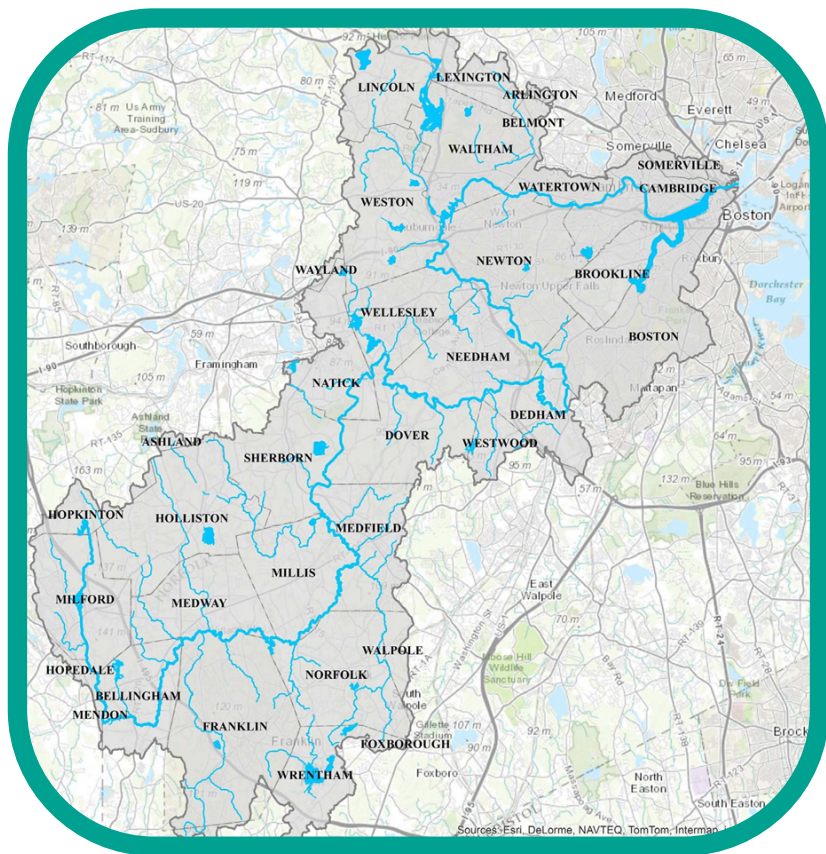


# Love Your Lakes

## Protecting Water Quality in Lakes in the Charles River Watershed



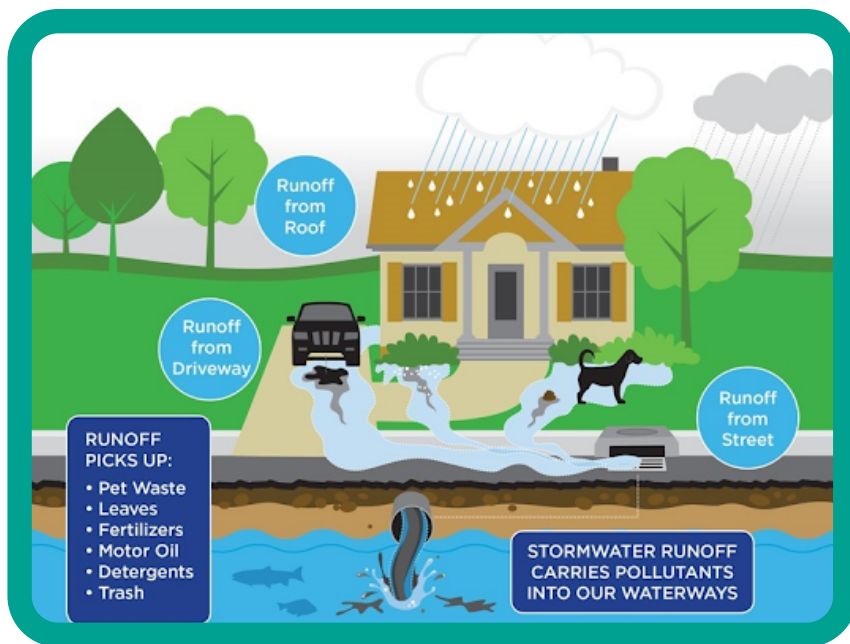
### Charles River Watershed

- Watershed covers 308 square miles in eastern Massachusetts
- River is 80 miles long stretching from Hopkinton to Boston
- Over 1 million residents call the watershed home
- Parts of 35 towns and cities intersect with the watershed

Charles River Watershed Association's mission is to protect, restore and enhance the Charles River and its watershed through science, advocacy and the law. CRWA develops science-based strategies to increase resilience, protect public health, and promote environmental equity as we confront a changing climate.

### Stormwater runoff is the largest modern source of pollution to the Charles River Watershed

- Non-point source pollution
- Phosphorus is main nutrient pollutant to the river and lakes
- Pollution worsened by aging stormwater pipes



# Love Your Lakes

## Protecting Water Quality in Lakes in the Charles River Watershed

### Water Quality Challenges

- Excess nutrients throw the ecosystem off balance
- Leads to aquatic invasive species growth
- Leads to toxic cyanobacteria (blue-green algae) blooms
- Leads to low oxygen and fish kill events

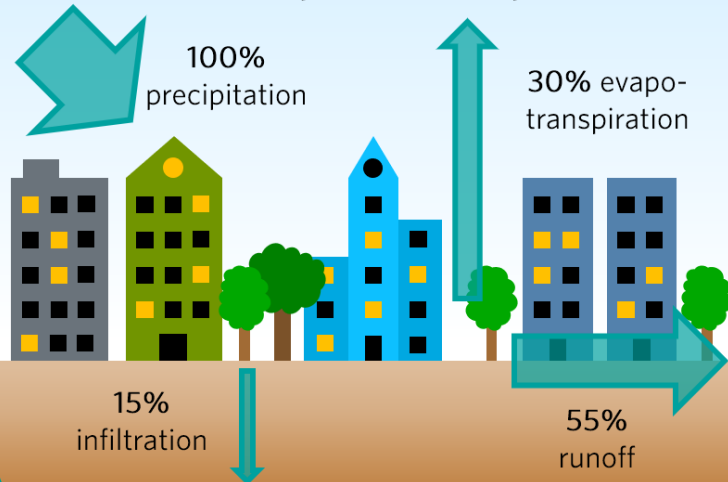


### Developed landscapes alter natural hydrology

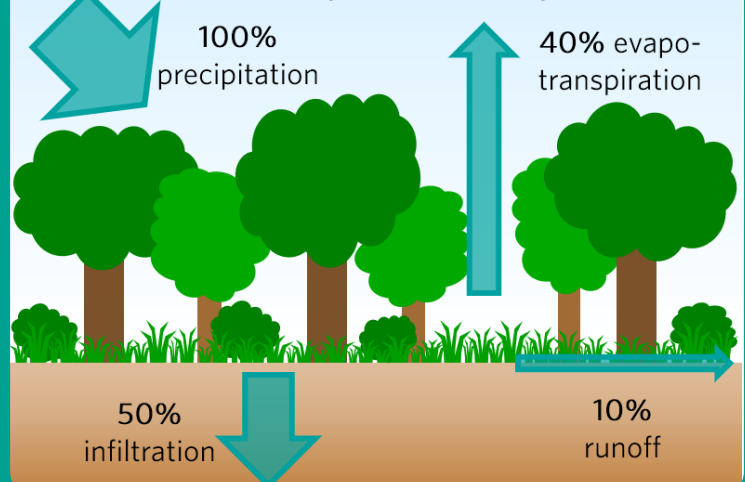
- Impervious surfaces (road, roofs) cannot absorb water
- Water runs off into stormwater pipe system in developed landscape
- Plants and soil naturally clean water, filtering nutrients out of it
- Increased precipitation due to climate change is worsening these problems



#### Developed Landscape



#### Undeveloped Landscape



# Love Your Lakes

## Protecting Water Quality in Lakes in the Charles River Watershed

**Green Stormwater Infrastructure (GSI) captures, filters, and absorbs stormwater runoff**

### Benefits of Green Infrastructure

- Filter nutrient pollutants out of stormwater runoff
- Reduce urban heat impacts
- Mitigate small localized floods
- Provide habitat space

### Four Types of GSI

#### Bioretention

Shallow, landscape depressions that promote natural filtering, evapotranspiration, and infiltration using plants and soil.

- Rain Gardens/ Bioretention
- Bioswales
- Green Roofs
- Tree Filters

#### Permeable Pavements

Hard surface materials on roads, parking lots, sidewalks, basketball courts, etc. that allow water to pass through.

- Permeable asphalt
- Concrete
- Pavers

#### Infiltration

Engineered practices designed to hold stormwater runoff underground and slowly release it into the surrounding soil.

- Underground chambers
- Infiltration basins
- Infiltration trenches
- Dry wells

#### Rain Water Harvesting

A storage structure used to hold runoff for subsequent reuse; primarily for non-potable purposes. Generally includes a filtering mechanism and pump.

- Rain barrel
- Rain tank

# Love Your Lakes

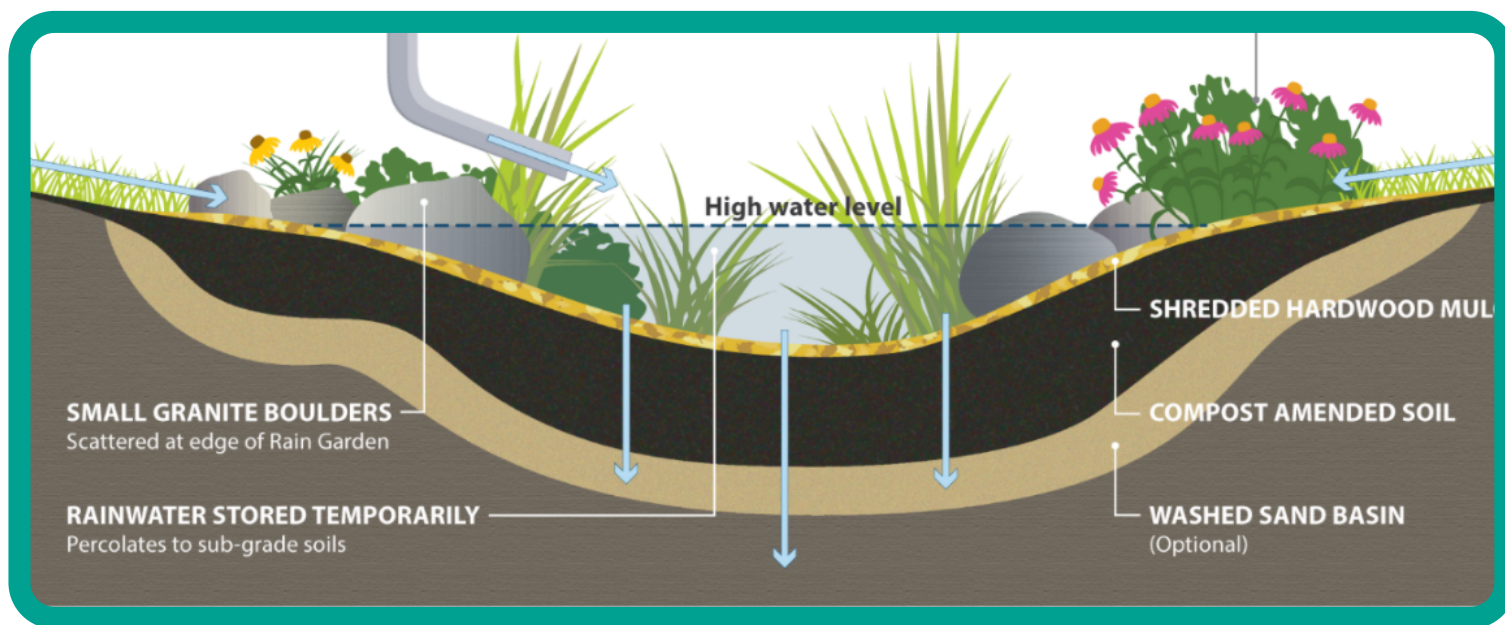
## Protecting Water Quality in Lakes in the Charles River Watershed

### Rain Gardens/ Bioretention

- Depressions with modified soils
- Capture and store stormwater
- Small, with a simple design
- Minor changes to existing native soil
- Planted with native vegetation
- Ideal for residential settings
- Can be placed at bottom of slope or at end of downspout



### Cross Section of a Rain Garden



# Love Your Lakes

## Protecting Water Quality in Lakes in the Charles River Watershed



### Rain Barrels

- Storage structure to hold runoff for later reuse
- Rain barrel, cistern, or rain tank
- Reuse water for non-potable purposes like irrigation or washing cars
- Inexpensive to set up and maintain



# Love Your Lakes

## Protecting Water Quality in Lakes in the Charles River Watershed

### Water Use

#### Do:

- Reduce outdoor water use
- Water at roots
- Water in early morning or evening
- Adjust watering amount based on weather
- Stay informed about drought conditions



#### Don't:

- Use water unnecessarily
- Spray water over plants
- Water mid-day
- Water during rainy week
- Ignore water bans



# Love Your Lakes

## Protecting Water Quality in Lakes in the Charles River Watershed

### Landscaping

#### Do:



- Reduce lawn size
- Plant your garden in a low spot
- Use native plant species
- Plant in groupings

#### Don't:



- Use full area for lawns
- Plant garden at top of hill
- Use invasive plant species
- Use fertilizers on lawn

### Maintenance

#### Do:



- Plant during spring and fall
- Collect leaves in bags
- Remove invasive plant species
- Amend soil or use mulch
- Maintain septic tanks

#### Don't:



- Plant during summer and winter
- Rake leaves into the lake
- Plant invasive plant species
- Compact soil by stepping on it
- Mow to the edge of the lake