



# STORMWATER steward

A Stormwater SMART publication

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*at a  
glance*

Low Impact Development: Money Saving Alternatives



Runoff Rundown: Riparian Buffers



Plants for Piedmont Buffers



Focus on the Roanoke River Basin



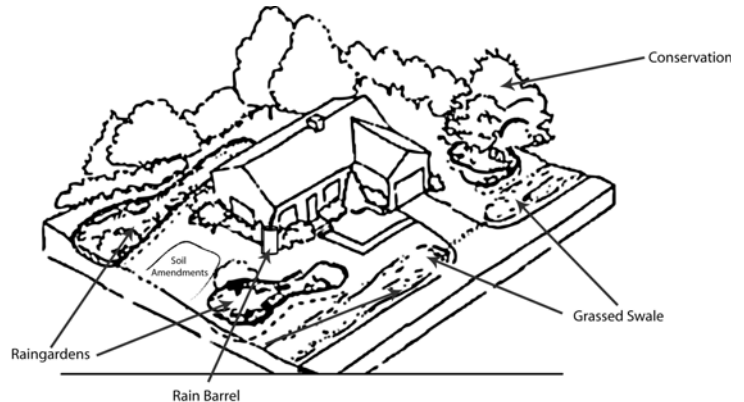
Get Involved: Big Sweep in the School Yard

## Low Impact Development: Money Saving Alternative

### What is Low Impact Development (LID)?

LID is exactly what it sounds like - development that minimizes its impact on the environment. By working with the landscape, developers minimize the amount of pollution that leaves the site.

Rain gardens, rain barrels or cisterns are popular forms of LID. Rain gardens capture and treat stormwater, preventing it from running off the property and into a storm drain. Rain barrels and cisterns store water, making it available for things like watering plants or washing your vehicle. Storing water means you don't have to pay for it! Plus, rainwater is often nutrient rich so you may not have to buy any fertilizer either!



### Does LID save money for developers?

In addition to saving on water and fertilizer, developers see a 10% cost savings due by not having to rely upon gutters, piping, and underground storm sewers. Using rain gardens and grass swales instead of gutters is much more aesthetically pleasing and is considered an amenity in lots of communities! Because LID

minimizes disturbance to the land, the cost of grading and soil compaction is reduced as well.

### What Can You Do?

Before you build, consider using LID techniques. Although LID is relatively new, many developers are beginning to see the benefits. If you already own a home, consider constructing a rain garden to help filter runoff before it leaves your property. All Stormwater SMART staff have Residential Rain Garden Certification, so give us a call and we'll design a rain garden for you! For more information on LID please visit [stormwatersmart.org](http://stormwatersmart.org) or give us a call (336-294-4950).

## LID for your Back Yard



**Rain Gardens** – A shallow depression collects a few inches of water and allows it to be absorbed into the ground or by native plants instead of flowing directly into nearby streams and lakes.

**Rain Barrels and Cisterns** – Store rainwater from gutters and roof to use as irrigation or recycle as grey water.

**Grassed Swale** – Vegetated, open channel designed specifically to treat and reduce stormwater runoff.

**Permeable Pavers**– Porous concrete or grids filled with gravel, grass or mulch act as paving while allowing water to filter down into the soil beneath.

**Soil Amendments** – Amend the soil with organic matter and/or sand to increase infiltration.

**Reduction and Disconnection** – Reduce the number of gutters and disconnect them from underground pipes. Store the rainwater for later or direct it towards the landscaping and away from the driveway or street. Water your garden, not your driveway!

## Runoff Rundown: Riparian Buffers

### Jordan Lake Rules Buffer Regulations:

- Existing Development is exempt.
- Zone 1—from edge of stream bank landward 30 feet; Vegetation in this zone must be undisturbed.
- Zone 2—an additional 20 feet starting at edge of undisturbed zone. Vegetation in this zone may undergo select disturbance such as pruning.
- For information on the activities that are allowed in zone 2 and for more information on activities that are exempt from this rule visit:

[jordanlakerules.org](http://jordanlakerules.org)

**Why are buffers needed?** Buffers are vegetated areas that begin at the stream edge and continue landward. Buffers reduce erosion by slowing the velocity of stormwater run-off. Flooding is also reduced because as water slows down it soaks into the soil, reducing the amount of water that reaches the waterways. Buffers also improve our water quality by filtering out pollutants.

### How do buffers help our water quality?

As stormwater runoff flows across the surface of the ground, vegetation slows the water down, reducing stream bank erosion. Erosion prevention reduces the amount of sediment in our water ways leading to better water quality.

Nutrient loads are reduced as excess nutrients such as phosphorus are trapped as the water permeates soil. The vegetation growing in the buffer trap and use nutrients such as nitrogen, reducing the input of human derived nutrients. Too many nutrients lead to eutrophication and possible fish kills.

Vegetation also traps soil particles to



Erosion due to poor riparian buffers

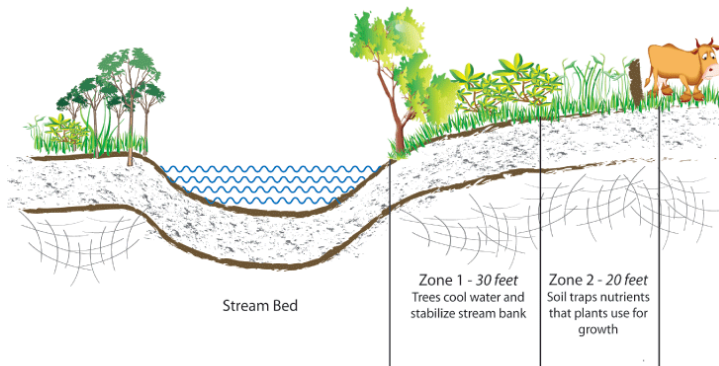
keep soil from entering the streams and rivers. Soil entering the waterway leads to increased turbidity, which is bad for fish habitat.

### Other benefits of Buffers:

Buffers provide wildlife habitat in and around the streams. Vegetated buffers can provide habitat corridors for animals to move from one location to another. As limbs fall from the trees they provide habitat in the stream for aquatic wildlife. Recreation value goes up for fishing and birding as habitat is improved.

Visit [stormwatersmart.org](http://stormwatersmart.org) for more information.

## Plants for Riparian Buffers in the Piedmont!



### Benefits of having trees in the buffer zone:

Tree roots stabilize the stream bank; shade keeps the water cool; limbs in the stream bed increase habitat and reduce flooding; nutrients and pollutants such as heavy metals are removed.

**Tree species recommended:** Beech, Black Cherry, Black Walnut, Black Willow, Blackgum, Elms (winged, American), Green Ash, Hickory, Hop-hornbeam, Oak, Persimmon.

**Understory Trees (up to 35 feet):** American Holly, Bladdernut, Box Elder, Fringetree, Ironwood, Parsley Hawthorn.

**Recommended Shrub species:** Beautyberry, Buttonbush, Coral Berry, Elderberry, Inkberry, Maple-leaf viburnum, Possumhaw, Pussy willow,

**Benefits of native warm season grasses:** Strong root system reduces erosion, growth form increases habitat for birds, water is slowed even in winter due to persistent plant matter, native grass can tolerate low fertility and requires no fertilizing.

**Recommended grass species:** Indiangrass, Big bluestem, Little bluestem

## Focus on the Roanoke River Basin

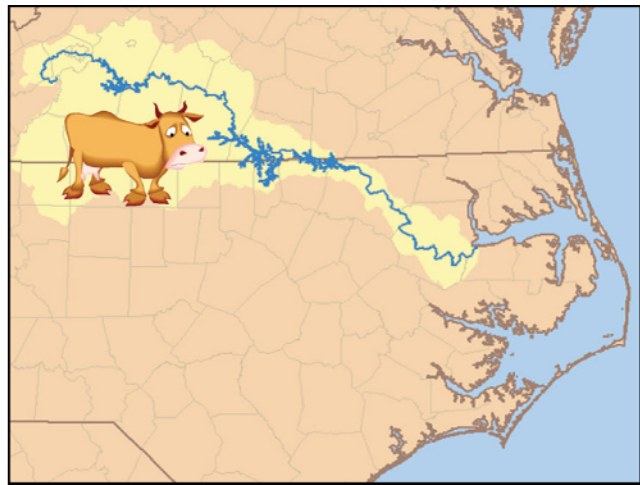
### About the Roanoke River Basin

What is a river basin? A river basin is an area of land where all the creeks and streams run downhill and eventually flow into the river. A river basin and a watershed have the same function, only a river basin is larger. The Roanoke River Basin begins in the mountains of Virginia and ends in North Carolina's Albemarle Sound.

The North Carolina portion of the Roanoke River Basin consists of the Dan River in the west and the Roanoke River in the East. The Roanoke contains more water than any other river basin in North Carolina and covers 3,503 square acres with a total of 1,476 acres of estuary.

The Cascade and Indian Creeks, beginning in Hanging Rock State Park before flowing into the Dan River, have been designated as Outstanding Resource Waters signifying that they have excellent water quality and support rare aquatic species.

Many Piedmont Triad residents live in the Roanoke River Basin. Larger cities include Eden, Reidsville, and Yanceyville.



### Problems facing the Roanoke River Basin

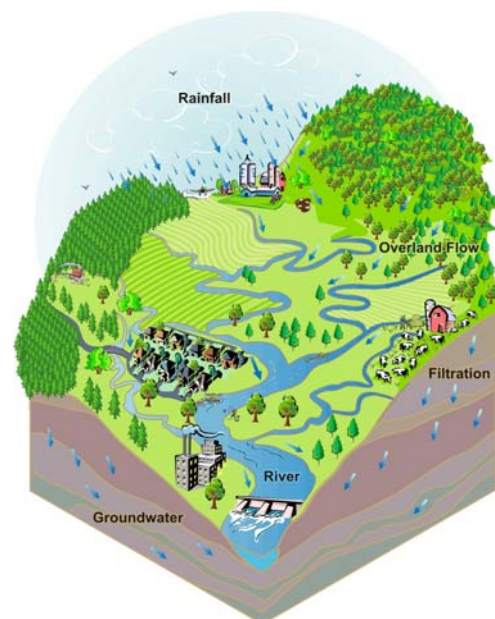
Unfortunately as you go further down the Roanoke River Basin the waters become more polluted by non-point sources such as stormwater runoff. Stormwater runoff in the basin collects pollution primarily from agriculture, forestry and construction. Leaving a vegetated buffer along the streams and rivers will help filter out nutrients and dirt carried by the stormwater runoff. For more information on how you can protect our waters, visit [www.stormwatersmart.org](http://www.stormwatersmart.org)

**Would you like Stormwater SMART to present to your civic or community group? If you live in one of our member communities, Stormwater SMART programs are available at no charge. Contact Stormwater SMART at (336) 294-4950 to set up a Stormwater Education Event Today!**

## What's a Watershed?

To further understand watersheds, think of playing "connect the dots". If you draw a line connecting all the highest points in an area, you've figured it out! All the water falling inside that circle is carried by small streams or tributaries to our rivers and lakes, and eventually into the ocean.

It's a long way from the mountains to the beach, but it's a typical journey for a water droplet. Along the way, stormwater picks up pollutants like fertilizer, dog waste, motor oil and litter and carries it downstream. Our communities depend on this water for drinking, recreation, energy, habitat, and agriculture. This is why it's important to remember that everything we do upstream affects water quality for all communities downstream.



## Get Involved: Spring Sweep in the School Yard!

Davidson County  
Randolph County  
Rockingham County  
Archdale  
Asheboro  
Burlington  
Elon  
Gibsonville  
Graham  
Green Level  
Haw River  
High Point  
Lexington  
Mebane  
Oak Ridge  
Summerfield  
Randleman  
Reidsville  
Thomasville  
Trinity



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[www.stormwatersmart.org](http://www.stormwatersmart.org)

Spring Sweep is a Big Sweep event timed to coincide with Earth Day. Big Sweep is a volunteer driven effort that helps us keep our state's water clean. Pollution in our watersheds destroys wildlife habitat and food sources, and it ruins many opportunities for recreation. Everyone suffers from harmful debris entangling boat motors, injured animals, and trashy landscapes. Volunteers including individuals, scouts, school groups, environmental groups, and local organizations can join together this Spring to help clean up debris from our watersheds.

This April 18th-22nd, we are offering teachers a mini Big Sweep on their school grounds. This will be an opportunity for students to learn more about their natural environment, and what local governments are doing to restore and protect our watersheds. If you have a stream or school yard that needs cleaning, our educators will provide you with everything you need!



**Combine a school yard clean up with one of our interactive programs for a fun and educational Earth Day Event.**

**To schedule a presentation or schoolyard clean-up for your students:**

**Contact Stormwater SMART  
(336) 294-4950/  
[stormwatersmart@ptcog.org](mailto:stormwatersmart@ptcog.org)**

## Look for Stormwater SMART at a Fairs or Festivals near you.

4/16/2011 Asheboro Zoo Earth Day Celebration  
4/30/2011 Mebane Dogwood Festival  
5/7/2011 Lexington Multi-Cultural Festival  
5/7/2011 Asheboro Art May Hem  
5/14/2011 Summerfield Founders Day

**Stormwater SMART was created by the Piedmont Triad Council of Governments to help Phase II and Jordan Lake communities comply with Public Education and Outreach and Public Participation requirements. Stormwater SMART is supported through dues paid by member governments.**



**PIEDMONT TRIAD  
COUNCIL OF GOVERNMENTS**