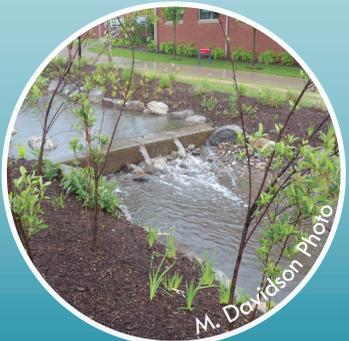


# 10 TIPS TO CONSERVE WATER



- 1 Water your lawn at dawn or dusk
- 2 Install a moisture sensor for your automatic sprinklers
- 3 Install rain water barrels
- 4 Water lawn less to increase plants' tolerance to drought
  - For new lawns water small amounts frequently
  - For established lawns water less often, but for longer periods
- 5 Mulch your garden
- 6 Use compost in your soil to retain moisture
- 7 Have less lawn
- 8 Replace portions of your lawn with a meadow
  - Specialized equipment may be needed, or hire a landscape contractor who manages meadows
- 9 Adjust your mower to a higher setting, and return clippings to lawn
- 10 Implement native plants in your planting beds, as well as using drought tolerant lawn species.



Save on water costs!

## MAKING A RAINGARDEN<sup>6</sup>

- **Location:** A Raingarden should be located at a low point with a slope between 1-10%, so that rain can be directed into it. It should also be more than 10 ft away from a foundation, and connected to the roof's downspouts.
- **Design Criteria:** A rain garden should be 1/3 the size of the surface area providing runoff. The rain garden has a depression up to 1ft deep, with a berm around it to retain water. Pick native perennial plantings that can tolerate saturated soils as well as droughts.\*
- **Constructing:** Excavate and amend the soil so that it has adequate percolation. Use deep rooted perennials around the edges to support the soil. Mulch the planting bed and repeat every year.
- **Maintenance:** In the first year, the plants in the rain garden should be watered to establish healthy growth. The following years rain gardens should be pruned to maintain the garden's appearance. You should also remove any sediment buildup and add a new layer of mulch each year to allow infiltration and prevent weeds from growing.

\*For a detailed rain garden design and native plants list visit the Center for Resilient Metro-Regions webpage, or the UMass Extensions publication on rain gardens. [ag.umass.edu/fact-sheets/rain-gardens-way-to-improve-water-quality](http://ag.umass.edu/fact-sheets/rain-gardens-way-to-improve-water-quality)



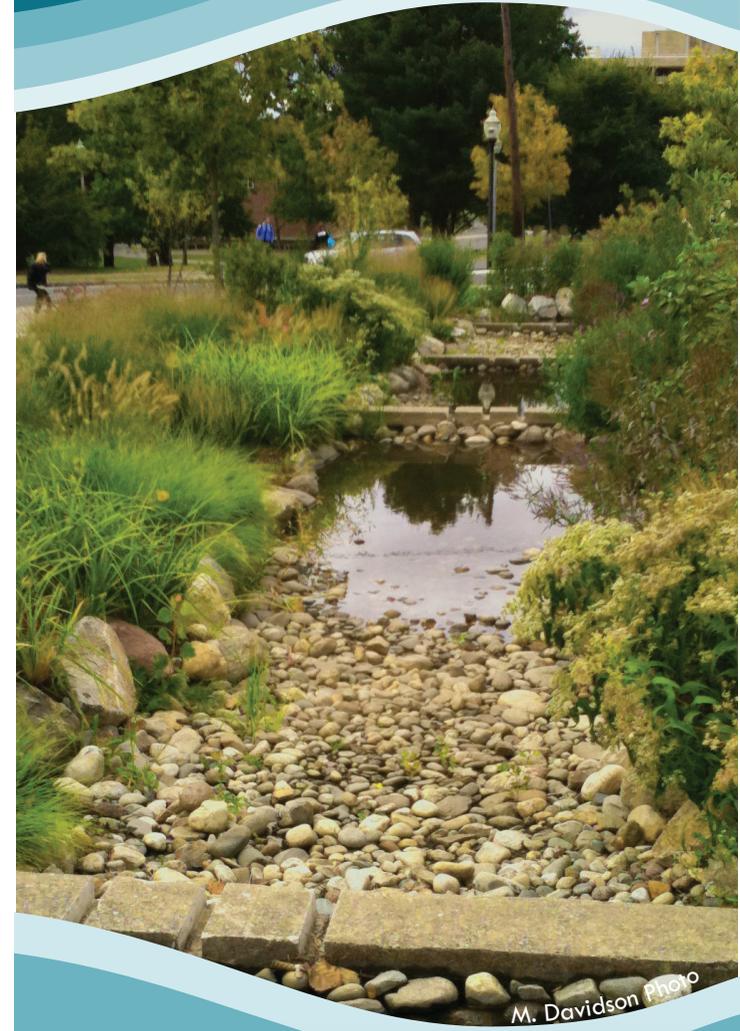
The Center for Resilient Metro-regions (CRM) supports the department's area of excellence in Green Urbanism, where we understand urbanism to occur at a range of scales and places, from rural communities to complex metropolitan regions. The UMass Center for Resilient Metro-regions provides planning and applied research toward making communities more economically, socially, and environmentally resilient and vibrant. Our goal is to help guide communities through complex choices and changing opportunities in climate, infrastructure, energy systems, land use, and housing. CRM faculty and students work together to integrate research and application to build and demonstrate the best of new practices.

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# RESIDENTIAL RAIN GARDENS & WATER CONSERVATION



M. Davidson Photo

Center for Resilient Metro-Regions  
Landscape Architecture & Regional Planning  
UNIVERSITY OF MASSACHUSETTS AMHERST

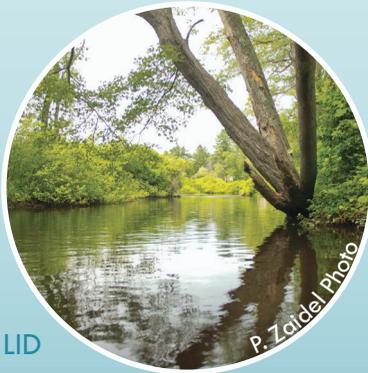


P. Zaidel Photo

## FACTS ABOUT THE IPSWICH RIVER

The Ipswich River covers an area of 155 sq. mi, provides drinking water to more than 300,000 people, but only houses roughly 150,000 people in and around the watershed.<sup>1</sup> Overuse of the Ipswich River has caused record low water flow with up to 80% of the water removed from the river during the summer.<sup>2</sup> Summer water conservation laws have been put in place to address the imbalance of supply and demand for water from the Ipswich River.

There are ways to improve the river's health, two of the main solutions are implementing water conservation practices and installing rain gardens and other LID practices.



P. Zaidel Photo

## WATER CONSERVATION

Water conservation is the most cost-effective and environmentally sound way to reduce our demand for water. Outdoor water use accounts for up to 50% of water consumed by an average household.<sup>3</sup> There are many different ways to retrofit an owner's lawn to be more water efficient, depending on their ability and preference towards outdoor residential design. Choosing drought tolerant turf and plants can help reduce the amount of water used.

### PREFERRED RESIDENTIAL LANDSCAPE DESIGN<sup>4</sup>

- **Limit lawn;** using lawn only where it serves a necessary use.
- **Poroushardscapes;** porous pavers or gravel allow rain water to infiltrate driveways and patios.
- **Drought tolerant plants;** using plants that can withstand droughts, native plants are preferred
- **Rain barrel;** catches rain water from the roof. It can be placed in a way so that it's not noticeable. Ideal for small yards.
- **Forested yard;** reduces the amount of grass and plants that need regular watering.
- **Meadow with mowed edges;** replacing lawn with native meadow plants. The taller plants will retain moisture. Specialized mowing equipment may be needed, as well as invasive plant maintenance.
- **Naturalized lawn;** native plants suited for the summer climate require less watering. Similar to a meadow, it's not suited for a recreational space.

These are the most widely accepted design based on J. Sacy's survey

## RAIN GARDENS

Rain gardens allow rain and snowmelt, which would otherwise be carried away in storm drains to infiltrate naturally into the ground. This helps recharge the groundwater supply, and reduces polluted runoff into the rivers watershed. Runoff that travels into a rain garden is temporarily held while it infiltrates, but it doesn't stay there for long. A rain garden is designed with deep-rooted plants that come back year after year and naturally restore water quality. By installing rain gardens, homeowners can create landscapes that add beauty, wildlife habitat and interest to a yard; while also helping reduce pollution runoff and manage storm water in a more sustainable way.



J. Stacy Photo

## LID PRACTICES

Low impact development (LID) is a planning and design approach to development intended to reduce runoff by improving infiltration, retaining or restoring natural hydrological characteristics<sup>5</sup>. LID combines water conservation and retention techniques and emphasizes the environment by mimicking natural processes:



soil amendments



greenroofs

rain barrels

rain garden

permeable pavers

J. Stacy Photo

1. (Ipswich River Watershed Association C.F. Stacy, 2015)  
 2. (Horsley & Witten C.F. Stacy, 2015)  
 3. (Massachusetts Water Resources Authority, 2006)  
 4. (Stacy, 2015)  
 5. (Zarriello, 2000)  
 6. (Mass.gov Energy and Environmental Affairs, 2004)  
 See [www.umass.edu/larp/center/center-resilient-metro-regions-crm](http://www.umass.edu/larp/center/center-resilient-metro-regions-crm) for full list of sources