STORMWATER SMART

2013-2014 ANNUAL REPORT

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PIEDMONT TRIAD REGIONAL COUNCIL

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A MESSAGE FROM THE PROGRAM COORDINATOR

This has been another exciting year for Stormwater SMART. We've continued to expand our programming and developed plenty of new materials. Our school programming continues to be the most popular component of our program. Joy has done an amazing job reaching out to teachers and working with them to best meet their curriculum requirements while also meeting our outreach and education requirements. While we look forward to continuing our outreach efforts in the schools, we are almost at capacity as far as the time commitment our school programming requires. Joy and I co-presented at the annual WRRI conference in Raleigh on our successful outreach efforts with teachers. Project WET continues to be at the forefront of our program and Joy was able to attend a facilitator training this year so we are both now certified program facilitators. While it's always challenging to find a time that works for teachers, they always benefit from the training and we hope to expand our teacher trainings to other school districts in the region. Our school programming has also allowed us to partner with other agencies whose mission is to educate. Working with organizations like NC Wildlife Resources Commission, NC Zoo, Soil and Water Conservation Districts, NC Forest Service and others, we've been able to provide teachers with hands on learning opportunities that span across multiple topics.

In response to the needs of our member governments, we focused on two specific outreach programs. In our strategic plan, we identified the need to target auto repair and maintenance shops. We developed a guide identifying best management practices (BMPs) and mailed it to all listed shops in our member communities. Our members also identified a need to focus on grass clippings. We worked hard to create custom materials educating homeowners and landscapers on best practices for yard maintenance and guidelines for properly disposing of yard waste (aka, not in the stormdrain!). All these materials are available in the appendix and on our website.

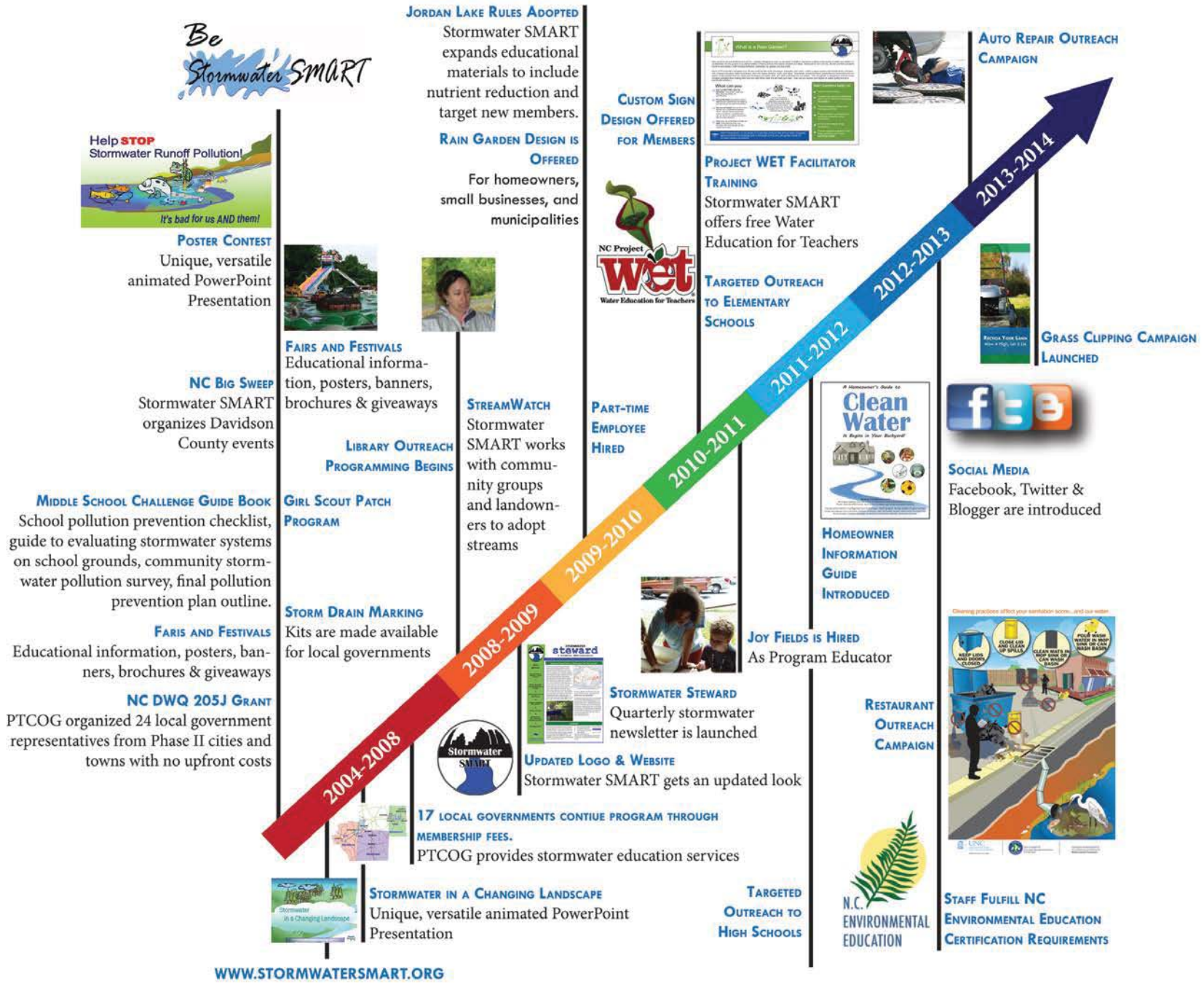
As always, we wouldn't be here without our board. We are lucky to work with so many folks doing such great work and look forward to next year!

Sincerely,

Elizabeth Jernigan

Elizabeth Jernigan
Stormwater SMART Program Manager

Figure 1: Infographic Timeline



BACKGROUND

Piedmont Triad Regional Council

In response to the needs of member governments, the Piedmont Triad Regional Council (PTRC) created a regional stormwater education program for NPDES Phase II jurisdictions in 2004. The PTRC is a voluntary association of municipal and county governments, enabled by state law to promote regional issues and cooperation among members. PTRC serves 72 member governments in the following twelve counties: Alamance, Caswell, Davidson, Guilford, Montgomery, Randolph, Rockingham, Surry, Stokes, Forsyth, Yadkin & Davie.

Goals and Objectives

The overall goal of the stormwater outreach and education partnership of local governments is to meet the needs of NPDES Phase II jurisdictions that otherwise would not have the resources to plan for and implement a strong outreach initiative. In 2009, Governor Beverly Purdue signed the Jordan Lake Rules into law. These Rules require additional communities in the PTRC region to address stormwater pollution through public outreach and education. Although not regulated by the NPDES Phase II program, Rockingham County, Reidsville, Summerfield and Oak Ridge utilize Stormwater SMART to meet Jordan Lake Rules outreach requirements. Additional communities opt to participate in Stormwater SMART, even though they are not required to do so by any governing body. These communities include Davidson County, Randolph County, Randleman, Asheboro and Lexington. These communities see a strong value in using water quality education to protect valuable resources including High Rock and Randleman Lakes.

Stormwater SMART Today

During fiscal year 2004-2005, through a 205j grant from the NC Division of Water Quality, PTRC organized a group of 24 local government representatives from Phase II cities and towns as part of the stormwater outreach program team with no up-front costs to local governments. Local government representatives originally directed the program coordinator to focus on educating the region's elected officials and the PTRC board of delegates. This was achieved through the development and presentation of a Power Point sideshow entitled "Stormwater in a Changing Landscape." PTRC created a unique, versatile animated Power Point presentation to demonstrate the stormwater problem. With the support of elected officials, the Stormwater SMART program was solidified through a second outreach and education effort targeting middle school students throughout the region.

Today Stormwater SMART works with citizens from all walks of life. From toddlers to senior citizens, teachers to elected officials and everyone in between, Stormwater SMART is known throughout the Piedmont Triad as the premiere hands on Stormwater Education program. Our constantly changing website, brochures and other materials reflect the nature of an organization dedicated to providing our constituents with the most up-to-date, relevant stormwater information and participation opportunities

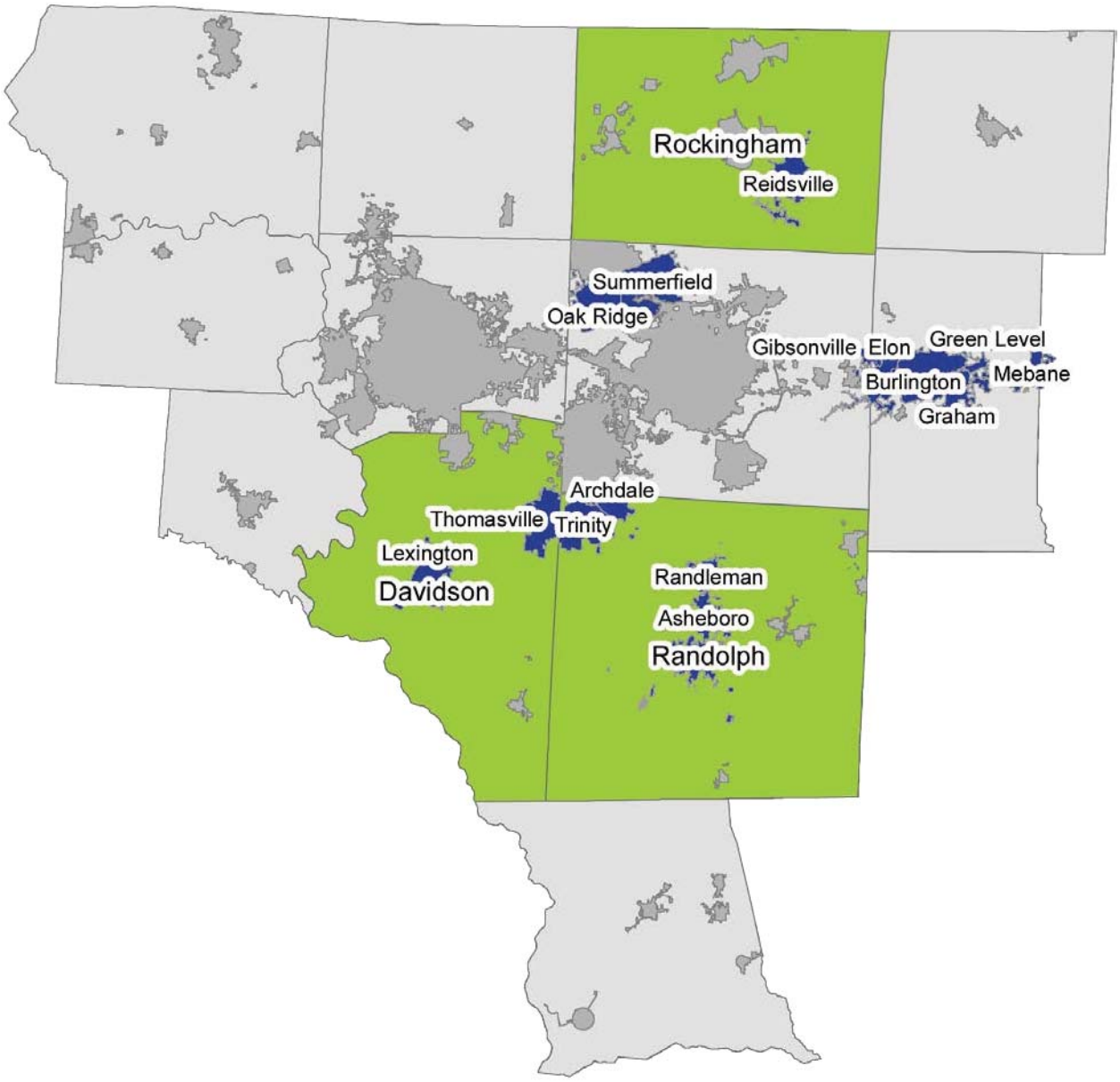
The following Counties and Municipalities participated in Stormwater SMART in 2013-2014:

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

STORMWATER SMART MEMBER GOVERNMENTS

Membership in Stormwater SMART is limited to PTRC member local governments within the PTRC twelve county region. Representatives from organizations and local governments from other regions, or non-PTRC member governments are welcome to attend meetings and access resources and information generated by Stormwater SMART. As of the 2010 US Census, 470,817 residents lived in Stormwater SMART communities.

Figure 2: Participating Stormwater SMART Communities



NPDES PHASE II REQUIREMENTS

Stormwater SMART works with the municipalities of Mebane, Elon, Haw River, Gibsonville, Graham, Burlington, Thomasville, Archdale and Trinity to address NPDES Phase II Public Education and Outreach and Public Participation criteria. We work with permittees to meet the following objectives:

BMPs for Public Education and Outreach

- Goals and Objectives: Defined goals and objectives of the Local Public Education and Outreach Program based on community wide issues.
- Describe target pollutants and/or stressors: The permittee shall maintain a description of the target pollutants and/or stressors and likely sources.
- Describe target audiences: The permittee shall maintain a description of the target audiences likely to have significant storm water impacts and why they were selected.
- Describe residential and industrial/commercial issues: The permittee shall describe issues, such as pollutants, likely sources of those pollutants, impacts, and the physical attributes of stormwater runoff, in their education/outreach program.
- Informational Web Site: The permittee shall promote and maintain, an internet web site designed to convey the program's message.
- Distribute public education materials to identified target audiences and user groups (For example, schools, homeowners, and/or businesses): The permittee shall distribute stormwater educational material to appropriate target groups. Instead of developing its own materials, the permittee may rely on Public Education and Outreach materials supplied by the state, and/or other entities through a cooperative agreement, as available, when implementing its own program.
- Maintain Hotline/Help line: The permittee shall promote and maintain a stormwater hotline/helpline for the purpose of public education and outreach.
- Implement a Public Education and Outreach Program: The permittee's outreach program, including those elements implemented locally or through a cooperative agreement, shall include a combination of approaches designed to reach the target audiences. For each media, event or activity, including those elements implemented locally or through a cooperative agreement the permittee shall estimate and record the extent of exposure.

BMPs for Public Involvement and Participation

- Volunteer community involvement program : The permittee shall include and promote volunteer opportunities designed to promote ongoing citizen participation.
- Mechanism for Public involvement : The permittee shall provide and promote a mechanism for public involvement that provides for input on stormwater issues and the stormwater program.
- Hotline/Help line: The permittee shall promote and maintain a hotline/helpline for the purpose of public involvement and participation.

JORDAN LAKE RULES REQUIREMENTS

North Carolina and the Environmental Protection Agency (EPA) have determined that Jordan Lake is impaired from high nutrient levels. The State conducted a TMDL assessment in 2007 that recommended a strategy to improve Lake conditions. The NC General Assembly created the Jordan Lake Rules from these recommendations. The Jordan Lake Rules require every municipality and county within the Haw River watershed to reduce their nitrogen and phosphorous contributions by 8% and 5%, respectively by 2017. This requires action by 19 Piedmont Triad counties and municipalities. The following 11 communities are required to participate in the Jordan Lake Rules: Burlington, Elon, Gibsonville, Graham, Green Level, Haw River, Mebane, Oak Ridge, Reidsville, Rockingham County and Summerfield.

In response to the Jordan Lake rules, Stormwater SMART stepped up our focus on nutrient management, including a program targeting landscape contractors and outreach to lawn and garden centers, pet stores and animal hospitals. We work hard to help citizens understand how their everyday actions have an impact on a lake 60 miles away.

OUTREACH REQUIREMENTS AND STORMWATER SMART COMPLIANCE

Outreach Strategy:

- ☑ Newspaper articles and/or inserts
- ☑ Kiosks and signage
- ☑ Direct mail
- ☑ Displays at the point-of-purchase in retail centers
- ❑ Utility bill inserts

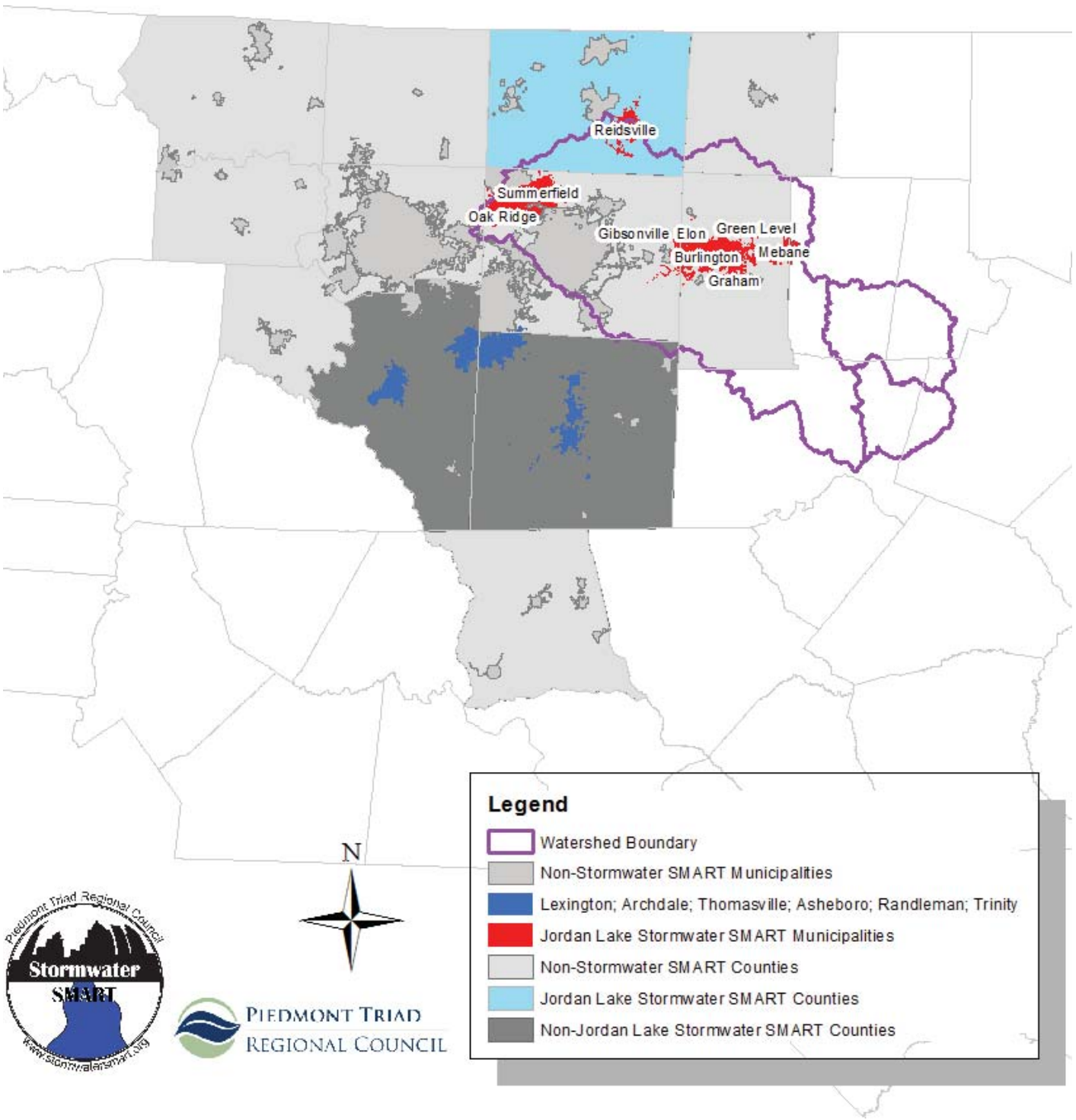
Outreach Program (1)

- ☑ Public meetings
- ☑ Community events
- ☑ Contests
- ☑ Storm drain marking
- ☑ Stream and Litter cleanups
- ☑ Group presentation and/or speeches

Outreach Program (2)

- ☑ News coverage
- ☑ Workshops and classroom outreach
- ☑ Distributing promotional giveaways and specialty items
- ☑ Brochures, displays, signs, welcome packets and pamphlets
- ❑ Local cable access
- ☑ Newsletters

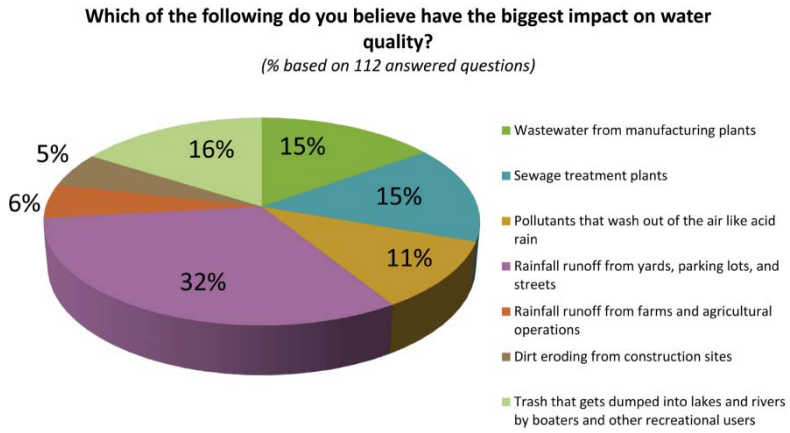
Figure 3: Jordan Lake Jurisdictions



SURVEY DATA

Stormwater SMART staff conducts surveys at most of the fairs and festivals we attend. We also have a link to the survey on our website. This year, we collected just over 100 responses.

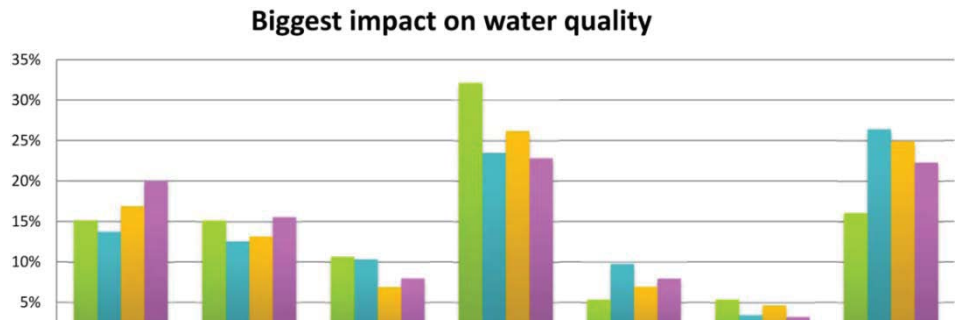
Figure 4: Biggest Impact on Water Quality



Area fairs and festivals are attended by a diverse group of individuals. Surveying these individuals provides Stormwater SMART with a strong sense of how aware a community is. The pie chart above indicates over 50% of our citizens believe the greatest impact to water quality is something other than stormwater runoff. However, more than half of citizens' surveyed indicated stormwater flowed into nearby rivers, streams or lakes, an increase over previous years.

Survey results also indicate citizens are paying more attention to their daily behaviors. The majority of citizens pick up after their pet, only five percent fertilize two or more times a year, most either don't change oil at home or take it to be recycled, and the majority of people wash their car at the carwash or on permeable surfaces. These results are encouraging and as we move forward, we hope our citizens not only continue improving their daily behaviors, but deepen their understanding of how those behaviors can positively impact our waters. For complete survey results and a comparison of survey results for the last four years, please see the appendix. The short survey covers the following areas: Residential landscape (urban, suburban or rural); overall water quality; biggest impact on water quality; fertilizer use; soil testing; motor oil disposal; car washing; pet waste and stormwater runoff.

Figure 5: Biggest Impact on Water Quality (cumulative)



	Wastewater from manufacturing plants	Sewage treatment plants	Pollutants that wash out of the air like acid rain	Rainfall runoff from yards, parking lots, and streets	Rainfall runoff from farms and agricultural operations	Dirt eroding from construction sites	Trash that gets dumped into lakes and rivers by boaters and other recreational users
2013-2014	15%	15%	11%	32%	5%	5%	16%
2012-2013	14%	13%	10%	24%	10%	3%	26%
2011-2012	17%	13%	7%	26%	7%	5%	25%
2010-2011	20%	16%	8%	23%	8%	3%	22%

PROGRAM OVERVIEW

In the Classroom

Stormwater SMART visits classrooms around the Triad, offering teachers a variety of programs based on the Project WET curriculum. We offer Elementary, Middle and High School students programs focused on stormwater runoff, native ecosystems, land use and other study areas impacting water quality. All programs are aligned with the NC Standard Course of Study.

NC StreamWatch

The Stormwater SMART StreamWatch program offers participants the opportunity to get their feet wet while learning about how the biological integrity of our waters can predict water quality.

Presentations

Stormwater SMART speaks to civic clubs, garden clubs, homeowners associations, local nonprofit organizations and other groups interested in learning more about what they can do to improve water quality.

Scouts

Stormwater SMART works with Girl and Boy Scout troops to provide programming that meets patch requirements. Our comprehensive programs combine stormwater education and participation to ensure our scouts and our leaders have the tools they need to protect our water!

Figure 7: StreamWatch in Burlington City Park

Figure 6: Nascar Days in Randleman

NC Big Sweep

Stormwater SMART organizes the annual Big Sweep in Davidson County and supports efforts in other Stormwater SMART communities. NC Big Sweep is part of an international effort to clean the litter from our watersheds and educate citizens on stormwater runoff.

Library Programs

Stormwater SMART works with libraries across the Piedmont Triad to provide programming for citizens of all ages. From summer reading programs to public information sessions, we ensure our material is relevant to all.

Fairs and Festivals

Fairs and Festivals continue to be one of the most effective ways to reach citizens from all backgrounds. We hand out rain gauges, bookmarks, and dog bones and encourage folks to sign up for the Stormwater Steward and take our survey.

Rain Garden Design

Stormwater SMART offers rain garden design for homeowners, small businesses, and municipalities. Rain gardens provide numerous water quality benefits and the potential for education is tremendous. That's why we also offer custom rain garden signage designed to accompany your rain garden if it's in a public location.

TOOLS OF THE TRADE

STORMWATER STEWARD

The Stormwater Steward is a quarterly publication covering current events, best practices, and Stormwater SMART programs. The newsletter is distributed to local officials, libraries, at fairs and festivals, and other events. The newsletter is available as a hard copy or electronically.

WWW.STORMWATERSMART.ORG

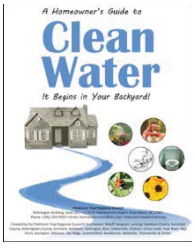
The Stormwater SMART website is designed to be user friendly for both our target audience and our local governments. We keep up to date information on our programs, links to our social networking sites, and information on various topics related to stormwater runoff.

BROCHURES / HANDOUTS

Stormwater SMART designs and distributes brochures addressing a number of topics, from program areas to actions individuals can take to improve water quality. Many of our publications are available in English and Spanish.

HOMEOWNER GUIDES

Stormwater SMART developed a comprehensive Homeowner Education packet for member distribution. Packets address common residential water quality issues and how they can be addressed.



MONITORING

We offer participants the option to get as dirty as they want on our watch. Stormwater SMART provides water quality monitoring and training addressing both physical and chemical parameters.

PRIZES

Stormwater SMART distributes rain gauges and our "buffer in a bookmark" to help participants remember how they can easily improve water quality. Our dog bones tagged with information about the importance of picking up pet waste are also popular with both two- and four-legged creatures.

ENVIROSCAPE

The Enviroscape® is a well-known tool in the stormwater education world. If you come to a Stormwater SMART function, you're likely to see us using the model to help kids and adults alike understand how we all contribute to stormwater pollution and what we can do to fix it.

PROJECT WET

Project WET is the leading resource when it comes to water quality education. The curriculum provides educators with a number of tools to help students understand the role water plays in the environment and in society and what we can do to ensure healthy water for future generations!

NC Project WET
Water Education for Teachers

This year, we offered one Project WET teacher training. Participants thoroughly enjoyed the program and look forward to a continued partnership with Stormwater SMART.

TARGETED CAMPAIGNS

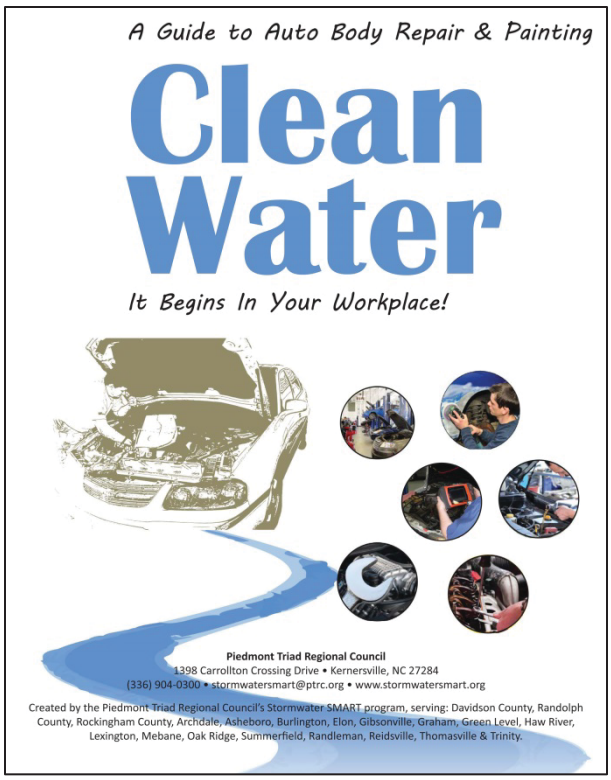
Every year, Stormwater SMART targets a different group of professionals through a structured outreach campaign. This year, at the request of our members, we developed two targeted campaigns, one focusing on auto mechanics and a second focusing on grass clippings. Both of these programs were designed to help community members understand what illicit discharges are and how they can properly dispose of pollutants.

Automobile Maintenance & Repair

This year we targeted auto body repair and painting shops. The types of materials used in these facilities are highly concentrated and are considered illicit discharges if they get into our stormwater system. We mailed out guides to 554 service centers in Stormwater SMART communities. Specific topics covered include:

- Changing Oil and Other Fluids
- Parts Cleaning & Radiator Flushing
- Painting
- Keeping a Clean Shop
- Storage
- Hazardous Materials and Wastes
- Education and Training

Figure 8: Auto Body Repair & Painting Guide



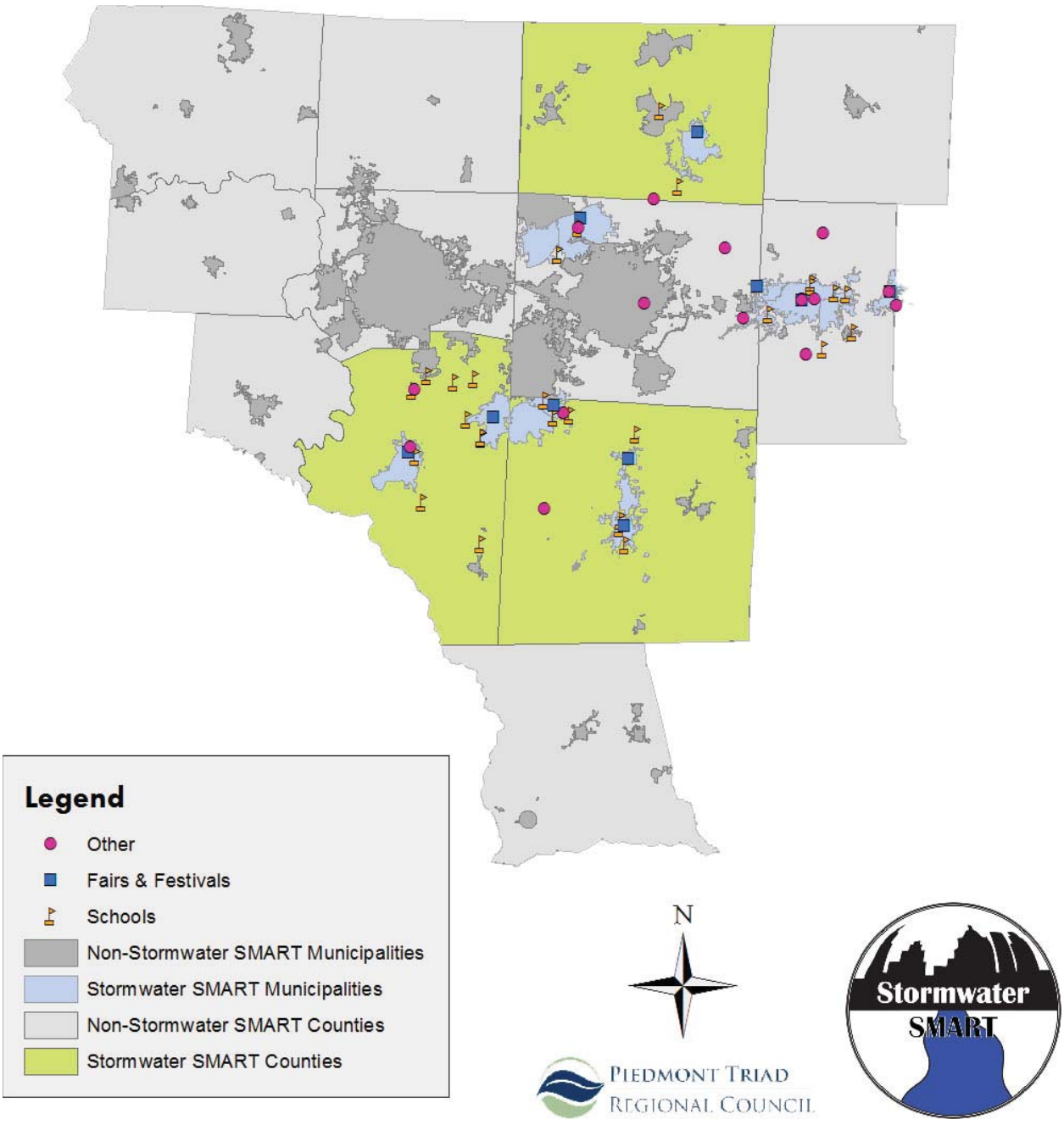
Mow it High, Let it Lie

At the request of our members, we also developed a program dedicated to grass clippings. The campaign included a number of materials including door hangers, customizable fliers, brochures and postcards. These materials identify practices used to improve appearance while keeping grass clippings out of our storm drains. Primarily targeting homeowners and landscapers, these materials also address why grass clippings are considered an "illicit discharge," and how our nutrient sensitive waters are impacted.

Figure 9: Recycle Your Lawn Postcard

KEY ACCOMPLISHMENTS

Figure 10: Stormwater SMART Programming



School Programs

School programming remains the foundation of Stormwater SMART. This year we reached almost 4,388 students in more than 26 schools around the region. In addition to working directly with schools, we partnered with the Haw River Assembly, Soil and Water Conservation Districts, NC Cooperative Extension, US Fish and Wildlife, NC Zoo, and the NC Forest Service to provide multi-disciplinary programs to participating schools. .

Figure 11: NC SOC Correlation

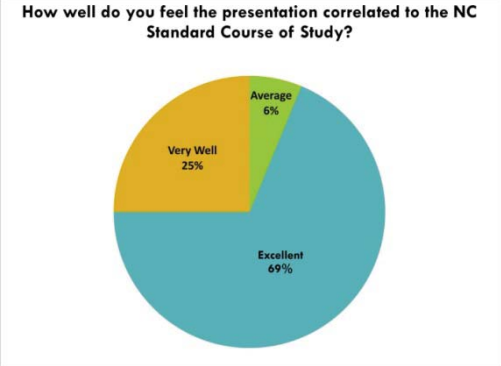


Figure 13: Soil to Seed

Figure 12: Stormwater SMART Students Reached

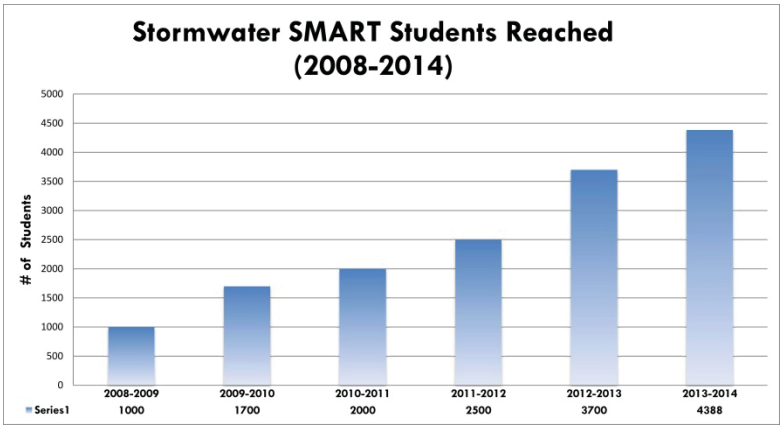


Table 1: School Programs

• Alexander Wilson • Archdale Elementary • Archdale Trinity Middle School • Brown Middle School • Central Middle School • Charles England Elementary School • Donna Loflin Elementary • Garrett Elementary • Guy B Teachy Elementary • Haw River Elementary School • Highland Elementary • John Lawrence • Ledford Middle	• Level Cross Elementary • McCrary Elementary • Midway Elementary School • North Davidson Middle • Northwest Middle • Oak Grove Middle • Pilot Elementary • R. Homer Andrews Elementary School • Sellars-Gunn • South Davidson Middle • Southern High School • Wentworth Elementary

Table 2: Sample School Programs

Enviroscape Model ® – Interactive program using an interactive 3-D model. The Enviroscape Model is an interactive 3-D model demonstrating how nonpoint source pollution flows over the landscape. The model demonstrates how pollution accumulates and impacts our surface waters. We are also able to show how berms, buffer strips, trees and other model best management practices can minimize impacts from stormwater pollution.	**A Drop in the Bucket** Students will be shown only a small amount of water is available for use.
Dragonfly Pond Using maps students determine the best way to develop an area with farms, industry, people, and nature and how development choices affect the natural resources necessary for life and the response of populations to the change in their environment.	**Macroinvetebrate Mayhem** Students play a game of tag to simulate macroinvertebrate populations.
There is No Away Students take a close look at everyday trash and learn how it can be reused, recycled or composted to take control of their trash and help keep litter out of our waterways.	**Sum of the Parts** Students illustrate how everyone contributes to the pollution of a river.
Soil to Seed Students discover how different soil structure, texture and particle size absorb and filter water.	**The Incredible Journey** Students identify and simulate the movement of water within the water cycle.
	Life Box Students discover four essential, interdependent factors needed to sustain life.
	Water Quality Ask the Bugs Students learn how plants and animals interact in their aquatic ecosystems by sampling the bugs and learning how macroinvertebrates are assessed.

Figure 14: Water Quality Ask the Bugs

Figure 15: Common Water (Project WET)

Project WET Teacher Training

This year we held one Project WET (Water Education for Teachers) teacher training for Alamance-Burlington School System (ABSS) teachers. We marketed an additional training in Rockingham County, but did not meet the minimum number of registrants. The Project WET Curriculum and Activity Guide 2.0 is a full color guide focusing on a variety of concepts related to water quality. The cross-disciplinary nature of Project WET appeals to teachers and the NC Project WET Coordinator has correlated all activities with the NC Standard Course of Study. Teachers came away with a stronger personal understanding of water quality issues in the region and across the world, and various interactive tools and mechanisms for relating those concepts to students.

StreamWatch

We work with a variety of groups, including schools, summer camps, civic groups, scouts and others to teach about the physical and biological indicators scientists use to test water quality. This year we added a new twist to our StreamWatch program. In addition to in-stream monitoring, we introduced "Water Quality – Ask the Bugs," an indoor version of our outdoor program. We recognize that access to a stream is simply not feasible for some groups so we adapted this Project WET activity to communicate the same concepts participants learn in our in-stream monitoring programs.

Presentations

Stormwater SMART offers a variety of presentations to meet the needs of a diverse audience. We customize each presentation to the age, size of the group and length of the presentation. Our presentations range in length from 15 minutes to two or more hours. We always provide plenty of handouts so our audience never leaves empty-handed. In a single day, you might catch us at a summer camp in the morning, a rotary meeting in the afternoon and a garden club in the evening. A sampling of our audience from this year includes:

- After School Programs
- Boys and Girls Clubs
- Summer Camps
- Civitan Clubs

A few of the topics covered in FY 2013-2014 were:

- Grass Clippings
- Rain Gardens
- Incredible Journey
- StreamWatch
- Stormwater Runoff

Figure 16: Summer Campers Learn About Bugs

Scouts

Stormwater SMART works with scout programs around the Triad. Whether scouts are trying to fulfill badge requirements, or work with the community to improve water quality project, our staff is always available to arrange for stream cleanups, assist with designing a rain garden, or conduct a water quality presentation. This year we worked with Randolph and Davidson Counties and worked with Girl Scouts in Summerfield.

Figure 17: Girl Scouts in Summerfield Community Park

NC Big Sweep

Across the State, groups gather every fall to clean our waters. The Piedmont Triad Regional Council organizes events in Davidson County and assists citizens in other jurisdictions connect with their local Big Sweep Coordinator. On October 19th, volunteers gathered at the Buddle Creek boat access in Davidson County. While registration for the event was high, turnout was low due to extreme weather.

Design Services

Stormwater SMART works with communities to promote and advertise projects designed to improve water quality. We assist communities in designing customized signs, flyers and other promotional materials to help citizens understand how Best Management Practices (BMPs) improve local water quality. This year, we continued work with the City of Burlington to develop educational signage for City Park. We've also continually worked with Randolph County and members of the Water Quality Task Force to design signs promoting their electronic and hazardous waste recycling days.

Figure 18: Randolph County Electronics Recycling Day

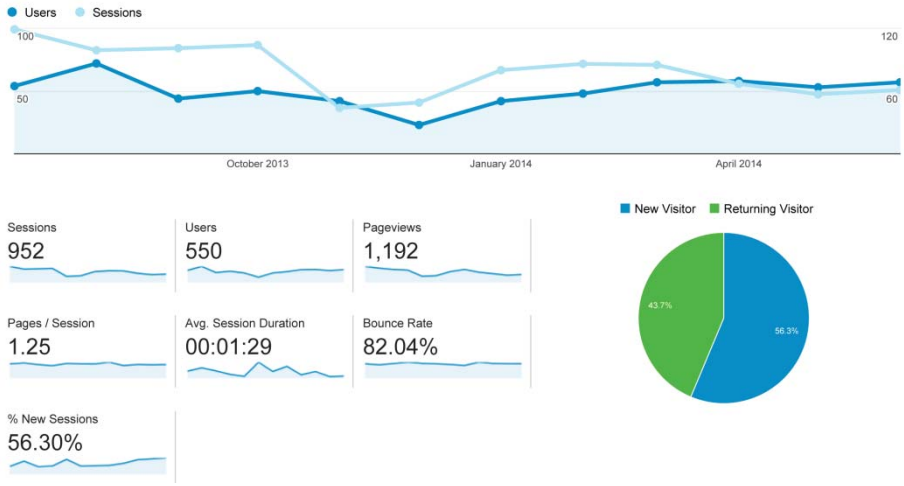
Raingarden Design

Stormwater SMART staff have their Residential Rain Garden Certification and are willing to help homeowners, garden clubs, scouts, and other groups build rain gardens in their back yard. This year, Stormwater SMART worked with homeowners in Thomasville and Burlington to assess rain garden potential in their backyard.

We hope these and other rain garden projects popping up across the Triad will encourage more citizens to consider installing rain gardens in their backyard. The more rain gardens in the ground, the better chance we have of treating stormwater on site and improving our water quality!

WEBSITE

Figure 19: Website Analytics



The Stormwater SMART website remains a central component to our program. Our website is kept up to date with our all our materials, newsletters, meeting notes, agendas, and presentations and links to Facebook, Twitter and Blogger. The calendar function shows where we are spending our days and helps teachers easily schedule a Stormwater SMART visit. Our social media presence also called for a website that was more fully integrated with our Blogger, Facebook, and Twitter feeds. Our website also uses Google Analytics software so we can more fully track who visits our website, allowing us to continuously make changes to better accommodate our target audience. The website can also be translated into dozens of different languages and has an advanced search function to help visitors quickly and easily find what they're looking for. This year, we had over a thousand pageviews.

SOCIAL MEDIA

Figure 20: Stormwater SMART Facebook Page

Stormwater SMART continues to utilize Facebook, Blogger and Twitter feeds. This year we featured 12 blog posts and had 735 hits. Our Facebook page has 29 friends, and we have 111 Twitter followers. Social networking allows us the opportunity to connect not only with our citizens, but opens the door for communication with many state and federal agencies, nonprofits, and other organizations working to protect water quality.

2013-2014 Blog Posts:

- Recycle Your Lawn: Mow it High, Let it Lie
- A Better Backyard for the Birds
- In the Classroom - Custom Maps Help 3rd Graders Understand Landforms.
- Chlorine: Good for Germs, Bad for Fish. How to Properly Drain Your Pool!
- National Drug Takeback Day - October 26th 2013
- I Am A Rain Drop - The 15 Stage Odyssey
- How Well Do You Know Your Septic System?
- Growing Green Roofs
- Making Connections - Food, Land & People
- It's Getting Hot In Here. . .
- Meet the Marbled Salamander
- The Emerald Ash Borer Threatens Our Water Quality!

Fairs & Festivals

We work closely with our member governments to educate the public at local fairs and festivals. This is a great opportunity to reach out to people who may otherwise not participate in any of our programming. From small community events, to large scale, multi-day events, we're there rain or shine. This year we handed out rain gauges, seeded bookmarks, and dog bones tagged with important information about pet waste and water quality. A casual atmosphere gives us the opportunity to introduce citizens to the importance of protecting water quality, introduce our services to the community, and collect survey information.

- Asheboro Fall Festival
- Burlington Carousel Festival
- Gibsonville Fall Festival
- Lexington BBQ Festival
- Mebane Dogwood Festival
- Randleman Nascar Days
- Reidsville Downtown Homegrown Festival
- Summerfield Founders Day Festival
- Thomasville Everybody's Day Festival
- NCDOT Div 7 Health Fair (Burlington/Alamance)
- Thomasville Spring Daze

Figure 21: Thomasville Spring Daze

APPENDIX A

Program Summary

Stormwater SMART Direct Education Program Summary

Alamance Regional Programs & Municipalities

NC DOT Division 7 Health Fair	September 17, 2013	Outreach	12
Project WET Teacher Training *Alamance County Teachers	February 7, 2014	Project WET	12
Nature Center at Glencoe Mill *Mebane, Graham, Burlington, Haw River, Green Level, Elon	Ongoing	Board Member	
Total			**24**

Burlington

Mackintosh Park Camp	July 9, 2013	StreamWatch	12
City Park Camp	July 12, 2013	StreamWatch	25
Camp Green Leaves	August 13, 2013	Blue Planet, StreamWatch	10
Carousel Festival	September 21, 2013	Festival	120
Highland Elementary	September 23, 2013	Enviroscape and Water Quality Ask the Bugs	115
R. Homer Andrews Elementary	September 26, 2013	Water Quality Ask the Bugs for 5th grade	100
Thataways Youth Center	October 8, 2013	Incredible Journey	30
Envirothon	April 25, 2014	Soil Erosion	25
Turning Points	April 28, 2014	Incredible Journey	25
R. Homer Andrews Elementary	April 30, 2014	Water Quality Ask the Bugs for 4th grade	89
Nature Camp	June 24, 2014	StreamWatch	25
Auto Mechanic Outreach	June, 2014	Mailing	100
Total			**700**

Elon

Auto Mechanic Outreach			**6**
Total			**6**

Gibsonville

Fall Festival	October 12, 2013	Outreach	50
Auto Mechanic Outreach	June, 2014	Mailing	6
Total			**56**

Graham

Southern High School	April 8, 2014	NC Watershed Game	40
Alexander Wilson Elementary	April 9, 2014	Incredible Journey	47
Auto Mechanic Outreach	June, 2014	Mailing	34
Total			**121**

Haw River

Haw River Elementary	September 9, 2013	Land Forms	112
Auto Mechanic Outreach	June, 2014	Mailing	4
Total			**116**

Mebane

Mebane Library	August 14, 2013	Incredible Journey	20
Garrett Elementary	November 15, 2013	Project WILD	30
Civitan Club	January 9, 2014	IDDE	20
Southern High School	April 8, 2014	NC Watershed Game	40
Mebane Dogwood Festival	April 26, 2014	Outreach	100
Auto Mechanic Outreach	June, 2014	Mailing	21
Total			**231**

Alamance County Total:	**1254**

*Southern High School covers students in Mebane and Graham. The total number of program participants were split equally between the two jurisdictions.

Randolph County and Municipalities

Archdale

Bush Hills Festival	September 14, 2013	Outreach	120
Archdale Library	October 30, 2013	Rain Gardens	1
Archdale Trinity Middle	November 5 and 7, 2013	Enviroscape and Soil Splash	112
Archdale Elementary	February 2, 2014	Enviroscape	15
John Lawrence	April 1, 2014	Water Quality Ask the Bugs	95
Auto Mechanic Outreach	June, 2014	Mailing	21
Total			**364**

Asheboro

Sunset Street Festival	October 5, 2013	Outreach	50
GBT Elementary	October 29, 2013	Incredible Journey	95
McCrary Elementary	April 3, 2014	Macroinvertebrate Mayhem	95
Donna Loflin	April 7, 2014	Water Quality Ask the Bugs	95
Auto Mechanic Outreach	June, 2014	Mailing	88
Total			**423**

Randleman

Randleman Nascar Days	October 26, 2013	Outreach	100
Level Cross Elementary	March 12, 2014	Land Forms	112
Auto Mechanic Outreach	June, 2014	Mailing	10
Total			**222**

Trinity

Archdale Trinity Middle	November 5 and 7, 2013	Enviroscape and Soil Splash	112
Auto Mechanic Outreach	June, 2014	Mailing	9
Total			**121**

County

Scout Program Preview *Davidson and Randolph County	August 29, 2013	Outreach	45
Scout Merit Badge *Davidson and Randolph County	November 23, 2014	Sustainability Merit Badge	25
Auto Mechanic Outreach	June, 2014	Mailing	23
Total			**93**

Randolph County Total	**1223**

*Archdale Trinity Middle covers students in Archdale and Trinity. The total number of program participants were split equally between the two jurisdictions.

Davidson County Regional Programs and Municipalities

Regional			
Scout Program Preview *Davidson and Randolph County Scouts	August 29, 2013	Outreach	45
NC Big Sweep *Rained Out	October 19, 2013	Litter Pick Up	3
Scout Merit Badge *Davidson and Randolph County Scouts	November 23, 2014	Sustainability Merit Badge	25
Total			**73**
Lexington			
Lexington BBQ Festival	October 26, 2013	Outreach	100
Charles England Elementary	November 19, 2013	Rain Gardens	92
Central Middle School	August 13, 2013	Water Quality Ask the Bugs	45
Auto Mechanic Outreach	June, 2014	Mailing	100
Total			**337**
Thomasville			
Brown Middle	September 10, 19, and 20, 2013	Incredible Journey for 7th grade	275
Everybody's Day Festival	September 28, 2013	Outreach	180
Pilot Elementary	October 23, 2013	Water Quality Ask the Bugs	75
Ledford Middle	January 2, and 3, 2014	Enviroscape for 8th grade	240
Brown Middle	January 6, 7, and 8, 2014	Enviroscape for 8th grade	365
Spring Daze Festival	May 3, 2014	Outreach	5
Auto Mechanic Outreach	June, 2014	Mailing	64
Total			**1204**
County			
North Davidson Library	July 10, 2013	Incredible Journey	20
Midway Elementary	December 6,2013	Water Quality Ask the Bugs	94
North Davidson Middle	December 2, 16, 17, 2013	Enviroscape	360
Oak Grove Middle	February 10, 2014	Water Quality Ask the Bugs	115
South Davidson Middle	May 8, 2014	Water Quality Ask the Bugs /Macroinvertebrate Mayhem	60
Auto Mechanic Outreach	June, 2014	Mailing	8
Total			**657**
Davidson County Total			**2271**

Rockingham County and Reidsville

Reidsville and County Combined

Wentworth Elementary	September 27, 2013	Incredible Journey	93
Haw River Learning Celebration	October 11, 2013	Enviroscape	65
Reidsville Fall Festival	October 12, 2013	Outreach	50
Reidsville Appearance Commission	April 10, 2014	Grass Clippings	7
Auto Mechanic Outreach	June, 2014	Mailing	56
Total			**271**

Guilford County

Summerfield And Oak Ridge Combined

Oak Ridge, Summerfield	September 30- October 3, 2013	Enviroscape/Soil	360
Summerfield	October 28, 2013	Water Quality ask the Bugs	15
Summerfield	November 8, 2013	Water Day	360
Oak Ridge, Summerfield	April 23, 2014	Dragonfly Pond	450
Summerfield	May 17, 2014	Founders Day Festival	100
Auto Mechanic Outreach	June, 2014	Mailing	4
Total			**1289**

Regional Total	**6308**

APPENDIX B

Budget & Meeting Notes

Stormwater SMART FY 2013-2014
Member Fees

Census 2010 Population		Base rate (90%)	% Total Stormwater SMART Population	Population Based Rate (10%)	Expenditures (population x $0.017)	Time (2PT) + Expenditures ($0.017)
Archdale	11,415	$3,642	2.42%	$196	$194	**$4,032**
Asheboro	25,012	$3,642	5.31%	$430	$425	**$4,497**
Burlington	49,963	$3,642	10.61%	$859	$849	**$5,350**
Davidson County	107,828	$3,642	22.90%	$1,854	$1,833	**$7,329**
Elon	9,419	$3,642	2.00%	$162	$160	**$3,964**
Gibsonville	6,410	$3,642	1.36%	$110	$109	**$3,861**
Graham	14,153	$3,642	3.01%	$243	$241	**$4,126**
Green Level	2,100	$3,642	0.45%	$36	$36	**$3,714**
Haw River	2,298	$3,642	0.49%	$40	$39	**$3,721**
Lexington	18,931	$3,642	4.02%	$325	$322	**$4,289**
Mebane	11,393	$3,642	2.42%	$196	$194	**$4,031**
Oak Ridge	6,185	$3,642	1.31%	$106	$105	**$3,853**
Reidsville	14,520	$3,642	3.08%	$250	$247	**$4,138**
Randleman	4,113	$3,642	0.87%	$71	$70	**$3,783**
Randolph County	88,465	$3,642	18.79%	$1,521	$1,504	**$6,667**
Rockingham County	55,009	$3,642	11.68%	$946	$935	**$5,523**
Summerfield	10,232	$3,642	2.17%	$176	$174	**$3,992**
Thomasville	26,757	$3,642	5.68%	$460	$455	**$4,557**
Trinity	6,614	$3,642	1.40%	$114	$112	**$3,868**
Total:	470,817	**$69,197**		**$8,093**	**$8,004**	**$85,294**

**County population totals do NOT include municipalities*

Piedmont Triad Regional Council Stormwater SMART
Wilmington Building, Suite 201 • 2216 West Meadowview Road • Greensboro, NC 27407-3480

AGENDA

July 25th, 2013 • PTRC Conference Room, Greensboro Office • 2pm - 4pm

I. Welcome

II. Program Update

a. Schools (K-12)
   i. South Asheboro Middle (May 13 and 20)
   ii. Randleman Elementary (April 22nd)
   iii. Southwest Guilford Middle in High Point (April 24-26)
   iv. Hawfields Middle School (Mebane/Graham/Burlington, May 6th)

b. Scouts
   i. Randolph and Davidson County Girl Scouts (Apr. 22)
   ii. Randolph County Girl Scout Troop (May 28th)

c. StreamWatch
   i. Haw River (June 22)
   ii. Media Coverage: http://www.thetimesnews.com/news/top-news/local-group-will-test-the-waters-on-the-haw-1.162335
   iii. Rockingham County June 15th

d. Outreach
   i. Randolph County Earth Day at the Zoo (April 21st)
   ii. Mebane Dogwood Festival (April 27th)
   iii. Graham Rain Garden Siting (April 29th)
   iv. Asheboro Environmental Field Day (May 3rd)
   v. Thomasville Spring Daze (May 4th)
   vi. Lexington Multicultural Festival (May 4th)
   vii. Haw River Festival (May 18th)
   viii. Summerfield Founders Day Festival (May 18th)
   ix. Flint Rock Farms in Rockingham County/Reidsville (May 29th)
   x. Reidsville IDDE (June 4th)
   xi. Randolph County Water Camp in Randleman (June 24-26)
   xii. Restaurant Outreach (2000)
   xiii. Burlington Summer Camp (June 17th, July 9th and 12th)

e. Library Programs
   i. Graham (June 27th)
   ii. Davidson County (July 10th)

f. Project WET
   i. Burlington/Haw River/Graham/Mebane/Green Level/Elon

g. Capacity Building
   i. Glencoe Mill Nature Center
   ii. NC Wildlife Commission and Soil and Water Conservation Districts
   iii. Boys and Girls Club and Trees NC (Asheboro)

III. Materials

a. Newsletters
b. Signs
c. Annual Report

IV. FY 2013-2014 Strategy

V. Legislative Issues

VI. Adjourn: Next Meeting **October 17th, 2pm – Greensboro Conference Room**

Piedmont Triad Regional Council
Stormwater SMART
Wilmington Building, Suite 201 • 2216 West Meadowview Road • Greensboro, NC 27407-3480

MEETING NOTES

July 25th, 2013 • PTRC Conference Room, Greensboro Office • 2pm - 4pm

Attendees: DJ Seneres, City of Archdale; Randall King, Town of Haw River; Chester Patterson, City of Burlington; Danny Scales, City of Burlington; Stacy Tolbert, Rockingham County; Greg Patton, City of Randleman; Donna Setliff, City of Reidsville; Melissa Guilbeau, City of Graham; Josh Johnson, AWCK; Michael Rhoney, City of Asheboro; Morgan Huffman, City of Thomasville; Cy Stober, PTRC; Brandon Parker, Town of Gibsonville; Montrena W. Hadley, City of Mebane; Scott Whitaker, Town of Summerfield; Joy Fields, PTRC; Elizabeth Jernigan, PTRC.

Welcome: Introductions

Annual Report: The annual report is almost completed. Hard copies of the Annual Report were made available during the meeting. Final copies will be distributed by the end of July. We made significant improvements, particularly in schools, where we increased participation by over 1,000 participants. This is due primarily to our successful outreach campaign to elementary teachers. Due to intense time requirements, we decided not to include individual community profiles. Instead, there is a detailed chart describing all programs in the appendix. Stormwater SMART members can request customized community profiles if they feel they are beneficial.

Liz reviewed the survey results collected at fairs and festivals. The actual number of surveys collected was lower than other years, due primarily to a rainy fair and festival season. While it is challenging to collect survey information, we do believe it is a vital component of the program and helps guide our program each year. This year we did not compile surveys for each community, instead we compiled all the results and made them available as an appendix to the annual report.

Environmental Education Certification: Joy and Liz both completed requirements for the North Carolina Environmental Education Certification. This is a significant achievement that required hundreds of hours of educational workshops, outdoor experiences, knowledge of resources and facilities across the state, teaching experiences and a community action partnership. The Certification process was the result of both personal and professional dedication. It provided us with many networking opportunities and opened the door for partnership building with teachers, professionals, and many local, regional and state nonprofit and government organizations. Liz did her community action project with the City of Burlington, designing a walking tour for citizens around city park. The project involves detailed signs, a map, and interactive website. The project should be implemented by the December 2013. Joy worked with the City of Greensboro to install a native plant riparian buffer at the Arboretum.

Project WET Teacher Training: We had two successful Project WET Teacher trainings this year. One training was in Davidson County and had two High Point teachers participate. While we only had eight participants, they very much enjoyed the training. Our most successful training targeted Alamance

County teachers and was organized by the Elementary Lead Science and Math teacher. We had 21 participants from Stormwater SMART schools in Alamance County. Having our Stormwater SMART representative help facilitate these connections is essential. It took many years to find the right contact in Alamance County, and we haven't had near the success in other jurisdictions. We attempted to engage Rockingham County teachers through various locations and dates, however only two were able to attend. In lieu of an additional training, we worked with Project WET facilitators in Guilford County and were able to provide the training to these participants free of charge.

Schools: We've continued expanding both the number of schools we work with and the number of programs we offer. Joy discussed challenges associated with correlating our programs to the NC Standard Course of Study. There are instances where she has had to adapt her program upon arriving at the school and discovering the teachers were using a different methodology to meet specific goals and objective. We also partnered with the Randolph County Soil and Water Conservation District to provide an "Environmental Field Day" for Randolph County elementary school students at the NC Zoo. Joy provided a StreamWatch Program and Liz did "The Incredible Journey." Joy is currently working with teachers at Highland Elementary to coordinate a Water Field Day. This event is unique in that we are bringing in presenters from Alamance Soil and Water as well as the NC Wildlife Resource Commission to provide programming.

Scouts: Joy had a very successful outreach event with girl scouts from Davidson and Randolph County. Scouts, their parents, the River Rats, and County rescue staff participated in the event. Joy connected participants with their local waters quality thorough a combination education and public participation program. Scouts took turns collecting trash from the shores of High Rock Lake and participating in environmental education games designed to teach them about how we can best protect our waters.

Restaurant Outreach: This year was the first year we've completed a large-scale mailing campaign to Stormwater SMART communities. We distributed over 1,500 packets to restaurants with posters in both English and Spanish, managers check list, spill response, and general stormwater awareness.

Liz asked members what type of outreach campaign the board would like to see next year. The board defaulted to staff to determine the best campaign.

Library Programs: We've worked with two libraries, North Davidson Public Library and Graham Public Library this summer. Stormwater SMART was a perfect fit for their summer reading program "Dig Into Reading." This is a unique opportunity because it provides a lot of interaction with parents, particularly for the younger children. We have another program scheduled in Mebane and look forward to continued partnerships with these and other libraries on the summer reading program. We also sent libraries newsletters, seeded bookmarks, and a letter describing our services in the fall. We will continue with that mailing this fiscal year.

Capacity Building: Liz is participating as a voting member on the board for the Nature Center at Glencoe Mill. Participation will ensure there is exemplary water quality programming built into the Nature Center. If members would like to discuss further, please let Liz know. Joy has been building partnerships with Boys and Girls Clubs and Trees NC in Asheboro and Randleman. If there are similar clubs in other jurisdictions, please feel free to provide us their contact information.

Signs: Liz displayed custom signs designed for the Town of Oak Ridge and the City of Burlington. We have the capacity to customize signs to match existing municipal signage, or can customize signs to meet your needs. Please contact Liz for additional information.

Materials: As always, newsletters were made available for participants. Those who were not at the meeting will receive 25 copies in the mail. We also have Homeowner Guides available. Please determine the best person in your community to distribute Guides (i.e. when water is turned on) and provide us with that person's contact information.

Legislative Issues: Josh Johnson and Cy Stober filled the board in on how the Jordan Lake Rules are changing. Communities are still required to meet existing requirements, however additional research is being conducted which may impact future development and redevelopment requirements.

Meeting was Adjourned: Next Meeting **October 17th, 2pm – Greensboro Conference Room**

Piedmont Triad Regional Council
Stormwater SMART
Wilmington Building, Suite 201 • 2216 West Meadowview Road • Greensboro, NC 27407-3480

AGENDA

October 17th, 2013 • PTRC Conference Room, Greensboro Office • 2pm - 4pm

I. Welcome

II. Program Update

a. Schools (K-12)
   i. Haw River Elementary, Haw River (September 9th)
   ii. Brown Middle School, Thomasville (September 10th, 19th and 20th)
   iii. Highland Elementary Water Day, Burlington (September 23rd)
   iv. Andrews Elementary, Burlington (September 26th)
   v. Wentworth Elementary, Rockingham County (September 27th)
   vi. Haw River Learning Celebration, Reidsville (October 10th)
   vii. Northwest Middle School, Oak Ridge and Summerfield (Sept 30th-October 3rd)
   viii. Thataways Camp, Burlington (October 8th)

b. Scouts
   i. Program Preview, Randolph and Davidson Counties (August 29th)

c. Outreach
   i. Burlington Summer Camp (August 13th)
   ii. Bush Hills Festival, Archdale (September 14th)
   iii. Carousel Festival, Burlington (September 21st)
   iv. Everybody's Day Festival (September 28th)
   v. Sunset Street Festival, Asheboro (October 5th)
   vi. Reidsville Fall Festival(October 12th)
   vii. Gibsonville Fall Festival (October 12th)

d. Library Programs
   i. Mebane (August 14th)

e. Capacity Building
   i. Glencoe Mill Nature Center
   ii. Boy Scout STEM Merit Badge College
   iii. Bridging the Gap STEM Conference

III. Materials

a. Rain Gauges and Bookmarks
b. Newsletter delayed until Winter 2014 meeting

IV. FY 2013-2014 Strategy

a. Direct outreach mechanic/automobile repair shops
b. Interactive map identifying programs
c. Civic club outreach campaign: IDDE and Pollution Prevention for Small Businesses
d. Buffer in a Bookmark mailing

V. New Member Outreach

a. Winter meeting

VI. Adjourn: 2014 Meeting Dates: Greensboro Conference Room

a. January 23rd – Kernersville
b. April 17th – Kernersville
c. July 17th – Kernersville
d. October 16th – Kernersville

Piedmont Triad Regional Council
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MEETING NOTES

October 17th, 2013 • PTRC Conference Room, Greensboro Office • 2pm - 4pm

Attendees: DJ Seneres, City of Archdale; Chester Patterson, City of Burlington; Danny Scales, City of Burlington; Stacy Tolbert, Rockingham County; Greg Patton, City of Randleman; Kaitland Finkle, City of Graham; Josh Johnson, AWCK; Morgan Huffman, City of Thomasville; Cy Stober, PTRC; Brandon Parker, Town of Gibsonville; Scott Leonard, Davidson County; Montrena W. Hadley, City of Mebane; Joy Fields, PTRC; Elizabeth Jernigan, PTRC; Cy Stober, PTRC

Welcome: Introductions

Program Update: Last quarter, we worked directly with over 1200 citizens in Stormwater SMART communities. Joy updated the staff on school outreach including new programs and adaptations. We have also significantly increased our elementary school participation. Stormwater SMART partnered with NC Wildlife Resources Commission and Alamance County Soil and Water Conservation District to conduct a "Water Day" at Highland Elementary School in Burlington. The program is successful and we look forward to partnering with more state and local organizations in the future. We are doing a similar event organized by Randolph County Soil and Water Conservation District, however it's unlikely we will spend as much time in Randolph County schools due to new requirements by the new superintendent requiring a pre-approval early in the school year for any field trips or presenters working in the school system. Stormwater SMART will work with the school district to ensure continued participation in Randolph County Schools. Asheboro schools are part of a separate school system and are not impacted by this requirement. Kaitland Finkle from the City of Graham asked if private schools were eligible to participate in Stormwater SMART programs. When the program was created, the board opted not to allow participation from private schools but the current board opted to overturn that vote. Greg Patton or Randleman made a motion, seconded by DJ Seneres or Archdale.

Joy attended and presented a modified version of Water Quality: Ask the Bugs at the national Project WET conference and was well received. This relatively new program involves a length of blue fabric, leaves, debris, and rock representing the streambed. Cutouts of macroinvetebrates are hidden throughout the stream and students are given 20 seconds to find bugs. They sort and identify the bugs and use stream survey worksheets to calculate water quality. This is a great option when there isn't a stream nearby or during bad weather.

We also had a successful fair and festival season, utilizing all water resources staff. We've found placement to be a critical component in how many surveys we are able to complete, however all outreach efforts have been successful in bringing awareness to the program and distributing materials.

We had a few summer camp and summer reading programs that fell into this category. The librarians we've worked with look forward to working with us again next year during their summer reading programs. Summer reading programs are a natural fit for Stormwater SMART and this year we will customize a program specifically to meet the summer reading theme and market it early to eligible libraries.

We are continuing to build partnerships with other organizations including the Glencoe Mill Nature Center, Soil and Water Conservation Districts and various local and statewide organizations. Joy has been involved in STEM trainings, working not only with teachers, but Boy Scouts and Boys and Girls clubs.

We plan on hosting a Project WET Teacher Training in Alamance County in February and are working with the Wildlife Resources Commission Teacher Training in Project Wild, also in Alamance County. This project is free to any member who can organize enough teachers to make it worth the facilitator's time. Joy and Liz also went to a Food, Land & People training organized by the NC Soil and Water Conservation District. While the training was good, many of the activities need to be adapted to make them useful for our communities. One benefit of the curriculum is the ability to work with teachers on a few lessons rather than requiring a full day commitment to learning the curriculum.

Capacity Building: Liz is continuing to work with the Nature Center at Glencoe Mill, representing all Stormwater SMART Communities with students in the ABSS school system. We hope to receive enough funding to sign a lease agreement on the Dye House at Glencoe. Joy is focusing a lot of her efforts on incorporating STEM into our programs, specifically in working with Boy Scouts and Boys and Girls Clubs.

Materials: The next publication date for the Stormwater Steward is winter 2013. We are ahead of schedule and did not distribute a newsletter this quarter so we could get back on track and keep the Steward up to date with relative events in the winter. We also ordered rain gauges and bookmarks for our outreach events.

FY 2013-2014 Strategy: The majority of the fall season is dedicated to fairs and festivals and a high demand for school programming. This winter we anticipate a direct mailing campaign similar to last year's restaurant outreach campaign. This year we will focus on mechanics and automobile repair shops. This will require a bit more preparation on our part due to a lack of readily available materials and no existing database. We hope to have a copy machine in the new building that will fold and stuff envelopes.

We are also in the process of developing a mapping database to better display where our outreach are being held. We will likely integrate a Google map into the website with points. Each point will have a photo and description of outreach activity. This will make us much more transparent as well as serve as a reminder of where we need to focus our efforts.

We also plan to reach out to civic clubs again this spring. This year's presentation will be based on Illicit Discharge Detection & Elimination and Pollution Prevention for Small Businesses. Joy will begin outreach this fall.

Our Buffer in a Bookmark outreach program will place a heavy emphasis on next years' summer reading program. The librarians we've worked with in the past were thrilled with last year's programming and look forward to having us back next summer. Summer reading programs offer us the opportunity to increase participation from eligible libraries.

New Member Outreach: Our winter meeting will be in the new Kernersville office. We will open up the meeting to all potential members. Board members agreed to actively participate in interactive programming. Staff will also work with the board to put together some preliminary materials to send to potential members. We also discussed potentially putting together some video of our programming but likely won't have time to pull that off.

Meeting was Adjourned: Next Meeting **January 23rd, 2pm – 4pm PTRC – Kernersville office.**

Piedmont Triad Regional Council
Stormwater SMART
Wilmington Building, Suite 201 • 2216 West Meadowview Road • Greensboro, NC 27407-3480

AGENDA

January 23, 2014 • PTRC Conference Room, Kernersville Office • 2pm - 4pm

I. **Welcome – Paul Kron**

II. **Background – Elizabeth Jernigan**

III. **Program Overview – Joy Fields**

IV. **Materials – Elizabeth Jernigan**

V. **Program Collaboration & Grants – Joy Fields**

VI. **What if we Already Have a Stormwater Program or Aren't Regulated? – Cy Stober**

VII. **Local Technical Assistance – Cy Stober**

VIII. **Contact Info**

Piedmont Triad Regional Council Stormwater SMART
Wilmington Building, Suite 201 • 2216 West Meadowview Road • Greensboro, NC 27407-3480

New Member Outreach – Meeting Notes

January 23, 2014 • PTRC Conference Room, Kernersville Office • 2pm - 4pm

Attendees: Elizabeth Jernigan, PTRC; Cy Stober, PTRC; Joy Fields, PTRC; Paul Kron, PTRC; Greg Patton, City of Randleman; Jim McIntosh, Town of Ramseur; Megan Ledbetter, Village of Clemmons; Mike Gunnell, Village of Clemmons; Scott Leonard, Davidson County; Stacy Tolbert, Rockingham County; Randall King, Town of Haw River; Brandon Parker, Town of Gibsonville; Montrena Hadley, City of Mebane; Ana Jaramitto, Town of Kernersville; Amy Crum, WS/FC Planning & Development Services; Roseann L'Esperance, City of Winston-Salem; Wendy Hartup, Forsyth Co. Cooperative Extension; Morgan Huffman, City of Thomasville; Josh Johnson, AWCK; Michael Layne, City of Burlington; Chester Patterson, City of Burlington; DJ Seneres; City of Archdale; Matthew Johnson (GoToMeeting), Town of Jamestown.

Welcome (Paul Kron): Paul Kron presented on the history of the Piedmont Triad Regional Council. Councils of Governments were established in 1968. We were re-formed in July, 2011 as the Piedmont Triad Regional Council. We have 72 member governments, over a hundred staff members and serve about 1.6-1.7 million citizens. Our budget is around 26 million. We are a voluntary membership government organization. Our mission is to serve you. A lot of what we try and do is bring people together to identify common issues and challenges and begin to work together on solutions. We have seven program areas; Area Agency on Aging, Criminal Justice, Community Development (Small Business Loans), Housing, Management Services Workforce Development & Planning. Three members of our department spend a significant portion of their time in water resources

We have two big projects we're currently working on: a three year HUD Sustainable Communities project "Piedmont Together," and a Comprehensive Economic Development Strategy (CEDS). These projects are closely linked. In terms of our planning program, we support local and regional scale projects including land use, ordinance development, parks & greenways, site & corridor design, transportation, brownfield redevelopment, air quality, water resources GIS/GPS Analysis & Mapping, facilitation & training, and outreach & education.

Background (Elizabeth Jernigan): Stormwater SMART was formed to help Phase II communities comply with NPDES Phase II Programs. The program was funded through a 205j grant which is only eligible for Councils of Governments. After the first few years, we had many of the governments opt to stay on and continue through a fee-based program. Eventually Jordan Lake Rules came into play and we picked up some additional communities.

We try to customize all programs based on regulatory requirements. We put together materials that are both useful and fulfill regulatory requirements. We work closely with the State office to make sure our communities are meeting regulatory demands. If you're interested in learning.

more, we have Annual Reports available at the back of the room. They are also available on our website

We currently have 19 members, all of which were previously in the Piedmont Triad region. We have not picked up any members from the Northwest region. Most of these communities either have existing programs or are not yet regulated.

Our programs are based on watershed needs (e.g. nutrient reduction in the Jordan Lake watershed). We emphasize impaired waters and use data from the State to try to connect citizens to those streams through education and public participation. We customize materials for our communities including estimated dump truck loads of pet waste in each community.

Joy and Liz both have their NC Environmental Education Certification. We put a lot of our personal time into the certification which facilitated a lot of partnerships and opened our eyes to a lot of additional resources around the state.

This year we reevaluated our budget and simplified it into a cut and dry formula (see attached).

Program Overview (Joy Fields): Many of our programs are based on survey information we gather at fairs and festivals. We use the information we gather to customize programs for that community and the region as a whole.

> **Schools**: We try to reach at least one school in each jurisdiction, usually more than that. We're often used for review of materials. In the past, we've used the Enviroscape ® but we are expanding into new programs (e.g. Water Quality "Ask the Bugs") and covering more subjects (ecosystems). We also bring in maps of their school to connect them to their local waters. Mapping is often part of the required curriculum and meet teacher needs.
>
> **Project WET** (Water Education for Teachers) Teacher Trainings are growing in popularity. We use the curriculum to train the teachers in how to teach stormwater principals. It's also an opportunity for us to make connections with teachers and make them aware of how to use our program as a resource.
>
> **StreamWatch:** We provide trainings on macroinvetebrates and look at the chemical properties of water. Using these methods, volunteers learn about monitoring parameters and what they mean.
>
> **Sample of Recent Presentations:**
>
> - General Stormwater Education
> - Enviroscape Presentation
> - Rain garden & Native Plants
> - Soils
> - Planting for Water Quality
> - Macroinvetebrates
> - Jordan Lake Rules Requirements
> - High Rock Lake Special Study
> - Illicit Discharge Detection & Elimination

Boy & Girl Scouts

NC Big Sweep

Restaurant Outreach: Each year we develop a targeted campaign. This year we focused on restaurants reaching approximately 1,150 restaurants in Stormwater SMART communities.

Library Outreach: Buffer in a Bookmark program, Summer Reading programs, Earth Day events

Rain Garden Design: We've worked with homeowners, scouts and local governments to design and educate the public on rain gardens

Fairs and Festivals: We conduct surveys, distribute materials and give away rain gauges, dog bones with information about pet waste disposal & our seeded bookmarks.

Materials (Elizabeth Jernigan): Liz develops the majority of media and materials for the program. Our website was recently renovated to more closely coordinate with the new PTRC website. We have a calendar function that allows our board members to know where we are and teachers to have an idea about when we're available for a program.

Our blog has been one of our most popular forms of social media. It's allowed us to connect with other stormwater professionals as well as members of the community.

The Stormwater Steward is our token publication. We're in our fifth year of publication. We have over 300 folks on our email list and almost a hundred receive hard copies. We also distribute the newsletter throughout the community as well as at fairs and festivals and other special events.

We create and customize numerous brochures. We always customize materials for the intended audience to ensure they are most effective.

Our Homeowner's Guide to Clean Water is one of our most popular publications. At the direction of the board, we opted to develop a booklet style guide that covers many of the things you can do to protect water quality in your backyard.

We create customized signs for Stormwater SMART communities, all of which is included in annual membership dues. We're able to match existing signs in the community for consistency. We are in the final draft stages of a "Follow that Drop" program that was part of Liz's Environmental Education Action Project. The program utilizes signage around city park to help people connect with what the municipality is doing and how they can use similar practices in their backyard.

Program Collaboration & Grants (Joy Fields): We work closely with a number of outside organizations including Soil and Water Conservation Districts, Cooperative Extension, Wildlife Resources Commission, Parks and Rec Departments, local watershed groups, river basin associations Audubon, Watershed Stewardship network, SourceWater Collaborative & Scouts (on an administrative level).

We partner with our members on grant applications. Stormwater SMART dues can be used as a source of match, extending what we can do in a community.

What if We Already Have a Stormwater Program or Aren't Regulated? (Cy Stober):

- We don't duplicate existing programs. We have many unique opportunities and customize all our programs to meet community needs.
- Strategic use of funds through grants leverage
- Representation of needs to DWQ & EPA
    - Lexington Stormwater Phase II
    - Clemmons, Lewisville, & Winston-Salem Turbidity TMDL
- Help with reporting requirements
- Participate in statewide discussions
    - Scientific Advisory Board
    - Stormwater Association of NC
    - NC Lake Management Society
- Representation in emerging concerns
    - Jordan Lake Rules
    - High Rock Lake Special Study
- Local Technical Assistance
    - Representation of member needs
    - Responsiveness to members needs
    - Grant support
- Piedmont Together
    - Technical reports (Green Infrastructure) – launched in the next couple months.
    - Innovative Infrastructure

Roseann L'Esperance asked about the difference between COG membership and Stormwater SMART. Cy responded that we are entirely funded by grants and contracts. Stormwater SMART makes you more competitive for grants and financial assistance and lets us remain responsive to board member needs. Liz also discussed how Stormwater SMART can help fill in the gaps. For example, we've heard from Stormwater Programs across the state that folks have trouble getting into schools. We can help fill in the gaps and leverage those needs for grant support as well. We're not going to come in and do "x, y & z", we're going to assess where your greatest need is. We don't do any mass media and work hard to document every student, teacher, & community member we reach throughout the year.

Contact Info:

Joy Fields: jfields@ptrc.org
Elizabeth Jernigan: ejernigan@ptrc.org
Cy Stober: cstober@ptrc.org

Piedmont Triad Regional Council
1398 Carrollton Crossing Drive
Kernersville, NC 27284
(336) 904-0300

Piedmont Triad Regional Council
Stormwater SMART
Wilmington Building, Suite 201 • 2216 West Meadowview Road • Greensboro, NC 27407-3480

AGENDA

April 17, 2014 • PTRC Conference Room, Kernersville Office • 2pm - 4pm

I. Program Update 1,256 participants since last Board Meeting

a. Schools (K-12)
   i. Archdale
   ii. Burlington
   iii. Graham, Mebane
   iv. Asheboro
   v. Asheboro
   vi. Summerfield/Oak Ridge
   vii. Summerfield/Oak Ridge
   viii. Randleman
   ix. Davidson County

b. Outreach
   i. Project WET Teacher Training
   ii. Asheboro Zoo Earth Day Event
   iii. Reidsville Appearance Commission – Grass Clippings

II. Materials

a. Grass Clippings
b. Electronics Recycling Posters
c. Infographic

III. FY 2013-2014 Strategy

a. Direct outreach mechanic/automobile repair shops
b. Interactive map identifying programs
c. Fizz, Bang, Bugs!
d. Summer Reading

IV. FY 2014-2015 Goals

V. Adjourn: 2014 Meeting Dates: Kernersville Conference Room

a. July 17th – Kernersville

Piedmont Triad Regional Council • 1398 Carrollton Crossing Drive • Kernersville, NC 27284

AGENDA

April 17, 2014 • PTRC Conference Room, Kernersville Office • 2pm - 4pm

Attendees: Danny Scales, City of Burlington; Stacy Tolbert, Rockingham County; Raven Gore, Rockingham County; Greg Patton, City of Randleman; Josh Johnson, AWCK; Morgan Huffman, City of Thomasville; Cy Stober, PTRC; Brandon Parker, Town of Gibsonville; Montrena W. Hadley, City of Mebane; Elizabeth Jernigan, PTRC; Cy Stober, PTRC

Welcome: Liz welcomed board members and showed a newly developed infographic of the history of Stormwater SMART.

Conferences: Liz and Joy presented at WRRI conference on the Stormwater SMART program, specifically our success in incorporating our programs into the schools. A graph shows how we have grown from approximately 1,000 students in FY 2008-2009 to over 4,000 students in FY 2013-2014. We credit diversifying and adapting the programs we offer, being responsive to teacher needs, and careful correlation to curriculum requirements as major components in our outreach efforts. We have also expanded from working only with middle school students to all K-12 students. Joy presented at the NC Lakes Management Conference in Asheville with a greater emphasis on how we've used Project WET in the classroom. Joy also recently went through the Project WET Facilitator training and now both staff are able to train teachers in the project wet curriculum.

Program Update: We've worked with 1,256 citizens this quarter, the majority of those being students. As school program winds down, we're looking forward to working with libraries and summer camps. We adapted the national library summer reading program, "Fizz, Bang, Boom!" to "Fizz, Bang, Bugs!" and will use an adaptation of our *Water Quality: Ask the Bugs* program. These programs are always a little challenging because students typically range from 2-12+ years old. We advertised the program in our spring library mailing and will follow up with a reminder to libraries. Cy presented to the Reidsville Appearance Commission on the benefits of recycling grass clippings. There were only seven attendees and Cy recommended trying to present at a trade meeting or other event where business owners already congregate.

Materials: Reidsville and Burlington independently requested materials for a grass clippings campaign. Liz developed a brochure, postcard, door hanger and flyer to meet this need. Cy recommended adding additional information on native plants or directing readers to additional resources. The board also liked the idea of including a space for jurisdictional contact information on our outreach materials. Liz also developed a customizable flyer in MS Word format for members to edit for their specific needs, or to eliminate the need to retype existing information. Liz reminded board members that we can always help with promotional materials, even if we are unable to attend the event due to other obligations (e.g. Randolph County Electronics Recycling Day).

FY 2013-2014 Strategy: We have met most of our strategic goals for this fiscal year. Malinda Ford, our GIS manager is working on developing an interactive map for our website displaying where we are conducting our programs. This will give board members and the public better insight into where we are doing programs. Depending on when Liz goes on maternity leave, we may not complete our Auto Mechanic Outreach goals. This is primarily due to the time put into the grass clipping outreach materials. We have completed the database of auto mechanics and repair shops, we only have to finalize the materials. Liz also discussed her maternity leave schedule which will be roughly early May through early August, so if you have any final requests, please get them over to us ASAP.

FY 2014-2015 Goals: Liz has redeveloped the layout for brochures and will begin updating and customizing existing brochures to be more consistent and look better on our new copiers. We will continue presenting IDDE info to civic and community groups and will emphasize litter education in Thomasville per request of Morgan. Cy recommended having specific contact information and a system in place for citizen engagement.

Legislation: Josh Johnson discussed the Jordan Lake Rules and that no new legislation will likely be introduced in the short session. Cy discussed the nutrient criteria development plan for High Rock Lake, the completion of High Rock Lake modeling, and Lexington/Davidson County's new status as a NPDES Phase II community Cy also let members know we received a Clean Water Management Trust Fund planning grant and we were the only awardees in the state. The grant is for the Swearing Creek watershed in Lexington. Cy also recommended members consider attending Stormwater Association of North Carolina (SWANC) meetings. There is currently no charge to attend.

The meeting was adjourned and the next meeting date is July 17th, at 2:00pm in the Kernersville Conference Room. Liz will not be attending this meeting.

APPENDIX C

NC Standard Course of Study Correlation

Stormwater SMART 1st Grade Programs for 2013 NC Essential Standards

1.L.1: Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive:

L1.1 – Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment.

Activities:

- **Life Box** – Through a thought provoking activity, students discover four essential, interdependent factors needed to sustain life (indoor).
- **Water Audit** – Students discuss water sources and water conservation concepts, conduct a home and school water audit, and compare and contrast results with and without the implementation of water conservation practices. Then they make recommendations for personal conservation strategies at home (indoor).

L1.3 – Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there.

Activities:

- **A-maz-ing Water** - Negotiate a maze to investigate nonpoint source pollution and discuss conservation practices (indoor).
- **There is no Away** – Students take a close look at everyday trash and learn how it can be reused, recycled or composted to take control of their trash and help keep litter out of our waterways (indoor). Can be combined with a school yard clean-up (outdoor).

1.L.2: Summarize the needs of living organisms for energy and growth

L2.1 and L2.2 – summarize the basic needs of a variety of different plants and animals (including air, water, nutrients and light) for energy and growth

Activities:

- **Life Box** (K-2 option) – Through a thought provoking activity, students discover four essential, interdependent factors needed to sustain life (indoor).

Social Studies:

1.G.1: Use geographic representations, terms and technologies to process information from a spatial perspective.

1G.1.1 – use geographic tools to identify characteristics of various landforms and bodies of water.

Activities:

- **Blue Planet (k-2 option)–** Students estimate the percentage of the earth's surface that is covered by water and use simple probability to check their estimates (indoor and outdoor).
- **Enviroscape Model ®** – Watershed model assists students in identifying characteristics of landforms and bodies of water (indoor).

Stormwater SMART 3rd Grade Programs for 2013 NC Essential Standards

3.E.2 :Compare the structures of the Earth's surface using models or three-dimensional diagrams.

3.E.2.1 :Compare Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers).

Activities: The activities below can be combined for a fun interactive 45minute/ 1 hour program

- **Blue Planet** – Students estimate the percentage of the earth's surface that is covered by water and use simple probability to check their estimates (indoor).
- **Blue River** – Students participate in a whole body exercise to simulate the movement of water through a river and its watershed (indoor).

3.E.2.2: Compare Earth's land features (including volcanoes, mountains, valleys, canyons, caverns, and islands) by using models, pictures, diagrams, and maps.

Activities: The activities below can be combined for a fun interactive 45minute/ 1 hour program

- **Blue River** – Students participate in a whole body exercise to simulate the movement of water through a river and its watershed (indoor).
- **Seeing Watersheds** – Students use maps to characterize what a watershed is, to identify key parts and functions of watersheds, to determine boundaries and how water flows in a watershed based on elevation (indoor).
- **Enviroscape Model ® –** Students investigate how water flows through land features and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).

3.L.2: Understand how plants survive in their environments.

3.L.2.4: Explain how the basic properties (texture and capacity to hold water) and components (sand, clay and humus) of soil determine the ability of soil to support the growth and survival of many plants.

Activities:

- **Life Box** – Through a thought provoking activity, students discover four essential, interdependent factors needed to sustain life (indoor).
- **The Dirt on Soil** - Students discover how different soil types absorb and filter water and learn how the basic components of soil affect erosion (indoor and outdoor options).

Stormwater SMART 4th Grade Programs for 2013 NC Essential Standards

4.L.1: Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.

4.L.1.1: Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.

Activities:

- **Enviroscape Model ® –** Students investigate how water flows through and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).
- **There is no Away** – Students take a close look at everyday trash and learn how it can be reused, recycled or composted to take control of their trash and help keep litter out of our waterways and reduce mosquito habitat(indoor). Can be combined with a school yard clean-up (outdoor).

4.L1.3: Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion).

Activities:

- **Enviroscape Model ® –** Students investigate how water flows through and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).
- **Rain Garden Design and Function –** Students investigate how rain gardens filter out pollutants caused by human behaviors and how they can be designed to fulfill human demands (indoor and outdoor options).
- **Blue Traveler –** Students investigate how humans impact the water cycle (indoor).
- **Watershed Game –** Students play a game showing how different human behaviors positively and negatively affect the watershed (indoor).

Stormwater SMART 5th Grade Programs for 2013 NC Essential Standards

5.P.2: Understand the interactions of matter and energy and the changes that occur.

5.P.2.1: Explain how the sun's energy impacts the processes of the water cycle (including evaporation, transpiration, condensation, precipitation and runoff).

Activities:

- **The Incredible Journey** – Students simulate the movement of water within the water cycle and identify the role of pollution (indoor/outdoor).

5.L.2: Understand the interdependence of plants and animals with their ecosystem.

5.L.2.2: Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors).

Activities:

- **Enviroscape Model ®** – Students investigate how water flows through and connects ecosystems using an interactive 3-D model. This activity is non-point source pollution intensive and can be used to demonstrate or discuss producers, consumers and decomposers (indoor).

5.L.2.3: Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.

Activities:

- **Invaders** – Students learn what aquatic invasive species are and then participate in a full-body movement game that simulates competition for habitat and resources; students also create graphs and find out about the prevention and management of aquatic invasive species (indoor).
- **Stream Watch** – Students learn how plants and animals interact in their aquatic ecosystems by sampling the bugs (indoor modeling or outside leafpacks) and learning how macroinvertebrates are assessed (indoor or outdoor options).
- **Virtual Water** – Students create a "water web" to illustrate their dependence on water and the interdependence among water users, producers and people worldwide (indoor).

Stormwater SMART 7th Grade Programs for 2013 NC Essential Standards

7.E.1: Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth's atmosphere, weather and climate and the effects of the atmosphere on humans

7.E.1.2 – Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on earth

Activity:

- **The Incredible Journey** – Students simulate the movement of water within the water cycle and identify the role of pollution (indoor/outdoor).

7.G.2: Apply the tools of a geographer to understand modern societies and regions

7.G.2.1 – Construct maps, charts, and graphs to explain data about geographic phenomena (e.g. migration patterns and population and resource distribution patterns)

Activity:

- **Color Me a Watershed** – Through the interpretation of maps, students observe how development can affect a watershed (indoor)

7.G.1.3 – Explain how natural disasters, preservation efforts and human modification of the environment affect modern societies and regions.

Activities:

- **Seeing Watersheds** – Students use maps to characterize what a watershed is, to identify key parts and functions of watersheds, to determine boundaries and how water flows in a watershed based on elevation (indoor).

- **Storm Water –** Students learn how water travels through a community and how it can be managed to reduce the impact of stormwater runoff (indoor).

- **Invaders** – Students learn what aquatic invasive species are and then participate in a full-body movement game that simulates competition for habitat and resources; students also create graphs and find out about the prevention and management of aquatic invasive species (indoor).

- **There is no Away** – Students take a close look at everyday trash and learn how it can be reused, recycled or composted to take control of their trash and help keep litter out of our waterways (indoor). Through this activity we can also explore the cause and spread of West Nile Virus in America. Can be combined with a school yard clean-up (outdoor).

Stormwater SMART 8th Grade Programs for 2013 NC Essential Standards

8.E.1: Understand the hydrosphere and the impact of humans on local systems and the effects of the hydrosphere on humans.

8.E.1.1: Explain the structure of the hydrosphere including:

- Water distribution on earth
- Local river basins and water availability

Activities:

- **Blue Planet** – Students estimate the percentage of the earth's surface that is covered by water and use simple probability to check their estimates (indoor and outdoor).
- **Blue River** – Students participate in a whole body exercise to simulate the movement of water through a river and its watershed (indoor and outdoor options).
- **Enviroscape Model ® –** Students investigate how water flows through and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).
- **Watershed Game –** students play a game showing how different human behaviors positively and negatively affect the watershed (indoor).
- **Get the Groundwater Picture –** Students learn about basic ground water principles as they create their own geologic cross section or Earth window (indoor).

8.E.1.3: Predict the safety and potability of water supplies in North Carolina based on physical and biological factors, including:

- Temperature
- Dissolved oxygen
- pH
- Nitrates and phosphates
- Turbidity
- Bio-indicators

Activities:

- **Stream Watch/Ask the Bugs!** – Students learn how plants and animals interact in their aquatic ecosystems by sampling the bugs (indoor modeling or outside leafpacks) and learning how macroinvertebrates are assessed (indoor or outdoor options).
- **Enviroscape Model ® –** Students investigate how water flows through and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).

- **Macroinvetebrate Mayhem –** Students play a game of tag to simulate the effects of environmental stressors on macroinvertebrate populations (outdoor).

- **A Snapshot in Time –** Students use topographic (contour) maps to explore the concept of a watershed and then apply that knowledge to watershed monitoring (indoor).

8.E.1.4: Conclude that the good health of humans requires:

- Monitoring of the hydrosphere
- Water quality standards
- Methods of water treatment
- Maintaining safe water quality
- Stewardship

Activities:

- **Enviroscape Model ® –** Students investigate how water flows through and connects watersheds using an interactive 3-D model. This activity is non-point source pollution intensive (indoor).

- **Storm Water –** Students learn how water travels through a community and how it can be managed to reduce the impact of stormwater runoff (indoor).

- **Watershed Game –** students play a game showing how different human behaviors positively and negatively affect the watershed (indoor).

- **Get the Groundwater Picture –** Students learn about basic ground water principles as they create their own geologic cross section or Earth window (indoor).

- **A Grave Mistake –** Students analyze data to solve a mystery and identify a potential polluter (indoor).

8.L.3: Understand how organisms interact with and respond to the biotic and abiotic components of their environment.

8.L.3.1: Explain how factors such as food, water, shelter and space affect populations in an ecosystem.

Activities:

- **Stream Watch/Ask the Bugs! –** Students learn how plants and animals interact in their aquatic ecosystems by sampling the bugs (indoor modeling or outside leafpacks) and learning how macroinvertebrates are assessed (indoor or outdoor options).

- **Watershed Game –** Students play a game showing how different human behaviors affect the watershed through modifications to the biotic and abiotic components (indoor).

- **Macroinvetebrate Mayhem –** Students play a game of tag to simulate the effects of environmental stressors on macroinvertebrate populations (outdoor).

APPENDIX D

Printed Materials & Signs

STORMWATER
steward
A *Stormwater SMART* publication

Volume 5, Issue 4 Fall, 2013

at a glance

Let the Bugs Teach Us!

Do We Want Bugs in Our Water?

How do you feel about the millions of little bugs swimming around in our streams, rivers and lakes? We feel pretty good about them. Many bugs shred leaf material, adding important nutrients to the water. Bugs are also an important part of the food chain, ensuring there are plenty of fish, turtles, and other organisms that make up a healthy ecosystem.

How Bugs Predict Water Quality

Otherwise known as macroinvertebrates (large enough to see without a microscope but lacking a backbone), these bugs have different levels of tolerance to pollution. Some, such as the mayflies, stoneflies and caddisflies are sensitive to pollution and need clean, clear water with plenty of oxygen in it. The sensitive bugs hide under rocks or in leaf packs to avoid being eaten by fish. Other bugs like dragonfly nymphs, crawdads and clams can tolerate less clean water with moderate amounts of pollution. The last group of bugs include aquatic worms, leaches, and midges which can tolerate polluted water.


Stonefly Nymph

These bugs or macroinvertebrates are found in all types of running waters, from the fast flowing streams of the mountainous areas to the slow moving muddy rivers of the Piedmont region and down into the coastal plain.

Aquatic macroinvertebrates are relatively easy to sample and identify, and don't require much equipment beyond a few nets and buckets. Everyone from professionals to elementary school students can assess a streams' health in a few hours by looking at bugs. Because some of these bugs are more sensitive to pollution than others, a lack of bugs indicates higher levels of pollution. Additional habitat assessments and water quality surveys are needed in order to identify sources of water pollution.

Interested in learning more? Work with Stormwater SMART to form or join a StreamWatch group in your community today. We also offer periodic trainings across the region. For more information, or to be notified of these events, please contact jfields@ptrc.org.

NC StreamWatch

NC StreamWatch helps protect our most precious resource, our water, by removing litter twice a year and keeping an eye on water and stream bank conditions. The sooner clean-up crews can get to the site, the easier it is to minimize the impacts different types of pollution have on our waters.

- Anyone can form a StreamWatch group of two or more people.
- Start from scratch, or join an existing group.
- Learn to use bugs and simple chemical tests to learn how clean water is.

For more information visit:
www.stormwatersmart.org/streamwatch.htm

Piedmont Triad Regional Council

Did you know?

Often, the average available soil phosphorous concentration in urban lawns is 3 to 40 times higher than the amount needed to maintain healthy grass.

Just one pound of phosphorous in runoff can result in 500 pounds of algae growth.

Many states including Maryland, Florida, New York, New Jersey, Michigan and Wisconsin have already banned the use of phosphorous in fertilizer

Scotts, a major manufacturer of synthetic chemical fertilizer, phased out the use of phosphorous in 2012

Scotts Eliminates Phosphorous in Fertilizer

Many folks use fertilizers to aid in the process of having the green lawn they always wanted. Phosphorous, a nutrient necessary to promoting healthy and vigorous root development, is also a main contributor to water quality problems. An abundance of nitrogen and phosphorous in our lakes have led to regulatory requirements in North Carolina, including the Jordan Lake Rules, the Falls Lake Rules, and a special study on High Rock Lake to determine whether a similar nutrient management strategy is necessary.

So, what's the big deal?
When too many nutrients, particularly phosphorous, find their way into our lakes, rivers, and streams, they can create harmful conditions for aquatic organisms. Just like humans, underwater organisms need oxygen to survive. As algae decays, oxygen is required by bacteria in order to break down dead algae, depleting the water of oxygen. This process, known as eutrophication, robs fish and other species of oxygen. Not only does excess algae make boating, swimming, and fishing unpleasant, it can also be dangerous. Blue-green algae, for example, emits a toxin that can be dangerous to humans and pets and has been found in many Piedmont Triad lakes.

Natural eutrophication is a gradual process occurring over many centuries, but rapid development and the incorporation of separate stormwater sewer systems (MS4s) has resulted in an abundance of impervious surface area including streets, sidewalks, rooftops and parking lots. When it rains, water is washed over these surfaces, collecting fertilizer and other pollution and washing them, untreated, into a nearby rivers, lakes, and streams.

Don't apply what you don't need.

As a homeowner, it's your responsibility to help protect our waters by making wise choices about frequency and fertilizer application rates to minimize nutrients washing into our waters. If you must fertilizer, please consider using compost or slow-release organic fertilizers. Most bags of fertilizer will display three numbers (xx-xx-xx). The middle number represents the amount of phosphorous. Also, consider having your soil tested to determine how much of each nutrient you need. Testing kits are available at your local Cooperative Extension office. North Carolina is one of the few states that offers free soil tests to citizens. Take advantage of it! Using the right amount not only protects our water, but it can save money.

Six Steps to Fertilize your yard

How to use traditional fertilizers. . .

* **Test your soil**
* **Choose a fertilizer with the nutrient level your soil needs**
* **Following the directions on the bag**
* **Make sure you check the weather forecast and fertilize when there is no rain forecasted for 48 hours so your fertilizer stays in your yard!**
* **Sweep up any excess that might have fallen on an impervious surface like a driveway**
* **Share this information with your neighbor!**

Cyber Stormwater: i-Tree Hydro

Urbanization significantly alters stream flows and water quality due to an increase in hard, impermeable or impervious surface area and decreased natural vegetation. These changes lead to increased runoff and flashiness of stream flow after storms, potential flooding issues, and poor water quality that affect human health and well-being.

Hydro is a stand alone application designed to simulate the effects of changes in tree and impervious cover characteristics within a defined watershed on stream flow and water quality. It was designed specifically to handle urban vegetation effects so urban natural resource managers and urban planners can quantify the impacts of changes in tree and impervious cover on local hydrology to aid in management and planning decisions.

People using i-Tree Hydro will provide the model with various changes in tree and impervious cover characteristics and Hydro will show changes in stream flow and water quality. Data will be presented in tabular summaries as well as through graphs (hydrographs) that illustrate the changes between the base case (conditions as they are now) and a future case specified by the user.

The Hydro model could be used to determine how various best management practices (including urban forestry) affect water quality. In addition, by altering the precipitation inputs to simulate storms of various intensities, the model can be used to determine how management practices can affect local flooding. Model results can be used to improve urban forest management and urban planning and design to help improve water quality and reduce the risk of flooding.

For more information visit: http://www.itreetools.org/hydro/index.php

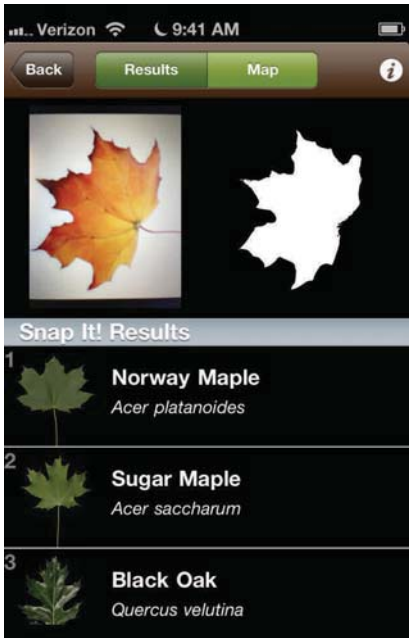
Oh Snap! Leafsnap that is. . .

Tired of carrying around a heavy field guide? Us this amazing app to identify common trees. Simply place a photo of a tree leaf on a white piece of paper and "Snap It!" Be forewarned, this app works best with wireless internet. You may have to wait until you have a wifi connection before you can upload the images. Leafsnap will make a negative of the image and provide you with a list of results to choose from. Click on any of the photos and you'll see additional images identifying the leaves, flowers, fruits, petioles, and bark that may help you further identify the tree. Another page verbally characterizes the tree and provides descriptions of the habitat, growth habits, bloom times, longevity and locations.

You may also choose to simply browse through the hundreds of beautiful, high-resolution images. Currently, Leafsnap includes trees of the Northeast but will soon grow to include trees of the entire continental United States. This app was developed by Columbia University, the University of Maryland, and the Smithsonian Institution.

While tree cover in general is tremendously important in protecting our water quality, native plants do a far superior job in allowing maximum infiltration and providing ecosystem services.

Leafsnap is compatible with iPhone, iPod touch, and iPad. Requies iOS 4.2 or later.



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

Elizabeth Jernigan
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Greensboro, NC 27407
Phone: (336) 294-4950
E-mail: stormwatersmart@ptrc.org

www.stormwatersmart.org

PIEDMONT TRIAD REGIONAL COUNCIL

Get Involved: Leaf Pack Network

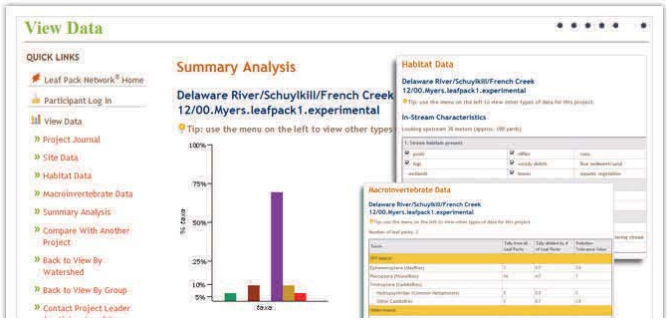
The Leaf Pack experiment involves creating an artificial leaf pack (dry leaves in a mesh bag), placing it in the stream for three to four weeks, examining the packs in the classroom and discovering different types of aquatic insects that are used as indicators of stream health.

Stormwater SMART has provided dedicated teachers with Leaf Pack Experimental Kits and we look forward to seeing what kind of bugs they find!

The Leaf Pack Network is funded through the Stroud Water Research Center. For more information, please visit:

www.stroudcenter.org/lpn/

The Leaf Pack Network® (LPN) is a network of teachers and students investigating their local stream ecosystems. The investigation uses the Leaf Pack Experiment Kit from the LaMotte Company. After conducting their own leaf pack experiment, schools share data through the network. These connections shed light on the important connection between streamside forests and the ecology of rivers and streams.



Schools enter data into an online database to share with others.

Look for Stormwater SMART at a Event near you.

- **09/14/13** **Bush Hills Festival—Archdale**
- **09/21/13** **Carousel Festival—Burlington**
- **09/28/13** **Everybody's Day—Thomasville**
- **04/27/13** **Dogwood Festival—Mebane**
- **10/05/13** **Fall Festival—Asheboro**
- **10/12/13** **Reidsville Downtown Homegrown Festival**
- **10/12/13** **Gibsonville Fall Festival**
- **10/26/13** **Lexington BBQ Festival—Davidson County**
- **10/26/13** **Nascar Day Festival—Randleman**

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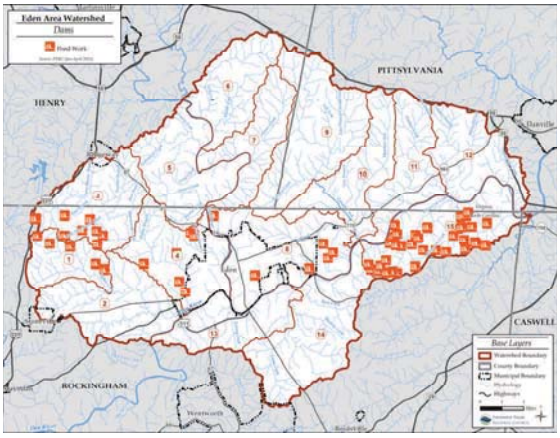
STORMWATER
steward
A *Stormwater SMART* publication

Volume 6, Issue 1 Winter, 2014

Keeping Farm Ponds a Resource for the Future!

Ponds are scattered throughout the landscape in the Piedmont of North Carolina. These ponds give landowners a source of water for livestock, crop irrigation, and provide an opportunity for recreational activities like boating and fishing. According to a 2012 interview with Grady Wise, who started working with the Soil Conservation Service in 1943 and spent his whole career in Rockingham County, 50-60 ponds were installed a year. These ponds have a life expectancy of 50 years because most of them used old steam engine pipes as overflow pipes to carry excess water away from the pond. These pipes saved landowners money by reducing the cost of pond construction. Unfortunately, these steel pipes have rusted out and water is finding another way to leave the pond. In many cases, water is forced through the emergency spill way causing considerable erosion.



Identified Farm Ponds Requiring Maintenance

As dirt or sediment from erosion enters the water, turbidity increases and reduces the health of our rivers and streams.

During field work for the Eden Area Watershed Plan, a Clean Water Management Trust Fund grant project, 72 dams were identified as requiring maintenance. Maintenance can be as simple as removing trees that potentially compromise the integrity of the dam, or as difficult as installing a new overflow pipe to replace the rusted out steam engine pipe. For more information on the Eden Area watershed restoration planning effort visit: www.edenareawater.org

AgWRAP

Farm Ponds in Rockingham County and other areas are aging and many have reached their intended life span. If your pond is in need of maintenance/repair please consider applying for cost share funds through AgWRAP. The application period for AgWRAP is now open. AgWRAP is a program that funds the following practices with up to $22,500:

- New Pond Construction
- Pond Repair/Retrofits
- Pond Sediment Removal (only $5,000)

For more information, or assistance in the application process, please contact your local Soil and Water Conservationist.

SOIL & WATER CONSERVATION *Yours for Life*

at a glance

Piedmont Triad Regional Council

Did you know?

92% of our suburban area is lawn, which does not contribute to local food webs

79% of what is planted in our suburban area is not locally native.

600 square miles of lawn is added in this country every year

Your 12 inch diameter Sugar maple will intercept 2,312 gallons of stormwater runoff and provide $101 in benefits this year .

A Better Backyard for the Birds

Want to spend less time mowing this Saturday?

We dedicate much of our free time to maintaining our lawns, however many other options are popping up that require less maintenance, are visually appealing, and provide habitat for birds and other wildlife. Planting flowers and trees require less maintenance once they are established and when planted in intentional patterns can be very appealing. You can also choose species that attract beautiful birds and butterflies to your yard.

A grass lawn does not support a productive ecosystem. A productive ecosystem is one that has food and habitat for many types of wildlife. When you plant flowers that provide butterflies with nectar and caterpillars with food, you will have birds visiting to eat these and other insects. Researchers have witnessed one set of bird parents feeding 27 caterpillars to their nest of fledglings over a 30 minute time period. Caterpillars are very nutritious for growing birds and many will only nest where caterpillars are abundant. Many plants native to Asia are suitable for our climate but lack the benefit of serving as a food source for caterpillars. Fewer caterpillars mean lower reproduction rates for birds. Autumn Olive , for example, is an exotic plant that has berries but only nine types of caterpillars eat the leaves while 297 types of caterpillars feast on our native maple.

Not only do native plants increase habitat for birds, their ecological benefits greatly improve water quality. These plants help polluted rainwater infiltrate into the soil, preventing stormwater runoff from reaching our streams, rivers and lakes. However, not all plants are created equal. In fact when siting a rain garden the lawn area is considered 10% impervious since the soil in lawns is usually compacted and does not allow water to percolate into the soil as well as other plants. If using non-native grasses, the root systems are likely much shorter, preventing rainwater from infiltrating deep into the ground. Transforming your lawn into a backyard meadow, or landscaped beds with native flowers, shrubs and trees can improve water quality while improving habitat for migratory birds that are already facing habitat loss.

For more information visit: www.bringingnaturehome.net

Native Plants for the Butterflies

Common Name	Plant Genus	Butterfly/moth species supported
1. Goldenrod	Solidago	115
2. Asters	Aster	112
3. Sunflower	Helianthus	73
4. Joe pye, Boneset	Eupatorium	42
5. Morning glory	Ipomoea	39
6. Sedges	Carex	36
7. Honeysuckle	Lonicera	36
8. Lupine	Lupinus	33
9. Violets	Viola	29
10. Geraniums	Geranium	23

Cyber Stormwater: Wetland App

Do you have soil in your yard that just won't drain? Have you thought about installing a rain garden? Here is a new tool that could help. Swamp School has an app with the national wetland plant list which provides information about which plants can live in wetland soils, or soils saturated with water for extended periods of time (such as thick clay).

Wetlands and rain gardens are important features in the landscape since they both filter runoff, contribute to cleaner water, and reduce flooding. Small wetlands or vernal pools that occur naturally are only saturated for short periods of time throughout the year, but they serve as important breeding grounds for salamanders and frogs. As land is developed, these seasonally wet depressions are often overlooked and lost to yards or buildings. Ensuring that vernal pools are maintained or created can significantly improve habitat conditions for our amphibians.

Many people are worried about mosquitoes inhabiting wetlands but in a functioning wetland there will be dragonfly larvae, frogs and other predators that will eat mosquitoes. If you want to go to sleep to a chorus of frogs, or watch as a jelly mass of eggs develop into tadpoles, consider building a small wetland in your yard!

New Regional Supplement Wetland Plant App

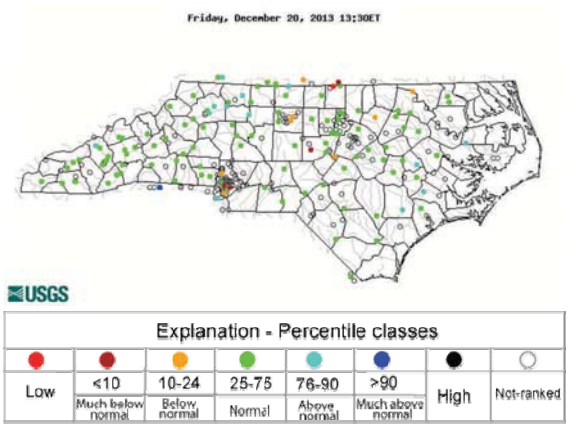
http://swampschool.org/

What's the Flow?

The US Geological Society (USGS) collects information on how high and fast streams flow. This streamflow data is collected in 15-60 minute intervals and is available online at: http://waterdata.usgs.gov/nc/nwis/rt. There are sampling sites throughout the Piedmont and there may even be one on a creek near you. If you want to know the size of the area that drains to the sampling point (how large the watershed is for the data location), this is a great way to begin your investigation. For example, at USGS sampling station number **02093800**, which monitors Reedy Fork near Oak Ridge, the drainage area is 20.6 mi^2. If you want to know how fast the water is moving, you can find the discharge in cubic feet per second (Reedy Fork: 15 cfs). The USGS also provides you with information on whether the flow is normal based on 30 years of data.

The flow in a stream can determine the life that can survive in that environment. If the flow varies significantly from day to day then the critters that live in the water have to tolerate the fluctuation or move to other reaches of the stream to survive.

Recent rain events or dams on rivers often determine the flow of water within a stream. Even at peak human consumption (when we are using the most water), there has to be enough water downstream of a dam to support aquatic life. Many of the sampling sites in the Piedmont Triad region currently have "normal" flows but there are a couple that have above normal flows and even one that is below normal.



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Graham
Green Level
Haw River
Lexington
Mebane
Oak Ridge
Summerfield
Randleman
Reidsville
Thomasville
Trinity

Get Involved: Rich Fork Preserve Clean-Up

Girl Scout collecting trash during 2013 clean-up

The Piedmont Triad Regional Council partnered with Guilford County Schools, the County Open Space Planner and the ad hoc committee that is guiding the development of the Rich Fork Preserve to have a spring clean-up on April 26th, 2014.

Rich Fork Preserve is the site of a planned 115 acre nature preserve in western High Point. The preserve hosts a historic farm house that was built in 1890's which may be restored in the future for educational programs. The preserve will also have a trail along the creek that goes behind Northwood Elementary School. Trails and nature preserves provide valuable teaching sites for students of all ages.

Cleanups are important because litter can last hundreds of years in our environment. Debris on the land can also wash into our waters and as it decomposes it can contaminate the water. Cleaning up litter before it becomes a water quality issue and a health concern is vital.

As litter is removed from the preserve, data on the type and amount of litter collected will be documented and sent to NC Big Sweep which provides material support for clean-ups across the state. To get involved, volunteers can contact Joy Fields at jfields@ptrc.org or 336-904-0300. Participation is free, fun and educational so please join us as we clean up trash from the grounds of this future nature preserve.

TOP 5 ITEMS FOUND DURING 2012 N.C. BIG SWEEP

RANK	ITEM	% OF TOTAL
1	Cigarettes	33%
2	Food Wrappers & Containers	10%
3	Caps & Lids	8%
4	Plastic Beverage Bottles	7%
5	Building Materials	6%
Top 5 Items: Total % of all debris		64%

Look for Stormwater SMART Near You!

- 04/05/14 Scout Day at High Rock Lake—Lexington
- 04/12/14 Earth Day at the Zoo—Asheboro
- 04/26/14 Spring Clean-up—Rich Fork Creek
- 04/26/14 Dogwood Festival—Mebane

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PIEDMONT TRIAD REGIONAL COUNCIL

STORMWATER
steward
A *Stormwater SMART* publication

Volume 6, Issue 2 Spring, 2014

at a glance

KEEPING OUR GRASS CUT AND WATER CLEAN!

The Problem:

Grass clippings and bits of leaves that are blown into the street after lawn maintenance can be just as bad as other forms of litter. They clog up gutters and storm drains, and what doesn't get stuck ends up in the nearest waterway (stream, pond, lake, and/or river) causing further problems. Any material (litter, grass clippings, leaves, etc.) in the storm drains reduces the amount of stormwater that can move through the drain system. Stormwater that should move quickly through the system may begin to back up; causing high water on roads or other, more hazardous, flooding situations.

Remember – there's no treatment or filtering of stormwater between the drain on your street to the nearest body of water. Even though grass clippings, leaves, and soil are natural forms of debris, when they are washed into our waters, they can destroy the natural balance of our waterways. Derived from fertilizer and natural sources, nutrients fuel excessive uncontrolled growth of aquatic weeds and algae, and degrade water conditions which can lead to fish kills.

Never pile grass clippings near a storm drain!

If you use a landscaping service, it is your responsibility to ask them to leave clippings on your lawn!

What's In It For Me?

- Save Money: Grass Clippings that are left on your yard reduce the need to buy fertilizer .
- Reduce Waste: Recycling your grass clippings reduces the use of plastic bags and landfill space.
- Save Water: Grass clippings are 75-85 percent water and decompose quickly which returns moisture to the soil.
- Healthier Lawns: As grass clippings breakdown, they slowly release nutrients (nitrogen,potassium, and phosphorus) back into the soil.

HOW DO I GET STARTED?

- Cut grass to a height of 2.5 to 3 inches. An easy guide is the width of a dollar bill. This will ensure roots will grow. Deep roots will keep your grass from needing frequent watering during the dry summer months
- Always have your soil tested before applying fertilizer and use organic, slow-release, or water insoluble fertilizers or compost
- Aerate the soil to prevent compaction and increase infiltration
- Use grass species that are adapted to your climate and pests
- Water deeply but less frequently
- You may also rake or blow clippings into a compost pile to use those nutrients in your garden or flower beds.

PIEDMONT TRIAD REGIONAL COUNCIL

Did you know?

In tree-lined commercial districts shoppers spend 12% more for goods

Shade reduces cooling costs by 8-12%.

100 large trees can remove 1000 lbs of air pollution including 400 lbs of ozone and 300 lbs of particulates

Your 12 inch diameter Sugar maple will intercept 2,312 gallons of stormwater runoff and provide $101 in benefits this year.

Parking Lot Forestry

Have you ever driven around a parking lot looking for some shade? Trees are the answer!

On hot sunny days trees shade vehicles and cool them down. In parking lots, tree cover can keep cars' internal temperatures 45°F cooler than those in uncovered lots. This reduction in temperature extends the lifespan of asphalt and increases the time shoppers want to spend in shopping districts. These impacts of trees have the potential to increase economic development in the Triad.

Trees reduce the temperature by creating shade as their leaves absorb 10-30% of the sun's energy before it reaches the ground. Trees also reduce temperatures through evapotranspiration (EVT). Plants absorb water from the ground through their roots and transport the water up to their leaves where they absorb heat from the air to evaporate the water, this process is EVT. All plants use EVT to cool themselves but larger trees reduce temperatures more since they have greater leaf area that absorbs the heat from the surrounding air.

http://www.parkingforest.org/

Improved Water Quality:

In addition to cooling the temperature of parking lots, trees can also absorb rainfall and reduce flooding or stormwater runoff. In rainy weather, trees capture some of the rain to increase groundwater recharge through infiltration and reduce stormwater runoff.

Parking lots can be designed specifically to slope towards the medians where trees or shrubs can use and filter the water. If the medians have curbs that keep the runoff from getting to the trees, the plants are still able to absorb part of the rain to reduce overall runoff. Pay attention to trees on your next shopping trip and see the benefits.

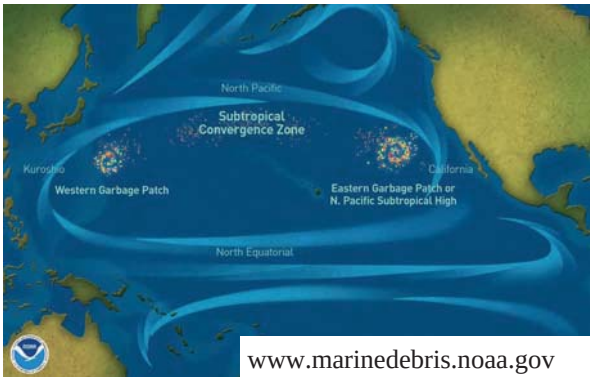
Native Trees for Small Areas

Crabapple picture by Ryan Somma

Common Name	Scientific Genus	Size and light requirements
1. Redbud	Cercis	15-20 feet, sun to part shade
2. Serviceberry	Amelanchier	4-25 feet, sun to part shade
3. Amur Maple	Acer	15-20 feet, sun to partial shade
4. Crabapple	Malus	15-18 feet, sun, well-drained soil
5. Spice bush	Lindera	6-12 feet, sun to partial shade
6. Buckeye	Aesculus	15-25 feet, sun to partial shade
7. Alder	Alnus	15-20, sun to partial shade
8. Winterberry	Ilex	6-15 feet, sun to partial shade
9. Little Gem Magnolia	Magnolia	15-20 feet, sun
10. Blackhaw viburnum	Viburnum	12-15 feet, sun to partial shade

Cyber Stormwater: Marine Debris Tracker

Harmful debris is washed by stormwater from our land into our waterways. Our small streams are connected to larger rivers that then carry the trash into our oceans. Litter is found in the most remote parts of the ocean. The "Great Pacific Garbage Patch," is the world's largest concentrated area of floating trash and is made up of two distinct garbage patches and the region between them.



www.marinedebris.noaa.gov

Plastic litter pollution is a huge deal, not only in the Piedmont Region, but around the world. Plastic takes a long time to go away. Disposable diapers, bottles, and other plastics can take more than 450 years go disintegrate. In the meantime, animals that don't know the difference between plastic and food ingest a lot of this material. Thirty-five percent of fish caught have plastic in their stomachs. Turtle hospitals committed to rehabilitating injured sea turtles, often operate on the turtles to remove the litter from their stomachs so they can eat real food and survive. What does this mean for you? There's a pretty strong possibility compounds found in plastics are also in our seafood and other wildlife.

Marine debris tracker tracks the debris that is found on land and in water and shows what is removed from our waters.

To learn more visit:

http://www.marinedebris.engr.uga.edu/

Your Water Footprint is. . .

Similar to our carbon footprint, which estimates how much carbon we use, our water footprint is an estimation of how much water we use in our daily life. The average American uses 1,190 gallons of water a day. While this number seems high, most people forget about the amount of water needed to grow and cook our food, heat our house and power our cars. The majority of people know we need clean water to brush teeth, wash dishes, clean our hands, bodies and clothes and be healthy, but they forget what else water is used for in our daily lives. It takes twice as much water to make the plastic in a water bottle than it does to fill the water bottle with water. Therefore, the calculation that claims the average water use in the US as 1,190/person/day includes all uses of water. Find out how much water you use by visiting:

http://www.gracelinks.org/3404/water-footprint-calculator

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Get Involved: Treelympics 2014

The Environment Online, or ENO is a virtual network for sustainable development. ENO is celebrating 10 years of planting trees in 157 countries at over 10,000 schools by organizing "Treelympics". "Treelympics" is a contest for tree planting by students, staff parents or the entire, school, between March 21st and October 24, 2014. Steps to take to join the contest:

1) Register your school online at the treelympics website by May 22, 2014
2) Organize a tree planting event.
3) Students, teachers, staff and parents plant the trees

4) Submit information on the planters and trees planted (location, species, number)
5) Await the results

The ENO Treelympics results are only based on data submitted online at:

http://treelympics.org

Categories include: Children 6-12, Children and youth 13-18, and schools who planted the most number of trees . All Treelympics participants will receive a certificate. The winners, however, will be given a trip to Finland to receive their awards.

Book a Stormwater SMART Program:

Our calendars fill up quickly so if you know you want a visit from Stormwater SMART staff please let us know now. Examples of our programs for schools, libraries and civic clubs include:

Water Quality Ask the Bugs - learn about the life in freshwater ecosystems.
Dragonfly Pond – Use maps to determine how development choices affect the natural resources necessary for life.
Incredible Journey - Simulate the movement of water through Earth's systems
Enviroscape Model ® – Using a watershed model assists students in identifying characteristics of landforms and sources of water pollution.
Planting for Water Quality - Explore planting with native plants and learn how they filter stormwater
Pollution detection and elimination - Understand sources of water pollution
Rain Gardens – landscape amenities for pollution reduction
Rules and Regulations of Stormwater - Current and future

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A Guide to Auto Body Repair & Painting

Clean Water

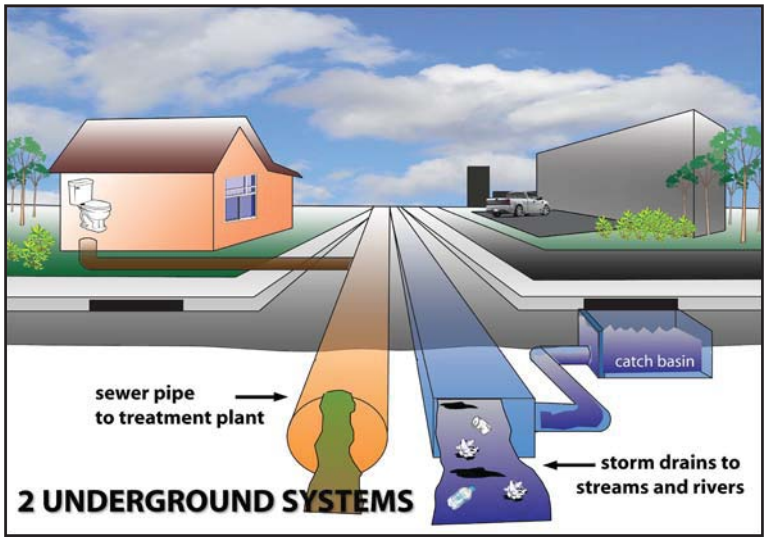
It Begins In Your Workplace!

Piedmont Triad Regional Council
1398 Carrollton Crossing Drive • Kernersville, NC 27284
(336) 904-0300 • stormwatersmart@ptrc.org • www.stormwatersmart.org

Created by the Piedmont Triad Regional Council's Stormwater SMART program, serving: Davidson County, Randolph County, Rockingham County, Archdale, Asheboro, Burlington, Elon, Gibsonville, Graham, Green Level, Haw River, Lexington, Mebane, Oak Ridge, Summerfield, Randleman, Reidsville, Thomasville & Trinity.

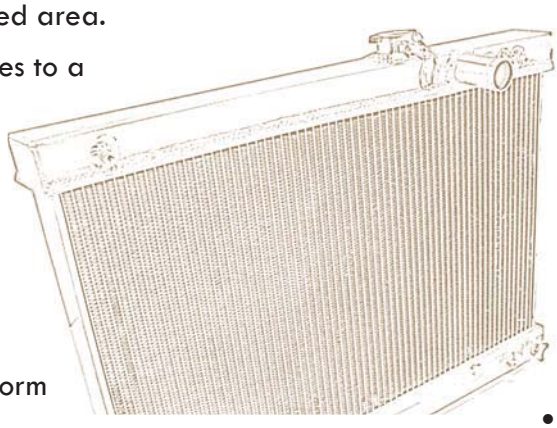
Did you know? **It is important for auto repair shop owners, managers and employees to know that the discharge of pollutants from their shop's activities, either directly or indirectly, into the storm drain, or into surrounding water bodies, is prohibited by both local ordinance and state and federal law. Such discharges can result in severe penalties.**

Nothing but clean water may be discharged to a storm drain. It is illegal as well as harmful to the environment to discharge wastes, wash water, or materials of any kind to the storm drain. This includes solid and liquid wastes from car washing, degreasing, sanding, painting, leaking vehicles, and parts cleaning. Minimize the contact of rainfall and runoff with pollutant sources. Do this by maintaining a clean facility, keeping materials covered, and managing wastes responsibly.



Changing Oil and Other Fluids

- Whenever possible, change vehicle fluids indoors and only on floors constructed of non-porous materials. Avoid working over asphalt and dirt surfaces that absorb vehicle fluids.
- If vehicle fluids must be removed outdoors, always use a drip pan. Prevent accidental spills from reaching the street or storm drain by working over an absorbent mat or working in a bermed area. If necessary you can use absorbent socks to create a bermed area.
- Transfer fluids drained from vehicles to a designated waste storage area as soon as possible. Drain pans and other open containers of fluids should not be left unattended.

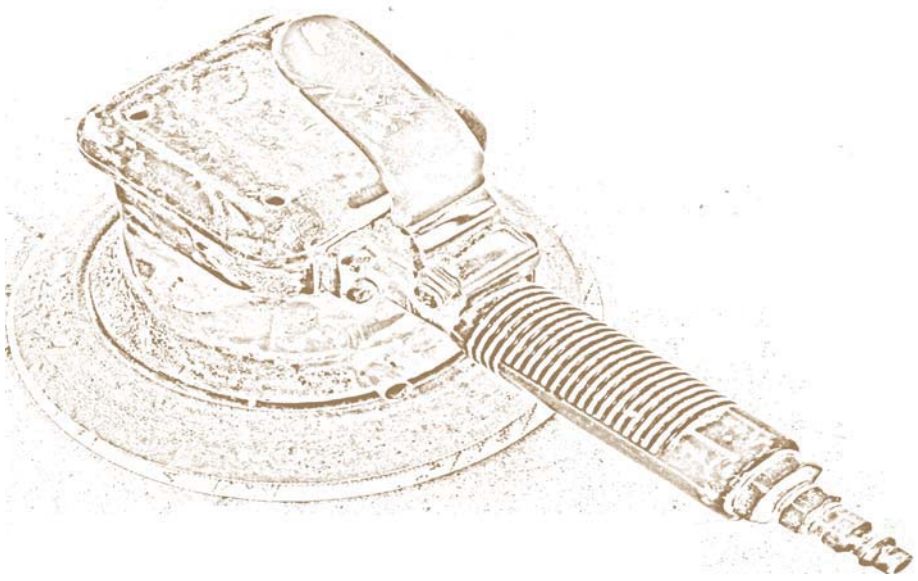


- Store wastes or bulk fluids within secondary containment to prevent leaks or spills from reaching the storm drain system or sewer.
- Never pour vehicle fluids or other hazardous wastes into storm drains, sewers, or into dumpsters where they could leak out. These substances should be kept in designated waste storage containers until recycled or disposed of properly.
- Drain fluids from leaking or wrecked vehicles as soon as possible. Use drip pans under leaking vehicles to capture fluids.

Parts Cleaning & Radiator Flushing

- Solvents are hazardous to employees and can ignite in sewers. Handle and dispose of properly.
- Designate specific areas or service bays for engine parts or radiator cleaning. Do not wash or rinse parts outdoors.
- Use self-contained sinks and tanks when working with solvents. Keep sinks and tanks covered when not in use.
- Inspect degreasing solvent sinks regularly for leaks, and make necessary repairs immediately.
- Rinse and drain parts over the solvent sink or tank, so that solvents will not drip or spill onto the floor. Use drip boards or pans to catch excess solutions and divert them back to a sink or tank.
- Collect and reuse parts cleaning solvents and water used in flushing and testing radiators. When reuse is no longer possible, these solutions may be hazardous wastes, and must be disposed of properly.
- Consider switching to a water-based cleaning solutions system. Case studies have proven that these systems are equally effective, less toxic, and save money.

Painting



- Use sanding tools equipped with a vacuum to pick up debris and dust.
- Minimize the exposure of pollutants from repair operations to stormwater runoff. Conduct body repair and painting work indoors or under cover, whenever possible.
- When cleaning auto body parts before painting, minimize use of hose-off degreasers. Brush off loose debris and use rags to wipe down parts. Collect and properly dispose of any wastes.
- Use dry cleanup methods, such as vacuuming or sweeping to clean up dust from the sanding or metal or fillers. Debris from wet sanding can be allowed to dry overnight on the shop floor, then swept and vacuumed. Liquid and dry waste from sanding may never be discharged to the storm drain system, and are often unacceptable for discharge to the sanitary sewer.
- Minimize waste paint and thinner by carefully calculating paint needs based on surface area and using the proper sprayer cup size. Use low volume paint mixing equipment and painting tools.
- Water used to control overspray or dust in the paint booth must be collected, managed, and disposed of properly. It may never be discharged to the storm drain system. Any wastewater discharges to the sanitary sewer must meet the requirements of the local sewer agency. This may require treatment of the wastewater before discharge, so check with the sewer agency before you discharge.
- Clean spray guns in a self-contained cleaner. Recycle the cleaning solution when it becomes too dirty to use. Never discharge cleaning waste to the sewer or storm drain system. It should be managed as hazardous waste.

Keeping a Clean Shop

Good housekeeping practices minimize liability, reduce costs, and make it easier to detect spills and potential problems.

- Sweep or vacuum the shop floor frequently. Use mopping as an alternative to hosing down work areas. Remove unnecessary hoses to discourage washing down floors and outside paved areas.
- Residue from the sanding of fillers is a common auto body shop pollutant – it should be collected and disposed of properly.
- Do not pour mop water into the parking lot, street gutter, or storm drain.
- Remove unnecessary hoses to discourage washing down floors and outside paved areas.
- Regularly sweep parking lots and areas around your facility instead of washing them down with water. Hosing dirt, oil, grease, and other pollutants into the storm drain system is prohibited and may result in a fine.
- Collect all metal filings, dust, and paint chips from grinding, shaving, and sanding, and dispose of the waste properly. Never discharge these wastes to the storm drain or sanitary sewer.
- Clean up all spills immediately and properly dispose of the generated wastes.

Storage

- Store hazardous materials and wastes indoors or where they are protected from rain, with secondary containment that prevents spills or leaks from reaching the sanitary sewer or storm drain.
- Keep fully stocked spill kits readily available.
- Keep dumpster lids closed and keep lids on waste barrels and containers. Store containers and dumpsters under cover to reduce exposure to rain.
- All hazardous wastes must be labeled according to hazardous waste regulations.
- Never mix waste oil with fuel, antifreeze, or chlorinated solvents. Keep wastes separate to increase your waste recycling/disposal options and to reduce your costs. Consult with your hazardous waste hauler for details.
- Keep storage areas clean and dry. Conduct regular inspections so that leaks and spills are detected as soon as possible.
- Carefully transfer fluids from drip pans or collection devices to designated waste storage areas as soon as possible.
- When receiving vehicles to be parted or scavenged, park them on a paved surface and immediately drain and collect gasoline and other fluids properly.
- Drain all fluids from components, such as engine blocks, which you may store for reuse or reclamation. Keep these components under cover and on a drip pan or sealed floor.
- Store batteries securely to avoid breakage and acid spills. Shelving should be secured to the wall. Store used batteries indoors to avoid contact with rainwater. Keep them in a plastic tray to contain leaks. Recycle old batteries using a licensed recycling service.
- Minimize the distance between waste collection points and storage areas.
- Recycle solvents, paints, oil filters, antifreeze, motor oil, batteries and lubricants.

Hazardous Materials and Wastes

All hazardous materials and hazardous wastes must be stored, used, and disposed of according to federal, state, and local laws, including, but not limited to, fire codes, hazardous materials waste laws, and zoning restrictions.

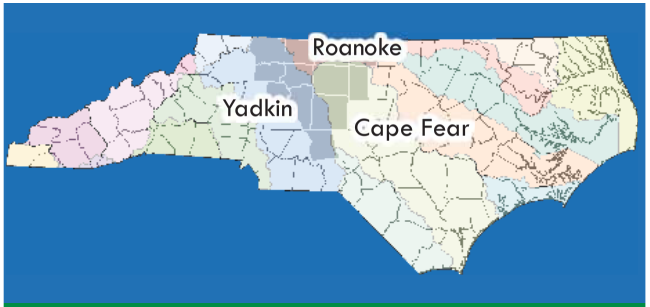
The Sanitary Sewer

It may be advisable to discharge wash water generated at your shop into the sanitary sewer, since it is prohibited to discharge it into the storm drain system. However, restrictions also apply to sanitary sewer discharges. Hazardous wastes may never be discharged to the sanitary sewer.

Education and Training

Train all employees upon hiring and annually thereafter on stormwater compliance, personal safety, chemical management, and proper methods for handling and disposing of hazardous waste. Ensure that all employees understand appropriate disposal methods for different types of waste. Post signs and mark storm drains, floor drains, and plumbing fixtures to remind employees of the importance of using proper disposal methods.

For more information on stormwater management, please visit www.stormwatersmart.org or contact your local stormwater department. If you experience problems with any water or sewer piping on your property, you should contact a plumber. The Piedmont Triad Regional Council nor any member government assumes no risk, liability or responsibility for the accuracy for this guide.



What Watershed Do You Live In?

Watersheds

A watershed is an area of land that drains into a specific site. Think of it as a line connecting the highest points in a region. Precipitation falling inside this line is carried through small streams or tributaries to our rivers and lakes. Everything that happens in a watershed affects water quality for all downstream users.

Stormwater Runoff

Stormwater runoff is rainwater that flows off our streets, lawns, rooftops, and parking lots. It carries dirt, oil, fertilizers, pet waste and other pollution directly into our streams, rivers, and lakes.

Properly managing our stormwater provides many economic benefits. Best management practices (BMPs) can increase property values, decrease flood damage, reduce public infrastructure costs, reduce water pollution and water treatment costs, and increase tourism and recreation.

Water Quality & Health

A healthy community depends on healthy water. Luckily, there are a number of things you can do to protect water quality in your neighborhood. Stormwater SMART works with Piedmont Triad communities to help citizens, business owners, local administrators and others understand how they can protect our valuable waters.

Piedmont Triad Regional Council
Stormwater SMART
www.stormwatersmart.org

Stormwater SMART

1398 Carrollton Crossing Drive
Kernersville, NC 27284

(336) 904-0300,

stormwatersmart@ptrc.org

www.stormwaterSMART.org

Protecting water quality through outreach, education & public participation since 2004.

Stormwater SMART Member Governments:
Davidson County, Randolph County, Rockingham County, Archdale, Asheboro, Burlington, Elon, Gibsonville, Graham, Green Level, Haw River, Lexington, Mebane, Oak Ridge, Summerfield, Randleman, Reidsville, Thomasville & Trinity.

www.twitter.com/Stormwater SMART

www.StormwaterSMART.blogspot.com

www.facebook.com/PTRCStormwaterSMART

Piedmont Triad Regional Council

Be Stormwater SMART!

Recycle Your Lawn

Mow it High, Let it Lie

Why Does It Matter?

Grass clippings and bits of leaves that are blown into the street after lawn maintenance can be just as bad as other forms of litter. Stormwater that should move quickly through the system may begin to back up causing high water on roads or other, more hazardous flooding situations.

What doesn't get stuck in the storm drain ends up in the nearest stream, pond, lake, or river. Nutrients derived from grass clippings, fertilizer and other natural sources fuel excessive uncontrolled growth of algae and may cause health problems, damage water quality, and negatively impacting the local economy.

Algal blooms consume large amounts of oxygen and cloud the water making it difficult for fish and other aquatic organisms to survive. Toxins in some algal blooms can sicken or kill pets, fish and other wildlife.

Additional Resources

Stormwater SMART
http://stormwatersmart.org/nativeplants.htm

North Carolina Botanical Garden
http://ncbg.unc.edu

Going Native
http://www.ncsu.edu/goingnative

NC Cooperative Extension
http://gardening.ces.ncsu.edu

NC Native Plant Society
http://www.ncwildflower.org

Maintaining Your Lawn

What's In It For Me?

- Reduced Waste: Recycling your grass clippings reduces the use of plastic bags and landfill space
- Saves Water: Grass clippings are 75-85 percent water and decompose quickly which returns moisture to the soil
- Healthier Lawns: As grass clippings breakdown, they slowly release nutrients (nitrogen,potassium, and phosphorus) back into the soil
- Saves Money: Reduces the need to buy fertilizer and the need for watering because grass clippings are mostly water and nutrients

How Do I Get Started?

- Cut grass to a height of 2.5 to 3 inches. An easy guide is the width of a dollar bill. This will ensure roots will grow. Deep roots will keep your grass from needing frequent watering during the dry summer months
- Always have your soil tested before applying fertilizer and use organic, slow-release, or water insoluble fertilizers or compost
- Aerate the soil to prevent compaction and increase infiltration
- Use native grass species that are adapted to your climate and pests
- Spot spray weeds with herbicide rather than treating the whole yard and use natural pest control management
- Water deeply but less frequently
- You may also rake or blow clippings into a compost pile

If you use a landscaping service, it is your responsibility to ask them to leave clippings on your lawn!

Be Stormwater SMART!

Recycle Your Lawn

WHY DOES IT MATTER?

Grass clippings and bits of leaves that are blown into the street after lawn maintenance can be just as bad as other forms of litter. They clog gutters and storm drains which reduces the amount of stormwater that can move through the system. Stormwater that should move quickly may begin to back up; causing high water on roads or other, more hazardous flooding situations. Remember, it is illegal to deposit anything other than rainwater down the storm drain!

What doesn't get stuck in the storm drain ends up in the nearest stream, pond, lake or river. Nutrients derived from grass clippings, fertilizers and other natural sources fuel excessive uncontrolled growth of algae and may cause health problems, damage water quality, and negatively impacting the environment. Some types of algal blooms are toxic, making it dangerous for recreation, fish and wildlife. As algae breaks down, it uses up oxygen in the water causing fish kills and other ecological damage. Unsafe conditions may require beach closures and limit fishing and other recreational activities which can impact the local economy.

Keep grass clippings off streets and other paved areas

MAINTAINING YOUR LAWN

To maintain your lawn properly, mow high and mow often, so that you only take off about 1/3 of the length of the grass. This will result in an attractive, neatly trimmed lawn, and clippings will disappear when they filter down to the soil. To shade the soil, cool the roots, and block weed growth, most lawns should be mowed 2-3" high especially in summer.

Controlling watering rates will help your lawn grow at manageable levels and still stay healthy. Don't water until the lawn is dry. If it turns blue-green or gray, or if footprints don't spring back, it's time to water. Provide about an inch at a time for clay soils. If managed carefully, water will soak four to six inches down, just right for building healthy root systems and greener growth. Early morning watering conserves water by preventing evaporation.

Have your soil tested and apply only organic, slow-release, or water insoluble fertilizers or compost, aerate the soil, plant native grasses, spot spray weeds with herbicides and using natural pest control methods to make an even bigger difference on your lawn and in the environment.

SO WHAT SHOULD BE DONE WITH CLIPPINGS?

Leave clippings on the lawn and sweep any that fall on paved surfaces back onto the lawn where they will naturally decompose and fertilize. You can also rake or blow clippings into a compost pile. If you use a lawn maintenance company, it is your responsibility to ensure they do not blow or dump yard wastes down the storm drain inlets.

Remember – there's no treatment or filtering of stormwater between the drain on your street to the nearest body of water. Even though grass clippings, leaves, and soil are natural forms of debris, when they are put into the storm drain they can destroy the balance of our waterways. Storm drains are not garbage disposals!

Recycle Your Lawn

Mow it High, Let it Lie

Did you know it is **illegal** to dump anything down a storm drain? This includes grass clippings and yard debris.

As grass clippings breakdown, they slowly release nutrients (nitrogen,potassium, and phosphorus) back into the soil. Nutrients fuel excessive uncontrolled growth of aquatic weeds and algae, and degrade water conditions.

Save Money: Save money on irrigation costs and fertilizers.

Conserve Water: Grass clippings are 75-85% water and quickly decompose, returning moisture to the soil.

Reduce Waste: Deuse diverts yard waste from the landfill.

Improve Appearance: Grass clippings result in a lusher, more attractive lawn.

For More Information, Please Contact:

How Do I Get Started?

- Cut grass to a height of 2.5 to 3 inches. An easy guide is the width of a dollar bill.
- Always have soil tested before applying fertilizer and use organic, slow-release, or water insoluble fertilizers or compost.
- Aerate the soil to prevent compaction and increase infiltration.
- Use grass species that are adapted to your climate and pests.
- Spot spray weeds with herbicide rather than treating the whole yard and use natural pest control methods.
- Water deeply but less frequently.
- Rake or blow clippings into a compost pile.

If you use a landscaping service, it is your responsibility to ask them to leave clippings on the lawn!

For more information about lawncare and stormwater management visit:

www.stormwatersmart.org

Piedmont Triad Regional Council
Stormwater SMART
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Davidson County, Randolph County, Rockingham County, Archdale, Asheboro, Burlington, Elon, Gibsonville, Graham, Green Level, Haw River, Lexington, Mebane, Oak Ridge, Summerfield, Randleman, Reidsville, Thomasville & Trinity.

Recycle Your Lawn

Mow it High, Let it Lie

Save Money • Reduce Waste • Conserve Water

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- **Water deeply but less frequently**

www.ci.burlington.nc.us

www.stormwatersmart.org

Grass clippings and bits of leaves that are blown into the street after lawn maintenance can be just as bad as other forms of litter. Any material in the storm drains reduces the amount of stormwater that can move through the system. Lawn waste also contains nutrients derived from fertilizer and natural sources. Nutrients fuel excessive uncontrolled growth of aquatic weeds and algae, and degrade water conditions which can lead to fish kills. **Remember, it is illegal to dispose of anything in a storm drain!**

Recycle Your Lawn

Mow it High, Let it Lie

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www.ci.reidsville.nc.us

www.stormwatersmart.org

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Be Stormwater SMART!

Recycle Your Grass

WHY DOES IT MATTER?

Grass clippings and bits of leaves that are blown into the street after lawn maintenance can be just as bad as other forms of litter. They clog up gutters and storm drains, and what doesn't get stuck ends up in the nearest waterway (stream, pond, lake, and/or river) causing further problems. Any material (litter, grass clippings, leaves, etc.) in the storm drains reduces the amount of stormwater that can move through the drain system. Stormwater that should move quickly through the system may begin to back up; causing high water on roads or other, more hazardous, flooding situations.

Yard wastes contain an abundance of nutrients from fertilizer and natural sources; however, sometimes too much of a good thing may be harmful. When these wastes decompose, the nutrients fuel excessive and uncontrolled growth of aquatic weeds and algae, and offset water conditions which can lead to fish kills. Always have your soil tested and only apply organic, slow-release, or water insoluble fertilizers.

Herbicides and insecticides remain on the grass for some time, and some make the clippings unsuitable for mulch, so it's important to cut it and leave it when you use weed killers. Too much herbicide can burn the lawn, kill nearby plants, and contaminate waterways. Instead of repeated whole- lawn application of weed killers, try a one-time pre-emergent weed killer and spot application if your lawn has only a few weeds.

Keep grass clippings off streets and other paved areas

MAINTAINING YOUR LAWN

To maintain your lawn properly, mow high and mow often, so that you only take off about 1/3 of the length of the grass. This will result in an attractive, neatly trimmed lawn, and clippings will disappear when they filter down to the soil. To shade the soil, cool the roots, and block weed growth, most lawns should be mowed 2-3" high especially in summer.

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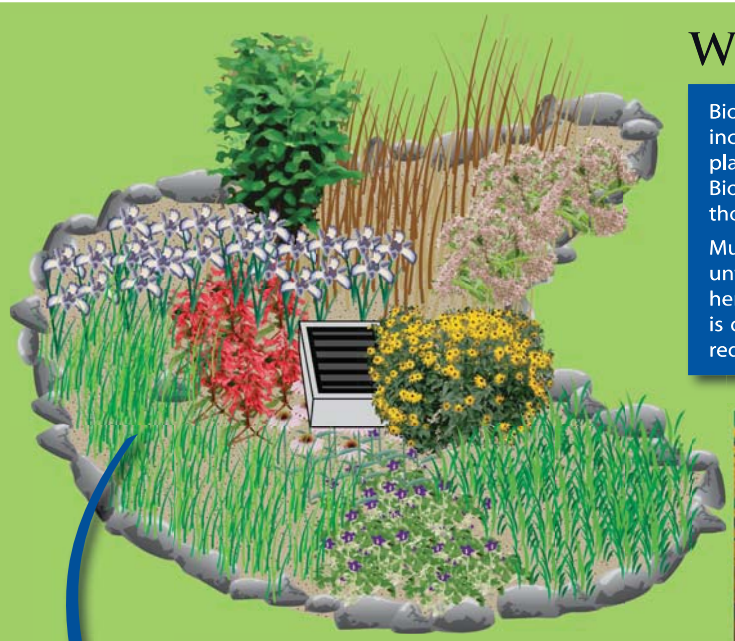
Follow that Drop!

Bioretention

City of Burlington

Piedmont Triad Regional Council Stormwater SMART www.stormwatersmart.org



What Are Bioretention Areas or Rain Gardens?

Bioretention areas or rain gardens are just what they sound like – gardens designed to soak up rain water. A shallow depression collects a few inches of water and allows it to be absorbed into the ground or by plants instead of flowing directly into nearby streams and lakes. Native plants and soil trap, absorb and filter pollutants found in stormwater runoff including fertilizers, pesticides, oil, grease and dog waste. Bioretention areas can be as small as a few square feet and require minimal engineering, or large enough to accommodate runoff from thousands of square feet of impervious surface areas.

Much of Burlington's rainwater runs off hard surfaces like roofs, driveways, sidewalks, and roads. Unlike a sewer system, stormwater flows untreated into underground pipes called storm drains, then into nearby streams, rivers, and lakes. Stormwater carries fertilizers, pesticides and herbicides from our lawns, oil and grease from our roads and driveways, pet waste, litter, and other pollutants into our waters. This rain garden is designed to prevent some of these pollutants from making their way into Little Alamance Creek, but we need your help. How can you reduce your impact on water quality and be a stormwater steward?

Native Plants

Native plants are an important component of bioretention cells and rain gardens. Not only do the long root systems keep soil in place, as they die, they leave deep tunnels allowing more oxygen and water to absorb into the ground. This is particularly important in the North Carolina piedmont because of the dense clay soils which make it difficult for rain water to absorb into the ground.

Bioretention:

- Improves water quality;
- Increases the amount of water that filters into the ground, recharging the aquifer;
- Prevents flooding, erosion and drainage problems;
- Protects streams and lakes from pollutants carried by urban stormwater;
- Enhances the beauty of our community;
- Provides valuable habitat for birds, frogs, butterflies and many beneficial insects.

Did You Know?

The City of Burlington and Stormwater SMART have a residential raingarden outreach program. We are available to help you design and build a rain garden in your backyard. Contact us for more information.

Water should stand in a rain garden no longer than 24 hours after the rain stops. Mosquitoes cannot complete their breeding cycle in this length of time. A rain garden should not increase mosquito populations.

Follow that Drop!

CISTERNS

City of Burlington

Piedmont Triad Regional Council
Stormwater SMART
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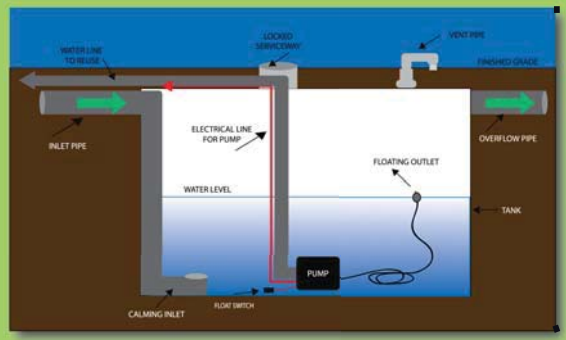
Cisterns and Rain Barrels

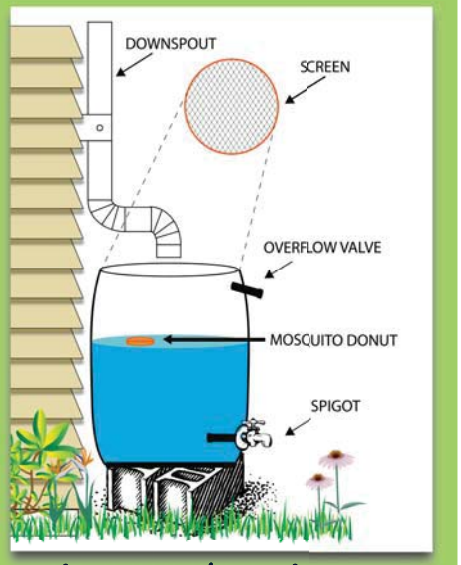


Cistern Design

While rainwater harvesting isn't a new concept, recent concerns over water quality and quantity have encouraged many municipalities and homeowners to consider using cisterns or rain barrels. These rainwater harvesting systems capture rooftop runoff and store the water for later use. By using harvested rainwater for purposes that don't require treated water, we can decrease demand on municipal water supply systems while preventing stormwater pollutants like nitrogen and phosphorous from washing into our surface waters. While the cistern at the Kernodle Center is underground, many cisterns are built above ground. New designs are aesthetically pleasing as well as functional, incorporating wooden exteriors, plantings, and murals. This cistern is designed to capture 7,600 square feet of rooftop runoff and is used primarily for irrigation.

Rain barrels are simply small rainwater harvesting systems. They can be purchased from many garden catalogues or stores, or you can make your own following the directions found on many websites. You can even attach a soaker hose to your rain barrel and deliver nutrient rich rain water directly to your plants. Rain water is softer than tap water; has no chlorine, lime, or calcium, and is healthier for your plants than tap water. With proper use, a rainwater harvesting system can pay for itself over time by reducing potable water bills. Most rain barrels are designed to capture about 55 gallons of water. While this may not seem like a lot compared to the cistern above, when used at a neighborhood scale, it can mean significant improvements for our water quality.

The dense clay soils of the Piedmont Triad along with the highly developed land around Little Alamance Creek make it challenging to prevent polluted runoff. Cisterns, rain gardens or bioretention cells, vegetated buffers along streambanks, and other best management practices (BMPs) allow stormwater to absorb into the soil instead of flowing into storm drains or directly into Little Alamance Creek.



Rain Barrel Design

Did You Know?

Rainwater is rich in nutrients like nitrogen and phosphorous. While plants depend on these nutrients to survive (they are common ingredients in most fertilizers), they can have devastating effects on our surface waters. In 2009, the legislature passed the Jordan Lake Rules. These rules require communities to reduce the amount of nutrients flowing into the Jordan Lake watershed. Cisterns capture rainwater, allowing it to slowly be released into the soil where nutrients are absorbed by plants or filtered out along with other pollutants, allowing fresh, clean water to be deposited into our groundwater supply.

Cisterns are larger and more permanent than rain barrels, ranging in size from 100 gallons to 10,000 gallons. They can be placed above or below ground.

For every 1000 square feet of roof line, a one inch rainfall captures over 632 gallons of water. This water can be stored and later used to wash cars and windows, water plants, fill ponds, or feed a garden, especially during periods of drought. The cistern at the Kernodle Center can hold 12,000 gallons of water.

Follow that Drop!

Native Plants

City of Burlington

Piedmont Triad Regional Council
Stormwater SMART
www.stormwatersmart.org

Native Plants

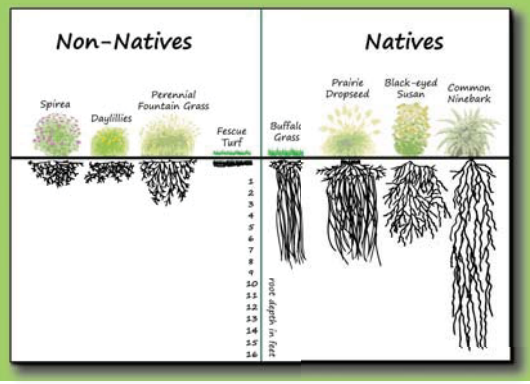
Native plants are species that occur naturally in an area, having not been introduced by human action. Over time, they have evolved with the physical and biological factors specific to their region, such as climate, soil, rainfall, and interactions with other plants, animals, and insects that live in the area. Thus, they are *uniquely adapted to the local conditions and the area's wildlife,* including important pollinators and migratory birds. Native plants generally grow well and produce showy flowers, abundant fruits and seeds, and brilliant fall foliage. Landscaping with native plants benefits the community, wildlife, and water quality through:

- Providing habitat for local and migratory animals.
- Improving water quality.
- Reducing the need for chemical pesticides and herbicides.
- Offering greater visual interest than turf.
- Reducing the time and expense of mowing, watering, fertilizing, and treating lawn and garden areas.
- Addressing areas with problems such as erosion, poor soils, steep slopes or poor drainage.

Invasive Plants

Invasive or exotic plants are those not native to an area. In North Carolina, exotics usually come from Asia or western Europe, regions that have similar climate and environmental conditions to those in this state. Exotics are planted intentionally as lawn or garden ornamentals, but others were introduced accidentally. Many of these species become *naturalized*, which means they are able to survive, spread, and reproduce on their own. Approximately 25% of the plants grown in the US are naturalized exotics, some of which have become *invasive*, growing unabatedly where native plants would otherwise occur.

Invasive exotic plants are those that pose the greatest risk to the native plants and animals of North Carolina. Competitors, diseases, and insects control a plants, growth and dispersal in its native range. Over thousands of years, natural checks and balances develop, which greatly reduce the chance a single species will increase in number to completely dominate a plant community. Exotic plants escape natural controls and become invasive. Prolific growth by a single plant species can be harmful because forests with a limited number of plant species provide very poor habitat for wildlife.



Native Plants and Stormwater Runoff

Native plants do a much better job of keeping soil on the ground and out of our waters. Not only do the long root systems keep soil in place, as they die, they leave deep tunnels allowing more oxygen and water to absorb into the ground. This is particularly important in the North Carolina piedmont because of the dense clay soils which make it difficult for rain water to absorb into the ground. Instead, rainwater washes over the ground picking up pollution, tearing vegetation from stream banks and waterways, and causing flooding and other potentially harmful disasters.


Black Eyed Susan


Joe Pye Weed


Sweet Pepperbush


Virginia Sweetspire


Red Buckeye


Blue Zenobia


Eastern Columbine


Virginia Iris

Follow that Drop!

Pet Waste

City of Burlington

Piedmont Triad Regional Council
Stormwater SMART
www.stormwatersmart.org

What's the Problem

Every time it rains, the potential exists for thousands of pounds of pet waste to wash down storm drains and into streams, rivers and lakes. If not disposed of properly, pet waste flows directly into nearby streams and creeks without being treated at wastewater treatment facilities.

As a pet owner, you can help by simply picking up after your pet. Being a responsible pet owner not only keeps the areas you walk clean for everyone but also reduces contaminants in stormwater runoff. Pet waste can carry viruses and bacteria that are extremely harmful to humans and animals that live in or near our streams. In addition to the risk of disease, the organic matter and nutrients found in pet waste can degrade water quality. As pet waste decays in our waterways, it uses up dissolved oxygen and releases ammonia, killing fish and other aquatic life. Pet waste also contains nutrients that encourage excess weed and algae growth. This water then becomes cloudy and green - unattractive for swimming, boating, and fishing. Excess nutrients are a major cause of water quality decline, especially in Little Alamance Creek watershed.

Bring plastic bags with you when you walk your dog.

Use a bag to pick up the dog waste

Tie bag closed and place in trash

Do the Math!

Approximately **37%** of households own dogs

= **12,874** dogs in Burlington

That means **4,248** lbs of dog poop daily

= **1,550,673** lbs of raw sewage a year

That's equivalent to almost **78** dumptruck loads of waste

See Spot.

See Spot Run.

See Spot . . . uh, oh.

Did you Know?

Dog poop left on the ground does not just go away or fertilize the grass. The bacteria in dog waste is often washed down storm drains and into ditches, streams, lakes and inlets, and can travel for miles in the water.

A little pet waste goes a long way: a day's waste from one large dog can contain 7.8 billion fecal coliform bacteria!

Nutrients found in pet waste can cause algae blooms which may lead to fish kills.

Pet waste is a health risk to animals and people, especially children.

Don't Risk It!

When pet waste is disposed of improperly, water quality isn't the only thing that suffers - your heath may be at risk, too!

Salmonellosis: the most common bacterial infection transmitted to humans by other animals. Symptoms include fever, muscle aches, headache, vomiting and diarrhea.

Toxocariasis: roundworms usually transmitted from dogs to humans, often without noticeable symptoms, but may cause vision loss, a rash, fever or cough.

Toxoplasmosis: a parasite carried by cats that can cause birth defects if a woman becomes infected during pregnancy and can also be a problem for people with depressed immune systems.

Follow that Drop!

STORMWATER

City of Burlington

Stormwater SMART

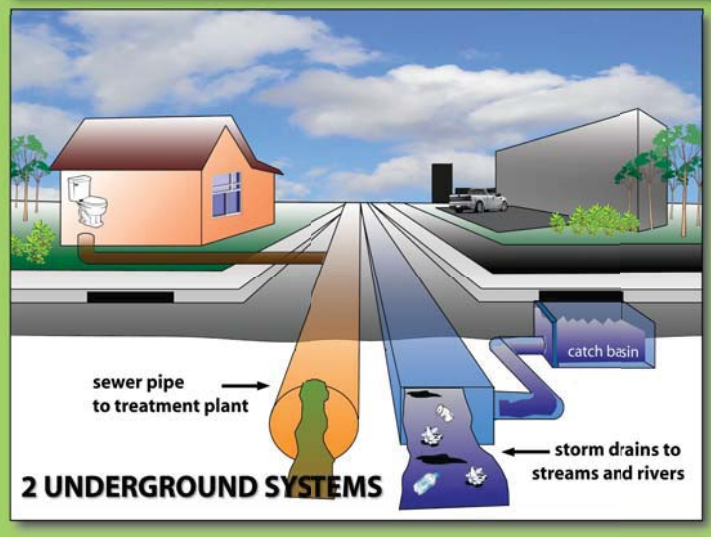
www.stormwatersmart.org

What is Stormwater Runoff?

Stormwater runoff occurs when precipitation from rain or sprinkler water flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater runoff from naturally soaking into the ground. Polluted stormwater runoff can have many adverse effects on plants, fish, animals and people.

- ***Sediment*** can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment can also destroy aquatic habitats.
- Excess ***nutrients*** can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ***Bacteria*** and other pathogens can wash into swimming areas and create health hazards, often closing swimming areas.
- ***Litter*** including plastic bags, six-pack rings, bottles, and cigarette butts - washed into our waters can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- ***Household hazardous wastes*** like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick from eating diseased fish or ingesting polluted water.

Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.



Did you Know?

Like many cities and towns, Burlington has two separate underground systems. The sewer system carries waste from our homes and businesses to the wastewater treatment plant while the stormwater system carries polluted rainwater UNTREATED into nearby streams, rivers, and lakes. Storm drains were originally designed to carry rainwater quickly off roads, parking lots, and other developed areas to prevent flooding and property damage. In order to protect our water quality, the City is investing in new types of infrastructure, including bioretention cells, residential rain gardens and other best management practices that filter and treat pollution before it gets into our water.

What is A Watershed?

A watershed is an area of land that drains into a specific site. Think of it as a line connecting the highest points in a region. Precipitation falling inside this line is carried through small streams or tributaries to our rivers and lakes. Everything that happens in a watershed affects water quality for all downstream users.

Little Alamance Creek is part of the Haw River Basin. The Haw River flows into Jordan Lake. All communities in the Jordan Lake watershed are subject to the Jordan Lake Rules which require communities to take special measures to protect water quality. Jordan Lake provides drinking water to many communities in the Triangle and is a prime recreation spot for more than a million visitors each year.

Little Alamance Creek is in a highly urbanized watershed. This means there's a lot of impermeable surfaces like rooftops, roads, sidewalks and parking lots. Because water can no longer soak into the ground, it's got to find somewhere to go. Along the way, it collects pollution and carries it directly to a stream, or through a storm drain which deposits stormwater UNTREATED into nearby waters.

Follow that Drop!

Stream Health

City of Burlington

Piedmont Triad Regional Council Stormwater SMART www.stormwatersmart.org

Protecting Our Waterways

Little Alamance Stream Enhancement

Little Alamance Creek is in a highly urbanized watershed. This means there's a lot of impermeable surfaces like rooftops, roads, sidewalks and parking lots. Because water can no longer soak into the ground, it's got to find somewhere to go. As it flows over the surface, it collects pollution and carries it into a nearby storm drain or stream. Little Alamance Creek is considered "impaired" by the NC Division of Water Resources because the water can't support bugs and other critters that need fresh clean water to survive.

In May 2012, the NC Ecosystem Enhancement Program (EEP) completed a 2,600 linear-foot stream enhancement project in Burlington City Park. The goals of the project focused on improving water quality, weakening flood events and restoring aquatic habitat. A stormwater treatment system was designed to treat surface runoff and reduce sedimentation from bank erosion through a reconstruction of the stream channel and planting of a new vegetative buffer.

Before

Photo: NC EEP

After

Photo: City of Burlington

Did You Know?

Residents, business owners, and governmental organizations are required to take certain measures to protect water quality. Riparian buffers are one of the most cost effective ways to improve stream health. The Jordan Lake Rules require a 50-foot wide buffer on all surface waters, including intermittent and perennial streams, lakes, ponds and reservoirs.

Bug Life

The presence or absence of certain organisms, called indicator species, can tell us whether water is healthy. Pollution generally reduces the diversity of bug life. Unhealthy waters are usually the result of rain water washing over the ground, collecting pollutants like fertilizers and pesticides, automobile oils and transmission fluids, sediment, pet waste and litter. Hard surfaces like roads, rooftops and sidewalks prevent water from absorbing into the soil, where pollutants are naturally filtered out. In addition to macroinvertebrates or bugs we can see with the naked eye, thousands of micro-organisms form the basis of the entire aquatic eco-system. Micro-organisms are vital in the food supplies of fish, aquatic birds, reptiles, amphibians, and mammals, including humans.

Riparian Buffers

A riparian (or streamside) buffer describes the area of vegetation along the banks of a water body. Deep-rooted vegetation helps hold soil in place, filter out pollutants and keeps excess sediment from entering the waterway. It also provides shade which helps keep streams cold, increasing habitat quality for fish and other stream life. Look for the "no-mow" signs along Little Alamance Creek and consider leaving more natural areas along the stream in your backyard!

Dragonfly Nymph

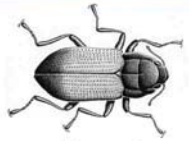
Caddisfly Nymph

Damselfly Nymph

Stonefly Nymph

Mayfly Nymph

Midge Larva



Riffle Beetle

Water Penny

Follow that Drop!

Taking Action

How Can You Improve Our Water?

City of Burlington

Piedmont Triad Regional Council
Stormwater SMART
www.stormwatersmart.org

Pet Waste

Stormwater carries pet waste containing bacteria, viruses, parasites, and nutrients which threaten human health and wildlife. Protect water quality by bagging or burying pet waste.

Hazardous Waste

We use hazardous materials almost every day. Danger, warning, and caution signs are all indicators of toxic substances. Always buy the least amount of a product needed to finish the job and properly dispose of leftover materials at a hazardous waste facility. NEVER dump hazardous waste down the storm drain.

TOXIC

Pesticides & Herbicides

Surface runoff of pesticides and herbicides into water bodies changes natural ecosystems by killing or damaging a variety of organisms. They collect and accumulate in the food chain, becoming dangerous to a variety of animals and other organisms. If you choose to apply pesticides and herbicides, make sure you read the application instructions and check the weather forecast, or determine natural alternatives to traditional pesticides and herbicides.

Native Plants

Native plants are naturally pest-resistant, less water-dependent, and adapted to our climate. Their long roots make them very efficient at absorbing water and leave deep tunnels for water and oxygen to filter into the ground.

Rain Gardens

Rain gardens are just what they sound like - gardens designed to soak up rain water. A shallow depression collects a few inches of water and allows it to be absorbed into the ground or by plants instead of flowing into nearby streams and lakes. Plants and soil trap, absorb and filter pollutants found in stormwater runoff including fertilizers, pesticides, oil, grease and metals.

Downspout Disconnection

A downspout is a vertical pipe used to drain rainwater from a roof. During a heavy rain, each downspout can deliver 12 gallons a minute to the stormwater system. By simply disconnecting a downspout, the volume of stormwater is minimized, reducing flooding and erosion and minimizing stormwater pollution

Fertilizer Use

Runoff from lawn irrigation and heavy rain carries unused fertilizer directly into our streams, rivers and lakes. Nutrients from fertilizers and other sources cause algal blooms. Algal blooms can cause fish kills, threaten recreation, and be expensive for water treatment plants to remove. Get your soil tested and apply only as much fertilizer as you need, sweeping up any excess that lands on streets or sidewalks. Never apply fertilizer when rain is forecasted within 24 hours. Compost is a great alternative to chemical fertilizer.

Vehicle Maintenance

Improper vehicle maintenance can result in highly toxic chemicals washing into our waterways. Even soaps and detergents can alter water chemistry. Properly clean up any spills, recycle your motor oil, and wash your vehicle over a pervious surface like the yard or at your local car wash which is equipped to treat soapy pollutant laden water.

Backyard Streams

Vegetation along stream banks is one of the most effective ways of protecting water quality. Vegetated buffers physically protect waterways, preventing lawn chemicals and other pollutants from washing directly into the water. Roots absorb pollution and the canopy provides shade, keeping temperatures down and dissolved oxygen levels up. Vegetation also helps stabilize stream banks and prevent erosion.

Rain Barrels

Rain barrels or cisterns are above ground water storage vessels. They capture rain runoff from the roof using gutters and downspouts. Rain barrels collect the first flush, the most critical rain that is loaded with pollutants, and then slowly releases the water, allowing it to absorb into the soil where most of the pollution is filtered out.

Septic System Maintenance

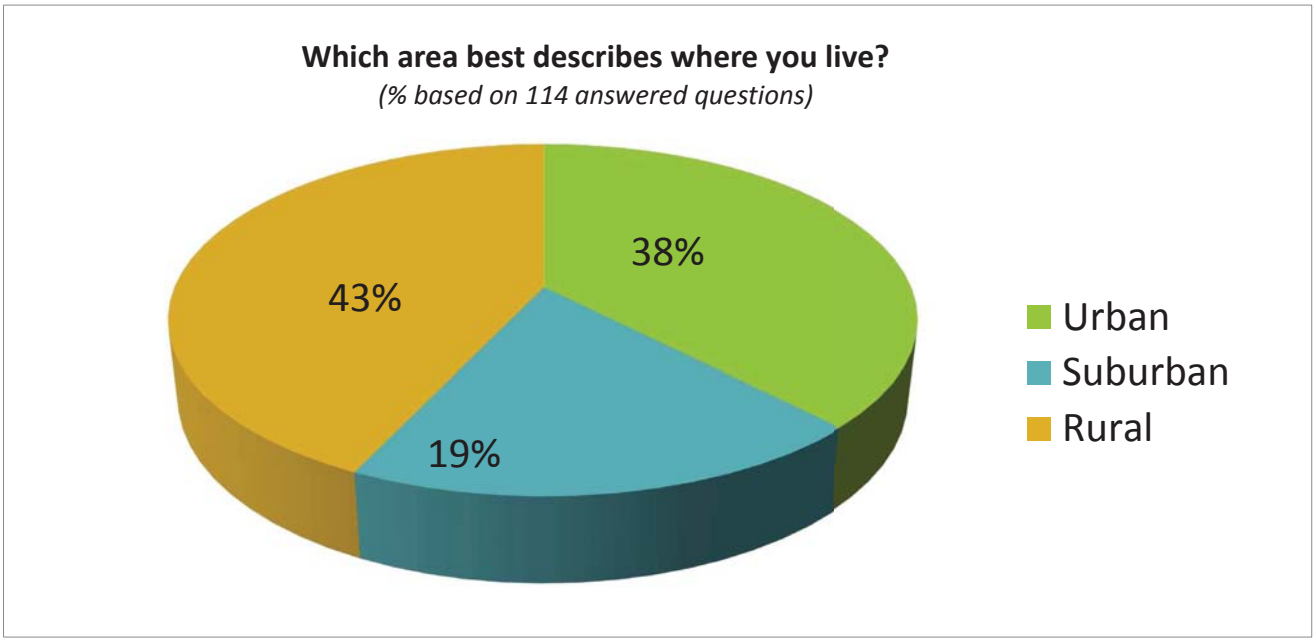
If you have a septic system, it's important to properly maintain it. Failed or broken septic systems can release harmful microbes and chemical contaminants into nearby waters. Even the most efficient tanks require regular maintenance every couple years. If you see excessive moisture or standing water in the drain field, noxious odors in the yard, dead grass or other plants over the drain field, depressions around or over the septic tank, or slow or plugged drains, it's time to call a licensed professional.

APPENDIX E

Fair & Festival Survey Results

Test your Stormwater IQ

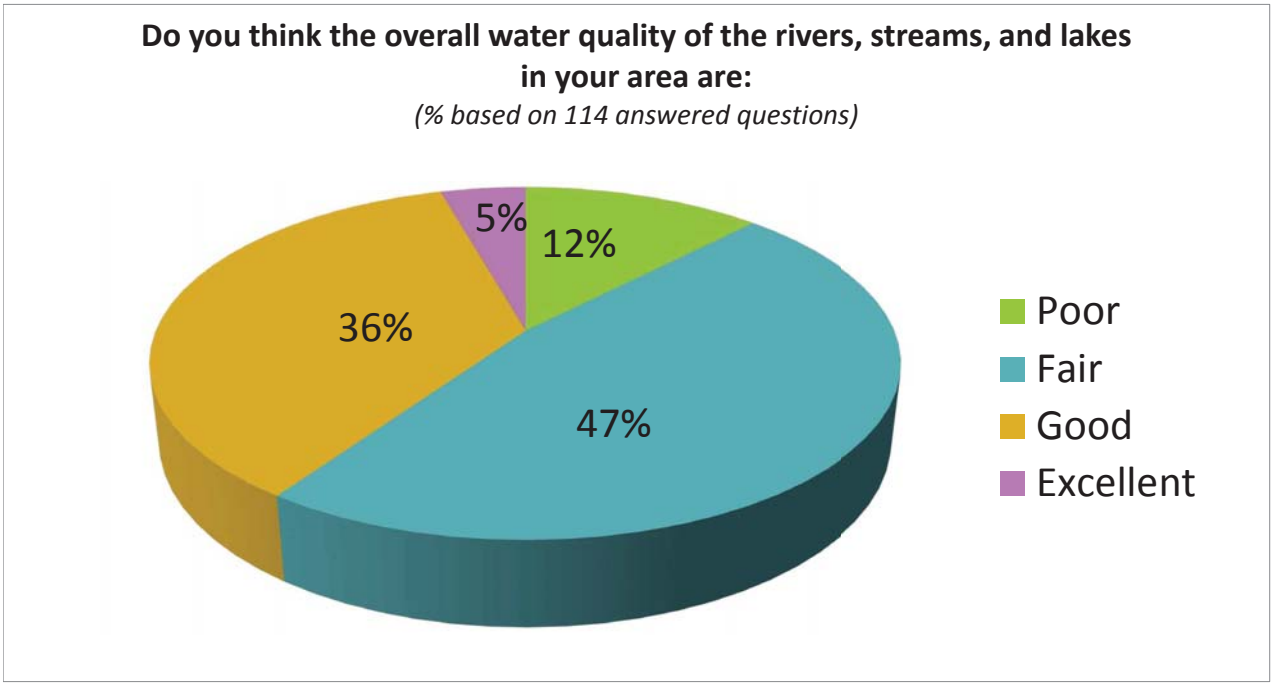
Which area best describes where you live?		
Answer Options	**Response Percent**	**Response Count**
Urban	37.7%	43
Suburban	19.3%	22
Rural	43.0%	49
	answered question	114



Test your Stormwater IQ

Do you think the overall water quality of the rivers, streams, and lakes in your area are:

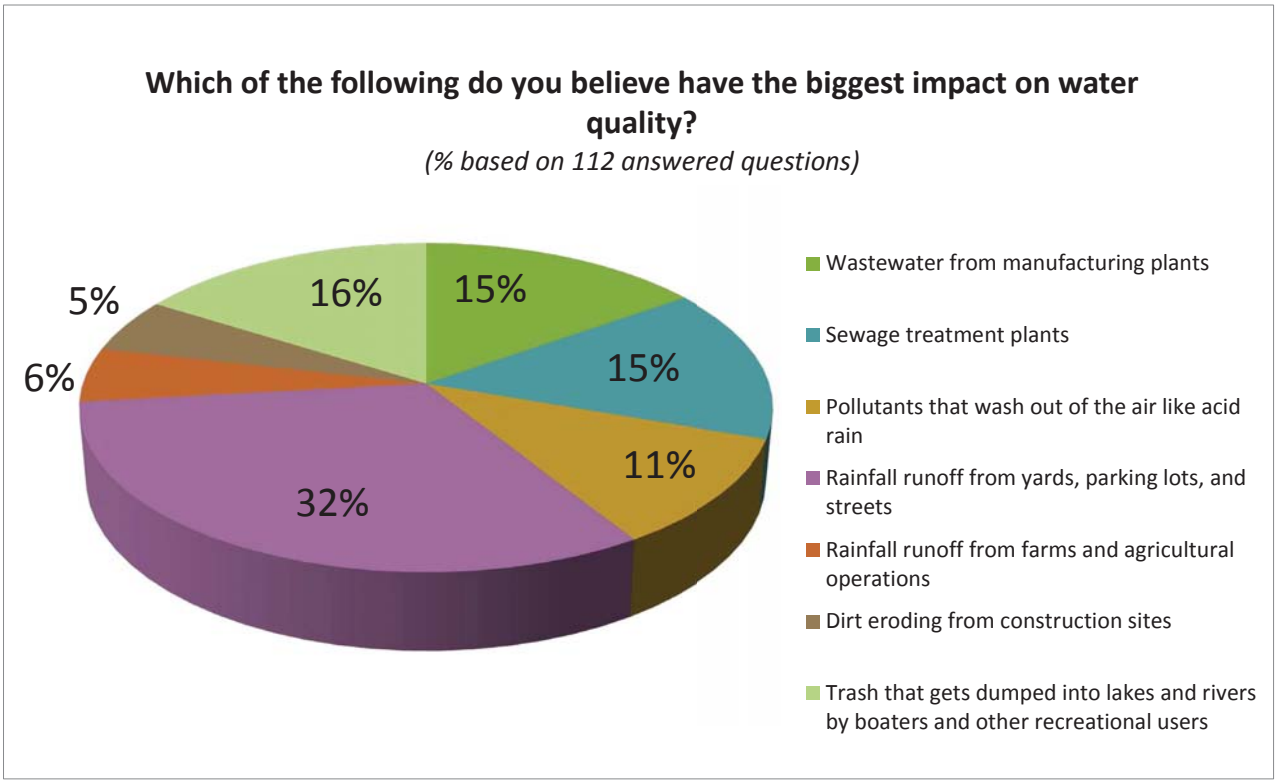
Answer Options		Response Percent	Response Count
Poor	Poor	12.3%	14
Fair	Fair	47.4%	54
Good	Good	36.0%	41
Excellent	Excellent	4.4%	5
	answered question		114



Test your Stormwater IQ

Which of the following do you believe have the biggest impact on water quality?

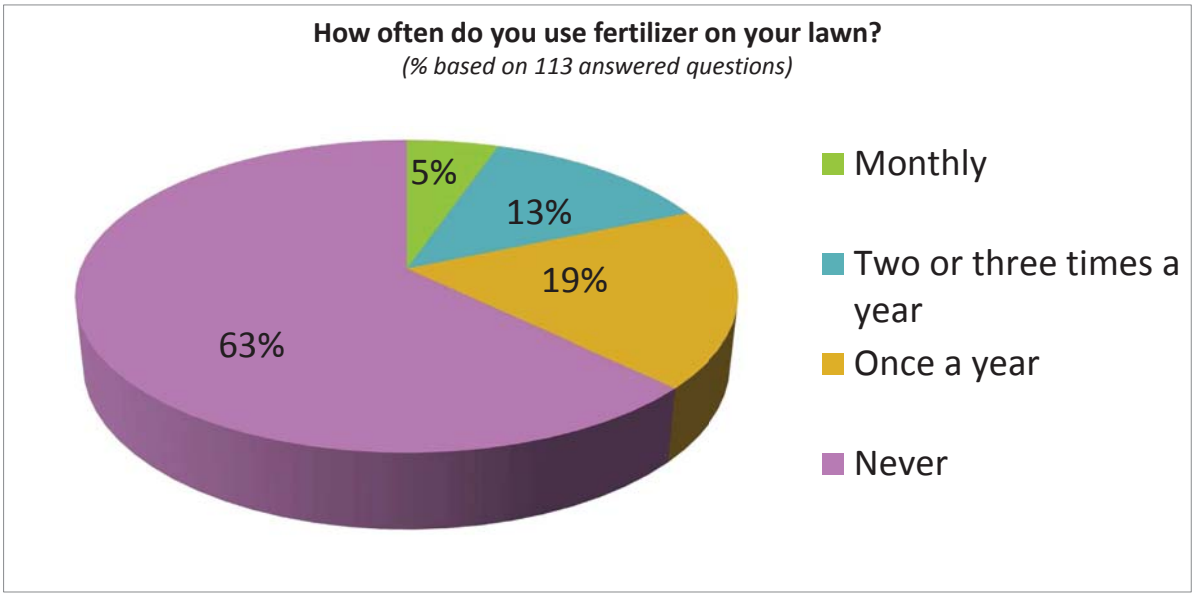
Answer Options	Response Percent	Response Count
Wastewater from manufacturing plants	15.2%	17
Sewage treatment plants	15.2%	17
Pollutants that wash out of the air like acid rain	10.7%	12
Rainfall runoff from yards, parking lots, and streets	32.1%	36
Rainfall runoff from farms and agricultural operations	5.4%	6
Dirt eroding from construction sites	5.4%	6
and other recreational users	16.1%	18
answered question		112



Test your Stormwater IQ

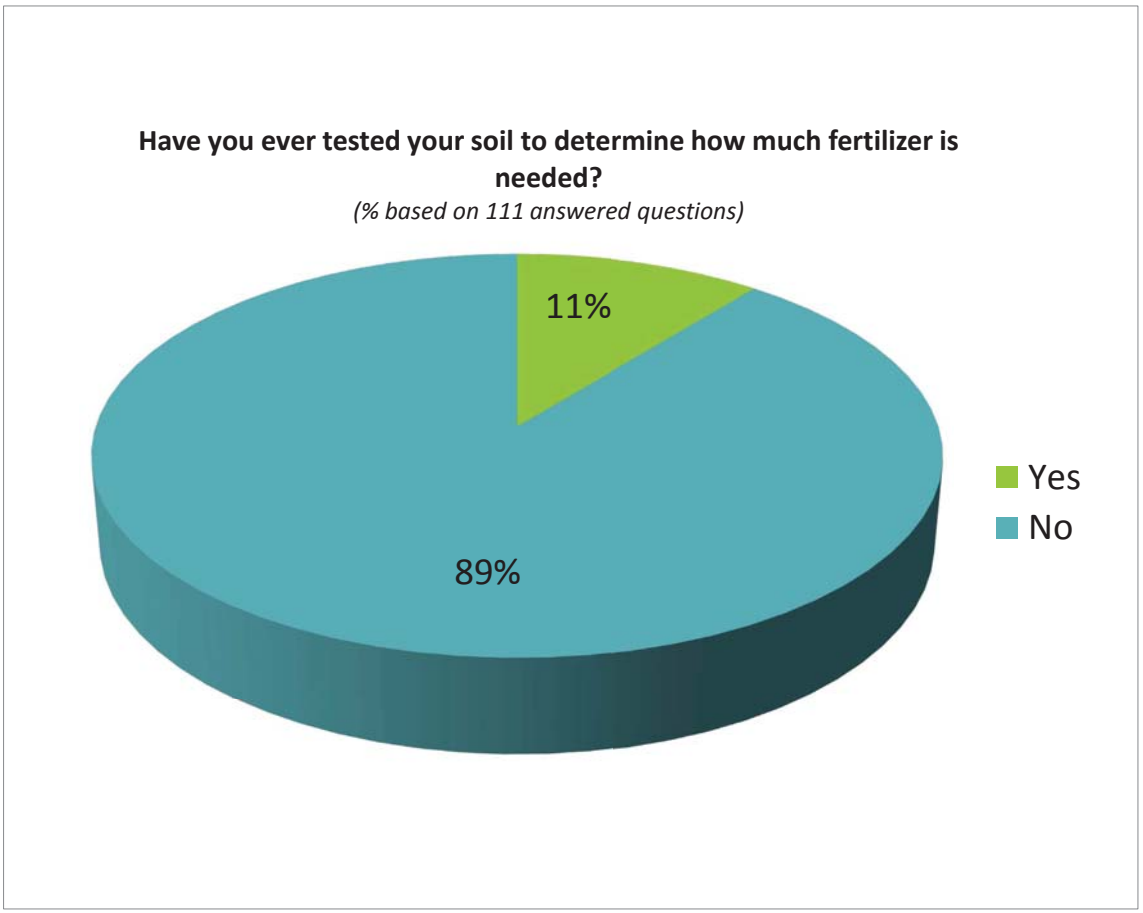
How often do you use fertilizer on your lawn?

Answer Options	Response Percent	Response Count
Monthly	5.3%	6
Two or three times a year	13.3%	15
Once a year	18.6%	21
Never	62.8%	71
	answered question	113
	100.0%	



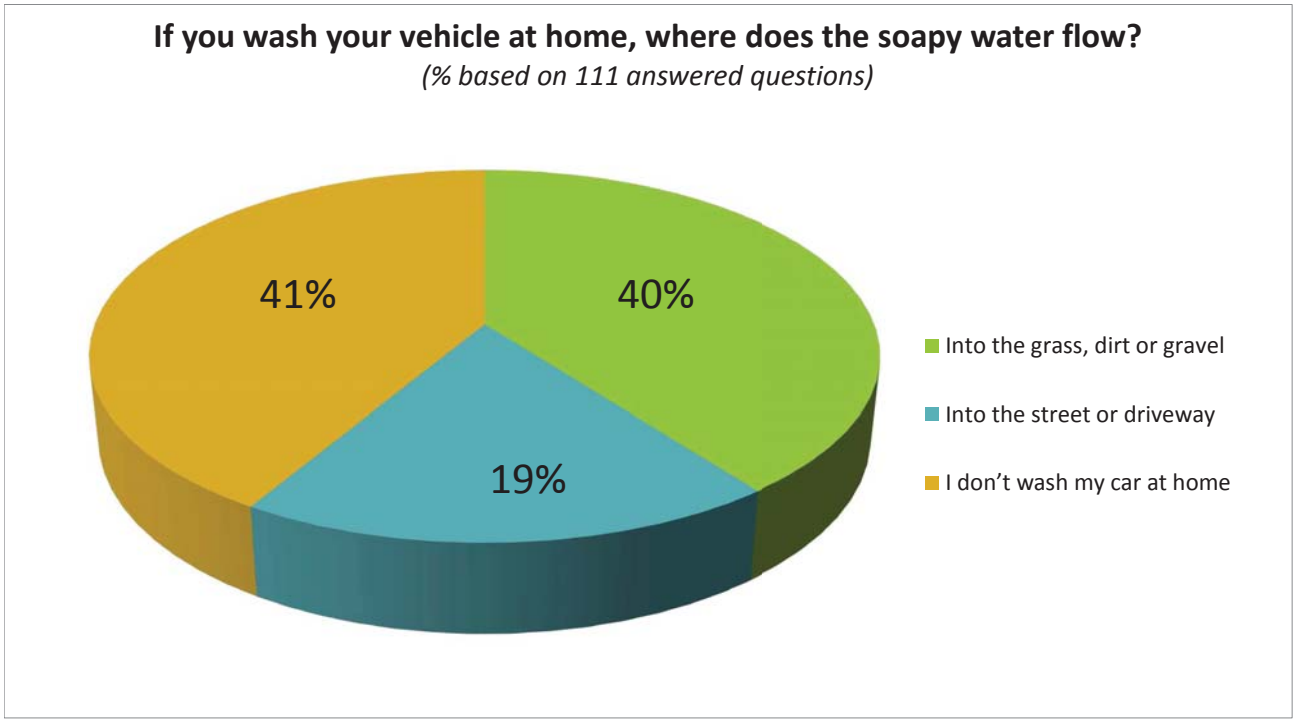
Test your Stormwater IQ

Have you ever tested your soil to determine how much fertilizer is needed?		
Answer Options	**Response Percent**	**Response Count**
Yes	10.8%	12
No	89.2%	99
	answered question	**111**
	100.0%	



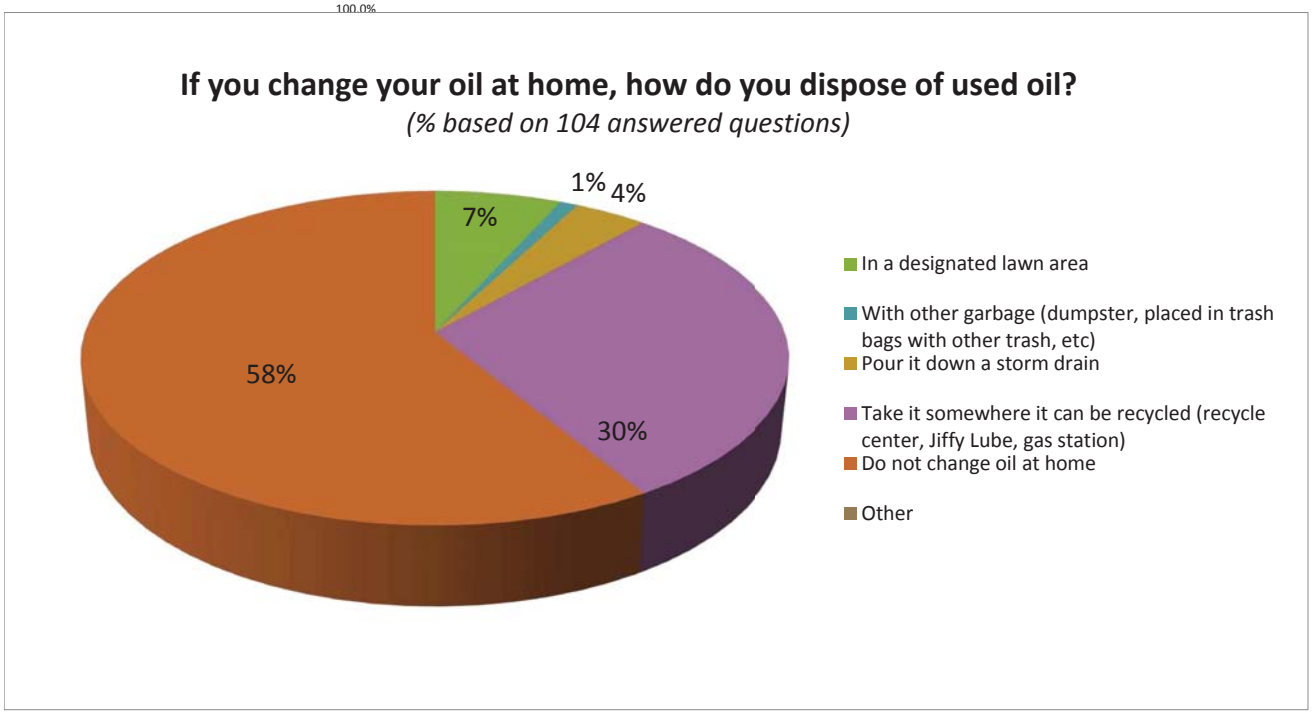
Test your Stormwater IQ

If you wash your vehicle at home, where does the soapy water flow?		
Answer Options	**Response Percent**	**Response Count**
Into the grass, dirt or gravel	39.6%	44
Into the street or driveway	18.9%	21
I don't wash my car at home	41.4%	46
	answered question	111



Test your Stormwater IQ

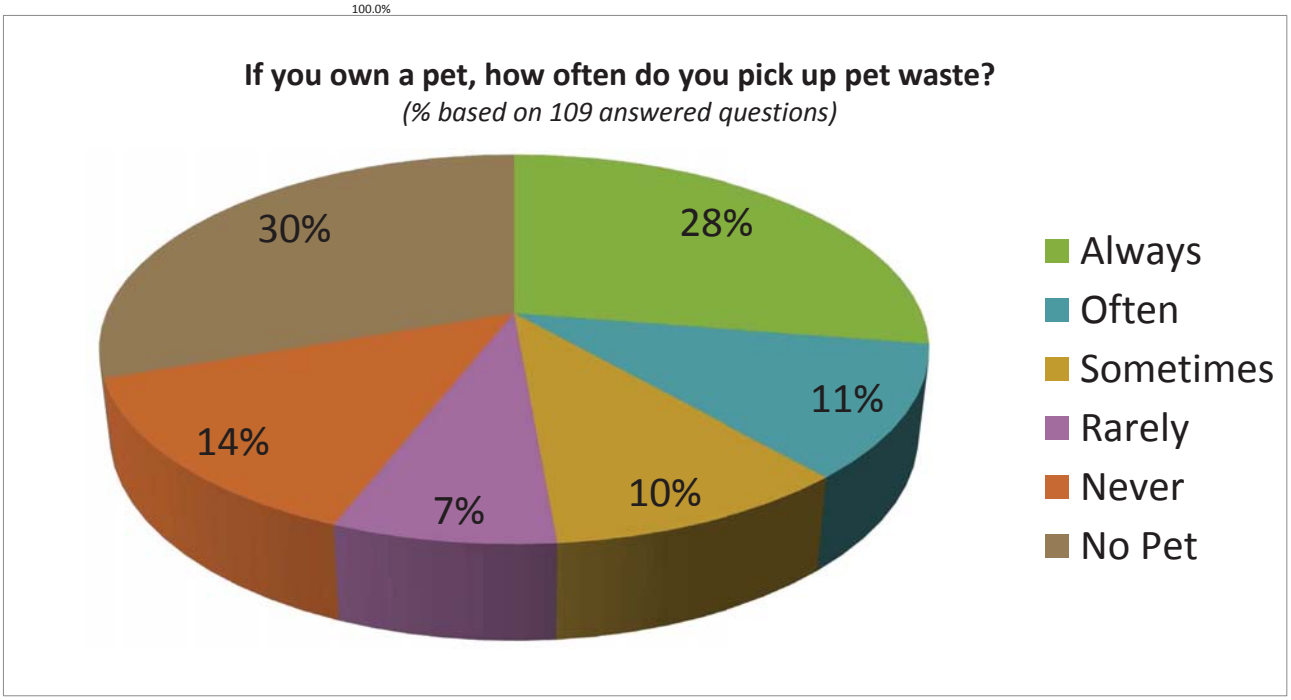
If you change your oil at home, how do you dispose of used oil?			
Answer Options		**Response Percent**	**Response Count**
In a	In a designated lawn area	6.7%	7
With other	With other garbage (dumpster,	1.0%	1
Pour it	Pour it down a storm drain	3.8%	4
Take it	Take it somewhere it can be	29.8%	31
Do not	Do not change oil at home	58.7%	61
		answered question	**104**
		100.0%	



Test your Stormwater IQ

If you own a pet, how often do you pick up pet waste?

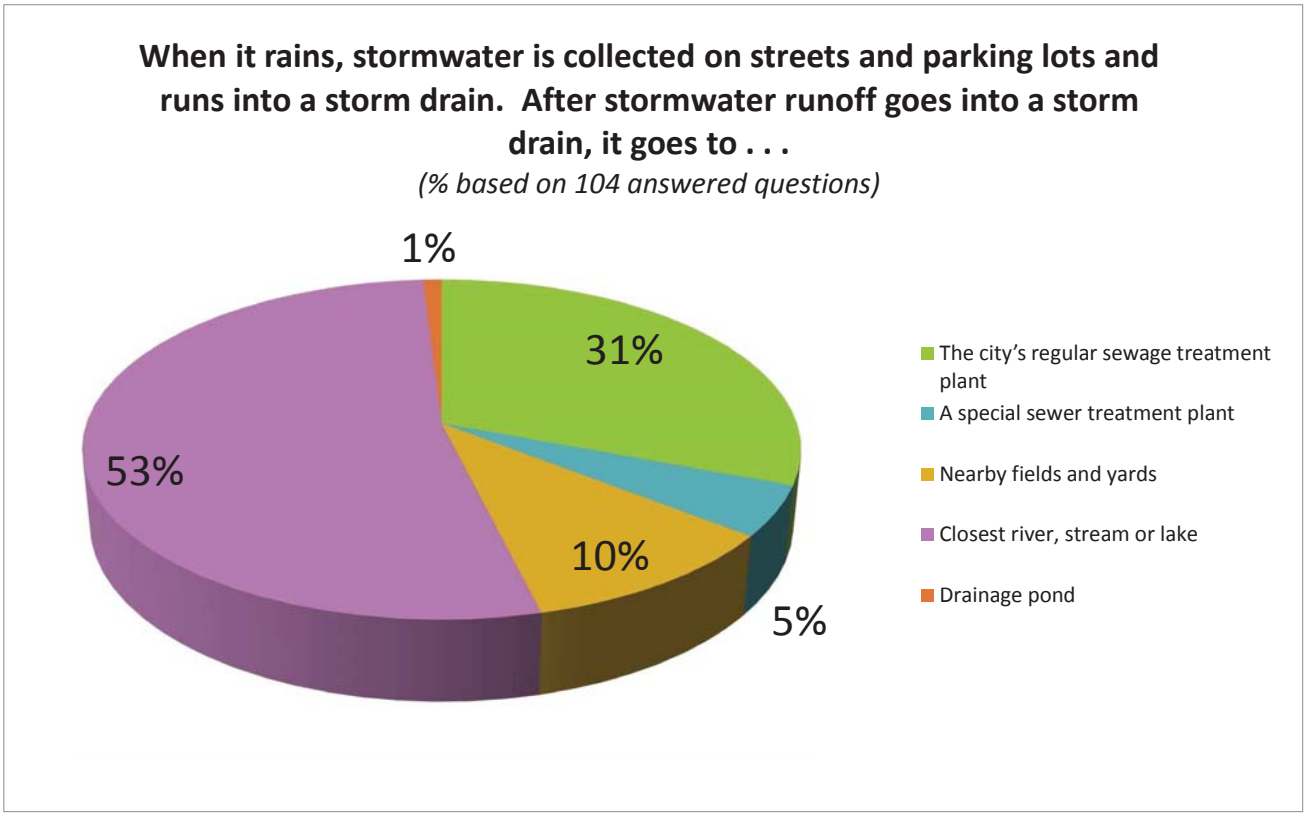
Answer Options		Response Percent	Archdale
Always	Always	27.5%	30
Often	Often	11.0%	12
Sometimes	Sometimes	10.1%	11
Rarely	Rarely	7.3%	8
Never	Never	13.8%	15
No Pet	No Pet	30.3%	33
		answered question	109
		100.0%	



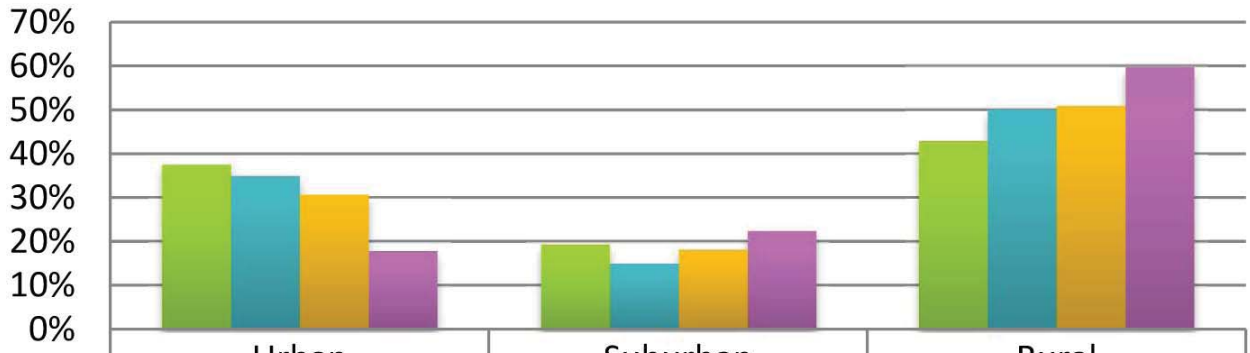
Test your Stormwater IQ

When it rains, stormwater is collected on streets and parking lots and runs into a storm drain. After stormwater runoff goes into a storm drain, it goes

Answer Options	Response Percent	Response Count
The city's regular sewage treatment plant	30.8%	32
A special sewer treatment plant	4.8%	5
Nearby fields and yards	10.6%	11
Closest river, stream or lake	52.9%	55
Drainage pond	1.0%	1
answered question		104

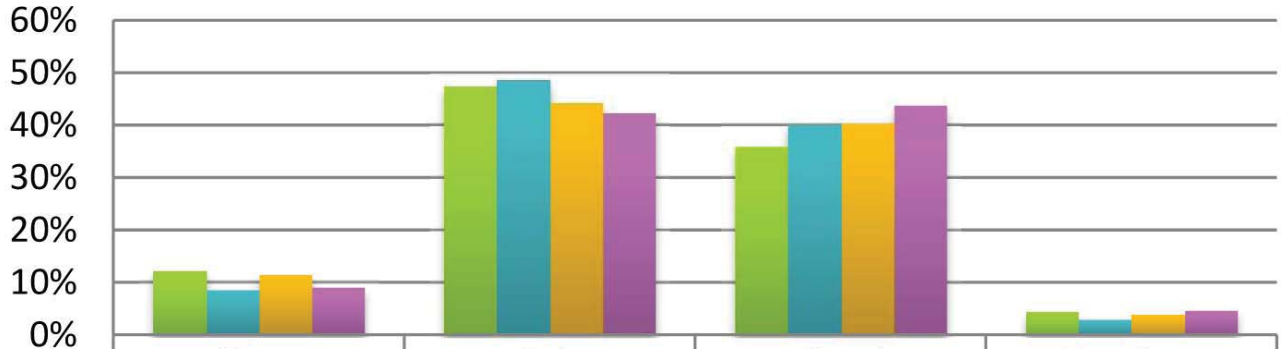


Residential landscape



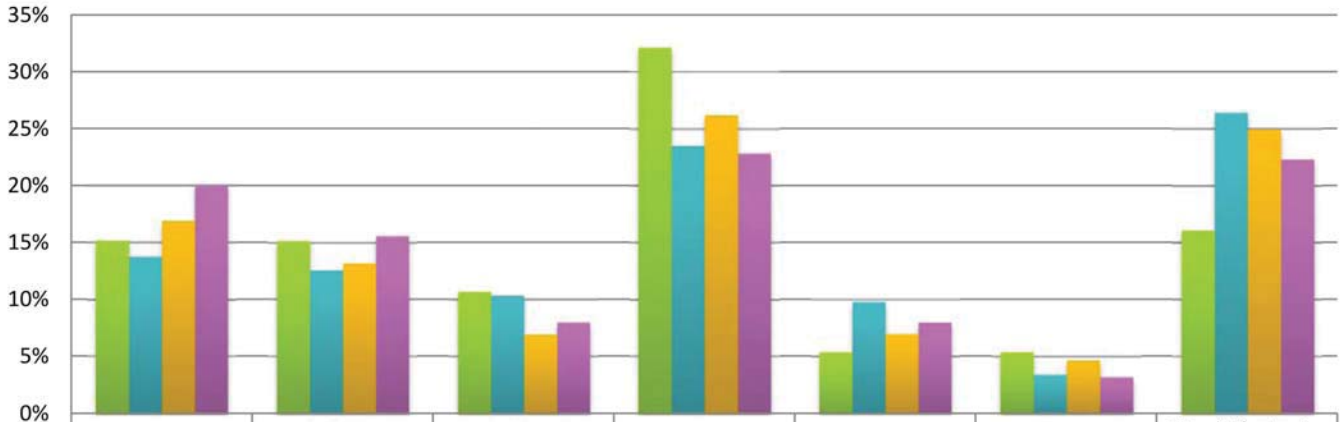
	Urban	Suburban	Rural
2013-2014	38%	19%	43%
2012-2013	35%	15%	50%
2011-2012	31%	18%	51%
2010-2011	18%	22%	60%

Overall water quality



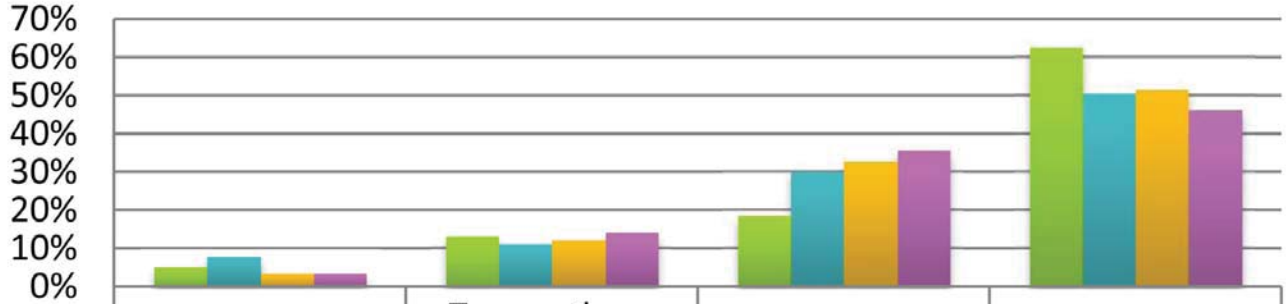
	Poor	Fair	Good	Excellent
2013-2014	12%	47%	36%	4%
2012-2013	8%	49%	40%	3%
2011-2012	12%	44%	40%	4%
2010-2011	9%	42%	44%	5%

Biggest impact on water quality



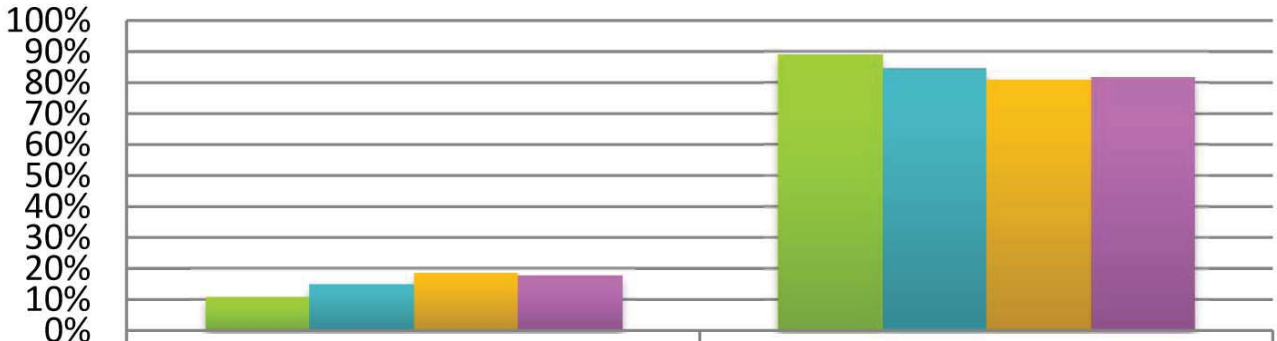
	Wastewater from manufacturing plants	Sewage treatment plants	Pollutants that wash out of the air like acid rain	Rainfall runoff from yards, parking lots, and streets	Rainfall runoff from farms and agricultural operations	Dirt eroding from construction sites	Trash that gets dumped into lakes and rivers by boaters and other recreational users
2013-2014	15%	15%	11%	32%	5%	5%	16%
2012-2013	14%	13%	10%	24%	10%	3%	26%
2011-2012	17%	13%	7%	26%	7%	5%	25%
2010-2011	20%	16%	8%	23%	8%	3%	22%

Fertilizer use



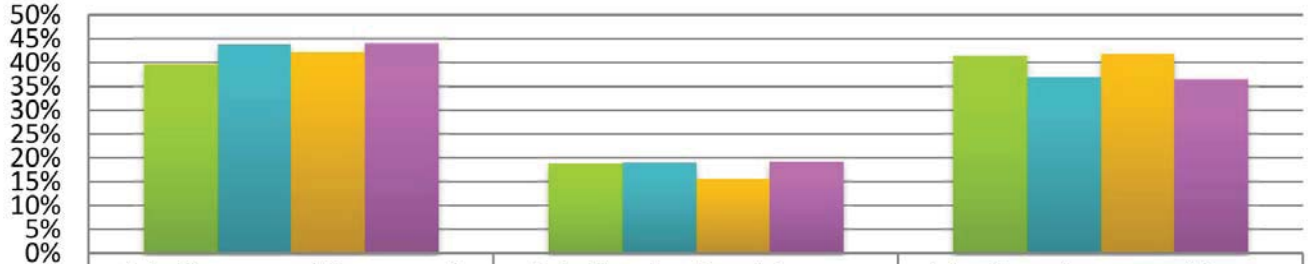
	Monthly	Two or three times a year	Once a year	Never
2013-2014	5%	13%	19%	63%
2012-2013	8%	11%	30%	51%
2011-2012	3%	12%	33%	52%
2010-2011	4%	14%	36%	46%

Soil testing



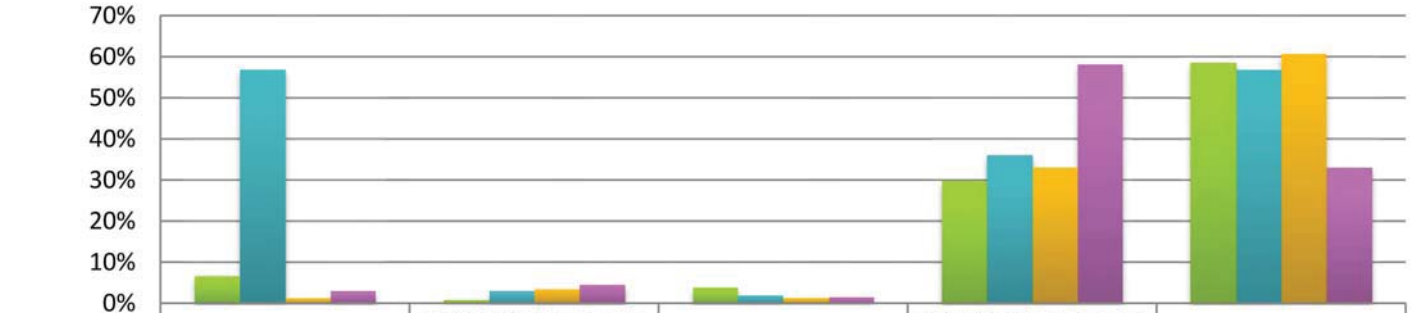
	Yes	No
2013-2014	11%	89%
2012-2013	15%	85%
2011-2012	19%	81%
2010-2011	18%	82%

Car washing



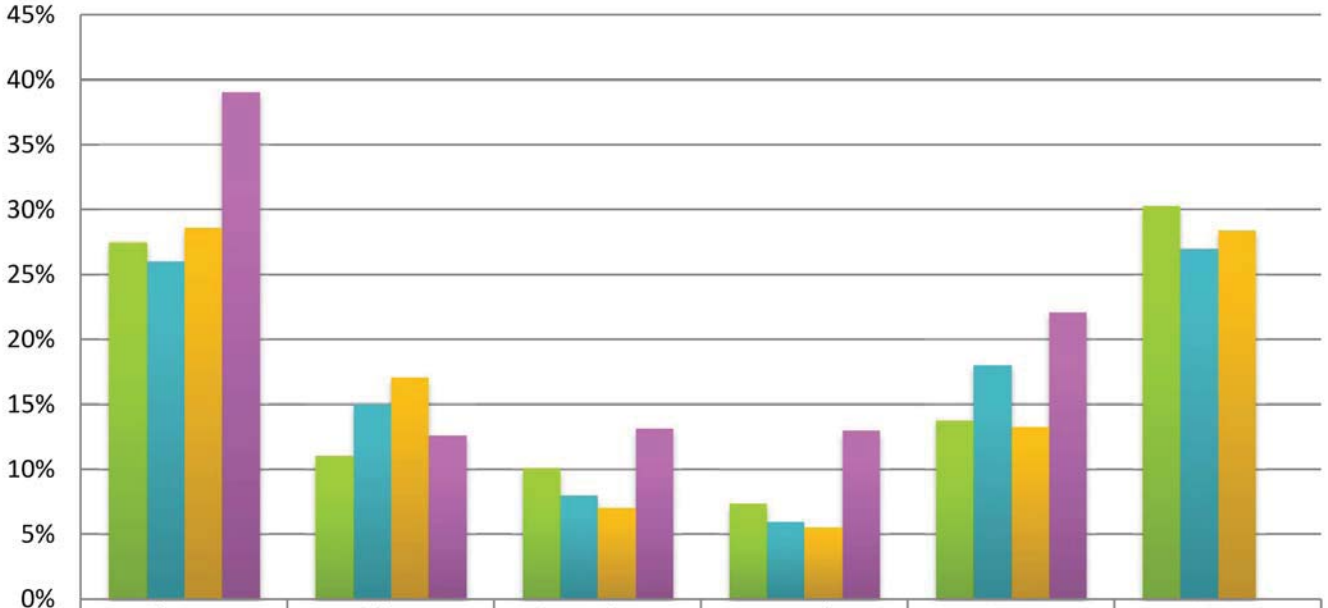
	Into the grass, dirt or gravel	Into the street or driveway	I don't wash my car at home
2013-2014	40%	19%	41%
2012-2013	44%	19%	37%
2011-2012	42%	16%	42%
2010-2011	44%	19%	37%

Motor Oil Disposal



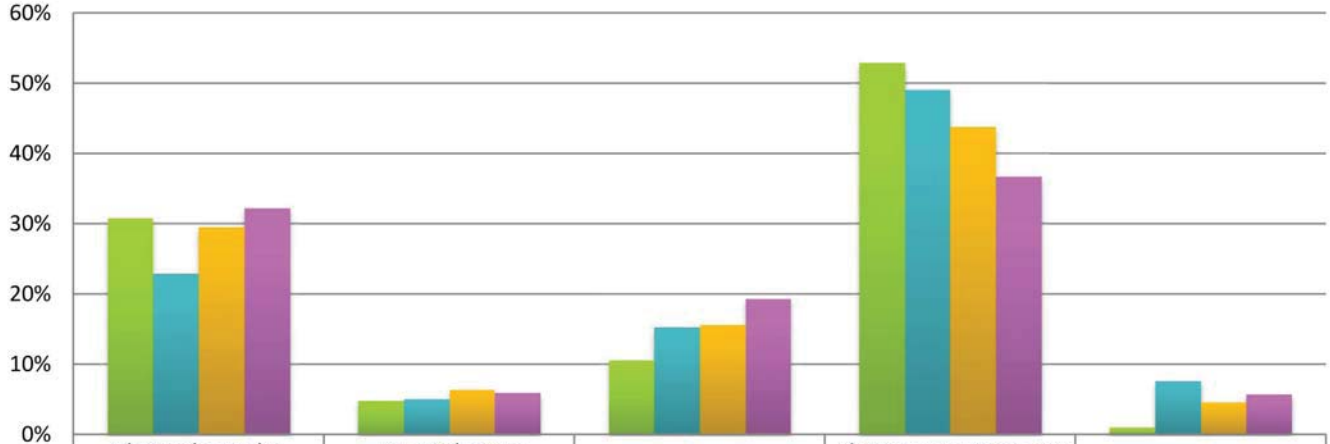
	In a designated lawn area	With other garbage (dumpster, placed in trash bags with other trash, etc)	Pour it down a storm drain	Take it somewhere it can be recycled (recycle center, Jiffy Lube, gas station)	Do not change oil at home
2013-2014	7%	1%	4%	30%	59%
2012-2013	57%	3%	2%	36%	57%
2011-2012	1%	4%	1%	33%	61%
2010-2011	3%	5%	1%	58%	33%

Pet waste



	Always	Often	Sometimes	Rarely	Never	No Pet
2013-2014	28%	11%	10%	7%	14%	30%
2012-2013	26%	15%	8%	6%	18%	27%
2011-2012	29%	17%	7%	6%	13%	28%
2010-2011	39%	13%	13%	13%	22%	

Stormwater runoff



	The city's regular sewage treatment plant	A special sewer treatment plant	Nearby fields and yards	Closest river, stream or lake	Drainage pond
2013-2014	31%	5%	11%	53%	1%
2012-2013	23%	5%	15%	49%	8%
2011-2012	29%	6%	16%	44%	5%
2010-2011	32%	6%	19%	37%	6%