Farm Plan workshop? If applicable, does he have a manure management plan?
- Make sure your own needs are met (e.g., you want to maintain a trail to the woodlot) but recognize also the impact your requirements might have on the farmer.
- While verbal agreements are common for short term leases (and constitute a valid contract), a written agreement will present its advantages should disagreements arise. Leases longer than 3 years must be in writing to be a valid lease agreement.
- There are three types of cropland leases — cash rental, flexible cash rent and crop share leases. What makes each of these leases different is how the payment for the land is calculated. Cash rental is fixed. Flexible cash rental and crop share are based on a division of revenue from the crop in a pre-determined fashion. Each has its advantages and disadvantages.
- Tax implications may be advantageous or not depending on your situation. Make sure you are aware of these and guide your decisions accordingly
- It should be clear this list presents only preliminary information. The factsheet *Land Lease Arrangements*, available from the Ontario Ministry of Agriculture, Food, and Rural Affairs, provides excellent background. Talking with neighbours and consulting a resource person is also important.

Long Term Conservation

What about the future... ?

Most property owners feel a pride and love of their land. That is why the majority of them want to be good stewards. Acquiring this guide and working through it shows you want to do the things that will enhance the environmental quality of your land and the impact on the broader landscape and environment. What about when your stewardship ends? What will become of the property and all your work when you are gone? These are questions more and more property owners are asking themselves.

Options are available to ensure the conservation of your land by future owners and into perpetuity. Essentially, these can be broken down into options within either: transferring ownership to a conservation organization, or; retaining ownership and establishing legally binding conditions on use of the land by any future owners. Further information is outlined opposite.

The disposition of land for long term conservation requires careful consideration of the legal and financial aspects unique to each property and type of transaction. If you are interested in exploring these options a helpful place to start is with **Ontario Land Trust Alliance**. This organization can give you more details about conservation options and also direct you to the local organizations who can work with you directly.

A landowner who wants to transfer land ownership can:

- grant a right of first refusal or option to purchase
- donate all or part of the land
- donate the land, but reserve the right to live on and/or use it
- sell land at a discount and get a tax receipt for the difference
- enter into a conservation agreement before the transfer
- grant a conservation agreement through a will
- transfer the land subject to trust conditions
- put conservation terms into a mortgage
- sell to a “conservation buyer” who will steward the property
- carry out a land exchange
- consider co-ownership options
- combine several options together

A landowner who wants to retain land ownership can:

- apply for property tax and other incentives
- put conservation terms in a management agreement or lease
- enter into a formal long-term conservation agreement that binds all future owners
- inform conservation organizations of future plans

Adapted from *A Landowner's Conservation Options*
Kawartha Heritage Conservancy

Resources List

Buying a Rural Property

Centre for Sustainable Watersheds

www.watersheds.ca

- On the Living Edge: Your handbook for Waterfront Living

Landowner Resource Centre

www.lronline.com

- Ontario Extension Note: *A Business Approach to Owning Rural Property*

Municipalities: For a List of Ontario Municipalities

www.mah.gov.on.ca

- Consult the Blue Pages in your phone book
- Land use zoning, Environmentally Sensitive Areas, municipal drains
- Simcoe County Maps www.maps.simcoe.ca/help
- Muskoka Maps www.maps.muskoka.on.ca

Ontario Land Trust Alliance

www.olta.ca

- Information on long term land conservation

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.on.ca

- Farm Property Class Tax Rebate Program
- *Land Lease Arrangements* (product order no. 01-065) – provides detailed information about renting your farmland to a farmer.
- *So, What's a Municipal Drain?* (product order no. 01-059)

Ontario Ministry of Natural Resources

www.mnr.gov.on.ca

- Managed Forest Tax Incentive Program
- Conservation Land Tax Incentive Program

Severn Sound Environmental Association

www.severnsound.ca

- Sustainability Plan

Nottawasaga Valley Conservation Authority

www.nvca.on.ca

- Watercourse and floodplain regulations
- Wetland and Environmentally Sensitive Area details
- Maps

Worksheet #2 - Getting to Know Your Property

Why should you be concerned?

- In rural areas, you are your own WATER QUALITY STEWARD!
- As a rural landowner, you are the steward of a property that is a small piece of the larger rural landscape. What you do on your property affects not only your well-being but that of your neighbours and the other creatures that share the landscape and the ecosystems that support it all.
- Upstream practices WILL affect your property, and your actions will affect downstream users.
- A property's soil and landform can influence water quality by influencing surface water and groundwater contamination, erosion of soil by water and wind, and soil compaction.
- Provincial regulations and municipal bylaws may restrict development of any kind and affect how you can use your property.
- Knowing your property will ensure you make informed decisions. Talk to neighbours and other local people to be aware of things like informal traditional access on your property for hunting, fishing, or hiking, etc.

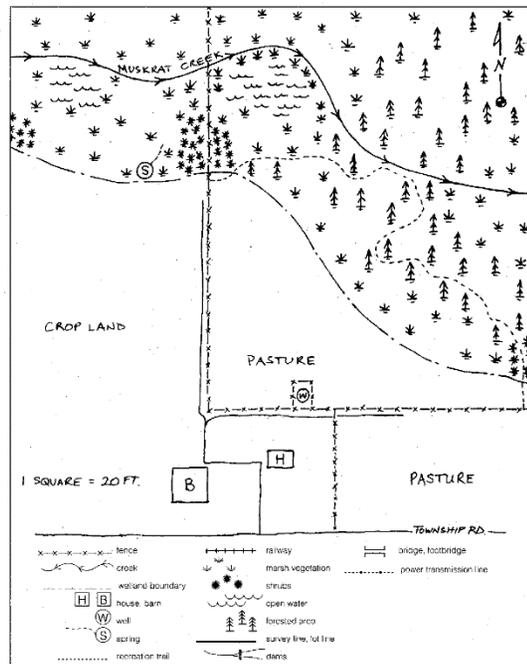
What can you do?

- You or your legal representative can contact the local Ministry of Natural Resources or Conservation Authority office to learn of any alteration restrictions (especially watercourses, groundwater sources, and shorelines) and how these may affect any future property projects.
- Talk with long-time residents to learn more about how the property may be affected by natural processes and potential hazards.
- Make a map of the property. Identify physical characteristics such as soil type, flood zones, and depth to water table, and learn how these can affect the vulnerability of your property and water quality. Accept these natural conditions and modify your activities accordingly to protect yourself and your property.
- Determine if your property contains any special landscape designations, such as an Environmentally Sensitive Area (ESA), Area of Natural or Scientific Interest (ANSI), or Provincially Significant Wetland (PSW). Learn how this affects your rights and responsibilities as a landowner.
- Determine if current services (e.g. water and sewage) are adequate for your planned/intended use of the property.
- Look beyond property boundaries. This is important for you to be able to analyze the potential for surface water contamination, wind and water erosion, and groundwater contamination.

Making a Map of Your Property

Why make a map?

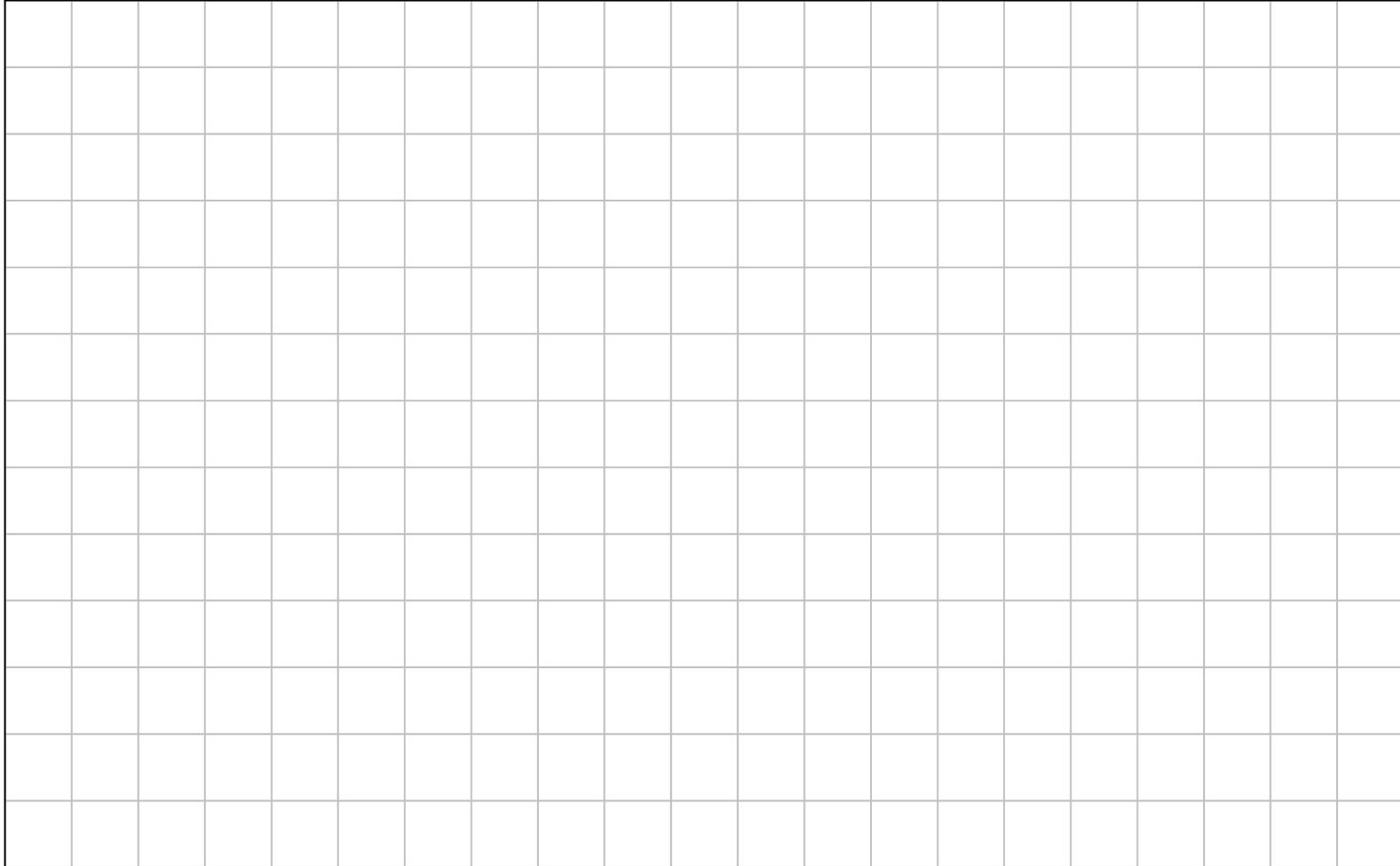
A map can help you identify the areas or aspects of your property that pose the greatest risk to the natural environment and determine what requires immediate attention. It is an important tool for the future management of your property and can help you protect yourself against the risks that come with living in hazard areas.



What you should include:

- property boundaries
- north arrow
- any buildings or structures
- roads, driveways, parking and/or other impervious surfaces
- bridges
- sewage system leaching bed, outhouses
- all wells (including dry or decommissioned wells)
- surface water features (stream, pond, lake, etc.)
- springs
- dams, weirs
- drainage ditches, drainage tile outlets
- fences and treed fencerows
- lawns, forested areas, plantation and natural
- fields, both working and retired
- trees, flower beds, vegetable garden(s) or cultivated area(s)
- wetlands
- utility lines, communication towers
- pesticide/herbicide storage
- any underground or aboveground storage tanks of fuel oil, gasoline, or other petroleum product
- burn barrels
- easements and right of ways
- known special or sensitive features (e.g. raptor nests, stone piles)

Making a Map of Your Property

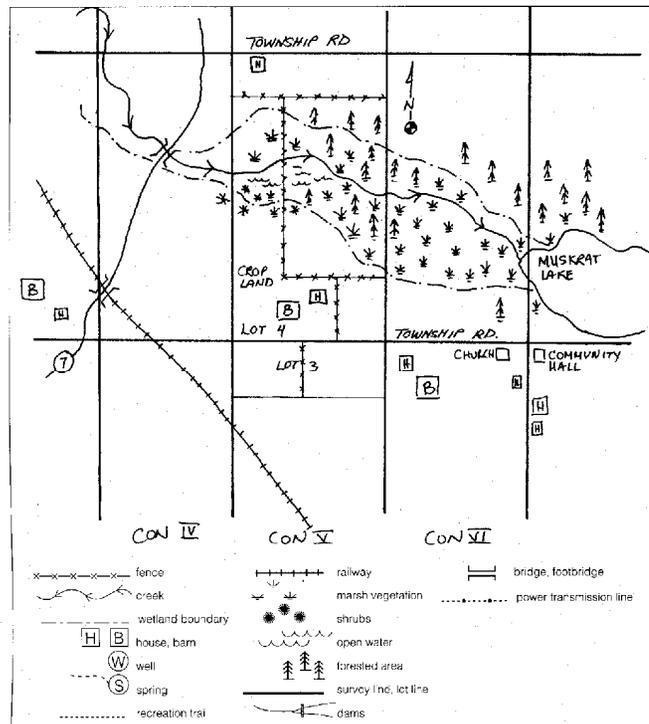


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Making a Map of Your Local Landscape

Why make a map?

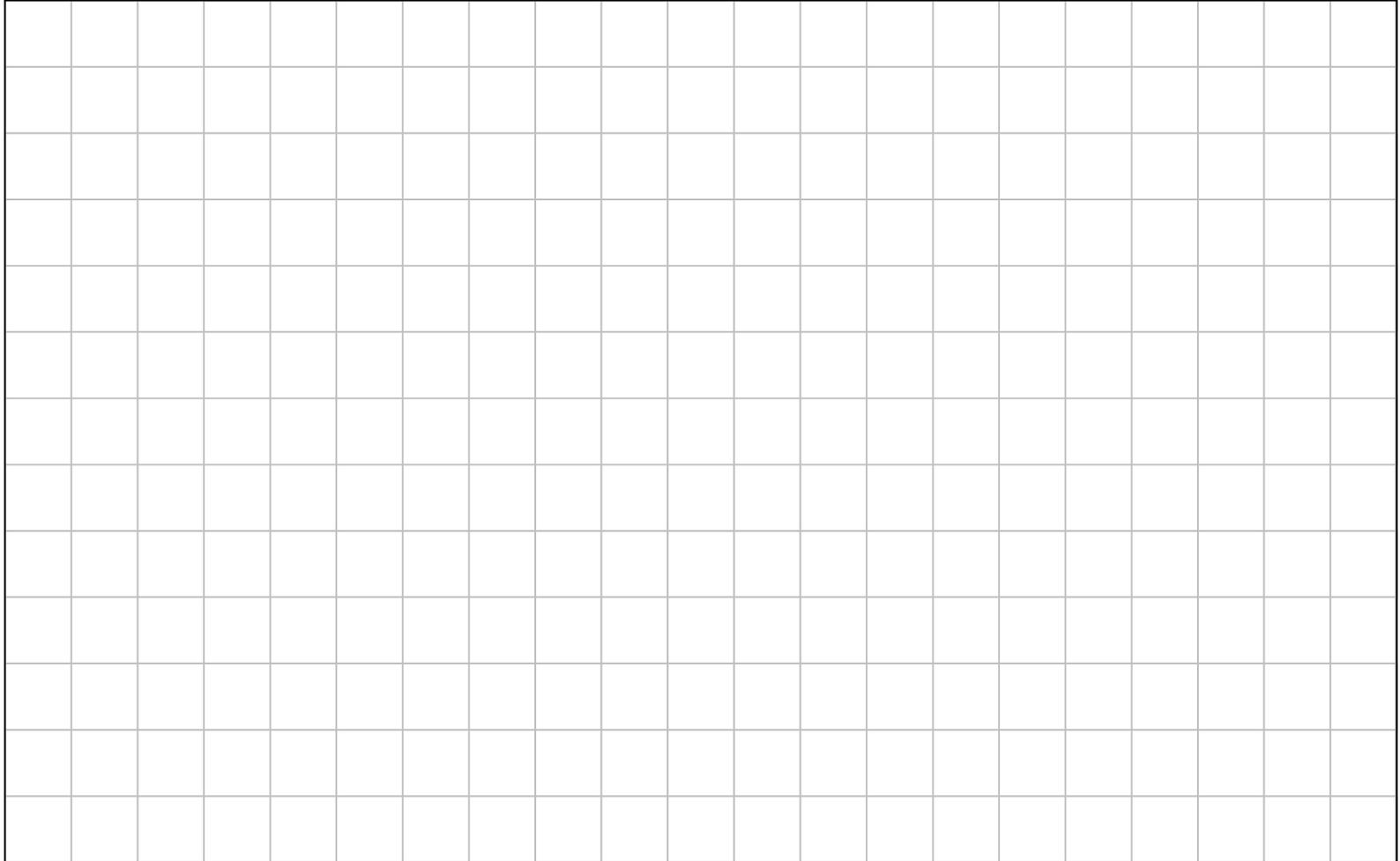
Now that you have mapped the features of your property, make a map of your immediate, local landscape. This will help you to see how your property and its features fit into the larger context. As a guide, cover an area of about one or two kilometres around your property. Aerial photos and topographic maps may be helpful for this (see the resource list at the end of this section)



What you should include:

- property boundaries (yours at least, neighbours' if known)
- north arrow
- any buildings or structures
- roads, trails
- railways
- road allowances
- bridges
- fields, both working and retired
- orchards
- all wells (including dry or decommissioned wells)
- surface water features (stream, pond, lake, etc.)
- springs
- dams, weirs
- drainage ditches
- fences and treed fencerows
- forested areas, plantation and natural
- wetlands
- utility lines
- communication towers
- known special or sensitive features (e.g. raptor nests, stone piles)

Making a Map of Your Local Landscape



date: _____

Getting to Know Your Property and Understanding Risk

Use this page to help assess your property's vulnerability to water contamination.



Soil type	Clay-silt loam	Silt loam	Silt-sand loam	Either gravel, sand or clay.
Soil depth	Greater than 4 metres (13 feet)		1-4 metres (3-13 feet)	Less than 1 metre (3 feet)
Bedrock	Non-permeable and solid. No direct access from the surface.	Semi-permeable limestone or sandstone. No direct access from the surface.	Any kind. Direct access from the surface.	Fractured bedrock - any kind.
Depth to water table	Greater than 14 metres (46 feet).	5 - 14 metres (16-46 feet).	1-5 metres (3-16 feet).	Less than 1 metre (3 feet).

To find soil depth, bedrock, or depth of water table check: your well-drilling records, a neighbour with a well, a local well-drilling company or local authorities.

The risk of pollution is greater in areas where the groundwater table is near the surface or in highly porous soils (e.g. sand or gravel)

Getting to Know Your Property – Hazards and Sensitive Landscapes

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
1 Knowing the Hazards on Your Property	Understand potential hazards affecting your property, such as flooding and erosion and have your own plan to deal with any eventualities	Understand potential hazards affecting your property.	Limited understanding of potential hazards affecting your property.	No understanding of potential hazards affecting your property.	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Your Rating</div> <input type="checkbox"/>

LIVING WITH SENSITIVE LANDSCAPES

Some landscapes are more vulnerable to environmental damages than others. Landscape features such as those listed below can enhance your property and your quality of life in many ways. However, with the benefit comes risk. Extra care and attention around these landscapes is required to avoid harm to you, to your property and to the environment. Some sensitive landscapes include:

- Ravines, valleys, steep slopes (escarpment areas),
- Wetlands, including swamps, marshes, bogs, fens and ponds,
- Rivers, creeks, flood plains or valleylands, and
- Lake shorelines.

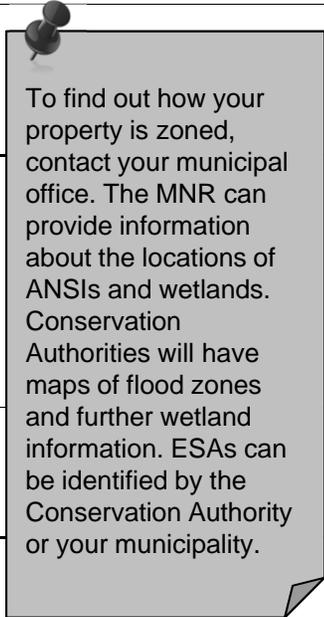
Activities around these features may be regulated by a Conservation Authority. In areas where they are present, Conservation Authorities have jurisdiction over these landscapes in order to ensure the safety of the public as well as the protection of the natural environment. Approval from a Conservation Authority must be obtained before any work or any alterations are made in or around these features.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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LIVING NEAR WATERWAYS

2 Awareness of Dynamic Shoreline Processes.	Understand dynamic nature of waterways and shorelines and plan accordingly, with long-term outlook and flexibility for change.	Understand dynamic nature of waterways and shorelines. No long-term planning for natural change.	Limited understanding of dynamic nature of shorelines. Property management attempts to control any naturally-occurring change.	No understanding of dynamic nature of shorelines and waterways. Attempt to control any naturally-occurring change.	<input type="checkbox"/>
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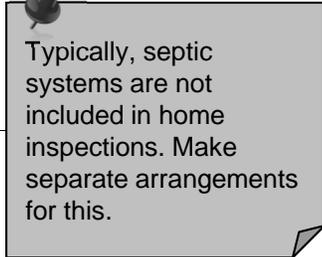
SPECIAL ZONING – SENSITIVE LANDSCAPES

3 Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs), and Provincially Significant Wetlands	Know of <u>any</u> significant natural features on the property, such as an ESA, ANSI, or wetland.	Know of <u>any</u> significant natural features on property, such as an ESA, ANSI, or wetland.	 <p>To find out how your property is zoned, contact your municipal office. The MNR can provide information about the locations of ANSIs and wetlands. Conservation Authorities will have maps of flood zones and further wetland information. ESAs can be identified by the Conservation Authority or your municipality.</p>	No knowledge of significant natural features within property boundaries.	<input type="checkbox"/>
	Understand these designations and how they impact use of the land and consult with MNR representatives before changes are made in these areas.	Consult with a representative of the MNR before any changes are made in these areas.		<i>*No inquiry about zoning on the property before changes are made.</i>	<input type="checkbox"/>
4a Flood Plains	Know if the property contains any flood plains in its zoning.			No knowledge of possible food plain zoning on the property.	<input type="checkbox"/>
4b Flood Plain construction	No construction or changes are made below the high water mark unless approved by the proper authorities.			<i>*Changes are made below the high water mark without approval from the proper authorities.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

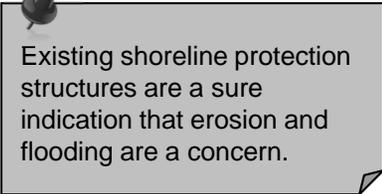
Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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SPECIAL ZONING – SENSITIVE LANDSCAPES *continued*

5 Development and natural Hazards	No development or disturbance within 30 m (100 feet) of dunes, beaches, watercourses, or hazard lands.	Minimal disturbance or structures near dunes, beaches, watercourses, or hazard lands.		Development or disturbance within 30 m (100 feet) of dunes, beaches, watercourses, or hazard lands.	<input type="checkbox"/>
6 Other special zoning considerations	Exact knowledge of actual property limits, setbacks, easements and right-of-ways and any Conservation Authority regulations are observed.	General idea of actual property limits, setbacks, easements and right-of-ways.		No knowledge of actual property limits, setbacks, easements and right-of-ways.	<input type="checkbox"/>

LEGAL CONSIDERATIONS

7 Zoning	Municipal zoning bylaws and Official Plan checked to know how property is zoned and property land use is in accordance with this zoning.	Municipal zoning bylaws and Official Plan checked to know how property is zoned.	No regard to whether intended use of property is in accordance with Official Plan or Zoning bylaws.	No regard to whether intended use of property is in accordance with Official Plan or Zoning bylaws and property land use is not in accordance.	<input type="checkbox"/>
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Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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LEGAL CONSIDERATIONS *continued*

8 Seller Property Information Statement	Vendor provides a notarized statement of the property's conditions.	Vendor provides a Seller Property Information Statement.		Vendor refuses to provide a Seller Property Information Statement.	<input type="checkbox"/>
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9 Buried Fuel Tanks	Ensure that there are no fuel tanks buried or otherwise on the property.			No knowledge of fuel tanks buried or otherwise on the property.	<input type="checkbox"/>
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If a buried, abandoned fuel tank is found, the property owner is responsible for any costs associated with removal or contamination. This is typically not covered under home insurance.

10 Home Insurance	Good knowledge of whether potential damage to property can be covered by insurance.	Some knowledge of whether potential damage to property can be covered by insurance.		No knowledge of what potential damages may be covered.	<input type="checkbox"/>
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Resources List

Getting to Know Your Property

Georgian Bay Biosphere Reserve

www.gbbr.ca

- *State of the Bay*

Nature Conservancy of Canada

www.natureconservancy.ca

- Conservation Land Securement Options

Nottawasaga Valley Conservation Authority

www.nvca.on.ca

- *Flood and Erosion Hazard Maps*. (Map lines show 1:100 year flood and erosion lines)
- *Flooding and Erosion Part 1: The Hazards*
- *Flooding and Erosion Part 2: Avoiding the Hazards*
- Aerial photos or topographic maps

Severn Sound Environmental Association

www.severnsound.ca

- Landowner Resources and Information Products

Ontario Forestry Association

www.forestsontario.ca

- Landowner Resources and Information Products

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.on.ca

- Soil Erosion Publications
- Best Management Practices: *Soil Management (BMP06E)* and *Buffer Strips (BMP15E)*

Ontario Ministry of Environment

www.ontario.ca/ministry-environment/

- Environmental Living Vol. 3: *Protecting the Environment when Building or Buying your Dream Cottage* ISBN 0-7778-1071-9

Ontario Ministry of Natural Resources

www.mnr.on.ca

- *Guide to Stewardship Planning for Natural Areas*
- Aerial photos and topographic maps

Worksheet #3 - Before & During Construction

Use this worksheet to assess potential opportunities and constraints about construction.

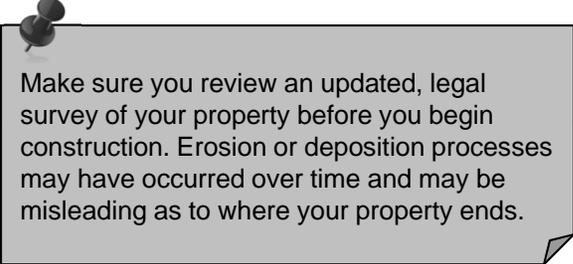
Why should you be concerned?

- Your property is part of a larger landscape, so any project you undertake may not only affect your immediate neighbours, but also have important consequences for land and water farther away.
- There may be existing legislation, regulations, and zoning that affect your project plans. Check with your municipal office, Conservation Authority or MNR office to ensure that your project is permissible.
- Shorelines of lakes, rivers and streams are protected under Federal legislation such as the *Fisheries Act*. Under this legislation, the onus falls upon shoreline property owners to ensure that they do not “harmfully alter, disrupt, or destroy” fish habitat. Offenders may be substantially fined or face criminal charges, and face restoring the shoreline to its previous state.
- Investigate who owns any shoreline areas of your property – it may not be you! The Public Lands Act applies to shore lands and a permit may be required for any development – even a restoration project. Only activities permissible under this legislation will be allowed.

What can you do?

- Make a plan including an inventory of existing plants, features, and structures. *See Worksheet #3.*
- Start early and be organized – the permit process may take more than several months.
- Protect yourself: keep records, including permit applications. These can be useful if disputes should arise with agencies or neighbours in the future.
- Be a land steward: contact your local MNR office if you witness or observe shoreline or stream alteration, or potential environmental damage. You can call the MNR toll-free reporting line (24 hours, 7-days a week) or for anonymity, contact Crime Stoppers. *See Resources list for information.*

Construction

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PERMITS & REGULATIONS					
1 Knowledge and understanding of application process	Planning begins the summer before work is to begin.	 <p>Make sure you review an updated, legal survey of your property before you begin construction. Erosion or deposition processes may have occurred over time and may be misleading as to where your property ends.</p>		No planning involved. Expect immediate start.	<input type="checkbox"/>
	Check with authorities to determine if a permit is required.			<i>*Necessary permits are not obtained.</i>	<input type="checkbox"/>
PREPARING A SITE PLAN					
2a Knowledge of existing natural features of the property	Thorough understanding of natural features, including long-term history of water levels.	Identification of existing and/or sensitive natural features or areas.	General idea of existing natural features.	No knowledge of existing natural features or sensitive areas.	<input type="checkbox"/>
2b Knowledge of effect of construction on existing natural features of the property	Construction does not impact existing features.	Awareness of the potential for construction impact and precautions taken.	Awareness of the potential for construction impact.	Disregard of potential for construction impact. No precautions taken.	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PREPARING A SITE PLAN <i>continued</i>					
3 Size and location of various activity areas.	Intensively used areas and paths are concentrated and located at least 30 m (100 ft) from surface water and away from steep shoreline slopes.		Intensively-used areas are not near surface water but in locations contributing to increased erosion, such as at the top edge of steep slopes.	Intensively-used areas are near surface water and in locations contributing to increased erosion, such as at the top edge of steep slopes.	<input type="checkbox"/>
4 Wind and sun	All outdoor living areas are sheltered from the prevailing wind.	Where possible, outdoor living areas are sheltered from the prevailing wind.		No consideration given to the prevailing winds and sheltering outdoor living areas.	<input type="checkbox"/>
	Window locations are placed to allow for maximum winter sunlight.	Where possible, window locations are placed to allow for maximum winter sunlight.		No consideration given to the sun exposure in winter.	<input type="checkbox"/>
	Evergreen trees are kept/planted on the northwest face for wind protection, AND deciduous trees are kept/planted on the southwestern face for summer shading.	Evergreen trees are kept/planted on the northwest face for wind protection, OR deciduous trees are kept/planted on the southwestern face for summer shading.	Landscaping design attempts to use trees strategically to improve energy conservation to a small degree.	Tree placement is not considered for wind protection or summer shading.	<input type="checkbox"/>

Consider adding a natural wind break or snow fence to your design.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION					
5 Minimizing erosion and/or compaction	Project area is subdivided into smaller projects and done sequentially.	Only the area necessary for the project is cleared.	Large areas are cleared but vegetation is restored.	Entire property is cleared at once.	<input type="checkbox"/>
	Buffer strip of natural vegetation wider than 30 m (100 ft) retained along shoreline or surface water.	Project site requires minimal removal of trees and shrubs in buffer strip.		Buffer strip is bulldozed clear of all existing vegetation.	<input type="checkbox"/>
	Project does not interfere with existing surface runoff patterns.		Project interferes minimally with existing surface runoff patterns.	Project interferes with existing surface runoff patterns.	<input type="checkbox"/>
	Disturbed areas are replanted as quickly as possible with native species.	Disturbed areas are replanted as quickly as possible with non-invasive species.	Bare soil is covered immediately with burlap or mulch.	Bare soil is left exposed.	<input type="checkbox"/>
	Use of machinery is minimal and machinery used is appropriate to job size.	Use of machinery is minimal.		Heavy machinery is used excessively.	<input type="checkbox"/>

Protect all soil/sand piles from erosion and avoid construction during heavy rains.

Straw bales or silt fences placed around vulnerable existing features such as wetlands will help protect them from sedimentation.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION <i>continued</i>					
6 Location of construction facilities and access	All construction materials are stored away from downspout openings and at least 30m (100 ft) from the shoreline or watercourse.	All construction materials are stored away from downspout openings.	Only hazardous construction materials are stored away from downspout openings, open water or any watercourse.	Construction materials are stored without regard to runoff patterns.	<input type="checkbox"/>
	Concentrate and restrict vehicle access to minimize soil compaction.	Vehicle access is kept away from shorelines, slopes, or other sensitive areas.	Concern about compaction is limited to septic leaching bed.	Vehicles are parked or driven throughout site, contributing to soil compaction.	<input type="checkbox"/>
	Toilet facilities are available.			Toilet facilities are not available.	<input type="checkbox"/>
	The location of buildings and access do not interfere with shorelines or waterways.			<i>*Location of buildings and access interfere with shorelines, waterways, or runoff patterns.</i>	<input type="checkbox"/>

 Fence or rope off all areas that are not to be disturbed.

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION <i>continued</i>					
7 Protecting existing features	Check if there is a municipal by-law that protects the trees on your property. Design or plan accordingly.	Develop a plan or design first and then check if there is a municipal bylaw that protects the trees on your property. Proceed accordingly.		<i>*Cut trees down on your property without checking if a municipal tree-cutting bylaw exists.</i>	<input type="checkbox"/>
	Protect trees from damage caused by digging and heavy machinery,	Protect trees from damage caused by digging and heavy machinery,	Trees are not protected during construction but any damage incurred is immediately and appropriately handled.	Damage to tree trunks, limbs, and roots is left unattended.	<input type="checkbox"/>
	No trees removed for construction.	Trees that need to be felled clearly marked to avoid unnecessary tree removal.	No measures taken to avoid unnecessary tree removal.	Excessive tree removal.	<input type="checkbox"/>
	Soil grade is not altered.	Soil grade is not altered within 3 metres (10 feet) of dripline of any tree to be preserved.	Soil grade is partially altered in sections within dripline.	Soil grade level within the dripline is permanently altered from pre-construction level.	<input type="checkbox"/>
	Soil around trees is not compacted.	There is minimal soil compaction near dripline.	Materials are stored within dripline for limited periods.	Soil is compacted around trees.	<input type="checkbox"/>
	Septic bed, well(s) and environmentally sensitive features such as wetlands and rare trees are protected, and distance requirements are respected.	Septic bed, well(s) and environmentally sensitive features such as wetlands and rare trees are protected from construction activity.	Septic bed and well(s) are protected from construction activity.	<i>*Distance requirements are not considered in protecting septic bed, wells, or environmentally sensitive features.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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DURING CONSTRUCTION *continued*

8 Purchasing and location of soil or fill

No use of off-site soil or fill.

Limited use of off-site soil and/or fill.

Limited use of off-site soil and/or fill.

Excessive use of off-site soil or fill.

No use of off-site soil or fill.

Awareness of the source of soil or fill and no excess or unnecessary fill is used and approval is obtained.

No awareness of the source of soil or fill, but approval is obtained.

No consideration for the non-renewable nature of soil and no approvals obtained.

Fill only used in appropriate areas

***Fill is dumped in any fill-regulated area such as a shoreline**

9 Construction materials

Local non-hazardous materials used where possible

Non-hazardous materials used where possible and no use of oil-based paints or varnishes.

Minimal use of hazardous materials where necessary.

Hazardous materials are used

Materials obtained in a responsible and appropriate manner.

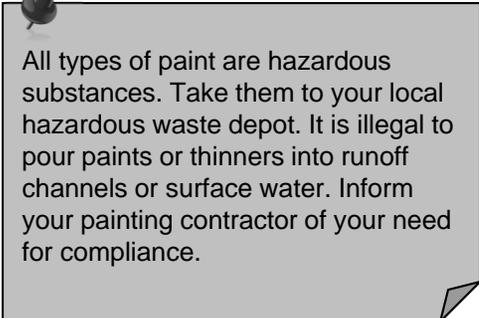
Know where your topsoil is coming from – it may bring contaminants and invasive species onto your property.

Materials sourced unnecessarily from far away or from environmentally - damaging production practices.

***It is dangerous and illegal to deposit fill in flood-prone or regulated shoreline areas.**

Know where your topsoil is coming from – it may bring contaminants and invasive species onto your property.

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION <i>continued</i>					
10 Construction waste	Your local municipality is contacted before construction to learn how to properly sort and dispose of construction waste and it is ensured that contractors dispose of waste appropriately.	Reputable waste removal/disposal company is hired to remove and appropriately dispose of all hazardous waste.	Care is taken to at least prevent paint or solvents from getting into waste water or septic system, or open surface water.	<i>*Waste material or excess fill is dumped into open surface water or waste material is burned (including burn barrels).</i>	<input type="checkbox"/>
	Waste containers are clearly and appropriately labeled and waste materials are recycled when possible.	Waste containers are clearly and appropriately labeled.		Waste is not sorted and recycling of material is not a priority.	<input type="checkbox"/>
	Absolutely no concrete or construction wash water flows into open surface water, towards trees or into septic system.			<i>*Concrete or construction wash water flows into open surface water or is drained into septic system.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Resources List

Before and During Construction

Landscape Design Publications

- Stevens, J. (ed.) 1994. *Living Near the Water: Environment Design for Shoreline Properties*. Burnstown, Ontario: General Shore Publishing House
- Henderson, C.L. et al, 2000. *Landscaping for Wildlife and Water Quality*. St. Paul, Minnesota: Department of Natural Resources.

Municipalities

- Consult the Blue Pages in your phone book
- Local municipality's Chief Building Official (CBO)
- Construction Wastes
- Municipal Tree By-laws

Ontario Ministry of the Environment

www.ontario.ca/ministry-environment/

- *Open burning*, Information Sheet PIBS 631b

Ontario Ministry of Municipal Affairs and Housing

www.mah.gov.on.ca

- *Ontario Building Code (OBC)* – regulates design, construction, operation, and maintenance of on-site septic systems and on building construction.

Ontario Ministry of Natural Resources

www.mnr.on.ca

- *Before you burn grass and debris* ISBN 0-7729-5716-9
- Public Lands Act information

Resource Violations Reporting

- CRIME STOPPERS at 1-800-222-8477 (1-800-222-TIPS)
- MNR toll-free reporting line: 1-877-847-7667

Worksheet #4 – Private Well Water Supply

Use this worksheet to assess the condition of your well(s) and water supply.

Why should you be concerned?

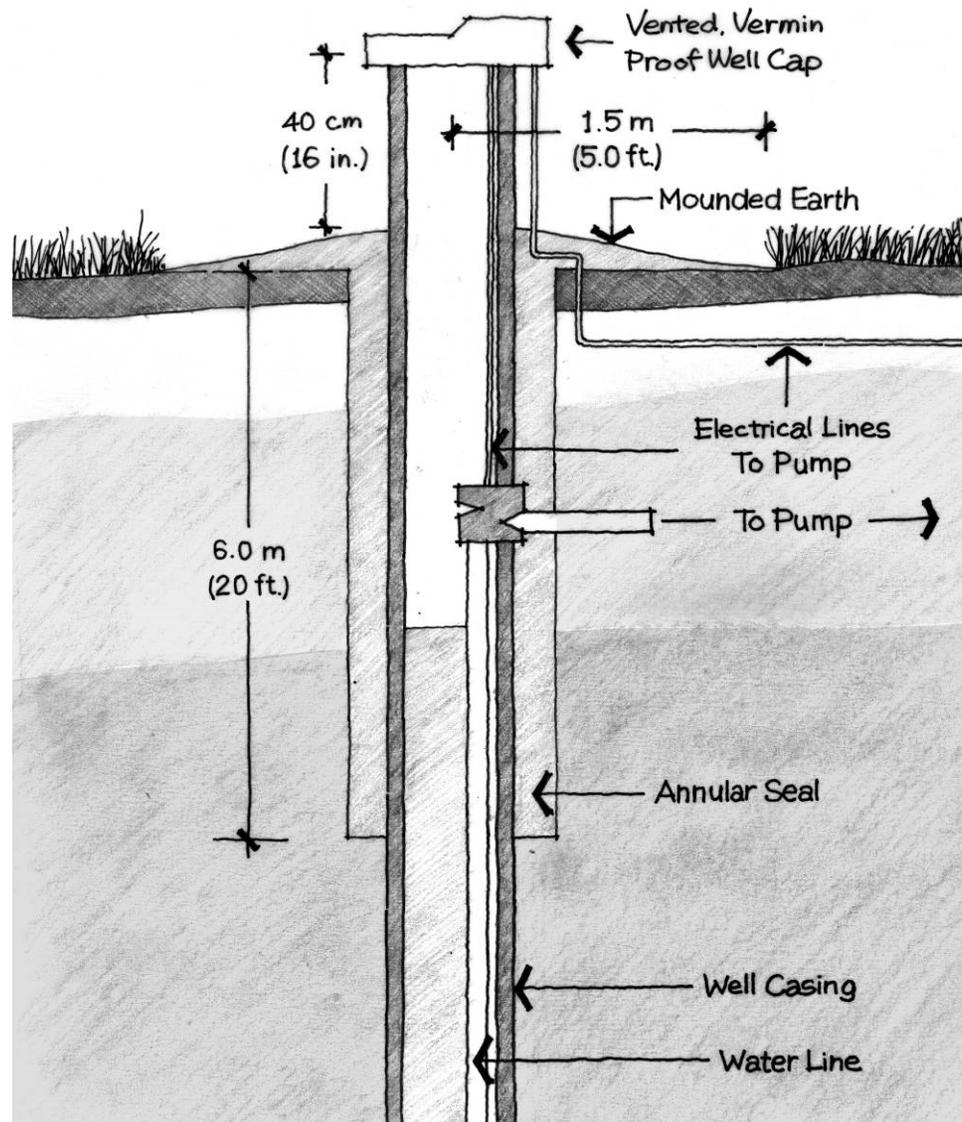
- Wells can provide a clean and safe supply of water, pumped from aquifers below the ground. If you use a private well, you must manage your own water quality.
- If a well is not constructed or maintained properly, or if a contaminant is spilled within the capture zone of a well, the quality of the water supply could be at risk.
- If your groundwater becomes contaminated, it can affect the health of your family. It may also affect the quality of groundwater supplying other wells, lakes or streams in the area. Everyone's well is connected. Your neighbours and community may all be affected.
- It is much easier and cheaper to prevent contamination than to try and clean it up. Treating contaminated water, constructing a new well or getting water from another source are all inconvenient and expensive.
- Whether you use a private well or a municipal system, everyone plays a role in source water protection.

What can you do?

- Make sure the water you drink and the groundwater that supplies your well are protected from contamination. Test your water regularly, at least seasonally.
- Know where your septic system and well are located, as well as those of your neighbours.
- Handle fertilizers, pesticides and other potential contaminants carefully.
- Assume that your entire property recharges your groundwater and contains the capture zone for your well(s).
- Contact a licensed well professional or your local Health Unit to assist with items that get a “2” or “1” rating in this worksheet.

Well Diagram:

This cross-section shows the typical components of a well. Your well may or may not look like this one, but the function is generally the same. You may find this diagram helpful as you navigate through the following worksheet.



Always maintain as great a distance as you can between a potential contaminant and wells or surface water.

Calculate Your Household Water Use

The chart below shows the amount of water used in the average household. Calculate the average amount of water used in your house for a typical day or week.¹

Fixture	Typical Ontario water use	Water use in my household	Water efficiency measure installed	New water use
Toilet	20 litres per flush (standard toilet)	___ litres (___ gal.)	Install toilet water displacement device in the tank – as simple as a plastic bottle filled with sand.	4 litres per flush
			Install a water efficient, 6 litre/flush toilet at a cost of \$150-\$300.	6 litres per flush
Shower	10 to 30 litres per minute	___ litres (___ gal.)	Install water-efficient showerhead at a cost of \$10-\$40.	9.5 litres per minute
Bath	60 litres	___ litres (___ gal.)		
Clothes Washer	208 litres	___ litres (___ gal.)	Do less laundry or buy a water-efficient clothes washer.	100 litres per load
Dishwasher	40 litres	___ litres (___ gal.)	Install water-efficient dishwasher.	26 litres per load
Faucets (toilet and kitchen)	15 litres per minute	___ litres (___ gal.)	Install a kitchen faucet aerator at a cost of \$3.	9.5 litres per minute
Leaks	13 litres per day (leaky faucet) to 190 litres per day (silent toilet leak)	___ litres (___ gal.)		
Other (Domestic)	6 litres	___ litres (___ gal.)		
Total	394 litres	___ litres (___ gal.)	Conversion Factor: Litres x 0.22 = Imperial Gallons	

¹ Source: Government of Alberta Ministry of the Environment. 2001. (www3.gov.ab.ca/env/water/Conservation/residential.cfm#LandscapeWaterUse)

Private Well Water Supply

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
LOCATION OF WELL					
1 Position of water well in relation to potential sources of contamination	Upslope from all sources of contamination.	Upslope from, or level with any source of contamination.	Level with most sources of contamination.	Downslope from any source of contamination so that surface water reaches well.	<input type="checkbox"/>
	All surface water moves away from well.	Surface water runoff does not reach well.	Some surface water runoff may reach well.	Water ponds at and around well.	<input type="checkbox"/>
2 Distance from well to potential sources of contamination	Greater than 90 m (300 ft).	24-90 m (76-300 ft) for drilled well**, OR 47-90 m (151-300 ft) for bored/dug well.	15-23 m (50-75 ft) for drilled well**, OR 30-46 m (100-150 ft) for bored/dug well.	*Less than 15 m (50 ft) for drilled well**, OR * less than 30 m (100 ft) for bored/dug well.	<input type="checkbox"/>
	** Note: Drilled wells must have at least 6 m (20 ft) of watertight casing below ground level. If less than 6 m (20 ft), treat as a bored/dug well.				
CONDITION OF WELL					
3 Condition of casing	Good condition. No defects visible.	No defects visible.	No holes or cracks visible.	Holes or cracks visible or can hear water running into well.	<input type="checkbox"/>
	Checked annually by certified inspector.	Checked every one to two years by certified inspector.	Checked every three years or more by certified inspector.	Never inspected.	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
CONDITION OF WELL <i>continued</i>					
4 Condition of well cap	Excellent condition, commercially manufactured, vermin proof, and tightly secured.	Fair condition, commercially manufactured, vermin proof, and tightly secured.	Commercially manufactured, vermin proof cap is loose or needs repair.	No commercially manufactured vermin proof cap.	<input type="checkbox"/>
5 Condition of well venting	Screened vent in excellent repair.	Screened vent in good repair.	Well vented but not screened.	No well vent.	<input type="checkbox"/>
6 Condition of surface material around well casing	Surface material raised above normal ground level beside well casing, and no space between well casing and surrounding surface material.	No settling of the surface material around well casing and no space between well casing and surrounding surface material.	Can see settling of surface material around well casing and no space between well casing and surrounding surface material.	Can see settling of surface material around well casing or visible space between well casing and surrounding surface material.	<input type="checkbox"/>
7 Casing Depth	More than 45 m (150 ft) below ground level.	31-45 m (100-150 ft) below ground level.	15-30 m (50-100 ft) below ground level.	Less than 15 m (50 ft), or no casing.	<input type="checkbox"/>
8 Casing height above ground level	40 cm (16 in) or more above normal ground level.			<i>*Less than 40 cm (16 in) above normal ground level, in pit or in basement.</i>	<input type="checkbox"/>
9 Age of well	Less than 20 years old.	Less than 40 years old.	40-60 years old.	More than 60 years old.	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MANAGEMENT OF PRIVATE WELL WATER SUPPLY					
10 Type of well	Drilled. – Casing terminates above ground, approved well cap.	Drilled. – Casing terminates in a well pit.	Sand point.	Bored or dug.	<input type="checkbox"/>
11 Backflow prevention	Anti-backflow devices (such as check valves and vacuum breakers) installed on all faucets with hose connections and air gap of at least 15 cm (6 in) maintained.	Anti-backflow devices installed on some faucets with hose connections and air gap of at least 15 cm (6 in) maintained.	No anti-backflow devices but air gap of at least 15 cm (6 in) maintained.	No anti-backflow devices or air gap not maintained.	<input type="checkbox"/>
12 Unused or abandoned wells	No unused or abandoned wells.	Unused wells capped, properly protected and maintained and abandoned wells properly plugged and sealed.	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> Your local Health Unit is a valuable resource in helping you manage the quality of your drinking water. Ask your neighbours what their tests reveal. </div>		<input type="checkbox"/>
13 Water testing	Water tested for bacteria more than 3 times a year (including spring) and more than once a year for other parameters (e.g., nitrate levels).	Water tested 3 times a year for bacteria and once a year for other parameters (e.g., nitrate levels).	Water tested less than 3 times a year for bacteria and not tested for other parameters (e.g., nitrate levels).	Water is not tested.	<input type="checkbox"/>
	Bacteria, nitrate, and other tests always meet Ontario Drinking Water Standards.	Bacteria, nitrate, and other tests usually meet Ontario Drinking Water Standards on the first test and always on the second test (the follow-up check).		Does not meet Ontario Drinking Water Standards on first test or on second test (follow-up check).	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Resources List

Private Well Water Supply

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.on.ca

- Best Management Practices: *Water Wells (BMP 12) and Keeping Your Well Water Safe to Drink (BMP 12K)*
- *Private Water Well Owners – Dealing with Water Shortages* (order no. 99-025)
- *Groundwater – An Important Rural Resource:*
 - *Managing the Quantity of Groundwater Supplies* (order no. 06-115)
 - *Private Rural Water Supplies* (order no. 06-117)
 - *Understanding Groundwater* (order no. 06-111)

Ontario Ministry of Health and Long-Term Care

www.health.gov.on.ca

- Contact the local Health Unit for these Information Sheets:
 - *Get Acquainted with Your Well*
 - *Keeping You Well Informed*
 - *Pathogens and Your Well Water*
 - *Putting Your Well Water to the Test*
 - *Disinfection Instruction Sheet*

Ontario Ministry of the Environment

www.ontario.ca/ministry-environment/

- *Green Facts:*
 - *Important Facts About Water Well Construction* (PIBS no. 3788e01, 2003)
 - *Managing Your Well Water in Times of Shortage* (PIBS no. 3784e, 1999)
 - *The Protection of Water Quality in Bored and Dug Wells* (PIBS no. 3962e01, 2003)
 - *The Protection of Water Quality in Drilled Wells* (PIBS no. 396e01, 2003)
 - *The Protection of Water Quality in Jetted or Driven Point Wells* (PIBS no. 4505e, 2003)
- *Well Aware – A Well Owner’s Guide*
- Information on the Use of Home Water Treatment Devices
- Ontario Water Resources Act
- Ontario Regulation 903 (Water Wells). This regulation governs how wells must be constructed in Ontario. It includes construction standards, distances from contaminant sources, and licensing requirements for well contractors.

Worksheet #5 - Wastewater & Septic Systems

Use this worksheet to determine whether household water is treated safely on your property.

Why should you be concerned?

- In urban areas, household wastewater is treated at a treatment plant before it is discharged into a lake or river.
- In rural areas, a septic tank or similar system is used to treat household wastewater. All the water that flows down your drains ends up in your septic system. It must be able to safely handle all the wastewater to prevent contamination of ground and surface water.
- Household wastewater contains disease-causing bacteria and viruses, household chemicals, and excess nutrients. All of these contaminants can cause serious health and environmental problems.
- Household water should be tested regularly for total coliform and E-coli. If present, these bacteria indicate that the water is not safe for drinking or food preparation. Your septic tank system could be one source of contamination.
- If your home treatment system has to handle too much wastewater, it will not be as effective and may cause premature failure. Increased use of water, through additional appliances or a second bathroom will increase the load on your septic system.
- Not only can septic system failure be highly inconvenient, it can also be very expensive. In addition, new regulations and higher standards may mean that the system may have to be replaced instead of being repaired or upgraded.
- Alternative facilities such as outhouses and chemical toilets can be effective and environmentally responsible. Contact your local Health Unit or municipality to learn more.

What can you do?

- Make sure your septic system is large enough to meet your needs. Look for ways to reduce the amount of wastewater that enters the septic system.
- Protect your health and the quality of your drinking water by disposing of contaminants properly.
- Keep your septic system in good repair. Pump the septic tank out regularly (every 3-5 years).
- Keep trees and shrubs out of your septic field.
- Consider renting a portable privy when hosting large gatherings.

Wastewater & Septic Systems

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
QUANTITY OF WASTEWATER					
1 Efficient water use affects septic function	Conservative water use (less than 180 litres/40 gal. per person per day).*	Moderate water use (180-270 litres/40-60 gal. per person per day).*	High water use (271-360 litres/61-80 gal. per person per day).*	Very high water use (greater than 360 litres/80 gal. per person per day).*	<input type="checkbox"/>
2 Fixtures and maintenance	Water-conserving fixtures throughout house.	Some water-conserving fixtures throughout house.	Fixtures are not inspected regularly.	No water-conserving fixtures.	<input type="checkbox"/>
	Fixtures are inspected regularly,	Main fixtures are inspected regularly.	Fixtures rarely inspected	Fixtures never inspected.	<input type="checkbox"/>
	All leaks fixed immediately.	Most leaks are fixed immediately.	Problems are fixed when found and some leaks are fixed immediately.	Leaks are not fixed immediately.	<input type="checkbox"/>
QUALITY OF WASTEWATER					
3 Solid waste	No use of garbage disposal unit in kitchen sink.		Some use of garbage disposal unit in kitchen sink.	Daily use of garbage disposal unit in kitchen sink.	<input type="checkbox"/>
4 Dissolved waste	Minimal use of environmentally friendly household detergents and cleaners (0.2 litres or 1 cup per week).	Careful use of household detergents and cleaners (0.5 litres or 1 pint per week).	Moderate use of household detergents and cleaners (1 litre or 1 quart per week).	High use of household detergents and cleaners (4 litres or 1 gal. per week).	<input type="checkbox"/>
	No disposal of household solvents or cleaning agents into plumbing system.	Minimal disposal of household solvents and cleaning agents into plumbing system.	Moderate disposal of household solvents and cleaning agents into plumbing system.	Frequent disposal of household solvents and cleaning agents into plumbing system.	<input type="checkbox"/>

Install faucet aerators and use low-flow shower heads.

Using less water helps your septic field perform better

* See Worksheet 4 to calculate your water use.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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QUALITY OF WASTEWATER *continued*

5	Water softener discharge	Water softener does not discharge to septic tank.	Water softener discharges to septic tank but the system is properly designed to accommodate discharge water.	Water softener discharges into septic tank not designed to accommodate discharge water.	<input type="checkbox"/>
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6	Grease and oils	No disposal of household grease or oils into plumbing system and household wastes only.	Minimal disposal of household grease or oils into plumbing system and oil and grease wiped from cooking utensils before washing.	Moderate disposal of household grease or oils into plumbing system and no attempt to reduce disposal of grease and oil from household.	Frequent disposal of household grease or oils into plumbing system.	<input type="checkbox"/>
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WASTEWATER TREATMENT SYSTEM

7	Design and construction	Has Building Permit or Certificate of Approval.	<div style="border: 1px solid black; padding: 5px; background-color: #f0f0f0;"> If on clay soil, plant grass over the leaching bed. If on sand, plant beach grass or leave without a ground cover. Don't park or drive any vehicle or heavy equipment on the leaching bed of your system. </div>	<i>*No Building Permit or Certificate of Approval.</i>	<input type="checkbox"/>	
		System adequately sized.		<div style="border: 1px solid black; padding: 5px; background-color: #f0f0f0;"> All septic systems eventually need replacing. However, with proper maintenance your system can last at least 15 years or longer. </div>	<i>*System not sized according to regulatory requirements.</i>	<input type="checkbox"/>
		System installed by a licensed installer.		<i>*System not installed by a licensed installer.</i>	<input type="checkbox"/>	

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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WASTEWATER TREATMENT SYSTEM *continued*

8 Knowledge of septic system	Excellent knowledge of overall septic system size, location, and operation.	Good knowledge of overall septic system size, location, and operation.	Limited knowledge of overall septic system size, location, and operation.	No knowledge of overall septic system size, location, and operation.	<input type="checkbox"/>
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LOCATION OF WASTEWATER SYSTEM

9 Distance from wastewater treatment system to nearest surface water	Greater than 60 m (200 ft).	30 - 60 m (100 - 200 ft).	15-30 m (50-100 ft) for: <ul style="list-style-type: none"> • septic tank • leaching bed • holding tank • other treatment unit 	* <i>Less than 15m (50 ft) for:</i> <ul style="list-style-type: none"> • <i>septic tank</i> • <i>leaching bed</i> • <i>holding tank</i> • <i>other treatment unit</i> 	<input type="checkbox"/>
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10 Distance from wastewater treatment system to a well	Greater than 90 m (300 ft).	For leaching bed or holding tank: <ul style="list-style-type: none"> • 24-90 m (76-300 ft) (drilled well) • 47-90 , (151-300ft) (bored/dug well) 	For leaching bed or holding tank: <ul style="list-style-type: none"> • 15-23 m (50-75 ft) (drilled well) • 30-46 m (100-150 ft) (bored/dug well) For septic tank or other treatment unit: <ul style="list-style-type: none"> • 15-23 m (50-75 ft) (drilled well) • 15-46 m (50-150 ft) (bored/dug well) 	<i>For leaching bed or holding tank:</i> <ul style="list-style-type: none"> • <i>less than 15 m (50 ft) (drilled well)</i> • <i>less than 30 m (100 ft) (bored/dug well)</i> <i>For septic tank or other treatment unit:</i> <ul style="list-style-type: none"> • <i>less than 15 m (50 ft) (all wells)</i> 	<input type="checkbox"/>
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Always maintain as great a distance as you can between a potential contaminant source and wells or surface water.

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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COLLECTION OF WASTEWATER

11 Source and amount

All wastewater is collected for treatment and there is no loss of wastewater that should be treated.

Downspouts should be diverted away from sewage system disposal areas. An average size home will deposit 11 400 litres (3000 gallons) of water onto the ground after an 8 centimetre (3 inch) rain storm.

**Some wastewater does not reach septic system because of leaks or some wastewater is diverted away from the septic system.*

No clear water is collected and directed to the septic system and no clear water enters the septic system by infiltration through joints, access ports, etc.

Clear water is getting into the septic system.

WASTEWATER TREATMENT SYSTEM

12 Subsurface distribution of wastewater
(septic or other treatment systems)

Pressure or dosed distribution to leaching bed.

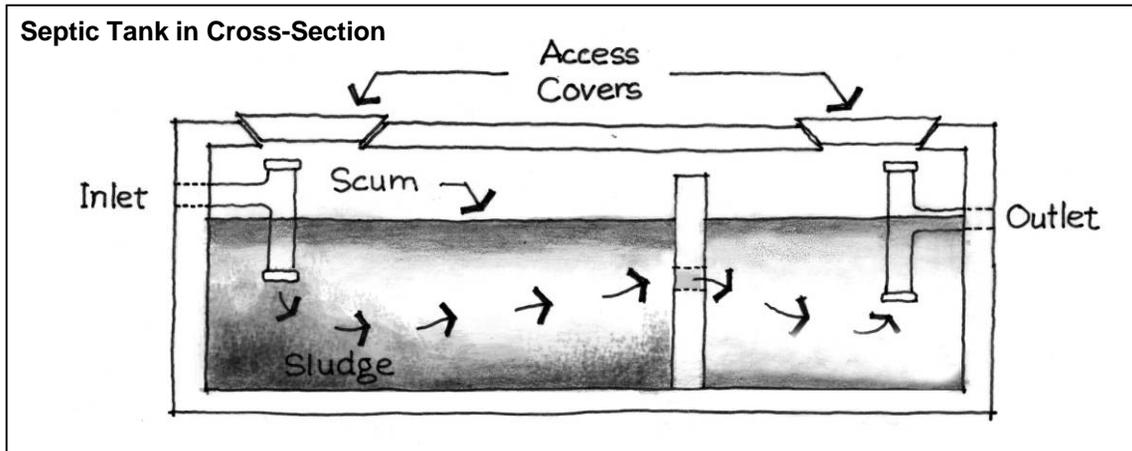
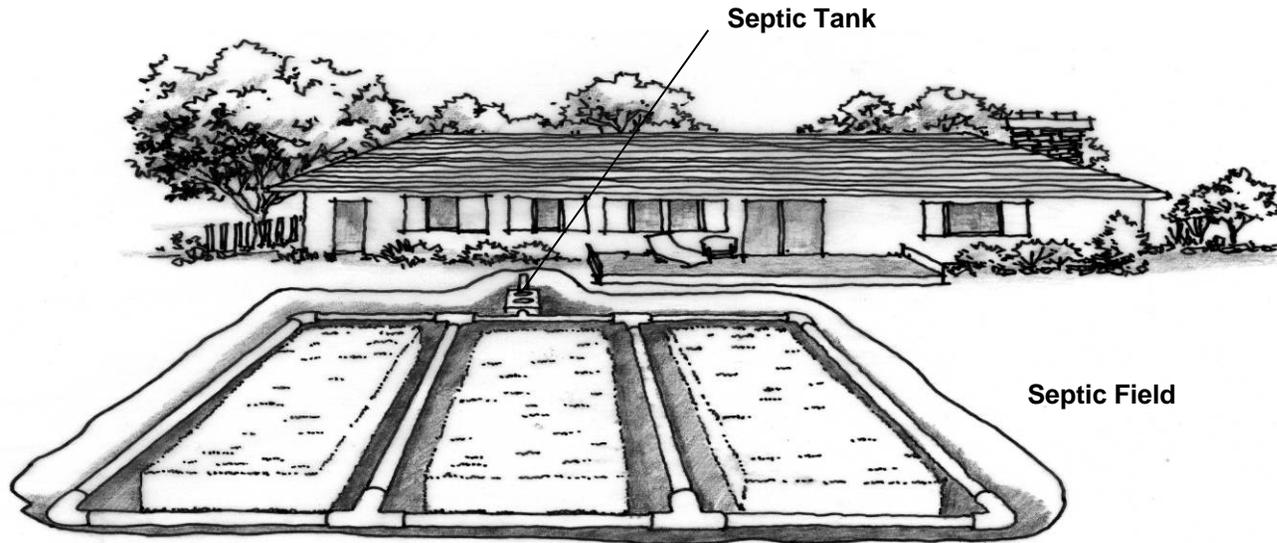
Gravity-fed distribution to leaching bed.

To keep your septic system operating at peak performance, don't let unnecessary clear water enter the system. This means fixing leaks and conserving water.

**Drainage directly into septic field, with no septic tank or piped to anywhere but a septic or other approved treatment system.*

* These conditions may violate provincial legislation or municipal by-laws.

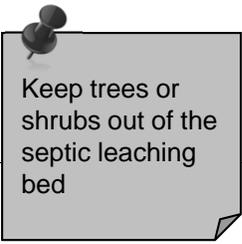
A Simple Septic System



There are many different septic system designs on the market, suited to different soil types, different spaces and different budgets. The function, however, remains generally the same: to remove harmful materials and contaminants from your household waste, returning pure water into the environment. To make this possible, careful and appropriate management and maintenance of your septic system are essential. This diagram shows a basic septic field (top) attached to the outlet pipe of a two-chamber septic tank (enlarged at bottom).

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PRETREATMENT SYSTEM					
13 Septic tank	Two compartment tank and septic tank checked every 3 years and pumped as required.	Two compartment tank and septic tank checked every 4-5 years and pumped as required,	Single compartment tank or septic tank checked every 6-10 years and pumped as required,	Single compartment tank or seldom pumped out – last time more than 10 years ago,	<input type="checkbox"/>
	Good maintenance - baffles and tank checked and no leaks.	Some maintenance and no leaks.	No maintenance but no leaks.	No maintenance, no checks, and leaks from tank.	<input type="checkbox"/>
14 Other treatment system	Regular maintenance program followed and no mechanical failures and loaded at rate below design capacity.	Regular maintenance program followed, no mechanical failures and loaded at rate near design capacity.	Regular maintenance program not followed or occasional failures (once every 2 years).	No maintenance Program, frequent system failure or system overloaded.	<input type="checkbox"/>
15 Holding tank - no leaching bed connected	Capacity is higher than design requirements,	Capacity meets design requirements.	Loaded at design capacity.	<i>*Capacity does not meet recommended guidelines</i>	<input type="checkbox"/>
	Tanks checked, no leaks and working alarm system.		Tanks not checked for leaks or alarm system not working.	<i>*Leaks and overflow from tank or no alarm system.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PRETREATMENT SYSTEM <i>continued</i>					
16 Leaching bed location and vegetation	Located more than: • 5 m (16½ ft) from any building or structure. • 3 m (10 ft) from any property line.	Located: • 5 m (16½ ft) from any building or structure. • 3 m (10 ft) from any property line.		<i>*Located less than:</i> • 5 m (16½ ft) from any building or structure. • 3 m (10 ft) from any property line.	<input type="checkbox"/>
17 Leaching bed surface water drainage	Surface water drains away from leaching bed area.			Surface water drains onto leaching bed area.	<input type="checkbox"/>
18 Depth to water table or bedrock from trench bottom	More than 1.8 m (6 ft).	0.9-1.8 m (3-6 ft).		<i>*Less than 0.9 m (3 ft).</i>	<input type="checkbox"/>
19 Leaching bed loading (visual inspection)	Soil always firm and no odours.	Ground is seldom wet, or spongy and no odours.	Ground is frequently wet or spongy or odours noticed occasionally.	Ground is always wet or spongy, strong odours noticed frequently or <i>*pooling or bubbling of wastewater noticeable on surface.</i>	<input type="checkbox"/>
HAULED SEWAGE					
20 Disposal of pumpage from septic tanks, other treatment systems, and holding tanks	Regulated, certified disposal by a licensed hauler.			<i>*Disposal is not done by a licensed hauler.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Resources List

Wastewater and Septic Systems

Canada Mortgage and Housing Corporation

www.cmhc-schl.gc.ca

- *Your Septic System*
- *Household Guide to Water Efficiency*

Ontario On-site Wastewater Association

www.oowa.org

- *Getting to Know Your Septic System*
- *About Your House*
- *Buying a House with a Well and Septic System*
- *Your Septic System*
- *A Guide to Operating & Maintaining Your Septic System*
- *OOWA Septic Dos and Don'ts*

Ontario Rural Wastewater Centre

www.uoquelp.ca/orwc/

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.on.ca

- *Septic Smart, Understanding Your Home's Septic System* (AF-139)
- *Septic Smart, Advanced Treatment Systems – Alternatives to Conventional Septic Systems* (AF-146)
- *Septic Smart, Rural Septic System Checklist* (AF-144)
- *Care and Maintenance of a Rural Septic Tank System* (order no. 93-081)

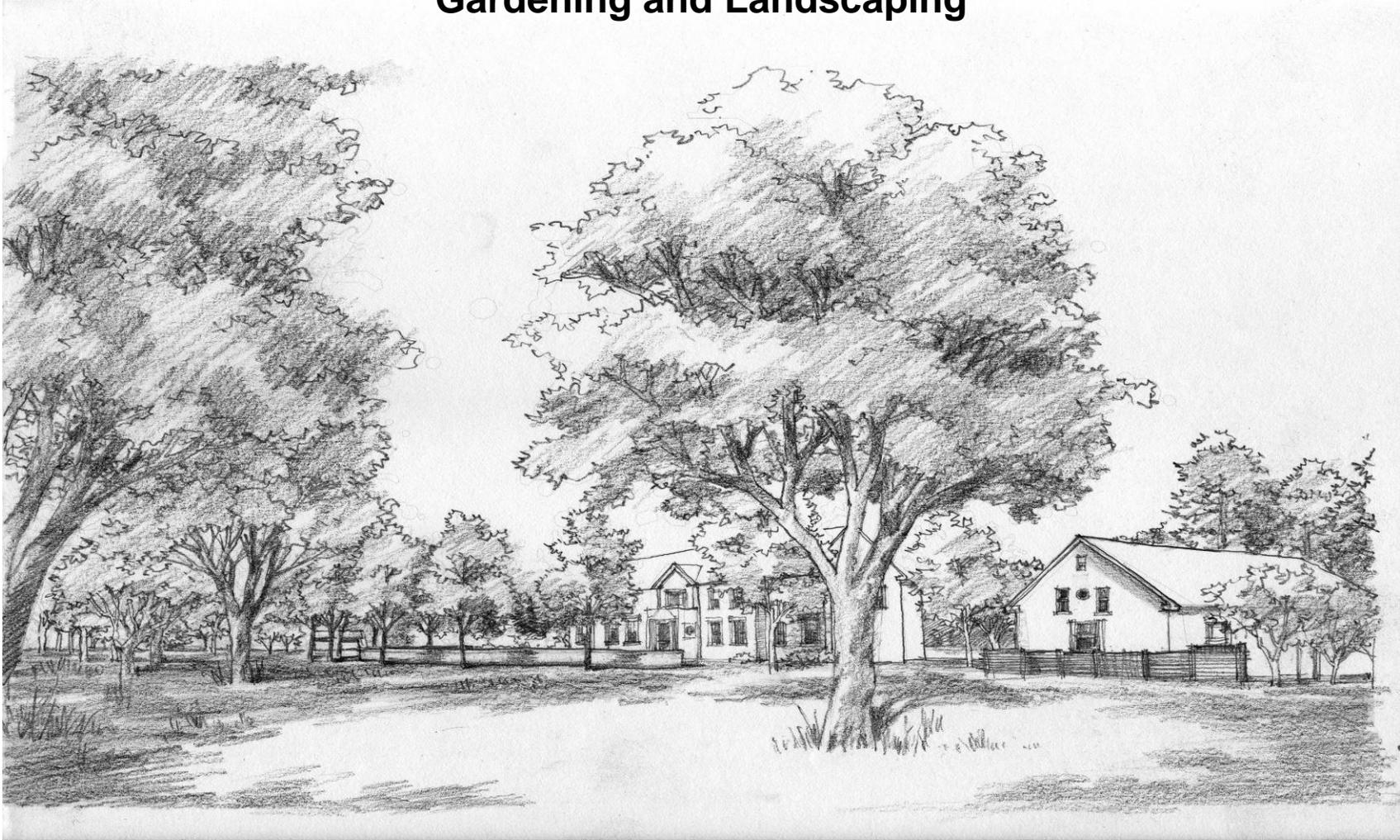
Ontario Ministry of Municipal Affairs and Housing

www.mah.on.ca

- *Septic Smart, New Ideas for Household Septic Systems on Difficult Sites* (www.ontariosoilcrop.org)
- Ontario Building Code Part 8

Worksheet #6

Gardening and Landscaping



Gardening and Landscaping

Worksheet #6a – Landscape Water Efficiency

Use this worksheet to learn about water efficiency in the landscape.

Why should you be concerned?

- There is a limited supply of fresh, clean water. South-eastern Georgian Bay is an important source that we need to protect.
- As water moves through the ground, it is filtered and purified before it is stored in underground aquifers. If water is drawn from these aquifers at a rate faster than it can be replenished by the water cycle, we can experience severe shortages and damage to aquatic systems.
- Prolonged temperature changes, such as heat waves, make the problem worse by lowering the groundwater levels even further.
- While the fresh water supply is shrinking, demand from municipalities, industries and agriculture is always increasing.
- The more water you draw from your well, the more you influence water sources and levels in the surrounding landscape. Minimizing your use of ground and surface water will also reduce your impact on local ecosystems.
- Whether your drinking water comes from a private or a municipal well, we're all pulling water from the same limited source.

What can you do?

- Find out how much water you use in your landscaping and gardening.
- Choose proper equipment that is water efficient and keep it in good condition. Repair all leaks.
- Consider plants that grow well in local conditions without a lot of irrigation.
- Teach children to respect the natural environment. Encourage them to help with recycling, weeding and conservation. Help them understand how your actions influence the world around you.

Landscape Water Efficiency

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating	
WATER MANAGEMENT AND USE						
1 Knowledge of water use in the landscape	Water use is monitored regularly and steps are taken to improve efficiency.		Water use is monitored on occasion.		Water use is not monitored.	<input type="checkbox"/>
	Regular monitoring for leaks. Leaks are fixed immediately.		Leaks are repaired only when they become a problem.		Leaks are not repaired.	<input type="checkbox"/>
2 Watering equipment type	Irrigation equipment applies water to plant rooting area only (e.g., drip system).		Low-level sprinkler system.	Mid-level sprinkler or mobile sprinkler head.	Fixed sprinkler head.	<input type="checkbox"/>
	3 Watering system		System is properly designed and sized for the size of the garden or landscaped area.		Irrigation system too large for the garden area.	<input type="checkbox"/>
	No ponding of irrigation water.	Water ponds briefly but then infiltrates soil.	Irrigation water ponds but does not run off the property.	Water runoff along the surface and into any underground drains.	<input type="checkbox"/>	

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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WATER MANAGEMENT AND USE *continued*

4 Watering your plants

Good knowledge of plant water needs and limitations,	General recommendations followed for water needs of specific plants,	General recommendations for water needs of specific plants known but not always followed.	Water needs of plants are not known.	<input type="checkbox"/>
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Soil moisture, water application rate and the volume of water are monitored.	Soil moisture, water application rate and the volume of water are usually monitored.	Soil moisture, water application rate or the volume of water are occasionally monitored.	Soil moisture, water application rate and the volume of water are never monitored.	<input type="checkbox"/>
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Watering schedule is adjusted according to rainfall, stage of plant development, use of water gauges, and plant appearance.	Watering schedule is sometimes adjusted according to rainfall, stage of plant development, use of water gauges, and plant appearance.	Watering limited to when establishing new plants.	Watering is not adjusted according to rainfall, stage of plant development, use of water gauges, and plant appearance.	<input type="checkbox"/>
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Water only in the early morning.	Water only in the early morning or early evening.	Water only in the late evening.	Water during the hottest hours of the day.	<input type="checkbox"/>
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Use rain barrels to catch rainwater that can later be used to water gardens during low rain periods. Cover the rain barrel with a screen to prevent mosquito breeding.

Watering in the morning (versus the evening) lowers the chance of fungal disease on plants.

Resources List

Landscape Water Efficiency

Capital Regional District

www.crd.bc.ca

- *Straight Talk about Landscape Care During Water-use Restrictions*

Regional Municipality of Durham

www.durham.ca

- Information on water conservation

Regional Municipality of York

www.york.ca

- *Water for Tomorrow*

Toronto's Water Efficiency Plan

www.toronto.ca

- Toronto's program for water efficiency

U.S. Environmental Protection Agency

www.epa.gov/WaterSense/docs

- *Water Smart Landscape Guide*

Gardening and Landscaping

Worksheet #6b: Trees Around the Homestead

Use this worksheet to assess trees around your home or cottage.

Why should you be concerned?

- Trees provide shelter and a food source for wildlife. Their presence is critical to the health of their ecosystems and watersheds.
- The roots of trees and shrubs anchor the soil, helping to stabilize slopes and prevent the loss of soil through erosion.
- Trees remove carbon dioxide, one of the main gases involved in climate change, from the atmosphere. They also absorb and store many pollutants that are emitted into the air from industry and cars. This helps to improve the quality of air that we breathe.
- Trees can be natural air conditioners. If planted strategically around windows, doors and outdoor activity areas, trees (especially larger, mature ones) can provide shade from the hot summer sun.
- Similarly, in winter, evergreen trees can provide shelter from cold winds. This can lower the heat loss from buildings and help reduce heating costs.
- From a real-estate perspective, trees add value to a property. They not only help to create an established feeling in a neighbourhood or property, they also improve the appearance.

What can you do?

- Protect trees from animal browsing, insect and disease infestation and physical damage from machinery or weather events.
- Plant appropriate trees where possible. Check with *Worksheet #6d - Plant Selection and Use*, or a Conservation Authority to ensure that you are not planting invasive species. Native plants are best suited to survive in local conditions.
- Identify mature and rare trees that you want to protect. Include these in a long-term management plan.
- Select and plant trees carefully so that they do not become hazards to personal safety, to your home or to your property. Do not plant trees on or near to your septic system.

Trees Around the Homestead

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TREE ECOLOGY					
1 Understanding and appreciation for the role of trees in ecosystem health	Proper instructions followed when planting trees and tree species selected to suit existing site conditions.	Trees planted following proper instructions.		No consideration given to tree ecology in selection of new trees.	<input type="checkbox"/>
	Only native species suited to your location are planted	Priority given to native species suited to your location.	Non-invasive, exotic species are planted.	Invasive species are planted.	<input type="checkbox"/>
	Standing, non-hazard dead trees are left in place to provide habitat. Only hazard trees are felled and left to rot in place.	Hazard or other trees that are felled are left to rot in place.	Some wood is left to rot and provide habitat while some is removed.	All felled wood is removed from your property.	<input type="checkbox"/>
	Trees and shrubs on bluffs and other slopes are protected and never removed.	Only some trees (e.g., hazard trees) are removed from bluffs and other slopes. Great care is taken to ensure that slope stability is not compromised.	Many trees are removed from bluffs and other slopes. No care is taken to ensure that slope stability is not compromised.	All natural vegetation is removed from bluffs and other slopes or <i>*tree limbs that overhang waterways or shores are cut.</i>	<input type="checkbox"/>

Before clearing or trimming trees get a resource person to help you with your plan and check local tree bylaw requirements.

Before you cut down a tree, consider the time it took to grow to its current size

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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TREE MANAGEMENT

2 Tree maintenance and care

All trees are protected against browsing, injury, and potential diseases and no healthy trees are removed.

Trees in shoreline and watercourse buffers are protected and no healthy trees are removed.

Trees are not protected or some healthy trees are removed.

Lot is generally cleared.

Protect trees during construction by ensuring that there is no disturbance within the dripline.

Branch pruning is done properly and at the right time to provide views from a distance.

Branch pruning is irregular but is done properly.

Trees are pruned carelessly or without regard for tree health and vigour.

Trees are watered properly and regularly for a minimum of three years after planting and mulch is properly piled at least 10 cm (3 inches) from tree trunk.

Trees are watered during hot, dry periods for the first three years after planting and mulch is properly piled at least 10 cm (3 inches) from tree trunk.

Trees are watered irregularly but mulch is properly piled at least 10 cm (3 inches) away from tree trunk.

Watering is inadequate during the first three years following planting or mulch is piled too close to the tree trunk, causing damage to bark.

3 Knowledge of issues related to tree health

Have knowledge of potential insect and disease problems in your area and a resource person is consulted to assess tree health and development and to develop a long-term management plan.

A professional is hired to assess tree health and development and to develop a long-term management plan.

Existing trees are checked periodically for disease or insect infestation.

No consideration is given to tree health or insect problems in your area.

Be aware of the source of new trees when purchasing and ensure they are infection-free before planting.

If necessary, ensure trees are properly staked after planting and that stakes are removed after 2 years.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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TREE MANAGEMENT

4 Tree root system

Most tree roots extend beyond the dripline of the tree.

Tree rooting zone has adequate soil volume and conditions appropriate to the tree species.

Tree rooting zone is adequate but may need supplemental feeding.

Tree rooting zone, or the area available for root growth, is at least 60% of appropriate volume and may require supplemental watering during dry spells.

Soil volume and growing conditions of rooting zone are inadequate for the tree species selected.

5 Soil

Tree species selected is well suited to existing soil conditions especially soil structure and moisture availability.

Tree species selected is tolerant of existing soil conditions.

Tree species selected will survive existing soil conditions with occasional supplemental feeding and watering.

Tree species selected is unsuited to existing soil conditions, especially moisture availability.

Cues for proper species selection can be gained by looking at nearby native or non-invasive trees that are thriving in the same conditions as your property.

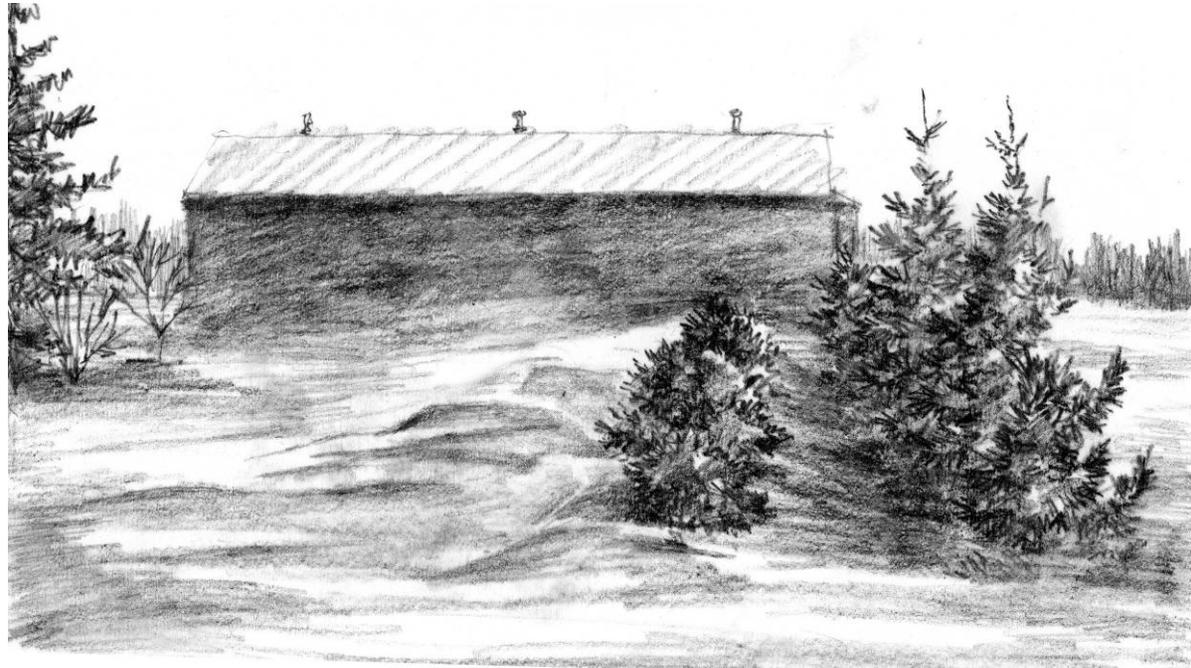
Never plant trees within the septic system area (tank or leaching field).

Windbreaks and Shelterbelts:

Creating comfort and protecting your property

For the most part synonymous, a *windbreak* or *shelterbelt* is made up of one or more rows of trees or shrubs designed and situated to provide shelter from the wind. The term *shelterbelt* is generally used when the location and function is to protect buildings and homesteads.

Windbreaks and shelterbelts help reduce the impacts of blowing winds. They can help to keep heated buildings warmer, reducing energy use and costs. They provide screening for the home from adjacent roads and neighbours, also reducing dust and noise. In fields, soil erosion is checked and crops are less stressed from strong winds. Windbreaks and shelterbelts can also act as a living snow fence, reducing snow accumulation on roads and around buildings and yards and parking areas. They also serve to beautify a property and the landscape.



Windbreaks and shelterbelts also serve as wildlife habitat. Certain birds may nest within them and they serve as corridors for travel for other creatures.

Depending on the specific need, the design of a windbreak or shelterbelt can be varied as to the density, width, and height. A dense, wider design will provide more protection against strong winds and provide more wildlife habitat. Height will determine the “shadow” of the effect, a factor important when one of the functions is as a snowfence.

Generally, conifers are desirable. However, deciduous trees and shrubs can also be incorporated.

Resources List

Trees Around the Homestead

Forest Gene Conservation Association

www.fgca.net

- On-line guide to tree and shrub species native to your local area

Landowner Resource Centre

www.lrconline.com

- Ontario Extension Note: *Maintaining Healthy Urban Trees*

Nottawasaga Valley Conservation Authority

www.nvca.on.ca

- Afforestation and Naturalization information and programs

Ontario Forestry Association

www.forestsonario.ca

- Information Resources

Ontario Ministry of Natural Resources

www.mnr.on.ca

- *Common Pests of Trees in Ontario*

Ontario Woodlot Association

www.ont-woodlot-assoc.org/

- Information Resources

Severn Sound Environmental Association

www.severnsound.ca

- Tree Planting and Distribution Programs

Society for Ecological Restoration (Ontario Chapter)

www.ser.org/ontario

- *Native Plant Resource Guide*

Gardening and Landscaping

Worksheet #6c - Plant Selection and Use

Use this worksheet to help select appropriate plants for your landscape.

Why should you be concerned?

- Native plants have evolved as part of a greater ecological community. They are well adapted to local conditions, and generally have few disease or insect problems.
- Using native species helps to integrate your property into the greater landscape context.
- Native plants are a valuable food source for insects and native wildlife. They also provide important habitat for many kinds of species including many species at risk.
- Invasive species can spread into other areas and are difficult to remove. They can introduce disease and require more maintenance such as watering and fertilizing.
- Extensive lawns reduce the diversity of plant and animal life and should be avoided.
- Extensive lawns also contribute to erosion and increase the potential for slope instability.

What can you do?

- Find out about the plant community in which you live and select plants with the help of a Conservation Authority, your local naturalist club, or a reputable nursery.
- Never plant invasive plants on your property and understand which invasive species already exist in your area.
- Know your soil type and depth.
- Reduce your lawn area to only what is needed for particular activities and keep it as far as possible from any water-body or shoreline.
- Use low-maintenance plants that don't require watering or fertilizing.
- Do not dispose of plant materials in natural areas. Compost them or take them to the landfill.

At the nursery: What you should ask...

- What native, local plants do you have?
- Are they nursery grown or were they harvested from the wild?
- Is there potential for invasion?
- How can you control or eradicate it if necessary?
- What are the nutrient and water requirements?

Plant Selection and Use

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
1 Plant selection and control	No use or presence of invasive plants on property.	No new planting of invasive plants and measures taken to eliminate existing invasive plants.	No new planting of invasive plants.	Continued use of invasive plants.	<input type="checkbox"/>
	Complete eradication and proper disposal of existing invasive plants on your property.	Long-term management plan for the eradication of existing invasive plants.	Short-term management plan for the eradication of existing invasive plants.	No attempts to eradicate invasive plants.	<input type="checkbox"/>
	Match plant selection to your soil conditions and only native plants used.	Plant selection suits local soil and climate conditions and non-invasive plants selected.	Occasional addition of nutrients to support non-invasive plants.	Plant selection does not suit local soil and climate conditions.	<input type="checkbox"/>

Test your soil for nitrogen, phosphorus and potassium levels before adding nutrients. Contact a soil testing lab for more details on soil sampling

When selecting any plant, consider its size at maturity and determine if it is appropriate to the space available.

When planting in a floodplain, ensure that plants can tolerate seasonal flooding conditions.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating	
2 Garden monitoring	Regular checks to ensure that invasive species have not established in gardens.	Occasional checks to ensure that invasive species have not established in gardens.	Irregular checks to ensure that invasive species have not established in gardens.	No checks to ensure that invasive species have not established in gardens.	<input type="checkbox"/>	
	Invasive plants are immediately disposed of in an appropriate manner.	Invasive plants are disposed of in an appropriate manner.	If spotted, invasive plants are immediately disposed of improperly.	When spotted, invasive plants are not disposed.	<input type="checkbox"/>	
3 Lawns	<p>If planting a traditional lawn, choose a grass that is hardy, pest resistant and non-invasive. During hot, dry weather, allow grasses to go dormant.</p>	Lawn is kept to a minimum size and at a maximum distance from any water's edge and no use of pesticides, fertilizers or irrigation.	Lawn is kept to a minimum size or at a maximum distance from any water's edge.	<p>To gradually remove or reduce the size of your lawn, stop mowing. Gradually native plants will return.</p>	Much of property is given over to lawn or lawn is used to the water's edge.	<input type="checkbox"/>
		Learn about appropriate alternative groundcovers from local experts and plant them and encourage local nurseries to stock native groundcovers.	Allow for a mix of native and non-invasive plants that tolerate some mowing and drought.		Non-invasive plants used that tolerate some mowing and drought.	Species used require extensive use of irrigation, fertilizer or pesticides or use of invasive species.
			Sod is used to establish new lawn.	Establishment of new lawn with seed, subject to erosion.	Bare soil.	<input type="checkbox"/>

Lawn Care: Tips on how to have a healthy, low-maintenance lawn

When to water? How much?

- ❑ Watering in the morning is best. In hot, dry weather and during water shortages, allow grass to become dormant. Water 7-12 mm (0.25- 0.5 in) every 2 or 3 weeks. Grass will look brown but it is dormant, not dead.
- ❑ Encourage deep rooting by watering infrequently but thoroughly. Your lawn needs no more than 2.5cm (1 inch) of water per week.
- ❑ Choosing drought-tolerant and native plants will reduce the need for watering

Fertilizing

- ❑ Leaving grass clippings on the lawn can increase soil fertility up to 50%. Locally produced compost is a good option for flower and vegetable gardens.
- ❑ Do not use unnecessary fertilizers. If you must fertilize a lawn, use phosphorus-free fertilizers.
- ❑ If you do use a fertilizer, choose a slow-release product and fertilize in the fall. The nutrients are released slowly, preventing 'lawn burn' and groundwater contamination.

When to mow? How?

- ❑ Mow when the grass is as dry as possible, and cut the lawn when the grass is high.
- ❑ Leave your grass at least 8 cm (3 in) long. This encourages root growth and lessens moisture loss.
- ❑ Aerating your lawn improves rooting conditions.

Dealing with weeds

- ❑ Remove unwanted plants from lawn by hand using long handled tools. It is easier to remove weeds when the ground is damp. Alternatively, pour boiling water over the exposed roots of unwanted plants.
- ❑ Spread a layer 8-10 cm (3-4 in) thick of natural mulch overtop of your garden. This will prevent weed seeds from germinating.
- ❑ If you do use a pesticide, directly spray only those plants that you want to remove. Avoid spraying the entire lawn.
- ❑ Appropriately dispose of invasive plants and plant native species. Check the Resources List for information on the control of invasive species.

Invasive Species

Be aware of the plant that can grow anywhere...

A well-intentioned gift from a friend or neighbour may end up taking over your garden and spreading into nearby plant communities where it can have a disastrous impact on the health of that ecosystem.

Being invasive depends on site conditions. It is possible that a well-contained plant in your garden may run rampant in a friend's garden.

Never accept or give plants if you are unsure. The following is a *partial* list of invasive plants that are of concern in Ontario. Check with local authorities to learn if additional plants are invasive in your area.

AVOID USING THESE PLANTS!

Trees

- Norway maple (*Acer platanoides*)
- Horse chestnut (*Aesculus hippocastanum*)
- European birch (*Betula pendula*)
- Russian Olive (*Elaeagnus angustifolia*)
- Autumn Olive (*Elaeagnus umbellata*)
- White mulberry (*Morus alba*)
- Scots pine/Scotch pine (*Pinus sylvestris*)
- White poplar/Silver poplar (*Populus alba*)
- Black locust (*Robinia pseudoacacia*)
- European mountain ash (*Sorbus aucuparia*)
- Siberian Elm (*Ulmus pumila*)

Shrubs

- Japanese barberry (*Berberis thunbergii*)
- Oriental bittersweet (*Celastrus orbiculatus*)
- European privet (*Ligustrum vulgare*)
- Japanese honeysuckle (*Lonicera japonica*)
- Multiflowered rose (*Rosa multiflora*)
- Glossy Buckthorn (*Rhamnus fragula*)
- European mountain ash (*Sorbus aucuparia*)
- Wayfaring tree (*Viburnum lantana*)
- European highbush cranberry (*Viburnum opulus*)

Herbaceous Plants

- Periwinkle, Myrtle (*Vinca minor*)
- Japanese knotweed (*Polygonum cuspidatum*)
- Reed canary grass (*Phalaris arundinacea*)
- Common reed (*Phragmites australis*)
- Silver dollar (*Lunaria annua*)
- Goutweed (*Aegopodium podagraria*)
- Leafy spurge (*Euphorbia esula*)
- European frogbit (*Hydrocharis morsus-ranae*)
- Yellow flag (*Iris pseudacorus*)
- Chinese silver grass (*Miscanthus sinensis*)
- Kentucky blue grass (*Poa pratensis*)

Resources List

Plant Selection and Use

Books

- Deacon, G. 2006. *Green Tips: How to Save Money and the Planet*. Toronto, ON: Green Living Enterprises
- Rubin, C. 1990. *How to Get your Lawn and Garden Off Drugs: Pesticide-free Gardening for a Healthier Environment*. Madeira Park, BC: Harbour Publishing.

Canadian Botanical Conservation Network

www.bgci.org

- On-line publications

Canadian Wildlife Federation

www.cwf-fct.org/

- *Gardening for Wildlife*
- *Canadian Native Plant Suppliers List*

Nottawasaga Valley Conservation Authority

www.nvca.on.ca

- Afforestation and Naturalization information and programs

Ontario Invasive Plant Council

www.ontarioinvasiveplants.ca/

- *Ontario's Most Unwanted Fact Sheet series*
- *Garden Smart: Grow Me Instead*
- *Compendium of Invasive Species Educational Materials*

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.on.ca

- *Ontario Weeds* (Agdex 640)

Ontario Ministry of Natural Resources

www.mnr.on.ca

- *Landscaping for Wildlife*
- *Shrubs for Wildlife*

Ontario Nature

www.ontarionature.org

- *Natural Invaders*
- *Backyard Habitat*

Weed Control Act

www.e-laws.gov.on.ca/DBLaws/Statutes/English/

Gardening and Landscaping

Worksheet #6d – Phosphorus and Other Nutrients

Use this worksheet to learn about the importance of nutrients in the landscape.

Why should you be concerned?

- Nutrients have an important and beneficial role in plant growth and soil amendments. As plant roots take up nutrients from the soil over time, the soil may become depleted, resulting in less vigorous plant and lawn growth.
- Over-application of fertilizers can result in fertilizer running off the garden or lawn. This can contaminate both groundwater and surface water and encourage algae and algal blooms in the waterbody the runoff drains to.
- Our activities both inland and along shorelines affect the nutrient-loading of our streams, rivers and lakes.
- Water quality protection includes nutrient management and the appropriate use of fertilizers.
- We can all potentially contribute to harmful eutrophication or algae blooms. Eutrophication reduces water quality and thereby recreational pleasure.

What can you do?

- Test to find out the nutrient level in your soil before adding any nutrients.
- Effectively manage nutrients in an environmentally responsible manner.
- Reduce the amount of fertilizers you apply to your lawn and gardens.

N-P-K

Nitrogen (N)	Phosphorus (P)	Potassium (K)
For leaf development and vivid green color.	For root growth.	For root development and disease resistance.

Phosphorus & Other Nutrients

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
FERTILIZER USE AND APPLICATION					
1 Understanding of plant nutrient requirements and fertilizer use	Good understanding of plant nutrient requirements .	Good understanding of plant nutrient requirements.	Basic understanding of plant nutrient requirements.	Little to no understanding of plant nutrient requirements.	<input type="checkbox"/>
	Soil is tested to determine nutrient requirements before fertilizing.	Plants are monitored regularly to detect nutrient deficiencies.	Occasional monitoring for plant nutrient deficiencies.	No consideration for soil condition or plant nutrient requirements	<input type="checkbox"/>
	Fully-composted manure and yard waste are used appropriately to amend soil and no additional fertilizer is used.	Fully-composted manure and yard waste are used appropriately to amend soil and some controlled spot use of fertilizer as necessary.	Occasionally apply fertilizer over the entire garden and/or lawn.	Over-application of nutrients or disregard for following package instructions.	<input type="checkbox"/>
	Compost produced on-site.	Local, well-rotted compost or manure is used.	Well-rotted compost or manure used but not obtained from local sources.	Compost used of unknown source and type.	<input type="checkbox"/>
	Fertilizer not used.	Slow-release synthetic fertilizer is used.	Quick-release fertilizer used but nutrient composition appropriate to situation.	A quick-release synthetic/commercial fertilizer is used inappropriately.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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FERTILIZER USE AND APPLICATION *continued*

2 Application practices and water access.	Nutrient application is a minimum of 30 metres (100 feet) from wells, water intakes, streams and water courses.	Nutrient application is a minimum of 30 metres (100 feet) from wells, water intakes, streams and water courses.	Nutrient application is a minimum of 30 metres (100 feet) from wells, water intakes, streams and water courses.	* <i>Nutrient application closer than 30 metres (100 feet) to wells, water-intakes, streams and water courses.</i>	<input type="checkbox"/>
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NEVER compost invasive species unless you are sure there are no seeds present and that composting will effectively kill the root system.

	A permanently vegetated buffer, greater than 3 metres (10 feet) wide runs between the area of nutrient application and any well, water intake, stream or water course.	Some vegetation between the area of application and any well, water intake, stream or water course.	Sparse vegetation between the area of application and any well, water intake, stream or water course.	No vegetated buffer.	<input type="checkbox"/>
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	Soil not saturated before nutrient application and checked to ensure that heavy rain or thunderstorms are not forecast for at least 24 hours following application.	Soil not saturated before nutrient application		Fertilizer, compost or manure applied to frozen or saturated soils, or on slopes where surface run-off is likely,	<input type="checkbox"/>
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COMPOST MANAGEMENT

3 Composting practices	Household compost is rodent proof, compost composition is monitored and mixed regularly, and compost is used on-site.	Compost composition is monitored and mixed regularly and compost used on-site.	Household compostable waste is sent to local composting facility.	Compostable material not composted.	<input type="checkbox"/>
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* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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WATER CONTAMINATION

<p>4 Artificial water features and ponds</p>	<p>There is no <u>artificial</u> water feature or pond on the property.</p>	<p>Water feature and landscaping are designed to minimize the amount of light falling on water feature, and water is continuously moving in water feature, and water feature(s) are located as far from waterways or open natural water as possible.</p>	<p>Water feature(s) are located as far from waterways or open natural water as possible.</p>	<p>Indiscriminate design, placement and chemical treatment of artificial water features.</p>	<input type="checkbox"/>
<div style="border: 1px solid black; padding: 10px; background-color: #f0f0f0; margin: 10px 0;">  <p>If you are experiencing problems with algae in your water feature or pond, be sure to properly diagnose the cause of the problem before attempting treatment.</p> </div>					

<p>5 Livestock and large animal access</p>	<p>Livestock are restricted from all water features.</p>	<p>Livestock are restricted from accessing water features except at controlled crossing points or controlled points of access.</p>	<p>Livestock have unrestricted access to all water features but alternative, acceptable source is available.</p>	<p>Livestock have unrestricted access to all water features and no alternative source.</p>	<input type="checkbox"/>
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Additional Information

Tips for Reducing Phosphorus

Phosphorus is found in many items, from toothpaste to fertilizer to most of the food we eat. A certain amount of phosphorus is natural and necessary for ecosystem health, but excessive amounts of phosphorus threaten the survival of aquatic species in the lake and the overall quality of the lake itself. With a few simple changes, phosphorus loading from human activities can be greatly reduced.

Animal Waste

- Dispose of pet waste in the garbage or toilet, and obey any “poop and scoop” bylaws in your municipality.
- Don’t feed waterfowl (geese, ducks, gulls, etc.) – they contribute significant amounts of waste which can affect the water quality of ponds and small lakes.

Cleaning and Personal Hygiene

- Reduce your use of personal hygiene products that contain phosphorus or switch to phosphate free soaps and shampoos.
- Buy and use cleaning products that are phosphate-free or use natural cleaners (for example: many things can be cleaned with household vinegar and baking soda).

Gardening & Landscaping

- Do not use "all purpose" garden-type fertilizers for lawns - Garden fertilizers are generally formulated with a higher content of phosphorus for flowering plants and vegetables. Fertilizers designated as 8-8-8, 10-10-10 or 12-12-12 are examples of garden fertilizers. Typically, lawns do not need as much phosphorus as these would provide.
- Low or no phosphorus fertilizers are a good solution to the goal of maintaining a healthy lawn.
- Look for companies that offer low or no phosphate fertilizing services.
- Locally produced compost is a good option for flower and vegetable gardens.
- Do not rake your yard waste into nearby streams, lakes or stormwater gutters.
- Plant native species and vegetation.
- Wash your car with non-phosphorus and biodegradable soap on your lawn rather than on your driveway so that excess water and detergents can soak into the grass.

Shorelines

- People beside the lake should naturalize shorelines to stop erosion and to reduce the flow of phosphorus into the lake.

Septic Tanks

- Keep septic tanks in good order and have them pumped regularly.

Water Use

- Conserve water – the less water used, the less polluted the water will become.
- Check for and fix leaky faucets, toilets, hoses, etc.
- Run dishwashers and clothes washers only when full; use them on a more water efficient cycle.
- Use toilet dams (a 1 or 2 litre bottle filled with water that sits in your toilet tank) to reduce the amount of water flushed through the toilet or replace toilets with low-flush models.

Pesticides and their use

Why should you be concerned?

- Exemptions to the new cosmetic pesticide ban are available to landowners in some circumstances.
- Research studies have found that many cosmetic pesticides are toxic and may cause serious health problems for humans and ecosystems immediately after exposure or many years later.
- Below tolerance levels (set by the government) have been found in Ontario's drinking water. The effects of repeated exposure to small amounts is unknown. Chronic health problems may not appear for many years.
- Pesticides must be handled very carefully to prevent them from getting into any water source. The presence of pesticides in surface and groundwater may make it unsuitable for drinking.
- When contaminated surface water runs into streams and lakes, it reduces the quality of the water and may harm fish, wildlife and humans.

What can you do?

- Inform yourself of alternative non-toxic or lower toxicity chemicals to deal with the problem.
- Read and follow instructions carefully. Note if weather conditions may affect application.
- Avoid storing pesticides for long periods of time. Buy only the amount you need and make sure you have a safe storage area. Dispose of empty pesticide containers and rinse water safely.
- Never pour leftovers down the drain, storm sewer or storm drain or into open water.
- Don't apply on windy days or when rain is expected.

Ontario's Cosmetic Pesticides Ban

On April 22nd, 2009, the Province of Ontario's new Cosmetic Pesticides Ban came into effect under Ontario Regulation 63/09 of the Cosmetic Pesticides Ban Act, 2008. The provincial ban supersedes local municipal bylaws, with the goal of creating one clear, transparent and understandable set of rules across the province.

Pesticides can no longer be used for cosmetic purposes on lawns, vegetable and ornamental gardens, patios, driveways, cemeteries, and in parks and school yards. More than 250 pesticide products are banned for sale and over 80 pesticide ingredients are banned for cosmetic uses.

There are some exceptions that apply with respect to public health and safety, natural resource management, and certain business, recreational, agricultural, forestry and public works activities. More specific information is available through the Ministry of Environment at www.ene.gov.on.ca.

Tips about Natural Alternatives

Alternatives

Successful landscapes rely on preventative measures and careful monitoring, just like your health. Timely effort saves you time and hassle later on – and your garden will thank you for it!

- Learn about your garden's current situation, such as nutrients, soil type and moisture/shade conditions. Add only what is needed, and work with what can't be changed.
- Keep your lawn fed (compost/manure/fertilizer), aerated, de-thatched and maintain adequate soil moisture. Most problems can be avoided if your lawn is in good shape. Lawn grasses go dormant naturally in the last days of summer and will green up with fall rains.
- Try old-fashioned remedies for pests, such as borax sprinkled around ant nests, insecticidal soap for sap-suckering insects, and baking soda or sulphur for fungal diseases.
- To make plants less appetizing, use a garlic spray (10 cloves of garlic in 1 litre) of water and heat for 5 minutes.
- Bring in reinforcements. Create suitable habitat for birds that will eat insect pests.

These are just a few ideas – more abound in literature, on the web and with your local nursery or plant club. Just ask about pesticide alternatives!



Resources List

Phosphorus & Other Nutrients

Books

- Smillie, J. and G. Gershuny, 1999. *The Soul of Soil (4th edition)* White River Junction, Vermont: Chelsea Green Publishing Company. ISBN 1-890132-31-4

Composting Council of Canada

www.compost.org

- *25 Questions and Answers about Composting*

North Shore Recycling Program

www.northshorerecycling.ca

- Compost

Ontario Horticultural Association

www.gardenontario.org

- *Green Gardens*

Ontario Ministry of Environment

www.ontario.ca/ministry-environment/

- Ontario Cosmetic Pesticides Ban Act, 2008

Soil Testing

- For a soil testing lab near you, see the *Yellow Pages*

Worksheet #7 - Waste Management

Use this worksheet to learn about how you can help manage your waste.

Why should you be concerned?

- The millions of tonnes of garbage produced in our communities every year quickly fill up existing landfill sites.
- It is increasingly difficult to place new landfill sites. No one wants to live near one.
- If a municipality's landfill site is full and a new nearby location cannot be obtained, residents must pay more to have their waste transported elsewhere.
- Recycling saves natural resources, energy and water by using already manufactured items instead of more natural resources.
- Durable products may initially be more expensive but they are generally a better investment in the long run and they stay out of landfill sites longer.
- There is the potential that leachate from landfill sites may contaminate groundwater.
- Open burning of garbage in barrels, woodstoves, fireplaces, outdoor furnaces or open pits releases a large number of pollutants. Burning garbage at home, the cottage and on the farm is one of the largest known sources of dioxins and furans in Ontario.

What can you do?

- Consider how you can personally generate less waste.
- Find out about initiatives and companies that are redesigning products, packaging, and manufacturing processes to reduce waste. Support them through your purchasing power.
- Recycle effectively. Contact your local municipality to learn what items can be recycled in your community and how you should prepare them for recycling (i.e. rinse, bundle, sort, etc.)
- Compost food and yard wastes. Don't use kitchen sink garbage disposals such as garborators.
- Use refillable and reusable containers and products as much as possible and purchase durable products that won't need short-term replacement.
- Watch for Hazardous Waste Disposal Days in your community. Encourage your local municipality to have them, green tags and support recycling programs.

Waste Management

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MINIMIZING THE WASTE THAT COMES 'IN'					
1 Purchases	Instead of buying, always attempt to borrow, rent or share items or purchase used items as much as possible.	Purchase or use only what you need and avoid accumulating unused products. Recycle as much as possible.	Purchase more than is necessary but recycle as much as possible, including donating items.	Purchase more than is necessary or throw unwanted items into regular household garbage.	<input type="checkbox"/>
<div data-bbox="157 657 478 1117" data-label="Complex-Block"> <p>Items that bear the EcoLogo symbol are manufactured in a way that minimizes the use of hazardous by-products.</p>  </div>	Preference given to items that are durable, reusable, and/or recyclable and can be recycled locally and disposable food/beverage containers are seldom used.	Preference given to items that are durable, reusable, and/or recyclable and can be recycled locally or recyclables are collected or taken to a recycling centre.	Disposable or single serving items purchased even when alternatives available and minimal effort made to recycle or reuse.	Frequently purchase disposable or single serving items or no effort to recycle or reuse.	<input type="checkbox"/>
	Choose items that have no packaging.	Choose items that have minimal packaging and that are recyclable in your community.	Choose items with packaging that is recyclable in your municipality.	No consideration given to product packaging.	<input type="checkbox"/>
	Always re-use carry-out grocery bags or bring a reusable tote bag.	Usually re-use carry out grocery bags or bring a reusable tote.	Plastic carry-out bags are used but recycled.	Plastic carry-out bags are accepted and then discarded.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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MINIMIZING THE WASTE THAT GOES 'OUT'

2 Re-using and recycling	Reduce the number of items you use, reuse as many items as possible, recycling a priority.	Reuse as many items as possible, recycling a priority.	Recycle as many items as possible.	All garbage is taken to local landfill, dumped, or burned.	<input type="checkbox"/>
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To reduce packaging, buy larger volumes, bulk or concentrated products. More product for less packaging.

Efforts made to minimize paper use and all paper is recycled.	All paper is recycled.	Most paper is recycled and paper purchased contains some recycled content.	Paper is not recycled.	<input type="checkbox"/>
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Redirect or place your subscriptions on hold while you are away from home.

Check with local municipality to learn what items are recyclable and how they should be prepared for recycling and comply with all applicable recycling practices in your community.	Comply with all applicable recycling practices in your community.	Most recyclable items are recycled.	Little or no attempt made to participate in local recycling programs or *waste is burned/ a burn barrel is used.	<input type="checkbox"/>
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Food scraps and yard wastes are properly composted regularly on site.	Food scraps and yard wastes are properly composted regularly through green bin program.	Food scraps and yard wastes are composted occasionally.	Food scraps or yard wastes are thrown in regular household garbage or a garborator or garbage disposal is used.	<input type="checkbox"/>
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* These conditions may violate provincial legislation or municipal by-laws.

Additional Information

Recycling

Know your numbers....



PETE

Beverage and food bottles



HDPE

Beverage and food bottles, detergent and ice cream containers



V

Clear deli food packaging, vegetable oil bottles



LDPE

Carry-out grocery bags, bread bags, frozen food bags



PP

Margarine and yogurt containers



PS

Foam cups, trays, and foam take-out containers



OTHER

Bottles containing several resins

.....
Check with your municipality to learn which numbers can be recycled in your local program. Look on the bottom of plastic containers to learn what number they are.

Resources List

Waste Management

Canadian Centre for Pollution Prevention

www.ec.gc.ca

Great Lakes Trash and Open Burning Website

www.openburning.org

Environmental Choice Program

www.ic.gc.ca

Canadian Eco logo Program (Ecological Labeling)

Ontario Ministry of the Environment

www.ontario.ca/ministry-environment/

Worksheet #8 - Storage & Proper Handling of Fuels, Pesticides, and other Typical Household Chemicals

Use this worksheet to learn about best management of fuels and chemicals.

Why should you be concerned?

- Petroleum products contain toxic compounds, such as benzene, which can cause cancer.
- Some toxic chemicals are colourless and odourless and can go undetected in water that has not been tested for contamination.
- Contaminated water or soil greatly devalues land property and is very expensive to clean-up. Clean-up may not even be possible in some cases.
- A property owner may be held liable for contaminating any water source.
- Vapours from some chemicals such as fuels can ignite or cause explosions.
- Pesticides have been found in amounts below the tolerance levels set by the government in Ontario's drinking water. We don't know the effects of repeated exposure to very small amounts over a long period of time. Chronic health problems may not appear for many years.

What can you do?

- Inform yourself of alternative non-toxic or lower toxicity chemicals to deal with the situation.
- Avoid storing chemicals. Buy only the amount you need and make sure you have a safe storage area. Contact your local municipality to learn how you can dispose of empty chemical containers and rinse water safely.
- Never store fuel or any chemical on your property where it may come in contact with water.
- Read and follow instructions carefully. Note if weather conditions can affect application.
- Never pour chemical leftovers down the drain, storm sewer, storm drain or into open water.

Chemical Storage and Handling

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
FUEL CHEMICALS					
1 Vehicles and machinery	Regular checks to ensure vehicles and machinery are not leaking.		Irregular checks to ensure vehicles and machinery are not leaking.	Never check to ensure vehicles and machinery are not leaking.	<input type="checkbox"/>
	Any fluid spills are cleaned up immediately. Rags are disposed of appropriately.	Any fluid spills are cleaned up immediately.	Some fuel spills are cleaned up immediately.	Drips and spills are not cleaned up.	<input type="checkbox"/>
	Used oil, antifreeze and other wastes are appropriately recycled.	Used oil, antifreeze, and other wastes are disposed of at landfill.	Used oil, antifreeze and other wastes are allowed to accumulate on your property.	<i>*Used oil, antifreeze, and other wastes are dumped down the storm-sewer, in a ditch or on the ground.</i>	<input type="checkbox"/>
	There are no unused or decommissioned vehicles on the property.	Unused or decommissioned vehicles on the property for short periods of time but stored and disposed of properly.	Unused or decommissioned vehicles are on the property for short amounts of time but not stored or disposed of properly.	There are unused or decommissioned vehicles on the property.	<input type="checkbox"/>
	No dirty car parts, wastes or chemicals.	Dirty car parts and vehicle wastes/chemicals are kept out of reach of storm water runoff.	Dirty car parts and vehicle wastes or chemicals are left on unpaved areas outside.	<i>*Car parts and vehicle wastes or chemicals are left near water courses.</i>	<input type="checkbox"/>

Keep your vehicles regularly serviced to check for oil, antifreeze or gas leaks.

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
FUEL STORAGE					
2 Portable fuel storage	Fuel is purchased only as needed so that long-term storage is not required anywhere on the property.	A minimal amount of fuel is stored in safe, approved, original-sale, and clearly labeled containers. Liquid fuel containers have a spout to prevent spills and are stored on an impervious surface, such as concrete.	Excess fuel is purchased but fuel is stored in safe, approved, original-sale, and clearly labeled containers.	Fuels are stored in unmarked, open or unapproved containers or not on impervious surfaces.	<input type="checkbox"/>
	Distance between petroleum storage and nearest surface water is greater than 150 metres (500 feet).	Distance between petroleum storage and nearest surface water is 61-150 metres (200-500 feet).	Distance between petroleum storage and nearest surface water is 30-60 metres (100-199 feet).	<i>*Distance between petroleum storage and nearest surface water is less than 30 metres (100 feet).</i>	<input type="checkbox"/>
	Distance between petroleum storage and well(s) is greater than 90 metres (300 feet).	Distance between petroleum storage and well(s) is 24-90 metres (76-300 feet) for a drilled well OR 47-90 metres (151-300 feet) for a bored/ dug well.	Distance between petroleum storage and well(s) is 15-23 metres (50-75 feet) for a drilled well OR 30-46 metres (100-150 feet) for a bored/dug well.	<i>*Distance between petroleum storage and well(s) is less than 15 metres (50 feet) for a drilled well OR less than 30 metres (100 feet) for a bored/dug well.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1		Your Rating
ABOVE GROUND FUEL TANK STORAGE						

3 Gasoline and diesel fuel tanks	No fuel tanks are present above or below ground anywhere on the property.	All tanks are made of steel and have a protective, anti-corrosive coating and ULC approved.				<input type="checkbox"/>
	Tanks are regularly checked for leaks.		Tanks are tested monthly for leaks.		Tanks are not checked for leaks.	<input type="checkbox"/>
	The water table is located more than 3 metres (10 feet) below the surface, under the fuel tank.		The water table is located consistently 1.5 metres (5 feet) to 3 metres (10 feet) below the surface.		The water table is located consistently less than 1.5 metres (5 feet) below the surface.	<input type="checkbox"/>
	Inactive tanks are decommissioned and properly removed.				Inactive tanks are abandoned.	<input type="checkbox"/>
	Tanks sites are checked for contamination. If found, it is immediately reported.				Tanks sites are not checked for contamination, or if found, not immediately reported.	<input type="checkbox"/>

If a spill or leak occurs report it immediately to the Spills Action Centre at the MOE by calling: 1-800-268-6060

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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ABOVE GROUND FUEL TANK STORAGE *continued*

4 Heating oil tanks

All types of tank(s) are located more than 3 metres (10 feet) from any building.

Tank(s) with a capacity of less than 2500 litres (550 gallons) are located 3 metres (10 feet) or less from any building.

Fuel tank is located inside a building or ****tank(s) with a capacity greater than 2500 litres (550 gallons) are located less than 1.5 metres (5 feet) from a building.***

Tanks are ULC approved, monitored for leaks, proper vent pipe used and protective coating maintained.

****If you have underground storage of fuel, you are not in compliance with regulations.***

****Tanks are not ULC approved, or are not monitored for leaks, or no vent pipe used, or protective coating not maintained.***

Tank less than 5 years old.

Tank less than 10 years old.

Tank less than 20 years old.

Tank more than 25 years old or age of tank unknown.

Fuel delivery system between fuel storage and appliance is installed by a registered contractor and inspected annually for leaks.

****Fuel delivery system between fuel storage and appliance is not installed by a registered contractor or not inspected annually for leaks.***

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
COSMETIC PESTICIDES, HOUSEHOLD CLEANERS AND NON-FUELS					
5 Cleaning products	All household cleaning products are low-phosphate/phosphate free, non-toxic and non-harmful to humans, and minimal quantities are used.	Most household cleaning products are low-phosphate/phosphate free, non-toxic and non-harmful to humans.	Typical chemical cleaners are used properly and minimal quantities are used.	No consideration given to a product's toxicity or more than is necessary is used.	<input type="checkbox"/>
6 Total amount of pesticide and other non-fuel chemicals stored	No chemicals stored any time.	Chemicals are not stored longer than immediate use period.	Small amount of chemicals stored for longer than immediate use period.	Large quantities of chemicals stored for longer than immediate use period.	<input type="checkbox"/>
7 Distance from chemical storage to nearest surface water source	Greater than 150 metres (500 feet).	60 -150 metres (200-500 feet).	30 - 60 metres (100-199 feet).	Less than 30 metres (100 feet).	<input type="checkbox"/>
8 Distance from chemical storage to well	Greater than 90 metres (300 feet).	23 – 90 metres for a drilled well (76-300 feet), OR 46-90 metres for a bored/dug well (151-300 ft).	15-23 metres for a drilled well (50-76 feet), OR 30 -45 metres for a bored/dug well (100-150 feet).	Less than 15 metres for a drilled well (50 feet), OR less than 30 metres for a bored well (100 feet).	<input type="checkbox"/>
9 Chemical solution mixing	Chemicals are mixed in well ventilated area, on an impervious surface, and far from any open drain or open water source.			Chemicals are not mixed in well ventilated area, or surface is permeable, or mix far from any drain or open water.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
COSMETIC PESTICIDES, HOUSEHOLD CLEANERS AND NON-FUELS <i>continued</i>					
10 Chemical storage area and containers	Stored in a water-proof, locked cabinet or storage container. The container itself stored in a garage or shed with a concrete floor that does not contain any drains.	Stored in a garage or shed with a concrete floor that does not contain any drains.		Stored with human or animal food, or stored in residence, or stored in a garage or shed with a concrete floor that contains drains.	<input type="checkbox"/>
	Sill installed in cabinet to contain any spills.	No sill installed in cabinet.		No sill installed in cabinet, and garage or shed has floor drain that leads to surface water source, etc.	<input type="checkbox"/>
	Garage or shed is well ventilated to outside.			Garage or shed is not ventilated to outside.	<input type="checkbox"/>
	Emergency numbers are posted nearby.			No emergency numbers are posted nearby.	<input type="checkbox"/>
	All chemicals are in clearly marked containers.			Containers not labeled.	<input type="checkbox"/>
	Storage/use of chemicals before the expiration date.			Chemicals not stored or used beyond expiration date.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
COSMETIC PESTICIDES, HOUSEHOLD CLEANERS AND NON-FUELS <i>continued</i>					
11 Disposal of pesticide sprayer rinse water	Sprayer rinse water is applied only to plants listed on the label.			Sprayer rinse water is applied to plants other than those listed on the label.	<input type="checkbox"/>
	More than 9 metres (30 feet) from surface water source and more than 61 metres (200 feet) from well.	More than 9 metres (30 feet) from surface water source and 45-60 metres (150-200 feet) from well.	Less than 9 metres (30 feet) from surface water source or less than 45 metres (150 feet) from well.	Dumped near an open water source or near a well.	<input type="checkbox"/>
12 Return, rinsing and disposal of chemical containers	Use of returnable or refillable containers and rinse water is used as per label instructions.	Triple or pressure rinsed containers or empty bags taken to municipal landfill and rinse water is used as per label instructions.	Appropriate disposal of triple or pressure rinsed containers but rinse water is allowed into septic system or storm drain.	<i>*Inappropriate disposal of un-rinsed containers including burning them.</i>	<input type="checkbox"/>
13 Emergency plan and clean up equipment for spills	Emergency plan easily accessible, outlining actions to be taken in case of spill, leak, fire or explosion and cleanup equipment available.	Emergency plan easily accessible, outlining actions to be taken in case of spill, leak, fire or explosion.	Emergency phone numbers posted nearby and general plan in case of emergency.	<i>*No emergency plan prepared or no spill cleanup equipment ready nearby.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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DISPOSAL OF ANY CHEMICALS

14 Disposal of hazardous chemicals or materials

No unused vehicle batteries stored on the property.

Vehicle batteries are stored on the property.

Expired household batteries are taken to a hazardous waste facility.

Expired household batteries are thrown in the regular garbage and taken to a landfill.

Expired household batteries are not disposed of.

Disposal is unnecessary because appropriate amount of chemical purchased and used up.

Leftover hazardous substances are given to others in proper and clearly labeled containers for appropriate use as soon as possible.

Chemical waste is properly disposed of at a hazardous waste facility.

****Hazardous substances are poured down the drain, on the ground, burned, or taken to a landfill.***

If you have leftover chemicals such as paint or turpentine, ask your neighbours or friends if they need it for a current project

* These conditions may violate provincial legislation or municipal by-laws.

Additional Information

Chemical Storage and Handling

Typical Hazardous Household Chemicals:

(Taken directly from *Home-A-Syst*, 1997)

Household Waste

- Ash/sludge from burned household waste
- Light bulbs/lamps (contain mercury)
- Waste motor oil
- Plastic wraps and containers (hazardous only when burned)
- Pesticide or solvent containers
- Empty containers from other product categories

Clothing and Fabric Care Products

- Mothballs
- Dry-cleaning fluids
- Spot removers (solvent based)
- Shoe-leather polishes

Hobby and Recreation Products

- Artist paints and solvents
- Charcoal lighter fluid
- Strong acids/bases*
- Bottled gas
- Household batteries (may contain mercury or cadmium)

Pesticides

- General use and 'restrictive use' pesticides
- Old and/or unwanted pesticides

Building/Wood Cleaners and Repair Products

Any building and wood cleaners with the following ingredients:

- Wood polishes
- Products for wood floor and panel cleaning

Building and equipment maintenance products:

- Strong acids/bases*
- Lead-based paint
- Oil/alkyd paints and primers
- Marine and exterior paints containing mercury and/or pesticides
- Aerosol paint products
- Stains and finishes
- Roof coatings and sealants
- Rust removers
- Silicon and other lubricants
- Adhesive removers
- Paint and finish preparation products
- Adhesives (glues, caulk)
- Wood-preserving products
- Products for brush or spray-gun cleaning
- Water repellents for wood and cement
- Solvents such as those used in degreasers, paint thinners, stains and varnishes

Vehicle Maintenance Chemicals

- Antifreeze, oil and grease, transmission fluid
- Solvents for oil and grease removal/disposal
- Engine/car parts cleaners such as carburetor and brake cleaner
- Paints and paint preparation products
- Lead acid batteries
- Tire cleaners
- Rust removers
- Ignition wire dryer
- Gasket removers
- Aerosol paint and primer products

* A strong acid/base can be identified by noting if there is a hazard warning label that recommends using skin protection or to avoid breathing in vapours or aerosol mists. Also, if the product is intended for commercial use or if is intended to manage difficult stains or dirt on hard surfaces.

Resources List

Chemical Storage and Handling

Municipalities

A list of Ontario municipalities available at:

www.mah.gov.on.ca

- Abandoned Vehicles (consult Blue Pages)

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.on.ca

- Best Management Practices: *Pesticide Storage, Handling, and Application* (BMP 13E)

Ministry of the Environment

www.ontario.ca

- Spills Action Centre 1-800-268-6060

Ontario Petroleum Contractor's Association

www.opcaonline.org

- Assistance and information on servicing, upgrading or removing petroleum equipment and storage facilities.

Technical Standards and Safety Authority

www.tssa.org

- Fuel Safety Program under the Technical Standards and Safety Act, 2000

Worksheet #9 - Living with Wildlife

Use this worksheet to learn more about how your actions affect wildlife species in the rural landscape.

Why should you be concerned?

- For rural property owners, seeing a fox dart across a concession road, watching a hawk as it soars above the meadow or hearing a midnight chorus of frogs is an unforgettable experience. Wildlife encounters in rural areas make our lives a little richer. In fact, wildlife is an essential part of our landscape, an integral part of the complex web that sustains our survival.
- Human activities and land use patterns have allowed species like raccoons, coyotes and deer to flourish while others such as the barn owl, badger and spotted turtle have drastically declined. Today's paradox is that we have both an abundance of some species of wildlife and other species at risk.
- Many habitats in Ontario occur on private land. Rural property owners play an important role in ensuring the stewardship of Ontario's wildlife.
- Attracting wildlife to your property brings both benefits and costs. Sometimes wildlife on your land can cause problems for you or a neighbour. Consider what types of wildlife you want to attract and manage your wildlife habitat enhancements accordingly.
- Human health risks of living with wildlife include Rabies, Lyme Disease and West Nile Virus. Contact your local health unit for more information.

What can you do?

- Maintain natural habitats on your land. The greater the diversity of vegetation and areas, the more species you are likely to see. More species generally means that you will be creating population checks and balances by attracting both desired species and their predators.
- Learn about species at risk and take a proactive role in protecting and expanding the quality of their habitat on your property whenever possible.
- Plant native trees, shrubs, vines, and other plants – native species are best suited to local conditions and supporting local wildlife.
- Design your plantings to widen fencerows, create movement corridors for wildlife and expand areas of natural cover on your land. Areas connected to one another are more valuable to wildlife, and bigger natural areas are better.
- Cover openings and block passageways around buildings to prevent unwanted wildlife from moving in. Doing a perimeter check periodically of your buildings to remove unwanted wasp nests from eaves, plug holes and remove nesting material is a good idea.
- Become familiar with best management practices for dealing with abundant wildlife.

Living with Wildlife

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WILDLIFE HABITAT MANAGEMENT					
1 Familiarity with local wildlife	Thorough understanding of wildlife and seasonal patterns in your area or continually seeking to learn how you can provide habitat for local wildlife, especially species at risk.	Good understanding of wildlife in your area and their seasonal patterns.	Basic familiarity with local wildlife and/or a general idea of wildlife seasonal patterns.	No consideration or knowledge of wildlife on your property or actions taken to eliminate non-nuisance wildlife.	<input type="checkbox"/>
2 Habitat Management	Effective habitats are left alone and where appropriate, areas that do not support a diversity of species (i.e. lawns) are enhanced or restored for wildlife by planting cover and food-producing species.	Habitats that effectively support species are left alone or minor alterations to wildlife habitat areas still permit a diversity of plants and animals to live in the area.	Habitats are altered but continue to provide enough habitat to support a limited number of hardy, adaptable species.	Areas that could provide habitat for species such as brush piles, fencerows or meadows are unnecessarily removed or altered so that they no longer attract wildlife.	<input type="checkbox"/>
3 Creating connections through restoration	Natural area restoration or habitat enhancement areas are located to increase the size of natural areas, to connect adjacent areas or to create ecological corridors between natural areas.	Natural area restoration or habitat enhancements are designed for specific single-species benefit only, with an attempt to link natural areas.	Natural area restoration or habitat enhancement is undertaken with little planning involved.	Habitat is further degraded.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WILDLIFE HABITAT ENHANCEMENT					
4 Windbreaks, Shelterbelts and Treed Fencerows	These features are maintained where they exist; a mixture of ages and species is in place and/or features are planted or enhanced with a wide range of species and at various intervals through the years to produce varied habitat.	These features are maintained where they exist, but consist of a limited number of species.	These features are not maintained; trees may be damaged or are mature (with no young trees in place for succession).	Trees in windbreaks, shelterbelts and fencerows are cut down and not replaced or are sources of invasive species spread.	<input type="checkbox"/>
5 Transitional Habitat Areas: Shorelines, Streambanks, Wetland/pond edges	Transitional areas that separate upland areas from aquatic habitats are naturally vegetated and vegetated area is 18 metres wide or more.	Transitional habitat areas are naturally vegetated and contain trees and shrubs and area is at least 10 metres wide.	Transitional habitat areas have permanent vegetation at least 5 metres wide.	Transitional habitat areas are not vegetated or are only covered with mowed grass or are eroding.	<input type="checkbox"/>
6 Brush Piles, Stone Piles	Natural brush cover and rock piles exist and are maintained, providing wildlife such as weasels, snakes and rabbits with cover, an essential part of their habitat.	Where cover is sparse, piles of brush, rock, concrete from old foundations, and other materials are piled to provide shelter for wildlife.	No rock or brush piles exist.	Rock and brush piles are unnecessarily removed where they exist; areas are kept free of woody debris and clutter.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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WILDLIFE HABITAT ENHANCEMENT *continued*

7 Nesting Habitat	Non-hazard, dead standing trees and other features that provide natural nesting habitat for songbirds, bats, cavity-nesting birds and squirrels exist and are maintained on your property.	Where natural nesting habitat is rare, artificial nesting structures to are installed and are placed in the correct location to meet species' needs, protected from predators and cleaned out in early spring each year.	Natural nesting habitat is retained and where natural nesting habitat is rare, artificial nesting structures are installed.	Nesting habitat has been unnecessarily removed from the property.	<input type="checkbox"/>
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8 Bird Food Sources	Native plants that provide natural sources of bird food flourish on your property (ie. fruit-bearing shrubs, birch trees).	Native plants are planted to replenish natural food sources for birds.	Bird seed is used to supplement naturally-occurring food sources, preferably only in winter months.	No natural sources of bird food present on the property.	<input type="checkbox"/>
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While tidying your house can be positive, try to resist tidying natural areas. Brush piles are great habitat for mice, voles and snakes; logs on your woodlot floor are ideal salamander homes, and standing dead trees are preferred real estate for woodpeckers.

Feeding wildlife species is generally not recommended since it concentrates animals, may increase populations artificially, and can cause other serious human-wildlife conflicts.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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MANAGING ABUNDANT WILDLIFE

9 Preventing Access to Buildings	All crevices, openings, passageways, chimneys, vents and soffits into buildings are properly blocked or screened and checked yearly.	Most openings to buildings are properly blocked or screened and checked regularly.	All doors and windows have a tear-free screen.	Openings to buildings are not checked or maintained.	<input type="checkbox"/>
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10 Waste Management	Compost and garbage is stored in wildlife-proof containers and recycling material is well-rinsed or cleaned before being stored <i>indoors</i> .	Compost and garbage is stored in wildlife-proof containers and recycling material is well-rinsed or cleaned before being put outside.	There is less chance of trapping wildlife in sealed openings if you construct seals at the end of the summer.	Compost, garbage and/or recycling materials are easily and/or frequently accessed by wildlife.	<input type="checkbox"/>
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11 Pet Management	Both dogs and cats have current rabies vaccinations and are spayed/ neutered, cats are kept indoors, or are kept on a leash when outdoors and dogs are confined to a fenced run.	Cats are spayed or neutered and have a bell on their collar when outdoors or dogs are supervised when outside.		Pets are allowed to roam outside unsupervised.	<input type="checkbox"/>
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The domestic cat is not a natural part of the ecosystem. Scientists estimate that cats kill hundreds of millions of birds each year.

To avoid attracting unwanted insects and wildlife to your home, keep your BBQ clean!

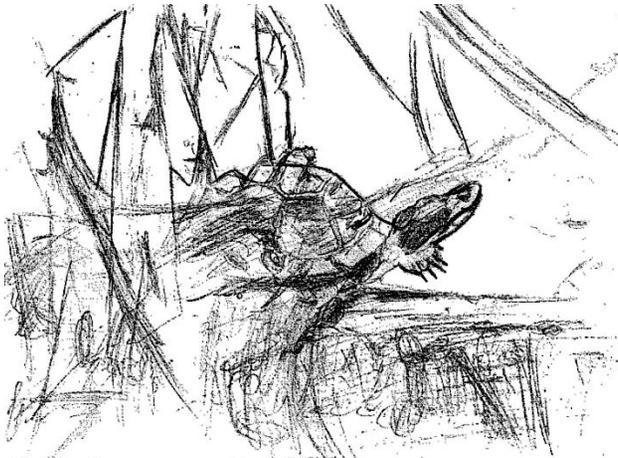
Install yellow compact fluorescent light bulbs near your exterior doors to reduce the attractiveness of interior lights.

Species at Risk

Living with Wildlife

Our health and quality of life depend on biodiversity – a rich diversity of wild plants, animals and habitats. We are fortunate to live in a province with a rich biodiversity, but more species become endangered every year as a result of human activities. More than 170 of Ontario's wild species are at risk – that's over one-third of all of the species at risk in Canada. Increasingly, teams working on species at risk recovery are focusing on priority ecosystems rather than a single species at risk.

A **priority ecosystem** is one that supports many species at risk. Some priority ecosystems in Ontario that may occur on your lands include Carolinian forest, tallgrass communities and alvars.



Blanding's Turtle (*Emydoidea blandingii*) is threatened in Ontario, due in part to loss of its aquatic habitat, road mortality and to predation by stray pets and other 'urban' wildlife.

By enhancing your property for wildlife using native plants, increasing natural cover and providing habitat elements as described in this section, you are contributing to the conservation of Ontario's biodiversity.

To help protect species at risk in your area:

- Learn about species at risk using the websites in the resources section of this module.
- If you think there is a species at risk on your property, you can help by reporting it to your local Ministry of Natural Resources office. MNR staff will appreciate any information you report and can explain about stewardship and other ways to protect the species.
- Promote the health and recovery of species at risk by eliminating or restricting your use of pesticides and herbicides.
- As a property owner, you may be eligible for Ontario's Conservation Land Tax Incentive Program (CLTIP). The program entitles property owners up to 100% property tax relief on lands that protect significant natural heritage features, including the habitat of endangered species.
- You can offer your help to teams working to recover species at risk in your area. They sometimes need a helping hand for specific activities.
- Federal and Provincial Species at Risk legislation may influence what you can do on your property. Endangered species and their habitats are protected under law.

Abundant Wildlife

Living with Wildlife

Rural areas are home to a variety of wildlife and seeing wildlife is commonly a source of enjoyment. However, abundant populations of some wildlife species can have ecological impacts that are in conflict with biodiversity conservation objectives and in some cases serious human-wildlife conflicts can occur. The difference often depends on taking a few simple steps to avoid encounters with or damages caused by wild animals. If you experience problems with abundant wildlife consult the Ministry of Natural Resources.

If abundant wildlife on your property is becoming a nuisance and causing high or very high impacts, you may want to consider control options through legal hunting or trapping.

Skunks and Raccoons

These creatures are often attracted to the homes where easy food and shelter can be found.

- Eliminate access points like overhanging tree branches to sheds, barns, porches etc.
- Control food sources such as lawn grubs and pet food, and ensure proper garbage storage.
- Animals that are residing under porches or in garages can be excluded by covering all openings with woven wire fencing once animals have left to feed for the evening.
- Chicken wire fencing around gardens or other areas is effective. It can be supplemented with electric fencing if required.
- Bright lights and loud music will deter raccoons from gardens and other areas as a short-term solution.

Deer

In some areas of Ontario, a high density of white-tailed deer is impacting woodland regeneration, wildflower abundance and diversity, forest composition and the natural resistance of woodlands to invasive species establishment. As a landowner, being aware of the impacts of white-tailed deer on your property is the first step in addressing these problems. Indicators of deer damage are most easily seen in your woodlot.

- A visible and widespread browse line with a lack of seedlings and saplings in the 0.5 – 1.5m height range indicates a high abundance of deer.
- Another sign is the absence of, or heavy damage to, sugar maple, cedar, hemlock, and oak seedlings and saplings.
- Native wildflowers such as trilliums may disappear with the non-native, invasive garlic mustard taking over.

Canada Geese

In many areas, high numbers of Canada Geese can have negative or unwanted impacts on the landscape. Geese prefer areas with easy access between food, water, and nesting sites.

- Establish a vegetated buffer around wetlands, ponds, and watercourses.
- Don't create nesting islands in wetlands.
- Planting shrubs and tall grass between the water and upland areas act as a visual barrier. Having a visual barrier from the water from the land is the best goose deterrent.
- Temporary fences made of 1 or 2 strands of string tied with streamers can provide temporary relief from migratory geese. Erect them between feeding areas and the water.

Resources List

Living with Wildlife

Canadian Wildlife Service

www.ec.gc.ca

- Hinterland Who's Who
- Migratory Birds information
- Species at Risk Public Registry and related information
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

Natural Heritage Information Centre

www.mnr.gov.on.ca/en/Business/NHIC

- Tracks and maintains data on natural areas, critical flora and fauna, natural communities and rare species for Ontario. To request a local rare species or other report, contact: NHICrequests@ontario.ca
- Resource library of wildlife species and habitat information

Ontario Ministry of Natural Resources

www.mnr.gov.on.ca

- *Deer Removal Authorization Factsheet*
- *Living with Wildlife: Species specific information on Preventing and Managing Human-Wildlife Conflicts in Ontario*
- Bear Wise Program information
- Species at Risk information
- Committee on the status of Species at Risk in Ontario (COSSARO)

Ontario Federation of Anglers and Hunters

www.ofah.org

- Ontario Invading Species Awareness Program
www.invadingspecies.com

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.gov.on.ca

- Best Management Practices: *Fish and wildlife Habitat Management* (BMP 10)

Ontario Nature

www.ontarionature.org

- *Birds on the Farm*
- *Species at Risk in Ontario*
- *Black Bears*

Ontario Soil and Crop Improvement Association

www.ontariosoilcrop.org

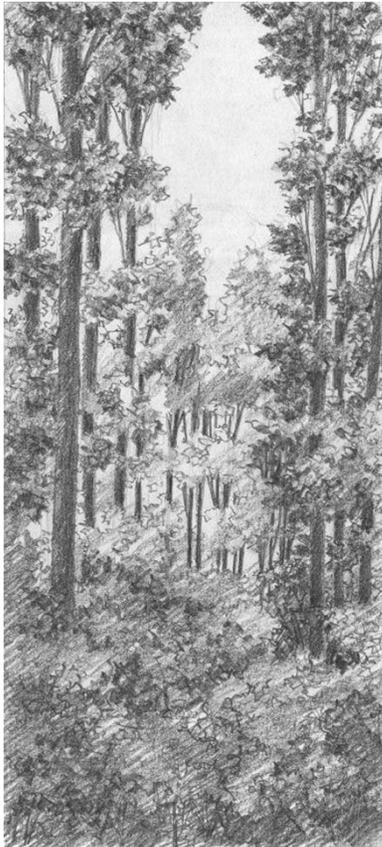
- *Wildlife Wise*
- *Probing Problem Wildlife*
- *Canada Geese and Farms*

Canadian Wildlife Federation

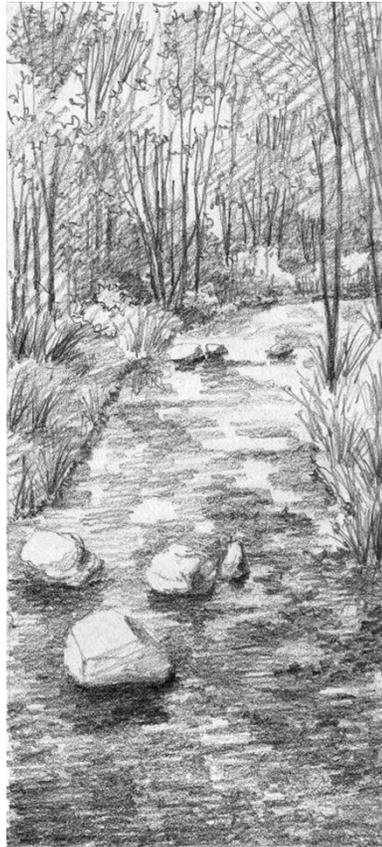
www.cwf-fcf.org

Worksheet #10

Working With the Ecosystems on Your Property



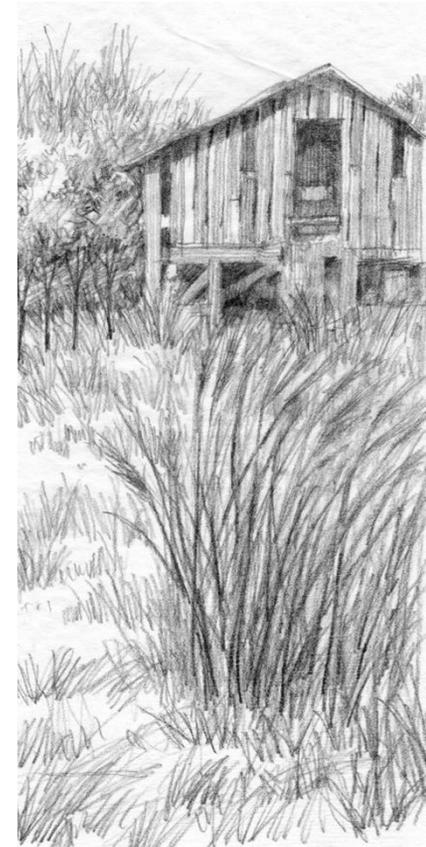
Forested lands



Streams and Drainage



Wetlands



Fields and Meadows

Worksheet #10a: Managing Your Forested Land

Use this worksheet to assess your knowledge of forests on your property and to help you set your management goals and objectives.

Why should you be concerned?

- A significant part of the forest in southern and central Ontario is privately owned. Forest conservation is largely dependent on voluntary stewardship activities.
- The forest is ecologically important. It adds to Ontario's biodiversity, absorbs pollutants, sequesters carbon and provides habitat for wildlife. The presence of healthy forests is critical to the health of ecosystems, watersheds, and communities of Ontario.
- A well-managed forest can provide you with a range of benefits. Developing a forest management plan can help determine your goals and objectives. Your management plan can be as detailed or as simple as you choose.
- Learning more about your forest and developing a plan can ensure that your forest continues to be a source of income and enjoyment, now and in the future.

Did you know?

Property owners with at least 4 hectares (9.88 acres) of forested land may be eligible for the **Managed Forest Tax Incentive Program (MFTIP)** which can reduce the property taxes. A Managed Forest Plan must be prepared by you or a forestry professional and approved by the Province to qualify. See the Resources List at the end of this section.

What can you do?

- Learn more about your forest and join an association. Learning more about your forest is the first step in becoming a better steward. Attend educational events and workshops presented by woodlot associations or other agencies or groups with an interest in forest stewardship. Your local MNR Partnership Specialist can give you information about associations in your area.
- Prepare an inventory of your forest and create a forest management plan. Understand all of the options that a well-managed forest can provide. Decide what benefits you wish to reap from your forest. Seek help or educate yourself about management practices.
- Manage for native tree species where possible. Native plants are best suited to local conditions. Ask a forestry professional for advice on native species best suited to your site or for the best ways to control non-native species that may already be present.
- Manage plantations. Many conifer plantations were established to stabilize the loss of soil and increase the forest cover in Ontario. Many of them have remained unmanaged. If you have a plantation on your property contact a forestry professional about thinning or other possible forest management activities. Thinning can provide you with income and increase the species diversity of your forest.

Caring for your Forested Land

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
SUSTAINABLE FOREST MANAGEMENT					
1 Understanding the importance of good forest management  <p>The best way to get what you want from your forest is to understand your options, decide what you want, then set goals and objectives.</p>	A written forest management plan is in place for your forests and management activities are carried out in accordance with it.	A management plan is in place but management activities are not always carried out in accordance with it.	No management plan in place but you have an idea of the goals and objectives that you would like to set for your forest and would like to learn about how to make one.	No management plan in place and you do not have goals and objectives for your forest.	<input type="checkbox"/>
2 Forest inventory	Forest inventory forms the basis of your management plan. Up to date records are available for species composition, stand density, age structure as well as the non-timber features of the forests on your property.	Moderate working knowledge of the tree species and forest conditions on your property.	Some idea of what is on your property from regular walks through the forests.	No knowledge of what is on your property.	<input type="checkbox"/>
 <p>Registered Professional Foresters and forest consultants are available to help you create a management plan. www.opfa.ca</p>					

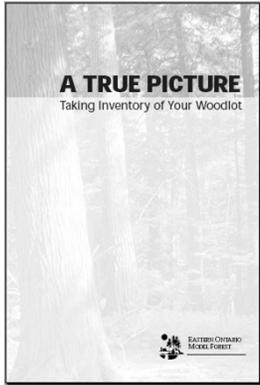
Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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SUSTAINABLE FOREST MANAGEMENT *continued*

3 Utilizing resources available to you	You utilize the advice and assistance of forestry professionals, are a member of a woodlot association and participate in their activities as well as other workshops.	Member of a woodlot association but do not participate in their activities and workshops.	Aware of the woodlot associations but have not joined.	No advice sought from forestry professionals and are not aware of local woodlot associations.	<input type="checkbox"/>
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4 Forest Health	Forest monitored seasonally for potential insect and disease problems and aware of what actions to take to address these problems. Alternatively, a forestry professional has been contacted to walk through the property with you and assess forest health.	Forest monitored occasionally to assess or address most insect and disease problems or are willing to contact a forestry professional to assess your forests health.	No monitoring of the forest to assess or address insect and disease problems.	<input type="checkbox"/>
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This book will help you through your forest inventory. It is available through the Eastern Ontario Model Forest: www.eomf.on.ca



Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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MANAGING FOR BIODIVERSITY

5	Wildlife objectives	Wildlife habitat is identified (and protected) through wildlife objectives in the forest management plan and non-hazard snags, cavity and mast trees, and fallen logs are protected.	Consideration is given for wildlife habitat but you do not have wildlife objectives in your management plan.	No consideration is given for wildlife in your forest.	<input type="checkbox"/>
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For tips on creating and maintaining healthy wildlife habitat visit: www.on.ec.gc.ca/wildlife

6	Increasing connectivity	Forested areas connected to other forested areas on your property or on other properties.	Most of the forests areas are connected.	May not recognize the extent of fragmentation on the landscape or unsure of how to connect forested areas but you would like to learn more.	<input type="checkbox"/>
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Forested areas can be connected by planting hedgerows, windbreaks or shelterbelts, or replanting blocks such as retired fields or lands marginal for agriculture.

If you are planting trees, be aware of the genetic stock. The wrong tree or the wrong place can mean it won't grow! The Forest Gene Conservation Association has excellent information on seed sources www.fgca.net

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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MANAGING FOR BIODIVERSITY

7 Controlling invasive species

Excellent awareness of species of plants that are not native to the area or are invasive.

Good awareness of species of plants that are non-native or invasive.

Some awareness of species of plants that are non-native or invasive.

Unaware of species of non-native or invasive plants and trees.

Invasive species can out-compete other species for resources and reduce the biodiversity of your forest.

Invasive species are actively eliminated when possible

Able to identify non-native or invasive species and they are removed sporadically.

Able to identify non-native or invasive species but not actively controlling them.

No elimination of invasive species or invasive species are planted.

8 Promoting regeneration of native forests

Aware that natural regeneration promotes native mixed forests and after a selective harvest trees natural regeneration is promoted or encouraged.

A good awareness of native forests and natural regeneration is promoted or encouraged after a harvest.

Unsure of the value of native tree species, but would like to learn more.

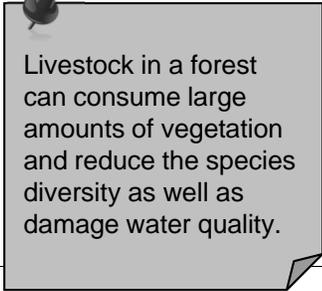
Invasive and non-native species are planted after a harvest.

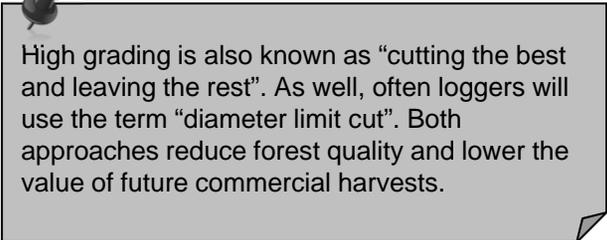
Tree species selected that are from the local seed zone, are native to the area, and are well suited to existing site and soil conditions.

Tree species are selected that are suited to existing site and soil conditions.

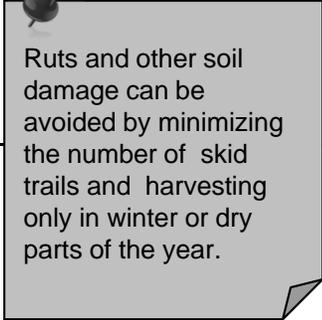
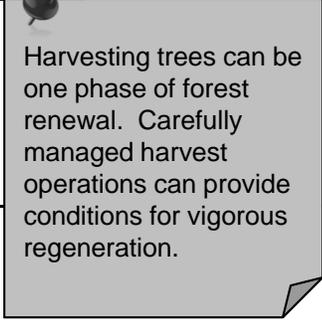
Cues for proper species selection can be gained prior to planting by looking at nearby native or non-invasive trees that are thriving in the same conditions as your property.

Unaware if tree species you select are suited to existing site and soil conditions

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MANAGING FOR BIODIVERSITY					
9 Restricting livestock access	Livestock are provided alternate shade and restricted from the forest and watercourses.	Livestock are allowed access to a small portion of the forest in the winter months only.		Livestock are allowed access to the forest and watercourses at all times of the year.	<input type="checkbox"/>
PLANTATION MANAGEMENT					
10 Increasing plantation diversity	Natural succession is allowed to take its course in the plantation and establishment and growth of other species' seedlings is encouraged through thinning and, if necessary, planting.		Natural succession is allowed to take its course in the plantation but no thinning or other management is practiced.	Seedlings of other species are controlled because a strict monoculture is desired.	<input type="checkbox"/>
11 Plantation thinning for maximum growth	Thinning and cutting follows a management plan and is designed to promote maximum health and growth of residual trees.			Plantation is unmanaged. No thinning or cutting is done.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MANAGING FOR TIMBER					
12 Following a Managed Forest Plan or forester's prescription	Harvesting follows a Managed Forest Plan and a prescription from a Registered Professional Forester.	You do not have a Managed Forest Plan but any harvesting follows a prescription from a Registered Professional Forester.		<i>Harvesting takes place without a Managed Forest Plan or prescription from a Registered Professional Forester.*</i>	<input type="checkbox"/>
13 Tree marking	Tree marking follows a management plan or prescription and certified tree markers are hired to follow the management prescription.	Tree marking is done but there is no management plan or prescription.		<i>*Trees are not marked before harvesting operation.</i>	<input type="checkbox"/>
15 Tree Cutting By-laws	Tree cutting follows the requirements of local Tree Cutting By-laws.			<i>*Trees are cut without regard to local Tree Cutting By-laws.</i>	<input type="checkbox"/>
					

* These conditions may violate municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MANAGING FOR TIMBER <i>continued</i>					
16 Careful logging practices	Harvesting is carried out in a sustainable manner with minimum adverse impacts on the remaining trees, vegetation or water quality.	Harvesting is carried out in a sustainable manner with minimum adverse impacts on the remaining trees, vegetation or water quality.		Harvesting causes damage to remaining trees, vegetation or water quality.	<input type="checkbox"/>
	Harvesting is done outside of wildlife breeding seasons with consideration for protecting other values like nesting sites.			Harvesting is carried out without provisions for wildlife or protecting other values.	<input type="checkbox"/>
17 Selling your timber	The sale of your timber is carried out with the assistance of a forestry professional.	When selling your timber you contact several logging companies and check references.	Several companies are contacted and compared but no references are checked.	A logging company is hired before reputation, references, and other companies are considered.	<input type="checkbox"/>
	Contract with the logging company to follow the prescription given by a professional forester.	Contract with the logging company.		You do not have a contract and do not require the logging company to follow a foresters prescription,	<input type="checkbox"/>
	You monitor the logging job from the first day to completion.	Logging is monitored when you can.		You do not monitor the logging job.	<input type="checkbox"/>

Resources List

Managing Your Forested Land

Canadian Sustainable Forestry Certification Coalition

www.kpmg.com

- Forest certification is a voluntary tool for property owners to demonstrate responsibility through independent certification of forest management planning and practices.

Ontario Forestry Association

www.forestsonario.ca

- Trees Ontario and the Fifty Million Trees Program
- Tree planting assistance
- Landowner resources

Ontario Woodlot Association

www.ont-woodlot-assoc.org

- *A Landowner Guide to Controlling Invasive Woodland Plants*
- *A Landowner Guide to Careful Logging*
- *A Landowner Guide to Selling Standing Timber*
- *Butternut Tree, A Landowner's Resource Guide*
- *Beach Bark Disease in Ontario*

Nottawasaga Valley Conservation Authority

www.nvca.on.ca

- Forest Management & tree planting advice, services, information

Ontario Professional Foresters Association

www.opfa.ca

- Forestry Consultant lists

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.gov.on.ca

- Best Management Practices: *Farm Forestry and Habitat Management* (BMP 01)
- Best Management Practices: *Agroforestry Series Vol. 1 – Woodlot Management*
- Best Management Practices: *Agroforestry Series Vol. 2 – Establishing Tree Cover*

Ontario Ministry of Natural Resources

www.mnr.gov.on.ca

- Managed Forest Tax Incentive Program
- *A Guide to Stewardship Planning for Natural Areas*
- Forest Health Conditions in Ontario
- Lists of Managed Forest Plan Approvers for Your Area

Eastern Ontario Model Forest

www.eomf.on.ca

- *Forest and Chain of Custody Certification Guidebook, 2012*

Forest Gene Conservation Association

www.fgca.net

- *On-line guide to tree and shrub species native to your area*

Landowner Resource Centre

www.lrconline.com

- Ontario Extension Notes: *factsheets on forestry and tree species*

Worksheet #10b – Streams and Shorelines

Use this worksheet to learn how you can protect water quality and your property around streams, ditches and shorelines.

Why should you be concerned?

- The health of streams, rivers and lakes is linked to the integrity of the smaller tributaries and quality of headwater landscapes.
- Many land use activities generate pollutants that enter nearby stream channels. These impacts degrade habitat values and negatively affect major sources of drinking water.
- Removal of natural shoreline and in-stream vegetation, roots, logs, or rocks usually results in increases in erosion and degraded water quality. Issues associated with the loss of stream and riparian structure are most evident during times of high flow activity.
- Shoreline and near – shore aquatic vegetation communities provide extremely important habitat values for fish and wildlife.
- Mature trees and overhanging vegetation provides shade and cools streams. This improves habitat for fish and wildlife, while reducing algae and weeds.
- Work in or around water could have a harmful impact on fish and aquatic life. Violation of the Fisheries Act could result in severe penalties.

What can you do?

- Protect streams and shorelines by maintaining, enhancing or enlarging existing buffers. Plant native vegetation along exposed banks and shorelines to establish new buffers.
- Modify cultural practices that includes mowing or maintaining a sod landscape adjacent to shorelines and stream channels through naturalization techniques. Many native plants, grasses and shrubs can be incorporated into shoreline projects where vistas and access are important criteria.
- Avoid using fertilizers or herbicides within the stream buffer or within 30 meters of any water channels.
- Don't 'clean' your stream. A stream cleared of leaves, rocks, 'weeds' or natural vegetation is a damaged stream.
- Avoid or minimize any activities that will disturb the stream bed, banks, shoreline or otherwise release sediment into the water.
- Investigate which government agencies need to review your plans if you intend to modify a stream, water course or shoreline. This is your responsibility.
- Think of the waterways that cross your land in terms of their place in the watershed; investigate where the water comes from and where it ends up.
- Be familiar with and protect springs and other groundwater sources on your land. These are important contributors of clean water to the watershed.

Stream Ecology

There are a number of main river systems that feed south-eastern Georgian Bay, fed by numerous small tributaries and source water areas. Maintaining the health of streams helps to protect fish and wildlife habitats, improve water quality and provides recreational opportunities.

Over time, the meandering pattern of streams change as water picks up and deposits sediments. Stream banks naturally erode and the stream bends change location.

However, severe erosion characterized by slumping and collapsing banks and murky water negatively affects the overall health of the stream. Understanding stream ecology can help maintain the natural path of streams and support their ecological function.

The meandering pattern or shape of streams is affected by the slope and surface materials in the stream.

Maintaining the banks and the structure of the stream are important considerations associated with water quality and habitat values. Trees and shrubs lining the shoreline form riparian buffers providing fish with shade and falling insects for food. Shade from vegetation also reduces increases in water temperature, important to the health of many aquatic species. In addition, tree roots and woody debris provide fish hiding and resting places. The plants in riparian buffers slow and absorb water, help prevent damaging floods and help take up nutrients that may otherwise directly enter the water. Reduced nutrient loading helps prevent excessive algae growth and over-abundant aquatic plant production.

When undertaking stream restoration activities, such as shoreline stabilization or in-stream fish habitat improvement, always make sure you consult with a professional before starting the work. Make sure the restoration techniques are appropriate for the conditions of the stream and that you obtain the required permits and approvals for work associated with water and floodplains.



Natural Shoreline Buffers

- Healthy streams, wetlands, bluffs and shorelines are protected by local natural buffers.
- A buffer is an area of natural vegetation that extends from the high water mark to the water's edge.
- Natural buffers can include native grasses, forest corridors, dunes, wetlands, beaches, and any native vegetation along the shoreline or bank.
- Natural buffers not only protect the stability of the shoreline, bluff or bank, but they protect water quality by filtering and purifying water before it enters a watercourse, and by keeping the water cool.
- In order to visually or physically access water, or to maximize areas of lawn or cropland, all or part of a buffer is sometimes removed. This activity weakens the buffer's ability to protect against erosion or poor water quality. This also prevents the buffer from performing its ecological function.
- Removal of buffers can also lead to liability cases with neighbours and criminal charges if fish habitat is harmed.



Vulnerable stream.



Stream with some buffer protection.

Some of the pollutants that the vegetation in a shoreline buffer helps filter out includes grass & yard clippings, pesticides, fertilizers, oil and gas spilled on a driveway or road, septic tank seepages, salt and sand from road works and 'deposits' from family pets! Your buffer ensures that these pollutants don't make their way into the lake.

Streams and Shorelines

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
KNOW YOUR STREAM					
1 Where does it come from, where does it go?	Knowledge of where your stream originates and where it ends up and you know where all tile drains or surface water channels enter the stream on your property.	Knowledge of where your stream originates and you know where most drains or tributary channels enter the watercourse.	Knowledge of where your stream goes.	Unaware of the source or destination of water flowing across your property.	<input type="checkbox"/>
2 Environmental designations & values	Aware of any especially sensitive buffers, including wetlands, species at risk (SAR), ESA, ANSI and are active in protecting them.	Aware of any especially sensitive buffers, including wetlands, SAR, ESA, ANSI and have plans to protect them.	Aware of any especially sensitive buffers including wetlands, SAR, ESA, ANSI. No plans to protect them.	No awareness of especially sensitive buffers such as wetlands, SAR, ESA, ANSI and no plans to protect them.	<input type="checkbox"/>
ASSESSMENT					
3 Stream structure	Stream water is allowed to take its natural path and change its shape, depth and meander pattern over time	Wherever possible, stream water is allowed to meander and create a natural path	Stream water flows in a uniform ditch or channel, but any future maintenance of the channel will strive for stream naturalization.	Banks are slumping or collapsing or your maintenance activities only strive to maintain the geometric structure of the channel.	<input type="checkbox"/>
4 Water flow	Presence of riffles, runs and pools			Unaware if riffles, runs and pools are present	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
ASSESSMENT <i>continued</i>					
5 Entry of Surface Water	Surface water enters stream without noticeable bank erosion	Structures such as rock chute spillways or drop-pipe inlets installed where washouts occur and water flows through grass or vegetated waterway uphill of spillway or inlet.	Surface water enters channel through rock chute spillway or drop pipe inlet without prior filtering or some bank damage at entry point of surface water.	Severe bank damage due to entry of surface water or surface water containing sediment and contaminants enters waterway.	<input type="checkbox"/>
6 Vegetative buffer	Buffer is continuous along the shoreline.	Buffer has only small gaps or punctures along its length.	Buffer is punctured but vegetation is allowed to re-establish naturally, or punctures are concentrated in one area.	No vegetated buffer is present and is cleared regularly and mowed lawn comes right to shoreline	<input type="checkbox"/>
7 Size of buffer	Buffer is greater than 30m (100 feet) wide and in ESA areas, buffer is 150m (500 feet) wide.	Buffer is less than 30m wide but occupies all available space 3 m (10 feet) or greater.	Buffer is less than 3 m (10 feet) wide.	There is no buffer present. Manicured lawn extends to property limit.	<input type="checkbox"/>
8 Composition of buffer	Buffer is naturalized and comprised of native vegetation, and a variety of trees, shrubs, grasses and wildflowers.	Buffer is naturalized and comprised mostly of native vegetation including trees and shrubs.	Buffer comprised of some native vegetation and mostly non-invasive species with no trees or shrubs.	Buffer is highly manicured and comprised of mostly invasive and/or non-invasive introduced species.	<input type="checkbox"/>
9 Shoreline Slope & Composition	Shoreline is composed of native vegetation, and is untouched or stabilized using bioengineering techniques. No active erosion present.	Shoreline slope is gentle and stable, and is comprised of a variety of boulders or rock rip rap interspersed with native vegetation.	Shoreline is comprised of natural rounded boulders or rip rap of uniform size.	Shoreline is a vertical wall, made of corrugated steel, concrete and/or gabions. Soil is exposed and eroding.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	<div style="border: 1px solid black; padding: 2px;">Your Rating</div>
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ASSESSMENT *continued*

10	Barriers to water flow and fish	Water flow and fish movement is not blocked or diverted by dams, weirs or culverts.	Water flow and fish movement barriers are infrequent	Several barriers are reducing stream base flow	Water flow is blocked or diverted frequently	<input type="checkbox"/>
11	Excess Nutrients	Sediment and contaminants are filtered by a vegetated buffer and limited to no algae on rocks	Limited or no algae on rocks	Algae on rocks	Thick algal mats on rocks and no vegetated buffer	<input type="checkbox"/>

FISH AND WILDLIFE HABITAT

12	Wildlife habitat in the water	An ecologist or other professional is consulted about options for enhancing habitat in your waterway and actively managing or improving habitat features	A variety of larger objects such as logs, boulders, tree roots and live shrubs, are left in and around the stream to provide habitat.	Some natural objects remain in the stream, providing limited habitat opportunities.	The stream is 'cleaned' of all natural debris or obstructions.	<input type="checkbox"/>
13	Wildlife habitat on land	All trees, woody debris, and leaves are left in place and actively managing or improving habitat features.	Vegetation alterations are limited to pruning branches from trees to provide visual access, or controlling invasive species	Trees removed to provide access are concentrated in one area. Other vegetation is not removed.	Tree or shrub cover is sparse or non-existent, and the stream is warmed by direct sunlight.	<input type="checkbox"/>
14	Shade Cover	Shrubs and trees provide shade of 50% of water to keep the stream cool and provide habitat for aquatic life.	Shrubs and trees provide areas of shade to keep the stream cool and provide habitat for aquatic life.	Some shrubs and trees grow along the shoreline, providing partial shade over the water.	There is no shade cover.	<input type="checkbox"/>

Topic Best **4** Good **3** Fair **2** Poor **1**

Your Rating

FISH AND WILDLIFE HABITAT *continued*

15 Water clarity	Water is clear and objects deeper than three feet are visible	Water is clear and objects over two feet are visible	Objects over one foot are visible	Water is murky with no visibility underwater	<input type="checkbox"/>
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WATER ACCESS

16 Stream crossings	Streams on the property are not crossed.	If stream crossing is necessary, proper structures (culverts, bridges, or low-level crossings) are used, minimizing disturbance of stream and banks.	No proper stream crossing system is in place, but stream crossing is rarely used.	No proper stream crossing system is in place. Vehicles, people or animals cross frequently through the stream.	<input type="checkbox"/>
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17 Garbage removal	All garbage is removed from the stream. Removal of any large items is done at times of low flow, to reduce the amount of sediment released, and outside of fish spawning times.	All garbage is removed from the stream, protecting water and wildlife from harmful materials.	Garbage is removed wherever possible.	Garbage is left in the stream.	<input type="checkbox"/>
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All garbage, from gum wrappers to old cars, can leach chemicals, minerals or particles into streams and lakes which can damage water quality and be damaging to wildlife.

18 Working around waterways	Good knowledge of the regulating bodies and permits required for shoreline and stream work.	Some knowledge of the regulating bodies and permits required for shoreline and stream work but aware of how to obtain more information.	No knowledge of the regulations or permits required for shoreline alteration.	<input type="checkbox"/>
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Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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SOURCES OF CONTAMINATION *continued*

18 Permits and Approvals

Knowledge of the legislation that applies to waterways on your property – these may include the Public Lands Act, the Lakes and Rivers Improvement Act, Drainage Act, Conservation Authorities Act and the Federal Fisheries Act. Proper approval is obtained from all relevant bodies before any work is done around a waterway on your property.

Relevant legislation may include: the Public Lands Act, the Lake and Rivers Improvement Act, Drainage Act, Conservation Authorities Act and the Federal Fisheries Act.

The Government of Ontario provides a list of 'e-laws' at the following website:
www.e-laws.gov.on.ca

**Work is undertaken around streams or ditches on your property without first obtaining permission from all relevant agencies. This could result in severe penalties.*

* These conditions may violate federal and/or provincial legislation or municipal by-laws.

Dredging

Dredging is the removal or displacement of any material from any shore lands, including the lake bottom, and is often done for boating access or water supply intakes. While it has become a common practice as a response to low water levels, it is not a sustainable practice. Where they exist, alternative access methods should be used such as boardwalks, docks, offshore mooring and public marinas.

There are a number of negative effects of dredging including:

- Damage to benthic habitat and communities (organisms in the sediment) causing changes in the food chain that impact plant, fish and invertebrate communities.
- Sediment plumes from dredging can cause changes to water quality, the redistribution of toxic materials and damage to bottom dwelling organisms.
- Habitat in the nearshore and river mouth areas can be severely damaged by excavation, infilling and dredging. Any of these activities must take into consideration the life-cycles of fish species.
- Dredging usually requires repetition as the channel fills in with sediment, which can lead to high costs and further damage to the ecosystem.

A work permit may be required to dredge shore lands such as with the creation of a boat slip, boating channel or swimming area and the removal of rocks/boulders from shore lands or the bottom of a lake or stream. It is the responsibility of the landowner to comply with all existing laws and regulations and approval may be required from more than one agency.



If no alternatives for dredging are viable make sure approvals are obtained and all erosion and sediment control measures are followed to minimize impact. The Ministry of Natural Resources sets timing windows to reduce impacts to fisheries.

Resources List

Streams and Shorelines

Department of Fisheries and Oceans

www.dfo-mpo.gc.ca/library/

- *The Shore Primer* – A cottager’s guide to healthy waterfronts
- *The Dock Primer* – A cottager’s guide to waterfront friendly docks
- *The Fish Habitat Primer* – A cottager’s guide to protecting fish habitat
- *Working Around Water?* A series of 15 fact sheets about fish habitat and working in or near water.

Lake Huron Centre for Coastal Conservation

www.lakehuron.ca

- *Southern Georgian Bay Shoreline Stewardship Guide*
- *Lake Huron’s Coastal Plants*
- *Lake Huron’s Dune Planting Guide*

South Simcoe Streams Network

silvia@nottawasaga.com

- Stream and Shoreline Restoration Programming (South Simcoe County)

Severn Sound Environmental Association

www.severnsound.ca

- Shoreline information, technical resources and programs

Landowner Resource Centre

www.lirconline.com

- Ontario Extension Notes: (Water)
 - *Improving Fish Habitat*
 - *Protecting Fish Habitat*
 - *Preserving and Restoring Natural Shorelines*
 - *Restoring Shorelines with Willows*
 - *Preserving Water Quality*
 - *Buffers Protect the Environment*

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.gov.on.ca

- Best Management Practices: *Buffer Strips* (BMP 15E)
- Best Management Practices: *Fish and Wildlife Habitat* (BMP 10)

Ontario Ministry of Natural Resources

www.mnr.gov.on.ca

- Shoreline information, technical resources
- Ontario Streams www.ontariostreams.on.ca
- *Ontario’s Stream Rehabilitation Manual*

Nottawasaga Valley Conservation Authority

www.nvca.on.ca

- Shoreline information, technical resources and programs

Resources List

Streams and Shorelines

Canadian Framework for Community Action – Lake Huron Georgian Bay Watershed

www.lakehuroncommunityaction.ca

- *Lake Huron Georgian Bay Framework for Community Action*
- *Sweetwater Sea: Strategies for Conserving Lake Huron Biodiversity*

Centre for Sustainable Watersheds

www.watersheds.ca

- *Watching Your Wake*
- Shoreline information
- *On the Living Edge: Your Handbook for Waterfront Living – Ontario Edition*

Federation of Ontario Cottagers Association

www.foca.on.ca

- *A Shoreline Owners Guide to Healthy Waterfronts*

Ontario Streams

www.ontariostreams.on.ca

- *Ontario's Stream Rehabilitation Manual*

Worksheet #10c – Ice and Snow

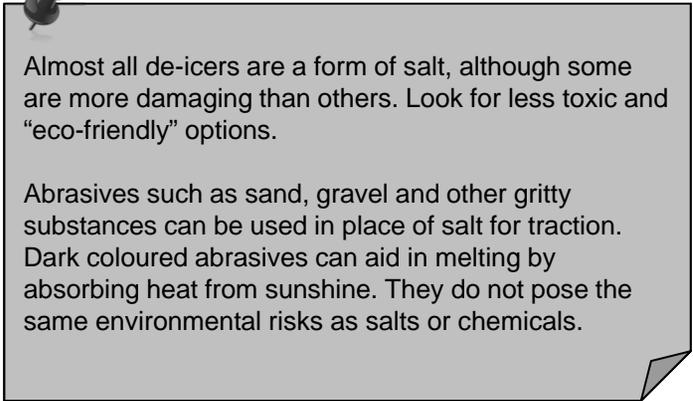
Use this worksheet to learn how you can protect water quality and your property around streams, ditches and shorelines.

Why should you be concerned?

- Ice can cause damage to property such as docks, boathouses, retaining walls, boat lifts and buildings near the shoreline.
- Ice ridges form natural berms that provide ecological benefits – removing these can have detrimental effects on shoreline stability and habitat.
- Snow removal and piling can result in large amounts of water drainage during thaws. It can flow into basements, cause extensive property damage - including erosion, slope instability and flooding.
- The use of salts to melt ice and snow leads to an excess of these products running off into streams and lakes.
- Some salts can have detrimental side effects including harm to plants and soils, damage to concrete surfaces, corrosion of metals and water pollution.

What can you do?

- Leave ice ridges in place. Shoreline access can be maintained by cutting access points or ramping over them.
- Ensure that personal property is stored for winter and not in the natural path of the ice.
- Place piles from snow removal from driveways and pathways in areas where melt will not direct water into storm sewers or septic tanks.
- Investigate other ice melting and traction solutions rather than salts or chemicals.



Almost all de-icers are a form of salt, although some are more damaging than others. Look for less toxic and “eco-friendly” options.

Abrasives such as sand, gravel and other gritty substances can be used in place of salt for traction. Dark coloured abrasives can aid in melting by absorbing heat from sunshine. They do not pose the same environmental risks as salts or chemicals.

Ice Ridges

Owners of shoreline properties often deal with damage caused by “ice heaving” or “ice jacking”. This phenomenon causes ice ridges to form along the shoreline and the process can damage retaining walls, docks, boathouses and potentially the house itself.

The pushing action of ice sheets against the shoreline causes these ice ridges to form. The ice sheet being firmly fused to the shore or different contraction rates in the top and bottom of the ice sheet cause cracks to form in the ice, particularly in years of little snow cover. Water rises in these cracks and freezes, causing the ice sheet to expand. Warmer air temperatures cause more expansion and the combination of these forces cause a massive “push” against the shore. Rising and falling temperatures repeat the process and lead to additional pushes, causing ice to move inland, scraping and pushing soil and rock into mounds along the shoreline (“ice ridges”). The size of the ice ridge can depend on the slope of the shoreline, temperatures, lake levels and the type of substrate on the shoreline.

These ice ridges form natural berms that provide a variety of ecological benefits. The ridges of soil create a barrier to nutrients, minimizing the amount draining to the lake as well as collecting on the inland side of the mound, creating fertile soil for vegetation. These thriving plant communities act as buffers, protecting the shore from erosion and adding to the nutrient uptake, further reducing the load entering the lake. These ice ridge plant communities also provide shade and habitat to shoreline organisms, supporting wildlife populations and fish habitat.

Gradual expansion due to deposition over time of the size of an ice ridge can help protect your shoreline from future ice-related damage. Shoreline ridges that are periodically fortified with new deposits of soil and rock generated by ice events provide conditions that can strengthen existing tree and shrub roots, and that can ultimately enhance overall shoreline protection values.



Ice and Snow

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
1 Winter preparation	All removable items are stored away from the shoreline in winter.	All removable items are stored for winter. Larger items are left in place and winterized.	Some property is removed but no winterizing is done.	No preparation for winter.	<input type="checkbox"/>
2 Shoreline ice	All ice left in place and allowed to form and melt naturally.	Ice left in place and access points are cut.	Large access points cut or some ice removal.	Ice removed from shoreline.	<input type="checkbox"/>
3 Ice ridges	Soil from ice ridges left in place. Shoreline access either cut or ramped.	Soil from ice ridges left in place. Shoreline access either cut or ramped.	Some soil left in place, but most ridges are graded.	Removal of shoreline ice ridges.	<input type="checkbox"/>
4 Snow piles	Piles placed on permeable surfaces and away from septic systems or sewers.		Snow piles near sewers or septic systems, but on permeable surfaces.	Snow piles near sewers or septic systems, but on permeable surfaces.	<input type="checkbox"/>
5 Salt use	No use of salt or other de-icers	Eco-friendly de-icers used minimally when required for safety.	Salt or de-icer used throughout property.	Excessive use of salt or other de-icer.	<input type="checkbox"/>

Worksheet # 10d - Wetlands and Ponds

Use this worksheet to learn more about how your actions affect wetlands and ponds.

Why should you be concerned?

Wetlands are nature's water filtration and purification system. They provide enormous diversity to the natural landscape and contribute to important ecological functions including:

- Wetlands act like giant sponges, absorbing excess water and releasing it slowly. Their ability to store water can reduce the frequency and severity of both floods and droughts.
- They filter nutrients and contaminants, maintaining downstream water quality.
- They regulate water flow in streams and rivers and help to recharge groundwater supplies.
- They are important habitat for hundreds of species of wildlife and provide critical nesting areas for many of these.
- Wetlands also offer many recreational opportunities including fishing, canoeing, wildlife viewing, hunting and nature photography.

Did you know?

Property owners of Provincially Significant Wetlands are eligible for the Conservation Land Tax Incentive Program (CLTIP) that covers 100% of your property tax on the wetland portion of your land. The Ministry of Natural Resources will contact you.

What can you do?

- Recognize the value of wetlands. Retain wetlands on your property. Build links, where practical, with other wetlands or natural areas. Remember to call your local conservation organizations before you begin to dig a pond.
- Maintain or establish a buffer strip of permanent vegetation around the wetland. In many cases this can be accomplished by not mowing the grass next to your wetland. Enhance it with native shrubs, trees and a diversity of plants.
- Enhance your wetland or pond's appeal to wildlife. Install a variety of habitat elements such as nest boxes for Wood Ducks and logs at the edge of the pond for basking turtles. It doesn't cost a lot and will attract wildlife to your wetland.
- Control nutrient sources such as fertilizers around your wetland or pond. This will minimize problems with algae growth.
- Do not introduce non-native fish such as carp or non-native plants like purple loosestrife to your wetland or pond.
- Artificial ponds that are 'on-line' (connected to watercourses either by damming or through inlet and outlet pipes) can have negative downstream impacts. If your pond is 'on-line', consider disconnecting it from the watercourse to which it is linked. Consult with local authorities for permits and technical help.

Wetland and Pond Management

What is a wetland?

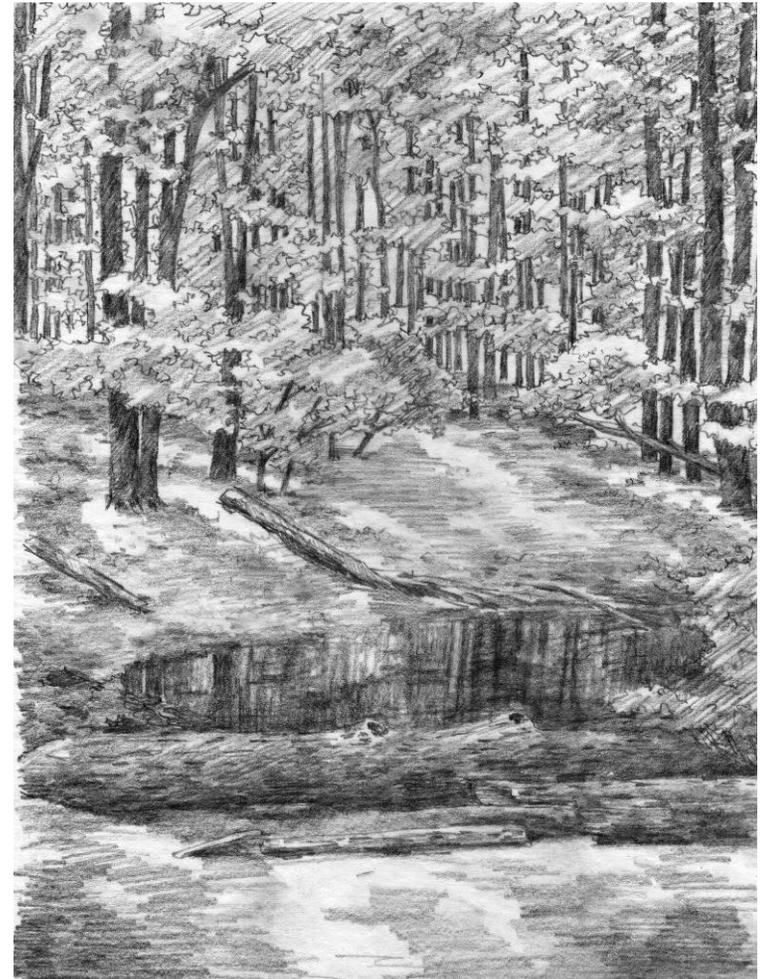
Wetlands are defined as an area of land that is covered by water or wetland vegetation for all or part of the year. The following are the main types of wetlands in Ontario.

Swamps are characterized by flooded trees such as black ash, white cedar, silver or red maple and white elm, and/or shrubs such as willow and alder. Swamps may dry out by late summer.

Marshes are recognized by the presence of cattails, grasses and sedges, with an absence of trees and shrubs. In their most productive state, they have an equal mix of open water and emergent plants.

Vernal pools are filled in early spring with water from snowmelt and spring rains. These seasonally flooded areas are particularly important for breeding amphibians including frogs and salamanders.

Bogs and Fens tend to be more common in northern Ontario. Bogs contain sphagnum moss, are acidic and are fed primarily with precipitation. Fens are alkaline and have some drainage. Both are characterized by peat soils and plants that can survive in low-nutrient environments such as pitcher plants and sundews.



Vernal Pool

Wetland and Pond Management

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
1 Wetland awareness	Awareness of the type and significance of the wetland on your property. If applicable: the wetland's formal name/local reference, its designation (provincial significance) by MNR and its zoning through your municipality's official plan.		Awareness of the type of wetland (i.e. marsh or swamp) but not its designations by local or provincial authorities.	No investigations made about the details of the wetland.	<input type="checkbox"/>
2 Wetland buffer vegetation	Wetland is surrounded on all sides by a band of permanent vegetation including native trees and shrubs. This buffer will filter runoff and nutrients, provide habitat and shade the wetland edge.	Wetland is surrounded on all sides by a band of permanent vegetation of native herbaceous plants (no trees/ shrubs).	At least 50% of the wetland edge is surrounded by a band of permanent vegetation.	Vegetation around wetland area covers less than 50% of the wetland edge or vegetation is cleared and prevented from re-establishing by mowing or other means.	<input type="checkbox"/>
3 Buffer width	Buffer greater than 30m wide.	Buffer is 30m wide.	A narrow buffer less than 30m in width is provided.	Buffer is 2m wide or less, or non-existent.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
4 Wetland management	Healthy, undisturbed wetland is left to function on its own.	Permitted alterations are made to a wetland or pond with the intent to enhance the diversity of plant and animal life present.	Permitted alterations are made to wetland/pond with little regard to enhancing the diversity of plants and animals.	Alterations are made to wetland/pond that reduce the diversity of plants and animals.	<input type="checkbox"/>
	Wetland/pond enhanced by having a documented plan, developed in consultation with conservation organizations, to add nesting structures, plant native species, harvest wetland resources or restore natural patterns of water flow.	Wetland/pond maintained by planting native species and highly sensitive habitats are moderately affected by harvesting/management activities	Wetland/pond damaged by removing buffer vegetation	Wetland/pond drained or dried out, or livestock are permitted to access wetland.	<input type="checkbox"/>
5 Water level control structure (if present)	Familiarity with water level control structure if applicable (e.g.. half round, drop inlet, Hickenbottom or overflow pipe). Structure maintained and water level managed.	If beaver dams are present, beaver impacts are managed (ie. beaver bafflers) if necessary.	Familiarity with water level control structure, but no active maintenance or management activities performed.	No familiarity with water level control structure and its function.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
6 Wildlife habitat	Natural wildlife habitat features are provided around the wetland. For example: fallen logs, standing dead trees and berry bearing shrubs.	Natural wildlife habitat features exist, but artificial features such as Wood Duck nesting boxes or bird perches are also installed and maintained seasonally.	Natural wildlife habitat features are rare, but artificial features such as Wood Duck nesting boxes or bird perches are installed and artificial features are not maintained seasonally.	No natural or artificial wildlife habitat features provided around the wetland/pond.	<input type="checkbox"/>
7 Monitoring	Participation in monitoring programs such as Marsh Monitoring Program and Frog Watch. Awareness of wildlife diversity.	Awareness of wetland wildlife species. Observations and notes made informally.		No awareness of wetland species.	<input type="checkbox"/>
8 Nutrient management in artificial ponds	Weeds and algae that cover more than 25% of the pond water surface are controlled at the source, with nutrient inputs managed or eliminated.	Good understanding of nutrient sources that can cause weed and algae problems, nutrient inputs minimized and other control actions taken such as: a) shading the pond by planting shrubs and plants such as cattails or b) ensuring that water circulates.	Excess nutrients are not managed but plant and algae control is achieved by harvesting aquatic plants with rakes or pulling by hand**, or by other mechanical means including shading through the use of black plastic.	Excess nutrients are not managed or <i>*herbicides are used to control in-water weeds.</i>	<input type="checkbox"/>

Aquatic vegetation and algae play a critical ecological role in *natural wetlands*, helping to maintain water quality and serving as a food source for other organisms.

The following sources can contribute to excess nutrients in artificial wetlands: Canada Geese and animal manure, septic system, organic fertilizers (incl. garden and fish food), soaps with phosphates for car washing or bathing.

* These conditions may violate federal and/or provincial legislation or municipal by-laws
 ** Harvesting aquatic plants can impact aquatic habitat for fish and other species. Permits may be required.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
9 Stocking an artificial pond with fish: proper species	Pond habitat is assessed for key fish survival features: depth, temperature, pH, oxygen and water clarity and based on assessment, pond is stocked with appropriate native fish species.	Pond habitat is generally assessed and pond is stocked with appropriate native species	Pond habitat is not assessed or fish species stocked in pond are inappropriate to the conditions, ie. cold water trout stocked in shallow warm water pond.	**Exotic invasive fish species such as Asian Carp (Grass Carp) are stocked.	<input type="checkbox"/>
	Fish are disease-free and purchased from licensed fish hatcheries and necessary stocking permits obtained.		Fish are not purchased from a licensed fish hatchery and may have diseases.	**No stocking permit is obtained	<input type="checkbox"/>
10 Stocking an artificial pond: stocking density	Exact area of pond is known before stocking, pond is stocked using recognized (MNR or University of Guelph) density guidelines for recreational ponds, or pond was stocked previously and current property owner is aware of the details.	Pond was stocked by a previous owner, but current property owner is unaware of the details but pond is healthy.	Pond is stocked but no effort is made to track the number of fish stocked or the overall density.	Pond is stocked with too many fish as a result of improper area calculations.	<input type="checkbox"/>
	<div data-bbox="147 974 493 1372" style="border: 1px solid black; padding: 5px;"> <p>Before stocking a pond that is connected to Ontario waters (example: a pond with inflow and outflow, or one on a floodplain) you must obtain a stocking permit from your local MNR office.</p> </div>	<div data-bbox="898 1055 1285 1323" style="border: 1px solid black; padding: 5px;"> <p>Overstocking results in poor survival and limited growth of fish. Declines in water quality and algae blooms are further symptoms of overstocking.</p> </div>		<div data-bbox="1438 1015 1806 1372" style="border: 1px solid black; padding: 5px;"> <p>Refer to the <i>Fish Stocking Guidelines for Inland Waters of Ontario</i> in the resources section for pond assessment information relating to various fish species approved for stocking in Ontario.</p> </div>	

** Ontario has a ban in place for buying and selling live bighead, black, silver and grass carp. This ban also extends to selling grass carp for use in backyard ponds.

Resources List

Wetlands and Ponds

Books

- Hicks, John S. 2013. *The Pond Book – A Complete Guide to Site Planning, Design, and Managing Small Lakes and Ponds*. Publisher-Fitzhenry and Whitehaver ISBN – 10: 15554551609

Canadian Wildlife Service

www.ec.gc.ca

- On-line water resource information

Ducks Unlimited Canada

www.ducks.ca

- *Wetlands on My Lands? Some Simple Low-cost Techniques for Creating or Restoring wetlands on Your Property*
- Wetland Technical Information and Landowner Programs

Landowner Resource Centre

www.lrconline.com

- Ontario Extension Notes: *Building a Pond*

Nottawasaga Valley Conservation Authority

www.nvca.on.ca

- Technical Information and Programs

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.gov.on.ca

- Best Management Practices: *Fish and Wildlife Habitat Management* (BMP 10)

Ontario Ministry of Natural Resources

www.mnr.gov.on.ca

- *Guidelines for Fish Stocking in Inland Waters of Ontario*
- *Living with Beavers*

Ontario Nature

www.ontarionature.org

- *Wetland Restoration and Rehabilitation Guide*

Peterborough County Stewardship

www.peterboroughcountystewardship.org

- *A Landowner's Guide to Constructing and Maintaining a Rural Pond*

Severn Sound Environmental Association

www.severnsound.ca

- Technical Information and Programs

Working With the Natural Features of Your Property

Worksheet #10e – Retired Fields and Meadows

Use this worksheet to learn how you can help protect these unique ecosystems.

Why should you be concerned?

- Meadow habitat is increasingly rare in Ontario.
- When we think about naturalization or habitat restoration, we tend to think about planting trees, but we can also contribute to rare tree-less habitats such as meadows and prairies.
- Natural grasslands need little maintenance, and are drought resistant, requiring no application of water, chemical fertilizers or pesticides.
- Many native meadow grasses are tolerant of periodic grazing by cattle, and can be used to extend the grazing season well into late summer drought.
- Grassland plants can be used as windbreaks and as buffers to wetlands, streams and wild areas. Like forests, grasslands also provide corridors for the movement of wildlife.
- Meadow and prairie vegetation can be very effective at filtering sediment and soil-bound nutrients, pesticides and bacteria, and can also be used to improve slope stability.
- A variety of birds and mammals, large and small, take shelter in meadows, fields and grasslands. Without proper precautions, these creatures may be harmed by our day-to-day activities.
- Providing habitat for natural predators helps control rodents and insect populations on your property.

What can you do?

- If you have unused lawn area, consider establishing a native wildflower meadow. If you have old fields, consider managing them as grassland instead of planting trees.
- If you choose to manage some of your land as grassland, mow your meadow or retired field in the late fall or early spring to prevent the encroachment of trees and shrubs.
- Alternatively, if you wish to increase your forest lands, consider reforesting retired fields or allowing natural succession.
- If your fields are used for hay production, delay cutting until after mid-July to allow ducks and other birds to fledge their young successfully.
- Install flushing bars on tractors to protect ground-nesting birds and other wildlife from injury, and mow only during the day to avoid harm to roosting fowl.
- If you think you might have a remnant tallgrass prairie or savannah on your property, contact local authorities to learn what you can do. Financial support or incentives may be available to support conservation or restoration efforts.

Retired Fields and Meadows

Rating Best **4** Good **3** Fair **2** Poor **1**

Your Rating

MAINTAINING MEADOWS AND RETIRED FIELDS

1	Management of invasive species	Removal of and regular monitoring for invasive species that can out-compete native plants and no introduction of horticultural exotics.	Identification and removal of invasive exotic species that can out-compete native plants and no introduction of horticultural exotics.	Occasional removal of invasive exotic plant species.	No awareness of invasive plant species that exist in your meadow.	<input type="checkbox"/>
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Some plants, both exotic and native, are controlled under the Ontario Weed Control Act. For more information about noxious weed species, see the Resources List at the end of this worksheet.

2	Species diversity	Underproductive farm fields are reverted to native plants, an effort is made to encourage a diversity of plant species, and invasive species are eradicated.	Underproductive farm fields are reverted to native plants and invasive species are controlled.	Underproductive fields are allowed to 'go back to nature,' with an effort to control weed species.	<i>*Fields are dominated by noxious weed species. - See Ontario's Weed Control Act for more information.</i>	<input type="checkbox"/>
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Native tallgrass species can be used very effectively for buffers and windbreaks.

Without interference, meadow habitats found in retired fields will superficially resemble 'prairies' for a period of time before forest vegetation moves in. This natural process is called succession.

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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MAINTAINING MEADOWS AND FIELDS FOR GRASSLAND HABITAT

3	Controlling woody plants	Meadow is mowed once per year, imitating historical burn cycle and mowing takes place in early spring or late fall.	Emerging trees and shrubs are cut or removed from meadow once every three years and cutting or removal takes place in early spring or late fall.	Woody vegetation is occasionally cut back to retain some open space.	Woody plants are not controlled, and are allowed to take over meadow system.	<input type="checkbox"/>
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MOWING

4	Flushing bars	Flushing bars are installed on all haying equipment, to save wildlife and nesting birds from mower blades.	<p>Many native grasses are well-suited to grazing by cattle. Rotational grazing of livestock on your meadow, may be another good way to control woody plants.</p> <p>Renting land to a farmer for hay production can also be an effective way of maintaining open space. Delaying cutting will allow birds to fledge their young successfully. See "Renting Your Land" for more.</p>		Flushing bars are not installed on haying machinery.	<input type="checkbox"/>
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5	Timing of cutting	Mowing is delayed until mid-July, after the nesting season for birds and mowing takes place during daylight hours to avoid harm to ground-roosting ducks.	Mowing is done during daylight hours but mowing is not timed to avoid critical nesting periods.	Mowing is not timed for the preservation of meadow wildlife.	<input type="checkbox"/>
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Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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MEADOW RECREATION

6 Mowed trails	A minimum number of trails are cut to access a maximum of key views and destinations on the property and the location of mowed trails is not changed.	A minimum number of trails are cut to access a maximum of key views and destinations on the property but trails are relocated or new trails are mowed from time to time.	Trails are mowed indiscriminately.	The entire meadow is used without regard for the impact on sensitive grassland wildlife or native plant species.	<input type="checkbox"/>
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★ See also Worksheet #11: *Access to Your Property*

7 Family pets	Pets are kept leashed and belled when walked through fields and pets are kept out of field and trails during nesting periods, to protect vulnerable ground-nesting birds and wildlife.	Pets are belled are not allowed to wander into fields or meadows.	Pets are belled but are not prevented from disturbing ground-nesting wildlife.	Pets are allowed to roam free in fields and meadows.	<input type="checkbox"/>
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Lower-growing than woods, a maintained meadow can allow you to keep desirable views while providing valuable habitat.



A mowed trail in a retired field. Bird boxes offer enhanced habitat opportunities while a bench provides a comfortable resting place.

★ See also Worksheet #9: *Living with Wildlife*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TALLGRASS PRAIRIE AND SAVANNAH LANDSCAPES					

8	Recognition	Aware of the endangered nature of these ecosystems and whether indicator plant species exist on property.	Aware of the endangered nature of these ecosystems, and an effort has been made to determine if indicators of a remnant patch are present on the property.	Aware of these ecosystems but have not made an effort to recognize indicator species.	No awareness about tallgrass prairie or savannah landscapes.	<input type="checkbox"/>
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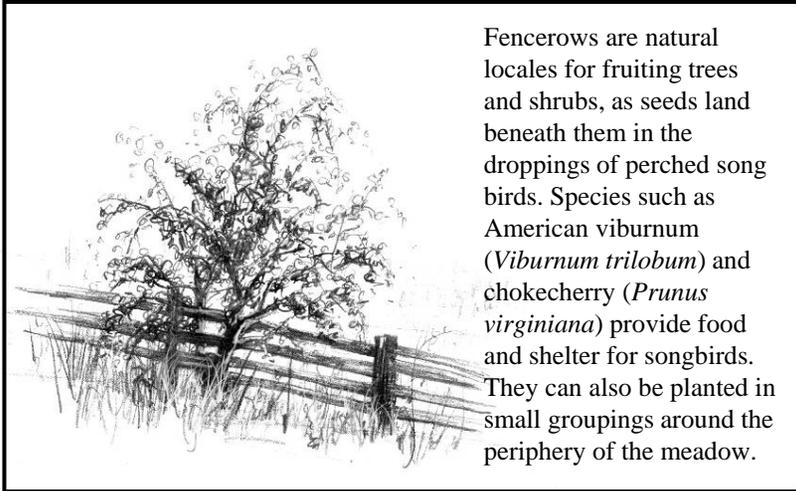
9	Restoration and management	If a remnant prairie or savannah is suspected, an expert has been contacted about restoration and management possibilities.			A remnant prairie or savannah is suspected, though no initiatives have been taken toward restoration or management.	<input type="checkbox"/>
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Financial support or incentives may be available for management of a rare ecosystem on your property. See the Managed Forest Tax Incentive Program (MFTIP) in the Resources List.

Some cavity-nesting birds, such as eastern bluebirds, purple martins, tree swallows and American kestrels can help control insect and rodent populations on your property.

Enhancing Habitat for Meadow Fauna

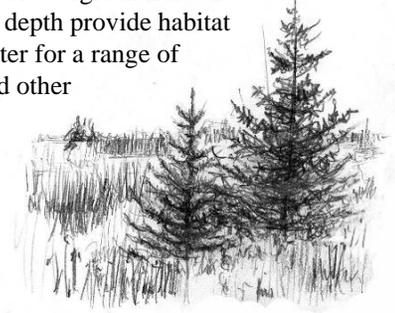
Meadows and old-fields are particularly attractive to a wide range of animals, because of their abundance of seed-bearing grasses and pollen and nectar from wildflowers. To enhance and further diversify this habitat, a number of elements can be added to the grass landscape. Some of these are described below:



Large, flat-surfaced rocks and boulders provide a comfortable place for snakes and butterflies to bask.

Deposit sand piles where turtles can lay their eggs in meadows near watercourses, ponds, or wetlands.

Clusters of evergreen trees of variable depth provide habitat and shelter for a range of birds and other animals.



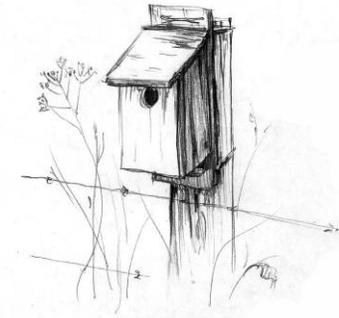
Hibernacula can be constructed to shelter hibernating snakes.

Some songbirds and small mammals will only venture into a meadow if there is adequate cover to protect them from predators such as hawks, owls and foxes. Old logs or brush piles may be placed in the meadow both to provide shelter and to attract songbirds that seek insects in the decaying wood.

Rock piles can provide shelter for small mammals and reptiles.



Nesting boxes can be placed on the edges of the meadow, next to stands of trees or shrubs. Different nest box designs will attract different species of song birds. It is important that nest boxes be cleaned early each spring.



Resources List

Meadows and Grasslands

Canadian Wildlife Service

www.ec.gc.ca

- *Planting the Seed: A Guide to Establishing Prairie and Meadow Communities in Southern Ontario*

Ontario Ministry of Agriculture, Food and Rural Affairs

www.omafra.gov.on.ca

- Best Management Practices: *Buffer Strips* (BMP 15E)

Ontario Nature

www.ontarionature.org

- *Birds on the Farm*
- *Grasslands*

Partners in Flight

www.bsc-eoc.org

- Ontario landbird conservation information

Peterborough County Stewardship

www.peterboroughcountystewardship.org

- *A Landowner's Guide to Restoring the Rice Lake Plains Tallgrass Prairie in Central Ontario*
- *Pollinator's Handbook*

Society for Ecological Restoration – Ontario Chapter

www.ser.org

- *Native Plant Resource Guide for Ontario*

Tallgrass Ontario

www.tallgrassontario.org

- *A Landowner's Guide to Tallgrass Prairie and Savanna Management in Ontario*

Worksheet #11 – Access To Your Property

Use this worksheet to minimize recreational impacts on your property and manage access to your lands.

Why should you be concerned?

- Access on your property is the key to its appreciation and use.
- Trails open an entire world of experience by allowing you, your family, friends, and perhaps even neighbours to see the changes to your land through the seasons.
- Trails can also increase the risk of trespass, cause erosion and introduce invasive species via vehicle wheels or hiking boots
- By following the guidelines in this section, you can design your trail system to provide access for management activities, monitoring and recreational activities, while minimizing negative impacts.

What can you do?

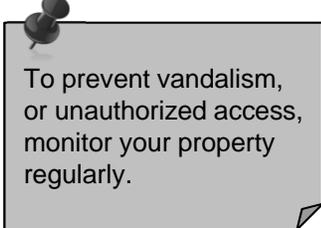
- Plan trail systems to allow you easy access to areas of interest and a variety of cover types.
- Design your trails according to the types of activities you plan to use them for. For example, trails for hiking will be narrower and more winding than those for logging or ATV use.
- Minimize the number of trails you create.
- Avoid building trails through sensitive areas on your property such as wet areas, rock outcroppings, sensitive vegetation like ferns or Trillium beds, or in steep areas.
- When planning or building trails, keep tree removal to a minimum, especially at entrance and exit points where wind, light and rain can have significant impacts.
- Maintain trails against erosion and rutting by installing water bars or culverts to direct water flow away from the trail.
- Build simple bridges to cross streams and wet areas. Permits may be required for stream crossings.
- Reduce unwanted trespassing by keeping your network of paths away from the outer boundaries of your land and by clearly identifying your property boundary.

Access to Your Property

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
Boundary Management					
1 Boundary identification	Property boundaries are identified using painted or plastic dots. Dots are 10 cm. in diameter or more, 4-6 ft above ground, and maintained yearly, property boundaries have been blazed by a professional surveyor and are maintained, or property boundaries are identified via written signs (ie. No Trespassing), maintained yearly and posted at regular intervals, 4-6 ft high.	<p>Boundary Marking Dots RED = entry is prohibited. YELLOW = entry is permitted, but only for specific activities that are clearly signed. GREEN = unrestricted entry is permitted.</p>	Property boundaries are not identified along their length, but corners have survey markings (ie. iron bars) in place that have been enhanced with stakes that are more visible than the iron bars or flagging tape has been hung in places along the length of the property line.	Only iron bars denote property lines or property boundaries are not known.	<input type="checkbox"/>
2 Permitted / non-permitted activity signage	If public access is permitted, a sign identifying permitted and non-permitted activities is posted at the approach to each ordinary point of access or if access is granted to specific users, agreed upon terms are outlined in writing, signed and held by the property owner and beneficiaries.	<p>Aluminum nails are the best hardware for attaching boundary signs to trees. Aluminum nails limit damage to machinery if the tree is ever sawn. Nails should be driven enough to secure the sign but not all the way into the tree. If you choose to paint your boundary dots / signs, use oil-based enamel paint.</p>		No signage is posted and non-permitted activities occur against the property owner's wishes.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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HUNTING

3 Hunting and trapping	You have a valid Outdoors Card, licence, tags and/or seals for the species or group of species you are hunting and you carry these documents with you in the field.		<i>You are hunting or trapping without necessary licences or other documentation in your possession.*</i>	<input type="checkbox"/>
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MONITORING

4 Monitoring	Property is seasonally monitored for vandalism, health, degradation, invasive species, and pests and you keep written records of your property.	Property is monitored for vandalism, health, degradation, invasive species, and pests, and regularly monitor your property, but do not keep written records.	No monitoring for vandalism, health, degradation, invasive species, and pests, but it is visited regularly.	Not monitored and rarely visited.	<input type="checkbox"/>
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Hunters and trappers contribute approximately \$57 million a year to the management and conservation of Ontario’s wildlife through license fees and royalties. These contributions benefit programs including biodiversity conservation, fish and wildlife rehabilitation, bear management, and enforcement.

Hunters, trappers and anglers also help biologists manage wildlife populations. Harvest information from hunters and trappers assists scientific research and helps biologists better understand and conserve wildlife.

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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TRAIL MANAGEMENT

<p>5 Trail design and layout</p> <p>One way to increase your enjoyment of recreational trails is to work with your neighbours to create adjoining trail systems.</p>	<p>Trails are not built through wet or other sensitive areas, tree removal is limited, trail width and layout is appropriate for intended uses, erosion is managed with water bars.</p>	<p>Trails avoid sensitive areas, few trees have been removed to build trail(s), trail width and layout is appropriate for intended uses.</p>	<p>The trail crosses some sensitive terrain such as Trillium beds, wetland edges and rock outcroppings, and limited tree removal took place in their creation.</p>	<p>Trail width and layout are not appropriate for the trail's uses (ie.rutting and tree damage is caused by vehicles), no trails are developed and activities follow different routes as the need arises or several areas of trail are actively eroding.</p>	<input type="checkbox"/>
<p>6 Trail water crossings</p>	<p>The number of water crossings are minimized, permits are obtained, and crossings are designed to permit the trail's intended uses.</p>	<p>Any alterations, fill or construction around watercourses or wetlands require a permit. This includes installing culverts, building footings for log bridges and any other alterations to the stream banks for trail crossings.</p>		<p><i>*Culverts, fill, or other alterations to the water crossing area are completed without the required permit.</i></p>	<input type="checkbox"/>
<p>7 Mowed trails</p>	<p>Trails through fields are few and don't impact nesting wildlife and if creating new trails through fields, the first mowing is delayed until July to prevent harm to ground nesting birds.</p>	<p>Several trails are routed through fields. They are not heavily used, however, and do not impact nesting wildlife and mowing new trails is delayed until July.</p>	<p>Many trails are routed through old fields and they are used heavily, such that they deter nesting wildlife or mowing new trails is initiated before July.</p>		<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Water bars for erosion prevention:

Simple water bars built into trails or lanes can prevent costly erosion repairs down the road.

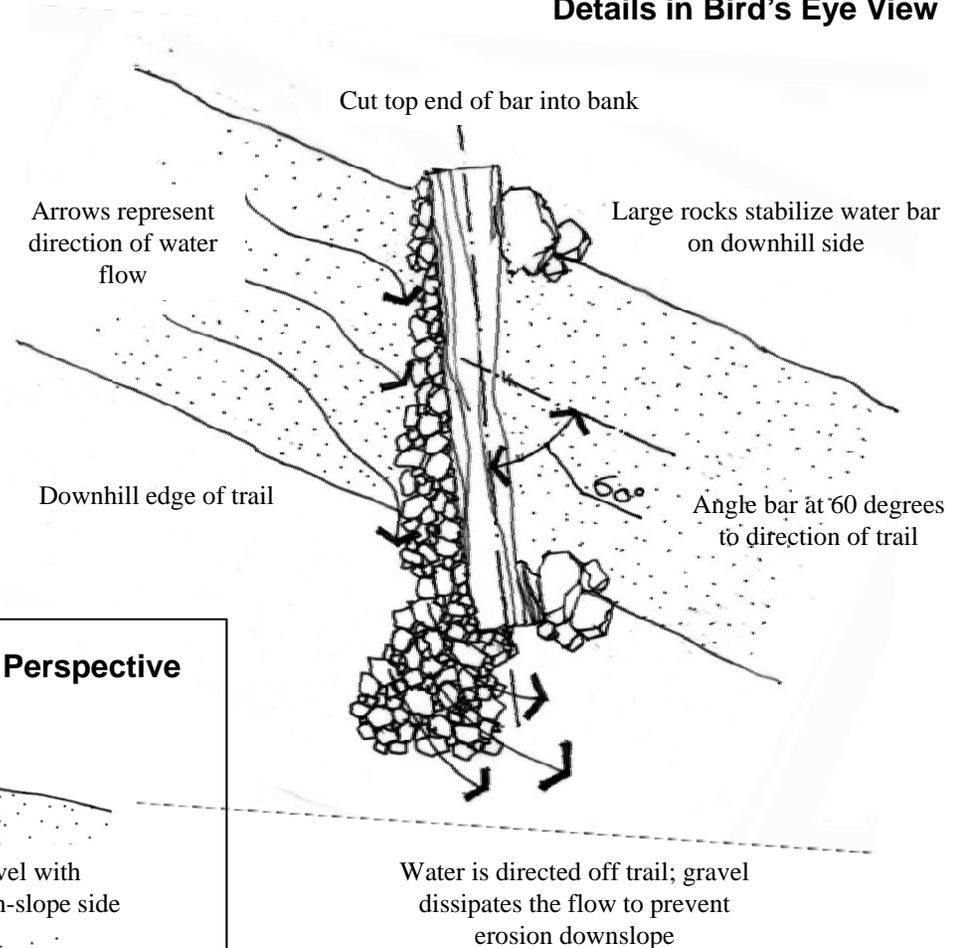
This diagram shows a simple design using a log and shallow trough lined with gravel. The water bar, angled down slope, directs water off the path and onto more erosion-resistant, vegetation-covered soils.

Be sure to make your water bar visible and keep the bar level with the ground on the downhill side, to prevent tripping.

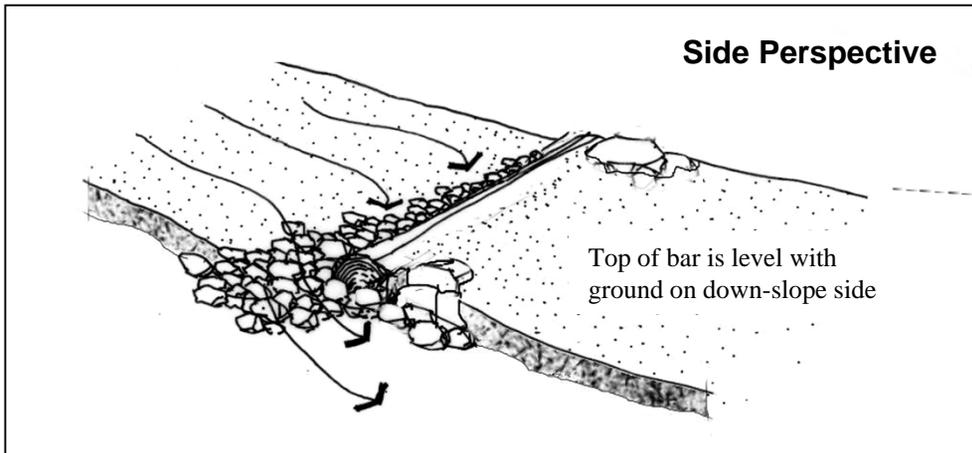
Other designs can be found online or through the resources listed at the back of this worksheet.

Have fun with your project!

Details in Bird's Eye View



Side Perspective



Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
OFF-ROAD VEHICLES					
8 Off-Road Vehicle Use	You stay on recognized off-road vehicle trails, pack out your litter, and ride in a way that limits your impact on trails. Noise is minimized by keeping your speed and engine rpm low and steady when approaching your neighbours' property.	You stay on a recognized trail system where off-road vehicles are permitted and practice riding behaviour that limits your impact on trails.	You stay on a recognized trail system where off-road vehicles are permitted but frequently ride after rains, in the early spring or during snowmelt or your riding practices cause some rutting and erosion on your trails.	You ride throughout your lands with no trail system, regularly ride through sensitive areas, or your activities cause widespread rutting and erosion.	<input type="checkbox"/>

Off-Road Vehicle Use

Many of the guidelines designed for riding on public lands are relevant to maintaining private trail systems. Below are a few points that will help you enjoy your trails responsibly:

- **Stay on a Trail:** The best way to minimize your impacts. Off-road vehicles should only be used on trails where they are expressly permitted. Off-trail causes compaction, disturbance, and can drive frost levels into the soil in late fall and early spring. Ruts caused in soft soil enhance erosion.
- When searching out scenic vistas or other points of interest, dismount and explore on foot. Keep your vehicle on the trail.
- Do not ride in sensitive areas such as stream banks, wetlands and hills. If it becomes necessary to cross a stream where there is no bridge, cross slowly at a right angle to the banks, at a location where the banks are stable and not too steep.
- Avoid riding on trails during or after heavy rains and snowmelt. Using your lowest gear on slopes will help to minimize erosion on wet trails.
- When riding, stay in the middle of the trail to avoid trail widening. Slow down on the corners to avoid rutting.
- Enjoy wildlife viewing opportunities, but avoid stressing animals. If you see deer, moose or other wildlife on the trail, stop and they will eventually amble off the trail. Avoid riding near the nesting sites of animals such as hawks, owls and nesting colonies of herons near wetlands.
- Take along a portable shovel; if you see reparable trail damage, stop and fix that hole or rut. A portable saw or chainsaw also helps remove downed trees; the removal of downed trees keeps people on the trail.
- For ATVs, check your tire pressure before each ride. Recommended tire pressure minimizes impact.

Adapted from ATV NatureWatch, www.atvnw.ca

Resources List

Access To Your Property

American Trails

www.americantrails.org

- On-line resources about trail design and construction

ATV Nature Watch

www.cohv.ca/safetynature.html

- *ATV Safety Watch pdf*

Association of Ontario Land Surveyors

www.ontariolandsurveyors.ca

- *Boundaries and your land*

Books:

- Demrow, C. 1998. *Complete Guide to Trail Building and Maintenance, 3rd edition*. Appalachian Mountain Club Books.

Hike Ontario

www.hikeontario.com

- *Best Practices Guide*

International Mountain Biking Association – Ontario Region

www.imbacanada.com

- Contact information for local clubs

Ontario Federation of All Terrain Vehicle Clubs

www.ofatv.org

- Contact information for local ATV clubs

Ontario Federation of Anglers and Hunters

www.ofah.org

- Information on protecting improving fish and wildlife habitat values

Ontario Federation of Snowmobile Clubs

www.ofsc.on.ca

- Information on safe snowmobiling and local clubs

Ontario Trespass to Property Act

www.e-laws.gov.on.ca/

Worksheet #12 - Lake Recreation

Use this worksheet to learn about enjoying lake recreation in a sustainable fashion.

Why should you be concerned?

- Georgian Bay is a resource shared by many, and provides enjoyment to all who visit. Thus, it is important that everyone do their part to ensure water quality in the lake is safe for all.
- Fuels, wastewater and other hazardous or toxic chemicals associated with motorized recreational watercraft can contaminate the lake, destroying fish habitat and making the water unsuitable for use.
- Invasive species are easily transported between water bodies and can quickly invade, out-competing native species and destroying ecosystems and causing property damage.
- Waves from the wake of motorized recreational watercraft can cause shoreline and channel erosion and damage water nesting areas.

What can you do?

- Operate an engine-less water-craft such as a canoe or kayak, or use a 4-stroke engine boat.
- Reduce boat wake and its effects on shorelines, channels and aquatic nesting areas by decreasing your speed on the water.
- Rinse off your craft (with water) every time it is hauled out of the water. This will prevent invasive species from being transported and spreading to other water bodies and water courses.
- Never dispose of waste (including fish guts) in the water. Dispose of them properly on land.
- Don't expand beaches by removing vegetation and/or dumping sand.
- Don't build docks or boathouses. Not only do they damage sensitive ecosystems along shorelines, they are not practical because of high intensity waves and water level fluctuations. Use a public boat launch or marina instead.

Lake Recreation

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BOATING					
1 Boat engine and maintenance <div data-bbox="157 576 478 812" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Check your engine regularly for any leaks, including the fuel line, clamps and filters. </div> <div data-bbox="157 844 430 1047" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Keep a tray under the battery to catch any acid spills. </div>	Boat/water-craft does not have an engine.	Boat has a four-stroke engine that meets or exceeds emissions standards or an electric motor on board with a battery and an outboard propeller.	Boat has a modern direct injection two-stroke engine.	Boat has an older two-stroke engine.	<input type="checkbox"/>
	Boat has a portable fuel container that is filled far from any open water.	Boat is refueled on board but great care is used to prevent spills or overflowing. Any spills are cleaned up immediately.	Little care is taken to prevent fuel from getting into open water.	No care is taken to prevent fuel from getting into open water or <i>*fuel is dumped into open water.</i>	<input type="checkbox"/>
	Bilge is cleaned out at an approved local marina bilge pump-out service.	Disposable cloths are used for cleaning bilge. These and any fuels from inside the bilge are properly disposed of at the local hazardous waste facility.	Bilge cleaners (including biodegradable ones) are rarely used.	Bilge pumps are used regardless if the bilge water is contaminated or bilge is cleaned without regard to the potentially hazardous nature of bilge fluids.	<input type="checkbox"/>
2 On-board waste	All garbage is kept on board in a designated area until it can be properly disposed of or recycled back on land.		Food scraps are rarely thrown overboard but plastic waste is never thrown overboard.	<i>*Black or grey water is discharged into the lake or water body instead of an approved pump-out facility.</i>	<input type="checkbox"/>

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BOATING					
3 Boat use	Within 150 metres (500 feet) of shore, means taken to reduce wake from watercraft and turn off propellers when in shallow waters to avoid stirring up lake bottom.	Within 30 metres (100 feet) of shore, speed of any power-driven vehicles reduced to 10 km/h (5.4 knots or 6.2 mph).		No consideration given to the noise your craft makes, boat near nesting birds or other wildlife near or on the shore, or <i>* operate motor craft at any speed regardless of the distance from shore.</i>	<input type="checkbox"/>
4 Water-craft launching and hauling	Water-craft and trailer are not stored in the water.	Water-craft and trailer are stored in the water for use period.		Water-craft and/or trailer sits in water for longer than use period.	<input type="checkbox"/>
	When launching the water-craft, trailer is submerged for as little time as possible, checked for plants/wildlife/fish and cleaned.	Water-craft and trailer are checked for any plants/wildlife/fish that may be clinging to the water-craft or trailer		Clinging plants/wildlife/fish are not removed from water-craft or trailer, and disposed of properly.	<input type="checkbox"/>

Take any oils or boat craft fluids to your marina or local municipal hazardous waste collection site. See *Worksheet #10*.

* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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FISHING

5 Permits and regulations

Fishing license obtained, check with your nearest MNR office for local catch regulations, familiar with the Recreational Fishing Regulations Summary, and when possible, fish from the beach or off piers.

Fishing license obtained, check with your nearest MNR office for local catch regulations, are familiar with the Recreational Fishing Regulations Summary.

**No fishing license obtained or quota is exceeded.*

To prevent the spread of invasive species, never dump your bait bucket remains in the water if it contains water from another water body.



* These conditions may violate provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
ACTIVITIES ALONG THE SHORE					
6 Beach access	Research appropriate ways to access beaches and access along the shoreline is minimal.	Access shoreline or trails using specific locations and keep to the trail to avoid trampling.	Access shoreline or trails using several locations or trails or stairs are built without consulting the local authorities first.	Plants, wildlife or other natural elements are removed or disturbed from most of beach access and trails or stairs are built without consulting the local authorities first.	<input type="checkbox"/>
7 Minimizing disturbance	Never remove or move wildlife or natural artifacts such as logs, vegetation, shells, or nests and waste is disposed of properly.	Natural artifacts or wildlife are seldom removed or moved and waste is disposed of properly.	Avoid hiking or using any all-terrain vehicle or snow-mobile on bluffs, banks, and along shorelines, especially during the spring thaw.	No regard or consideration for ecosystem or slope disturbance or waste is not disposed of properly.	<input type="checkbox"/>
8 Campfire safety	Check with your local municipality regarding Campfires and always exercise caution with any fire.	Check weather conditions and local fire bans before starting a campfire.	Check for beach postings before you go swimming and don't go in water if you can't see your feet from the waist height of an adult. E.coli levels may be high.	Ignite an outdoor fire without consideration of bylaws or restrictions or burn wood products or wood covered or soaked in hazardous chemicals.	<input type="checkbox"/>

Resources List

Lake Recreation

Canadian Coast Guard

www.ccg-gcc.gc.ca

Canadian Power and Sail Squadrons

www.cps.ecp.ca

- *The Enviro-Boater Guide: A Guide to Environment-friendly Boating*

Centre for Sustainable Watersheds

www.watersheds.ca

- *On the Living Edge: Your Handbook for Waterfront Living – Ontario Edition*

Federation of Ontario Cottagers' Associations

www.foca.on.ca

- *Take the Plunge: Stewardship of Ontario's Waters*

Ontario Ministry of Natural Resources

www.mnr.gov.on.ca

- *Boating Regulations and Information*
- *Don't Rock the Boat (10 Tips on Better Boating)*
- *Recreational Fishing Regulations Summary*

Worksheet #13 - Lowering Your Energy Bill

Use this worksheet to find out how to improve your energy efficiency.

Why should you be concerned?

- Increasing energy costs means that the average home owner will have to pay more to be comfortable.
- As the world's demand for energy continues to increase, so will the cost of energy. To protect yourself against growing costs, invest in homes, vehicles, appliances, electronics and practices that consume less energy.
- The amount of greenhouse gases in the atmosphere is increasing. It's leading to changes in average global temperatures known as climate change. Emitted gases also threaten air quality and have resulted in a record high number of 'Smog Days'.
- Climate change is anticipated to cause an increase in extreme weather events such as droughts, ice storms, floods, and hurricanes.
- The cost of owning and operating a typical car is approximately \$7000 per year. Alternatively, public transportation if available, for an entire year costs approximately \$1000.

What can you do?

- Realize that small changes can have a cumulative effect in protecting our environment, including air and water quality.
- Ensure that your home is tightly-sealed, properly insulated and that all mechanical systems such as heating and cooling are operating efficiently. Have a professional conduct a home energy audit of your house and ensure that heating/cooling systems receive regular maintenance.
- Choose energy-efficient appliances and electronics such as those with the Energy Star label.
- Reduce the amount of driving that you do, especially in urban areas, and choose the most fuel-efficient vehicle for your needs.
- Reduce the amount of greenhouse gases that you produce annually.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BUILDINGS					
1 Heating and cooling units	Use the most energy efficient heating and/or cooling units for your needs, upgrading if necessary and choose a unit that carries the Energy Star label.	Use the most energy efficient heating and/or cooling unit for your needs, upgrading if necessary or choose a unit that carries the Energy Star label.	A window air conditioning unit is used but is removed during the winter or if fixed in place, the unit is sealed with caulking or tape and covered with an airtight, insulated jacket.	Heating or cooling unit inefficient and no upgrading planned or unit is older than 15 years.	<input type="checkbox"/>
	Heating and cooling units are serviced yearly by a licensed heating contractor and furnace filters cleaned or replaced every two months and air conditioner filters replaced monthly (central air filters cleaned or changed at the beginning of the warm season each year).	Heating and cooling units serviced yearly by a licensed heating contractor or furnace filters cleaned or replaced every two months and air conditioner filters replaced monthly (central air filters cleaned or changed at the beginning of the warm season each year).	Heating and cooling units are serviced immediately when malfunctioning or when a problem is suspected.	Heating or cooling units are seldom maintained or filters are not changed as per energy efficiency recommendations.	<input type="checkbox"/>
	Regularly check that vents, air intakes and chimneys are not blocked and that seals around them are intact.	All chimneys are cleaned and inspected annually.	Occasionally check that vents, air intakes and chimneys are not blocked.	Fireplace dampers are left open when not in use or vents, air intakes and chimneys are not inspected.	<input type="checkbox"/>
	Retrofit fireplaces or older woodstoves with a new, advanced combustion model.	Seal and insulate warm air ducts and turn off fireplace and wall heater pilot lights in the summer.		Heat inefficient fireplaces or older woodstoves are used regularly.	<input type="checkbox"/>

In winter, naturally warm your home by ensuring that sunlight can enter through all south-facing windows. Close drapes or shutters in the evening.

In summer, close windows and doors during the day, especially those along the south and south-west facing wall. Open in the evening to catch cool breezes.

Seal and insulate warm air ducts and turn off fireplace and wall heater pilot lights in the summer.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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BUILDINGS *continued*

2 Lights

Minimize light-bulb use by maximizing the use of natural lighting and all incandescent light bulbs are replaced with Energy Star-qualified compact florescent light bulbs.

Lights are turned off when not in use or motion detectors or automatic timers are installed on outdoor lights.

Attempt to minimize light bulb use and Energy Star qualified compact florescent light bulbs used in the most commonly used areas.

Everyday practices do not attempt to minimize light-bulb use or lights are left on for a prolonged period of time such as overnight or while occupants are away.

Locate working spaces and high activity areas that need light near south-facing windows.

3 Building components

Hire a professional to conduct an energy audit and develop an energy plan of your home and inform yourself of alternative energies such as solar power and wind energy.

Check regularly for drafts or leaks around doors, windows, baseboards, ducts, attic – hatches, window air conditioning units and electrical outlets/switches and immediately take the appropriate action to fix the situation.

Check occasionally for drafts or leaks throughout the building.

Seldom check for drafts or leaks or condensation or frost appears on windows.

Install storm windows and doors over single-pane windows and use weather-stripping around all joints.

Alternatively, install double-glazed windows that carry the Energy Star label.

All duct work is located in heated and/or cooled space within the building and weather-stripped.

All duct work is located in heated and/or cooled space within the building.

Some duct work located in unheated and/or un-cooled space (e.g., attic, garage) and insulated.

Ducts are not insulated or ducts have no weather-stripping around joints.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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BUILDINGS *continued*

4	Building design	Construction uses R-2000 building practices and technologies.	Energy efficiency is an important factor in building design and layout.	Passive solar heating used where possible.	Building is difficult to heat in winter, and difficult to cool in summer.	<input type="checkbox"/>
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5	Heating and cooling practices	Use a programmable system and in the winter, lower your thermostat at night and while you are away during the day.		In the winter, lower the thermostat at night and while you are away during the day.	Heating and cooling systems are not adjusted to time of day or activity within the space.	<input type="checkbox"/>
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		In the summer, naturally cool the building by closing blinds/shutters/ drapes, and using awnings and strategically-placed shade trees outside.	A ceiling fan is used, especially in rooms with high ceilings or with electric baseboards to help circulate the air. In winter ensure that blade direction pushes warm air downwards.	In the summer, air conditioner is set to 24°C (75°F) while you are at home and raise it when you leave.	No attempt is made to adopt practices that minimize energy use.	<input type="checkbox"/>
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Every 1°C that a thermostat is lowered results in a 2% savings in energy costs. The most cost-effective change is to lower it by 3°C.

24°C (75°F) is the most cost-effective setting for cooling.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WATER HEATING AND USE					
6 Hot water use	Most laundry is washed and rinsed using cold water.	Laundry washed with warm water and rinsed with cold water.	Laundry is washed and rinsed with warm water.	Clothes are washed or rinsed using hot water or no attempt made to minimize the amount of hot water used.	<input type="checkbox"/>
	Length of showers is minimized, water is not left running while washing dishes or bathing and a low flow shower-head is used.	Length of showers is minimized and water is not left running while washing dishes or bathing.	Low-flow shower heads and/or faucets are used or an effort is made to turn off faucets while washing or bathing.	Hot or warm water is left running while bathing or while washing dishes or produce or no attempt made to minimize the amount of hot water used.	<input type="checkbox"/>
7 Water heaters	Choose a high-efficiency water heater unit that heats water only when it is necessary and water heater is turned off when building is not in use for a prolonged period of time.	Non-plastic hot water pipes are insulated for the first two metres of pipe from the water heater.	An electric water heater is used, but it is insulated.	Water heater is left on year-round regardless of use or water heater tank is inefficient or not insulated.	<input type="checkbox"/>
8 Hot tubs and pools	Location optimizes use of natural wind shelter or shade from climatic factors or there is no pool or hot-tub.	Water is heated with solar panels and water is covered with a thermal blanket to trap heat.	Water is not heated with solar panels and pump timers are used to regulate the temperature and duration of water heating.	No actions taken to ensure that heat energy is not lost when air temperatures drop or pump timers are not used for pools/hot tubs.	<input type="checkbox"/>

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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APPLIANCES AND ELECTRONICS

9 Energy efficiency

Choose front-loading washing machines or water-efficient, top-loading models with the Energy Star label.

Always purchase high energy efficiency Energy Star appliances, especially the refrigerator, oven, dishwasher, and laundry washer/dryer, and electronics such as computers and printers that go into 'standby' mode when not in use.

Always turn off and unplug appliances that are not in use, especially older, inefficient appliances and minimize the use of appliances and electronics.

Locate the refrigerator or freezer away from heat sources (including other appliances) or windows and keep the refrigerator between 1.7°C (35°F) and 3.3°C (38°F) and the freezer unit at -18°C (0°F).

Energy efficiency is not considered when purchasing appliances or electronics or no action is taken to improve the energy efficiency of appliances or electronics.

Set your computer to use its energy-saver mode when not in use.

During hot weather, all baking, washing, drying, and ironing are done early in the morning or in the evening and whenever possible, clothes are hung to dry.

Dishwasher is used but always runs full and is set to the 'no-heat' or 'air-drying' option and clothes washer/ dryer are almost always run full and cold settings are used most of the time.

Dishwasher is used but always runs full and clothes washer/ dryer are almost always run full and cold settings are used often.

No consideration given to actions or practices that minimize energy waste.

10 Maintenance

Check appliances regularly to ensure that seals remain in good condition, especially refrigerators and freezers.

Appliances rarely checked to ensure that seals remain in good condition, especially refrigerators and freezers.

Appliances never checked to ensure that seals remain in good condition, especially refrigerators and freezers.

Resources List

Lowering Your Energy Bill

Green Communities Canada

info@greencommunitiescanada.org

Natural Resources Canada

www.nrcan.gc.ca/energy/offices-labs/office-energy-efficiency

- Office of Energy Efficiency
www.oeenrcan.gc.ca/energiguide/home.cfm

Ontario Home Energy Savings Program

<http://www.energy.gov.on.ca>

Working With the Features of Your Property

Worksheet #14 – Drainage and Water Runoff

Use this worksheet to learn how well your property minimizes the potential for water runoff and property damage.

Why should you be concerned?

- Surfaces such as roofs, paved areas, bare soil, and sloped lawns all contribute to the volume of surface water runoff because they impede water infiltration into the ground.
- Runoff carries soil, pet feces, salt, pesticides, fertilizers, oil and grease, fuels, leaves, litter and other possible pollutants into streams, ponds, wetlands, lakes and oceans.
- Pollutants entering ditches or stream channels on your property eventually reach sources of drinking water in the south-eastern Georgian Bay area.
- Polluted water runoff degrades the lakes, rivers, and wetlands. Soil makes the water murky and damages fish habitat. Nutrients such as phosphorus encourage algae that can crowd out other aquatic life and change the chemistry of the water.
- Water runoff is not only a problem for water quality. It can also flow into basements, cause extensive property damage - including erosion, slope instability and flooding, decrease property value, and disrupt recreation.
- Erosion can cause significant damage to your property and reduce property value.
- Without vegetation at the shoreline, contaminants flow directly into lakes, rivers, and streams.

What can you do?

- Minimize the amount of water runoff from your property.
- Minimize the area of your property that is used as a path or driving surface and use water - permeable materials for driveways and pathways.
- Locate an impermeable surface away from shorelines and adjacent water courses.
- Make sure that foundation tiles and municipal drain outlets are not located in erosion-prone areas.
- Reduce the amount of potential pollutants on your property that can be carried by water runoff.
- Encourage the use and infiltration of storm water within your property boundaries.

Drainage and Water Runoff

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
KNOW YOUR DRAIN					
1 Where does it come from, where does it go?	You know where your drain originates and where it ends up, and you know where all tile drains or surface water channels enter the stream on your property.	You know where your drain ends up, and you know where most drains or tributary channels enter the watercourse.	You know where your drain goes.	You do not know the source or destination of water flowing across your property.	<input type="checkbox"/>
2 Type and responsibility	Knowledge of municipal drain(s) on or adjacent to your property, who is responsible for its maintenance, and have verified this information with the Drainage Superintendent of your municipality.	Knowledge of what type of drains you have on your property and who is responsible for their maintenance.	Aware of the different designations of agricultural drains, but have not yet inquired as to which type you have on your property.	Unaware of the different drain designations, and assume that any drains on your property are your own responsibility or the responsibility of someone else.	<input type="checkbox"/>

A drain or ditch on your property may be one of 4 different types of drains under the Ontario Drainage Act. Though all look alike, which drain type you have will determine who is responsible for its maintenance, and what you can do as a landowner.

Municipal Drains...

are drainage systems maintained by the local municipality, not by the landowner. Contact the clerk or drainage superintendent of your municipality to find out if your property contains any municipal drains.

Private Drains...

are ditch or tile systems created by property owners on their own properties in order to drain their farmland.

Mutual Agreement Drains...

are private drains that have been constructed through an agreement between two or more property owners. The agreement is registered on the property title through the Land Registry Office.

Award Drains...

are drainage systems built before 1963, under the Ditches and Watercourses Act. Each landowner along an award drain is responsible for maintaining his or her section of the drain.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
ASSESSING WATER RUNOFF MANAGEMENT					
3 Surface water drainage	All surfaces are sloped away from the house at a minimum of 2% to prevent water damage.	All paved surfaces are sloped away from the house at a minimum of 2%.	Most paved or compacted surfaces do not slope away from the house.	Paved or compacted surfaces do not slope away from the house.	<input type="checkbox"/>
4 Surface permeability	All driving/ parking/ walking and patio surfaces are water permeable and gravel and woodchips are used to surface walkways. Minimal compaction.	Porous paving such as interlocking bricks used to surface driveway and lanes. Additional parking spaces are not paved.	Paved surfaces are located far from any watercourse.	All paths, parking, driveways, and outdoor patios are paved, regardless of nearness to watercourse and walking surfaces not restricted to paths. Foot-traffic compaction throughout.	<input type="checkbox"/>
5 Extent of impervious surfaces and slope	Drive is minimal and follows natural contours and there are no other impervious/compacted areas.	Drive is minimal but does not follow natural contours.	Drive extensive but follows natural contours.	Extensive drive and surfaced areas that do not follow natural contours or compacted and/or paved surfaces run straight down slope.	<input type="checkbox"/>
6 Downspouts, gutters and drains	Roof gutters, downspouts and basement drains installed and cleaned regularly and downspouts drain onto gravel or grassed surfaces to a safe and adequate drain.	Downspouts are not directed at or into nearby gullies.	Downspouts direct drainage onto impervious surfaces but downspouts are not directed at or into nearby gullies.	Roof gutters, downspouts and/or basement drains not checked/cleaned regularly <i>or *are aimed at adjacent properties without an intercepting swale or ditch, onto septic tile beds or into nearby gullies.</i>	<input type="checkbox"/>

 Clogged gutters on a single house can produce over one million mosquitoes a season.

* These conditions may violate federal and/or provincial legislation or municipal by-laws.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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ASSESSING WATER RUNOFF MANAGEMENT *continued*

7 Areas of bare soil

No areas of bare soil.

Grass or native groundcover planted immediately to prevent erosion.

Non-invasive groundcover planted immediately to prevent erosion.

Bare soil left uncovered and unplanted.

Cover newly-seeded lawns lightly with straw mulch with about 50% coverage to prevent erosion.

Temporary bare areas are mulched and straw bales, diversion ditches and silt fences used to trap sediment.

Some areas are mulched to prevent erosion.

No regard given to sediment loss through runoff.

All plant beds have minimum 8 cm (3 in) depth of mulch.

Plant beds have 2.5 - 5.0 cm (1-2 in) depth of mulch.

Most plant beds are mulched to a depth of 2.5 cm (1 inch).

No plant beds are mulched.

8 Grass clippings, leaves and other yard wastes

Grass clippings, leaves, and other yard wastes are swept off paved surfaces and away from water flow routes and is composted on an appropriate site.

Leaves and other yard wastes are left to compost on site.

Leaves and other yard wastes are collected in appropriate containers and left for municipal collection.

Grass clippings, leaves and other yard wastes are left on driveways, streets, and other paved areas to be carried off by stormwater, OR yard waste is burned on-site.

Organic material, like leaves, swept or blown into street sewers possibly provide a breeding spot for mosquitoes over winter.

If you have more than five cows, horses, sheep, or other livestock on your property you might need to develop a **Nutrient Management Plan**.

Plant material placed on bluff slopes or over the top of banks can kill slope vegetation and cause instability.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
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ASSESSING WATER RUNOFF MANAGEMENT *continued*

9 Car washing	Cars and trucks are occasionally washed at commercial car wash.	Cars and trucks taken to commercial carwash or spray booth.	Cars, trucks, or other items are washed on a lawn or gravel driveway.	Cars, trucks, or other items are washed on a driveway, street, or other paved area.	<input type="checkbox"/>
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10 Working around waterways regulations	Thorough knowledge of the legislation that applies to waterways on your property and proper approval is obtained from all relevant bodies before any work is done around a waterway on your property.	General knowledge of the legislation that applies to waterways on your property and proper approval is obtained from all relevant bodies before any work is done around a waterway on your property.	No knowledge of whether any conservation or water protection legislation applies to the drainage system on my property but intend to find out before any work is done around drainage channels.	<i>*Work is undertaken around ditches on your property without first obtaining permission from all relevant agencies.</i>	<input type="checkbox"/>
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11 Work around municipal drains	Before a new buffer is established on a municipal drain, plans are discussed with your municipality's Drainage Superintendent.			<i>*The Drainage Superintendent is not contacted before alterations are made on a municipal drain.</i>	<input type="checkbox"/>
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To avoid sending dirty, soapy water into a water course or lake, wash your car on the lawn, or better yet, take it to a commercial car wash or spray booth where the dirty water goes to the treatment plant.

All water courses eventually lead to rivers and lakes. Field drainage systems are no exception. Well managed drains and ditches can help protect water quality downstream, and can even provide habitat to fish such as trout and northern pike.

Resources List

Drainage and Water Runoff

Centre for Sustainable Watersheds

www.watersheds.ca

Minnesota Shoreland Management Resource Guide

www.shorelandmanagement.org

Ontario Ministry of Agriculture and Food

www.omaf.gov.on.ca

- Nutrient Management Plans

Ontario Streams

www.ontariostreams.on.ca

- *Ontario's Stream Rehabilitation Manual*

Tip of the Mitt Watershed Council

www.dsao.net/Resources/big-drain-e.pdf

- *Understanding, Living with, and Controlling Shoreline Erosion. A Guidebook for Shoreline Property Owners*

The end of a journey



Glossary

4-stroke engine: Boat engine constructed similarly to that of a car. Its emissions are cleaner, it is quieter, more durable and has better fuel economy than a 2-stroke engine.

Air gap: An air space (open space) between the hose or faucet and the level of liquid. This is one way to prevent backflow of liquids into a well or water supply.

Air intake/ventilation: A permanent opening that allows outside air to flow into a heating and cooling system. It is critical that there is adequate air intake and that the air that is brought and distributed through the building is not contaminated and not polluted.

Alvar: Naturally open areas of thin soil over essentially flat limestone or marble rock with trees absent or scattered and characterized by distinctive flora and fauna. Alvars are a globally rare ecosystem.

Amendment (soil): Organic or inorganic material that is added to the soil for the purpose of improving its texture, nutrients, moisture-holding capacity and infiltration rates.

Anti-backflow device: Check valve, vacuum breaker or other mechanical device that prevents liquids from flowing backwards through a water supply pipe to a well or surface water source. Also called an anti-back siphoning device.

Approved containers: A portable container made of metal or other material that has been approved for use by the Underwriter's Laboratories of Canada (ULC), the Canadian Standards Association (CSA), or Transport Canada. An approved container must have a certification label such as jerricans - CTC-5L, BTC-5L, ICC-5L, DOT-5L, TC-5L

Aquifer: An underground layer of rock and sand that can store water, and lies above a layer of clay or other impermeable material that does not allow water to flow to lower depths. Aquifers can be present at various depths depending on the location of the impermeable material. They are an important well water source.

Arborist: *See* Certified Arborist.

Areas of Natural and Scientific Interest (ANSIs): Areas identified by the Ministry of Natural Resources as containing natural landscapes or features that have been identified as having life or earth science values related to protection, scientific study, education and natural heritage appreciation. Such designation helps to protect representative and special natural areas, plants and animals.

Glossary

Artificial Ponds: Human-built ponds can be anything from a rock lined swimming hole to a restored or constructed wildlife pond. There are five basic pond types:

- **Bypass ponds** are located beside watercourses and are fed and drained by separate channels connected to the watercourse.
- **Dugout ponds** have no inflow or outflow and are fed by springs, precipitation or pumping from other water bodies. These ponds tend to have fewer impacts on natural water bodies and can provide good habitat for fish and wildlife species.
- **Impoundments** are created by damming intermittent streams, draws or valleys.
- **On-line ponds** are created by damming natural, permanently flowing watercourses and are no longer approved by permitting groups like the Conservation Authorities and the MNR.
- **Temporary ponds** are shallow depressions built primarily for breeding and feeding habitat for amphibians, migrating birds and waterfowl.

Atmosphere: The layer of air surrounding the earth that is primarily composed of nitrogen and oxygen, and held in place by gravity.

Backflow: The unwanted reverse flow of liquids in a piping system.

Baffles: Inlet and outlet devices in a septic tank, designed to reduce the transfer of solids to the leaching bed. They also prevent fats, oils, and grease from discharging to the leaching bed. They increase the amount of solids retained, prevent plugging of inlets and outlets, and prevent rapid flow of wastewater through the tank.

Beach: A band of variable width, typically of sandy material located adjacent to the lake. The sand is deposited and removed by the action of waves and currents.

Bilge: The lowest part inside a boat's hull or frame where water, fuel, oil and other hazardous chemicals can collect.

Biodegradable: The ability of a substance or material to break down into harmless substances by living things like microorganisms and bacteria.

Biodiversity/ Biological Diversity: The variety and variability among organisms and the ecological complexes in which they occur.

Bluff: A high, steep bank at the water's edge.

Boat wake: The wave(s) that spreads behind a boat as it moves forward through the water.

Bog: A highly acidic type of wetland that is fed by precipitation and is characterized by peat-filled depressions, sphagnum moss mats, and low shrubs. Bogs are rare in southern Ontario.

Bored well: Large diameter well constructed by using specialized earth boring equipment. Casing material is usually concrete or corrugated steel. These wells are typically 60 to 90 cm (24-36 in) in diameter.

Glossary

Browse line: A distinct line seen in forested areas, usually about 1.5 m above the ground, below which leaves and small twigs are absent from trees and shrubs due to browsing by abundant deer.

Browsing: A mode of feeding by herbivores, such as deer or rabbits, in which leaves and outer shoots are removed from trees and shrubs.

Buffer (Buffer Strip): A strip of permanent vegetation alongside natural areas (e.g., watercourses, wetlands) to protect them from surrounding land uses. A buffer strip can intercept and absorb nutrients, provide wildlife habitat and reduce soil erosion.

Building permit: A municipally-issued document that regulates construction and enforces Building Code compliance.

Burlap: A coarse, canvas-like fabric made from the fibers of jute, hemp or cotton plants.

Burn barrels: Open burning of household waste in barrels that results in very high levels of toxic chemicals emitted in the smoke.

Burning: The controlled use of fire to dispose of paper or cardboard containers. Smoke from the fire must be directed away from buildings, highways, roads or public outdoor areas and must not affect people or animals. Municipalities may have burning bylaws that prevent such fires or regulate how they must be carried out.

Bypass ponds: *See* Artificial Ponds

Canopy: The layer of leaves, needles, and branches formed by the crowns of taller trees. It shades the layers of vegetation below.

Cap: *See* Well cap.

Capture zone: *See* Well capture zone.

Carbon dioxide: A colourless, odorless gas occurring naturally in the atmosphere, but also released through the burning of fossil fuels.

Carolinian Zone: The Carolinian zone is a region in Ontario found south of an imaginary line which runs approximately from Grand Bend to Toronto. The mild climate of this region is the main reason it forms a unique ecosystem. The region boasts 65% of Ontario's rare plants, of which 40% are restricted to the Carolinian zone.

Casing : *See* Well casing.

Certified Arborist: A professional trained in the planting, care and maintenance of individual trees and a current member of the International Society of Arboriculture.

Clay: A soil type made up of particles less than .002 mm in diameter that feels very smooth and sticky between the fingers when wet. Clay soils do not easily absorb surface water and so have increased runoff of rain and surface water.

Clean up equipment: Includes absorbent materials (e.g., sawdust, soil or kitty litter) to soak up spilled liquids, and shovel, broom, empty pails to gather solids and absorbed liquids.

Clear water infiltration: Entry into a septic system by water that does not need treatment, such as rainwater or sump pump.

Glossary

Climate change: The gradual change in global temperatures which in turn causes changes in climate around the world. It is caused by the emission of gases that trap the sun's heat in the Earth's atmosphere. Gases that contribute to global warming include carbon dioxide, methane, nitrous oxides, chlorofluorocarbons (CFCs), and halocarbons (the replacements for CFCs). Carbon dioxide emissions are primarily caused by the use of fossil fuels for energy.

Coastal wetland: Areas that are permanently or temporarily submerged, or saturated for at least part of the year. Unlike upland wetlands, coastal wetlands don't transition into drier communities.

Cohesive Shore: Shore made up of partially consolidated glacial till. Sand, silt, clay and some gravel/cobbles deposited at the end of the last ice age, stuck together with the weight of material. However, erosion easily destroys this cohesive state and such shores cannot be reconstituted.

Coliform organisms: Harmful bacteria usually found in polluted water. If they are found in a water sample, it indicates that the water may not be safe for drinking or food preparation.

Compaction (soil): Compression of soil that decreases the spaces between soil particles. This hinders the movement of air and water into and through the soil. Consequently the soil holds less water and surface runoff, and erosion occurs. Soil compaction may be caused by ongoing pedestrian traffic, one time or ongoing vehicular traffic, construction equipment or the storage of materials.

Compost: Organic material resulting from the natural breaking down or rotting of plant and animal material by bacteria, fungi, and other organisms. It is used to enrich soil.

Compostable: Items that will decompose naturally and enrich soil, such as food and yard wastes.

Condensation: The process by which water vapor becomes a liquid.

Conifer/Coniferous: An evergreen tree or shrub that bears cones and has needle or scale-like leaves. Examples include pine, spruce, cedar, juniper, and fir.

Conservation Authority (CA): Localized government body that is responsible for the management of a watershed and especially the floodplains within that watershed.

Conservation easement: A legal agreement registered on the title of a property to restrict future subdivision and development. The property owner continues to own the land and can still use it, subject to any restrictions in the terms of the agreement. Those restrictions are typically oriented to protect the natural features of the property. The agreement and the restrictions are binding on all future owners of the property.

Conservation Land Tax Incentive Program: Provides a reduction in municipal taxes for lands identified by the Ministry of Natural Resources as Provincially Significant. Categories include provincially significant: wetlands; provincially significant areas of natural and scientific interest (ANSIs); habitat of endangered species; land designated as escarpment natural area in the Niagara Escarpment Plan; community conservation land.

Glossary

Contaminant source: Anything which can cause pollution. Septic systems, stored pesticides, fuels, pet wastes, furnace oil, paints and cleaners are all possible contaminant sources. Contaminants may be colourless and/or odourless.

Contaminant: A substance that is not naturally present in the environment or is present in unnatural concentrations that can, in sufficient concentration, harm people or the environment.

Contaminate/Contamination: Alteration of a material by the introduction of a chemical or other substance so that the material is unfit for a specified use.

Crime Stoppers: A partnership of the community, the media and law enforcement to protect human safety and the environment. All information is kept anonymous.

Crown land: Publicly-owned land, typically under the jurisdiction of the provincial and/or federal government and administered on behalf of the people.

Dampers (fireplace): A metal flap-like device that when closed, prevents outside air from entering the house and heated air from escaping. When in the open position, it allows smoke and heat to flow up the chimney. A traditional damper is located where the firebox and the flue meet. Alternatively, dampers can be mounted on top of a chimney and this type is more energy efficient, although they can not be used with gas fireplaces or wood stoves.

Deciduous trees: Trees that shed their leaves in the fall.

Decommissioned well: A well that has been permanently plugged and sealed.

Deposition processes: The geological processes whereby material is added to a landform. The material is eroded and transported from elsewhere by wind, water or ice. Also referred to as sedimentation.

Design capacity: The total daily sanitary sewage flow that the septic system is designed to handle. The Ontario Building Code (OBC) determines wastewater flows.

Diameter-limit cutting: A system of harvest based on cutting all the trees in a stand over a specified diameter, usually resulting in a poor quality residual stand.

Dioxins: A group of chlorinated organic chemicals with similar chemical structures. Dioxins have no uses. They are formed unintentionally and released as byproducts of human activities such as waste incineration, fuels combustion, chlorine bleaching of pulp and paper, or pesticide manufacturing. They are also formed by natural processes such as forest fires and volcanoes.

Disposal: Getting rid of hazardous material safely. Puncture or break up empty containers and bury under at least 20 in of soil far away from any watercourse or water table or deliver to a municipal landfill or drop off on Hazardous Waste Days.

Downspout: A vertical conduit used for draining water from the roof gutters of a building.

Drainage pattern: The network of water courses (streams and rivers) that drain a watershed(s) into a lake or water body.

Glossary

Drains: Specifically, refers to ditches and watercourses that may be registered under the Ontario Drainage Act to serve for agricultural drainage usually associated with tile-drained fields. Even if you do not farm, you should be aware of obligations you may have under this legislation. See also Section 10b in this workbook

Drilled well: Well not dug or driven. These wells are normally 10 to 20 cm (4 to 8 in) across.

Dripline: The outer extent of a tree's branches. The dripline is used as a rule-of-thumb indication of the extent of a tree's root system, though most roots in fact extend beyond the dripline.

Duct: A tube or conduit, usually made of sheet metal that carries cooled or heated air from one place to another in a building.

Dug well: Large-diameter well often constructed by power shovel, back-hoe or by hand.

Dugout ponds: *See* Artificial Ponds.

Dune: A dune is a large mound or ridge formed by the deposition of sand

Dune Formation: The process of adding sand to a dune through wind and wave action, thereby increasing its size. This generally occurs when lake water-levels are low.

Dynamic beach setback: The legal minimum distance that development must be set back from a beach. The setback distance is determined by the combined influence of flooding and an allowance for natural changes in the beach. This is defined in the Provincial Policy Statement, under the authority of the Planning Act.

E-coli: Harmful bacteria that comes from human and animal faeces. If E-coli is found in drinking water, it is not safe for drinking, food preparation or bathing. Water with any levels of E-coli should not be used for any purpose.

Easement: Right of way or similar right over another's property by a third party. *See also Conservation Easement and Right of way.*

Ecological corridor: An area of vegetation, typically linear that is similar or the same in nature as wildlife habitat areas, allowing wildlife to move between habitat areas. Ecological corridors connect habitat areas. The size of the corridor determines its effectiveness as a safe means of movement.

Ecosystem: An interdependent and dynamic system of living organisms within their physical and geographical environment.

Emergency plan: A plan of action to deal with an emergency. The plan should include: location of emergency equipment, emergency telephone numbers, cleanup methods, and steps to follow in case of spill or fire.

Emissions (vehicle): Pollutants such as unburned gases and smoke that are produced during combustion in an engine and released into the air.

Emissions standards: Emission standards limit the amount of pollution that can be released into the atmosphere from sources such as industry, power plants, vehicles and small equipment such as lawn mowers.

Glossary

EnerGuide: A rating system managed by Natural Resources Canada that helps consumers compare the energy efficiency between appliance models and buildings.

Energy audit: A thorough assessment of how much energy a building uses, conducted by an energy audit professional. It pin-points the areas where the building is losing energy, and includes suggestions on how to improve energy efficiency.

Energy Consumption: The amount of energy that is used. This is affected by the energy efficiency of all objects and materials in a space.

Energy Efficiency: Reducing as much as possible, the total amount of energy used to complete an activity. The most effective way to determine the energy efficiency of a building is to have a home energy audit done by a service professional.

Energy Star: An internationally recognized symbol for energy efficiency. In Canada, the international Energy Star symbol is monitored and promoted by Natural Resources Canada's Office of Energy Efficiency.

Environmentally Sensitive Area (ESA): Areas of land identified by a municipality and/or a Conservation Authority that are locally or regionally significant natural areas. Note: the term is not universal: the jurisdictions in your area may use different terms and descriptions but to the same end.

Erosion: The wearing away of the land surface by wind, water, ice, or other geologic agents. Erosion occurs naturally from weather or runoff but is often intensified by human land use practices.

Erosion by water: Movement and loss of soil caused by rain or surface water runoff.

Erosion by wind: Movement and loss of soil caused by the wind.

Erosion-hazard limit: A setback distance determined by considerations that include the 100 year erosion rate (the average annual rate of recession of a bluff extended over a one-hundred-year time span), plus an allowance for slope stability and an erosion allowance.

Ethanol-blended fuels: Ethanol is a high octane, non-toxic, biodegradable alcohol produced from renewable resources such as grain or wood. It is usually blended with gasoline as a 10 per cent mix to create a fuel called gasohol. Ethanol blended fuels are approved under the warranties of all automobile manufacturers. Some even recommend ethanol use for its clean burning benefits. Ethanol also helps prevent winter-related problems by acting as gas line antifreeze.

Eutrophication: A process by which a water body becomes rich in dissolved nutrients. The nutrients encourage algal blooms and plant growth, which depletes the water of oxygen and threatens aquatic life. This process can be accelerated by human activity.

Evaporation: The conversion from a liquid to a gas. For example, the process of rainwater becoming water vapour (clouds).

Evergreen trees: Trees that retain their leaves or needles year-round. Most coniferous trees are evergreen, though some broad-leafed trees also retain their leaves year-round.

Glossary

Exotic (plant): An exotic species (also known as an introduced species) is an organism that is not indigenous to the place or area where it resides and instead has been accidentally or deliberately transported to the new location by human activity. Exotic species can often be damaging to the ecosystem to which they are introduced.

Exposure: Contact with a gas, liquid or solid. Exposure can happen by swallowing (oral), skin contact (dermal) or breathing in dust or vapour (respiratory).

Faucet aerator: A round case at the mouth of the faucet that contains a mesh-like disk, through which the water flows. Low-flow faucet aerators save water as well as any energy used to heat that water

Fen: A peat-land where the water table is at or close to the surface and water drainage is very slow. It is dominated by sedges, mosses, and some grasses. Trees are few and are typically coniferous and stunted. Fens are rare in southern Ontario.

Fencerows: Narrow strips of trees and shrubs planted or naturally seeded from nearby woodlots usually associated with fencelines and other linear divisions between open areas. They provide food and cover for wildlife and connect different habitats.

Fertilizer: Any organic or inorganic substance that is applied to the soil in either liquid or granular form to improve plant growth and vigour.

Fill: Material that is brought from elsewhere and added to the existing landscape, such as soil, gravel, sand or loam. Fill regulations may exist and are administered by the a Conservation Authority.

Fish habitat: The parts of the environment that fish rely upon, directly or indirectly, in order to go through the various stages of their life cycle. This life cycle depends on three basic elements: food, ability to reproduce, and cover, as well as good water quality and safe routes for migration at various stages of life . “Spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes”. (Canada Fisheries Act, Sec.31.5)

Fisheries Act: A federal law administered by the Department of Fisheries and Oceans and Environment Canada to protect fish and fish habitat. It prohibits the destruction or damage of fish habitat and the discharging of substances that may harm fish or fish habitat.

Fixed sprinkler head: Sprinkler head affixed in place more or less permanently.

Flood plain/ Flood zone: The area adjacent to a water body or water course that becomes covered with water during high water levels. Often this occurs following snowmelt or an extreme rainfall event. In Ontario, activities in flood zones are regulated by the Conservation Authorities.

Flushing bar: A metal bar that’s mounted horizontally in front of a tractor. Chains hanging down from the bar rustle the grass as the tractor moves, frightening animals from their hiding places and preventing injury or death.

Forb: A flowering plant, excluding grasses, sedges, and rushes, that does not have a woody stem and dies back to the ground at the end of the growing season.

Glossary

Forest corridor: A linear remnant of a forest community. It is too narrow to be viable as habitat but can have the important role of connecting other larger isolated or separate areas of forests, creating the effect of contiguous forest. This allows animals and other species to travel through disturbed landscapes.

Forest inventory: A survey of the forest that describes the number, type, height, size and quality of the trees; other plants, wildlife, soils, and other natural heritage features.

Forester's prescription: Management actions designated by a Professional Forester based upon a Forest Inventory. The prescription should support your short-term and long-term management objectives.

Fragmentation: The breaking up of pre-settlement forest cover (which was more or less contiguous) by human development. Fragmentation reduces the opportunities for plants and animals to reproduce and their ability to adapt to new conditions.

Fuel: A material that can be transformed into usable energy.

Fuel economy: A description of the amount of fuel required to move a vehicle over a given distance.

Fungal disease: Any fungus harmful or lethal to plant growth.

Furans: A family of chemicals that are formed during combustion. They are extremely toxic.

Garbage: A general term used to describe household items that are no longer desired. Also referred to as trash.

Garborator: A type of garbage disposal system that functions through the kitchen sink. Food scraps go into the municipal water or septic system.

Good forestry practices: The proper use of harvest, renewal and maintenance activities known to be appropriate for the forest and environmental conditions where they are being applied.

Great Lakes – St. Lawrence Watershed: One of two primary watersheds in the province of Ontario, the other being Hudson Bay.

Greenhouse Gases: Gases that contribute to global warming and climate change: carbon dioxide, methane, nitrous oxide, ozone.

Grey water: wastewater from household uses such as dishwashing or bathing.

Groundwater: Fresh water that has seeped through the soil and rock on the earth's surface and naturally collects forming a reservoir, the top of which is referred to as the water-table. This water supplies wells and springs and is the source of most people's drinking water.

Habitat: The environment occupied by individuals of a particular species, population, or community, including everything required during the life cycle, such as food, water, space, shelter, and breeding spaces.

Hazard area: An area prone to flooding or erosion such as properties located within a floodplain, on beaches, dunes or bluffs, or subject to wind setup, wave activity, etc. Includes features such as quickly-draining sandy soils or sinkholes.

Glossary

Hazard Land: A land designation usually applied to erosion or flood prone areas such as floodplains, wetlands, and ravines. Development of these areas is usually prohibited or regulated by permit.

Hazard tree: A tree or part of a tree that is at risk of falling and causing personal injury or property damage.

Hazardous: A thing or situation that has the potential to cause harm.

Hazardous waste: Substances that can be dangerous to humans or animals and must be disposed of in a manner as to not pollute groundwater.

Header tile: A tile drain into which lateral tile drains connect.

Health Unit: A provincial health agency that administers health promotion and disease prevention programs through local offices. This may also be enforcement of Part 8 of the Ontario Building Code. There are 36 Health Units in Ontario.

High grading: The removal of only the best trees or tree species, often resulting in a poor quality residual stand.

High water mark: *See Normal high water mark.*

Household chemicals: Any chemicals normally used within the house such as detergents or cleansers.

Household waste: Waste that is commonly generated in the average home.

Impervious: Not allowing water or other substance to pass through. Sand feels gritty between the fingers, and is very fast-draining.

Impervious surface: A solid surface that that does not allow a liquid to pass through or penetrate it.

Impoundments: *See Artificial Ponds*

Incandescent light bulb: A glass bulb that contains a glowing wire filament that, when heated to white-hot by electrical resistance, generates light. Tends to lose 95% of energy to the air as heat.

Indicator species: These are specific plants or a specific group of plant whose presence together indicate that a particular ecosystem existed on the site in the past.

Infiltrate/ Infiltration: Refers to the passage of water into and through the soil from an outer surface. Also *percolate/ percolation*.

Inorganic fertilizer: A synthetically-made chemical mixture that is applied to plants to promote growth. Plant nutrients are immediately available for plant roots to absorb. Consequently, the risk of over-application or 'burning' is higher.

Invasive species: A plant, animal or aquatic organism which typically spreads quickly and may be difficult to control or eradicate. These species are of concern because they can be detrimental to other species and threaten ecosystems.

Irrigation: The process of drawing water from a concentrated source (well, pond, municipal water system, etc.) and applying it to your garden or landscaping.

Glossary

Jig: A fishing lure designed to resemble a small fish with one or more hooks that is jerked up and down in the water.

Landfill: A site specially engineered for the permanent disposal of solid waste on land, constructed so that it will reduce hazard to public health and safety.

Lawn: A mown or smooth expanse of vegetation typically comprised of one or more grass species.

Leachate: Liquids that have percolated through soil and carry contaminants.

Leaching bed: The part of a septic system that returns water to the ground for re-absorption. A system of tiles or perforated pipes allows liquid effluent from the septic tank to percolate slowly into the soil.

Leaching bed (trench type): Consists of trenches of buried distribution pipe. Each pipe is set in a bed of stone in a trench. Wastewater leaves the septic tank and flows through the distribution pipe into the soil through perforations in the pipe.

Leaching bed loading: Refers to the volume of wastewater in relation to the capacity of the leaching bed. Increased household water use can overload the system

Legislation: Law or set of laws made by a law-making body. Also referred to as Statutes or Acts.

Liability: being liable: legally bound, answerable for.

Loading: *See* Leaching bed loading.

Loam: Soil containing a mixture of clay, silt and sand, that is typically loose, well-drained and rich in organic matter. It is considered best for the growth of most plants. The ratio of sand, silt, and clay determines texture and other soil characteristics.

Low-flow shower head: A shower head that restricts the flow of water and forces it through very small apertures. It uses 8-9 litres (about 2 gallons) per minute while a conventional showerhead uses 15-19 litres (3-4 gallons) or more per minute. It is easy to install and can be fitted to most standard shower arms.

Low-level crossing system: A constructed crossing for vehicles or livestock that is within the stream channel rather than crossing above it.

Low-level sprinkler: Sprinkler where water stream reaches a low height; type often seen on residential properties with direct, pulsed water jets.

Managed Forest Tax Incentive Program: Provides a reduction in municipal taxes for forested lands for which a landowner has prepared a Managed Forest Plan.

Management plan: A document that outlines the goals and objectives and recommended practices to be implemented over time to achieve current and future forest management goals.

Manure: Any animal or plant material that is used to fertilize soil but is not yet broken down or decomposed by bacteria, fungi or other micro-organisms.

Mast tree: A tree that produces mast (fruits and nuts used as a food source by wildlife).

Glossary

Meadow: Typically thought of as a transitional community of wildflowers and some grasses. Of the three types of meadow communities found throughout Canada: wet meadow, dry meadow and old field meadow, only old field meadow (found on old sites and abandoned agricultural land) is a true transitional community. Without intervention, it will naturally succeed into forest.

Meander pattern: The sinuous arrangement that a watercourse typically makes in areas of slower flow.

Mid-level sprinkler: Sprinkler where water stream reaches a moderate height; type often seen on residential properties for children's recreational use.

Ministry of Natural Resources (MNR): Ministry of the Ontario Government that deals with the protection and management of the province's natural resources. Also known as OMNR. *See Resources section of Worksheet #1.*

Monitor: To become aware of the volume of water used and to measure weekly rainfall using a rain gauge.

Monitoring: Regular inspections that help maintain and increase the knowledge of your forest. Monitoring ensures that forest insect infestations, abnormal tree mortality or illegal activities (such as garbage dumping, trespassing or theft) are identified and addressed.

Mulch: Loose, organic materials such as woodchips, bark, and straw, or a mixture thereof. When applied around a plant, mulch protects the plant, suppresses weeds and retains moisture. Re-apply as mulch breaks down over time.

Municipal by-laws: Local legislation enacted to consider natural heritage, land use, environmental protection and hazard policies.

Municipal landfill: The designed site for a community to permanently dispose of their non-hazardous, solid waste. The site is specially engineered to reduce hazard to public health and safety.

Native plant: A plant that is adapted to and occurs naturally in a specific location. Also referred to as indigenous. Exotic plants are foreign species that are brought in from elsewhere.

Native species: Plants and animals that have a long evolutionary history in a given area. Generally, those present before European settlement. Also referred to as indigenous.

Native vegetation: A cumulative term to describe any and all plants that are adapted to and occur naturally in a specific location. Also referred to as indigenous.

Natural heritage: The natural species, habitats, and landscapes of a region.

Natural process: A series of changes or actions that occur within an ecosystem to maintain its health or regulation.

Natural regeneration: The process of establishing new trees by allowing seeds from other trees in the area to grow.

Non-invasive species: Any species, either native or not native, that does not exhibit the characteristics of an invasive species.

Glossary

Non-renewable: Something that cannot be replaced by nature once it is used up, or that regenerates only over a very long period of time.

Non-toxic: A substance that is not poisonous or will not cause harmful health effects.

Normal high water mark: The level or elevation along the shore of a federal historic canal, lake or river that marks government ownership and administration. Also known as the upper controlled water elevation.

Noxious Weed: A broad term to describe plants that can be problematic to people, livestock, or field crops (e.g., poison ivy, ragweed, bindweed, some thistles).

Nuisance or Abundant Wildlife: Any wildlife that causes damage to your property or is a potential threat to health and safety.

Nutrient: Any element needed for plant growth. Usually refers to elements added to the soil or garden as fertilizer. Commonly used nutrients are nitrogen (N), phosphorus (P), and potassium (K).

Nutrient management: The responsible and appropriate application of nutrients (especially nitrogen) to plants, with the purpose of improving plant growth and soil conditions, in such a way as to protect surface and groundwater from nutrient contamination.

Nutrient Management Plan: A formalized plan that describes how a farm's agricultural nutrient wastes (e.g. fertilizers, animal waste) will be safely dealt with. Required by Ontario law in certain situations.

Official Plan: A municipal policy document that outlines basic principles to guide future development within an area. Available at the municipal office or community library.

Off-Road Vehicle: Includes all-terrain vehicles, Jeep-type off-road vehicles and snowmobiles.

On-line ponds: *See* Artificial Ponds.

Ontario Drinking Water Standards: The minimum water quality standards set by the Ontario Ministry of the Environment to protect public health. It is advisable that drinking water meets these standards.

Organic fertilizer: A product that promotes plant growth that is derived from animal or vegetable matter such as compost. Nutrients are released at a slower rate that facilitates plant absorption and therefore are less likely to be carried away by surface runoff or leached into groundwater.

Other treatment systems: Includes biofilters, packaged aerobic systems, sand filter systems, etc. *See the Ontario Building Code (OBC) for approved systems.*

Passive solar heating/ lighting: The natural heating/ lighting of buildings or rooms by capture of direct sunlight. Buildings can be designed with large windows in south-facing walls and small windows in north-facing walls, to reduce the need for electricity and fossil fuel energy as a source of heat and light.

Paved surface: A hard surface that is impermeable to liquid substances such as rainwater.

Glossary

Percolate/ Percolation: Refers to the flow of water through the soil. Also infiltrate/ infiltration.

Perennial: An herbaceous plant that grows back from the root every year.

Permeable: Not impervious to water penetration.

Permit: A document granting legal permission. *See also* Building Permit.

Pesticide: A general name given to toxic chemicals used to eliminate or control unwanted insects, diseases, plants or other organisms. Pesticides include insecticides, herbicides, and fungicides.

Pesticide (cosmetic): A general term used to describe any chemical or biological agent used in a non-farming context to kill plant or animal pests. Herbicides, insecticides, fungicides, bactericides, etc., are all types of pesticides.

Pesticide alternative: Generally any pesticide derived from natural sources and/or that does not require a license to apply. Considered gentler than conventional pesticides, alternatives do not degrade the environment.

Pesticide storage: The legal requirements for pesticide storage can be found in the Ontario Pesticides Act.

Pilot light: A small flame that stays lit all the time (in a hot water heater, boiler or furnace) and ignites the burner flame.

Plant community: An ecologically integrated collection of plants existing in an area.

Ponding: The process through which water collects or pools on a surface before being infiltrated into the ground.

Portable fuel container: A portable container made of metal or other material that has been approved for use by the Underwriter's Laboratories of Canada (ULC), the Canadian Standards Association (CSA), or Transport Canada to transport and store fuel.

Prairie: An ecological community made up of native grasses and wildflowers. In Canada, three prairie communities can be found: the short grass and mixed grass prairies found in the Western plains of Saskatchewan and Alberta, and the tallgrass prairie found in southern Ontario and Manitoba. Unlike old-field meadows, prairies are long-lived, and typically grow in conditions or climates where forests cannot.

Pressure or Dosed distribution: A septic system that utilizes a pump to load shallow, rapidly-changing, distribution lines in doses.

Pressure rinse: One method to properly rinse containers. Spray water under high pressure against all inside surfaces of the container.

Pretreatment: First step in treating wastewater to make it suitable for further treatment or disposal. For example, the septic tank retains most of the sludge from the wastewater, making further treatment in the leaching bed more effective.

Prevailing wind: Refers to the direction from which the wind most commonly blows.

Protective Coating: A paint or other coating material designed to prevent rust.

Glossary

Provincially Significant Wetland: A wetland evaluated by the Ministry of Natural Resources as having significant biological, social, hydrological, and special features. These wetlands are provided special consideration under Ontario's Planning Act.

Public Lands Act: Legislation protects the integrity of public lands and waters for all citizens of Ontario. It requires that property owners obtain work permits for activities on shore lands adjacent to navigable waters.

Puncture: An area of change or disturbance within a natural community such as a buffer. It is often created by a change in land use or development. The threat or damage caused by the puncture depends on its size and the type and health of the natural community or buffer it has disrupted. Punctures provide opportunity for soil erosion and for invasive species to colonize.

Quick-release fertilizer: Type of synthetic (inorganic) fertilizer that is immediately available for plant roots to absorb. There is a high 'burn' potential if too much is applied and the potential for it to leach into ground and surface water is high causing algal blooms and eutrophication. It is also referred to as Water Soluble Nitrogen (WSN).

R-2000: A building technology designed in Canada and recognized internationally for energy efficiency and indoor air quality. Every R-2000 home is certified by the Government of Canada and the R-2000 rating is managed by the Canadian Home Builders' Association and Natural Resources Canada's (NRCan's) Office of Energy Efficiency.

Recyclable: Materials that can be collected, sorted, and processed back into raw materials that are used to make new products. Typical recyclables include glass and selected metal, paper and plastic products.

Registered Contractor: A person registered by the province of Ontario to install and repair petroleum storage tanks.

Regulation: A binding rule of law. Regulations are not made by Parliament but rather by persons or bodies that have received authority from Parliament to do so.

Retired Field: Also known as old-fields, retired fields refer to areas that were once cultivated or grazed, but are no-longer used for that purpose. Typically on these sites, the vegetation has begun to diversify to a variety of native and crop vegetation, and on older sites, woody vegetation has begun to invade. If left undisturbed, an retired field will eventually succeed into a forest.

Reusable: Items that can be used again in their current state by another individual or for another purpose.

Right of way: Right established by usage to pass over another's property. Usually registered on property title. For example, usually associated with things like hydro corridors and shared driveways.

Rinse water: Wastewater from cleaning the inside of a product container or applicator.

Riparian vegetation: Vegetation naturally suited to the moist conditions within or around a stream or waterway. This vegetation helps filter pollutants, provides habitat for aquatic life, prevents erosion, and stabilizes stream temperature and conditions.

Glossary

Risk: The potential for disaster and loss.

Road allowance: Land, usually owned by the municipality, on which roads are located. However, a road may not be present or be “unimproved” or unmaintained on such lands but the road allowance remains.

Runoff: Snow melt or rain that flows overland rather than infiltrating through the soil/rock.

Runoff pattern: The arrangement of how rain or water flows over an area. This is determined by the land form; water will flow down slope to the lowest elevation points due to gravity.

Sand: A soil type comprised of particles between .05 - 2 mm.

Sand point wells/ driven wells: Wells constructed by driving assembled lengths of pipe into the ground. These wells are usually smaller in diameter (5 cm or less) and less than 15 metres (50 feet) deep. They can be installed in loose soils, such as sand.

Saturated (soil): Soil in which all the pore spaces are completely filled with water and no additional water can be stored.

Savanna/ Savannah: A grassland community with approximately 10-30% tree canopy cover, typically consisting of oak, cedar, and/or pine.

Sedimentation: Occurs when sediment (particles of soil and other material) fall out of suspension in water. The gradual build up of these layers of sediment chokes channels and rivers, inhibiting plant and fish life.

Seed zone: An area of similar genetic diversity among trees.

Seller Property Information Statement: A non-legally binding document that outlines what the current owner of the property knows about the property. Also known as a Disclosure Statement.

Sensitive natural feature: An environmental element of the landscape that is readily affected by or responsive to external influences or change.

Septic leaching bed: Part of the septic system. Together with the septic tank, it treats household sewage. It is comprised of rows of perforated pipes set at a specific distance apart and above a stone layer. The area above a leaching bed should have a good grass cover and should be kept free of trees, shrubs, and structures such as patios, pools, and sheds, and vehicles including snowmobiles. Any compaction of the soil reduces leaching bed performance and crushed leaching bed pipes can cause backups into your home.

Septic system: Consists of a tank to settle the solids out of the wastewater, followed by a leaching bed in which the wastewater is treated and distributed into the soil.

Septic tank: A watertight vault in which sanitary sewage is collected to remove scum, grease, and solids from the liquid without the addition of air. This is where solids settle and anaerobic digestion of the sanitary sewage takes place.

Setback: *See* Dynamic beach setback.

Glossary

Sewage system: A domestic wastewater treatment system (consisting of a septic tank and a soil absorption system) into which wastes are piped directly from the home; bacteria decompose the waste, sludge settles to the bottom of the tank, and the treated effluent percolates out into the ground, typically through perforated pipes in a leaching bed.

Shelterbelts: Belts of trees (normally conifers) planted around homesteads and roadways to reduce heat loss by wind, provide shade, and sometimes to act as a natural snowfence.

Shoreline: The area between the edge of the water and the normal high water mark. Shoreline can refer to the edge of any body of water, including tidal waters, a coastal or inland wetland, a standing body of water, such as a pond or lake, or flowing water, such as ditches, streams and rivers.

Sill: A lip or catch under the spout of a container that effectively catches any drips from the mouth of the spout.

Silt: A type of soil composed of particles between .02 - .05 mm in diameter. Silt feels fairly smooth between the fingers when wet, though not sticky like clay. Silt soils absorb water relatively slowly, contributing to increased surface runoff.

Silt fence: A temporary barrier stretched across an area to trap sediment and prevent runoff water from moving it off-site during construction.

Silvicultural system: The process through which a forest is tended, harvested, and regenerated. The system used is based upon the composition and condition of the forest.

Sinker: Small metal weight, traditionally made of lead, that is attached to fishing lines and is part of the lure. Lead sinkers are not-permissible in some water bodies and alternatives such as brass, tungsten, steel, and bismuth are used instead.

Sinkhole: A closed depression, formed by the dissolution of underlying soluble bedrock, and that connects surface and bedrock groundwater. These features are circular or elliptical with walls that range from nearly vertical, through cone and bowl shapes to shallow dish-like shapes.

Slope: Refers to land surface steepness. It is measured as a number of centimetres rise in a 100 cm (1 m) horizontal length (for example, a 2% slope equals 2 cm rise across 100 cm horizontal length).

Slow-release fertilizer: The type of synthetic (inorganic) fertilizers that break down using bacteria, fungi or other soil micro-organisms in the soil, or that are coated to reduce solubility. As a result, the nutrient nitrogen becomes available for plants over time. While it is typically more expensive than quick-release fertilizers, it does lower the chance of 'burning' plants when over-application occurs and has less potential to leach into ground or surface water. It is also referred to as Water Insoluble Nitrogen (WIN).

Snag: A standing dead tree. Snags often provide habitat for cavity dependent wildlife

Soil compaction: Reduced pore space in the soil due to human or equipment traffic. Compaction makes it difficult for water to infiltrate and for roots to penetrate the soil.

Glossary

Soil depth: The depth of soil influences the potential for groundwater contamination. Deeper soils are typically more effective at filtering out contaminants before they can reach groundwater.

Soil grade: The elevation of the ground surface. Grade may also refer to the steepness or slope of the surface.

Soil type: The material(s) that a soil is made of affect its ability to percolate water and other substances (including pollutants). Sand and gravel soils provide the fastest infiltration and therefore increase the potential for groundwater contamination. Conversely, clay soils are slow to allow water to infiltrate and may cause water to runoff the surface rather than infiltrate. This can encourage erosion and surface water contamination.

Solar power: Energy from the sun's radiation that is converted into heat or electricity.

Solvent: a liquid that can dissolve another substance. (e.g., paint thinner, mineral spirits, and water).

Source Water Protection Plan: A plan devised by the Ontario government to ensure that every watershed in the province has an action plan to protect its water resources.

Species: A group of closely related organisms capable of interbreeding, and reproductively isolated from other groups of organisms; the basic unit of biological classification.

Species at Risk: Any plant or animal threatened by, or vulnerable to extinction. This term is further organized into 5 categories of risk: Special Concern, Threatened, Endangered, Extirpated, and Extinct.

Stand: An aggregation of trees occupying a specific area and uniform enough in composition (species) age and arrangement to be distinguishable within the forest.

Steward: The person responsible for making and carrying out property management decisions.

Storm sewer: A system of underground pipes (separate from sanitary sewers) that collects and carries only water runoff from building and land surfaces to a discharge point (e.g., infiltration basin, receiving stream, treatment plant).

Storm water: Water from rain or melting snow that does not infiltrate into the ground.

Storm windows: An extra pane of glass or plastic added to the outside of windows to provide additional insulation and wind protection.

Stream: A smaller watercourse that empties into a larger river or lake.

Subsurface distribution: Underground discharge of household wastewater to a leaching bed after pretreatment in a septic tank.

Glossary

Succession: The gradual process of change in an ecosystem as one community of plants and its resident organisms is replaced by another. Succession occurs when a landscape has been disturbed by human activity, fire or flood, for example. Fast-growing and hardy grasses and forbs will colonize a site first, to be later shaded out by shrubs and eventually trees and forest. The end result – a mix of species that makes up a mature forest - is known as a climax community.

Surface material: Refers to soil, lawn, or other ground material that surrounds the well.

Surface water: Water that moves through:

- a natural or artificial channel that carries water intermittently or continuously, and that may support vegetation that requires or prefers the continuous presence of water or continuously saturated soil;
- a lake, reservoir, pond or sinkhole;
- a wetland, such as a swamp, marsh, bog or fen;
- a grassed waterway; or
- roadside ditches.

Survey: A map document made by a licenced surveyor that illustrates and describes the measurements and layout of a parcel of land including its size, boundaries, location, elevations, the dimensions and position of any structures and indicates any easements, rights of ways, etc.

Tallgrass communities: Naturally occurring grasslands such as on the mid-continental prairies. Herbaceous species dominate; trees and shrubs being restricted by drought and wildfire. Tallgrass is a globally imperilled ecosystem and one of the most endangered ecosystems in Canada; is part of Ontario's natural heritage.

Tallgrass prairie: *See* Prairie.

Temporary ponds: *See* Artificial Ponds.

Thinning: Reducing the number and density of trees in a stand in order to improve the growth and condition of residual trees and prevent mortality.

Treatment: Reduction of the level of contaminations in wastewater so that they are not as harmful to human health or the environment.

Tree marking: Selecting and marking trees to be harvested and trees left to grow. Trees are usually marked with coloured paint, orange/yellow for removal; no paint or blue for residual stems.

Triple rinse: One way to properly rinse containers. Fill the container 10% full of water or other diluent, cap and shake the container, then add the rinsate to the spray tank. Repeat two more times.

ULC approved: Approved for safety by the Underwriter's Laboratories of Canada. ULC approval should be marked on a storage tank.

Unused well: A water well that is not currently used or is used occasionally. All water wells must be properly maintained or they must be properly decommissioned (plugged and sealed).

Vegetated buffer: A permanent strip of vegetation along the side of a watercourse that reduces soil erosion and surface water contamination.

Glossary

Vegetation: All plants including trees, shrubs, non-woody plants, lichens, mosses, etc.

Vent: *See* Well vent.

Wash water: Water that is used in the cleaning or rinsing process.

Waste: Another general term for items that are no longer desired.

Wastewater: Water of domestic origin, including water-borne waste from kitchen, laundry, and bathrooms (toilet, shower, tub).

Wastewater treatment plant: Municipal public facilities that treat water that is collected from home, businesses and industry.

Wastewater treatment system: A sewage system approved under the Ontario Building Code (OBC).

Water bar: Water bars divert water off a trail at controlled points along the trail. Water bars are made of rock, 4 x 6 timbers, or native logs. The bars of material are set at a 60 degree angle across the trail. They extend such that water is carried completely off the trail, and rock is provided at the downslope end of the water bar to dissipate the energy of the flowing water, minimizing erosion. The top of the water bar should be nearly flush with the trail tread to minimize tripping hazards, and the excess soil and debris that build up at the downslope end of the water bar needs to be periodically unplugged.

Water-conserving fixtures: Household fixtures and appliances designed to reduce the volume of water consumed with their use. Examples are low-flow shower heads, faucet aerators, and water-efficient toilets.

Water-craft: Used here to describe a vehicle designed to float on and/or move across water for recreational purposes.

Water efficiency: The degree to which practices or devices are used to reduce the amount

Water feature: Any constructed landscape feature that holds or has water spill over it. This includes artificial small ponds, artificial waterfalls, and artificial streams.

Water heater: An appliance that typically uses gas or electricity to heat water. A water heater also stores the heated water until it is used.

Water level control structure: A device that maintains water levels in a wetland at a prescribed height. Some devices are designed to allow the user to vary water levels to encourage different types of vegetation, enhancing the health of the wetland.

Water table: The boundary between the saturated soil (where all the soil pore spaces are filled with water) and the unsaturated soil (where soil pore spaces are filled with air, roots, soil organisms and some water).

Watercourse: An open flow of water including a stream, spring, channel or river.

Waterway: Any moving body of water, natural or man-made.

Weather stripping: Strips of resilient material, typically rubber or plastic, used to plug air leaks around doors and window frames in order to prevent cold air or water from coming indoors.

Glossary

Well cap: A commercially manufactured device used to cover the top of a well casing pipe. This cap prevents surface water, vermin, or solid material from entering the well.

Well capture zone: The area of land that replenishes water to a pumped well or a group of wells. Determining the size of a capture zone is complex and expensive. Knowing its area may not be necessary if the entire property is treated as the capture zone for the well(s) and potential contaminant sources are managed properly.

Well casing: Steel, fibreglass, plastic pipe or concrete tile, installed when a well is constructed, in order to strengthen the well bore hole so it does not collapse. It also prevents contaminants from entering the well and allows placement of a pump or pumping equipment.

Well pit: Lined, shallow excavation around the top of the well casing of a drilled well.

Well vent: An opening in the well cap or well seal that makes the air pressure inside the well the same as outside. It also lets gases escape. The vent should always have a screen to prevent dirt, vermin, or other materials from getting into the well. A screened pipe may extend from the vent up above ground level to prevent flooding of the well.

Well-rotted manure: Any animal waste that is used to fertilize soil and has undergone decomposition by bacteria, fungi or other micro-organisms for a minimum of 6 months. Its odour is no longer pungent but is often sweet, its colour is dark or black and its texture is crumbly.

Wetlands: Areas that are permanently or seasonally covered by shallow water, as well as lands where the water table is close to or at the surface. Wetlands are Ontario's most diverse and productive habitats.

Wildlife Ponds: Ponds that are managed primarily to provide wildlife habitat.

Wind energy: Energy that is obtained from wind-powered turbine engines.

Wind setup: A wind-related phenomenon that can cause substantial inundation of a beach over a short period of time.

Windbreaks: Narrow rows of trees planted along the edges of field or open areas. Windbreaks help control erosion from wind and water.

Zoning bylaw: Municipal legislation that describes the exact use for a specific parcel of land including permissible buildings, size, building heights and setbacks from lot lines.

Zoning: The division of a municipality by legislative regulations into areas (zones) that control the use of the land by specifying the uses allowable for the real property in these areas.

Resources List

American Trails

P.O. Box 491797, Redding, CA 96049-1797
530-605-4395 trailhead@americantrails.org
www.americantrails.org/resources/trailbuilding

Association of Ontario Land Surveyors

1043 McNicoll Avenue, Toronto, ON M1W 3W6
416-491-9020 Toll Free: 800-268-0718
www.aols.org

ATV NatureWatch

Ontario Federation of ATV Clubs
192 Niagara Street, London, ON N5W 1R6
705-797-0797 info@ofatv.org
<http://www.ofatv.org/>

Canada Mortgage and Housing Corporation

100 Sheppard Ave. E, Ste. 300, Toronto, ON M2N 6Z1
416-221-2642 Toll Free: 877-389-1742
www.cmhc-schl.gc.ca

Canadian Centre for Pollution Prevention

100 Charlotte Street, Sarnia, ON N7T 4R2
519-337-3423 Toll Free: 800-667-9790

Canadian Coast Guard

Fisheries and Oceans Canada Communications Branch
200 Kent Street 13th Floor, Station 13228
Ottawa, ON K1A 0E6
613-993-0999 info@dfo-mpo.gc.ca
www.ccg-gcc.gc.ca

Canadian Power and Sail Squadrons

26 Golden Gate Court, Toronto, ON M1P 3A5
416-293-2438 Toll Free: 888-277-2628 hqg@cps-ecp.ca
www.cps-ecp.ca

Canadian Sustainable Forestry Certification Coalition

Sustainable Forest Management Policy
Forest Products Association of Canada (FPAC)
Suite 410-99 Bank Street Ottawa, Ontario K1P 6B9
613-563-1441 ext. 310 ottawa@fpac.ca
www.certificationcanada.org

Canadian Wildlife Federation

350 Michael Cowpland Drive, Kanata, ON K2M 2W1
613-599-9594 Toll Free: 800-563-WILD
www.cwf-fcf.org

Canadian Wildlife Service

Inquiry Centre Ontario Region CWS Environment Canada
4905 Dufferin St. Toronto, ON M3H 5T4
819-997-2800 Toll Free: 800-668-6767

Capital Regional District

PO Box 1000, Victoria, BC V8W 2S6
250-360-3000
www.crd.bc.ca

Centre for Sustainable Watersheds

40 Sunset Blvd. Suite 115 Perth, ON K7H 2Y4
613-264-1244 info@watersheds.ca
<http://www.watersheds.ca/en/>

Resources List

Conservation Ontario

Box 11, 120 Bayview Parkway, Newmarket, ON L3Y 4W3
905-895-0716 info@conservationontario.ca
<http://www.conservation-ontario.on.ca/>

Community Stream Steward Program

4601 Guthrie Drive, Peterborough, ON K9J 8L5
705-748-6324 stream_steward@ofah.org
<http://www.ofah.org/streamsteward/>

Composting Council of Canada

16 Northumberland St., Toronto, ON M6H 1P7
416-535-0240 Toll free: 877-571-GROW(4769)
info@compost.org
www.compost.org

County of Simcoe Administration Centre

1110 Highway 26, Midhurst, ON L0L 1X0
705-726-9300 info@simcoe.ca
www.county.simcoe.on.ca

Department of Fisheries and Oceans

520 Exmouth St. Sarnia, ON N7T 8B1
519-383-1813 Toll Free: 866-290-3731 info@dfo-mpo.gc.ca
www.dfo-mpo.gc.ca

Ducks Unlimited Canada

740 Huronia Rd. Unit 1 Barrie, ON L4N 6C6
705-721-4444 Toll Free: 888-402-4444 du_barrie@ducks.ca
www.ducks.ca

Environment Canada

Inquiry Centre
10 Wellington, 23rd Floor, Gatineau, Quebec, K1A 0H3
819-997-2800 Toll Free: 800-668-6767 enviroinfo@ec.gc.ca
www.ec.gc.ca

Environmental Choice Program

(Ecologo) c/o terrachoice Environmental Services Inc
2197 Riverside Dr. Suite 300 Ottawa, ON K1H 7X3
Toll free: 800-478-0399
www.environmentalchoice.ca

Federation of Ontario Cottagers' Associations

#201-159 King St. Peterborough, ON K9J 2R8
705-749-3622 info@foca.on.ca
www.foca.on.ca

Forest Gene Conservation Association

Suite 233, 266 Charlotte St., Peterborough, ON K9J 2V4
705-750-0636
www.fgca.net

Georgian Bay Biosphere Reserve

17 George St. Box 337 Parry Sound, ON P2A 2X4
705-774-0978 info@gbbr.ca
www.gbbr.ca

Georgian Bay Country Visitor Centre

70 Church St. Parry Sound, ON P2A 1Y9
705-746-1287 Toll Free: 888-229-7257 info@gbcountry.com
www.gbcountry.com

Resources List

Georgian Bay Native Friendship Centre

175 Yonge St., Midland ON L4R 2A7
705-526-5589
<http://www.gbnfc.com/>

Georgian Triangle Tourist Association

45 St. Paul Street, Collingwood, ON L9Y 3P1
705-445-7722 Toll Free: 888-227-8667
info@georgiantriangle.com
<http://www.visitsouthgeorgianbay.ca/>

Great Lakes Information Network

Eisenhower Corporate Park, 2805 S. Industrial Hwy.,
Suite #100, Ann Arbor, MI 48103-6791
734-971-9135 manninen@glc.org
www.great-lakes.net

Green Communities Canada

416 Chambers St, 2nd Floor, Peterborough, ON K9J 3V1
705-745-7479 info@greencommunities.nonprofitwebsites.ca
<http://greencommunitiescanada.org/>

Hike Ontario

165 Dundas St. West Suite 800 Mississauga, ON L5B 2N6
905-833-1787 Toll Free 800-894-7249 info@hikeontario.com
www.hikeontario.com

Kids for Turtles Environmental Education

450 Atherley, Orillia, ON L3V 7Y1
705-325-5386 info@kidsforturtles.com
www.kidsforturtles.com

LandOwner Resource Centre

Box 599, 3889 Rideau Valley Dr. Manotick, ON K4M 1A5
613-692-3571 Toll Free: 800-267-3504 info@lrconline.com
www.lrconline.com

LEAF Local Enhancement & Appreciation of Forests

Artscape Wychwood Barns
601 Christie St. Suite 253 Toronto, ON M6G 4C7
416-413-9244 info@yourleaf.org
www.yourleaf.org

Natural Resources Canada Office of Energy Efficiency

613-995-0947
<http://www.nrcan.gc.ca/energy/efficiency>

Natural Heritage Information Centre

705-755-2159 NHICrequests@ontario.ca
<http://nhic.mnr.gov.on.ca/nhic.cfm>

Nature Conservancy of Canada

36 Eglinton Ave W. Suite 400 Toronto, ON M4R 1A1
416-932-3202 Toll free: 1-800-465-0029
nature@natureconservancy.ca
www.natureconservancy.ca

Niagara Escarpment Commission

232 Guelph Street, Georgetown, ON L7G 4B1
905-877-5191 nec@escarpment.org
www.escarpment.org

Resources List

North Shore Recycling Program

148 East 2nd St., North Vancouver, BC V7L 1C3
604-984-9730

<http://www.northshorerecycling.ca>

Oak Ridges Moraine Foundation

120 Bayview Parkway, Newmarket, ON L3Y 4X1
289-279-5733 support@ormf.com

<http://www.moraineforlife.org/>

Ontario Federation of Anglers and Hunters

4601 Guthrie Drive, PO Box 2800, Peterborough, ON K9J 8L5
705-748-OFAH (6324) ofah@ofah.org

www.ofah.org

Ontario Federation of Snowmobile Clubs

501 Welham Road, Unit 9, Barrie, Ontario, Canada L4N 8Z6
705-739-7669

www.ofsc.on.ca

Ontario Forestry Association

144 Front Street West, Suite 700, Toronto, ON M5J 2L7
416-646-1193 Toll Free: 877-646-1193 info@treesontario.ca

<http://www.forestsontario.ca/>

Ontario Horticultural Association

district16@gardenontario.org

www.gardenontario.org

Ontario Invasive Plant Council

P.O. Box 2800, 4601 Guthrie Drive, Peterborough, ON, K9J 8L5
705-748-6324 ext. 281

<http://www.ontarioinvasiveplants.ca/>

Ontario Land Trust Alliance

10 Adelaide St. E. Suite 401, Toronto, ON M5C 1J3
416-588-OLTA (6582)

<http://www.olta.ca/>

Ontario Ministry of Agriculture and Food

Agricultural Information Contact Centre
Toll-free: 877-424-1300 Toll Free: 1-888-466-2372

ag.info.omafra@ontario.ca

www.omafra.gov.on.ca

Ontario Ministry of Environment

Public Information Centre
MacDonald Block 900 Bay St. 2nd Fl, Toronto, ON M7A 1N3
416-325-4000 Toll-free: 800-565-4923

<http://www.ontario.ca/ministry-environment>

Ontario Ministry of Municipal Affairs and Housing

777 Bay St. 17th floor, Toronto, ON M5G 2E5
416-585-7041 Toll Free: 866-220-2290 mininfo.mah@ontario.ca

www.mah.gov.on.ca

Resources List

Ontario Ministry of Natural Resources

Natural Resources Information Centre
Toll-free: 800-667-1940 mnr.nric.mnr@ontario.ca
www.mnr.gov.on.ca

Ontario E-Laws Web Site

416-326-5300 Toll Free: 800-668-9938 e-laws@ontario.ca
www.e-laws.gov.on.ca

Ontario Ministry of Health and Long-Term Care

M-1B114 MacDonald Block 900 Bay St.
Toronto, ON M7A 1N3
MOHLTC INFOline Toll Free: 866-797-0000
www.health.gov.on.ca

Ontario Nature

214 King St W Suite 612, Toronto, ON M5H 3S6
416-444-8419 Toll Free: 800-440-2366
info@ontarionature.org
www.ontarionature.org

Ontario Petroleum Contractor's Association

51 King St #8, Barrie, ON L4N 6B5
705-735-9437 Toll Free: 866-360-6722 info@opcaonline.org
www.opcaonline.org

Ontario Professional Foresters Association

5 Wesleyan St. Georgetown, ON L7G 2E2
905-877-3679 opfa@opfa.ca
<http://www.opfa.ca/>

Ontario Soil and Crop Improvement Association

1 Stone Road West, Guelph, ON N1G 4Y2
519-826-4214 Toll Free: 800-265-9751
www.ontariosoilcrop.org

Ontario Streams

50 Bloomington Road W. Aurora, ON L4G 3G8
905-713-7399 doug.forder@ontariostreams.on.ca
www.ontariostreams.on.ca

Ontario On-site Wastewater Association

3781 Strandherd Rd. Box 34065 Strandherd R.O.
Nepean, ON K2J 5B1
Toll Free 1-855-905-6692 (OOWA) info@oowa.org
www.oowa.org

Ontario Woodlot Association

275 County Road #4, RR 4, Kemptville, ON K0G 1J0
613-258-0110 Toll Free: 888-791-1103
info@ont-woodlot-assoc.org
www.ont-woodlot-assoc.org

Partners in Flight

c/o Canadian Wildlife Service Environment Canada
102 Industrial Place, Penticton, BC, V2A 7C8
250-490-8286
www.cws-scf.ec.gc.ca/mbc-com/default.asp

Resources List

Royal Ontario Museum

100 Queen's Park, Toronto, ON M5S 2C6
416-586-8000 bio-ontario@rom.on.ca
www.rom.on.ca/ontario/risk.php

Society for Ecological Restoration – Ontario Chapter

1017 O Street NW, Washington D.C. 20001 USA
202-299-9518
<http://chapter.ser.org/ontario/>

Severn Sound Environmental Association

67 Fourth St. Midland, ON L4R 3S9
705-527-5166 sseainfo@midland.ca
<http://www.severnsound.ca/>

Tallgrass Ontario

1095 Wonderland Rd. S, Box 21034 RPO Wonderland S.
London, ON, N6K 0C7
519-674-9980 info@tallgrassontario.org
www.tallgrassontario.org

Technical Standards and Safety Authority

14th Fl. Centre Tower, 3300 Bloor St. W., Toronto, ON M8X 2Z4
416-734-3347 Toll Free: 877-682-8772
customerservices@tssa.org
www.tssa.org

Tip of the Mitt Watershed Council

426 Bay Street, Petoskey, Michigan 49770
231-347-1181
<http://www.watershedcouncil.org/>

Toronto's Water Efficiency Plan

1530 Markham Road, 4th Floor, Toronto, ON M1B 3G4
416-392-7000
www.toronto.ca/watereff/plan.htm

Water for Tomorrow

Long Term Water Project Office, Regional Municipality of York
17250 Yonge Street, Box 147, Newmarket, ON L3Y 6Z1
Toll Free: 888-967-5426
www.water4tomorrow.com

