LIFE ON THE BAY

A STEWARDSHIP GUIDE FOR EASTERN GEORGIAN BAY AND INLAND LAKES

United Nations Educational, Scientific and Cultural Organization

GEORGIAN BAY BIOSPHERE MNIDOO GAMII

Land Acknowledgement

The Georgian Bay Mnidoo Gamii Biosphere is situated in the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee, and the Wendat peoples, and is now home to many diverse First Nations, Inuit, and Métis peoples. Its boundaries fall within the Robinson-Huron Treaty of 1850 and the Williams Treaty of 1923. Traditional names for Georgian Bay include: *Mnidoo Gamii* (Spirit Lake) and *Waaseyaagami-wiikwed* (Shining Waters Bay). We are grateful to Indigenous people in this area and acknowledge their ancestors as caretakers of the air, land, and water. We support the United Nations Declaration on the Rights of Indigenous Peoples in this territory and work towards respectful and reciprocal relationships. Miigwech.

With Thanks

This is the second edition of the Life on the Bay Stewardship Guide. We gratefully acknowledge the work of the authors, Steering Committee, and funders of the first edition. Furthermore, we acknowledge that both editions are based on the *Stewardship Guide for the Lake Huron Coastline,* and that sections have been reproduced with the appropriate permission.

Cover photos: Tianna Burke, winter scene and turtle; Olivia Fines, Georgian Bay scene.

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Environment and Climate Change Canada
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Introduction

Background

In 1991, Ontario farmers developed the Environmental Farm Plan (EFP) to address environmental concerns arising from agricultural production. The EFP became the basis for the Lake Huron Stewardship Guide, a program for the Huron-Bruce shorelines and the Bruce Peninsula.

Following the success of that program, the Canadian Committee for the Lake Huron Bi-national Partnership expanded the program to take in other areas of the Lake Huron Basin. The Life on the Bay Stewardship Guide is modeled after this program, but tailored to the unique ecological and community characteristics of eastern Georgian Bay by addressing the risks, challenges, and benefits of living along or near the coastal region.

This is the second edition of the *Life on the Bay Stewardship Guide* produced by the Georgian Bay Mnidoo Gamii Biosphere, it includes updated chapters, resources, and recommendations.

Using This Guide

The objective of the Life on the Bay Stewardship guide is to support healthy ecosystems through the care and protection of shorelines and water, both ground and surface water.

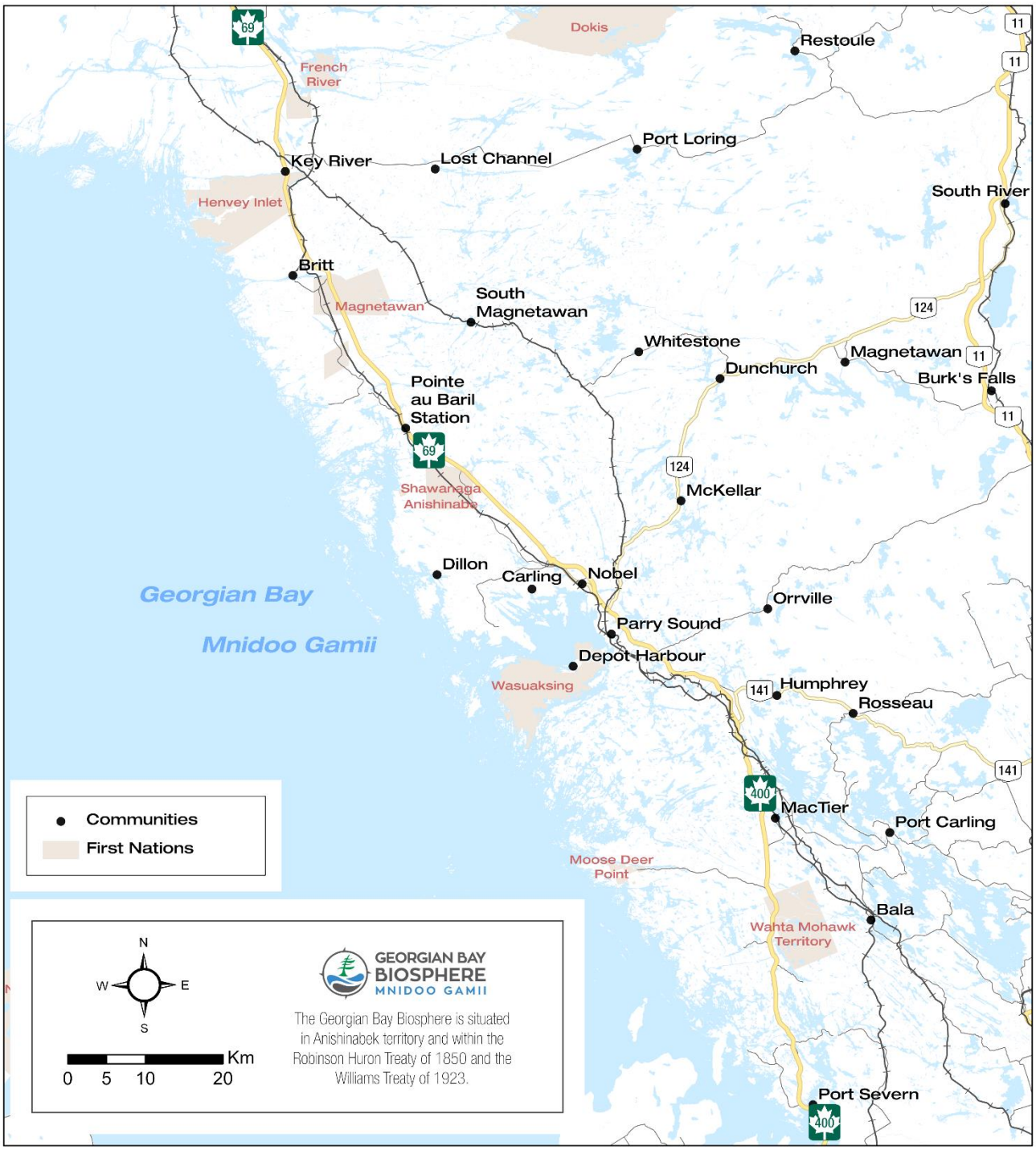
The guide will assist you through an environmental assessment of your property. It will help you to see your property and your actions in a new way. The guide asks you to think about your land, the buildings and structures on it, and how your actions affect the landscape. It asks you to rate how your actions affect the land, species, and water around your property. Finally, it recommends resources to further your understanding of ways of maintaining your property in order to decrease the risks to the natural environment.

The guide has two sections, A Brief History of Eastern Georgian Bay and Worksheets and Action Plans. As you complete the worksheets, you will learn what you are doing well, and where you can modify your actions to better protect the natural environment. The worksheets provide basic background information, helpful tips, and additional resources to further your understanding of each topic.

By taking steps to protect nearby and adjacent land and water, you are making a wise investment as a property owner. You will also help preserve the natural environment for future generations. Every effort counts.

Is This Guide For You?

This guide is intended for residents, cottagers, and property owners along the eastern shore of Georgian Bay and surrounding inland lakes, from Port Severn in the south, to Killarney in the north. This area includes the Georgian Bay Mnidoo Gamii Biosphere, a UNESCO designated area committed to sustainable development and conservation. Applicable chapters of this guide can also be used for non-waterfront properties. The focus is on the communities and landscapes west of Highways 400 and 69, coastal Georgian Bay, and surrounding lakes. Information in this guide is also relevant for areas outside of these boundaries with comparable landscapes and ecosystems.



Eastern Georgian Bay and surrounding region. Scale 1:550,000. Data Sources: Ontario Geohub, Open Government Canada. Generated January 13, 2022. Using: *ArcGIS Pro for Desktop Advanced.*

A Brief History of Eastern Georgian Bay

The Landscape

The Lake Huron-Georgian Bay watershed and shoreline contain some very significant culturally and ecologically rich features and places, the result of thousands of years of evolution, glacial activity, and human development. The following is a brief description of our current landscape.

Along the eastern shore of Georgian Bay lie the 30,000 Islands, the largest freshwater archipelago (or chain of islands) in the world. Georgian Bay is a large bay of Lake Huron, the fifth largest freshwater lake on the planet. Over two hundred km long, Georgian Bay is almost the same size as Lake Ontario and is big enough to be one of the world's 20 largest lakes! Georgian Bay is separated from the rest of Lake Huron by the Bruce Peninsula to the west and Manitoulin Island to the north. It is often referred to as the 'sixth Great Lake' and is noticeably different from Lake Huron in terms of landscape and ecology. It even creates its own weather, waves, and currents.

Sculpted by Ice

The characteristic Georgian Bay landscape was shaped by the sheets of ice that covered the entire Great Lakes Basin 70,000 years ago. The glaciers advanced in four major arms, following the depressions in which the Great Lakes now sit. These lobes extended well beyond the present lakes. In southern Ontario, the three major lobes were associated with the Ontario, Erie, and Huron basins and smaller lobes advanced out of Georgian Bay and the Lake Simcoe lowlands.

About 10,500 years ago, the melting glaciers formed Lake Algonquin, which covered the areas of present-day Lake Michigan, Lake Huron, and Georgian Bay. Lake Algonquin drained through the French and Mattawa River valleys. This outlet was formed when the French and Mattawa valleys, which had been depressed about 200 m by the glaciers, became free of ice. During the initial stages of this outflow to the east, a small lake remained in each of the Michigan, Huron, and Georgian Bay basins. Over a few thousand years, as the melting increased, these small lakes grew in size to form one large lake known as Lake Nipissing.

About 6,000 years ago, the waters of Lake Nipissing drained through three different outlets, the French-Mattawa valleys, the Mississippi, and Lake St. Clair. Uplift in the northeast caused the flow in the French River valley to be reversed. Eventually, the St. Clair route became the only outlet for Lake Nipissing leading to the drainage of all the Great Lakes down the St. Lawrence valley and the shape of the lakes we know today. The Great Lakes basin continues to rise at a rate of 7.5 cm every 100 years.

The glaciers also shaped our landscape as soil was scraped from some areas and glacial till deposited in other areas. The rocks were scoured and polished. Depressions were left that formed lakes and wetlands. The result is our unique landscape of barren rocks, shallow soils, and rolling ridges.

Most of the rocks we admire along the coast today are gneiss (pronounced like *nice*), which were formed one billion years ago during a series of mountain building events which baked, squeezed, stretched, and twisted the rock. These colourful rocks are the eroded remains of those mountains.

Today, the land along Lake Huron and Georgian Bay continues to undergo change, incorporating recreational and residential land uses and activities.

Local Ecology: Natural Neighbourhoods

Georgian Bay's cobalt blue waters, windswept pines, and smooth gneiss rocks captivate both visitors and residents. The beauty of our landscape is renowned through the works of many artists including the Group of Seven.

Ecologically speaking, we live in a rich and diverse neighbourhood. With 30,000 plus islands, over 5,000 km of shoreline, rock barrens, mixed forests, hundreds of lakes and a wealth of wetlands, the eastern Georgian Bay coast has a remarkable variety of habitat and wildlife. The coastal wetlands of Georgian Bay are among the highest quality on the Great Lakes and provide important nesting areas for birds, turtles, and amphibians. This area is recognized as one of the most biologically diverse regions in the province and is globally recognized as a UNESCO world biosphere reserve.

The appeal of retreating to areas with access, or proximity to, bodies of water for rest and relaxation is increasing in popularity. Year-round, rather than seasonal, use of properties is becoming more common. We need to be aware of how our activities and behaviour affect our natural neighbourhood. As individuals and communities, our actions can help maintain and restore habitat. Taking care of the health of the land and water is important for the well being of wildlife and future generations. Taking the time to create your own stewardship action plan is an excellent first step.

Important Habitats in the Region

- Wetlands are the filter between land and water. They act as water purifiers, cleaning surface and groundwater before it enters Georgian Bay. There are four types of wetlands found in our area: swamp, marsh, bog, and fen. This mixture of wetland types provides diverse habitats. It is estimated that more than 2/3 of all lake species reproduce in wetlands and the nearshore areas, including birds, fish, reptiles, and amphibians. Coastal wetlands provide nesting sites for many colonial nesting birds (e.g., herons, terns, gulls).

- Shorelines can provide habitat for uncommon plant species such as Virginia meadow beauty and Carolina yellow-eyed grass. These plants are referred to as Atlantic coastal species and, as the name implies, are normally found along the eastern seaboard. In eastern Georgian Bay they are found in undisturbed areas with gently sloping sand and gravel shorelines where seasonal water level changes naturally occur. Sun exposed cobble beaches and rocky shores provide excellent habitat for reptiles, including northern watersnake and at-risk species such as common map turtle and the eastern foxsnake.

- Vernal pools or spring ponds are temporary, seasonal pools of water. They vary in size but are often quite small. Vernal pools are found in low lying areas and hold water primarily in the spring and sometimes in the fall. Since they lack fish predators, they become essential in the reproduction of many amphibians and insects.

- Rock barrens and rock outcrops are common throughout the region. Only a limited number of plants and animals can survive in these harsh conditions with cycles of heat, cold, and drought. Low growing plants such as lichens and common juniper, along with stunted white pine and red oak, are typical species in this habitat. Birds like the prairie warbler and the common nighthawk favour these areas. Despite the name, the common nighthawk is now considered to be a threatened species. Ontario's only lizard, the five-lined skink, is also concentrated in these areas.

- Large mixed forests are found on large inner islands and along the shoreline. These areas tend to have deeper soils and support tree species such as sugar maple, American beech, hemlock, and yellow birch. The large trees hold water, reduce erosion, and build soil. These forested areas influence the local climate by providing shade, increasing humidity, and reducing winds. Large areas of forest are critical habitat for interior forest species such as the red-shouldered hawk and the pileated woodpecker. The forests also provide habitat for white-tailed deer, black bear, wolf species, and fishers.

Get Involved!

Help monitor wetland water levels through the iwetland citizen science project! Monitoring stations are located throughout the region.

Learn more: www.ecohydrology.mcmaster.ca/iwetland.html

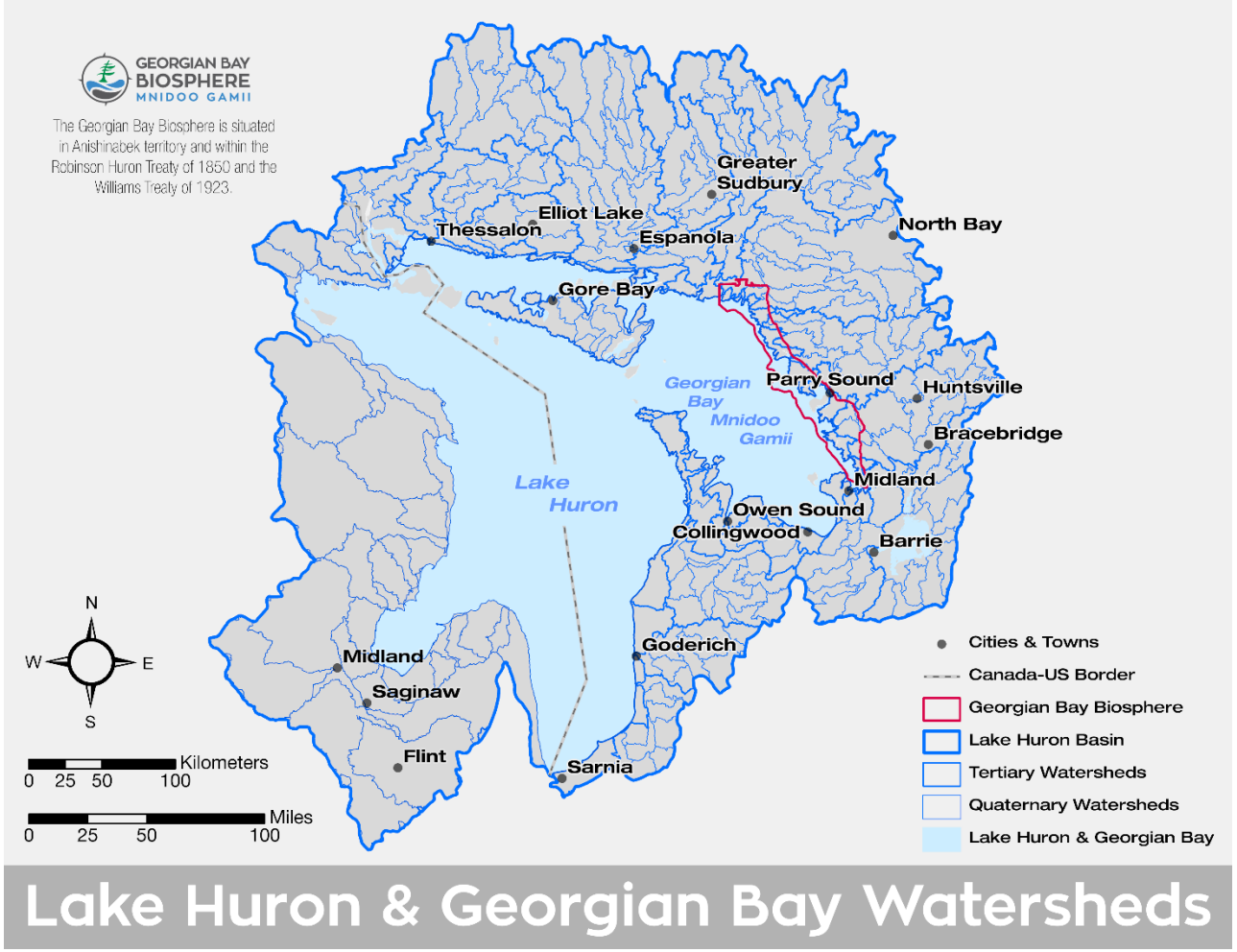
Broad Scale: A Watershed Perspective

What is a Watershed?

A watershed is the entire land and water area that drains into a body of water such as an ocean, lake, river, or pond. 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 into the same water body.

On its journey downwards, the water within a watershed can pass through different landscape features such as streams, rivers, lakes, bogs, and marshes. The Lake Huron-Georgian Bay watershed forms part of the larger Great Lakes-St. Lawrence watershed.

The first step in protecting aquatic ecosystems is to better understand your place in this watershed. Become familiar with local natural features and understand how they function in relation to this watershed and to aquatic health. Your actions and those of your neighbours affect the aquatic health of the watershed in which you live.



Lake Huron and Georgian Bay watersheds. Scale 1:3,000,000. Data Sources: Ontario Geohub, USGS TNM – National Hydrography Dataset, Open Government Canada. Generated January 13, 2022. Using: *ArcGIS Pro for Desktop Advanced.*

Outer Islands of Eastern Georgian Bay	Intermediate Islands of Eastern Georgian Bay	Inner Islands, Shorelines, & Adjacent Lakes
Generally small, low islands (<1 hectare) that are exposed to ice, wind, and water erosion. Can be vulnerable to high water levels and tend to have a low level of biodiversity.	Medium-sized (1-5 hectares) and sheltered by outer islands. Provide "stepping stones" for migrating species and often have a high level of biodiversity.	Includes the lee side of large islands, smaller inland lakes, and other mainland shoreline areas. Relatively protected from storms and can have the highest level of biodiversity.
		
Habitat Types • Bedrock shoreline and rock barrens	**Habitat Types** • Wetlands including small marshes (on lee side), spring ponds, small "perched" bogs (rocky depressions with sphagnum moss), and some forest cover • Bedrock/cobble, small natural sand beaches with rock outcrops/barrens	**Habitat Types** • All wetland types and spring ponds • Bedrock/cobble and natural sand beaches with rock outcrops/barrens • Large mixed forests
Typical Species • Limited plant species, e.g. lichens • Coldwater fish species including lake trout • Colonial nesting birds, e.g. gulls, terns, cormorants	**Typical Species** • Tree species such as white pine and red oak • Some small-medium sized mammals • Common amphibians and reptile species along with endangered spotted turtle and eastern fox snakes • Many song and shoreline birds	**Typical Species** • Significant fish spawning & rearing habitat • Variety of mammals including moose and bear • High diversity of reptiles & amphibians • Range of birds including forest interior species • High number of plant species, including rare Atlantic coastal species
Human Influence • Generally limited impact, minimal use by recreational boaters/fishers • Some outer islands are being developed • Colonial nesting birds are susceptible to disturbance by people and their pets during nesting season	**Human Influence** • Increasing level of impact from cottage development, boat traffic, and recreational camping	**Human Influence** • High level of impact on water quality and wildlife habitat with increased development

Natural Influences

Natural disturbances have always been part of the ecology of the eastern Georgian Bay coast.

- Wind, water, and ice continue to shape this area. Western facing shores and small islands are particularly vulnerable to these forces. Soil and plants are sparse to non-existent on these exposed sites. Inland, weather events such as strong winds and ice storms create openings in the forest canopy which can benefit species such as deer. The decaying downed trees provide habitat for a range of species from fungi and insects to small mammals, snakes, and salamanders.

- Naturally occurring cycles of insect infestations, such as the forest tent caterpillar, also influence the forest. The feeding caterpillars weed out young and weak trees. The standing dead trees provide habitat for species like woodpeckers and provide nesting sites for other birds and mammals.

- Beavers play an essential role in the ecology of this area. When they cut trees and build dams, it changes both the type of aquatic habitat and forest available. When beavers flood an area, they create important habitat for many species of fish, birds, amphibians, reptiles, and plants. Mammals such as moose and river otter also benefit from these ponds. When the ponds drain, the resulting beaver meadows are areas of nutrient rich soil which foster a flush of new plant growth.

- Water levels in Georgian Bay fluctuate both seasonally and over multiple-year cycles with weather patterns having a significant influence. For example, a mild winter leads to higher evaporation rates in the spring, late fall, and winter. Naturally occurring, cyclic water-level fluctuations are essential for the maintenance of high-quality coastal wetlands.

Credit: Ted Krug

Human Influences

The landscape of eastern Georgian Bay has benefited from countless acts of stewardship, caretaking, and restoration carried out by First Nations, community groups, governments, and individuals. However, human actions have also resulted in significant changes to the landscape and have created new challenges for the present and future.

- The first significant landscape changes began in the mid 1800s with extensive logging. By the early 1900s much of this area was deforested. High intensity fires were common since much of the slash was left on the ground. These fires damaged the shallow soils and led to increased erosion. The forests that we see today are secondary growth.

- Commercial fishing followed a similar history to the logging industry. In the late 1800s approximately two million pounds of fish (lake whitefish, walleye, and lake trout) were harvested per year in Georgian Bay. By 1960, the harvest was reduced to 98 thousand pounds. Unsustainable harvests and the introduction of invasive sea lamprey led to the near-collapse of commercial fishing in Georgian Bay.

- The "cottage industry" began in the late 1800s and continues to grow in eastern Georgian Bay. Recreational boating, camping, and fishing are popular activities. This has led to an increase in habitat loss and fragmentation as more buildings, roads, and trails are constructed. Species that are particularly sensitive to habitat fragmentation include Algonquin wolf (Special Concern), lynx, red-shouldered hawk, and several species of reptiles. Development can restrict the natural movement patterns of wildlife leading to isolated populations that are vulnerable to a number of stresses including in-breeding. Other impacts associated with recreational and residential property development include the discharge of sewage and other forms of pollution, an increase in non-native species, and the death of wildlife due to pets, vehicles, and boats. Island ecosystems can be particularly vulnerable to human disturbance. A number of bird species, such as loons, herons, and terns will not nest successfully when people frequent an area.

- There are now more than 180 non-native and invasive species in the Great Lakes ecosystem. Many of these species have been introduced by ocean going ships dumping ballast water into the Great Lakes. Invasive species lack natural predators and may displace some native species. They can also bring foreign diseases that negatively impact native species. Once established, invasive species can be very expensive to control and almost impossible to eradicate.

- There have always been changes in the Earth's climate, but in the past 100 years human activities have increased the amount of carbon dioxide in the atmosphere. This is causing the climate to change very quickly. Scientists are researching how climate change will affect people and nature in the region. For example, we know with less ice on Georgian Bay in the winter, we has increased evaporation which affect snow and rain. Research shows surface water temperatures are currently warming up about 1°C every 10 years which has unprecedented effects on the aquatic ecosystem. Changes in spring and fall temperatures will affect when animals start hibernation or migration. Many animals and plants cannot adapt to changes if they happen quickly.

Want more information about climate change and predicted impacts for Ontario?

Check out the Climate Atlas of Canada: www.climateatlas.ca

Human Influences (continued)

- Recreational and commercial boating impact water quality with combustion residues from marine engines, oil and gasoline spills, and the discharge of contaminated water into the Bay. Boating and recreational vehicles also emit a high amount of carbon dioxide, contributing to climate change.

- Nuisance algal blooms, which can be associated with human impact, have occurred in areas such as Sturgeon Bay and a number of inland lakes. The presence of blue-green algae means that contact with the water is not safe.

- Compared with the lower Great Lakes, Lake Huron and Georgian Bay have relatively good water quality. In the past, people were comfortable taking drinking water directly from Georgian Bay; however, it is strongly recommended that all drinking water be treated. The greatest threat to drinking water safety comes from tiny microbes, including bacteria, viruses, and parasites found in human and animal waste. Future increases in the number of homes, cottages, marinas, and boats on local water bodies may reduce water quality. Water quality is jeopardized by nutrient leaching from septic systems, shoreline erosion, runoff from fertilizers, herbicides and pesticides on lawns, and spills of solvents or other toxic materials.

Resource List

Conservation & Stewardship

- Georgian Bay Mnidoo Gamii Biosphere
  www.gbbr.ca
- Canadian Biospheres
  www.biospherecanada.ca
- Maamwi Anjiakiziwin - Together, Land, Renewal, Life
  maamwigeorgianbay.ca
- State of the Bay
  www.stateofthebay.ca
- Muskoka Watershed Council
  www.muskokawatershed.org
- Invading Species
  www.invadingspecies.com/invaders
- Ontario Stewardship
  www.ontariostewardship.org
- Living by Water
  www.livingbywater.ca

Cultural

- Treaty of 1850 Robinson Huron Waawiindaamaagewin
  waawiindamaagewin.com
- Cultural Resource List
  www.gbbr.ca/cultural-resources
- West Parry Sound District Museum
  www.wpsdm.com

Government

- Fisheries and Oceans Canada (Ontario & prairie region)
  https://www.dfo-mpo.gc.ca/regions/ontario-prairie/index-eng.html#offices-bureaux
- Ministry of Natural Resources
  www.ontario.ca/page/ministry-northern-development-mines-natural-resources-forestry
- Georgian Bay Islands National Park
  www.pc.gc.ca/pn-np/on/georg/index

How to Use This Guide

Worksheets & Action Plans

The guide includes 11 worksheets to help you evaluate your activities on your property. Pick which worksheets apply to your property.

Ratings

Read the introductory page and then begin going through the associated worksheets for each chapter. For the topics that apply to you, give yourself a rating in the right-hand column that best describes your property. For topics that don't apply, write the letters 'NA' (not applicable) in the rating box. If you don't know how you rate, mark the box with a question mark to remind yourself to get the necessary information.

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

Best	4
Good	3
Fair	2
Poor	1

The Best (4) rating describes conditions that protect the environment and water quality or have the lowest potential for environmental damage. The Poor (1) rating describes conditions that have the highest potential to affect the environment negatively and which require remediation. Please note that ***bold, italicized*** text indicates conditions that may violate provincial legislation. Federal laws or municipal bylaws may also apply. Contact your local municipal government office for more information.

The purpose of this rating system is not to tally the numbers in the right-hand column, but to identify areas in need of improvement. A rating of 1 or 2 indicates areas of your property management in need of improvement to reduce the potential for environmental damage and water contamination. These are the topic areas you should address in an action plan.

Action Plan

An action plan form is found at the end of each worksheet section. Often, the information in columns 4 and 3 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. Remember, this is YOUR action plan. It must suit you and your property.

Example of a completed worksheet question:

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
AVOID ATTRACTING NUISANCE WILDLIFE					
4. Food and waste scraps	All food/waste (including pet food and bird seed) is stored indoors in rodent/bear proof containers. Recyclables are rinsed and stored. Waste is taken to sanitary landfill. Compost is properly maintained. BBQ is cleaned and stored in a secure area.	Garbage is temporarily stored outside, but in rodent/bear proof containers. Waste is taken to sanitary landfill.	Empty food and drink containers are rinsed. Garbage is stored in sealed containers in an outbuilding. Waste is taken to sanitary landfill.	Compost is improperly maintained, or rodent/bear proof containers are not used. Waste is improperly disposed of.	2

Example of a completed action plan:

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
Living with wildlife Topic 4	Food waste and scraps	2	Research options for composting and bear proof storage of garbage.	Purchase and properly install or build a bear proof garbage container or store garbage in a sealed container in a basement. Recyclables are stored in a secure fashion. Compost is carefully managed.

GETTING TO KNOW YOUR PROPERTY

Worksheet #1 - Getting to Know Your Property

Use this worksheet to gain a better understanding of your property and its features.

Why Should You Be Concerned?

- In this region, you are your own LAND AND WATER STEWARD!
- Upstream practices WILL affect your property.
- Provincial regulations and municipal bylaws are designed to protect shorelines and waterways, these can restrict how you use your property.
- A property's soil and landforms can influence water quality. Your development and use of your property can affect its environmental quality, which may impact value and your enjoyment of it.

What Can You Do?

1. You (or your contractor or other legal representative) can contact your local municipality or provincial government office to learn about any alteration restrictions (especially shorelines) and how these may affect any future projects on your property.

2. Talk with long-time residents to learn more about how the property may be affected by natural processes and potential hazards (e.g. severe storms, winter conditions, flooding).

3. Make a map of your property and store it with other important property and household files. Identify physical and environmental characteristics such as soil type and depth, vegetation communities, and ponding areas. Learn how these can affect the vulnerability of your property to natural hazards and contribute to a healthy ecosystem on and off your property. Accept these natural conditions and modify your activities accordingly to protect yourself, your property, and your shoreline.

4. Determine if current services (e.g. water, sewage) are adequate for your planned/intended use of the property through consultation with your municipality or other applicable entity.

5. Look beyond your property lines with a view to identifying the potential for erosion and the contamination of surface water and groundwater.

Mapping Your Property

Why Make a Map?

A map will help you understand the natural characteristics of your property and how your development and use of your property may affect them. It will also serve as a written record of your property's features, which can be a valuable tool to revisit in the future. Sometimes a small change in your actions is all that is needed to avoid problems. A map can help you identify potential risks to water quality and ensure property use is compatible with legal restrictions.

You could draw your map on standard graph paper, enlarge a copy of the survey of your property, or download an image from an online map provider such as the West Parry Sound Geography Network.

What to include on your map?

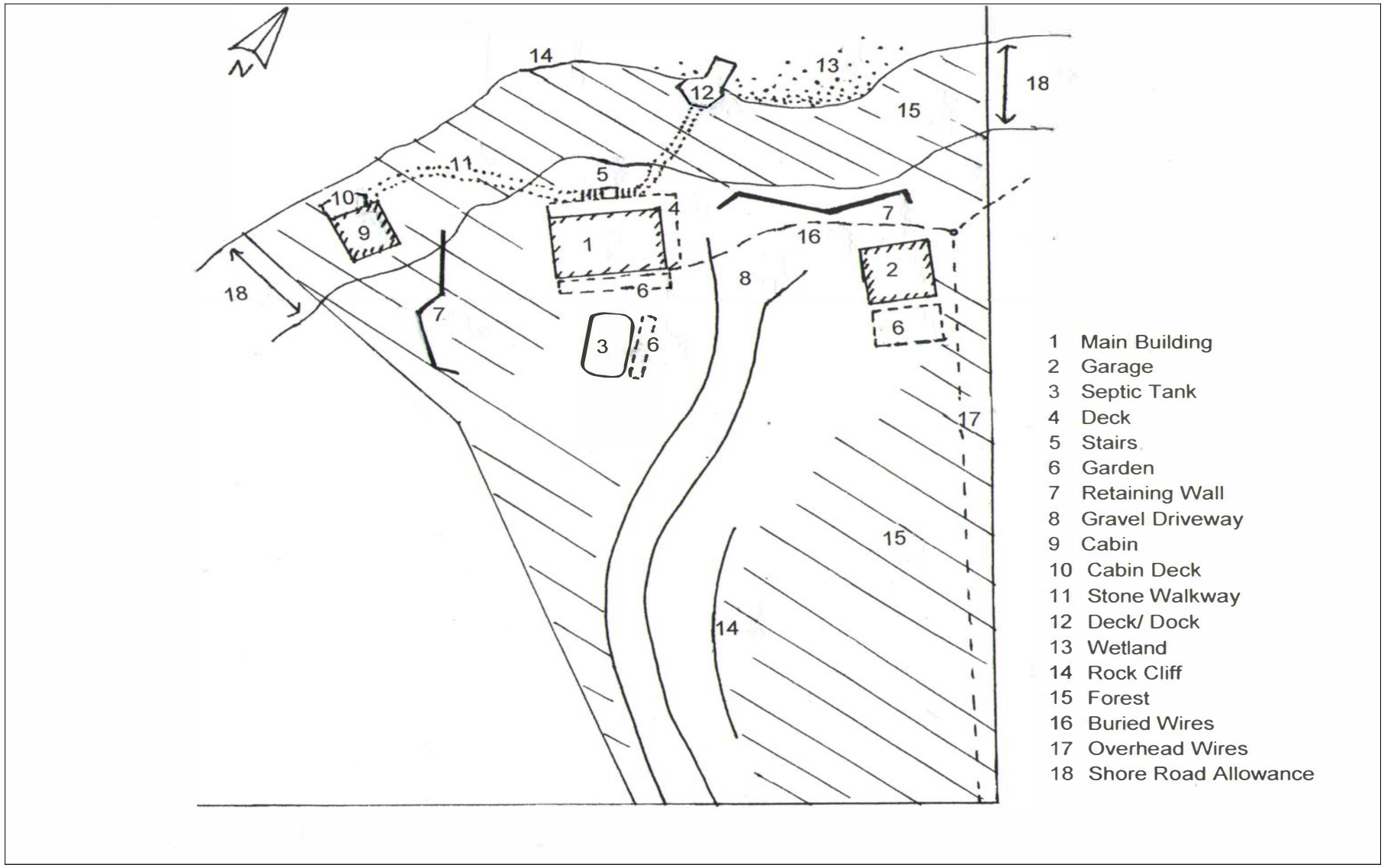
1. Natural Features
    - Wetlands, streams, and ponding areas (seasonal and year-round)
    - Naturally vegetated areas including types of plants (trees, shrubs, etc.)
    - Rock outcrops
    - Aquatic areas with boulders or aquatic plants

2. Proposed or Existing Structures
    - Cottage, home, and other buildings
    - Orientation of all living spaces
    - Docks and boathouses
    - Roads, driveways, parking, and/or other hard/compacted surfaces
    - Septic system leaching bed, outhouses
    - Foundation drains and outlets, all drinking wells (including dry or abandoned wells) or location of surface water intake
    - Eavestrough drains, direction of drainage from them
    - Sump pump drains, swimming pool backwash drain, area used for swimming pool or hot tub drainage water
    - Dog house/dog run, chicken coops, livestock areas
    - Hazardous materials storage (paints, solvents, etc.) and any underground or aboveground storage tanks of fuel oil, gasoline, or other petroleum product
    - Any buried cables/lines (e.g. hydro, water lines, cable, phone) or underground infrastructure including fuel tanks

3. Landscaped Features
    - Trees, flower beds, lawns, vegetable garden(s), or any other cultivated area(s)
    - Area for snow piles and snowmelt

4. Legal Considerations
    - Municipal zoning
    - Property setbacks, conservation easements, floodplain restrictions, shoreline road allowances, and rights-of-way
    - Environmentally Sensitive Areas (ESA) - designated zones of valuable ecological features or habitat that need special protection due to their surrounding landscape, wildlife, or historical value
    - **Note:** The government retains ownership of land to the high watermark, erection of fences or other obstructions below this point is illegal

Making a Map of Your Property (example)



Resource List

Conservation & Stewardship

- Building in the Biosphere Habitat Screening Tool
  www.gbbr.ca/building-in-the-biosphere-habitat-screening-tool

- North Bay Mattawa Conservation Authority
  www.nbmca.ca/planning-permits

Government

- Ministry of Environment, Conservation, and Parks
  www.ene.gov.on.ca

- Environmental Permissions
  www.ontario.ca/page/environmental-permissions

- Zoning Bylaws
  www.ontario.ca/document/citizens-guide-land-use-planning/zoning-bylaws

Maps

- West Parry Sound Geography Network
  www.wpsgn.ca

- Muskoka Geo Hub
  https://map.muskoka.on.ca

- Ontario GeoHub
  https://geohub.lio.gov.on.ca/

CONSTRUCTION ON LAND

Worksheet #2 - Construction on Land

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

Why Should You Be Concerned?

- Your property is part of the larger landscape. Any project you undertake will not only affect your immediate neighbours, but also have important consequences for the land and water farther away.

- There may be existing legislation, regulations, and zoning that affect your project plans. Check with your municipal office and NDMNRF office to ensure that your project is permissible.

- You should ensure that your project is completely contained within your property. Often, property lines are not readily apparent or contain covenants with the Crown, easements, and/or rights of way. Check or have a lawyer check with the Land Registry Office for your area to see if your property has any of these constraints that may affect where you may build.

- Many lots on Georgian Bay have, or had, an original shore road allowance which means you may not own the waterfront.

- Shorelines and lake bottoms along the shore are protected under federal legislation including, but not limited to, the Fisheries Act. Under this legislation, the onus falls on water adjacent property owners to ensure that they do not “harmfully alter, disrupt, or destroy” fish habitat.

What Can You Do?

1. Make a plan including an inventory of existing plants, features, and structures. (Helpful hint: you could make a copy of your property map from Chapter 1). Include a photo log of your property from different angles. This will help your planning in the offseason. Strive to minimize your impact on existing trees and other natural features.

2. Start early and be organized. The permitting process may take more than several months.

3. Protect yourself: keep records, including permit applications, and take photos throughout the construction process. These can be useful if disputes should arise with agencies or neighbours in the future.

4. Ensure that all construction wastes are properly managed.

5. Be a land steward: contact your local NDMNRF office if you witness or observe shoreline alterations or potential environmental damage. You can call the NDMNRF toll-free reporting line (24 hours, 7 days a week) or for anonymity, contact Crime Stoppers. See resources list for information.

Construction on Land: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PERMITS & REGULATIONS					
1. **Knowledge and understanding of the application process**	Planning begins at least one year before work is to begin. Check with local municipality to determine if a permit is required.			No planning involved. Expect an immediate start. **Necessary permits are not obtained.*	☐
PREPARING A SITE PLAN					
2. **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.	☐
Knowledge of the impact of construction on existing natural features of the property	Proposed construction will not harm sensitive natural 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.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PREPARING A SITE PLAN					
3. **Size and location of various activity areas**	Intensively used areas and paths are concentrated and located away from the water's edge, away from steep slopes, and behind vegetation (if possible). Paths follow natural contours. Proposed construction areas are cognizant and respectful of where neighbours have located their existing structures/activity areas.		Intensively used areas are not near surface water but in locations that might cause erosion, affect natural water courses, and/or affect areas of vegetation.	Intensively used areas are near surface water, in locations which will result in erosion, and will significantly diminish existing natural vegetation. No thought is given to the impact of structures and/or activity areas on neighbours, existing vegetation, waterfowl, or animals.	
4. **Wind and sun**	Where possible, habitable structures are sheltered by existing vegetation so as to provide a sun shelter and resultant cooling. Permanent residences are situated to benefit from passive solar gain in winter.	Where possible, habitable structures are located in areas with minimal shelter, but where native tree species for wind and sun protection are planned.		No consideration given to location of structures relative to wind and sun protection.	

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION					
5. **Minimize erosion and/or compaction**	Project area is divided into smaller projects and completed sequentially.	Only the area necessary for the project is cleared.	Large areas are cleared but vegetation is restored.	Entire property is cleared at once.	☐
	Where it exists, a buffer strip of natural vegetation as wide as possible is retained along shorelines.	Project plans require minimal removal of trees and shrubs in buffer strip.	Most vegetation in buffer strip is maintained but undercutting of limbs and clearing of underbrush occurs in large areas.	Buffer strip of natural vegetation is completely removed.	☐
	Project does not interfere with existing surface runoff patterns.		Project interferes minimally with existing surface runoff patterns.	Project interferes with existing surface runoff patterns.	☐
	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 and/or mulch.	Bare soil is left exposed.	☐
	Use of machinery is minimal. Machinery used is appropriate for the size of the job.	Machinery is used but some measures are taken to utilize existing cleared corridors.	There is indiscriminate use of machinery and new corridors through vegetation are cut for convenience.	Heavy machinery is used excessively with significant clearing of vegetation.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION					
6. Location of construction facilities and access	All construction materials are stored away from downspout openings and watercourses.	All construction materials are stored away from downspout openings.	Only hazardous construction materials are stored away from downspout openings and watercourses.	Construction materials are stored without regard for runoff patterns.	
	Vehicle access is restricted to designated areas to minimize site disturbance and soil compaction.	Vehicle access is kept away from steep edges, shorelines, slopes, and other sensitive areas.	Concern about compaction is limited to septic leaching bed.	Vehicles are parked or driven throughout site.	
	Toilet facilities are available.			Toilet facilities are not available.	
	Shoreline and watercourse features are not interfered with by the location of facilities and access.		The location of facilities and access minimally interfere with shoreline or watercourse features.	**Location of facilities and access interfere with shoreline and watercourse features.*	

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION					
7. **Protecting existing features**	Check if there is a municipal bylaw that protects the trees on your property. Design or plan accordingly.	Develop a plan or design first, then check if there is a municipal bylaw that protects the trees on your property. Proceed accordingly.		**Cut trees down on your property without checking if a municipal tree-cutting bylaw exists.*	☐
	Protect trees from damage caused by digging and heavy machinery. Avoid removal of any trees for construction.	Protect trees from damage caused by digging and heavy machinery. Clearly mark those trees that need to be felled to avoid unnecessary tree removal.	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.	☐
	Soil grade is not altered. Soil around trees is not compacted.	Soil grade is not altered within 3 metres (10 feet) of dripline of any trees to be preserved. There is minimal soil compaction near dripline.	Soil grade is partially altered in sections within dripline. Materials are stored within the dripline for limited periods of time.	Soil grade level within the dripline is permanently altered from pre-construction level. Soil is compacted around trees.	☐
	Septic bed, well(s), and environmentally sensitive features such as wetlands are protected from construction activity. Distance requirements are respected.	Septic bed, well(s), and environmentally sensitive features such as wetlands are protected from construction activity.	Septic bed and well(s) are protected from construction activity.	**Distance requirements are not considered in protected septic bed, well, or environmentally sensitive features.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION					
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. Awareness of the source of soil and/or fill. No excess or unnecessary fill is used. Approval is obtained.	Limited use of off-site soil and/or fill. No awareness of the source of soil and/or fill. Approval is obtained.	Excessive use of off-site soil and/or fill. **Fill is dumped in any fill-regulated area such as a shoreline.*	☐
9. **Blasting**	No blasting or removal of rock by any means.	Limited fracturing and removal of rock using a non-explosive demolition agent.	Limited blasting is completed. Blasting mats are used. Blasted rock is not placed in wetlands or in the nearshore area.	Multiple blasts are completed. *Blast rock is dumped in any fill-regulated area such as a shoreline.*	☐
10. **Construction materials**	Local non-hazardous materials used where possible. Materials obtained in a responsible and appropriate manner.	Non-hazardous materials used where possible. No use of oil-based paints or varnishes.	Minimal use of hazardous materials where necessary.	Hazardous materials are used. Materials sourced unnecessarily from far away or from environmentally damaging production practices.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION					
11. Construction waste	Local municipality is contacted before construction to learn how to properly sort and dispose of construction waste. 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 prevent paint or solvents from getting into wastewater, septic system, or open surface water.	**Waste material or excess fill is dumped into open surface water,* **Waste material is burned (including in burn barrels).*	☐
	Waste containers are clearly labelled and waste materials are recycled or repurposed where possible.	Waste containers are clearly labelled.		Waste is not sorted and recycling of material is not a priority.	☐
	Absolutely no concrete or construction wash water flows into open surface water, towards trees, or into septic system.			**Concrete or construction wash water is allowed to flow into open surface water or is drained into septic systems.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Helpful Hints

Permits and Regulations

- Make sure you review an updated legal survey of your property before you begin construction. Property boundaries are often difficult to find.

- The Ontario Endangered Species Act, Section 9-1 states that “No person shall, kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species”. Section 10-1 states that “No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species”.

Preparing a Site Plan

- Hire qualified contractors who will respect your land and plans. Use written contracts to clearly outline responsibilities and expectations.

During Construction

- Protect all soil/sand piles from erosion and avoid construction during heavy rains (i.e. cover with tarps and/or locate in sheltered areas).

- Place straw bales around vulnerable features such as wetlands and between sand/dirt piles and shorelines. Heavy duty silt fencing can trap and kill snakes, it should only be used if maintained in an upright position and inspected daily.

- Plan to be on-site any time trees are to be removed.

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

- Keep in mind that the volume of rock displaced by blasting is 2-3 times greater than in its original state.

- Paint of any kind is a hazardous substance. Take unwanted paint to your local hazardous waste depot or return it to the place of purchase. It is illegal to pour paints or thinners into runoff channels or surface water. Inform your painting contractor of your need for compliance.

Resources List

Government

- Report Natural Resource Violations
  www.ontario.ca/page/solve-natural-resource-case

- How Species at Risk are Protected
  www.ontario.ca/page/how-species-risk-are-protected

- Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF)
  www.ontario.ca/page/ministry-northern-development-mines-natural-resources-forestry

- Ontario Building Codes
  www.ontario.ca/page/ontarios-building-code

- Ontario Building Permits
  www.ontario.ca/document/citizens-guide-land-use-planning/building-permits

- Land Registry
  www.ontario.ca/page/land-registry-offices-lro

- Outdoor Fire Rules and Permits
  www.ontario.ca/page/outdoor-fire-rules-and-permits

Conservation & Stewardship

- Building in the Biosphere Habitat Screening Tool
  www.gbbr.ca/building-in-the-biosphere-habitat-screening-tool

- Living Alongside the Massasauga Rattlesnake
  www.youtube.com/watch?v=79qVL-ogUks

- Georgian Bay Biosphere Species at Risk Database
  www.gbbr.ca/species-at-risk

- Green Building Canada
  www.greenbuildingcanada.ca/green-building-guide

Action Plan Worksheet #2

Construction on Land

Any ratings of 1 or 2 indicate areas where your construction project may need to be changed to reduce the potential for environmental damage and water contamination. Use the information from the worksheet and the resource list to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
4	*Wind and sun*	*1*	*Identify where and which native tree species you will plant to gain protection from wind/sun and allow for winter solar gain.*	*Purchase, plant and care for trees, particularly their watering needs.*

CONSTRUCTION IN OR NEAR WATER

Worksheet #3 - Construction in or Near Water

Use this worksheet to assess opportunities and constraints for planned construction in or near the water.

Why Should You Be Concerned?

- Your shoreline is part of a larger landscape. The “ribbon of life” where the water meets the land provides vital habitat for many wildlife species, including spawning habitat for fish. Any project you undertake will not only affect you and your immediate neighbours, but also impact people and wildlife farther away.

- The water level of Georgian Bay fluctuates greatly over seasons and years. Even in one day, a change in wind direction can cause water levels to fluctuate by 20 cm (8 in). Inland lakes can also be susceptible to considerable swings in water levels depending on the type of water level management (e.g. hydro dam, beaver dam). It is important to keep these facts in mind when planning to build in or near water.

- Under low water conditions, much of your shoreline may actually be a dry lakebed. Almost all lakebed is owned by the Crown including these dry portions. You should confirm ownership with your municipality before starting construction.

- Shorelines and lakebeds along the shore are protected under the Federal Fisheries Act. It is your responsibility to ensure that you do not “harmfully alter, disrupt, or destroy” fish habitat. Offenders can be fined or face criminal charges and be required to restore the shoreline to its previous state at their own expense. Shorelines are also protected by the Public Lands Act which outlines the types of work that require a permit. Permits may be required from your municipality, the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF), and/or Fisheries and Oceans Canada (DFO).

What Can You Do?

1. Make a plan including an inventory of weed beds, gravel and rock areas, natural sand beaches, and old crib and dock ruins. (Helpful hint: you could make a copy of your property map from Chapter 1).

2. Before making any alterations to your shoreline such as building, repairing, or renovating a dock or boathouse:
   - Contact your municipality to determine if you need a building permit.
   - Contact the NDMNRF to determine if you require a work permit (issued under the Public Lands Act).
   - Determine whether your project requires DFO review.
   - Research ways to minimize your impact on aquatic habitat.

3. Protect yourself: keep records, including permit applications, and take photos throughout the construction process. These can be useful if disputes should arise with agencies or neighbours in the future.

4. Be a land and water steward. Keep the shoreline in its natural condition; even small alterations can have negative impacts. Fish and other aquatic life need weed and rock beds. Natural shorelines also reduce the risk of erosion and, as a result, help protect water quality.

5. It is wise to estimate how storm events might affect your docks and boathouses and plan accordingly.

Construction in or Near Water: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PERMITS & REGULATIONS					
1. Knowledge and understanding of application process	Planning begins the year before work is to begin. Check with local municipality and provincial and federal authorities regarding permit requirements.		No planning involved and an immediate start expected.	**Permit required but not obtained.*	
PREPARING A SITE PLAN					
2. Knowledge of shore and underwater features of the site	Thorough knowledge of all natural features, including history of water levels.	Identification of sensitive natural areas.	General idea of natural features.	No knowledge of natural or sensitive features.	
Knowledge of effect of work on natural features	Construction done in a manner that has the least impact on sensitive and important aquatic features, and accounts for water level fluctuations.	Aware of potential impacts, some precautions taken into consideration. Construction is of primary concern.	Aware of potential impact but construction goes ahead. Few precautions taken.	No knowledge of how construction will affect sensitive and important aquatic features and no attempt is made to minimize impacts.	
3. Plan for access to water	Minimal path clearing and/or vegetation removal planned and stairs or bridges used in steep areas. Sensitive natural features avoided.	Minimal path clearing with bridges over sensitive natural features.	Multiple pathways planned with considerable under brushing and vegetation removal. No avoidance of natural features.	No fixed path and machines and people move around damaging large patches of natural areas.	

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
PREPARING A SITE PLAN					
4. Plan for effects of storms	Thorough knowledge of direction and expected strength of prevailing winds and seasonal storms. Dock and other structures planned and constructed accordingly.	Good knowledge of wind strength and direction.	Some knowledge of prevailing winds.	No knowledge of winds or storm directions/strength. Dock planned without consideration of winds.	
5. Avoiding important habitats	Docks, boathouses, and other structures are located well away from wetland features and away from large underwater cobble or boulder areas.	Docks, boathouses, and other structures are located outside of wetland features and away from large underwater cobble or boulder areas but with little buffering provided.	Docks are located in wetland features and over underwater cobble or boulder areas, but boathouses are located outside these areas.	No concern for underwater habitat in the placement of docks and boathouses.	
DESIGN AND CONSTRUCTION					
6. Assessing and building what you need	The size of docks and boathouses are minimized to reduce environmental and visual impact.			Large extensive docks and boathouse constructed; docks used as large recreational areas.	
7. Using environmentally friendly designs	Docks are constructed with a minimal footprint size and some light is able to filter through to the water below.	Docks are constructed with a small footprint size or floating docks with anchors are used. Minimal light filters through.		Docks are constructed with a large footprint on the bottom and wide decks so that no light filtration can occur under docks.	

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DESIGN AND CONSTRUCTION					
8. **Materials used**	Environmentally friendly materials (e.g. FSC wood) are used for all aspects of construction that will not leach chemicals into the environment. Styrofoam blocks are not used to float the dock.	Those components of the dock/boathouse which are exposed to water are non-polluting and non-toxic.		Docks are constructed with materials that are potentially toxic to the environment.	

Helpful Hints

Permits and Regulations

- Requirements around permitting can change over time and from region to region. Always check with municipal, provincial, and federal authorities to ensure your proposed work is in compliance with all regulations and you have any necessary permits.

Preparing a Site Plan

- A changing climate will result in more frequent and intense weather events in the region. Natural shorelines are not only more visually appealing than altered shorelines, but they are also better able to absorb wave action resulting from more intense wind.

Design and Construction

- Eastern white cedar is an excellent choice of wood for dock construction.

- Wood that is Forest Stewardship Council (FSC) certified is managed, harvested, and milled in an environmentally friendly manner. Westwind Forest Stewardship can be contacted for more information about this excellent choice for local wood products.

- Polystyrene foam breaks down over time as it is exposed to sun, wind, waves, ice, and animals. Pieces of polystyrene foam persist in the environment and pose a risk to fish and wildlife. With the passing of Bill 228: Keeping Polystyrene Out of Ontario's Lakes and Rivers Act, any polystyrene foam used in the construction of docks and rafts must be fully encapsulated.

Resource List

Government

- Crown Land Work Permit
  www.ontario.ca/page/crown-land-work-permits
- Review of Projects Near Water
  www.dfo-mpo.gc.ca/pnw-ppe/reviews-revues/request-review-demande-d-examen-001-eng.html
- Public Lands Act
  www.ontario.ca/laws/statute/90p43
- Fish and Fish Habitat Protection Policy Statement
  https://waves-vagues.dfo-mpo.gc.ca/Library/40971193.pdf
- Standards and Codes of Practice
  www.dfo-mpo.gc.ca/pnw-ppe/practice-practique-eng.html

Conservation & Stewardship

- Building in the Biosphere Habitat Screening Tool
  www.gbbr.ca/building-in-the-biosphere-habitat-screening-tool
- Problems with Polystyrene Foam – Georgian Bay Forever
  www.georgianbayforever.org/Polystyrene/GBFReportPSFoam
- Muskoka Water Web
  www.muskokawaterweb.ca/index.php
- Watersheds Canada
  www.watersheds.ca
- Westwind Forest Stewardship
  www.westwindforest.ca

Action Plan Worksheet #3

Construction in or Near Water

Any ratings of 1 or 2 indicate areas where your property management needs to be changed to reduce the potential for environmental damage and water contamination. Use the information from the worksheet and the resource list to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
3	*Plan for access to water*	*2*	*Identify where paths can be consolidated or removed especially those near sensitive natural features, e.g. stream edge.*	*Reduce the number of paths and replant previously cleared areas with native plants.*

WATER MANAGEMENT

Worksheet #4a - Water Runoff

Use this worksheet to assess 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 ground, and sloped lawns all contribute to the volume of water runoff because they obstruct or prevent water absorption into the ground.
- Runoff carries soil, pet waste, salt, pesticides, fertilizers, oil and grease, fuels, litter, and other pollutants into waterbodies.
- Without vegetation along shorelines acting as a natural barrier, contaminants are able to flow directly into waterbodies.
- Water that flows into storm drains or ditches is transported and eventually discharged into Georgian Bay, untreated.
- Polluted water runoff degrades lakes, rivers, and wetlands. Soil makes the water murky and damages fish habitat. Nutrients such as phosphorus encourage algae growth that can crowd out other aquatic life and change the chemistry of the water.
- Water runoff can also flood basements and cause extensive property damage including erosion and slope instability. Furthermore, it can lead to decreased property values and disruptions to recreation.
- More frequent and intense weather events are expected in the region due to climate change. Rapid snowmelt and heavy rainfall events will result in greater volumes of runoff at one time.

What Can You Do?

1. Minimize the amount of water runoff from your property by reducing "hard" surface areas such as paved paths or driveways. Consider using water permeable materials for driveways and pathways.
2. Do not locate any impermeable surface near the shoreline or next to any watercourse.
3. Drain tile exit points should not be in erosion-prone areas.
4. Reduce the amount of potential pollutants on your property that can be carried by water runoff by:
    a. Minimizing hard surfaces;
    b. Encouraging the absorption of storm water within your property boundaries; and
    c. Storing potential pollutants in a safe place (e.g. bags of salt in buckets or bins) or removing them from close proximity to waterbodies (e.g. picking up after pets).
5. Maintain a buffer of natural vegetation along the shoreline so that runoff is at least partially intercepted before reaching the watercourse.

4a Water Runoff: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
SURFACES					
1. Surface permeability	All driving, parking, walking, and patio surfaces are water permeable. Gravel and woodchips are used to surface walkways. Minimal compaction.	Porous paving such as interlocking bricks are used to surface driveways and lanes. Additional parking spaces are not paved.	Paved surfaces are located far from any water course.	All paths, parking, driveways, and outdoor patios are paved, regardless of proximity to watercourse. Walking surfaces not restricted to paths. Foot-traffic compaction throughout.	☐
2. Extent of impervious surfaces and slope	Driveway is minimal and follows natural contours of the landscape. There are no other impervious/compacted areas.	Driveway is minimal but does not follow natural contours.	Driveway extensive but follows natural contours.	Extensive driveway and hard surface areas that do not follow natural contours. Compacted and/or paved surfaces run straight down slope.	☐
3. Application and use of fertilizers, de-icers and salts, pool, and other outdoor chemicals	Spills are cleaned up immediately. Applications are minimal and delayed until after rain.		Spills are cleaned up immediately on paved surfaces. Applications are not delayed to avoid rain.	Spills are not cleaned up. Applications are not delayed to avoid rain.	☐
4. 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.	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. Yard waste is burned on-site.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
POTENTIAL POLLUTANTS					
5. **Pet waste**	Pet wastes are flushed down the toilet or picked up and disposed of according to municipal guidelines.	Pet waste is left to decompose on grass or soil well away from any waterbody. Waste is scattered over a wide area.	Pet waste is left to decompose on grass or soil. Some effort is made to avoid concentrating waste in one area.	Pet waste is left on paved surfaces, concentrated in pen or yard areas, or dumped down a storm drain or in a ditch.	☐
DRAINAGE					
6. **Downspouts, gutters, and drains**	Roof gutters, downspouts, and basement drains installed and cleaned regularly. Downspouts drain onto gravel or grassed surfaces to a safe and adequate drain. Alternatively, downspouts drain into rain barrels for landscaping use.	Downspouts are not directed at or into nearby gullies.	Downspouts direct drainage onto impervious surfaces. Downspouts are not directed at or into nearby gullies.	Roof gutters, downspouts, and/or basement drains not checked/cleaned regularly. ***Downspouts and roof gutters are aimed at adjacent properties without an intercepting swale or ditch in between, onto septic tile beds, or into nearby gullies.***	☐
7. **Surface water drainage**	All surfaces are sloped away from the house at a minimum of 2%.	Any paved surface is sloped away from the house at a minimum of 2%.		Paved or compacted surfaces do not slope away from the house by a minimum of 2%.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Worksheet #4b & 4c – Drinking Water

Use this worksheet to assess how well you manage the quantity and quality of you drinking water supply.

Why Should You Be Concerned?

- Even though water in the Great Lakes appears abundant, reducing our water consumption and eliminating contamination are important. Residential sources of contamination can include coliform bacteria from failing septic systems, or runoff from chemicals applied to a lawn.

- Wells that pump water from aquifers below the ground can provide a clean and safe supply of water; however, if a well is not constructed or maintained properly, or if a contaminant is spilled within the capture zone of a well, the quality and safety of the water supply could be at risk.

- Contaminating your water source can harm you, your family, or nearby families.

- 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 is inconvenient and expensive.

- When water is at risk of contamination, it threatens not only your health, but the ecosystem's health as well. Whether you use a private well, surface water, or a municipal system, everyone plays a role in source water protection.

What Can You Do?

- Manage both your water source and water runoff carefully. This will help reduce pollution, protect your family's health, and help to ensure that we all have clean water available.

- Make sure the water you drink and the groundwater that supplies your well are protected from contamination. Test your water regularly in spring and fall.

- Know the location of your septic system and those of your closest neighbours.

- Properly maintain your septic system to ensure that it is working effectively (see Chapter 5). Encourage your neighbours to do the same.

- Question the need for using chemical fertilizers and pesticides on your property. Handle fertilizers and other potential contaminants carefully.

- Contact a licensed well professional or your Health Unit to assist with items that get a "2" or "1" rating in this worksheet.

4b Surface Water Supply: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
LOCATION OF WATER INTAKE					
1. **Position of water intake in relation to shore and bottom**	Intake is in water at least 3 m deep, 0.5 m off bottom, and away from boat traffic areas and shore.			Intake is in ankle deep water near shore, and/or on the bottom, and/or close to shore and boat traffic areas.	☐
2. **Distance of water intake from potential source of contamination**	Greater than 90 m (300 ft).	45-90 m (150-300 ft).	30-40 m (100-150 ft).	Less than 30 m (100 ft).	☐
3. **Water testing**	Drinking water is tested for bacteria three times a year (including once in the spring) and at least once a year for other impurities. Bacteria and other tests (health-related) always meet Ontario Drinking Water Standards.	Drinking water tested three times a year for bacteria and once a year for other impurities. Bacteria and other tests (as needed) usually meet Ontario Drinking Water Standards on the first test and always on the second test (the follow-up check) if first test fails.	Drinking water tested less than three times a year for bacteria and not tested for other impurities.	Drinking water is not tested or does not meet Ontario Drinking Water Standards on first or second test (follow-up check).	☐

4c Well Water Supply: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
LOCATION					
1. Position of well in relation to potential sources of contamination	Upslope from all sources of contamination. All surface water moves away from well.	Upslope from, or level with, any source of contamination. Surface water runoff does not reach well.	Level with most sources of contamination. Some surface water runoff may reach well.	Downslope from any source of contamination so that surface water reaches well. Water ponds at and around well.	☐
2. Distance from well to potential sources of contamination	Greater than 90 m (300 ft).	24-90 m (76-300 ft) for a drilled well. 47-90 m (151-300 ft) for a bored/dug well.	15-23 m (50-75 ft) for a drilled well. 30-46 m (100-150 ft) for a bored/dug well.	**Less than 15 m (50 ft) for a drilled well.* **Less than 30 m (100 ft) for a bored/dug well.*	☐
CONDITION					
3. Inspection	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.	☐
4. Condition of casing	Good condition, no defects visible.	Decent condition, no defects visible.	No holes or cracks visible.	Holes or cracks visible or can hear water running into well.	☐
5. 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.	☐
6. Condition of well venting	Screened vent in excellent repair.	Screened vent in good repair.	Well vented but not screened.	No well vent.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
CONDITION					
7. **Condition of surface material around well casing**	Surface material raised above normal ground level beside well casing. No space between well casing and surrounding surface material.	No settling of the surface material around well casing. No space between well casing and surrounding surface material.	Can see settling of surface material around well casing. No space between well casing and surrounding surface material.	Can see settling of surface material around well casing. Visible space between well casing and surrounding surface material.	☐
8. **Casing depth**	More than 45 m (150 ft) below ground level.	31-45 m (101-150 ft) below ground level.	15-30 m (50-100 ft) below ground level.	Less than 15 m (50 ft), below ground level or no casing.	☐
9. **Casing height above ground level**	40 cm (16 in) or more above normal ground level.			***Less than 40 cm (16 in) above normal ground level, in pit or in basement.***	☐
10. **Age of well**	Less than 20 years old.	Less than 40 years old.	40-60 years old.	More than 60 years old or unknown age.	☐
MANAGEMENT					
11. **Type of well**	Drilled, casing terminates above ground, approved well cap.	Drilled, casing terminates in a well pit.	Sand point.	Bored or dug.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MANAGEMENT					
12. Backflow prevention	Anti-backflow devices (such as check valves and vacuum breakers) installed on all faucets with hose connections. Air gap of at least 15 cm (6 in) maintained.	Anti-backflow devices installed on some faucets with hose connections. Air gap of at least 15 cm (6 in) maintained.	No anti-backflow devices. Air gap of at least 15 cm (6 in) maintained.	No anti-backflow devices. Air gap not maintained.	
13. Unused or abandoned wells	No unused or abandoned wells.	Unused wells capped, properly protected, and maintained. Abandoned wells properly plugged and sealed.		**Unused wells not capped or protected.* *Abandoned wells not properly plugged and sealed.*	
14. Water testing	Drinking water is tested for bacteria three times a year (including once in the spring) and at least once a year for other impurities. Bacteria and other tests (health-related) always meet Ontario Drinking Water Standards.	Drinking water tested three times a year for bacteria and once a year for other impurities. Bacteria and other tests (as needed) usually meet Ontario Drinking Water Standards on the first test and always on the second test (the follow-up check) if first test fails.	Drinking water tested less than three times a year for bacteria and not tested for other impurities.	Drinking water is not tested or does not meet Ontario Drinking Water Standards on first or second test (follow-up check).	

**These conditions may violate provincial legislation or municipal bylaws.*

Helpful Hints

Areas of Bare Soil

- Cover newly seeded lawns lightly with straw or leaf mulch to a cover of 50% to prevent erosion.

Potential Pollutants

- Ensure that your winter snow pile is not close to any shoreline or water course. Melt water may cause erosion and contamination.

- To avoid sending dirty, soapy water into a watercourse 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 wastewater treatment plant.

Runoff & Drainage

- Use rain barrels to catch rainwater that can later be used to water gardens during dry periods. Cover the rain barrel with a screen to prevent mosquito breeding.

- Clogged gutters on a single house can produce over one million mosquitoes a season, be sure to keep gutters clean!

Well Condition

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

- Drilled wells must have at least 6 m (20 ft) of watertight casing below ground level. If less than 6 m (20 ft), treat the well as a bored/dug well.

Drinking Water Testing

- Your local Health Unit is a valuable resource in helping you manage the quality of your drinking water. The Health Unit provides you with sample bottles and conducts free testing for bacteria. Simply drop bottles off at the closest Health Unit for testing. Consider asking your neighbours what their tests reveal.

Get Involved!

Learn more about how you can help monitor water quality in the region by volunteering with the Lake Partner Program!

www.desc.ca

Resource List

Government

- Private Drinking Water Testing - North Bay / Parry Sound Health Unit
  www.myhealthunit.ca/en/public-health-services/private-drinking-water-testing.asp

- Information and Rules for Residential Well Owners
  www.ontario.ca/page/wells-your-property

- Water Supply Wells: Requirements and Best Practices
  www.ontario.ca/document/water-supply-wells-requirements-and-best-practices

- Source Water Protection
  www.ontario.ca/page/source-protection

- Ontario Drinking Water Quality Standards
  www.ontario.ca/laws/regulation/030169

- Flood Ready
  www.canada.ca/en/campaign/flood-ready.html

- Ontario's Flooding Strategy
  www.ontario.ca/page/protecting-people-property-ontarios-flooding-strategy

Stewardship & Conservation

- Muskoka Watershed Council
  www.muskokawatershed.org

- Ontario Ground Water Association Well Water Testing
  www.ogwa.ca/well_water_testing.php

- Watersheds Canada
  www.watersheds.ca

Action Plan Worksheet #4

Your Drinking Water

Any ratings of 1 or 2 indicate where your property management needs to be changed to reduce the potential for environmental damage and water contamination. Use the information from the worksheets and the resource lists to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
4c-3	*Private well - condition of casing*	*2*	*Arrange for a certified inspector to examine well casing.*	*Schedule regular (annual or bi-annual) inspections.*

WASTEWATER & SEPTIC SYSTEM

Worksheet #5 – Wastewater & Septic System

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

Why Should You Be Concerned?

- In rural areas, people use a septic tank or similar system to treat household wastewater. All the water that flows down your drains ends up in your septic system. Your septic system must be properly maintained to safely handle your wastewater and prevent contamination of ground and surface waters.

- If not properly maintained, your septic system could be a source of contamination to the environment and to your family and neighbours. Household wastewater contains disease-causing bacteria and viruses, household chemicals, and excess nutrients. All of these contaminants can cause serious health and environmental problems.

- If your home treatment system has to handle too much wastewater, it will not be as effective and may fail prematurely. Increased use of water, through additional appliances or increased number of people at the residence, will increase the load on your septic system.

- Guests from areas with municipal sewage systems might not fully appreciate the need to restrict what is flushed into the septic system and to limit the amount of water they use.

- 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 an older system may have to be replaced instead of being repaired or upgraded.

What Can You Do?

1. Make sure your septic system is sized to meet your needs and installed in an appropriate location on your property. Your municipality or Conservation Authority will be able to provide information on the regulations applicable to your property.

2. Look for ways to reduce unnecessary wastewater entering the septic system. Effluent from sump pumps and roof drains should not go into the septic system.

3. Keep your septic system in good condition. Pump your septic tank when the sludge layer reaches 1/3 of the tank (approximately every 4-8 years for year-round use, less frequently for seasonal use). Consult with a licensed septic tank inspector to determine when you should get your septic tank pumped.

4. Ask for a professional assessment of the condition of your septic system at each pumping. Include an inspection of the tank.

5. Avoid any aggressive groundcovers or plants with strong root systems on top of your leaching bed. Grass is usually recommended for leaching beds, or other shallow-rooted alternatives, such as microclover or white clover.

6. Consider installing innovative technologies with enhanced sewage treatments that reduce the nutrient load to the environment. These can be particularly practical on small lots with minimal soil.

7. Keep records on your septic system such as building permits and pump-out and maintenance dates. These may be useful if you sell your property.

8. Facilities such as outhouses and composting and chemical toilets can be effective, affordable, and environmentally responsible. Contact your local Health Unit or municipality to learn more.

Wastewater & Septic System: How Do You Rate?

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 L/40 gal. per person, per day).	Moderate water use (180-270 L/40-60 gal. per person, per day).	High water use (271-360 L/61-80 gal. per person, per day).	Very high water use (greater than 360 L/80 gal. per person, per day).	☐
2. Fixtures and maintenance	Water-conserving fixtures throughout house. Fixtures are inspected regularly. Leaks fixed immediately.	Some water-conserving fixtures throughout house. Some fixtures are inspected regularly. Some leaks are fixed immediately.	No water-conserving fixtures in house. Fixtures are not inspected regularly. Some leaks are fixed immediately.	No water-conserving fixtures. Leaks are not fixed immediately.	☐
QUALITY OF WASTEWATER					
3. Solid waste	No use of garburator.	Very little use of garburator.	Moderate use of garburator.	Daily use of garburator.	☐
4. Dissolved waste	Only environmentally friendly household detergents and cleaners used.	Careful use of household detergents and cleaners (0.5 L or 1 pt. per week).	Moderate use of household detergents and cleaners (1 L or 1 qt. per week).	High use of household detergents and cleaners (more than 1 L or 1 qt. per week).	☐
	No disposal of household solvents and 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.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
QUALITY OF WASTEWATER					
5. **Water softener discharge**	Water softener does not discharge into septic tank.	Water softener discharges into septic tank but the system is properly designed to accommodate discharge water.		Water softener discharges into septic tank not designed to accommodate discharge water.	
6. **Grease and oils**	No disposal of household grease or oils into septic system.	Minimal disposal of household grease or oils into septic system and oil and grease wiped from cooking utensils before washing.	Moderate disposal of household grease or oils into septic system, or no attempt to reduce disposal of grease and oil from household.	Frequent disposal of household grease or oils into septic system.	
WASTEWATER TREATMENT SYSTEM					
7. **Design and construction**	Has building permit or certificate of approval. System is adequately sized. System is installed by a licensed installer.			**No building permit or certificate of approval.* *System is not sized according to regulatory requirements.* *System is not installed by a licensed installer.*	

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WASTEWATER TREATMENT SYSTEM					
8. **Knowledge of septic system**	Complete knowledge of overall septic system size, location, and operation on the property.	Some knowledge of overall septic system size, location, and operation on the property.	Limited knowledge of overall septic system size, location, and operation on the property.	No knowledge of overall septic system size, location, and operation on the property.	☐
LOCATION OF WASTEWATER SYSTEM					
9. **Distance from wastewater treatment system to nearest surface water**	Greater than 150 m (500 ft).	61-150 m (200-500 ft).	15-60 m (50-199 ft).	**Less than 15 m (50 ft) for: septic tank, leaching bed, holding tank, and/or other treatment units.*	☐
10. **Distance from wastewater treatment system to a well**	Greater than 90 m (300 ft).	For leaching bed or holding tank: • 24-90 m (76-300 ft) (drilled well) • 47-90 m (151-300 ft) (bored/dug well)	For leaching bed or holding tank: • 15-23 m (50-75 ft) (drilled well) • 30-46 m (100-150 ft) (bored/dug well) For septic tank or other treatment unit: • 15-23 m (50-75 ft) (drilled well) • 15-46 m (50-150 ft) (bored/dug well)	**For leaching bed or holding tank:* • *Less than 15 m (50 ft) (drilled well)* • *Less than 30 m (100 ft) (bored/dug well)* *For septic tank or other treatment unit:* • *Less than 15 m (50 ft) (all wells)*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
COLLECTION OF WASTEWATER					
11. Source and amount	All wastewater is collected for treatment. There is no loss of wastewater that should be treated. No clear water is collected and directed to the septic system. No clear water enters the septic system by infiltration through joints, access ports, etc.			**Some wastewater does not reach septic system because of leaks.* *Some wastewater is diverted away from the septic system.* *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.		**Drainage directly into septic field with no septic tank.* *Piped to anywhere but a septic or other approved treatment system.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TREATMENT SYSTEM					
13. Septic tank	Two compartment tank. Septic tank checked by a qualified inspector every three to four years and pumped as required.	Two compartment tank. Septic tank checked by a qualified inspector every four to five years and pumped as required.	Single compartment tank. Septic tank checked by a qualified inspector every six to ten years and pumped as required.	Single compartment tank. Seldom pumped out - last time more than ten years ago.	☐
	Good maintenance - baffles and tank checked, no leaks.	Some maintenance, no leaks.	No maintenance, but no leaks.	No maintenance, leaks from tank.	☐
14. Other treatment system	Regular maintenance program followed. No mechanical failures. Loaded at rate below design capacity.	Regular maintenance program followed. No mechanical failures. Loaded at rate near design capacity.	Regular maintenance program not followed. Occasional failures (once every two years).	No maintenance program. Frequent system failure. System overloaded.	☐
15. Holding tank - no leaching bed connected	Capacity is higher than design requirements. Tanks checked, no leaks. Working alarm system.	Capacity meets design requirements. Tanks checked, no leaks. Working alarm system.	Loaded at design capacity. Tanks not checked for leaks. Alarm system not working.	**Capacity does not meet recommended guidelines.* *Leaks and overflow from tank.* *No alarm system.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TREATMENT SYSTEM					
16. Leaching bed location	Located more than: • 5 m (16.5 ft) from any building or structure • 3 m (10 ft) from any property line	Located at: • 5 m (16.5 ft) from any building or structure • 3 m (10 ft) from any property line		**Located less than:* • *5 m (16.5 ft) from any building or structure* • *3 m (10 ft) from any property line*	☐
17. Leaching bed surface water drainage	Surface water drains away from leaching bed area.			Surface water drains onto leaching bed area.	☐
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).		**Less than 0.9 m (3 ft).*	☐
19. Leaching bed loading (visual inspection)	Soil always firm. No odours.	Ground is seldom wet or spongy. No odours.	Ground is frequently wet or spongy. Odours noticed occasionally.	Ground is always wet or spongy. Strong odours noticed frequently. **Pooling or bubbling of wastewater noticeable on surface.*	☐
HAULED SEWAGE					
20. Disposal of pumpage from septic tanks, other treatment systems, and holding tanks	Regulated, certified disposal by a licensed hauler.			**Disposal is not done by a licensed hauler.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
OTHER SOURCES					
21. Outhouse	Outhouse is at least 9 m (27 ft) from a watercourse unless in a designated restricted area or a municipal by-law indicates a greater distance. Bottom of the pit is at least 1 m (3 ft) above the high ground-water table. Sides of the pit are reinforced to prevent collapse. Soil is placed around the base of the privy to a height of at least 15 cm above the ground level. The pit is surrounded on all sides and on its bottom by not less than 60 cm of solid or leaching bed fill.			Outhouse is located less than 9 m (27 ft) from a watercourse. Outhouse is within 1 m (3 ft) of the groundwater table. Has less than 60 cm (1.5 ft) of solid or leaching bed fill on all sides and bottom.	☐
22. Outdoor showers	Outdoor shower drains into a grey water pit or septic system.			Outdoor shower does not drain into a grey water pit or septic system.	☐

Helpful Hints

Septic System Inputs

- To keep your septic system operating at peak performance, do not let unnecessary clear water enter the system. Fix leaks promptly and install faucet aerators and low-flow shower heads to conserve water.

- Your septic tank requires live bacteria to function properly. Many substances will kill bacteria including bleach, paints, gasoline, and antifreeze. Human waste from a person on chemotherapy can also kill the bacterial action in a septic system. You may find you have to pre-pump your septic system and then pump the system after the chemotherapy treatments are completed.

- Septic systems are designed to accommodate regular household wastewater. Do not allow any of the following to enter your septic system: feminine hygiene products, diapers, condoms, plastic, and cigarette filters. Limit the amount of fats or oils, kitchen waste (coffee grounds, egg shells), and chemical cleaning products that enters your system.

- Septic system additives are widely available but should be used with extreme caution. A properly functioning septic system does not require additives, an improperly functioning system may receive more benefit from a pump out. In some cases, additives can disrupt the bacteria which the system depends on, or can cause the sludge to break into small pieces which reach the septic bed and cause clogging.

Maintaining a Healthy Septic System

- All septic systems eventually need replacing but with proper maintenance your system can last 20 years or longer, even with year-round use.

- Do not park or drive any vehicle or any heavy equipment on the leaching bed of your septic system. Compaction will compromise the function of the leaching bed.

- All downspouts should be diverted away from the leaching bed. An average size home will deposit 11,400 l (3,000 gal) of water onto the ground after an 8 cm (3 in) rain storm.

- Signs that your system is not functioning properly include: system backing up, foul odours, effluent on the surface, soggy ground in the leaching bed, system freezing, and toilet and drains gurgling or draining slowly.

- Garburators or kitchen garbage disposal units can have a serious negative impact on your septic tank. Connecting a garburator to your septic system may be prohibited in your municipality.

- Lakes and rivers are not your bathtub. Do not use soap or shampoo, even biodegradable ones, in waterbodies. Biodegradable products degrade in the soil around your leaching bed, not in water.

Resource List

Government

- Septic Systems 101
  www.thearchipelago.on.ca/p/septics
- Rural Septic System Checklist
  www.omafra.gov.on.ca/english/environment/facts/sep_check.htm
- Soil Health in Ontario
  www.omafra.gov.on.ca/english/environment/bmp/soil-health.htm
- Environmental Protection Agency
  www.epa.gov/septic

Stewardship & Conservation

- Septic Smart Videos & Guidebook
  www.omafra.gov.on.ca/english/environment/facts/sep_smart.htm
- Ontario Soil and Crop Improvement Association
  www.ontariosoilcrop.org
- Ontario On-site Wastewater Association
  www.oowa.org
- Muskoka Water Web
  www.muskokawaterweb.ca/water-101/water-quality/wastewater/septic-systems
- Game of Thrones: Septic Health & Best Practices (Webinar)
  www.youtube.com/watch?v=oa8YssAvoss&t=11s
- Water Use Calculator
  www.watercalculator.org

Action Plan Worksheet #5

Wastewater & Septic Systems

Any ratings of 1 or 2 indicate where your property management needs to be changed to reduce the potential for environmental damage and water contamination. Use the information from the worksheet and the resource section to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
2	*Quantity of Wastewater*	*2*	*Inspect and repair all leaking water fixtures.*	*Purchase and install water-conserving fixtures*

WATER-BASED RECREATION

Worksheet #6 – Water-based Recreation

Use this worksheet to learn about enjoying your waterfront property in a sustainable manner.

Why Should You Be Concerned?

- Proximity to the water was probably a large part of why you purchased your property. It is important that everyone do their part to ensure good water quality that is drinkable, swimmable, and fishable 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 waterbodies and can quickly outcompete native species, destroy ecosystems, and reduce property values.
- Waves from the wake of motorized watercraft can cause shoreline and channel erosion and damage aquatic nesting areas.

Get Involved!

Report aquatic invasive species using EDDMapS Ontario.

Learn more: www.eddmaps.org/ontario

What Can You Do?

1. Choose to use an engineless watercraft such as a stand-up paddleboard, canoe, or kayak, or use an electric or four-stroke motor.
2. Reduce the force of your boat wake and its destructive effects on shorelines, channels, and nesting areas by decreasing your speed on the water.
3. Rinse off your craft (with water) every time it is hauled out of the water. Dry all parts of your watercraft, trailer, and gear completely before movement to a new body of water. This will prevent invasive species from being transported and spreading to other waterbodies.
4. Never dispose of waste (including fish guts) in the water. Dispose of waste properly on land.
5. Do not expand your beach by removing vegetation and/or dumping sand. These types of shoreline alterations harm aquatic habitat and require specific permits.
6. If possible, do not build docks or boathouses. These structures damage sensitive ecosystems along shorelines. Use a public boat launch or marina instead. Or, if you must build a dock, ensure that you follow the guidelines outlined in Chapter 3.
7. Remember to treat waterbodies with care in winter. Do not fuel recreational vehicles while on the ice or near a waterbody.

Water-based Recreation: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BOATING					
1. Boat engine and maintenance	Watercraft does not have an engine.	Boat has an electric or four-stroke engine that meets or exceeds emissions standards.	Boat has a modern direct injection two-stroke engine.	Boat has an older two-stroke engine.	☐
	Boat has a portable fuel container that is filled far from any open water.	Boat is refuelled on board but great care is used to prevent spills or overfilling. 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.	☐
	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 of whether the bilge water is contaminated or not. Bilge is cleaned without regard to the potentially hazardous nature of bilge fluids.	☐
2. On-board waste	All garbage is kept on board in a designated area until it can be properly disposed of or recycled on land. Black and/or greywater is properly disposed of at an approved pump-out facility.			**Waste is thrown overboard.* **Black and/or greywater is discharged by any means other than an approved pump-out facility.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BOATING					
3. **Boat use**	Within 150 m (500 ft) of the shore, means are taken to reduce wake from watercraft. Turn off propellers when in shallow waters to avoid stirring up lake bottom and disturbing vegetation/wildlife.	Within 30 m (100 ft) of shore, watercraft speed is reduced to 10 km/h (5.4 knots or 6.2 mph).		**Operate motor craft at any speed regardless of the distance from shore.* Boat near nesting birds or other wildlife near or on the shore.	
4. **Watercraft launching and hauling**	When launching the watercraft, the trailer is submerged for as little time as possible. Watercraft and trailer are checked for any plants/ wildlife/fish that may be clinging to the watercraft or trailer. Rinse if possible.	Watercraft 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 watercraft or trailer and disposed of properly.	
FISHING					
5. **Permits and regulations**	Fishing license obtained. Familiarity with the current Recreational Fishing Regulations Summary for the area you are fishing.			**No fishing license obtained or regulations are disregarded.*	

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
6. Fishing equipment	Non-toxic alternatives to lead fishing weights and jigs are used.			Use lead-based weights and jigs.	
ACTIVITIES ALONG THE SHORE					
7. Minimizing disturbance	Never move or disturb wildlife or natural objects such as logs, vegetation, shells, or nests. Access along the shoreline is minimal.	Natural objects or wildlife features are seldom disturbed or moved. Access shoreline or trails using designated paths. Keep to the trail to avoid trampling.		**Plants, wildlife, or other natural elements are removed and/or disturbed.* Disregard of the trail systems. Shoreline heavily trampled and disturbed.	
8. Camping/picnicking	Camp/picnic in established sites or set up on a durable surface (e.g. rock). Waste is packed out including food scraps and pet waste. Existing latrines are used or human waste is buried 50 m from water. Toiler paper is burned or buried. Wastewater is dumped at least 30 m from water.			Camp/picnic without consideration of landscape and vegetation. Waste is left on site. Human waste is not buried. Wastewater enters surface water.	

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
ACTIVITIES ALONG THE SHORE					
9. Camping/picnicking	Camp/picnic in established sites or set up on a durable surface (e.g. rock). Dispose of waste properly: Use existing latrines or bury human waste 50 m from water. Burn or bury toilet paper. Carry out food scraps. Washing and wastewater is dumped at least 30 m from water. "Stoop and scoop" and carry out pet waste.			Camp/picnic without consideration of landscape and vegetation. Wastes are left on site. Soap/wastewater enters surface water.	☐
10. Campfire safety	Do not have campfires unless absolutely necessary. Check weather conditions and local fire bans before starting a campfire.	Check weather conditions and local fire bans before starting a campfire. Always exercise caution with fire. Build in existing fire rings and minimize size of fire.	Check weather conditions and local fire bans before starting a campfire.	Ignite an outdoor fire without consideration of bylaws or restrictions. Burn wood products or wood covered or soaked in hazardous chemicals.	☐

Helpful Hints

Boating

- Check your engine regularly for any leaks, including the fuel line, clamps, and filters.
- Keep a tray under the battery to catch any acid spills.
- Dispose of any oils or watercraft fluids at your local hazardous waste collection site.

Fishing

- Do not release bait. It is illegal to release any live bait or dump the contents of a bait bucket, including the water, into any waters or within 30 m of any waters.
- Protect aquatic life by properly disposing of monofilament fishing line in the garbage.
- A single lead weight or jig contains enough lead to kill a common loon or other waterfowl.

Snowmobiling

- Treat our waterways with care in winter. Make sure your garbage is packed out and keep human wastes away from water sources. When approaching the shoreline on a snowmobile, use existing trails to protect vegetation.

Get Involved!

Report your catch and help inform fisheries management using the MyCatch app! Fishing data is confidentially shared with biologists so your secret spots won't be given away!

Learn more: www.anglersatlas.com

Resource List

Government

- Safe Boating Canada
  https://tc.canada.ca/en/marine-transportation/getting-started-safe-boating/getting-started-safe-boating

- Ontario Fishing Licenses
  www.ontario.ca/page/fishing

- Ontario Fishing Regulations Summary
  www.ontario.ca/document/ontario-fishing-regulations-summary

- Sustainable Bait Management in Ontario
  www.ontario.ca/page/sustainable-bait-management-ontario

- Preventing the Spread of Aquatic Invasive Species
  www.dfo-mpo.gc.ca/species-especes/ais-eae/prevention/index-eng.html

Stewardship & Conservation

- Clean Marine Program
  www.boatingontario.ca/cpages/clean-marine-program

- Educational Boating Authority - Canadian Power and Sail Squadrons
  www.cps-ecp.ca

- Watch Your Wake - Federation of Ontario Cottagers' Associations
  www.foca.on.ca/watch-your-wake

- Safe Quiet Lakes
  www.safequiet.ca

- Leave No Trace Canada
  www.leavenotrace.ca

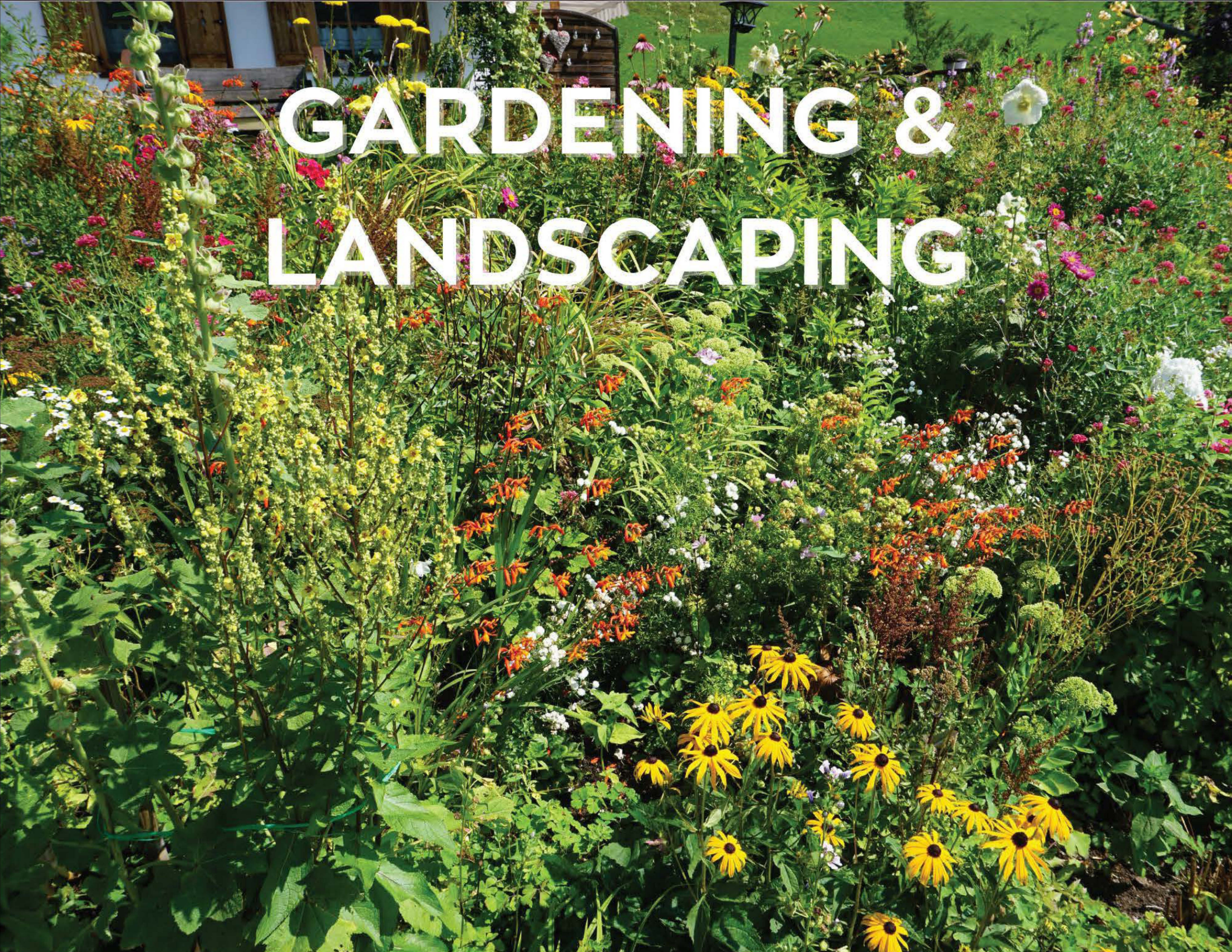
- Plugboats
  www.plugboats.com

Action Plan Worksheet #6

Water-based Recreation

Any ratings of 1 or 2 indicate areas where your water/shoreline management needs improvement to reduce the potential for environmental damage. Use the information from the worksheet and the resource section to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
1	*Boat engine and maintenance*	*2*	*Research four-stroke engines and electric motor options*	*Purchase fuel efficient, low emission engine.*


GARDENING &
LANDSCAPING

Worksheet #7a - Natural Buffers & Shoreline Access

Use this worksheet to learn about maintaining or restoring natural shoreline buffers.

Why Should You Be Concerned?

- A buffer is an area of natural vegetation that runs along the shoreline or bank. Also referred to as the riparian zone, it extends from the water's edge to the high water mark, at a minimum, and often beyond that.

- Natural buffers can include wetlands, beaches, forest corridors, and any native vegetation along the shoreline or bank.

- A naturally vegetated shoreline supports a wide variety of plants and animal life. Ninety percent of all aquatic life depends on the area where land and water meet for at least part of their lives.

- Natural buffers have robust underground root networks that protect both the stability of the shoreline and water quality by filtering and purifying water before it enters a watercourse.

- In order to visually or physically access water, people sometimes remove all or part of a buffer. In doing so, the buffer's ability to protect against erosion and filter runoff is weakened or eliminated. Whether on a small or large scale, this will impact the ability of the buffer to function properly. It can also lead to disputes with neighbours and criminal charges if fish habitat is harmed.

What Can You Do?

1. Maintain your shoreline in its natural predeveloped state. In some cases, your natural shoreline may be bedrock.

2. Refrain from cutting the grass right to the shoreline. Simply letting the vegetation grow there naturally will have a huge impact.

3. Restore buffers where they have previously been removed or degraded. Look at nearby undisturbed sites to determine which plant species are found at the shore. Plant climate-resilient species in buffer zones to protect against potential erosion and storm damage.

4. Minimize the number of water access points. Do not locate accessways through environmentally sensitive areas.

Natural Buffers & Shoreline Access: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BUFFER ZONES					
1. Disturbance to the buffer	Buffer is not traversed to provide access to water.	There is only a small designated path through the buffer.	Buffer is traversed but vegetation is allowed to re-establish naturally. Breaks are concentrated in one area.	Buffer is mostly broken or non-existent. Vegetation cleared and prevented from re-establishing.	☐
2. Size of buffer	Buffer is greater than 30 m (100 ft) wide and in environmentally sensitive areas (ESA), the buffer is 150 m (492 ft) wide.	Buffer is at least 30 m (100 ft) wide.	Buffer is less than 30 m (100 ft) wide.	There is no buffer present. Grass/lawn extends to water's edge.	☐
3. Composition of buffer	Buffer contains only native vegetation and/or natural bedrock.	Buffer contains mostly native vegetation, natural bedrock, and some non-invasive, introduced species.	Buffer has some native vegetation and mostly non-invasive introduced species.	Buffer has no native vegetation and mostly invasive and/or non-invasive introduced species.	☐
4. Property maintenance	Aware of, and actively protecting, any especially sensitive buffers, including wetlands, ESA, and Areas of Natural and Scientific Interest (ANSI).	Aware of any especially sensitive buffers, including wetlands, ESA, and ANSI, and plans to protect them.	Aware of any especially sensitive buffers including wetlands, ESA, ANSI. No plans to protect them.	No awareness of any especially sensitive buffers including wetlands, ESA, ANSI.	☐
	All trees, woody debris, and leaves are left in place with no alterations.	Vegetation alterations are limited to pruning branches from trees to provide sightlines to water.	Trees removed to provide sightlines to water. Other vegetation is not removed.	Trees are removed throughout to provide sightlines to water.	☐

Worksheet #7b – Trees & Plants

Use this worksheet to assess the plants on your property and their care and maintenance.

Why Should You Be Concerned?

- Native trees and plants provide food and habitat for wildlife. Their presence is critical to the health of ecosystems and watersheds.
- Native plants have evolved as part of a greater ecological community. They are well adapted to local conditions and generally will suffer less from disease or insect problems. Using native species helps to maintain your property as a part of the larger landscape.
- Trees remove carbon dioxide, one of the main gases causing climate change, from the atmosphere. They also help to improve the quality of the air that we breathe by absorbing and storing many air pollutants.
- Trees can reduce your energy bill. Deciduous trees can be strategically planted around buildings to provide shade from the summer sun. Similarly, in winter, coniferous trees on the north or west side can provide shelter from cold winds. Tree and shrub roots anchor the soil and prevent erosion.
- Trees add value to a property. They not only help to create an established feeling in a neighbourhood or on a property, but they also improve the appearance.
- Invasive plant species are often difficult to eradicate and may introduce disease.
- Extensive lawns reduce biodiversity and require more maintenance than native species.

What Can You Do?

1. Learn to confidently identify several invasive species, forest pests, and tree diseases common in your area.
2. Protect existing trees from insect and disease infestation and physical damage from machinery or weather events.
3. Identify mature and rare trees that you want to protect and include these in a long-term management plan.
4. Protect the forests! Reduce the spread of serious forest pests such as emerald ash borer by not purchasing and/or transporting firewood from other regions.
5. Choose native, climate-resilient species. They are best suited to local conditions.
6. Learn about the plant community in which you live and select plants from a reputable nursery.
7. Never plant invasive plants on your property. Identify invasive species that already exist in your area and work to remove them if possible.
8. Know your soil type and depth. Most areas in this region have very shallow soils. Choose your plants accordingly.
9. Reduce your lawn area to only what is needed for particular activities and keep it as far as possible from any shoreline.
10. Use low-maintenance plants that do not require watering or fertilizing.

Trees & Plants on Your Property: How Do You Rate?

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 are followed when planting trees. Tree species are selected to suit existing site conditions. Only native species are planted.	Trees are planted following proper instructions. Tree species selected to suit existing site conditions.	Non-invasive, introduced species are planted.	No consideration given to tree ecology in selection of new trees. Invasive species are planted.	☐
	Dead but stable trees are left in place to provide habitat. Only hazard trees are felled and left to rot in place. Trees that overhang the water or fall into the water are left in place.	Both standing and hazard dead trees are felled and left to rot in place.	Some wood is left to rot and provide habitat while some is removed.	All felled wood is removed. Trees are removed from the water.	☐
	Trees and shrubs on slopes or near water are protected and never removed (unless hazardous).	Only some trees (e.g., hazard trees) are removed from slopes and near water.	Many trees are removed from slopes and the water's edge.	Natural vegetation is removed from the majority of the property. ***Tree limbs that overhang the shore or water are cut.***	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TREE MANAGEMENT					
2. **Tree maintenance and care**	All trees are protected against injury and potential diseases. No healthy trees are removed.	Trees in buffers are protected. No healthy trees are removed.	Trees are not protected. Some healthy trees are removed.	Lot is generally cleared.	☐
	Branch pruning is done properly and at the right time for tree health.	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. Mulch is properly piled at least 3 inches away from the tree trunk.	Trees are watered during hot, dry periods for the first three years after planting. Mulch is properly piled at least 3 in away from tree trunk.	Trees are watered irregularly. Mulch is piled too close to the tree trunk, causing damage to bark.	Watering is inadequate during the first three years following planting. Mulch is piled too close to the tree trunk, causing damage to bark.	☐
3. **Knowledge of issues related to tree health**	Knowledge of potential insect and disease problems in your area. A certified arborist is hired to assess tree health and development and to develop a long-term management plan.	A certified arborist 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 the area.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TREE MANAGEMENT					
4. Tree root system	Tree rooting zone has adequate soil volume and conditions appropriate for the tree species selected.	Tree rooting zone is adequate but may need supplemental feeding.	Tree rooting zone is not less than 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.	☐
INVASIVE SPECIES					
5. Plant selection and invasive species	No new planting of invasive plants. Measures taken to eliminate existing invasive plants.		No new planting of invasive plants.	Continued use of invasive plants.	☐
	Complete eradication and proper disposal of existing invasive plants.	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.	☐
	Match tree and plant selection to your soil conditions. Use only native plants.	Tree and plant selection suits local soil and climate conditions. Non-invasive plants selected.	Occasional addition of nutrients to support non-invasive plants.	Tree and plant selection does not suit local soil and climate conditions.	☐
6. Garden monitoring	Regular checks to ensure that invasive species have not established in gardens. Once spotted, invasive plants are removed and immediately disposed of in an appropriate manner.	Occasional checks to ensure that invasive species are not established in gardens. Once spotted, invasive plants are removed and immediately disposed of in an inappropriate manner.	Occasional checks to ensure that invasive species are not established in gardens. Once spotted, invasive plants are removed and eventually disposed of in an inappropriate manner.	No checks to ensure that invasive species are not established in gardens. If spotted, invasive plants are not removed.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
INVASIVE SPECIES					
7. **Lawns**	No traditional lawn.	Lawn is limited to area over the septic bed with no use of pesticides, fertilizers, or irrigation.	Lawn is kept to a minimum size and as far from the shoreline as possible.	Much of the property is lawn. Lawn extends to the shoreline.	☐
	Learn about appropriate alternative groundcovers from local experts and plant them. Encourage local nurseries to stock native groundcovers.	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 and fertilizer. Use of invasive species.	☐

Worksheet #7c – Nutrients

Use this worksheet to learn about the role 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 ground and surface water, and encourage excessive algae growth.

- Activities on land and along shorelines affect the nutrient-loading of waterbodies.

- Nutrients are the foundation of the aquatic ecosystem, but too many nutrients can lead to what is known as eutrophication. Waterbodies that are eutrophic are more likely to experience nuisance algae blooms which impair water quality and use.

What Can You Do?

1. Plant native species that require little or no fertilizing.

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

3. Reduce your nutrient application volume and time applications according to need and forecasted rain.

4. Use natural fertilizers like compost produced on-site or grass clipping tea.

5. In the fall, let leaves decay on site and when mowing grass, do not collect the clippings (unless using for grass clipping tea).

6. Learn about how plants use different nutrients to better target any nutrient applications. Nitrogen (N) is for leaf development and vivid green colour. Phosphorus (P) is for root growth. Potassium (K) is for root development and disease resistance.

Nutrients: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
FERTILIZER USE & APPLICATION					
1. **Understanding of plant requirements and fertilizer use**	Good understanding of plant nutrient requirements. Soil is tested to determine nutrient requirements before fertilizing. Fertilizer used accordingly.	Good understanding of plant nutrient requirements. Plants are monitored regularly to detect nutrient deficiencies. Fertilizer used accordingly.	Basic understanding of plant nutrient requirements. Occasional monitoring for plant nutrient deficiencies. Fertilizer used regularly.	No consideration of soil condition or plant nutrient requirements. Excessive use of fertilizer.	☐
	Fully-composted manure and yard waste are used appropriately to amend soil.	Fully-composted manure and yard waste are used appropriately to amend soil. Controlled spot use of fertilizer if necessary.	Fertilizer occasionally applied over the entire garden and/or lawn.	Fertilizer frequently applied to entire lawn and/or garden without consideration for soil needs. Poor care taken in following package instructions.	☐
	Locally-produced, well-rotted compost or manure is used.	Locally-produced, well-rotted compost or manure is used. Slow-release synthetic fertilizer is used.	Well-rotted compost or manure is used but not obtained from local sources. Quick-release fertilizer is used but the nutrient composition is appropriate for the situation.	A quick-release synthetic/commercial fertilizer is over-used.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
FERTILIZER USE & APPLICATION					
2. **Application practices and water access**	Nutrient application is a minimum of 30 m (100 ft) from wells, water intakes, and all watercourses. A permanently vegetated buffer, greater than 3 m (10 ft) wide runs between the area of nutrient application and any well, water intake, or watercourse.	Nutrient application is a minimum of 30 m (100 ft) from wells, water intakes, and all watercourses.		**Nutrient application is closer than 30 m (100 ft) to wells, water intakes, and/or watercourses.*	☐
	Nutrients are never applied on frozen or saturated soil, or where surface runoff is likely. Check to ensure that heavy rain or thunderstorms are not forecast for at least 24 hours following application.	Nutrients are never applied on frozen or saturated soil, or where surface runoff is likely.	Nutrients are rarely applied on frozen or saturated soil, or where surface runoff is likely.	Fertilizer, compost, or manure applied to frozen or saturated soils, or on slopes where surface runoff is likely. Nutrients applied regardless of forecast.	
COMPOST MANAGEMENT					
3. **Composting practices**	Household compost is rodent proof. Compost composition is monitored and mixed regularly. Compost is used on-site.	Compost composition is monitored and mixed regularly. Compost is used on-site.	Household compostable waste is sent to a local composting facility or to a friend/neighbour's compost.	Compostable material not composted.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WATER FEATURES					
4. **Water features and ponds**	There is no artificial water feature or pond on the property.	Water feature is designed to minimize the amount of artificial light on it. Water is continuously moving in water feature. Water feature is located as far from natural waterbodies as possible.	Water feature is located as far from natural waterbodies as possible.	Indiscriminate design, placement, and chemical treatment of artificial water features.	

Worksheet #7d – Landscape Water Efficiency

Use this worksheet to assess your water use on your property.

Why Should You Be Concerned?

- There is a limited supply of fresh, clean water.
- If groundwater is used at a rate faster than it can be replenished by the water cycle, severe shortages and damage to aquatic systems may result.
- Whether your drinking water comes from a private or a municipal system, everyone is pulling water from the same source.
- Both surface and well water require energy to treat and pump.

What Can You Do?

1. Calculate how much water you use in your landscaping and gardening.
2. Purchase or build a rain gauge to monitor how much water your yard receives.
3. Choose proper equipment that is water-efficient, such as soaker hoses rather than sprinklers. Keep equipment in good condition.
4. Choose native plants that grow well in local conditions without irrigation.
5. Divert downspouts into screened rain barrels and use the water for your plants.

Landscape Water Efficiency: How Do You Rate?

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.	☐
	Hoses, faucets, etc. are regularly monitored for leaks. Leaks are fixed immediately.		Leaks are repaired only when they become a problem.	Leaks are not repaired.	☐
2. **Irrigation equipment type**	No irrigation equipment used.	Irrigation equipment applies water to the plant rooting area only (e.g., drip system).	Low-level sprinkler system or mobile sprinkler head.	Fixed sprinkler head.	☐
3. **Irrigation design**	System is properly designed and sized for the size of the garden or landscaped area.			Irrigation system is larger than needed for the garden area.	☐
	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.	☐
4. **Watering plants**	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.	Monitored watering limited to when establishing new plants.	Watering is not adjusted according to rainfall, stage of plant development, use of water gauges, and/or plant appearance.	☐
	Water only in the early morning to reduce the chance of fungal disease on plants.	Water only in the early morning or early evening.	Water only in the late evening using a soaker hose.	Water using a sprinkler system during the hottest hours of the day.	☐

Helpful Hints

Purchasing Plants

- At the nursery, be sure to ask:
    - What native, local plants do you have?
    - Are they nursey grown or harvested from the wild?
    - Is there a potential for invasion?
    - How can you control or eradicate if necessary?
    - What are the nutrient and water requirements?

- Cues for proper species selection can be gained by looking at nearby native plants that are thriving in the same conditions as those on your property.

- If planting a traditional lawn with non-native grass, choose a grass that is hardy, pest resistant, and non-invasive.

- 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 the ecosystem. A well-contained plant in your garden may run rampant in a friend's garden. Never accept or give outdoor plants if you are unsure.

Get Involved!

Contribute to biodiversity science by joining the Georgian Bay Biosphere iNaturalist project!

Learn more: www.gbbr.ca/citizen-science

Plant Care

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

- Spread a layer of natural mulch 8-10 cm (3-4 in) thick over your garden. This will prevent weed seeds from germinating.

- Never pile mulch right up against the trunk of a tree. This can damage the bark, possibly girdling and killing the tree.

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

- NEVER compost invasive species. Research proper disposal methods for the species you are dealing with.

Nutrients

- 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.

Helpful Hints

Pesticide Alternatives

- Ontario's cosmetic pesticides ban took effect in 2009. Pesticides cannot be used for cosmetic purposes on lawns, vegetable and ornamental gardens, patios, driveways, cemeteries, and in parks and school yards.

- Try old-fashioned remedies for pests, such as borax sprinkled around ant nests, insecticidal soap for sap-sucking insects, and baking soda or sulphur for fungal diseases.

- Create suitable habitat for birds that will eat insect pests.

- To make plants less appetizing to garden pests, use a garlic spray (10 cloves of garlic in 1 L of water, heat for 5 minutes, let cool before application).

Healthy, Low-Maintenance Lawns

- In hot, dry weather allow grass to go dormant. Water 7-12 mm (0.25-0.5 in) every two or three weeks. The grass will look brown but it is dormant, not dead.

- Encourage deep rooting by watering infrequently but thoroughly. Your lawn only needs 2.5 cm (1 in) of water per week.

- Mow when the grass is as dry as possible and leave your grass at least 8 cm (3 in) long. This encourages root growth and lessens moisture loss. Leave grass clippings on the lawn and you can increase soil fertility by up to 50%.

- Aerating your lawn improves rooting conditions.

- If you do use a fertilizer, choose a slow-release product. The nutrients are released slowly, preventing ‘lawn burn’ and water contamination.

- Remove unwanted plants from the lawn by hand using long-handled tools. It is easier to remove weeds when the ground is damp. Alternatively, pour boiling water or small amounts of white vinegar over the exposed roots of unwanted plants.

Best for the Biosphere: Native Plant List

Native Plant List

All of the plants in this list are appropriate for the eastern Georgian Bay area. You may have some of these species growing naturally in your neighbourhood!

Legend - Plant Blossom Colour

White | Pink | Blue | Yellow | O | Red | Green

Common Name	Scientific Name	Bloom Colour & Timing: Apr to June	Bloom Colour & Timing: June to Aug	Bloom Colour & Timing: Aug to Oct	Height	Soil Type	Light Requirements	Meadow	Shorelines & Wet Areas	Forest
WILDFLOWERS										
Bearberry	*Arctostaphylos uva-ursi*	White, Pink			15 - 30 cm	dry to moist, sand, loam, gravel	full to part sun	■		
Black Eyed Susan	*Rudbeckia hirta*		Yellow		30 - 50 cm	dry to moist, sand, loam	sun to part shade	■		
Bloodroot	*Sanguinaria canadensis*	White			7 - 30 cm	moist to wet, sand, loam, clay	shade			■
Blue Flag Iris	*Iris versicolor*	Blue, Purple			60 - 90 cm	moist, wet	sun to part shade		■	
Blue Vervain	*Verbena hastata*		Blue, Purple		60 - 180 cm	normal to wet, clay, loam, sand	sun to part shade	■	■	
Blue Violet	*Viola sororia*	Blue, Purple			7 - 20 cm	normal to moist, sand, clay, loam	sun to part shade			■
Blue-stem Goldenrod	*Solidago caesia*				30 - 90 cm	dry to normal, loam, humus	shade to part shade	■		■
Bunchberry	*Cornus Canadensis*	White			7 - 20 cm	normal to moist, sand, clay, loam, humus, acidic	sun to parth shade			■
Butterfly Weed	*Asclepias tuberosa*		Orange		30 - 75 cm	dry to normal, sand, loam	sun to part shade	■		
Canada Goldenrod	*Solidago Canadensis*			Yellow	30 - 120 cm	dry to normal, sand, clay, loam	sun to part shade	■		
Cardinal Flower	*Lobelia cardinalis*		Red		60 - 120 cm	normal to wet, loam, humus	sun to part shade		■	
Common Boneset	*Eupatorium perfoliatum*			White	60 - 160 cm	wet to moist, clay, sand, loam	sun to part shade	■	■	
Common Milkweed	*Asclepias syriaca*		Pink		60 - 120 cm	dry to normal, sand, loam, clay	sun	■		
Cup Plant	*Silphium perfoliatum*		Yellow		100 - 150 cm	normal to moist, sand, clay	sun	■		
Dense Blazing Star	*Liatris spicata*		Purple		30 - 180 cm	moist, sand, loam	sun	■		
Dutchman's Breeches	*Dicentra cucularia*	White			10 - 30 cm	normal to moist, humus	part shade to shade			■
Fireweed	*Chamerion angustifolium*		Pink		60 - 180 cm	dry to moist, sand, loam	sun		■	

Best for the Biosphere: Native Plant List

WILDFLOWERS Continued

Common Name	Scientific Name	Bloom Colour & Timing: Apr to June	Bloom Colour & Timing: June to Aug	Bloom Colour & Timing: Aug to Oct	Height	Soil Type	Light Requirements	Meadow	Shorelines & Wet Areas	Forest
Flat-topped Aster	*Doellingeria umbellata*				60 - 200 cm	normal to wet	sun	■	■	
Foamflower	*Tiarella Cordifolia*				15 - 30 cm	normal to moist, humus, loam, acidic	shade to part shade		■	
Foxglove Beardtongue	*Penestemon digitalis*				30 - 100 cm	dry to moist, clay, sand, loam, acidic	sun to part shade	■		
Golden Alexander	*Zizia aurea*				30 - 75 cm	dry to wet, clay, sand, loam	sun to part shade	■		
Great Blue Lobelia	*Lobelia siphilitica*				30 - 120 cm	normal to wet, loam, humus	sun to part shade		■	
Heath Aster	*Symphyotrichum ericoides*				30 - 90 cm	dry to moist, sand, clay, loam, humus	sun	■		
New England Aster	*Symphyotrichum novae-angliae*				90 - 210 cm	dry to moist, sand, clay, loam	sun to part shade	■	■	
Pearly Everlasting	*Anaphalis margaritacea*				30 - 90 cm	dry, sand	sun	■		
Rough Woodland Sunflower	*Helianthus divaricatus*				40 - 150 cm	dry to normal, sand	sun to part shade	■		
Rough-stemmed Goldenrod	*Solidago rugosa*				30 - 80 cm	most to wet, sand	sun to part shade	■		
Spotted Joe-Pye Weed	*Eupatorium maculatum*				60 - 180 cm	normal to wet, clay, sand, loam, humus	sun to part shade		■	
Swamp Milkweed	*Asclepias incarnata*				30 - 150 cm	moist to wet, clay, loam	sun		■	
Sweet Oxeye	*Heliopsis helianthoides*				50 - 150 cm	dry to moist, sand, clay, loam	sun to part shade	■	■	
Tall Meadowrue	*Thalictrum pubescens*				60 - 200 cm	moist, loam, acidic	part shade		■	
Turtlehead	*Chelone glabra*				30 - 90 cm	moist to wet, acidic	shade, part shade, sun		■	■
Wild Bergamot	*Monarda fistulosa*				60 - 120 cm	dry to moist, sand, clay, loam, humus	sun	■		
Wild Columbine	*Aquilegia Canadensis*				30 - 90 cm	dry to moist, sand, loam	sun to part shade	■		
Wild Strawberry	*Fragaria virginiana*				5 - 25 cm	dry to normal, clay, sand	sun to part shade	■		
Yarrow	*Achillea millefolium*				30 - 70 cm	dry to normal, clay, sand	sun	■		
Zigzag Goldenrod	*Solidago flexicaulis*				30 - 100 cm	moist, sand, loam, humus, acidic	shade to part shade			■

Best for the Biosphere: Native Plant List

Common Name	Scientific Name	Bloom Colour & Timing: Apr to June	Bloom Colour & Timing: June to Aug	Bloom Colour & Timing: Aug to Oct	Height	Soil Type	Light Requirements	Meadow	Shorelines & Wet Areas	Forest
GRASSES										
Big Bluestem	*Andropogon gerardii*				90 - 250 cm	normal to moist, sand, loam	sun to part shade	■		
Canada Wild Rye	*Elymus canadensis*				90 - 150 cm	dry to moist, clay, sand	sun, part shade, shade	■		
Indian Grass	*Sorghastrum nutans*				90 - 240 cm	dry to moist, sand, clay, loam	sun to part shade	■		
SHRUBS										
Alternate Leaf Dogwood	*Cornus alternifolia*				4 - 8 m	normal to moist, humus, acidic	shade to part shade			■
Bush Honeysuckle	*Diervilla lonicera*				1 - 1.5m	dry to normal, sand, loam	sun to part shade	■		
Buttonbush	*Cephalanthus occidentalis*				1 - 3.5 m	moist to wet, clay, sand, loam	sun to shade		■	
Common Elderberry	*Sambucus canadensis*				1 - 4 m	moist to wet, sand, clay, loam	sun to part shade		■	
Highbush Cranberry	*Viburnum trilobum*				2 - 4 m	normal to moist, sand, loam	sun to part shade	■	■	
Low Sweet Blueberry	*Vaccinium angustifolium*				30 - 60 cm	dry to moist, sand, loam	sun to part shade	■		
Meadowsweet	*Spiraea alba*				1 - 1.5 m	normal to wet, sand, loam, clay	sun to part shade	■	■	
Nannyberry	*Viburnum lentago*				4 to 7 m	dry to moist, sand, loam, clay	sun to part shade	■		
Ninebark	*Physocarpus opulifolius*				2 to 3 m	dry to moist, sand, loam	sun to part shade	■	■	
Purple-flowering Raspberry	*Rubus odoratus*				1 - 1.8 m	normal to moist, sand, loam, clay	sun to part shade	■		
Pussy Willow	*Salix Discolor*				2 - 8 m	moist to wet, sand, clay, loam	sun		■	
Red Elderberry	*Sambucus pubens*				2 - 5 m	moist to wet, sand, clay, loam	sun to part shade		■	
Red Osier Dogwood	*Cornus sericea*				1.5 - 4 m	normal to wet, clay, sand, loam	sun to part shade		■	
Slender Willow	*Salix petiolaris*				1 - 8 m	moist to wet, sand, loam, clay	sun to part shade		■	
Smooth Rose	*Rosa blanda*				0.5 - 1.5 m	dry, clay, sand, loam	sun	■		
Smooth Serviceberry	*Amelanchier laevis*				2 - 10 m	normal to moist, clay, loam, sand, humus	sun to part shade	■		

Best for the Biosphere: Native Plant List

Common Name	Scientific Name	Bloom Colour & Timing: Apr to June	Bloom Colour & Timing: June to Aug	Bloom Colour & Timing: Aug to Oct	Height	Soil Type	Light Requirements	Meadow	Shorelines & Wet Areas	Forest
SHRUBS Continued										
Staghorn Sumac	*Rhus typhina*				1 - 8 m	dry to normal, clay, loam, sand	sun to part shade	■		
Swamp Rose	*Rosa palustris*				0.5 - 2 m	moist to wet, clay, loam, sand	sun to part shade		■	
Wild Red Raspberry	*Rubus idaeus*				0.5 - 2 m	dry to moist, sand, loam, humus	sun to part shade	■		
Winterberry	*Ilex verticillata*				1.5 - 2.5 m	normal to wet, sand, loam, clay, acidic	sun to part shade		■	
TREES										
Basswood	*Tilia americana*				18 - 22 m	dry to moist, sand, loam	sun to part shade	■		
Black Cherry	*Prunus serotina*				6 - 10 m	moist, clay, sand, loam	part shade	■		
Black Spruce	*Picea mariana*				12 - 25 m	moist to wet, clay, sand, loam, humus, acidic	sun to shade		■	■
Chokecherry	*Prunus virginiana*				4 - 8 m	dry to moist, clay, loam, sand	sun to part shade	■		
Eastern Hemlock	*Tsuga canadensis*				6 - 30 m	normal to moist, sand, loam, acidic	shade to part shade		■	■
Eastern White Cedar	*Thuja occidentalis*				9 - 16 m	dry to moist, clay, sand, loam	sun to part shade		■	■
Pin Cherry	*Prunus pensylvanica*				1 - 12 m	dry to moist, sand, loam	sun	■		
Red Maple	*Acer rubrum*				12 - 25 m	moist to wet, loam, humus	shade, part shade, sun		■	■
Red Pine	*Pinus resinosa*				4 - 25 m	dry to moist, sand, loam, acidic	sun	■		
Sugar Maple	*Acer saccharum*				20 - 35 m	normal to moist, sand, loam, humus	shade, part shade, sun			■
White Spruce	*Picea glauca*				20 - 30 m	normal to moist, sand, clay, loam	sun to part shade	■		■
Yellow Birch	*Betula alleghaniensis*				15 - 25 m	moist to wet, loam	part shade to shade			■

Forest Pests & Diseases

A selection of forest pests and diseases common to this region are introduced here. Please refer to the resource list for additional information.

Beech Bark Disease

- Caused by an insect-fungus complex consisting of a scale insect and a canker fungus

Emerald Ash Borer

- Invasive species from Asia
- Larvae bore into bark, overwinter in trees
- Adults feed on leaves throughout their lives

Forest Tent Caterpillar

- Forest tent caterpillar outbreaks occur on average every 10-12 years in Ontario
- Each outbreak lasts about 3-5 years

LDD Moth

- Invasive pest that feeds on the leaves of over 300 host species in its larval stage
- Adult moths reproduce but do not feed

Spruce Budworm

- Defoliates primarily balsam fir and spruce trees
- Larvae feed from the top of a tree downwards

Introduced Pine Sawfly

- Invasive species first found in 1931 in Ontario
- Produces two generations during the growing season

Resource List

Stewardship & Conservation

- Best for the Biosphere Plant List
  www.gbbr.ca/conservation-guides
- Composting Council of Canada
  www.compost.org/backyard_compost/
- Food Gardens
  www.gbbr.ca/gardens
- Forest Gene Conservation Association
  www.fgca.net
- Forests Ontario
  www.forestsontario.ca/en/programs
- Georgian Bay Biosphere Webinars: Gardening with Native Plants, Building Shoreline Resilience, Forest Pests & Diseases
  www.youtube.com/c/GeorgianBayBiosphere
- Grow Me Instead
  www.ontarioinvasiveplants.ca/resources/grow-me-instead
- LDD Moth in the Georgian Bay Biosphere
  www.gbbr.ca/conservation-guides
- Master Gardeners of Ontario
  www.mgoi.ca
- Muskoka Water Web – Waterfront Living
  www.muskokawaterweb.ca/waterfront-living
- Ontario Invasive Species
  www.invadingspecies.com/invaders/
- Ontario Woodlot Association
  www.ontariowoodlot.com/
- Society for Ecological Restoration – Native Plant Resource Guide
  www.chapter.ser.org/ontario/resources/seropublications
- Westwind Forest Stewardship Inc.
  www.westwindforest.ca

Government

- Forest Health – Pests, Diseases, and Severe Weather
  www.ontario.ca/page/forest-health-pests-diseases-and-severe-weather-conditions
- Managing Invasive Species in Ontario
  www.ontario.ca/page/managing-invasive-species-ontario
- Natural Garden Pest Management
  www.ontario.ca/page/natural-ways-manage-pests-home-gardens
- Using Pesticides in Ontario
  www.ontario.ca/page/using-pesticides-ontario

Action Plan Worksheet

Gardening & Landscaping

Any ratings of 1 or 2 indicate areas of your landscape management that require changes to reduce the potential for environmental damage. Use the information from the worksheets and the resource list to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
4-a	*Watering Your Plants*	*2*	*Research water needs of your plants and purchase a water gauge.*	*Water schedule always adjusted according to rainfall and plants requirements.*

WASTE REDUCTION

Worksheet #8 – Waste Reduction

Use this worksheet to learn about how you can reduce your household 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 difficult to find new landfill sites as no one wants to live near one.
- If a municipal landfill site is full and a new location cannot be obtained, residents must pay more to have their waste transported elsewhere. Not only does this option cost more, but the transportation necessary creates additional greenhouse gas (GHG) emissions.
- Recycling saves natural resources, energy, and water by using already manufactured materials rather than new raw materials.
- When organic matter is sent to landfills instead of being composted, methane gas, a powerful GHG, is produced because there is no oxygen to support decomposition. In one year, the organic waste from four people in a landfill will release more GHG than a car!
- Durable products may initially be more expensive, but are generally a better investment in the long run and stay out of landfill sites longer. Leachate from landfill sites may contaminate groundwater.
- Open burning of garbage releases a large number of pollutants. Burning of garbage at home is one of the largest known sources of dioxins and furans in Ontario.
- Some people throw medications into the garbage or flush them down the toilet or sink. This has a harmful effect on the environment since chemicals in the drugs leach into soil and drinking water.

What Can You Do?

1. Consider how you can generate less waste. If you are a seasonal resident, please remember that good recycling practices should continue even while you are on vacation.
2. Recycle effectively. Your local municipality will have lists of which items can be recycled in your community and how you should prepare them for recycling (i.e. rinse, bundle, sort).
3. Inform yourself of initiatives and companies that are redesigning products, packaging, and manufacturing processes to reduce waste. Support them through your purchasing power.
4. Compost food and yard waste.
5. Use refillable and reusable containers and products as much as possible. Purchase durable products that last longer before needing to be replaced.
6. Watch for hazardous waste disposal days in your community. Encourage your local municipality to have them and support recycling programs. Many items such as paint, batteries, and printer ink cartridges can be returned to the place of purchase for proper disposal or recycling.
7. Return your unused and expired medications to your pharmacist for safe disposal.

Waste Reduction: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WASTE REDUCTION					
1. Purchases	Instead of buying new items are frequently borrowed, rented, or shared. Purchase used items.	Purchase or use only what you need and avoid accumulating unused products.	Purchase more than is necessary. Recycle as much as possible, including donating items.	Purchase more than is necessary. Throw unwanted items into your regular household garage.	☐
	Preference given to items that are durable, reusable, and/or recyclable and can be recycled locally. Take-out or disposable containers are seldom used.	Preference given to items that are durable, reusable, and/or recyclable and can be recycled locally.	Disposable or single-serving items are purchased even when alternatives are available. Minimal effort made to recycle or reuse.	Frequently purchase disposable, or single-serving items (e.g. plastic straws and cutlery, coffee cups). No effort to recycle or reuse.	☐
	Frequently choose items that have no packaging.	Choose items that have minimal packaging.	Choose items with packaging that is recyclable in your municipality.	No consideration given to product packaging.	☐
	Exclusively use reusable tote bags.	Always re-use carry-out grocery bags or tote bags.		Plastic carry-out bags are accepted and then discarded.	☐
2. Products	Choose products made from recycled, reclaimed, or environmentally friendly materials as often as able to.			Never consider if products are made from recycled, reclaimed, or environmentally friendly materials.	☐
	Effort is given to repair items and appliances to increase their longevity whenever possible.			Broken or damaged items are thrown into regular household garbage immediately.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WASTE DIVERSION					
3. Re-using and recycling	Reduce the number of items you use.	Reuse as many items as possible.	Recycle as many items as possible.	Little or no attempt is made to reduce the volume of items in the garbage.	☐
	Both sides of a sheet of paper are used, and all paper is recycled.	Both sides of a sheet of paper are used, or all paper is recycled.	Most paper is recycled and all paper purchased contains some recycled content.	Paper is not recycled.	☐
	Check with your municipality to learn what items are recyclable and how they should be prepared for recycling. Comply with recycling practices in your community.		Most recyclable items are recycled.	Little or no attempt made to participate in local recycling programs. **Waste is burned / a burn barrel is used.*	☐
4. Hazardous materials	All hazardous materials are disposed of properly (e.g. paint, light bulbs, batteries).			**Hazardous wastes are put into regular garbage.*	☐
5. Organic waste	Food scraps are properly composted regularly, on-site.		Food scraps are composted occasionally.	Food scraps are thrown in regular household garbage.	☐
	Home compost is in a proper site (sunny, well drained) and well looked after (stirred weekly, adequate moisture).	A home compost exists in a proper site but isn't well looked after.	A home compost exists but is in a poor site and is neglected.	No home compost.	☐
	Yard waste (fallen leaves, grass clippings, etc.) are left in place to compost naturally as much as possible.	Yard waste (fallen leaves, grass clippings, etc.) are composted at home.		Yard waste (fallen leaves, grass clippings, etc.) are deposited in the garbage or landfill.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Helpful Hints

- Items that bear the EcoLogo symbol have been independently certified to meet strict environmental standards that reflect their entire life cycle – from manufacturing to disposal.

- Use your purchasing power to help minimize waste – buy fewer items, select used items or products made from recycled materials, and shop locally to help cut down on emissions from consumer goods.

- To reduce packaging, buy in bulk (more product for less packaging) or purchase concentrated products.

- Microplastics and microfibers are serious issues in waterways. You can easily reduce the volume of these pollutants that leave your house by installing simple traps on your washing machine and dryer. Learn more about microplastic reduction, including trap effectiveness, at www.georgianbayforever.org.

- When composting in bear country, remember that most backyard composter models are not fully bearproof. Unmanaged compost will produce a smell that will attract bears. With proper care, a compost unit will not smell badly. Proper care includes ensuring a mix of brown and green materials and aeration through stirring. Never add meat, fish, dairy, oil, cooked food, or large amounts of fruit. Ensure you have a clear sightline as you walk toward your composter.

Get Started Composting!

Location: Make sure it is convenient, receives some sun, and is 2 ft from structures in a well-drained spot.

Decide on a pile or bin: You can start a simple pile in your backyard or purchase a bin for it. A bin may discourage animals from investigating.

Load it up: Composting works by mixing two types of wastes: green (nitrogen) and brown (carbon). Fill your compost with 60% browns and 40% greens. Add brown leaves to help balance carbon and nitrogen.

Add water: The microbes need some moisture to survive. It should be as damp as a wrung-out sponge.

Turn your pile: Once a week, use a shovel to turn your compost, break up clumps and infuse oxygen into the mix.

Time: Finished compost can take six months to a year to produce. Speedup the process by chopping materials into smaller pieces, turn it regularly, ensure a mix of greens and browns, and keep it moist.

Resource List

Government

- Contact your local municipality to learn about waste disposal in your region.

- Environmental Labels and Claims
  www.ic.gc.ca/eic/site/Oca-bc.nsf/eng/ca02523.html

Conservation & Stewardship

- Great Lakes Trash and Open Burning Website
  www.openburning.org

Waste Reduction & Diversion

- Composting 101 & List of Compostable Materials
  www.gbbr.ca/gardens

- Compost Council of Canada
  www.compost.org

- Zero Waste Canada
  www.zerowastecanada.ca

Action Plan Worksheet #8

Waste Reduction

Any ratings of 1 or 2 indicate areas where your management of household waste needs some changes to reduce the potential for environmental damage. Use the information from the worksheet and the resource list to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
1-a	*Purchases*	*2*	*Research which items are recycled locally. Purchase reusable travel mugs, shopping bags, water bottle, etc.*	*Reduce waste produced by your household. Make informed decisions when purchasing packaged items and ensure materials are recycled.*

CHEMICAL STORAGE & HANDLING

Worksheet #9 – Chemical Storage & Handling

Use this worksheet to learn about best management practices for household 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 therefore go undetected in water.
- Contaminated water or soil greatly devalues property and is very expensive to clean up. Clean up may not be possible in some cases.
- A property owner can be held liable for contaminating a 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. The effects of repeated exposure to small amounts of pesticides over a long period of time are unknown. Chronic health problems may not appear for many years.

What Can You Do?

1. Select non-toxic or lower toxicity chemicals to suit your purposes, research what options might be best.
2. Avoid storing chemicals. Buy only the amount you need. If you do need to store chemicals, make sure you have a safe area in which to do so. Contact your local municipality to learn how you can safely dispose of empty chemical containers and rinse water.
3. Never store fuel or any chemical on your property where it may come in contact with water.
4. Read and follow instructions carefully. Note if weather conditions can affect application of a product.
5. Never pour leftover chemicals down the drain, storm sewer, or into open water.

Chemical Storage & Handling: How Do You Rate?

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.	☐
	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.	☐
	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.	**Used oil, antifreeze, and other wastes are dumped down the storm sewer, in a ditch, or on the ground.*	☐
	No unused or decommissioned vehicles on the property.			Unused or decommissioned vehicles on the property.	☐
	No dirty car parts, wastes, or chemicals.	Dirty car parts and vehicle wastes/chemicals are kept out of reach of stormwater runoff.	Dirty car parts and vehicle wastes or chemicals are left on unpaved areas outside.	**Car parts and vehicle wastes or chemicals are left near watercourses.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
FUEL STORAGE					
2. **Portable fuel storage**	All fuel is used up regularly so that storage is not required anywhere on the property.	A minimal amount of fuel is stored in safe, approved, original-sale, and clearly labelled containers. Liquid fuel containers have a spout to prevent spills.	Fuel is stored in safe, approved, original-sale, and clearly labelled containers.	Fuels are stored in unmarked, open, or unapproved containers.	☐
	Distance between petroleum storage and the nearest surface water is greater than 150 m (500 ft).	Distance between petroleum storage and the nearest surface water is 61-150 m (200-500 ft).	Distance between petroleum storage and the nearest surface water is 30-60 m (100-199 ft).	**Distance between petroleum storage and the nearest surface water is less than 30 m (100 ft).*	☐
	Distance between petroleum storage and well(s) is greater than 90 m (300 ft).	Distance between petroleum storage and well(s) is 24-90 m (76-300 ft) for a drilled well or 47-90 m (151-300 ft) for a bored/dug well.	Distance between petroleum storage and well(s) is 15-23 m (50-75 ft) for a drilled well or 30-46 m (100-150 ft) for a bored/dug well.	**Distance between petroleum storage and well(s) is less than 15 m (50 ft) for a drilled well or 30 m (100 ft) for a bored/dug well.*	☐

**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 are ULC approved.		**Steel tank with no protective coating, fibreglass tank, or tank that is not ULC approved.*	☐
	Tanks are regularly checked for leaks.		Tanks are tested monthly for leaks.	Tanks are not checked for leaks.	☐
	The water table is located more than 3 m (10 ft) below the surface, under the fuel tank.		The water table is located consistently 1.5 m (5 ft) to 3 m (10 ft) below the surface, under the fuel tank.	The water table is located consistently less than 1.5 m (5 ft) below the surface, under the fuel tank.	☐
	Inactive tanks are decommissioned and properly removed.			Inactive tanks are abandoned.	☐
	Tank sites are checked for contamination. If found, it is immediately reported.			Tank sites are not checked for contamination. If found, not immediately reported.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
ABOVE GROUND FUEL TANK STORAGE					
4. Heating oil tanks	All types of tanks are located more than 3 m (10 ft) from any building.	Tanks with a capacity of less than 2,500 L (550 gal) are located 3 m (10 ft) or more from any building.		Fuel tank is located inside a building. **Tanks with a capacity of greater than 2,500 L (550 gal) are located less than 1.5 m (5 ft) from a building.*	☐
	Tanks are ULC approved, monitored for leaks, and proper vent pipe is used. Protective coating maintained.			**Tanks are not ULC approved, not monitored for leaks, and/or no vent pipe is used.* *Protective coating not maintained.*	☐
	Tank is less than 5 years old.	Tank is less than 10 years old.	Tank is less than 20 years old.	Tank is more than 25 years old, or the age of the tank is unknown.	☐
	Fuel delivery system between fuel storage and the appliance is installed by a registered contractor and inspected annually for leaks.			**Fuel delivery system between fuel storage and the appliance is not installed by a registered contractor and/or is not inspected annually for leaks.*	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
HOUSHOLD CLEANERS AND NON-FUELS					
5. **Cleaning products**	All household cleaning products are non-toxic and non-harmful to humans. Minimal quantities are used.	Most household cleaning products are non-toxic and non-harmful to humans.	Typical chemical cleaners are used properly. Minimal quantities are used.	No consideration given to a product's toxicity. More than is necessary is used.	☐
6. **Total amount of non-fuel chemicals stored**	No chemicals are stored at any time.	Chemicals are not stored longer than the immediate use period.	Small amounts of chemicals are stored for longer than the immediate use period.	Large quantities of chemicals are stored for longer than immediate use period.	☐
7. **Distance from chemical storage to nearest water source**	Greater than 150 m (500 ft).	60-150 m (200-500 ft).	30-60 m (100-199 ft).	Less than 30 m (100 ft).	☐
8. **Distance from chemical storage to well**	Greater than 90 m (300 ft).	23–90 m for a drilled well (76-300 ft) or 46-90 m for a bored/dug well (151-300 ft).	15-23 m for a drilled well (50-76 ft) or 30 -45 m for a bored/dug well (100-150 ft).	Less than 15 m for a drilled well (50 ft) or less than 30 m for a bored well (100 ft).	☐
9. **Chemical solution mixing**	Chemicals are mixed in well-ventilated areas, on an impervious surface, and far from any open drain or open water source.			Chemicals are not mixed in well-ventilated areas, not on an impervious surface, and/or mixed close to an open drain or open water source.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
HOUSEHOLD CLEANERS AND NON-FUELS					
10. Chemical storage area and containers	Stored in a waterproof, locked cabinet or storage container. The container itself is stored in a garage. 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, in a residence, and/or in a garage or shed with a concrete floor that contains a drain.	☐
	Sill installed in the cabinet to contain any spills.	No sill installed in the cabinet.		No sill installed in the cabinet. **Garage or shed has a floor drain that leads to anything other than a municipal sewer.*	☐
	Garage or shed is well ventilated to outside.			Garage or shed is not ventilated to outside.	☐
	Emergency numbers are posted nearby.			No emergency numbers are posted nearby.	☐
	All chemicals are in clearly marked containers.			Containers not labelled.	☐
	Chemicals are used before the expiration date.			Chemicals are stored or used beyond expiration date.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
HOUSEHOLD CLEANERS AND NON-FUELS					
11. **Return, rinsing, and disposal of chemical containers**	Use of returnable or refillable containers. Rinse water is used as per label instructions.	Triple/pressure rinsed containers or empty bags taken to a municipal landfill. Rinse water is used as per label instructions.	Appropriate disposal of triple/pressure rinsed containers. Rinse water is allowed into septic system or storm drain.	**Inappropriate disposal of unrinsed containers including burning them.*	☐
12. **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. Cleanup equipment is available.	Emergency plan easily accessible, outlining actions to be taken in case of spill, leak, fire, or explosion.	Emergency phone numbers are posted nearby. General plan in case of emergency.	No emergency plan prepared. No spill cleanup equipment is ready nearby.	☐
DISPOSAL OF CHEMICALS					
13. **Disposal of hazardous chemicals or materials**	No unused vehicle batteries are stored on the property.			Vehicle batteries are stored on the property.	☐
	Disposal of hazardous materials is unnecessary because the appropriate amount is purchased and used.	Leftover hazardous substances are given to others in proper and clearly labelled containers for their 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.*	☐
	Expired household batteries are taken to a hazardous waste facility or a retail store that recycles them.		Expired household batteries are put in the garbage and taken to a landfill.	Expired household batteries are not disposed of.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Helpful Hints

Prevention of Chemical Spills

- Keep your vehicles regularly serviced to check for oil, antifreeze, and gas leaks.
- Avoid storing chemicals on your property. Purchase only what you will use and properly dispose of any containers.
- Follow proper storage and handling of chemicals to reduce the likelihood of spills or leaks. If a spill or leak occurs, report it immediately.
- If you have leftover chemicals such as paint or turpentine, ask your neighbours or friends if they need it for a current project or return it to a store that collects used paints.

Hazardous Household Chemicals

Consult your local waste management site to determine how to properly dispose of hazardous household waste. Refer to hazard warning labels on the product or consult the supplier to determine safe handling. All chemicals listed below can pose a threat to human and environmental health if improperly used or disposed of. Refer to the resource list for additional information.

- Vehicle maintenance chemicals: antifreeze, oil, gasoline, grease, transmission fluid, solvents, engine cleaners, lead-acid batteries, tire cleaners, rust removers, aerosol car paint, primers.
- Building and equipment maintenance products: strong acids or bases, oils, paints, primers, aerosols, stains, finishes, sealants, lubricants, adhesives, water repellants, solvents, degreaser, paint thinner, varnishes, wood polish, wood floor cleaner.
- Household items: artists paint, lighter fluid, household batteries, shoe polishes, mothballs, solvent-based laundry products, pest control chemicals.
- Pesticides, Insecticides, and Fungicides

Resource List

Government

- Report Pollution and Spills
  www.ontario.ca/page/report-pollution-and-spills

- Safe Use of Household Chemicals
  www.canada.ca/en/health-canada/services/home-safety/household-chemical-safety.html

- Types of Chemicals and Pollutants
  www.canada.ca/en/health-canada/services/chemicals-product-safety.html

Stewardship & Conservation

- Call2Recycle Battery Recycling
  www.call2recycle.ca/ontario

- Household Hazardous Waste Recycling
  www.productcare.org/products/hhw/ontario

- Paint Recycling
  www.productcare.org/products/paint/ontario

- Underwriters Laboratories of Canada (ULC)
  https://canada.ul.com

- Rice, K. (2018). 483 Non-Toxic DIY, Health, Beauty, and Household Recipes to Replace the Chemicals in your Life (eBook).

Action Plan Worksheet #9

Chemical Storage & Handling

Any ratings of 1 or 2 indicate that your storage and handling of fuels and chemicals needs to be changed to reduce the potential for environmental damage and water contamination. Use the information from the worksheet and the resource list to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
5	*Cleaning Products*	*2*	*Research non-toxic cleaners available and purchase those required.*	*Commitment to using only non-toxic cleaning products.*

LIVING ALONGSIDE WILDLIFE

Worksheet #10 – Living Alongside Wildlife

Use this worksheet to learn about living alongside wildlife.

Why Should You Be Concerned?

- Wildlife have been inhabiting this region well before property ownership was a legal concept. We must remember that we are newcomers on this landscape and it is humans that need to learn to live with wildlife, in their habitat.

- Living alongside wildlife is key to a healthy ecosystem and watershed.

- Understanding how to live with wildlife will help ensure that wildlife doesn't become a safety concern preventing you from enjoying your property and will help ensure the safety of wildlife who may pass through.

- Local wildlife can be very beneficial and even indirectly decrease your property maintenance costs and efforts (e.g., songbirds and bats decrease insect pest populations).

- There is abundant wildlife diversity along shorelines. However, this coastal biodiversity is increasingly threatened by human activities and development.

What Can You Do?

1. Learn about species at risk and take a proactive role in living alongside these species and their habitats. Take actions to expand the quality of their habitat on your property wherever possible.

2. Ensure that any buildings and structures on your property are appropriately built and sealed to prevent wildlife from entering.

3. See the landscape as an integrated whole and support initiatives that connect areas together.

4. Work with neighbours to ensure contiguous habitat areas along shorelines (see Chapter 7).

5. Manage pets appropriately so they do not harass or harm wildlife.

Living Alongside Wildlife: How Do You Rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
RESOURCES FOR WILDLIFE					
1. **Familiarity with local wildlife**	Strong understanding of wildlife in the region, and their seasonal patterns. Continually seek to learn how you can provide habitat for local wildlife, especially species at risk.	Good understanding of wildlife in the region and their seasonal patterns.	Basic familiarity with local wildlife and their seasonal patterns.	No knowledge or consideration for wildlife on your property. ***Immediately take action to exterminate without sufficient knowledge.***	☐
2. **Wildlife habitat planning**	Development and implementation of a wildlife habitat plan that enhances habitat resources for desired wildlife. Plan seeks to link habitat on property with the larger landscape using ecological corridors.	No formal plan exists but property management includes wildlife habitat enhancement. Property management links habitat on property with the larger landscape using ecological corridors.	Property provides some wildlife habitat that is protected and preserved.	Property is managed with no regard to wildlife habitat requirements.	☐
	Trees, shrubs, and other plants on your property provide food for birds, butterflies, and other wildlife.	Bird seed is available but other animals are kept out of feeders. Feeders are only used from Nov. 1 - April 1.	Birds are expected to forage elsewhere beyond your property.	Bird feeders are readily accessed by other animals.	☐

**These conditions may violate provincial legislation or municipal bylaws.*

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
RESOURCES FOR WILDLIFE					
3. **Providing wildlife habitat**	Extensive buffers are created or conserved along shorelines and the property contains several woody and herbaceous plant species, offering a large range of wildlife habitats including coastal wetlands and vernal pools.	Numerous buffers are created along shorelines and the property contains several woody and herbaceous plant species, offering a range of wildlife habitats and good water quality protection.	A few buffers are present but contain no woody species, offering a limited range of wildlife habitats but some water quality protection.	No buffers present.	☐
	Basking rocks used by reptiles are left in place near vegetative cover, providing habitat for snakes. Species and their habitat are avoided especially in the spring.	Natural vegetation cover is maintained, and some rocks are in place to provide habitat for snakes. Species are left undisturbed.	Some natural vegetation is maintained and some rocks are in place to provide habitat for snakes. Species are left undisturbed.	No natural vegetation and rocks have been removed.	☐
	Natural bird food sources, nest boxes, and perches are placed and managed for species including those that provide specific services (e.g. fly, mosquito, or garden insect control). They are all more than 1.5 m (5 ft) above the ground and nest boxes are cleaned regularly.	Natural bird food sources, nest boxes, and perches are available but not strategically placed, and only managed for species that provide specific services (e.g. fly and mosquito control).	Natural bird food sources such as berry bearing shrubs are provided.	Natural bird food sources, nest boxes, or perches are not present.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
AVOID ATTRACTING WILDLIFE					
4. **Food and waste scraps**	All food and waste (including pet food and birdseed) is stored indoors in rodent/bear-proof containers. Recyclables are rinsed and stored. Waste is taken to a sanitary landfill. Compost is properly maintained. BBQ is cleaned and stored in a secure area.	Garbage is temporarily stored outside, but in rodent/bear proof containers. Waste is taken to a sanitary landfill.	Empty food and drink containers are rinsed. Garbage is stored in sealed containers in an outbuilding. Waste is taken to a sanitary landfill.	Compost is improperly maintained, or rodent/bear-proof containers are not used. Waste is improperly disposed of.	☐
5. **Preventing unwanted browsing of plants**	Plastic or metal mesh (e.g. chicken wire) is not used to cover plants as it entangles wildlife. If necessary, plants are covered with burlap, and trees are protected with a light-coloured pipe.			No consideration given to wildlife in attempts to protect plants from animal browsing.	☐
PET MANAGEMENT					
6. **Controlling access**	Cats are kept indoors. Dogs are kept on a leash or in a run. All pets have up-to-date vaccinations.	Cats are belled and kept on a leash. Dogs are on a rope.	Pets are allowed outside unleashed but are supervised.	Pets are allowed to roam freely outside and are unsupervised.	☐

Helpful Hints

Pet Management

- Cats can be disastrous for young birds and other wildlife including Ontario's only lizard, the five lined skink. Keep your cat indoors.

- Always keep dogs on a leash or rope, or in a contained space.

Property Management

- Leave rocks in their natural place. They provide important cover and areas for reptiles to regulate their body temperature.

- Limit the number of trees that are cut. If safe to do so, leave dead trees standing. If you must cut a dead tree, try to leave some logs to slowly decay at the edge of your property. Create brush and leaf piles rather than burning them.

- Do not fill or alter wetlands or the natural shoreline. These areas are essential for the survival of many species.

Interacting with Wildlife

- Do not disturb wild animals, including snakes and turtles, and never feed them.

- Control measures for nuisance wildlife are regulated by provincial legislation. Do not attempt any control methods without consulting local and provincial regulations or without the help of a professional.

Wildlife in Distress

- If you come across an animal in distress, be certain that the animal is truly injured or abandoned. Some species act injured to lure predators away from their nest or young. A young animal may appear to be abandoned but could just be temporarily unattended by its parents. Your presence may keep the parents from returning. This is often the case with fawns which are left while their mother is nearby feeding. Although it is sometimes hard to accept, your removal of that animal may deprive predators of a natural food source.

- If you decide that an animal truly needs help, please call a provincial authority or animal rehabilitation centre for advice first. Some injured animals could be dangerous while others simply don't need help. The provincial authorities or an animal rehabilitation centre can offer advice on how to best resolve the situation. Never attempt to treat the animal yourself. The sooner it receives professional help, the greater the chance of it being returned to its natural habitat. It is also illegal in Ontario to keep native species without proper licensing.

Get Involved!

Learn everything you need to know about finding both injured and uninjured turtles on roadways with the Turtles on Roads Guide!

Available here: www.gbbr.ca/conservation-guides

Additional Information

What is a Species at Risk?

- A species at risk is any native plant or animal that is at risk of extinction or of disappearing from our province (known as extirpation).

- Over 50 species at risk are found in eastern Georgian Bay. For several of these species, this area is essential for their survival.

- Species at risk are classified as either:
    - Endangered – facing imminent extirpation or extinction;
    - Threatened – likely to become endangered if limiting factors are not reversed; or
    - Special concern – has characteristics that make it particularly sensitive to human activities or natural events.

- Just as we define our community as the place where we live and work, areas such as wetlands and mixed forests with their associated plant and animal species help define natural communities. Each species has its own niche or role in these natural communities. The loss of even one species can have a ripple effect in the community and indicates stress in that environment. This is why maintaining biodiversity is important for the overall health of our natural community.

The Endangered Species Act

- The Endangered Species Act (2007) deals with the protection and recovery of species at risk in Ontario.

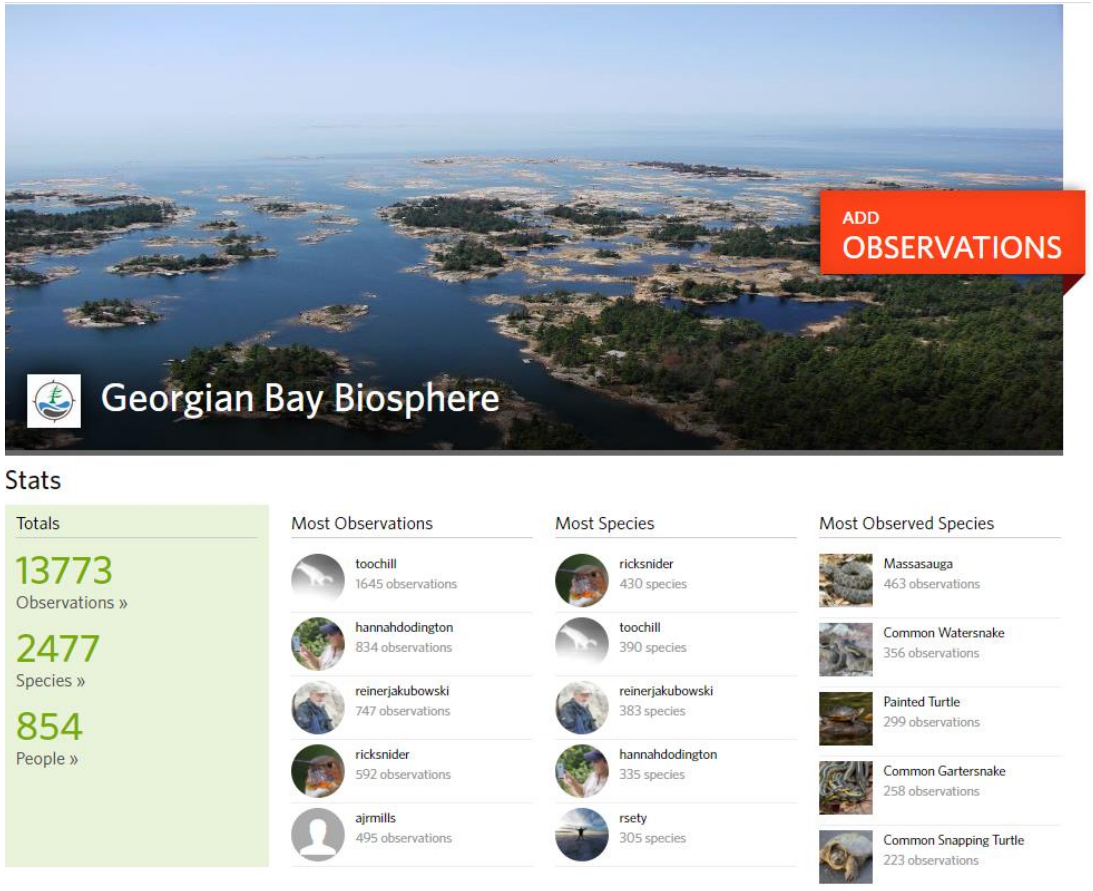
- If a species is identified as an endangered or threatened species on Ontario's species at risk list, it is illegal to kill, harm, harass, capture, remove, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade one of its members.

- Maximum fines of $250,000 for individuals, and up to $1 million for corporations are applicable.

- Please report your sightings of species at risk in your community (see iNaturalist page).

iNaturalist

- iNaturalist is an app that is popular across the world as a citizen science tool that helps collect observations and identify species of plants and animals posted by users.
- Every observation can contribute to biodiversity science, from the rarest butterfly to the most common backyard weed. Join the **Georgian Bay Biosphere iNaturalist project** to showcase your observations of unknown, rare, at-risk, and common species!
- All observations will help researchers to gather more information about the species on the eastern coast of Georgian Bay in order to better understand threats and where efforts into research and mitigation should be directed. These observations will help guide research questions, mitigation projects, and other conservation initiatives.
- iNaturalist shares your findings with scientific data repositories like the Global Biodiversity Information Facility to help scientists find and use your data. All you have to do is observe.
- Learn more: www.inaturalist.ca/projects/georgian-bay-biosphere.



Resource List

Stewardship & Conservation

- Species at Risk in the Georgian Bay Biosphere
  www.gbbr.ca/species-at-risk
- Maamwi Anjiakiziwin – Together, Land, Renewal, Life
  www.maamwigeorgianbay.ca
- Pollinator Gardens: A Guide for Eastern Georgian Bay
  www.gbbr.ca/conservation-guides
- Ontario Nature
  www.ontarionature.org/programs/community-science
- Birds Canada
  www.birdscanada.org/you-can-help/citizen-science
- Keep Cats Safe and Save Bird Lives
  www.catsandbirds.ca
- Ontario Turtle Conservation Centre
  www.ontarioturtle.ca
- Aspen Valley Wildlife Sanctuary
  www.aspenvalley.ca

Government Resources

- Bear Wise Program
  www.ontario.ca/bearwise
- Preventing Conflicts with Wildlife
  www.ontario.ca/page/prevent-conflicts-wildlife
- Animal Welfare Contacts
  www.ontario.ca/page/animal-welfare
- Ontario Species at Risk
  www.ontario.ca/page/how-species-risk-are-protected
- Report Rare Species
  www.ontario.ca/page/report-rare-species-animals-and-plants
- Creating Wildlife Habitat
  www.ontario.ca/page/creating-wildlife-habitat
- Endangered Species Act
  www.ontario.ca/laws/statute/07e06

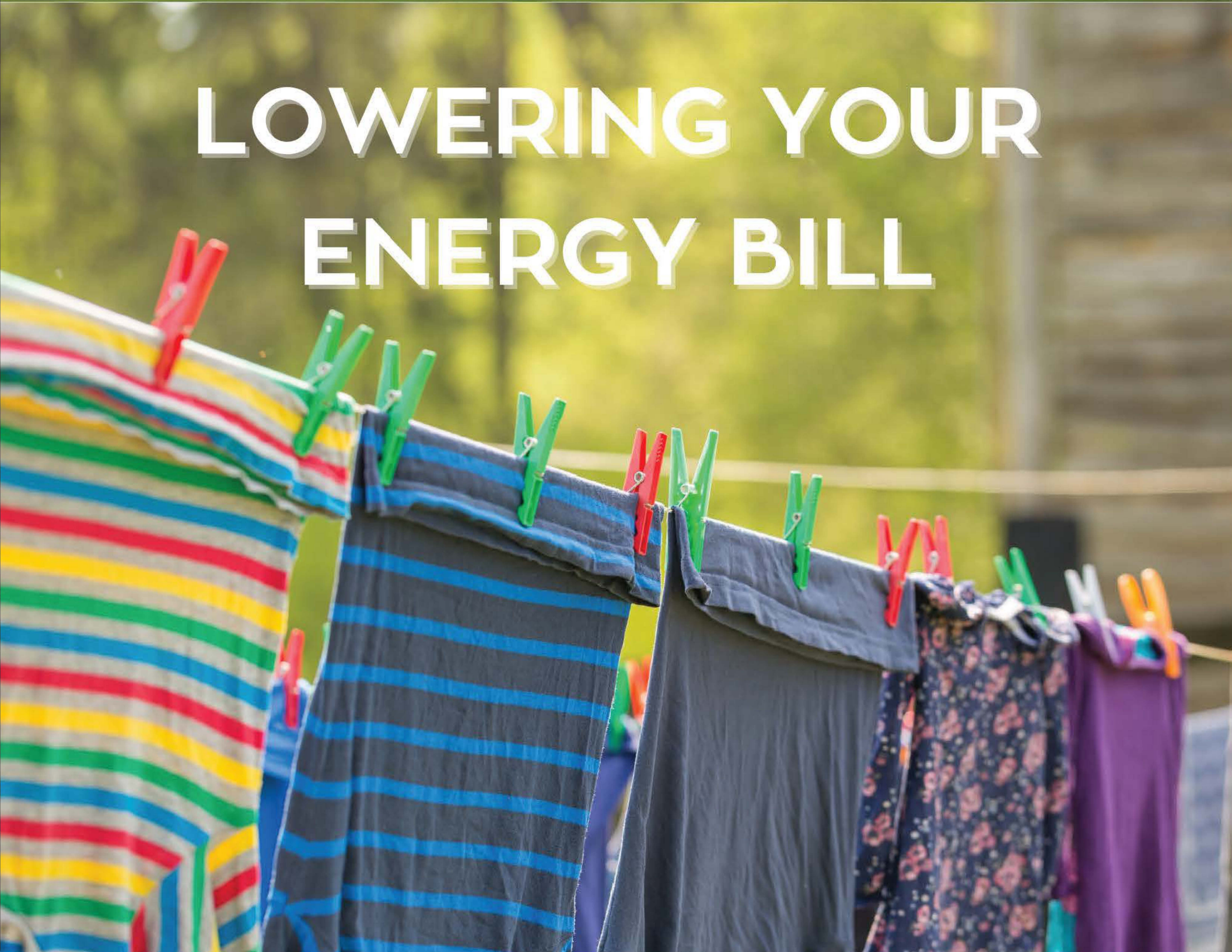
Action Plan Worksheet #10

Living Alongside Wildlife

Any ratings of 1 or 2 indicate that your management of wildlife should be changed to reduce the potential for harm. Use the information from the worksheet and the resource list to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
4	*Food waste and scraps*	*2*	*Research options for composting and bear-proof storage of garbage.*	*Purchase and properly install or build a bear-proof garbage container or store garbage in a sealed container in a basement. Recyclables are stored in a secure fashion. Composting is carefully managed.*
	f			

LOWERING YOUR ENERGY BILL



Worksheet #11 - Lowering Your Energy Bill

Use this worksheet to find out how to improve your energy efficiency at home and at the cottage.

Why Should You Be Concerned?

- Increasing energy costs mean that the average homeowner will have to pay more for energy use in their homes. This includes heating and cooling, as well as energy use to power appliances.
- 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.
- Home energy use contributes to greenhouse gas (GHG) emissions. Increasing global GHG emissions leads to worsening effects from climate change.
- Climate change will affect many aspects of our everyday lives with more extreme weather events, changes to seasons and growing patterns, even altering water levels on Georgian Bay.

Get Involved!

Learn about your GHG emissions by using the Georgian Bay Biosphere's Carbon Calculator!

Learn more: www.gbbr.ca/carbon-calculator

What Can You Do?

1. Improve energy efficiency in your home or cottage to reduce the amount of energy you are using and the GHG emissions you produce. Doing so also saves you money!
2. Learn how small changes can have a cumulative effect in protecting our environment, including air and water quality.
3. Ensure that your home is tightly-sealed, properly insulated, and that all mechanical systems such as heating and cooling are operating efficiently.
4. Have a professional conduct a home energy audit of your house and ensure that heating/cooling systems receive regular maintenance.
5. Choose energy efficient appliances and electronics such as those with the Energy Star label.
6. Reduce the amount of driving that you do, especially in urban areas, and choose the most fuel-efficient vehicle for your needs or consider the long-term benefits of an electric vehicle.

Lowering Your Energy Bill: How Do You Rate?

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 that carry the Energy Star label, upgrading if necessary.	Use energy-efficient heating and/or cooling units for your needs, upgrading if necessary.	A window air conditioning unit is used but it is removed during the winter. If it is fixed in place, the window air conditioner is sealed with caulking or tape and covered with an airtight, insulated jacket for winter.	Heating or cooling unit is inefficient, older than 15 years, and/or no upgrading planned.	☐
	Heating and cooling units are serviced yearly by a licensed heating contractor. Furnace filters are cleaned or replaced every two months and air conditioner filters are replaced monthly (central air filters are cleaned or changed at the beginning of the warm season each year).	Heating and cooling units are serviced yearly by a licensed heating contractor. Furnace and air conditioning filters are cleaned or replaced occasionally.	Heating and cooling units are serviced immediately when malfunctioning or when a problem is suspected.	Heating or cooling units are seldom maintained. Filters are not changed nor cleaned as per energy efficiency recommendations.	☐
	Regularly check that vents, air intakes, and chimneys are not blocked and that seals around them are intact. Retrofit fireplaces or older woodstoves with a new advanced combustion model.	All chimneys are cleaned and inspected annually. Pilot lights of gas fireplaces or wall heaters are turned off in the summer.	Occasionally check that vents, air intakes, and chimneys are not blocked.	Fireplace dampers are left open when not in use. Inefficient fireplaces or older woodstoves are used regularly.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BUILDINGS					
2. Lights	Minimize light bulb use by maximizing use of natural lighting. Lights are turned off when not in use. All incandescent light bulbs are replaced with Energy Star certified fluorescent light or LED bulbs.	Lights are turned off when not in use. Motion detectors or automatic timers are installed on outdoor lights.	Attempt to minimize light bulb use. Energy Star certified compact fluorescent light bulbs are used in the most commonly used areas.	Everyday practices do not attempt to minimize light bulb use. Lights are left on for a prolonged period of time such as overnight or while occupants are away.	☐
3. Building components	Hire a professional to conduct an energy audit, then develop and implement an energy plan for your home. Inform yourself of alternative energy options such as solar power and wind energy.	Check regularly for drafts or leaks around doors, windows, baseboards, ducts, attic hatches, air conditioning units, and outlets/switches. Immediately take the appropriate action to fix the situation.	Check occasionally for drafts or leaks throughout the building.	Seldom check for drafts or leaks. Condensation or frost appears on windows.	☐
	All ductwork is located in heated and/or cooled space within the building and has weather stripping in place.	All ductwork is located in heated and/or cooled space within the building.	Some ductwork is located in unheated and/or uncooled space (e.g. attic, garage).	Ducts are not insulated. Ducts have no weather stripping around joints.	☐
4. Building design	Construction meets passive house standards for building practices and technologies.	Energy efficiency practices and technologies are used in building design and layout.	Energy efficiency is a consideration in building design and layout.	Building is difficult to heat in winter and difficult to cool in summer.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BUILDINGS					
5. **Heating and cooling practices**	A programmable system is used. During the winter, thermostat is lowered at night and while you are away during the day.	A programmable system is used.	During the winter, thermostat is lowered at night and while you are away during the day.	Heating and cooling systems are not adjusted to the time of day or activity within the space.	☐
	During the summer, the building is naturally cooled by closing blinds/shutters/ drapes, and by 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. During winter, blade direction pushes warm air downwards.	During the summer, the air conditioner is set to 24°C (75°F) while you are at home and is raised when you leave.	No attempt is made to adopt practices that minimize energy use.	☐
WATER HEATING AND USE					
6. **Hot water use**	All laundry is washed and rinsed using cold water.	Most laundry is washed and rinsed using cold water.	Cold water is sometimes used to rinse laundry.	No attempt to minimize the amount of hot water that is used in laundry.	☐
	Length of showers is minimized and a low flow showerhead is used.	Length of showers is minimized.	Hot or warm water is left running while bathing.	No attempt to minimize the amount of hot water that is used in showers.	☐
7. **Water Heaters**	High efficiency, on-demand water heater. Water heater is turned off when the 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 tank is inefficient or not insulated. Water heater is left on year-round regardless of use.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
WATER HEATING AND USE					
8. Hot tubs and pools	No pool or hot tub.	Location optimizes the use of natural wind shelter or shade from climatic factors. Water is heated with solar panels. Water is covered with a thermal blanket to trap heat.	Water is not heated with solar panels. Pump timers are used to regulate the temperature and duration of water heating.	No actions taken to ensure that heat energy is not lost from water when air temperatures drop. Pump timers are not used.	☐
APPLIANCES AND ELECTRONICS					
9. Energy efficiency	Always purchase high energy efficiency Energy Star appliances, especially the refrigerator, dishwasher, stove/oven, washer, and dryer. Electronics such as computers and printers are unplugged or turned off at the power bar when not in use.	Always turn off and unplug appliances that are not in use, especially older, inefficient appliances. Minimize the use of appliances and electronics.	Locate the refrigerator or freezer away from heat sources (including other appliances) or windows. Keep the refrigerator between 1.7-3.3°C (35-38°F) and the freezer unit at -18°C (0°F).	Energy efficiency is not considered when purchasing appliances or electronics. No action is taken to improve the energy efficiency of appliances or electronics.	☐
	During hot weather, all baking, washing, drying, and ironing are done early in the morning or in the evening.	Dishwasher is used but always runs full and is set to the 'no heat' or 'air drying' option.	Dishwasher is used but always runs full.	No consideration is given to actions or practices that minimize energy waste.	☐
	Laundry loads are always full and done on cold water settings. Whenever possible, clothes are hung to dry.	Clothes washer/dryer are almost always run full and cold settings are used most of the time.	Clothes washer/dryer is almost always run full and cold settings are used often.	No consideration is given to actions or practices that minimize energy use.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
APPLIANCES AND ELECTRONICS					
10. Maintenance	Check appliances regularly to ensure that seals remain in good condition, especially refrigerators and freezers.	Appliances are sometimes checked to ensure that seals remain in good condition, especially refrigerators and freezers.	Appliances are rarely checked to ensure that seals remain in good condition.	Appliances are never checked to ensure that seals remain in good condition.	

Helpful Hints

Buildings

- Seal and insulate warm air ducts.
- 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 southwest facing wall. Open them in the evening to catch cool breezes.
- Locate working spaces and high activity areas that need light near south facing windows so that fewer lights need to be on to meet your needs.
- Install storm windows and doors over single-pane windows and use weather stripping around all joints. Alternatively, install Energy Start certified double-glazed windows.
- In winter, lower the temperature on your thermostat. 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. In summer, 24°C (75°F) is the most cost-effective thermostat setting for cooling.
- Use a programmable thermostat. Save energy by only heating or cooling your home when you need it. Turn off your AC or heat when not at home.
- Ensure that your home is properly insulated and seal any air leaks to prevent drafts.

Appliances & Electronics

- Choose front-loading washing machines with the Energy Star label.
- Many appliances (TVs, computers, DVD players, cell phone chargers, stereos) consume 25% of their power when they are not even turned on! Unplug electronics when not in use or use a power bar to easily turn off multiple items.
- Use your microwave to reheat food, it is the most efficient.
- Energy Star certified recessed lighting fixtures can use up to 90% less energy than traditional models with incandescent bulbs.
- An Energy Star certified dryer can save up to 20% more energy compared to other models. Save even more energy by hanging your clothes outside to dry!
- Consider an on-demand, tankless water heater.
- Use an electric or induction stove rather than gas.
- Consider changing your home's heat source to an electric heat pump.

Resource List

Government

- Energy Star Canada
  www.nrcan.gc.ca/energy-efficiency/energy-star-canada/18953
- Government of Canada EcoAction Program
  www.ecoaction.gc.ca/index
- Climate Change Adaptation in Canada
  www.nrcan.gc.ca/climate-change-adapting-impacts-and-reducing-emissions/21442
- Get Flood Ready
  www.canada.ca/en/campaign/flood-ready.html
- Prepare for Extreme Weather
  www.getprepared.gc.ca/index-en.aspx
- Energy Efficiency for Home
  www.nrcan.gc.ca/energy-efficiency/homes/20546
- Small Changes for Your Home
  www.nrcan.gc.ca/energy-efficiency/homes/make-small-changes-add/21850

Stewardship & Conservation

- Climate Resources
  www.gbbr.ca/climate-resources
- AffordAbility Fund
  www.affordabilityfund.org
- Save on Energy Home Affordability Program
  www.saveonenergy.ca//en/For-Your-Home/Energy-Affordability-Program
- International Passive House Association
  www.passivehouse-international.org

Action Plan Worksheet #11

Lowering Your Energy Bill

Any ratings of 1 or 2 indicate areas of your household management that need some changes to reduce your energy usage. Use the information from the worksheet and the resource list to help analyze 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
5	*Heating and Cooling Practices*	*2*	*Research appropriate tree species for your area. Install a programmable thermostat and ceiling fans in bedrooms and living room. Install window coverings to help regulate temperatures.*	*Plant deciduous trees on the south side to reduce solar gain in summer and coniferous trees on the north and west sides to reduce winter winds.*

Conclusion

Thank you for taking the time to self-assess your actions and property to learn more about how simple actions can have big effects on the habitats and species in the region.

With the results of your self-assessment and the suggested resources, we encourage you to use your action plans and begin implementing changes. With every improvement you make, you are playing your part in helping to care for the land, water, and air.

What To Do Next?

SHARE… Pass this guide on to friends, family, and neighbours. While not every chapter of the guide will apply to every individual or family, valuable information can still be gained by reading through each chapter.

HOST… Invite a group of neighbours or friends over for a Stewardship Party! Use your property to go through part or all of the guide together with your guests. Consider where improvements can be made and identify great examples of best practices in action!

CHALLENGE… Encourage neighbours to create their own action plans and set up a friendly competition. See who can make the most improvements, the improvement with the biggest impact, etc.

PARTICIPATE… There are so many great ways to get involved in citizen science projects both on your own property and throughout the region. Find examples throughout the chapters that match your interests and get involved! For even more options, visit www.gbbr.ca/citizen-science.

STAY IN TOUCH… We want to hear from you! Contact the Georgian Bay Biosphere to let us know how this guide helped you and your property. Consider a charitable donation to one of our many conservation and education programs. Check out www.gbbr.ca for more information on events, sign up for our newsletter, and follow us on social media!

Glossary

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

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.

ANSI (Area of Natural and Scientific Interest): Areas identified by provincial regulations 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.

Anti-backflow device: Check valve, vacuum breaker, or another mechanical device that prevents liquids from flowing backward 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 stores water, and which lies above a layer of clay or other impermeable material that does not allow the 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 source for wells.

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 number 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.

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.

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.

Buffer: An area of natural vegetation that runs along the shoreline, stream, or bluff. It extends from the high water mark to the water's edge. Also referred to as a buffer strip, filter strip, or riparian zone.

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

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

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

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

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.

Coliform bacteria: 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.

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 easement: A legally binding agreement not to develop part of a property, but to leave it "natural" permanently or for some designated period of time. The property still belongs to the landowner, but restrictions are placed both on the current landowner and on subsequent landowners. The easement becomes part of the land deed so that all future property owners are bound by the terms of the easement.

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.

Contiguous: Connecting without a break.

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

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

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

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, indicating the extent of a tree's root system, though most roots in fact extend beyond the dripline.

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

Ecological corridor: An area of vegetation, typically linear that is similar to or the same as wildlife habitat areas, which allows wildlife to move between habitat areas. The size of the corridor determines its effectiveness as a safe means of travel.

Ecosystem: A complex, natural system created and maintained by the interaction and interdependency between all living organisms and their particular environment. Any action taken at any level in this interacting system has a potential domino effect on every other organism or element within the ecosystem.

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.

Energy audit: A thorough assessment of how much energy a building uses, as determined 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 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.

Erosion: Movement and loss of soil caused by wind or water (rain, surface water runoff, or direct contact with a water body).

ESA (Environmentally Sensitive Area): Designation given to an area with valuable ecological features or habitat that need special protection due to its surrounding landscape, wildlife, or historical value.

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

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.

Fill: Material that is brought from elsewhere and added to the existing landscape, such as soil, gravel, sand, or loam.

Floodplain: The area adjacent to a water body or water course that is flooded during high water levels. Often this occurs following snowmelt or an extreme rainfall event.

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 in relative safety.

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

Great Lakes – St. Lawrence Watershed: One of three primary watersheds in the province of Ontario. The other two primary watersheds are the Hudson's Bay and the Nelson River Watersheds.

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 that provides what an organism requires for survival and reproduction.

Hazard tree: A tree or any component of a tree that has sufficient structural infirmity to be identified as having a high risk of falling and causing personal or property damage.

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

Health Unit: A provincial health agency that administers health promotion and disease prevention programs through local offices.

Herbaceous: Non-woody plant material or vegetation. An herbaceous plant goes dormant or dies back every year.

High watermark: The level or elevation along the shore that marks the boundary of the lake bed, which signifies the boundary of the government's ownership. Also known as the upper controlled water elevation.

Impervious: Not allowing water or other substances to pass through.

Infiltration: Allowing water or other substances to pass through pores or spaces in a material(s).

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 native species and threaten ecosystems.

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

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

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.

Marsh: A type of wetland that is periodically or permanently flooded. It is characterized by non-woody emergent vegetation such as cattails, rushes, reeds, grasses, and sedges. Vegetation ranges from shrubs in drier areas to floating-leafed or submerged plants in open water.

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 the mulch breaks down over time.

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

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 process: A series of changes or actions that occur within an ecosystem to maintain its health or regulation.

Non-invasive: A plant with a low potential to spread quickly or become difficult to control or eradicate. Local native plants are typically not invasive.

Nuisance wildlife: Any wildlife that causes damage to your property or is a potential threat to health and safety.

Ontario drinking water standards: The minimum water quality standards set by provincial regulations to protect public health. It is advisable that drinking water meets these standards.

Passive solar heating/lighting: The natural heating/ lighting of buildings or rooms by the 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.

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, are all types of pesticides.

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.

Pressure or dosed distribution: A septic system that utilizes a pump to load shallow, rapidly-changing distribution lines in doses.

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 shorelands adjacent to navigable waters.

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.

Right-of-way (includes easements): A legal agreement that confers on an individual, company, or municipality the right to partially restrict an owner's use of those portions of land use a landowner's property in some way. It is also therefore affected by the right of way/easement. Right of ways are typically registered on the certificate of title to the property and are automatically transferred from one owner to another as the land is sold. They remain on the title until the holder of the easement discharges their rights from the certificate of title.

Riparian area: The transition zone from aquatic to a terrestrial habitat that exists near and along the bank of a natural watercourse or water body (e.g., river, stream, or lake). It is rich in the density, diversity, and productivity of plant and animal species.

Runoff: Snowmelt or rain that flows overland rather than infiltrates through the soil/rock.

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 m (50 ft) deep. They can be installed in loose soils, such as sand.

Sensitive natural feature: An environmental element of the landscape that is readily affected by or responsive to external influences or change.

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.

Silt fencing: A temporary barrier stretched across an area to trap sediment and prevent runoff water from moving it off-site during construction.

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.

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.

Spawning habitat: The place where female fish lay their eggs and males fertilize them.

Species-at-risk: A general term to describe the state of a species population. This term is further organized into five categories of risk: Special Concern, Threatened, Endangered, Extirpated, and Extinct. The usual causes for a species to be at risk include habitat destruction, genetic and reproductive isolation, the suppression of natural occurrences such as fire, environmental contamination, over-harvesting, climate change, disease, and the presence of invasive species.
Steward: An individual with a personal commitment to care for the land and the surrounding landscape in order that it may be preserved or enhanced for future generations.

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 (such as infiltration basin, receiving stream, treatment plant).

Surface water: Any open or exposed body or flow of water including springs, streams, rivers, ponds, lakes, etc.

Survey: A map document made by a licensed 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.

Swamp: This is the most diverse type of wetland and it is often flooded in the spring and drains throughout the dry season. It is dominated by shrubs and trees.

Unused well: A water well that is not currently used or is used occasionally. All wells regardless of use must be properly maintained or they must be properly abandoned (plugged and sealed).

Wastewater: Water of domestic origin, including water-borne waste from the kitchen, laundry, and bathrooms.

Wastewater treatment plant: Municipal public facilities that treat water that is collected from homes, businesses, and industry.

Watercourse: An open flow of water including a stream, spring, channel, or river
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).

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.

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.
Wetlands: Areas that are permanently or temporarily submerged, or saturated for at least part of the year.

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.

Thank You
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The Georgian Bay Mnidoo Gamii Biosphere (GBB) is a community-based organization that builds capacity for regional sustainability in eastern Georgian Bay.

The GBB is a non-profit registered Canadian charity governed by a Board of Directors.

For more information, please visit:

gbbr.ca

info@gbbr.ca
705-774-0978