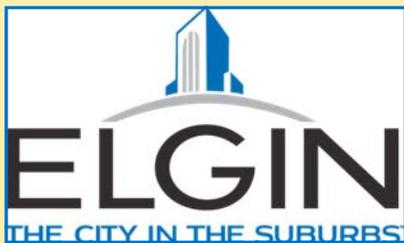


City of Elgin

# Parkway Rain Garden Program

Updated January 2013



A homeowners how-to guide for  
planting and maintaining a rain garden

# **The City of Elgin Parkway Rain Garden Program: Homeowners Guide**

Text and Drawings by Trotter and Associates, St. Charles, IL

Front cover images: Rob Linke, Trotter and Associates, Inc.; City of Elgin

All other native plant and weed species images and information were obtained from the following websites:

University of Illinois Turfgrass Program, [www.turf.uiuc.edu](http://www.turf.uiuc.edu)

Easyliving Native Perennial Wildflowers, [www.easywildflowers.com](http://www.easywildflowers.com)

Lady Bird Johnson Wildflower Center, [www.wildflower.org](http://www.wildflower.org)

Illinois Wildflowers, [www.illinoiswildflowers.info/](http://www.illinoiswildflowers.info/)

University of Illinois Extension – Wildflowers, [urbanext.illinois.edu](http://urbanext.illinois.edu)

Grow Native!, [www.grownative.org](http://www.grownative.org)

Fine Gardening, [www.finegardening.com](http://www.finegardening.com)

Forest Preserves of the Kankakee River Valley, [www.krvfpd.org](http://www.krvfpd.org)

Prairie Moon Nursery, [www.prairiemoon.com](http://www.prairiemoon.com)

Gateway Garden Center, [www.gatewaygardens.com](http://www.gatewaygardens.com)

# Your contribution makes an impact!

The purpose of this how-to guide is to help City of Elgin homeowners establish a rain garden on their property or in an adjacent parkway. The material within this guide is meant to introduce the homeowner to the basic functions that rain gardens perform as well as the overall positive effects that rain gardens collectively have on the sewer and stormwater issues witnessed throughout Elgin. Furthermore, information on how to maintain a rain garden is also supplied within this guide which, although requires only simple tasks, is also very important in maintaining a high level of performance.

Good luck with your new rain garden!



Initial Parkway Rain Garden Site at Perry Street and Washburn Street; pre-construction.

Parkway Rain Garden Site at Perry Street and Washburn Street immediately after native plants were installed by neighborhood residents and community volunteers.



# Parkway Rain Gardens

## What is a Rain Garden?

A rain garden is a depressed landscaped area that captures and infiltrates rainwater that runs off of streets, roof tops, sidewalks, and turf lawns during a storm event. Rainwater is routed into the rain garden and slowly filtered by plants and infiltrated into the underlying soils instead of running off into a storm drain. It is planted with wild flowers and other native plants with deep, fibrous roots that help soak up the rain water as well as offer a beautiful landscaped feature.

## Parkway Rain Garden Overview

Elgin's Parkway Rain Garden Program is a stormwater initiative by the City to install rain garden features in the parkway green space between the sidewalk and street in select neighborhoods. Each parkway rain garden has an inlet or opening cut into the curbline to direct rainwater from the street into the landscaped basin.

The parkway rain garden is constructed by digging a trench in the parkway and backfilling it with open-graded stone topped with a sandy engineered soil mix, mulch, and plants. The garden is very permeable and can store the incoming rainwater until it infiltrates into the underlying soil. Parkway rain gardens located near street corners have an underdrain pipe installed between the basin and existing corner storm inlet to guarantee proper rain garden drainage (no standing water for extended periods of time). Rain gardens constructed mid-block where storm sewer connections aren't possible are only situated in parkways where infiltration testing indicates the soils can easily drain the stormwater without an underdrain.

In 2011, The City of Elgin was awarded a **Illinois Green Infrastructure Grant (IGIG)** by the Illinois Environmental Protection Agency (IEPA). This grant program has helped fund the City's green infrastructure stormwater initiatives which are part of the City's effort to eliminate combined sewer overflows and reduce stormwater pollution discharged into the Fox River. Phase I of the IGIG project included construction of the first 7 parkway rain gardens in 2012.

Phase 2 of IGIG project includes construction of as many as 24 additional parkway rain gardens, several structural infiltration devices for installation in areas where full-size parkway rain gardens aren't practical, and reconstruction of two asphalt alleys using permeable pavement or pavers in 2013-2014.

## What will parkway rain gardens do in my neighborhood?

Residential areas have an abundance of hard surfaces that do not soak up rain water. Rooftops and the area around homes are designed to quickly drain water away and into the right-of-way, and the streets are designed to drain water quickly to storm drains and into the nearest stream or river. Therefore, there is a large volume of rainwater that runs into the storm sewer inlets. In the City of Elgin, many areas of the city still rely on a combined sewer system in which wastewater and stormwater utilize the same sewer pipe system. As the wastewater treatment plants cannot handle the massive volume of stormwater runoff along with the sanitary sewerage, these combined sewers were designed with a combined sewer overflow (CSO) that allows the excess mixed storm/sanitary flows to overflow into the river. This untreated sewage and stormwater pollutes the river during and after storm events and affects the quality of the water and the river's habitat.

Although the City of Elgin is currently in the process of separating the combined sewers throughout the city, the process will take many years. In the meantime, the City is constructing rain gardens and other infiltration-type stormwater systems in areas that won't be separated for some time. These systems will not only reduce the volume and frequency of combined sewer overflows into the river during the sewer separation phase, but will also reduce the amount of stormwater pollution that would otherwise be directed into the separate storm sewer and ultimately the Fox River.

# Benefits of having a rain garden



**Besides offering the major benefit of reducing the frequency at which untreated water is discharged into the Fox River, rain gardens offer these benefits as well:**

- Keeps runoff onsite.
- Filters pollutants from stormwater.
- Recharges groundwater in the underlying aquifer.
- Prevents street flooding.
- Provides habitat for birds and other insects, like butterflies.
- Provides an attractive landscaped element in your yard or parkway.

Rain gardens and other best management practices are gaining in popularity and there are other cities in the United States that have featured rain gardens as a stormwater reduction and treatment practice in their community. The City of Elgin's Parkway Rain Garden Program, launched in 2012, has applied many great features and methods of these existing programs into their own. This will assist in creating a lasting element of the city-wide stormwater plan that homeowners can take part in!

Other cities implementing rain gardens include:

- Madison, WI
- Fort Wayne, IN
- Maplewood, MN

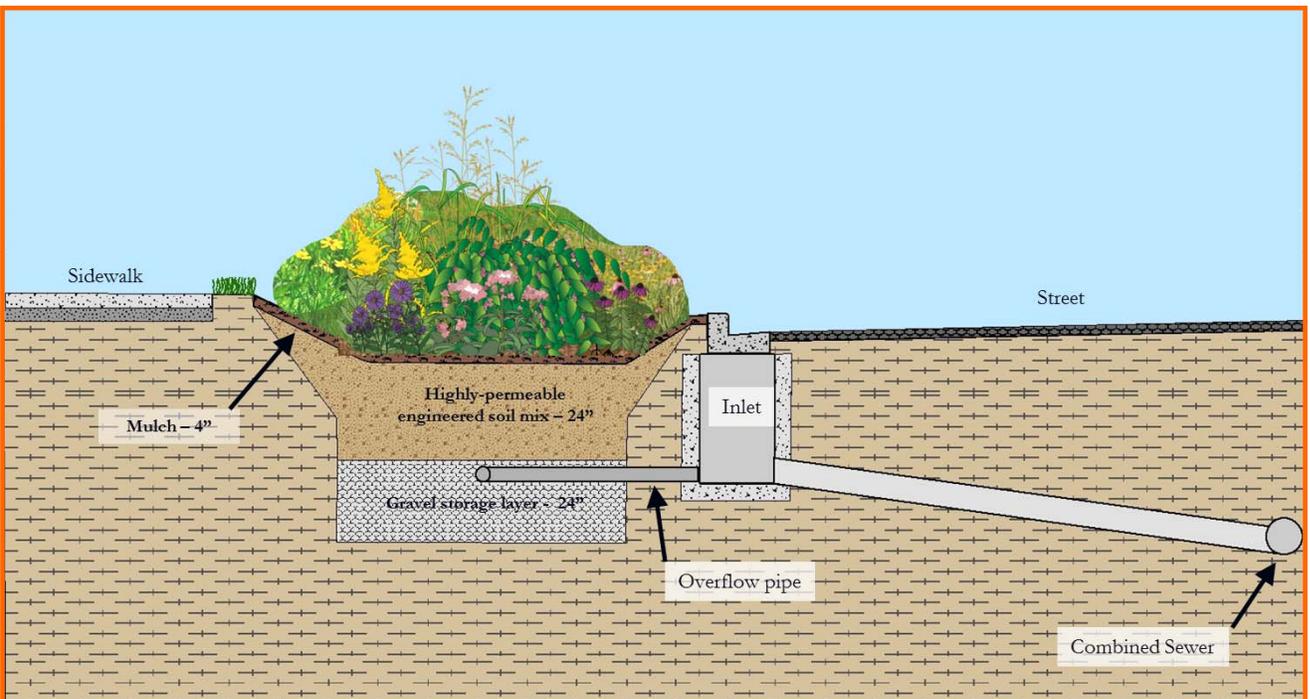
# Major Components of a Parkway Rain Garden

Rain gardens can either be a simple, depressed basin or a more labor-intensive multi-layered system. Multi-layered rain gardens will be constructed with the 2011 IGIG funding received by the City of Elgin. This funding will be used to implement stormwater reduction practices which include many parkway rain gardens. These parkway rain gardens are designed to achieve the greatest amount of infiltration to effectively store stormwater runoff and where feasible, an underdrain system will be installed to allow for sufficient drainage.

## Structural Features:

- **Curb cuts or inlet structures**— Located in the curb line of the adjacent street. The curb cuts allow stormwater flow to enter each rain garden before being captured directly into the existing combined sewer inlets. Cuts made into the curb will typically be 2 feet long. Inlet structures look similar to sewer inlet structures with a grated cover and a pipe connection into the ponding area of the rain garden.
- **Vegetated ponding area**— This area is the depressed portion of the rain garden which provides the surface storage for the runoff and the opportunity for it to infiltrate. The ponding area depth will be 12-18 inches below the existing ground surface. Parkway rain gardens are planted with native flowers, grasses and shrubs. Native plants are able to handle the different environmental conditions of a rain garden. The key function of the plants is to uptake nutrients and other pollutants as well as to increase the infiltration rate by creating paths for the water to flow along the roots. Small stone is placed around the outlet of the pipe to help prevent erosion from occurring within the basin.





- **Groundcover Perimeter** – To assure ample space is provided between the edge of a sidewalk, driveway, or curb and the edge of the rain garden when it begins to slope downward, 1.5-3 ft of level land will surround the rain garden. A groundcover will be planted to surround the perimeter on the level land to provide a border.
- **Mulch layer** – The mulch used should be a hardwood to prevent it from floating and should be spread in an even layer 2-4 inches thick. The mulch layer protects the soil from excessive drying, regulates the soil temperature (keeping it cool in the warm summer months), and helps to control weeds.
- **Engineered soil layer** – The engineered soil layer is a mixture of sand and compost. Topsoil can also be used in the mixture. The combination of sand and compost allows for maximum infiltration and storage of water but includes enough organic material for the vegetation to grow well. The engineered soil layer is 24-36 inches thick.
- **Storage layer** – The storage layer promotes infiltration and is typically gravel. The storage layer is 24-48 inches thick.
- **Underdrain** – An underdrain is used in rain gardens as an outlet for the runoff that cannot be infiltrated and to ensure proper drainage for plants. The underdrain system consists of a perforated pipe that runs along the bottom of the rain garden at the top of the storage layer. To prevent clogging, the pipe is protected with a filter fabric or a filter sock.

**Note:** An underdrain will only be installed in rain gardens that have an adjacent sewer inlet. The connection to the sewer inlet will be made but will initially be blocked with a plug. Unless the rain garden does not fully drain within 24 hours after a storm event will the plug be removed by City Public Works personnel.

# Parkway Rain Gardens – Criteria for Location

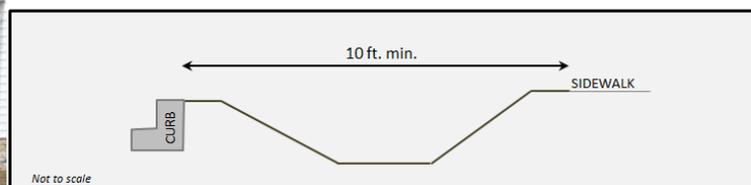
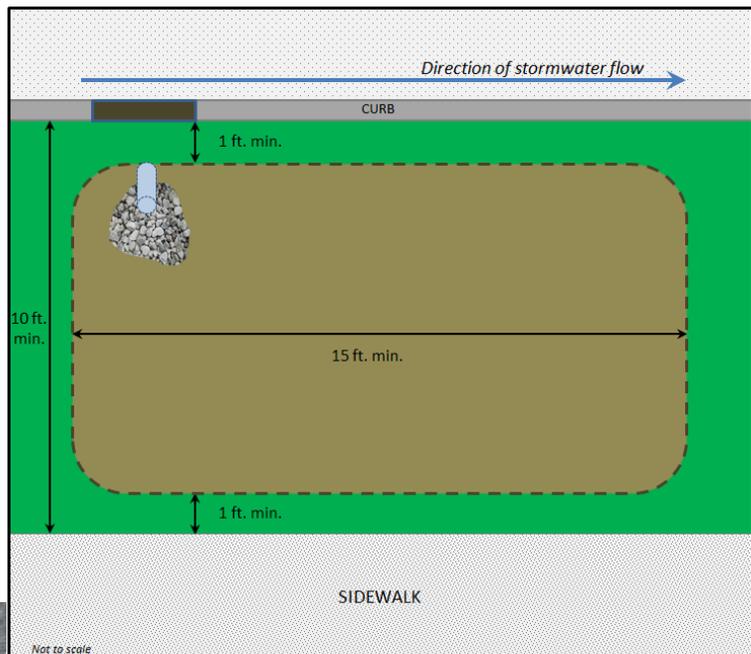
## Is my parkway suitable for a rain garden?

The criteria used for selecting the location of a parkway rain garden are:

1. The terrace must be at least 10 feet wide from the back of curb to the edge of sidewalk.
2. The rain garden must be a minimum of 15 feet long.
3. Trees, power poles, and light poles need to be at least 10 feet from the edge of the rain garden.
4. Driveways and sidewalk ramps need to be at least 3 feet from the edge of the rain garden.
5. The rain garden will need to overflow back into the curb, away from the sidewalk/house. Therefore, the lowest ground surface needs to be as close to the curb as possible.
6. The terrace cannot be too steep in either direction (lengthwise or crosswise).
7. Parkway located near where sewer inlets are present are preferred for Phase I rain garden selection. Rain gardens constructed in Phase I will be equipped with an underdrain connection to an adjacent sewer inlet.

Other sites that are not adjacent to a sewer inlet may be chosen at a resident's suggestion IF soil conditions indicate sufficient infiltration in underlying soils (to insure basin will drain without a "safety valve" connection to the sewer system).

**If you are unclear as to a site's suitability, contact the Project Team to do a site visit and make a determination based on the above criteria.**



A plan and profile view of a typical parkway rain garden layout.



A well qualified parkway for a potential rain garden.

# Planting a Rain Garden

Planting a rain garden is very similar to planting any other garden. Although rain gardens are an extremely useful way to disconnect stormwater from entering the combined sewer system, they should be an attractive element of your yard as well. For those familiar with planting, as well as those who are new to planting a garden, there are only a few important things that should be kept in mind when planting and selecting plants for your rain garden.

- A plan as to what plants will be planted and where is helpful, and a few plans are provided later in this Guide, but don't be afraid to be creative! Consider bloom time, bloom color, and height when choosing plants for your rain garden to keep the layout interesting and diverse.
- One plant per square foot of rain garden is typical when planting.
- An even layer of mulch, about four inches thick, should be applied once the new plants are in the ground. The mulch provides a barrier for weeds and other invasive plants from popping up as well as to help keep moisture in the soil.
- Plants with heavy flower heads or thin stems may require staking since they tend to fall over during heavy rains. Stake perennials when they are six inches in height, this will allow the plant to grow around it usually hiding the stake around mid season.

## What is a native plant?

Native plants of Northeast Illinois have been in the area since pre-settlement times. With their deep root systems, they have stabilized soil, slowed runoff, aided with infiltration, and decreased erosion prior to urban development. Today, they can offer the same benefits as we now battle stormwater problems in our area.

In comparison to traditional landscaping, native plants provide water quality benefits as well. Pollutants in stormwater runoff can be removed by native plants through chemical, biological, and physical mechanisms.

All of the benefits offered by planting native species have some positive impact on the quality and quantity of water entering the Fox River.



The following few pages provide a variety of different native plant species that are suitable for planting in your rain garden. These native plants are resilient to changes in moisture conditions so they can survive times of drought as well as periods of heavy rain. Many plants presented in this Guide are perennials, plants that reappear year after year and can bloom and produce seed every season. Perennials can provide instant color and provide a finished appearance very quickly after initial planting. Plants furnished by the City of Elgin will be planted from quart sized pots or plugs since more mature plants have a better rate of survival than plants started from seeds.

## Choosing Plants:

**Light.** Light exposure is crucial for plant growth and bloom. Prior to your final selection of plants, note the lighting on your property where the proposed rain garden will be constructed.

Full sun—Six or more hours of direct sun.

Partial shade—A half a day of sun such as morning sun and afternoon shade, or limited shade from overhead tree branches.

Full shade—No direct exposure.

## Garden templates:

The templates provided in this Guide are a general layout of the grouping of plants in a rain garden. The numbers on the template are associated with a plant species and can be adjusted if desired. The Project Team will then create a customized Planting Plan for your site with your favorite plants!

**Moisture.** There are three moisture zones in a rain garden, the most moist zone is at the bottom of the garden, a medium moisture zone is around the sides, and the driest zone is around the top edges.

Choose plants that prefer medium to moist conditions for the bottom of the rain garden. During times of heavy rainfall, the soil at the bottom of the rain garden will become saturated as it soaks up water. In some cases when water starts to pond in the ponding area, plants at the bottom may become partially underwater.

Plants that favor medium moisture conditions should be chosen for the sides and plants preferring dry conditions should be chosen for the top edges.

**Height and width.** A rule of thumb for spacing is one plant per square foot of garden. If planted too close, some may be overcrowded and affect plant health and the appearance of your rain garden. Taller plants should be chosen to be planted in groups near the bottom of the rain garden as to avoid a “wall effect”.

**Other physical characteristics.** A variety of colors, textures, and bloom times can create a very pleasing and lovely appearance throughout the growing season.

# Shorter Rain Garden Plants

1 feet- 4 feet tall

## KEY

-  Partial Shade/ Shade
-  Full Sun
-  Full Sun/ Partial Shade



**1** Dense Blazing Star  
(*Liapis spicata*)  
Height: 2-3 feet  
Light:   
Moisture: Medium to Moist  
Blooms: June to frost



**2** Black-Eyed Susan  
(*Rudbeckia hirta*)  
Height: 1-2 feet  
Light:   
Moisture: Medium to Moist  
Blooms: May to frost



**3** Blue Wild Indigo  
(*Baptisia australis*)  
Height: 2-4 feet  
Light:   
Moisture: Medium  
Blooms: May - July



**4** Butterfly Weed  
(*Asclepias tuberosa*)  
Height: 1-2 feet  
Light:   
Moisture: Dry to Medium  
Blooms: May-June



**5** Nodding Wild Onion  
(*Allium cernuum*)  
Height: 1-2 feet  
Light:   
Moisture: Medium to Moist  
Blooms: June - August



**6** Wild Bergamot  
(*Monarda fistula*)  
Height: 2-3 feet  
Light:   
Moisture: Dry to Medium  
Blooms: Late May to Fall



**7** Purple Coneflower  
(*Echinacea purpurea*)  
Height: 3 feet  
Light:   
Moisture: Medium to Moist  
Blooms: June - frost



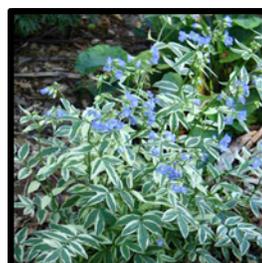
**8** Mountain Mint  
(*Pycnanthemum virginianum*)  
Height: 2-3 feet  
Light:   
Moisture: Medium to Moist  
Blooms: June to September



**9** Blue Flag Iris  
(*Iris virginica shrevei*)  
Height: 2-3 feet  
Light:   
Moisture: Moist to Wet  
Blooms: May - July



**10** Cardinal Flower  
(*Lobelia cardinalis*)  
Height: 2-4 feet  
Light:   
Moisture: Moist to Wet  
Blooms: July - September



**11** Jacob's Ladder  
(*Polemonium reptans*)  
Height: 1-2 feet  
Light:   
Moisture: Moist to Wet  
Blooms: July - September



**12** Golden Alexanders  
(*Zizia aurea*)  
Height: 1-3 feet  
Light:   
Moisture: Moist  
Blooms: April - June

KEY

- Partial Shade/ Shade
- Full Sun
- Full Sun/ Partial Shade



**13** Great Blue Lobelia  
(*Lobelia siphilitica*)  
Height: 1-4 feet  
Light: ○●  
Moisture: Moist to Wet  
Blooms: July – October  
Salt tolerant



**14** Ohio spiderwort  
(*Tradescantia ohioensis*)  
Height: 2-4 feet  
Light: ○●  
Moisture: Dry to Medium  
Blooms: June - July



**15** Prairie Blazing Star  
(*Liatriis pycnostachya*)  
Height: 2-4 feet  
Light: ○●  
Moisture: Medium to Moist  
Blooms: July



**16** Wild Geranium  
(*Geranium maculatum*)  
Height: 1-2 feet  
Light: ○●  
Moisture: Dry to Medium  
Blooms: May - June



**17** Columbine  
(*Aquilegia canadensis*)  
Height: 1-3 feet  
Light: ○●  
Moisture: Dry to Medium  
Blooms: May - June



**18** Bluebell  
(*Campanula rotundifolia*)  
Height: 1-2 feet  
Light: ○●  
Moisture: Dry - Medium  
Blooms: June - September



**19** Wild Blue Phlox  
(*Phlox divaricata*)  
Height: 1-2 feet  
Light: ○●  
Moisture: Moist to Wet  
Blooms: July - October



**20** Labrador Violet  
(*Viola labradorica*)  
Height: 0.5 feet  
Light: ●●  
Moisture: Dry to Medium  
Blooms: June – August



**52** Sky Blue Aster  
(*Aster azureus*)  
Height: 1-2 feet  
Light: ○●  
Moisture: Dry to Medium  
Blooms: September - October



**59** Bottle Gentian  
(*Gentiana andrewsii*)  
Height: 1.5-2.5 feet  
Light: ○●  
Moisture: Medium-Wet  
Blooms: August - October



**61** Marsh Marigold  
(*Caltha palustris*)  
Height: 2 feet  
Light: ○●  
Moisture: Wet  
Blooms: April - June



**66** Prairie Coreopsis  
(*Coreopsis palmata*)  
Height: 1-3 feet  
Light: ○  
Moisture: Dry to Medium  
Blooms: June - July



**67** Shooting star  
(*Dodecatheon meadia*)  
Height: 1.5 feet  
Light: ☉ ☿  
Moisture: Dry to Wet  
Blooms: May - June



**75** Monkey Flower  
(*Mimulus ringens*)  
Height: 2 feet  
Light: ☉ ☿  
Moisture: Wet  
Blooms: June - September



**76** Prairie Sundrop  
(*Oenothera pilosella*)  
Height: 2 feet  
Light: ☉  
Moisture: Medium  
Blooms: May - June



**78** Foxglove Beard Tongue  
(*Penstemon digitalis*)  
Height: 2-3 feet  
Light: ☉ ☿  
Moisture: Dry to Medium  
Blooms: June - July



**80** Purple Prairie Clover  
(*Petalostemum purpureum*)  
Height: 1-3 feet  
Light: ☉  
Moisture: Dry to Medium  
Blooms: July-August



**82** Prairie Phlox  
(*Phlox pilosa*)  
Height: 1-2 feet  
Light: ☉ ☿  
Moisture: Dry to Medium  
Blooms: May - July



**85** Wild Petunia  
(*Ruellia humilis*)  
Height: 0.5-2 feet  
Light: ☉ ☿  
Moisture: Dry to Medium  
Blooms: June - August



**86** Common Arrowhead  
(*Sagittaria latifolia*)  
Height: 3 feet  
Light: ☉ ☿  
Moisture: Wet  
Blooms: July - September



**88** Starry Campion  
(*Silene stellata*)  
Height: 1-2 feet  
Light: ☉ ☿  
Moisture: Dry to Medium  
Blooms: July - September



**89** Zig-zag Goldenrod  
(*Solidago flexicaulis*)  
Height: 1-3 feet  
Light: ☿ ☿  
Moisture: Medium to Wet  
Blooms: August - September



**95** Prairie Violet  
(*Viola pedatifida*)  
Height: 0.5 feet  
Light: ☉  
Moisture: Dry  
Blooms: April - June



**100** Prairie Smoke  
(*Geum triflorum*)  
Height: 1 feet  
Light: ☉  
Moisture: Dry to Medium  
Blooms: April - May

# Taller Rain Garden Plants

4 feet- 6 feet tall

## KEY

-  Partial Shade/ Shade
-  Full Sun
-  Full Sun/ Partial Shade



**21** New England Aster  
(*Aster novae-angliae*)  
Height: 4-5 feet  
Light:   
Moisture: Medium  
Blooms: Midsummer to frost



**22** Joe Pye  
(*Eupatorium maculatum*)  
Height: 4-5 feet  
Light:   
Moisture: Moist to Wet  
Blooms: June to frost



**23** Marsh Milkweed  
(*Asclepias incarnata*)  
Height: 3-5 feet  
Light:   
Moisture: Moist to Wet  
Blooms: June-August  
Salt tolerant



**24** Cup Plant  
(*Silphium perfoliatum*)  
Height: 3-9 feet  
Light:   
Moisture: Medium to Wet  
Blooms: July to September  
Salt tolerant



**25** Marsh Aster  
(*Aster simplex*)  
Height: 3-5 feet  
Light:   
Moisture: Moist to Wet  
Blooms: September - October



**26** White False Indigo  
(*Baptisia lactea*)  
Height: 3-5 feet  
Light:   
Moisture: Medium to Moist  
Blooms: June - July



**27** Wild Senna  
(*Cassia hebecarpa*)  
Height: 4-6 feet  
Light:   
Moisture: Medium to Wet  
Blooms: July - August



**28** Pale Purple Coneflower  
(*Echinacea pallida*)  
Height: 4-5 feet  
Light:   
Moisture: Dry to Medium  
Blooms: June - July



**29** Rattlesnake Master  
(*Eryngium yuccifolium*)  
Height: 3-5 feet  
Light:   
Moisture: Dry to Medium  
Blooms: June - August



**30** Sweet Joe Pye Weed  
(*Eupatorium purpureum*)  
Height: 4-6 feet  
Light:   
Moisture: Medium  
Blooms: August - September



**31** Dogtooth Daisy  
(*Helenium autumnale*)  
Height: 4-5 feet  
Light:   
Moisture: Moist to Wet  
Blooms: August - September



**32** Showy Sunflower  
(*Helianthus laetiflorus*)  
Height: 3-6 feet  
Light:   
Moisture: Dry to Medium  
Blooms: August - September



**33** Woodland Sunflower  
(*Helianthus strumosus*)  
Height: 3-5 feet  
Light:    
Moisture: Dry to Medium  
Blooms: June - August



**34** Ox eye Sunflower  
(*Heliopsis helianthoides*)  
Height: 3-6 feet  
Light:   
Moisture: Dry to Moist  
Blooms: June - August



**35** Wild Quinine  
(*Parthenium integrifolium*)  
Height: 3-5 feet  
Light:   
Moisture: Medium to Moist  
Blooms: June - September



**36** Blue Vervain  
(*Verbena hastata*)  
Height: 3-6 feet  
Light:   
Moisture: Medium to Moist  
Blooms: July - September  
Salt tolerant



**37** Turk's Cap Lily  
(*Lilium superbum*)  
Height: 4-6 feet  
Light:    
Moisture: Moist  
Blooms: July - August



**38** Yellow Coneflower  
(*Ratibida pinnata*)  
Height: 3-6 feet  
Light:   
Moisture: Dry to Moist  
Blooms: July - September



**39** Stiff Goldenrod  
(*Solidago rigida*)  
Height: 3-5 feet  
Light:   
Moisture: Dry to Medium  
Blooms: August - September



**40** Ironweed  
(*Vernonia fasciculata*)  
Height: 4-6 feet  
Light:   
Moisture: Moist  
Blooms: July - September



**98** Common Boneset  
(*Eupatorium perfoliatum*)  
Height: 3-4 feet  
Light:    
Moisture: Medium to Wet  
Blooms: July - September



**99** Queen of the Prairie  
(*Filipendul rubra*)  
Height: 3-5 feet  
Light:    
Moisture: Wet  
Blooms: June - August



**102** Great St. John's Wort  
(*Hypericum pyramidatum*)  
Height: 3-5 feet  
Light:    
Moisture: Medium to Wet  
Blooms: July - August



**103** Culver's Root  
(*Veronicastrum virginicum*)  
Height: 3-5 feet  
Light:    
Moisture: Medium to Wet  
Blooms: July - August

KEY

- Partial Shade/ Shade
- Full Sun
- Full Sun/ Partial Shade

# Grasses and Sedges

1 foot- 6 feet tall



**41** Little Bluestem  
(*Schizachyrium scoparium*)  
Height: 2-4 feet  
Light: ☉ ●  
Moisture: Dry to Medium  
Blooms: August - September



**42** Side Oats Grama  
(*Bouteloua curtipendula*)  
Height: 2-3 feet  
Light: ☉ ●  
Moisture: Dry  
Blooms: July - October



**43** Switch Grass  
(*Panicum virgatum*)  
Height: 3-6 feet  
Light: ☉  
Moisture: Dry to Moist  
Blooms: August - September



**44** Vanilla Sweet Grass  
(*Hierochloa odorata*)  
Height: 1-2 feet  
Light: ☉  
Moisture: Medium to Moist  
Blooms: July - August



**45** Fox Sedge  
(*Carex vulpinoidea*)  
Height: 1-3 feet  
Light: ☉  
Moisture: Moist to Wet  
Blooms: May - June  
Salt tolerant



**46** Prairie Dropseed  
(*Sporobolus heterlepis*)  
Height: 1-3 feet  
Light: ☉  
Moisture: Medium to Dry  
Blooms: June - August



**47** Bottlebrush Grass  
(*Elymus hystrix*)  
Height: 2.5-5 feet  
Light: ● ●  
Moisture: Dry to Moist  
Blooms: June - August

## Groundcovers

These are some suggested groundcovers that can be planted on the mulched perimeter of the rain garden.



Lamb's Ear  
(*Stachys byzantina*)  
Height: 10 inches  
Light: ☉  
Moisture: Medium



Lily of the Valley  
(*Convallaria majalis*)  
Height: 6-8 inches  
Light: ● ●  
Moisture: Medium



Periwinkle  
(*Vinca minor*)  
Height: 6-8 inches  
Light: ☉ ●  
Moisture: Medium



Catmint  
(*Nepeta sp.*)  
Height: 4-6 inches  
Light: ☉  
Moisture: Medium

### KEY

- ● Partial Shade/ Shade
- ☉ Full Sun
- ☉ ● Full Sun/ Partial Shade

# Operation and Maintenance

Regular inspection and maintenance of the Lord Street Basin Rain Gardens is an essential component of the project's long term viability and success. The rain gardens will be maintained initially by the City of Elgin, however, vegetative maintenance and landscape care will be transitioned over to the adjacent resident one year following construction of the rain garden. City staff will make maintenance inspections to note the condition and upkeep of the basins and will assist in major maintenance items such as malfunctioning piping.

## How a parkway rain garden will operate:

**Normal Operation (small runoff events):** Stormwater enters the rain gardens via the curb cuts or inlet structures along the adjacent street and by overland flow from the rain garden's tributary area. The rain garden provides an area for stormwater to pool and sequentially infiltrate into the storage area and underlying native soil.

**Significant Runoff Operation:** Initially, the rain garden functions under normal operation conditions. Stormwater in excess of the amount that can infiltrate into the storage layer and engineered soil layer will begin to collect within the vegetated ponding area, or the depressed zone, and the water surface level will rise.

- Rain gardens without underdrains: the water level will increase and discharge over the curb and back into the adjacent street's gutter.
- Rain gardens with underdrains: If the plug in the underdrain has not been removed by the City, the water level in the basin will rise to the level of the riser pipe and begin to overflow into the pipe. If the plug has been removed by the City, water will permeate into the perforated pipe and be directed into the existing combined sewer system.

Once the soil is no longer saturated, normal operation will resume.



Normal operation of a parkway rain garden.

## What sort of Maintenance is required?

### General Maintenance:

The inlet structure is expected to receive and/or trap debris and sediment and should be inspected for clogging and excessive debris or sediment accumulation at least four times annually as well as after every storm exceeding 1 inch of rainfall. Accumulated sediment and debris at the flow entrance should be removed if the accumulation obstructs flow into the rain garden itself.

### Vegetated Areas:

**Watering.** Diligent watering will be required immediately following the first planting and throughout the entire first growing season. As a general rule, plants require one inch of water per week but watering will not be needed once the plants are established.

**Mowing.** Mow any turf grass around the rain garden area as needed, at least once per month during the growing season.

**Trash and debris removal.** Inspect the rain garden for any trash and remove as needed. Inspections should be done minimum once per month. Leaf litter and other debris may need to be removed approximately twice per year.

**Weed removal.** Remove weeds and woody vegetation from the rain garden at least once per month during the growing season for the first few years. Once the vegetation becomes full, weeding will not be needed as often. Placing plant labels next to young native plants will help identify them from weeds when weeding the garden. A list of common weeds with pictures and descriptions is included in the Resident Guide.

**Vegetation health, density, and diversity.** Dead, dying, or diseased plants will be replaced by the City of Elgin for the first year after the garden is constructed. Replacement of plants will become the resident's responsibility after the first year. Vegetative cover should be maintained at 50% of the rain garden area at a minimum. Perennials and grasses may need to be trimmed at the end of the growing season or at the end of the winter season before new growth starts.

**Mulching.** Add new mulch at least every other year, but annually is best. Reshape mulch around the plants and along the bottom of the rain garden to provide adequate soil cover. A layer 2-4" should be maintained. Do not block the flow path into the rain gardens at the curb cuts or inlet structures or the flow path to the downstream end of the rain garden. Mulch should be a double shredded hardwood to prevent floating during storm events.

**Erosion Repair.** Repair areas of erosion or scour on the side slopes or the central area of the rain garden when signs of erosion are observed.

**Don't have a green thumb?** Maintaining a rain garden is fairly straightforward and simple. Dedication must be given however to assure that it is properly taken care of, especially during the first year after planting. After the plants are established, less watering, weeding, and mulching is required but visual inspections of the structure and it's performance should be done as listed in the **Operation and Maintenance Section** of this Guide.

Even removing weeds can be a daunting task, especially if you find it difficult to distinguish a weed from a plant. The following pages contain conventional methods of removing weeds and images of common weeds to help you in this aspect of maintaining your rain garden.

# Weed Management

## Weed Control Techniques

**Pulling.** Young weeds can easily be pulled from moist soil. It is important that the root of the weed is removed from the soil also. To do this, hold the weed by the stem as close to the soil as possible. If the stem tends to break when it is pulled, use a dandelion weeder or similar tool to pry and twist as you pull up.

**Digging.** Weeds such as Canada thistle or quackgrass that regrow from persistent roots need to be dug. Start digging about six inches to a foot away from the center of the weed, depending on the estimate size of the root structure, and lift the weed out of the soil. This will reduce the number of root pieces that break off and have the potential to reseed. Reset the displaced soil and mulch. Weeds that are easily pulled out of moist soil may have to be dug out of dry soil.

**Mulching.** Maintaining a layer off mulch on the surface of your rain garden that is more than 2 inches thick will deprive weeds the sunlight they need to germinate and grow. If weeds become numerous, lay four to six sheets of newspaper on the weeded area and cover them with two to three inches of mulch.

**Herbicide Application.** There are a variety of herbicides that can be used in your rain garden to control weeds including glyphosate, organic, and corn gluten herbicides.

**Glyphosate.** Ready-to-use glyphosate sprays (e.g. Round-up) are common but should only be used in still weather. Spray carried by a light wind can damage or kill nearby garden plants. Glyphosate is relatively safe for humans and the environment. It breaks down quickly in the soil and does not leach through the soil into the groundwater.

**Organic.** Herbicides made of natural ingredients can also be applied to weeds in your rain garden. The most common active ingredients are vinegar (acetic acid), clove oil (eugenol), or soap (fatty acids). Those herbicides containing clove oil (eugenol) control young broadleaf weeds the best. Herbicides containing acetic acid give the best control of young grasses. Some products exist contain both clove oil and acetic acid, so they are useful on a broad variety of weeds. Repeated application of a product containing acetic acid can lower the soil's pH, making it more acidic, so care should be taken to bot over apply.

**Corn Gluten.** Corn gluten herbicides are sold in powdered form and prevent sprouting weed seeds from developing normal roots. Therefore, corn gluten herbicides should not be used in rain garden beds where no seeds will be planted. Established plants in the rain garden are not affected. Be sure to read and follow application procedures on the product's label since application procedures do vary with the particular project.

The next few pages are meant to help you as a homeowner easily identify common weeds found in gardens and turf grass here in Northeast Illinois.

# Common Weeds



## Crabgrass (*Digitaria sanguinalis*)

**Classification:** Grassy weed

**Appearance:** Mat forming, purple stems that can grow usually 15 inches or less.

**Life Cycle:** Summer annuals

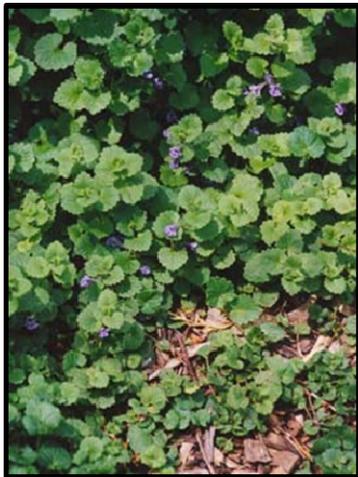


## Dandelion (*Taraxacum officinale*)

**Classification:** Broadleaf weed

**Appearance:** Dandelions emerge above a long, sturdy tap root. The leaves are deep, jagged lobes and are 2 to 10 inches long. The flowers are yellow, up to 2 inches in diameter and turn into round "puffballs" as they mature. Stems are hollow and can grow up to 20 inches long.

**Life Cycle:** Cool season perennial



## Creeping Charlie or Ground Ivy (*Glechoma hederacea*)

**Classification:** Broadleaf weed

**Appearance:** Forms as patches with stems that grow up to 2 ½ feet long. The flowers occur in April to June and are small and lavender in color.

**Life Cycle:** Cool season perennial



## Broadleaf Plantain (*Plantago major*)

**Classification:** Broadleaf weed

**Appearance:** Forms a spreading of broad leaves with flowering stalks.

**Life Cycle:** Cool season perennial

# Common Weeds



## White Clover (*Trifolium repens*)

**Classification:** Broadleaf weed

**Appearance:** Leaves are small, often with a faint white marking. Flowers are ball-shaped and up to 1 ¼ inch in diameter. White clover forms patches and has a fibrous root system.

**Life Cycle:** Cool season perennial

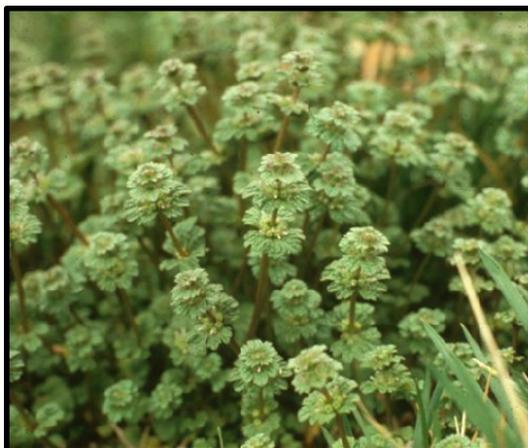


## Prostrate Spurge (*Euphorbia supina*)

**Classification:** Broadleaf weed

**Appearance:** Leaves are small, often with a faint white marking. Flowers are ball-shaped and up to 1 ¼ inch in diameter. White clover forms patches and has a fibrous root system.

**Life Cycle:** Cool season perennial



## Henbit (*Lamium amplexicaule*)

**Classification:** Broadleaf weed

**Appearance:** Stems grow upright up to 16 inches tall and the leaves have rounded teeth edges and are crinkled. Flowers occur April to June and sometimes through September.

**Life Cycle:** Winter annual



## Prostrate knotweed (*Polygonum aviculare*)

**Classification:** Broadleaf weed

**Appearance:** Resembles grass but forms a wide mat after germinating. Flowers are small, white color, and occur June through October

**Life Cycle:** Summer annual

# Common Weeds



## Canada Thistle (*Cirsium arvense*)

**Classification:** Broadleaf weed

**Appearance:** Forms large, coarse stems with prickly leaves and a large root system. Flowers are lavender and up to 1 inch in diameter.

**Life Cycle:** Perennial



## Common Groundsel (*Senecio vulgaris*)

**Classification:** Broadleaf weed

**Appearance:** A large stem develops from a short taproot with prickly leaves up to 4 inches long. The stems and leaves are covered with white "hairs" that resemble cobwebs. Flowers are similar to dandelion flowers, yellow and cylindrical, and form puff-like balls when they mature.

**Life Cycle:** Winter/Summer annual



## Yellow Foxtail (*Setaria glauca*)

**Classification:** Grassy weed

**Appearance:** A bunch-type grass with leaves that grow between 2 and 12 inches long. Flowers are cylindrical, dense and bristly and occur June through September.

**Life Cycle:** Summer annual



## Curled Dock (*Rumex crispus*)

**Classification:** Broadleaf weed

**Appearance:** A dense rosette of 6 to 12 inch leaves forms from a taproot. Small, clustered flowers form on upright stems.

**Life Cycle:** Cool season annual

# Common Weeds



## Reed Canary Grass (*Phalaris arundinacea*)

**Classification:** Grassy weed

**Appearance:** Grass like with blades growing up to 10 inches long. Spikelets form which are initially green and later become light tan in color.

**Life Cycle:** Perennial



## Lamb'squarters (*Chenopodium album*)

**Classification:** Broadleaf weed

**Appearance:** Leaves are rounded and triangular in shape on an erect stem

**Life Cycle:** Perennial



## Wild Violet (*Viola spp.*)

**Classification:** Broadleaf weed

**Appearance:** Low-growing that can form dense patches. Violets are characterized by a pansy-like flower and occur in the spring.

**Life Cycle:** Perennial