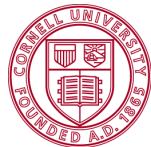


# Finger Lakes Landscapes

Landscaping for Water Quality in the Finger Lakes Region



Cornell University  
Cooperative Extension  
Onondaga County

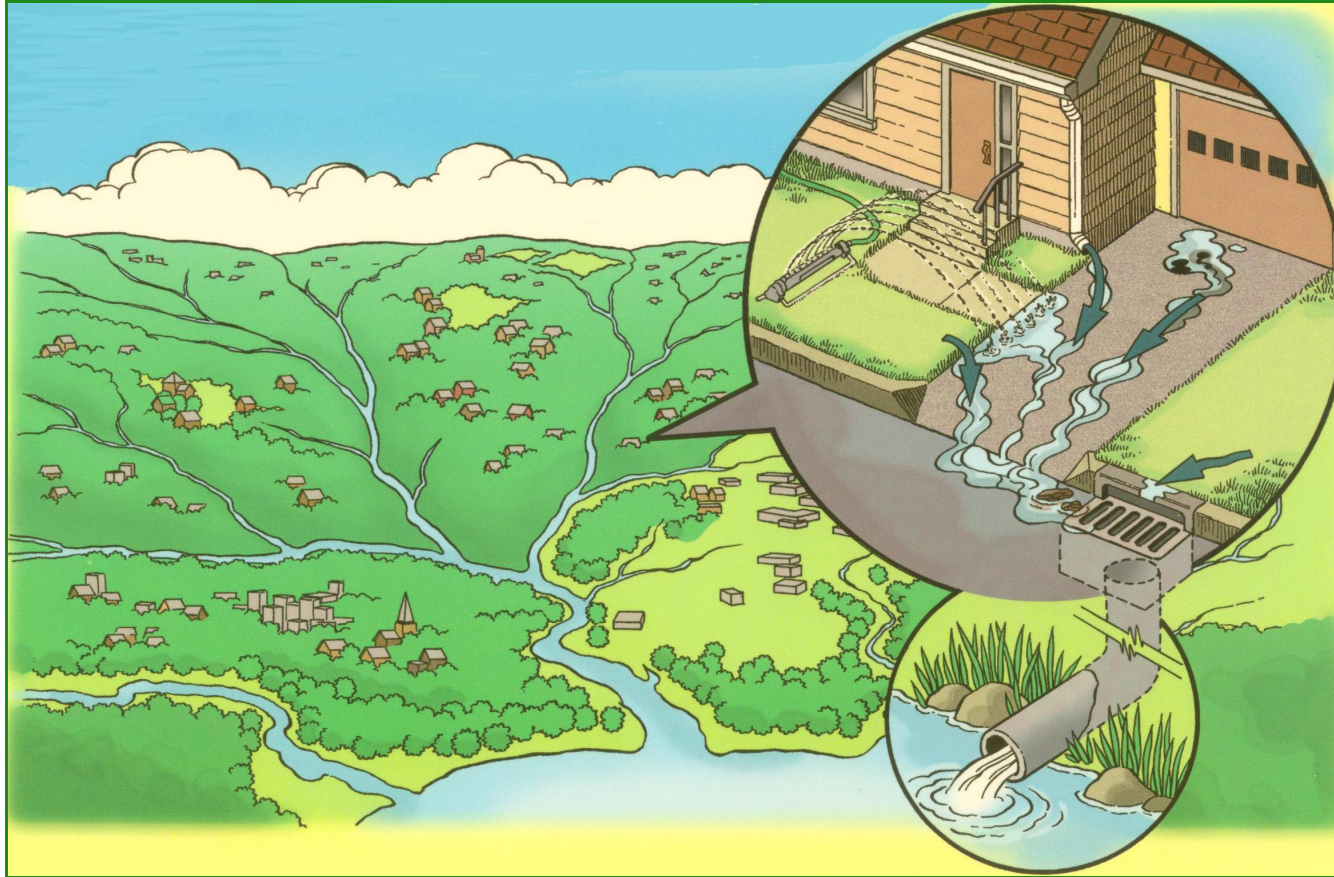
# Introduction

Whether you have waterfront property or live miles away from the nearest shoreline— everyone has an impact on the quality of water that enters and leaves their property as it travels through the watershed. In the Finger Lakes Region, every lawn, front yard, and flowering garden plays a role in how clean and healthy the local streams and lakes are. The rain that washes off your lawn may flow directly to a lake or stream, or it may travel through a network of stormdrains and ditches before it empties into a waterway. Regardless, the amount and quality of water that leaves your property has an impact on local waters. The right combination of landscaping techniques can help filter out pollutants and soak up excess stormwater. Not only can these methods help ensure that the water leaving your property is as pure as possible, but they can also add a dimension of beauty to your yard that will provide blooming color, enjoyable scenery, and important butterfly & songbird habitat!



# How can my property affect water quality?

## Runoff from a single lawn...



...quickly adds up at a watershed scale!

Rain or snowmelt that runs over the land, rather than soaking into the ground, is known as "runoff". As water washes over the land it picks up and dissolves lawn chemicals, garden fertilizers, bacteria from pet waste, and eroded soil particles.

### When it Rains it Drains

- ◆ **Eroded soil and sediment** decrease water clarity, promote plant growth, and smother fish spawning habitat.
- ◆ **Bacteria** from pet waste and inadequate septic systems threaten swimming and drinking water uses.
- ◆ **Lawn and garden fertilizers** bring added nutrients that can promote the growth of aquatic plants and lead to algae blooms.
- ◆ **Automotive fluids, road salt, and car washing detergents** from streets and driveways have a negative impact on water quality.

# What is Landscaping for Water Quality?

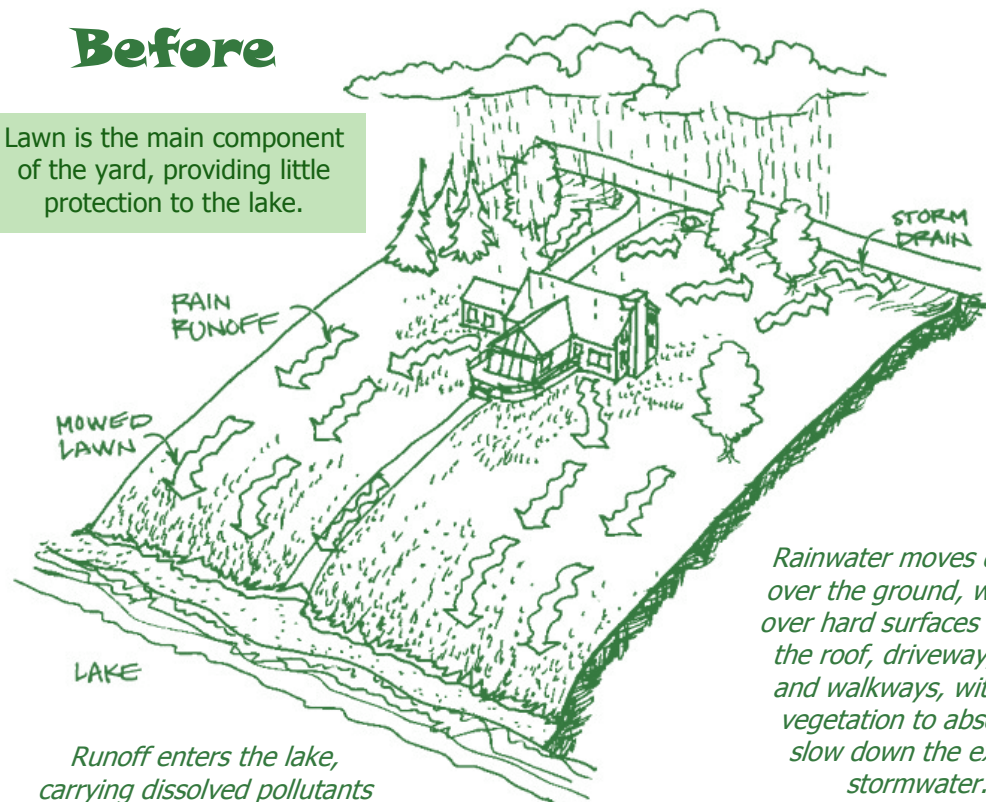
Landscaping for water quality can transform an average lawn into a outdoor space with appealing design and purpose. It means maintaining the vegetation that already exists on your property and adding more shrubs and trees, particularly along stream banks, shorelines and other wet areas. It means establishing perennial gardens, wildflower beds, rain gardens, and vegetation that maximize the beauty of your property while minimizing harmful impacts on the environment. Depending on your personal preference and style – your new landscaping elements can be less maintenance than a typical lawn, or provide you with new gardening activities. This publication contains information to help you choose shrubs and trees that are suited to your property and are as pleasing to you as they are to the environment.

## Many Benefits

- ◆ **Benefit wildlife.** Planting a diverse variety of native plants will meet the needs of a variety of song birds, butterflies, and other creatures.
- ◆ **Enhance property values.** Eroded shorelines and polluted water can hurt property values. Stabilizing the shoreline and contributing to water quality is a sound investment.
- ◆ **Satisfaction.** Many people find that it is satisfying to make changes that protect our natural resources.
- ◆ **Show Best Attributes.** Plants can be used to screen undesirable views and frame good ones.
- ◆ **Save Time and Money.** Landscaping with native plants can often reduce the need for maintenance, fertilizers, and other chemicals.
- ◆ **Improve Water Quality.** Plants can help filter pollutants that wash off driveways, streets, and other hard surfaces.

## Before

Lawn is the main component of the yard, providing little protection to the lake.



*Runoff enters the lake, carrying dissolved pollutants such as eroded sediment, lawn fertilizer, garden chemicals, and bacteria from pet waste.*

*Rainwater moves quickly over the ground, washing over hard surfaces such as the roof, driveway, patio and walkways, with little vegetation to absorb or slow down the excess stormwater.*

# After

# Landscaping Techniques

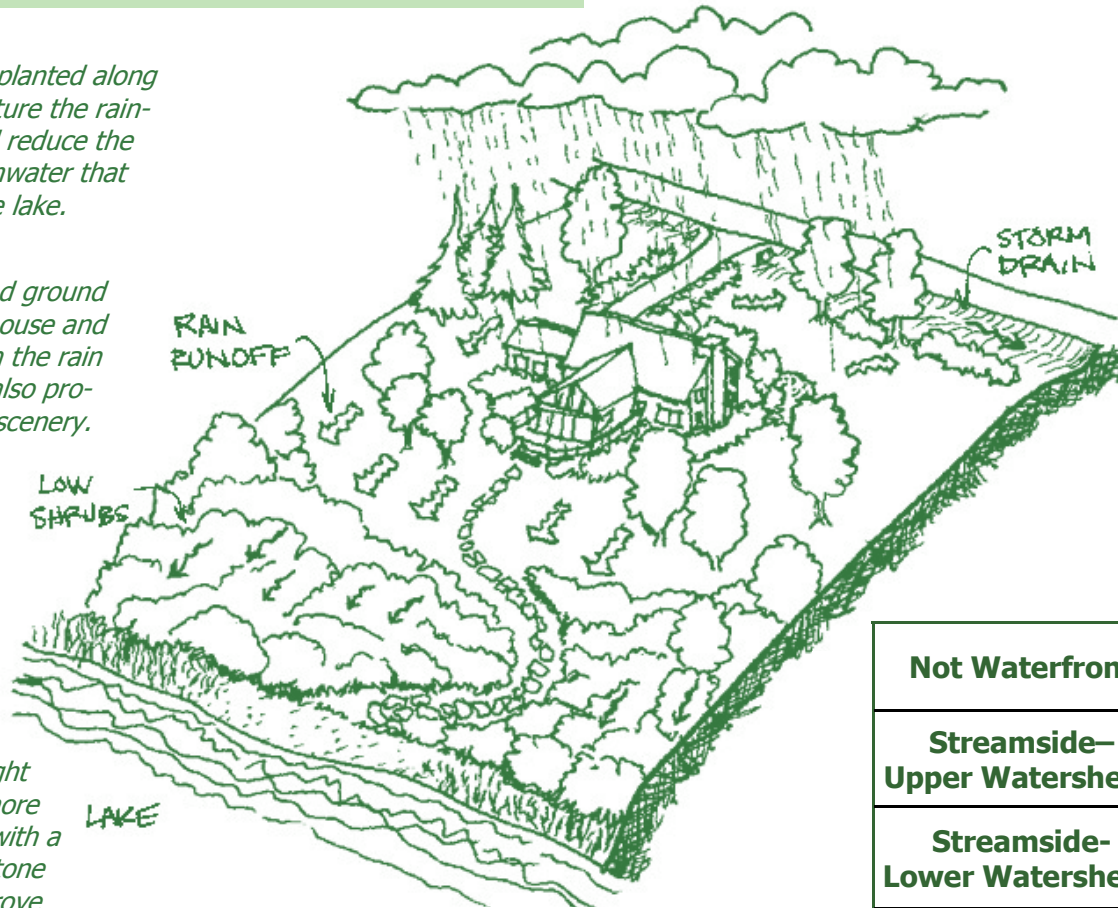
By landscaping this property with water quality in mind, the yard has more aesthetic character and contributes less stormwater pollution to the lake.

Perennial gardens planted along the driveway capture the rain-water runoff and reduce the amount of stormwater that reaches the lake.

Flowering plants and ground covers border the house and patio, to both catch the rain water runoff and also provide eye-pleasing scenery.

Additional trees help stabilize the soil and prevent erosion.

The paved, straight walkway to the shore has been replaced with a meandering, flagstone path that will improve water infiltration to the ground rather than directing water straight downhill.



The lakeshore is protected by a buffer of low-growing shrubs and perennial plants that will filter stormwater runoff before it reaches the lake, while at the same time enhancing the view from the house and providing eye-catching color, flowers, and butterfly habitat.

## Which will work for you?

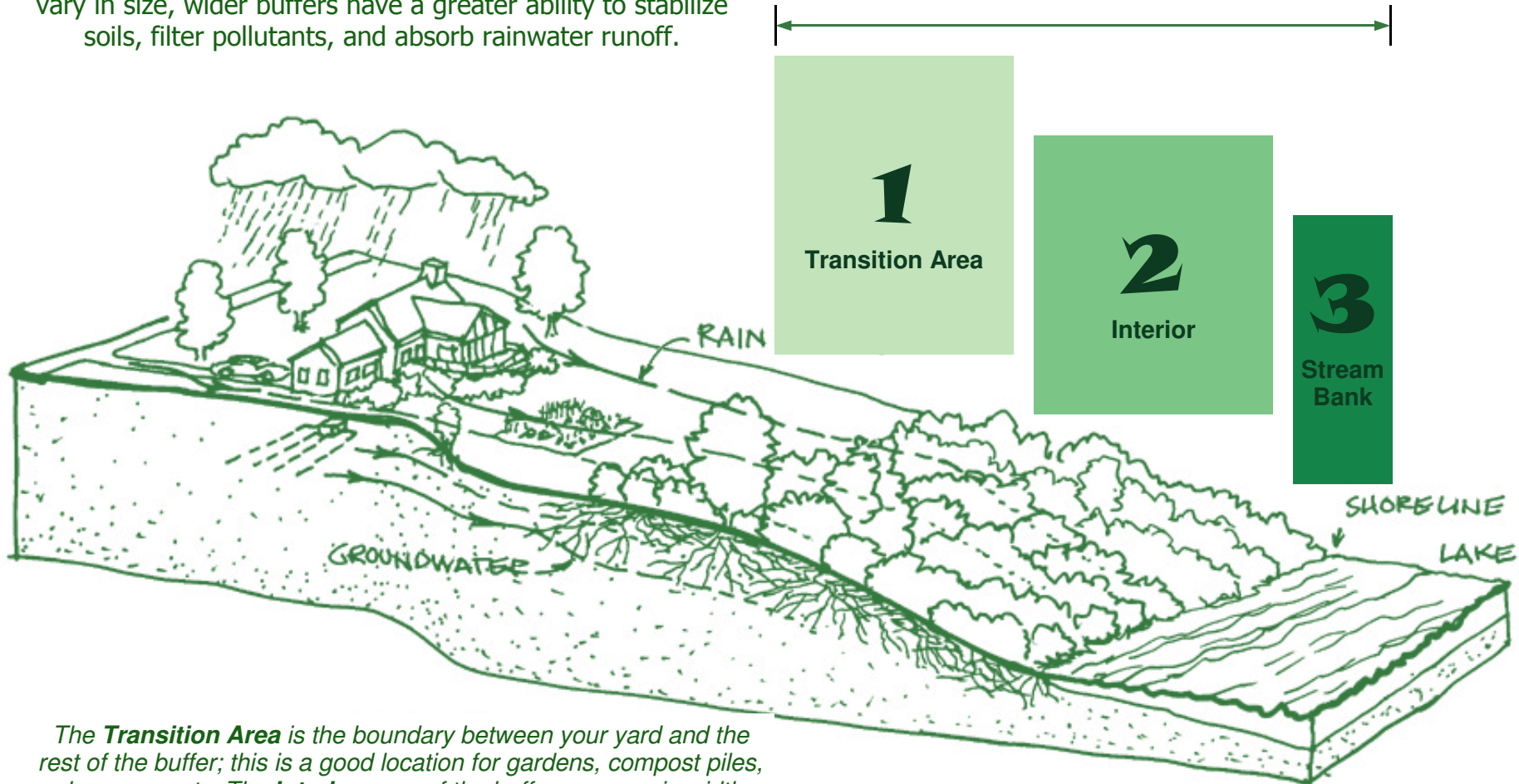
	Waterfront Property Considerations	Landscaping Materials	Lawn Care	Rain Barrels & Compost Bins	Rain Garden	Filter Strips	Hardwood Trees and Shrubs	Backyard Buffer
Not Waterfront		•	•	•	•	•	•	
Streamside-Upper Watershed*	•	•	•	•	•	•	•	•
Streamside-Lower Watershed*	•	•	•	•		•	•	•
Lakeshore	•	•	•	•		•	•	•

\*Streams in the upper portions of the watershed tend to be smaller (or even seasonal) and located in higher areas of the landscape; the water table is not as close to the surface of the ground. Streams in the lower portions of the watershed tend to be larger and located in lowlands or valleys; the water table can be relatively close to the surface of the land.

# Backyard Buffers

Buffers are vegetated areas along the edge of streams, rivers, ponds, wetlands or lakes. Buffers consist of grasses, shrubs and trees that act as a living transition zone between the waterway and upland land uses. While the size of buffers can vary in size, wider buffers have a greater ability to stabilize soils, filter pollutants, and absorb rainwater runoff.

The wider the buffer, the greater the benefit — but even small buffers can help reduce pollutants. A typical buffer has 3 main components or zones:



The **Transition Area** is the boundary between your yard and the rest of the buffer; this is a good location for gardens, compost piles, play areas, etc. The **Interior** zone of the buffer can vary in width, but typically has trees, shrubs and perennial plants. The **Stream Bank** zone spans from the water's edge to the top of the stream bank and should include mature trees and large shrubs.

# Filter Strips

## Buffers Have Many Benefits

- **Shoreline Stabilization.** The roots of woody shrubs and trees help stabilize soil, thereby holding the shoreline in place and reducing erosion! TIP: When selecting a tree to plant on your streambank, opt for a hardwood species over an evergreen - the roots are deeper and stronger!
- **Cooler Water Temperatures.** Streamside trees and plants provide shade over the stream, which helps keep the water temperature cool for fish and frogs. Did you know colder water can hold more oxygen than warm water?
- **Flood Protection.** Plants can serve as a living floodplain along a stream. During heavy rainstorms, or after a snowmelt, a buffer helps to absorb the water that overflows the creek bed, thereby reducing erosion and protecting property. Large buffers can even help reduce the “flashy” flow of a stream during a storm, by soaking up rainwater that would otherwise contribute to the increased stream volume.
- **Filter Pollutants.** Buffers help slow rainwater moving over the land and also filter out many types of pollutants.
- **Bird and Wildlife Habitat.** Your backyard buffer can provide a home for wildlife. By planting shrubs with berries and colorful blooms, you can attract birds and butterflies. Streamside habitat is also important for animals that spend part of their lives on land and part in the water, such as turtles, salamanders, and frogs.

Filter strips are a type of buffer that can be used in a wide variety of places in order to improve water quality. Examples of filter strips in residential settings include flower beds with ornamental grasses, perennial gardens, and “no-mow” zones. As rainwater passes through a filter strip, the low-growing vegetation slows the movement of water, allowing sediment to settle out, and excess nutrients and pollutants to be filtered by the plants. The plants also help absorb some of the rainwater, resulting in less runoff from your property!

## Where to Plant A Filter Strip

- ◆ **Next to a shoreline buffer.** Filter strips are great additions to any riparian or lakeshore buffer.
- ◆ **Along a ditch or drainage area.** Where does the water on your property drain? The cleaner the water going into the ditch or down the stormdrain the better!
- ◆ **Property Boundaries.** Establishing a filter strip along your property boundary will help keep the water leaving your property as clean as it can be! Not to mention the water entering your property from uphill neighbors!
- ◆ **Field & Vegetable Garden Borders.** Tilled fields and gardens can be prone to soil erosion. Establishing a filter strip around fields and vegetable gardens can help keep soil and nutrients on the ground and out of the water.

# Trees & Shrubs



## Woody Plants Provide Year-Round Benefits

Trees and shrubs have extensive root systems that help hold soil in place all year long. Planting woody vegetation along a stream bank or shoreline not only helps to stabilize the banks, but also helps to keep the water temperature cooler by providing shade from the sun. Water temperature is an important factor in water quality because cold water holds more oxygen than warm water. Many aquatic animals and fish will benefit from the shade and habitat provided by shoreline trees and shrubs.

## Proper Planting of Trees and Shrubs

The greatest threat to planting a tree or shrub is “transplanting shock.” Proper site preparation before and during planting, coupled with good follow-up care will reduce shock.

When planting a tree or shrub take the time to dig a proper hole. The hole should be **twice as wide and slightly shallower** than the root ball or soil in the container you will transplant from. This leaves a firm base of compacted soil for the root ball to rest on which will not settle when watered. In addition, the backfill used to fill in the hole will be well aerated and allow water and roots to easily penetrate the soil. Once the hole is dug, roughen up the sides of the hole so that root tips can penetrate into the soil. Smooth walls like that of a clay pot are like cement to root tips. Use a pick axe to break up especially compacted soil.

Next, locate the root collar (or flare) of the tree or shrub. The root collar is usually slightly wider than the main trunk, at the base of the plant. In balled & burlapped and container grown plants, you may need to remove excess soil to find the collar. Measure the distance from the root collar to the bottom of the root ball with a shovel handle. Use this length as a guide for adjusting the hole depth. In doing this, you can prevent the tree from settling lower than originally grown. Trees planted as little as 2 inches too deep can drown or suffer trunk rot. It is better to plant 1-2 inches above the root collar than to plant it at or below the original growing level.

*Planting tips courtesy of the “The CommuniTree Stewards Tree Care Guide,” Cornell Cooperative Extension of Onondaga County. For more information about planting trees and shrubs visit [www.gardening.cornell.edu/woodies/](http://www.gardening.cornell.edu/woodies/)*



# Rain Gardens

Rain gardens look like typical flower gardens, but they are actually specifically designed to capture and absorb rain water from a roof, driveway or patio. By soaking up rain water that could otherwise flow off the land, the gardens prevent pollutants from being picked up and washed into streams, lakes, or storm drains. In this sense, a rain garden is a homeowner's personal contribution to cleaner water!

## What You Will Need:

- **Soil Test**– How fast does your soil drain?
- **Shovel or backhoe**, depending on the size of your garden.
- **Gutter Extension**, to divert the water into the garden
- **Rototiller**
- **Rain Garden Plant List**



*Rain gardens are constructed by digging a shallow depression in a well-drained area, and planting with a variety of flood-tolerant plants.*

*Each time it rains, water from a rooftop or driveway is diverted into the garden, where it can infiltrate into the ground and nourish the plants. The size and depth of the garden are dependent upon slope, soil type, and the size of the area that will be draining into the garden.*

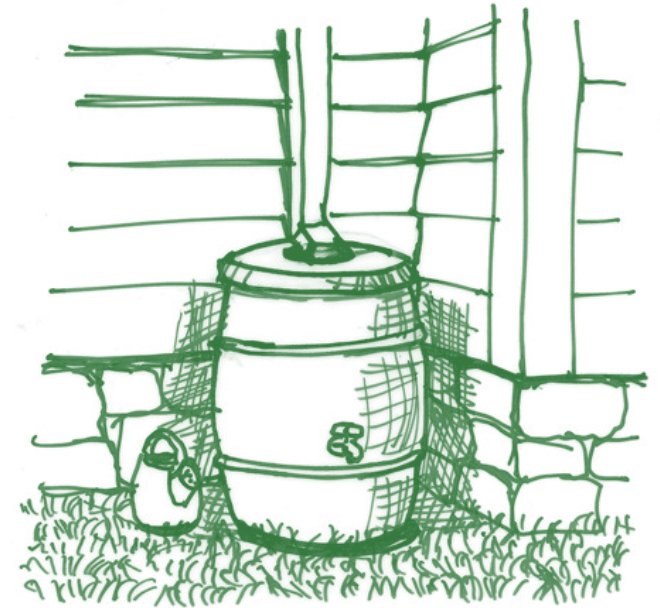
*To learn more about rain gardens, or for assistance in building one of your own, refer to the brochure "An Introduction to Rain Gardens" or contact Cornell Cooperative Extension of Onondaga County. Phone (315) 424-9485 or [www.cce.cornell.edu/onondaga](http://www.cce.cornell.edu/onondaga)*

# Rain Barrels & Compost Bins



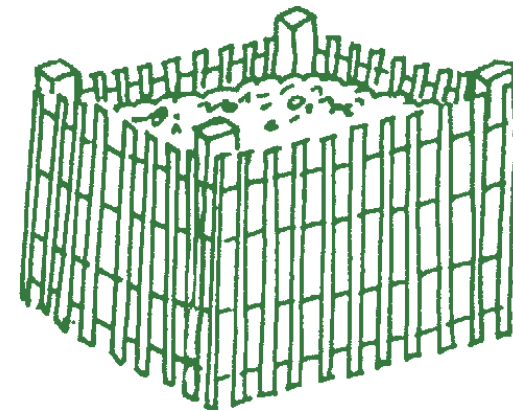
Recycling not only makes sense, it also helps save you money , nourishes your lawn and gardens, and most importantly helps protect local streams and lakes!

During a rain storm the land becomes saturated with water and the stream of water leaving your gutter can not absorb into the wet ground fast enough... so it ends up becoming "runoff." A rain barrel collects and stores rainwater from your roof top for later use, like watering gardens and lawns. Watering your lawn or garden with water from a rain barrel is a great way to recycle water and re-charge ground water levels. You can build your own rain barrel (be sure to follow directions that include a preventative cover to keep mosquitoes out!) or order a pre-constructed one.



*For directions on how to build your own, visit this EPA web site:*  
<http://www.epa.gov/region3/p2/make-rainbarrel.pdf>

Composting leaves, grass clippings, and garden waste is a great way to keep decomposing plant material out of lakes and streams and turn it into something useful! Whether you prefer a bin, pile or box style compost—composting is an easy way to recycle nutrients and reduce water pollution. You can even compost fruit and vegetable leftovers from your kitchen! In no time at all you will have rich compost to add to your mulch and gardens and you will have also helped to keep excess nutrients out of local waterways. For more information on composting and how to start the process for yourself, visit:  
<http://cwmi.css.cornell.edu/compostbrochure.pdf>



# Lawn Care

Well-managed lawns are an environmental asset. They can help protect, or even improve, water quality. Poorly managed lawns, whether by neglect or through the overuse of fertilizers and pesticides, can be an environmental liability.



## **Quick tips for a healthier lawn—**

*Lawn Care Tips from the Cornell University Department of Horticulture Gardening Resources Portal. For more information about lawns, visit : [www.gardening.cornell.edu/lawn/lawncare/](http://www.gardening.cornell.edu/lawn/lawncare/)*

**Mow high.** The shorter you mow your lawn, the more work you will need to do to keep it looking good. Never cut more than a third of the plant when you mow. If you want to keep your lawn mowed to just 1 inch, that means mowing when it reaches 1.5 inches, or every 2 to 5 days. That's a lot of work. Mowing that close can weaken root systems (making the grass more prone to drought), and makes it easier for weeds to out compete grass. Mowing your lawn to a 3-inch height helps grass compete with weeds. It means mowing when the grass reaches 4.5 inches, or every 5 to 15 days, depending on growth rates

**Keep your mower sharp.** Dull blades tear grass instead of cutting it. Lawns mowed with dull blades use 30 percent more water. The wounds created by dull blades also allow disease pathogens to enter grass plants. File your blade regularly, and replace damaged blades.

**Fill in weak spots.** Use a rake to work up and improve the soil where weeds flourish or the ground is bare. Then reseed with grass varieties best-suited to the site. If, after a season of mowing high and leaving the clippings (taller grass will help shade out weeds), your lawn is still more than half perennial weeds and bare spots, consider a complete renovation.

**Don't fertilize early.** Fertilizing in early spring only stresses grass plants over the long term by encouraging excessive top growth at the expense of roots. (Do not apply fertilizer to frozen or saturated soil, or on top of snow. It's a waste of fertilizer and sure way to have it wash into streams and lakes.) A better strategy is to fertilize in fall, from about August 15 until about 2 weeks after last mowing. Plants will use this fertilizer to develop root reserves to help them survive through winter and get off to a healthy start next spring.

**Watch your water.** It's easy to do more harm than good. Never water at night. Wet grass invites diseases. Water between 4 a.m. and 8 a.m. when the leaves will dry quickly in the morning sun. During extended drought, stop watering and allow grass to go dormant.

**Leave the clippings.** Clippings do not create thatch, contrary to popular belief. If you cut only a third of the plant at each mowing, the clippings won't smother the grass either. Mulching mowers work best to chop up clippings so they can settle down through the grass and onto the soil surface. There, earthworms incorporate clippings into the soil, improving both its drainage after storms and ability to hold water during drought. Do not disperse clippings onto pavement or into gutters. They are high in phosphorus and when washed into storm sewers, can end up as pollution in streams and lakes.

**Spray sparingly.** Never use lawn insecticides without scouting to see if the problem justifies treatment. Seventy-five percent of lawn insecticide applications in New York are unnecessary or ineffective. The proper care of your grass will result in a healthy root systems, which can enable it to tolerate some insect damage and remain aesthetically pleasing.

# Landscaping Materials

## Let it Soak!

### Mulch

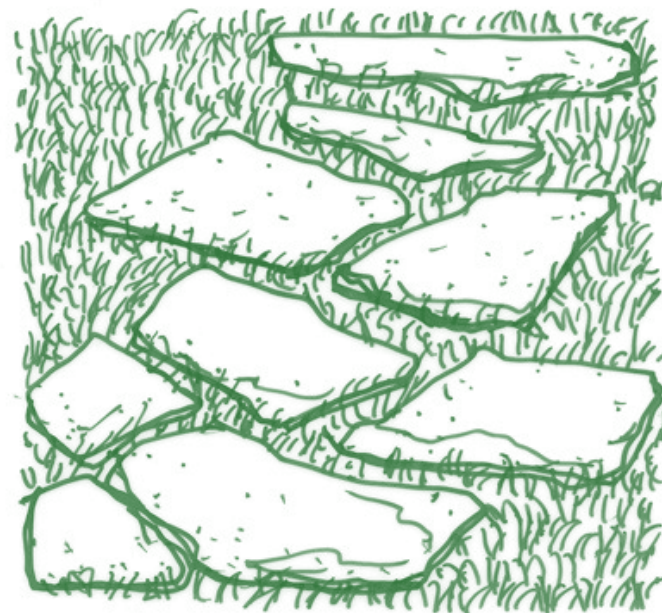
Mulching around plants and trees on your property can provide a number of benefits to the soil, including increased rainwater absorption, protection from erosion and extreme temperatures, improved soil moisture retention, and suppressed weed growth!

Many different types of natural and synthetic mulches are available for landscaping—

- ◆ Black plastic and straw are commonly used in vegetable gardens or small fruit plantings.
- ◆ Wood chips, bark chunks, and pine needles are appropriate mulches for shrub beds or around trees.
- ◆ Fine mulches, such as bark granules, wood shavings, cocoa shells, and buckwheat hulls, are attractive when used in annual or perennial beds.
- ◆ Fine gravel or crushed stone mulches look most natural when used in rock gardens.

Property owners can protect local streams and lakes from polluted runoff by reducing the amount of water that washes off the land and increasing the amount that soaks into the ground. Think about all of the hard surfaces that cannot absorb water, such as driveways, sidewalks, basketball courts, parking areas, rooftops, patios, and walkways. These areas will increase rainwater runoff rather than absorbing it! The design and materials used for these kinds of areas can determine how much water is allowed to soak into the ground.

- Use stone or brick walkways, rather than concrete (preferably with plants in-between).
- Use gravel, crushed stone, or pervious pavement rather than asphalt for your driveway or parking area.
- Construct patios and decks out of wooden planks, with a gravel or sand layer below, so that rain water can drip through and soak into the ground.



# Special Considerations for Waterfront Property

Water in motion, such as the current of a stream or wave-action on a lake, can have destructive consequences on vulnerable shoreline and stream banks. It is especially important to protect these areas, which are particularly prone to erosion if located on a steep slope.

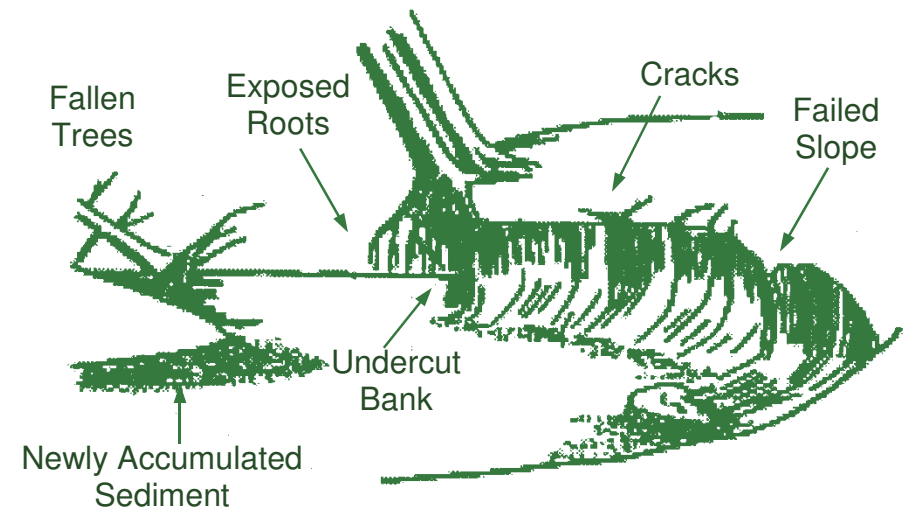
Establishing vegetation along the shoreline doesn't mean you have to lose your water access or view! To maintain foot access, lay out a curved path and plant around it. If you need larger access for boat or dock installation, plan accordingly. "Islands" of wildflower meadows, shrubs, or manicured gardens can be spaced so that they capture the downhill flow of rainwater moving across your yard without forming a restrictive barrier to you. Large trees can be pruned high to maintain your view, while keeping the benefits of their deep roots.



## Are you Losing Ground?

If you've noticed some changes occurring along your stream bank or shoreline, such as receding or undercut banks, falling trees or slumping land—you waterfront may be undergoing severe erosion. Although some erosion is a natural process, shorelines can be made especially vulnerable when vegetation is removed. Human activities can accelerate erosion, leading to property loss and murky, muddy water. Landscaping with trees and shrubs can help alleviate erosion, however in severe cases or in locations with steep slopes structural methods or bioengineering may be required. For more information about managing erosion, see Cornell Cooperative Extension's "Landscaping for Erosion Control" publication.

## Signs of Poor Health



# Getting Started

## Sun

The direction your yard faces and the location of existing trees and buildings determines how much sun or shade there is. On a sunny day, watch what spots stay in the sun, shade, or get some of both.

## Problem Areas

Some plants are better at preventing erosion on banks than others. In the planting guide that follows look for plants under the heading "bankcover". Steep banks and cliffs frequently require the use of additional drainage and structural systems such as sea walls to alleviate erosion. For more information refer to the complimentary, "Landscaping for Erosion Control" (from Cornell Cooperative Extension of Onondaga County).

## Views

The right selection and placement of trees and shrubs can help enhance views that are valuable and screen those that are less desirable, such as neighboring buildings, parking areas and utility right of ways.



## Activities

Different areas of your yard are used for various purposes. Leave enough open areas for lawn games or children's play space. If you have a boat, be sure to allow space for launching access. Plan ahead for footpaths and walkways down to the water.

## Soil pH

Soils can be limey, neutral or acidic. Since many plants have soil pH preferences, testing the pH of your soil can help you make more informed plant selections. The Cornell Soil Lab and many local nurseries can do this test for you.

## Soil Moisture

Some plants prefer more moisture. Others are better at tolerating drought. Moisture loving plants will do better in low spots or closer to the shoreline. Higher spots away from the water will need plants that prefer drier soils.

# Understanding Your Property

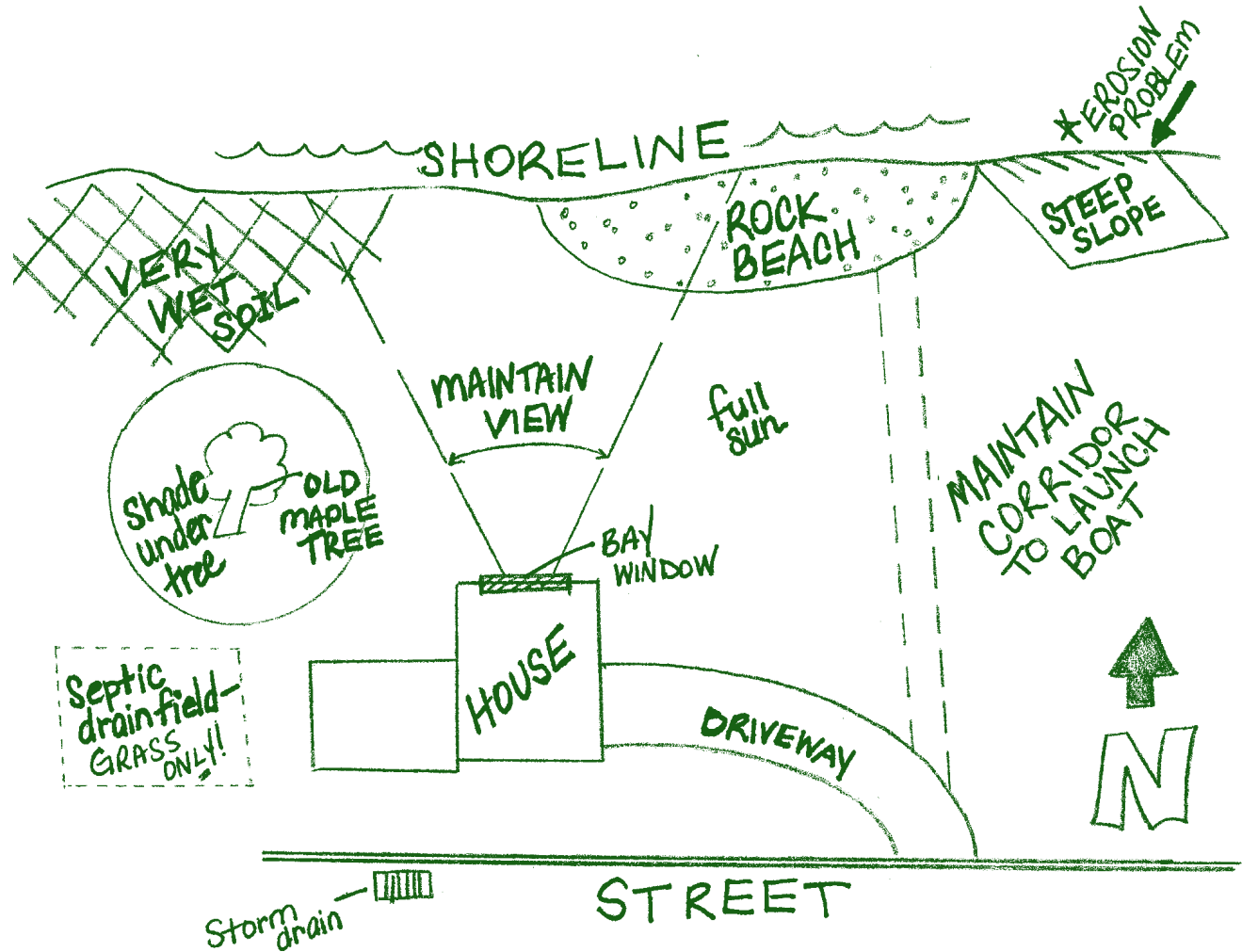
## Make A Sketch of Your Property

A sketch of your property can help you to begin visualizing new landscaping plans. Remember to include the considerations discussed on the opposite page, as well as existing landscaping features or vegetation that you currently have.

The layout should help you to factor in where you have space for planting beds, pathways, shrubs and trees.

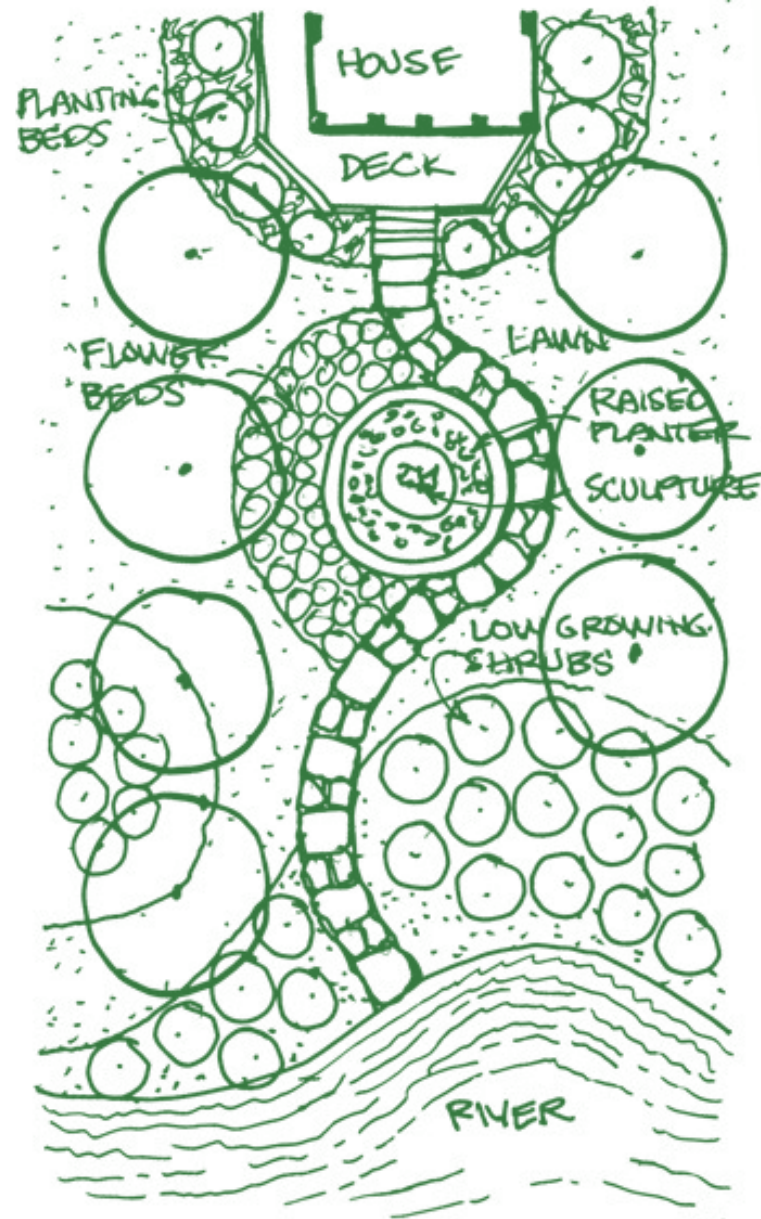
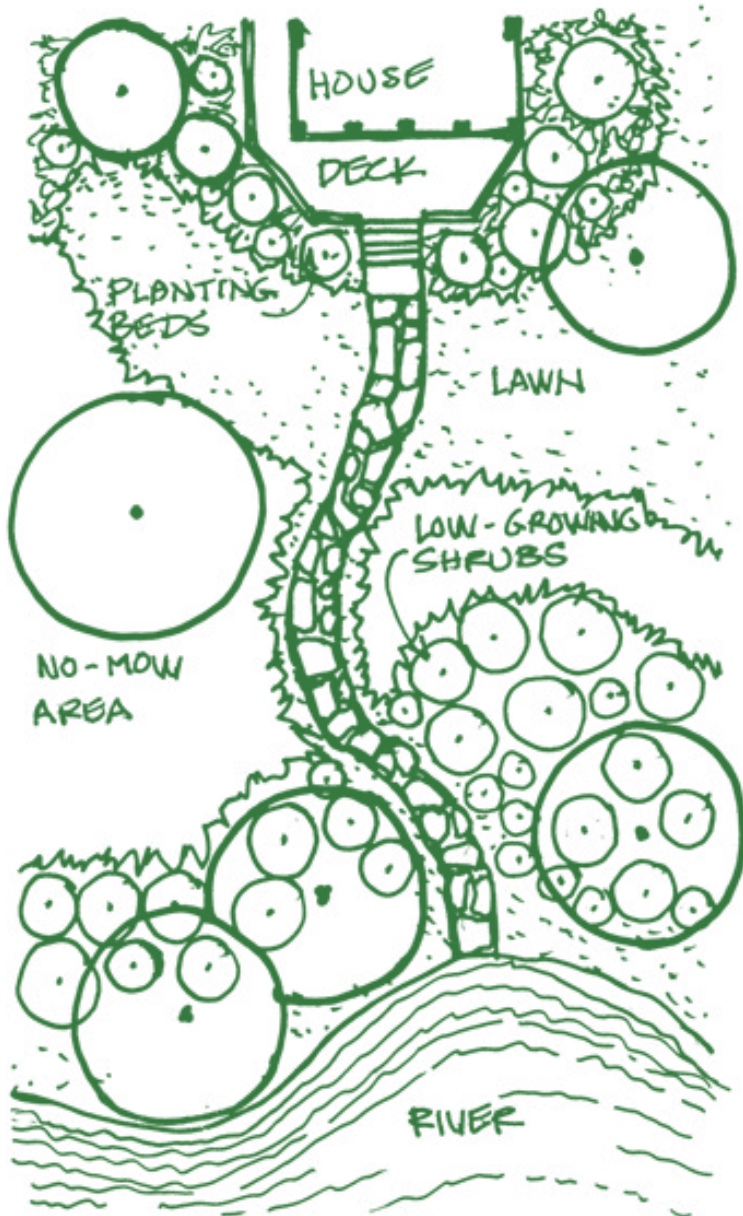
Keep in mind that there may also be areas in your yard that are not suitable for some plantings. For example, gardens that will receive fertilizers or pesticides should not be established within a 100-foot radius of your well. Also, only grass should be planted over your septic system tank and drain field — the roots of shrubs and trees can interfere with the drainage plumbing and leach field.

Once you have a sketch of your property, including its existing needs and limitations, you are ready to begin the placement and planning of new landscape additions. Use the design layouts on the following pages for inspiration and ideas for lakeshore and streamside properties.



# Laying Out a Design Plan

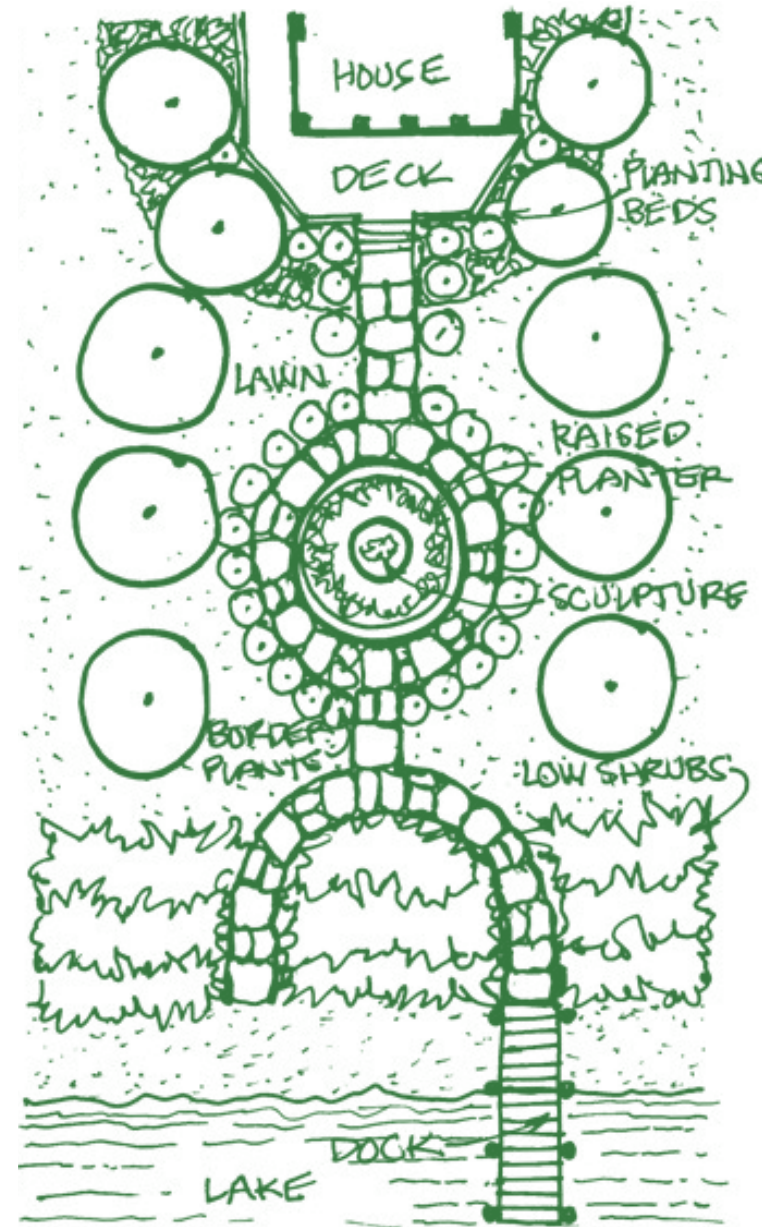
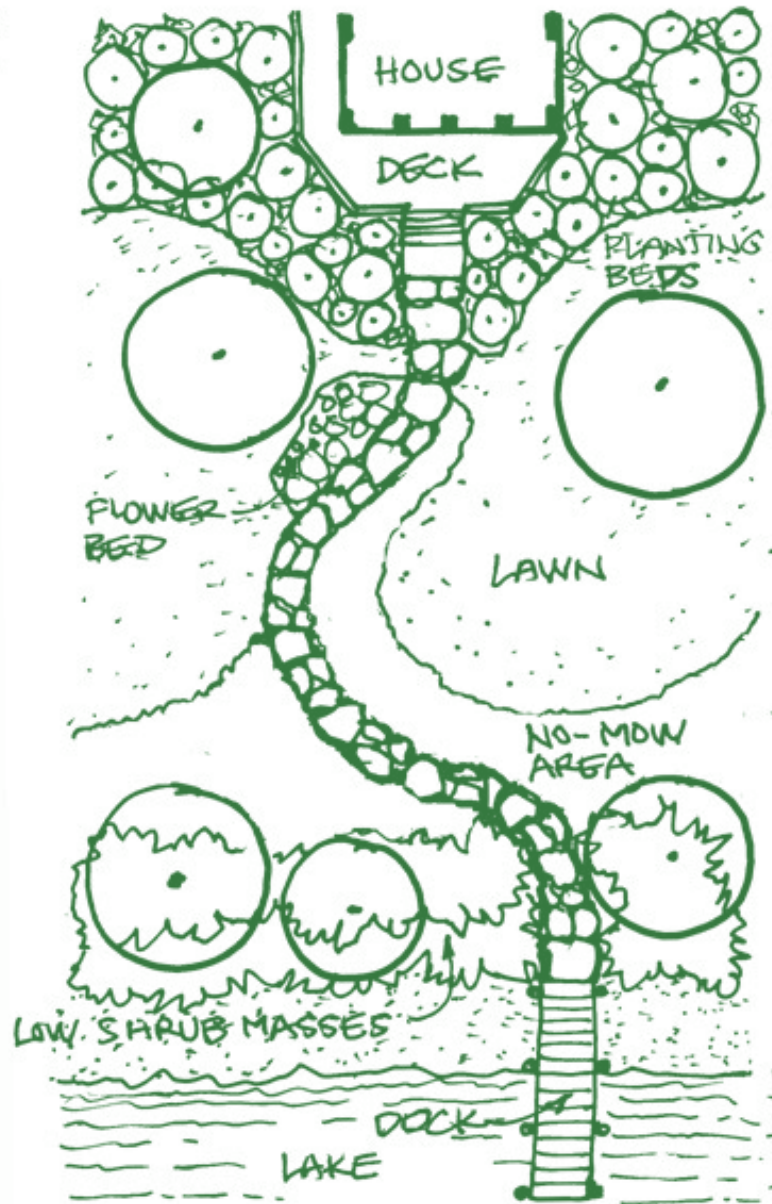
## Natural - Streamside



## Formal - Streamside



## Natural-Lakeshore

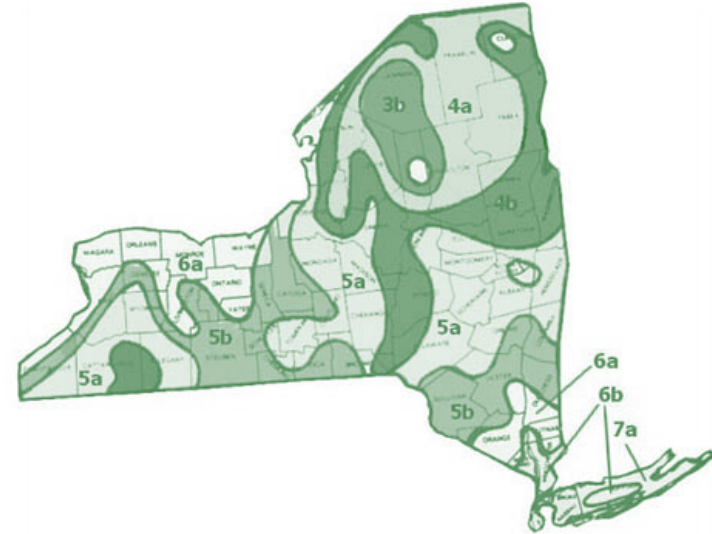


## Formal-Lakeshore

# Choosing the Right Plants

## Benefits of Native Plants

- **Many native plants are beautiful and functional.** Gardening with native plants has increased in popularity in the past few years. In fact, many people are discovering that some of the beautiful plants found in European gardens are plants native to this continent that had been overlooked by Americans looking for something exotic. Sometimes beauty really is right under your nose.
- **Planting native plants helps preserve biodiversity.** Biodiversity refers to the multitude of different forms of life. By gardening with native plants, we are less likely to plant weedy, invasive plants such as European buckthorn and Japanese knotweed that can out-compete and overgrow the native plants. Invasive plants form monocultures and decrease plant variety in a garden. None of the plants suggested in this brochure are currently considered to be invasive. However, many common landscaping shrubs can become weedy problems. If you would like more information on plants to avoid or how to get rid of them once they are established, call Cornell Cooperative Extension.
- **Gardening with plants native to New York makes our landscapes unique.** Native plants provide a visual connection between our landscapes and the surrounding forest. This gives our community a distinct regional character. Variety is the spice of life!



*Zone maps divide a geographical area into zones based upon minimum winter temperatures. While some plants may survive in a sheltered spot north of their recommended zone, it is usually best to plant reliably hardy species. If you are uncertain about the suitability of a plant for your locale, check with a local nursery.*

Once you have evaluated your property, choose plants that will thrive in the soil and light conditions on your property. A careful selection of plants will give you color and seasonal diversity.

The following plant list includes varieties of trees, shrubs, and groundcovers that are suitable for use in landscaping lakeshores, streambanks, and buffer strips. A number of non-woody perennial plants are also listed because of their suitability in rain gardens and wetland areas.

Type	Common name	Botanical name	Growth Rate	Zone	Plant Characteristics
Tall Deciduous Tree (40-100')	White Ash	<i>Fraxinus americana</i> *	Medium	4	Moist, well drained soil; sun. Insignificant flowers, fruits are winged samaras; orange to purple fall color; dioecious (male and female plants).
Tall Deciduous Tree (40-100')	Black Ash	<i>Fraxinus nigra</i> *		2	Moist to wet soil; tolerates poor drainage; sun. Dark green compound leaves, yellow fall color; non-ornamental, good for streamside plantings.
Tall Deciduous Tree (40-100')	Green Ash	<i>Fraxinus pennsylvanica</i> *	Fast	3	Dry to wet soil; tolerates poor drainage; sun. Insignificant flowers; fruits are winged samaras; yellow fall color; salt tolerant; weak wooded.
Tall Deciduous Tree (40-100')	Black Tupelo	<i>Nyssa sylvatica</i> *	Slow	4	Moist to wet soil; sun to part shade; Insignificant flowers; blue-black fruit; brilliant, red fall color; 30-60' height; pyramidal shape, spreads by suckers.
Tall Deciduous Tree (40-100')	Black Cherry	<i>Prunus serotina</i> *	Medium-Fast	3	Moist to dry soils; sun. White flowers, red berries; yellow-red fall color; 50-60' height; good tree for bluffs.
Tall Deciduous Tree (40-100')	Swamp White Oak	<i>Quercus bicolor</i> *	Slow	4	Moist to wet soil; tolerates poor drainage; sun. Insignificant flowers; fruits are acorns; no fall color.
Tall Deciduous Tree (40-100')	Bur Oak	<i>Quercus macrocarpa</i> *	Slow	2	Moist to dry soil; full sun. Fringed acorns; Yellow to brown fall color; large, inspiring tree; 70-100' height.
Tall Deciduous Tree (40-100')	Basswood	<i>Tilia americana</i> *	Medium	3	Rich, moist soil; sun or shade. Fragrant, tiny white flowers in early summer; nut-like, pea sized fruits; yellowish or no fall color; salt sensitive.

The following symbols can help you locate plants for specific, special uses —

RG= Plant for Rain Gardens  
 E= Plant for Erosion-Prone Areas  
 BC= Bank Cover

*\*Plants with an asterisk are native to New York State.*

Type	Common name	Botanical name	Growth Rate	Zone	Plant Characteristics
Medium Deciduous Tree (30-40')	River Birch	<i>Betula nigra</i> *	Medium	4	Wet to dry acid soil; tolerates poor drainage, sun. Catkins; small cone-like fruits; yellow fall color, cinnamon colored, peeling bark.
Medium Deciduous Tree (30-40')	Whitespire Birch	<i>Betula platphylla japonica</i> 'Whitespire'	Medium	3	Moderate soils; tolerates hot sites; sun. Catkins; small cone-like fruits; yellow fall color, resistant to bronze birch borer.
Medium Deciduous Tree (30-40')	Ironwood	<i>Ostrya virginiana</i> *	Slow	3	Dry to moist soil, shade. Catkins; hop-like fruits; yellowish fall color, elm like leaves.
Low Deciduous Tree (15-30')	Speckled alder	<i>Alnus rugosa</i> *	Medium	4	Wet soil; tolerates poor drainage; sun. Catkins; small cone-like fruits; no fall color.
Low Deciduous Tree (15-30')	Shadblow Serviceberry	<i>Amelanchier canadensis</i> *		5	Wet to moist soil; tolerates drought; sun to shade. White flowers, dark purple fruit;
Low Deciduous Tree (15-30')	Allegheny Serviceberry	<i>Amelanchier laevis</i> *	Slow	3	Moist soil; partial shade. White flowers; edible red to blue-black fruits; orange to red fall color.
Low Deciduous Tree (15-30')	American Hornbeam	<i>Carpinus caroliniana</i> *	Slow	3	Moist soil, shade. Catkins; fruits are small nutlets; orange fall color, smooth gray muscle-like trunk.
Low Deciduous Tree (15-30')	Pagoda Dogwood	<i>Cornus alternifolia</i> *	Medium	3	Cool, moist soil, shade. White flowers; blue-black fruits on red stalks; maroon fall color.
Low Deciduous Tree (15-30')	Hawthorns	<i>Crataegus</i> * sp	Medium	4	Dry to moist soils; sun. White flowers; red fruits; yellow to orange fall color; thorns.

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Type	Common name	Botanical name	Growth Rate	Zone	Plant Characteristics
Low Deciduous Tree (15-30')	Shining Willow	<i>Salix lucida</i> *	Fast	2	Moist to wet soil; sun to partial shade. Shiny green foliage; shrub or small tree up to 20' height; native along streams and in wet meadow.
Low Deciduous Tree (15-30')	Laurel Willow	<i>Salix pentandra</i>	Medium	3	Wet soil; sun. Catkins; insignificant fruits; yellowish fall color, dense habit.
Low Deciduous Tree (15-30')	American Mountain Ash	<i>Sorbus americana</i> *	Slow	2	Moist to wet soil, sun to partial shade. White flowers; brilliant orange-red fruit; 10-30' high; short-lived
Evergreen Shrub	Inkberry	<i>Ilex glabra</i> *	Slow	4	Moist to dry, acid to neutral soil; tolerates occasional flooding; sun or shade. Inconspicuous male and female flowers on separate plants; lustrous green foliage year round; blackberry like fruit; 6-8' height.
Evergreen Shrub	Canada yew	<i>Taxus canadensis</i> *	Slow	2	Moist, sandy soil; shade; will not tolerate heat or drought. Glossy, dark green needles; prostrate habit; 3-6' height.
Evergreen Shrub	Hetz midget arborvitae	<i>Thuja occidentalis 'hetz midget'</i>	Slow	3	Moist soil; half shade. Insignificant flowers and fruits; 18" height, globe; bright green foliage.
Evergreen Shrub	Woodward globe arborvitae	<i>Thuja occidentalis 'woodwardii'</i>	Medium	3	Moist soil, half shade. Insignificant flowers and fruits; 6' height; globe; bright green foliage.
Tall Deciduous Shrub (8-14')	Smooth Alder	<i>Alnus serrulata</i> *		5	Moist soil; tolerates poor drainage. Yellow brown catkins provide interesting color in winter.

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	Tall Deciduous Shrub (8-14')	Highbush Blueberry	<i>Vaccinium corymbosum</i> *	Slow	3	Moist, acid, well-drained soil; full sun or partial shade. White flowers; Delicious blueberries; yellow, bronze, orange, red fall color.
BC	Tall Deciduous Shrub (8-14')	Northern Bayberry	<i>Myrica pensylvanica</i>	Medium	2	Dry to wet soil; tolerates clay soil; sun to part shade; Inconspicuous flowers; aromatic grayish white berries; up to 9' height; Dark green flowers.
	Tall Deciduous Shrub (8-14')	Elderberry	<i>Sambucus canadensis</i> *		4	Moist soil; tolerates dry soil or seasonal flooding; sun to shade. White flowers, edible purple black fruit; 5-15' height; spreads by suckers; good for naturalized planting.
	Tall Deciduous Shrub (8-14')	Eastern Ninebark	<i>Physocarpus opulifolius</i> *	Fast	3	Dry to moist soil, partial shade. White flowers; red, capsular fruits; yellowish fall color; shredded bark.
	Tall Deciduous Shrub (8-14')	Common Buttonbush	<i>Cephalanthus occidentalis</i> *	Medium	5	Moist to wet soil; sun to partial shade, tolerates full shade. Fragrant, white flowers in dense clusters resembling buttons, up to 9' height, hummingbird plant, nutlet food for waterfowl.
	Tall Deciduous Shrub (8-14')	Grey Dogwood	<i>Cornus racemosa</i> *	Fast	4	Dry to wet soil; prefers partial shade but tolerant of many conditions. White flowers; white fruits; purple fall color.
BC	Tall Deciduous Shrub (8-14')	Silky Dogwood	<i>Cornus amomum</i>	Fast	5	Moist to wet soil; partial shade. Yellowish white flowers; bluish fruit; 6-10' height;
E BC	Tall Deciduous Shrub (8-14')	Redosier Dogwood	<i>Cornus sericea</i> *	Fast	2	Moist to wet soil; tolerates poor drainage; sun. White flowers; white fruits; red twigs; purple fall color.

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Tall Deciduous Shrub (8-14')	Eastern Wahoo	<i>Euonymus atropurpurea</i>	Fast	4	Moist soil; shade. Tiny purplish flowers; bittersweet-like fruits; orange to purple fall color
Tall Deciduous Shrub (8-14')	Common Witchhazel	<i>Hamamelis virginiana</i> *	Fast	3	Moist soil; shade. Yellow flowers in October; insignificant fruits; yellow fall color.
Tall Deciduous Shrub (8-14')	Pink Azalea	<i>Rhododendron periclymenoides</i> *	Slow	4	Moist to dry acidic soil; partial shade to shade, will not tolerate full sun. White to light pink flowers; yellow fall foliage; 6-12' height; spreads by stolons; found along stream banks.
Tall Deciduous Shrub (8-14')	Clammy Azlea	<i>Rhododendron viscosum</i> *	Slow	4	Moist to wet, acidic soils; sun or shade. Fragrant white-pink flowers; 6-12' height orange-purple fall foliage; spreads by stolons; found along stream banks
BC Tall Deciduous Shrub (8-14')	Fragrant Sumac	<i>Rhus aromatica</i>	Fast	4	Dry soil; sun. Greenish-yellow flowers; red fruits; 4' height; orange-maroon fall color; fragrant foliage; mounded habit.
Medium Deciduous Shrub (5-8')	Swamp Rose	<i>Rosa palustris</i> *		4	Wet soil; full sun. Pink flower; red fruit; 5-8' height.
Medium Deciduous Shrub (5-8')	Blackberry	<i>Rubus allegheniensis</i> *		4	Moist soil; Sun to shade. White flowers; sweet black fruit; suckering habit; good for naturalized planting.
E Medium Deciduous Shrub (5-8')	Red Chokeberry	<i>Aronia arbutifolia</i> *	Fast	3	Wet soil; tolerate poor drainage; shade. White flowers; red fruits; red fall color.

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Medium Deciduous Shrub (5-8')	Coastal Sweet-pepperbush	<i>Clethra alnifolia</i> *	Medium	4	Moist to wet acid soil; sun or partial shade; tolerates full shade. White fragrant flowers; 3-8' height; yellow to golden brown fall color; spreads by suckers.
Medium Deciduous Shrub (5-8')	Winterberry	<i>Ilex verticillata</i> *	Fast	4	Moist to wet acid soil; tolerates poor drainage; sun to partial shade. Dioecious, red fruits; yellowish fall color.
Medium Deciduous Shrub (5-8')	Spice Bush	<i>Lindera benzoin</i> *	Slow	4	Moist soil, sun to partial shade, tolerates dry soil. Greenish yellow flowers; red fruits eaten by birds, lemon yellow fall color; spicy aroma, can be difficult to transplant, but very attractive.
Medium Deciduous Shrub (5-8')	Mountain Holly	<i>Nemopanthus mucronatus</i> *		3	Moist to wet acid soil; shade. Inconspicuous flowers; dark red fruits; 8' height; showy fall color; thicket forming, stoloniferous shrub.
BC Low Deciduous Shrub (2-5')	Wolfberry	<i>Symphoricarpos occidentalis</i>		2	Well-drained soil; medium shade. Small, pinkish flowers; dull white berries; 3-6' height; suckers profusely; bank cover.
BC Low Deciduous Shrub (2-5')	Snowberry	<i>Symphoricarpos albus</i>	Fast	2	Dry soil; shade. White flowers; pink fruits; 3' height; suckering habit.
BC Low Deciduous Shrub (2-5')	Running Serviceberry	<i>Amelanchier stolonifera</i> *	Medium	3	Dry soil; shade. White flowers; edible red fruits; orange fall color; suckering habit.
Low Deciduous Shrub (2-5')	Black Chokeberry	<i>Aronia melanocarpa</i> *	Medium	3	Wet soil; shade. White flowers; black fruits; red fall color; groundcover or shrub.

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Low Deciduous Shrub (2-5')	Atlantic Leatherwood	<i>Dirca palustris*</i>	Slow-Medium		Moist to wet; shade. Pale yellow flowers in early spring; pale green to reddish round fruits; 3-6' height; rich green foliage turns yellow in the fall.
Low Deciduous Shrub (2-5')	Black Huckleberry	<i>Gaylussacia baccata*</i>		3	Dry or moist, acidic, sandy soil; partial shade. Red flowers; 3' height; black, edible berries.
Low Deciduous Shrub (2-5')	Sweetgale	<i>Myrica gale*</i>		1	Moist to wet soil; sun to part shade; Glossy, dark green, aromatic foliage; 2-4' height.
Low Deciduous Shrub (2-5')	PJM Hybrid Rhododendron	<i>Rhododendron x pjm</i>	Slow	4	Moist, acid soil; sun. Lavender flowers; insignificant fruits; evergreen leaves turn purple in fall.
Low Deciduous Shrub (2-5')	Alpine Current	<i>Ribes alpinum</i>	Fast	3	Dry to moist soil; partial sun to shade. Insignificant flowers and fruits; yellowish fall color; good hedge plant.
Low Deciduous Shrub (2-5')	Carolina Rose	<i>Rosa carolina*</i>		4	Well drained to dry soil; Sun-partial shade. Single pink flower; red fruit; 3-6' height; spreads by suckers and forms dense thickets.
Low Deciduous Shrub (2-5')	White Meadowsweet	<i>Spirea alba*</i>		3	Moist to wet slightly acid soil; sun. White flowers; erect shrub to 6' height; can form thickets.
Low Deciduous Shrub (2-5')	Little Princess Spirea	<i>Spirea japonica little princess</i>	Medium	4	Dry to moist soil; sun. Pale pink flowers; insignificant fruits; yellowish fall color, compact habit.
Low Deciduous Shrub (2-5')	Steeplebush	<i>Spirea tomentosa*</i>		4	Moist to wet slightly acid soil; sun. Purple-rose flowers; upright shrub to 4' height; native along streams and in meadows; thicket forming.

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RG	Herbaceous Perennials	Foamflower	<i>Tiarella cordifolia</i>		3	Does well in partial-full shade in moist, rich soil. Clumps of small, fuzzy, maple-like foliage bear feathery spikes of tiny white flowers
RG	Herbaceous Perennials	Swamp Milkweed	<i>Asclepias incarnata</i> *		3	Pink flowers in midsummer; 2-4' height; narrow lance-shaped, smooth edged leaves.
RG	Herbaceous Perennials	Spotted Joe-pye Weed	<i>Eupatorium maculatum</i> *		5	Flat topped clusters of pale purple flowers in late summer; 4-6' height; stem is deep purple in color.
RG	Herbaceous Perennials	Cardinal Flower	<i>Lobelia cardinalis</i> *	Slow	2	Wet soil; sun or partial shade. Spikes of crimson, red flowers; 2-4' height; nectar source for hummingbirds and butterflies
RG	Herbaceous Perennials	Great Blue Lobelia	<i>Lobelia siphilitica</i> *		4	Wet soil; tolerant of dry conditions; sun or partial shade. Spikes of blue or white flowers in late summer; 2-4' height.
RG	Herbaceous Perennials	Bee balm	<i>Monarda didyma</i> *		4	Scarlet flower, resembling a circular cockscomb; downy leaves with a mint fragrance; 2-3' height; will also do fine in drier soils or in partial shade.
RG	Herbaceous Perennials	Columbine	<i>Aquilegia canadensis</i>		3	Red and yellow flowers in spring; 2' height; elegant divided foliage; moist to dry soils; sun to shade
RG	Herbaceous Perennials	White Turtlehead	<i>Chelone glabra</i>		5	Snapdragon-type white flowers bloom in late summer; saturated to moist soils; full sun to part shade; 2-3' tall
RG	Herbaceous Perennials	Green-headed Coneflower	<i>Rudbeckia laciniata</i>		5	Yellow flowers with drooping rays and green eyes; 1.5-9' tall; saturated to dry soils; sun to part shade

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	Type	Common name	Botanical name	Growth Rate	Zone	Plant Characteristics
*	Groundcover	Bearberry	<i>Arctostaphylos uva-ursi</i> *		3	Dry, acid soil; sun to partial shade. Small, terminal, white flowers in spring; 6" height, paddle-shaped, evergreen leaves;
	Groundcover	Canada Wildginger	<i>Asarum canadense</i> *	Slow	3	Rich, moist soil; shade. Ground level, cup-shaped, 3 pointed red-brown flowers in spring, 6" height; large, heart-shaped leaves.
	Groundcover	Mountain Clematis	<i>Clematis occidentalis</i> *	Fast	3	Sun to partial shade. Blue-purple flowers; 6" height; vining groundcover.
	Groundcover	Plantain Lily	<i>Hosta cultivars</i>		3	Moist soil; shade. White or lavender flowers in summer or early fall; 6-24" height; green, blue, gold and variegated leaves.
EC	Groundcover	Juniper	<i>Juniperus species</i>	Slow	3,4	Dry soil; sun. Insignificant flowers; some have berry-like fruits; 6-24" height; needle evergreen; ground or bank cover.
	Groundcover	Wild Lily-of-the-Valley	<i>Maianthemum canadense</i> *		3	Moist, humus rich soil; partial shade to shade. Tiny, white flower spikes; shiny green arched leaves; 2-5" height.
RG	Groundcover	Cinnamon Fern	<i>Osmunda cinnamomea</i> *	Fast	3	Moist acidic soil, sun to partial shade; Fertile fronds shoot up as "cinnamon sticks" among rich green foliage; 3-5' height.
	Groundcover	Japanese Pachysandra	<i>Pachysandra terminalis</i>	Slow–Medium	3	Moist soil; shade. White flowers in summer, 6-8" height; evergreen foliage; ground cover.
	Groundcover	Moss Phlox	<i>Phlox subulata</i>	Medium	3	Dry, infertile soil; sun. Small clustered, pink or white flowers in spring; 6" height; needle-like, semi-evergreen leaves; ground cover.

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