

Roanoke County

Stormwater Runoff– Why It Matters



WHAT IS STORMWATER RUNOFF?

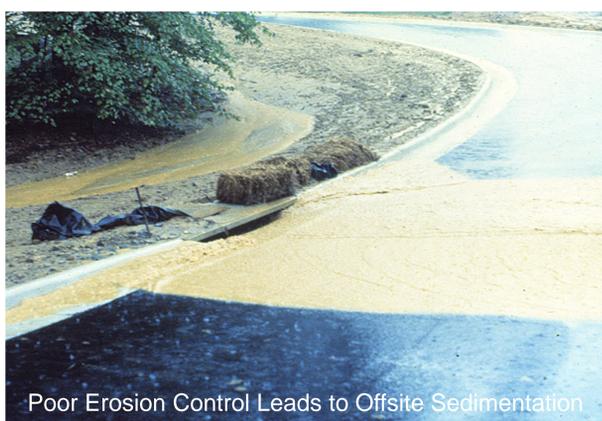
Stormwater *runoff* is the **excess runoff water** from rainfall or snowmelt that travels over the land instead of seeping into it. Stormwater runoff travels over lawns, building rooftops, roads, and parking lots and generally finds its way into a ditch, pipe, or other conveyance before it is discharged, **UNTREATED**, into the nearest receiving waterway. Along its travels, stormwater runoff picks up many substances that pollute nearby creeks, streams, lakes, and rivers, such as:

- Lawn Fertilizers, Herbicides, and Pesticides
- Oils, Grease, and Soap
- Trash, Litter, and Debris
- Leaves, Limbs, and Grass Clippings
- Pet Waste



Some stormwater does infiltrate into the soil, where it naturally filters the runoff and helps to replenish underground aquifers and feed receiving streams and other water bodies. But, as more natural areas become developed, more impervious cover is created with the addition of rooftops, roads, sidewalks, and parking lots. Such impervious cover reduces the soil's ability to absorb stormwater, which causes an **increase in the volume and velocity of stormwater runoff**. This results in:

- Downstream Flooding
- Stream Bank Erosion and Stream Bed Undercutting
- Contaminated Streams
 - Increased sedimentation (turbidity) – smothers fish eggs and tiny critters
 - Overgrowth of algae from too many fertilizers – depletes much-needed oxygen in the water column
 - Loss of habitat for aquatic life – results in species loss
- Damage to infrastructure (roads, drainage systems, etc.)
- Pollution of Water Supply Systems



HOW DO WE MANAGE STORMWATER RUNOFF?

Federal and State regulations require localities to reduce stormwater pollution. These laws require localities, including Roanoke County, to do six things, at a minimum:

1. Conduct public outreach and education about polluted stormwater runoff and ways to reduce it
2. Provide opportunities for residents to be involved with activities related to reducing polluted stormwater runoff
3. Detect and eliminate illicit discharges to the drainage system (i.e., dumping or straight connections via pipe)
4. Control runoff from construction sites
5. Control runoff after construction in new and existing developments
6. Employ Pollution Prevention/Good Housekeeping techniques at County facilities to prevent polluted runoff from entering the drainage system

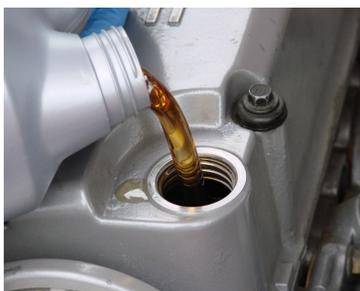
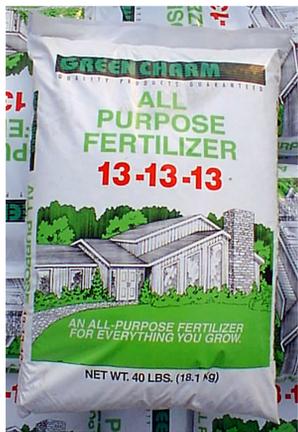
How Can Roanoke County Residents Protect and Improve Water Quality?



Just as the rain falls on everyone, everyone needs to do their part to protect and improve the water quality of our streams.

It's Easy . . .

- Maintain good vegetative cover on your property.
- Use a mulching mower.
- Do not place grass clippings in ditches or by streams or storm drains.
- Limit the use of fertilizers and apply them only in the fall.
- Maintain "No Mow" Buffers around streams.
- Keep trash cans covered.
- Pick up after your pet and properly dispose of waste.
- Have your septic tank regularly pumped out.
- Ensure that only stormwater goes into storm drains and ditches.
- Recycle used motor oil.
- Wash your car in the grass or use a commercial car wash.
- Promptly report sewer overflows to the Western Virginia Water Authority.
- Promptly report illicit (non-stormwater) discharges to Roanoke County, Department of Community Development.



Roanoke County

Stormwater-Related Acronyms



STORMWATER-RELATED ACRONYMS

BOS	Roanoke County Board of Supervisors
BMP	Best Management Practice
CGP	Construction General Permit
CD	Roanoke County Community Development
CWA	Federal Clean Water Act
DCR	Virginia Department of Conservation and Recreation
DEQ	Virginia Department of Environmental Quality
EPA	United States Environmental Protection Agency
ESC	Erosion and Sediment Control
IDDE	Illicit Discharge Detection and Elimination
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollution Discharge Elimination System
PC	Roanoke County Planning Commission
SWAC	Roanoke County Stormwater Advisory Committee
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
VESCH	Virginia Erosion and Sediment Control Handbook
VSMH	Virginia Stormwater Management Handbook
VSMP	Virginia Stormwater Management Program
WLA	Waste Load Allocation

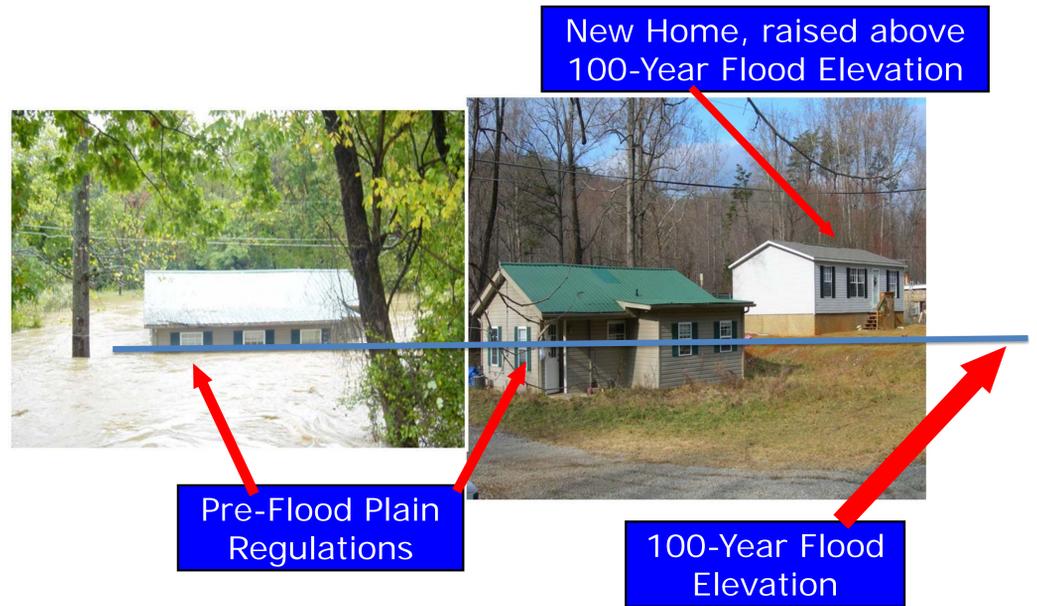
Roanoke County Stormwater Programs



ROANOKE COUNTY STRIVES TO PROVIDE COST EFFECTIVE SERVICES THAT ARE RESPONSIVE TO OUR CITIZENS. THE COUNTY CURRENTLY IMPLEMENTS THE FOLLOWING PROGRAMS:

▪ FLOODPLAIN MANAGEMENT

- Serves as the Floodplain Manager in support of the FEMA Flood Insurance Program
- Participates in the FEMA Community Rating System, which lowers flood insurance rates approximately 10%
- Manages development in the floodplain to avoid inappropriate construction in flood prone areas



▪ STORM DRAINAGE MAINTENANCE

- Maintains all County-owned drainage infrastructure (over 200 miles of pipes and channels)
- Maintenance is currently reactive to reported problems
- Current two 3-person crews strive to meet Citizen maintenance/repair demands.



▪ EROSION AND SEDIMENT CONTROL

- County administers state-mandated program to control and minimize erosion and sediment from ongoing construction activities
- All land-disturbing (construction) activities that disturb 2,500 square feet or more are regulated
- County reviews construction plans and inspects construction activities for compliance



▪ STORMWATER MANAGEMENT

- County administers state-mandated program
- Land-disturbing (construction) activities are regulated to minimize adverse impacts from development
- County reviews construction plans and inspects construction activities for compliance
- After completion of construction, the County periodically inspects public and private stormwater management (SWM) facilities (ponds) for proper operation in perpetuity



Roanoke County's MS4 Permit Requirements



ROANOKE COUNTY HAS A GENERAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT ISSUED BY THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) AS REQUIRED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY IN RESPONSE TO THE CLEAN WATER ACT.

PERMIT COMPLIANCE IS INCREASING STORMWATER PROGRAM COSTS FOR LOCALITIES ACROSS THE STATE AND COUNTRY. BASIC PERMIT REQUIREMENTS INCLUDE:

▪ ADDRESSING IDENTIFIED STREAM IMPAIRMENTS

- Roanoke County has 13 stream impairments identified by DEQ. The primary impairments are for sediment and e-coli (bacteria)
- The County must develop and implement plans to address and remove the impairments. This requirement may result in the County being required to regulate new development beyond the minimum state requirements; and to mitigate existing development by ordinances and construction of new stormwater treatment facilities



▪ PUBLIC EDUCATION AND OUTREACH

- Identify 3 high priority water quality issues and identify and quantify target audiences
- Through an effective public education program, reach 20%/yr. of our target audiences
- Program includes school programs, website, social media, newsletters, billboards, television, and direct mailing



▪ PUBLIC INVOLVEMENT AND PARTICIPATION

- Participate in local activities aimed at increasing public participation, such as Fall Waterways Cleanup and Earth Summit

"Tell me and I forget, teach me and I may remember, involve me and I learn."
Benjamin Franklin



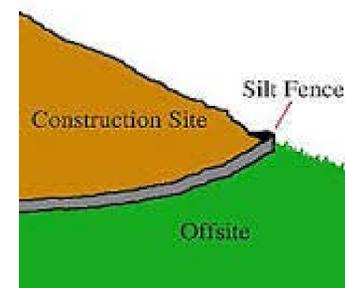
▪ ILLICIT DISCHARGE DETECTION AND ELIMINATION

- Maintain a storm sewer map and information table
- Prohibit non-stormwater discharges to the storm sewer system
- Periodically inspect outfalls for evidence of illicit discharges
- Investigate and take actions to eliminate illicit discharges



▪ CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

- Administer state-compliant local Erosion and Sediment Control Program



▪ POST CONSTRUCTION STORMWATER MANAGEMENT

- Administer state-compliant local Stormwater Management Program
- Ensure proper operation of stormwater management facilities (ponds) in perpetuity through maintenance agreements, periodic inspections, and enforcement

▪ POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

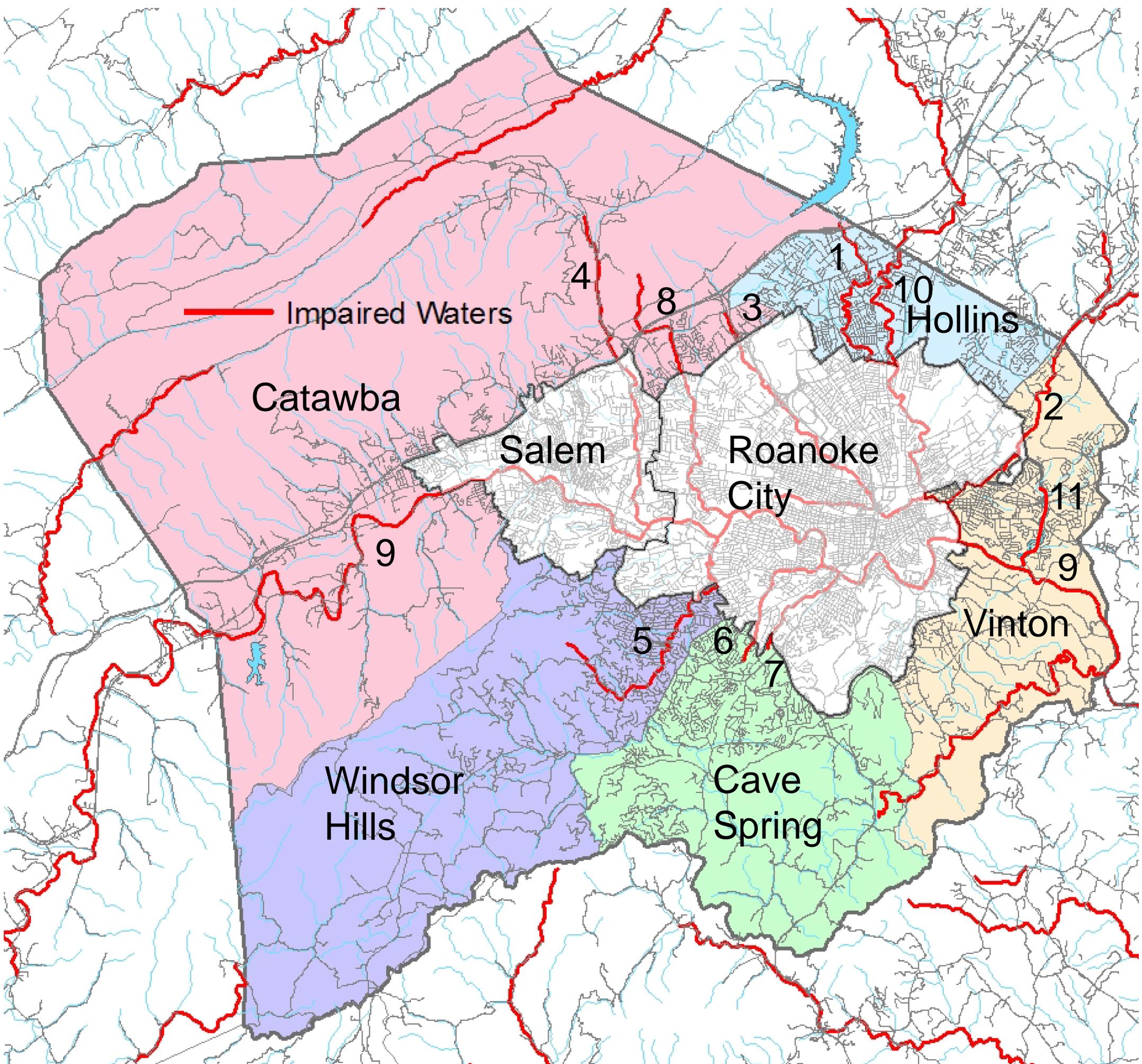
- Ensure that County daily activities minimize or prevent pollutants through written procedures to prevent illicit discharges, ensure proper disposal of wastes, prevent discharge of vehicle or equipment washwater, and minimize pollutants from bulk storage areas
- Provide employee training



Roanoke County's Impaired Streams



Impaired streams in Roanoke County's MS4 area are: 1 Carvin Creek, 2 Glade Creek, 3 Lick Run, 4 Mason Creek, 5 Mudlick Creek, 6 Murray Run, 7 Ore Branch, 8 Peters Creek, 9 Roanoke River, 10 Tinker Creek, and 11 Wolf Creek



Roanoke County Stormwater Advisory Committee



COMMITTEE MEMBERS:

Twenty-one members were appointed by the Board of Supervisors and included representatives of key stakeholders from across a broad spectrum of community interests.

COMMITTEE OBJECTIVES:

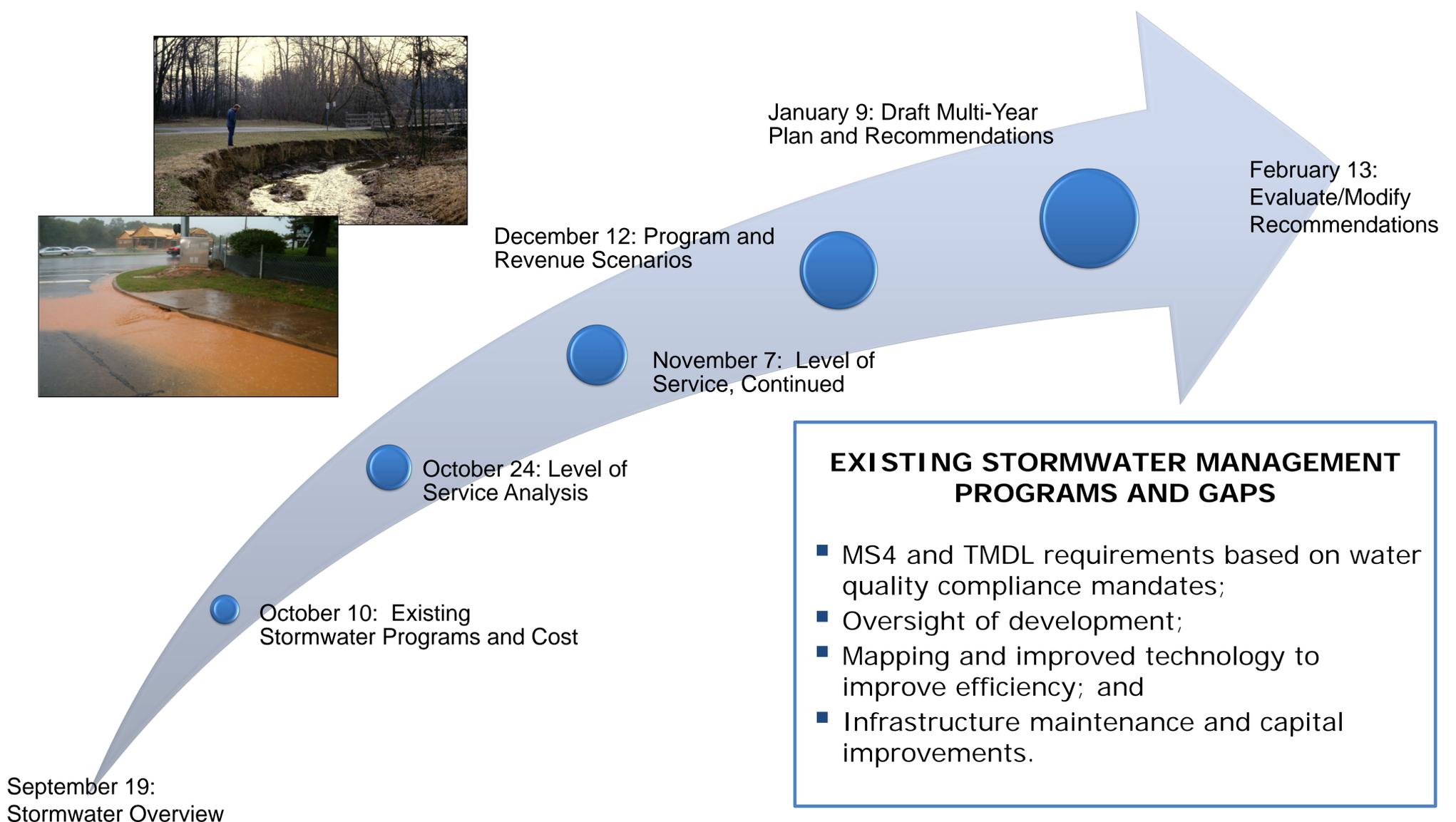
The objective of the advisory committee was to make recommendations on the following:

- Stormwater management priorities;
- Appropriate and affordable level of service;
- Level of interest in public participation in stormwater management program activities;
- Preliminary stormwater management needs assessments;
- Preliminary regulations and policies; and,
- Preliminary financial requirements and funding mechanisms

PRIMARY DRIVERS:

The committee agreed upon three primary drivers for evaluating the County and Town's stormwater management program.

- **Regulation** – New MS4 permit (July 2013), revised Virginia Stormwater Management Regulations (July 2014), TMDL Action Plans
- **Infrastructure** – Stormwater project backlog, storm sewer system assessment, equipment replacement, stream maintenance
- **Quality of Life and the Economy** – Balance environmental and stormwater needs with the goal of maintaining a thriving and growing economy



RCSWAC Draft Recommendations and Funding



At a meeting of the Committee on January 9, 2014, the RCSWAC members present were asked to give their preliminary thoughts on the future funding of the stormwater program. The majority of the members agreed on the following key items:

- The County should fund stormwater through a dedicated fund and move it out of the general fund.
- The County should fund stormwater through a utility structure with billing based on impervious surface (either ERU or straight impervious cover) because of equity.
- Impervious data should be clearly defined and defensible.
- Non profits should not be excluded from paying for stormwater.
- The County should establish a credit program to encourage stormwater management measures by property owners.
- The general fund taxes should be decreased if the entire stormwater program is funded through a dedicated fund.

REVENUE STRATEGIES:

General Fund

- Distributes cost primarily based on property value.
- Each penny on the real estate tax generates ~\$780,000.
- Key considerations:
 - Tax-exempt properties do not pay.
 - No relationship between need for program and fees paid.
 - Funds are not legally segregated from other uses.
 - Does not provide credit for on-site stormwater facilities.
 - Less stable – annually competes with other budget items.
 - Least complicated approach.

Service District Fee

- Distributes cost based on property value.
- Same revenue generation as real property tax.
- Key considerations:
 - Tax-exempt properties do not pay.
 - No relationship between program need and fees paid by property owners.
 - Funds are legally segregated from other uses.
 - Does not provide credit for on-site stormwater facilities.
 - Allows for greater program stability.
 - Relatively simple approach – requires establishment of service district by ordinance.

Stormwater Utility Fee

- Distributes cost based on impervious cover.
- Rate structure depends on goals and available impervious surface data.
- Key considerations:
 - Tax-exempt properties do pay.
 - Nexus between program need and fees paid by property owners.
 - Funds are legally segregated from other uses.
 - Does provide credit for on-site stormwater facilities.
 - Allows for greater program stability.
 - More complex – requires ordinance and ability to track changes to impervious areas.

Utility Fee Rate Structure Options

- Flat Rate for Single Family Residential Detached versus All Other Properties
 - Bill in Increments of Equivalent Residential Unit (ERU) for All Other Properties
 - ERU = Median Residential Impervious Area
- Tiered Rate for Residential
 - Flat Rate for Single Family Detached
 - % Flat Rate for Single Family Attached and Condos
 - Bill in Increments of ERU for All Other Properties
- Straight Impervious Cover
 - Example – Bill in Increments of 500 Square Feet
 - Same as City of Roanoke
 - Applies to All Land Uses

IMPERVIOUS AREA EXAMPLES

Typical Single Family Parcel:
Impervious area = 3,000 sq. ft.



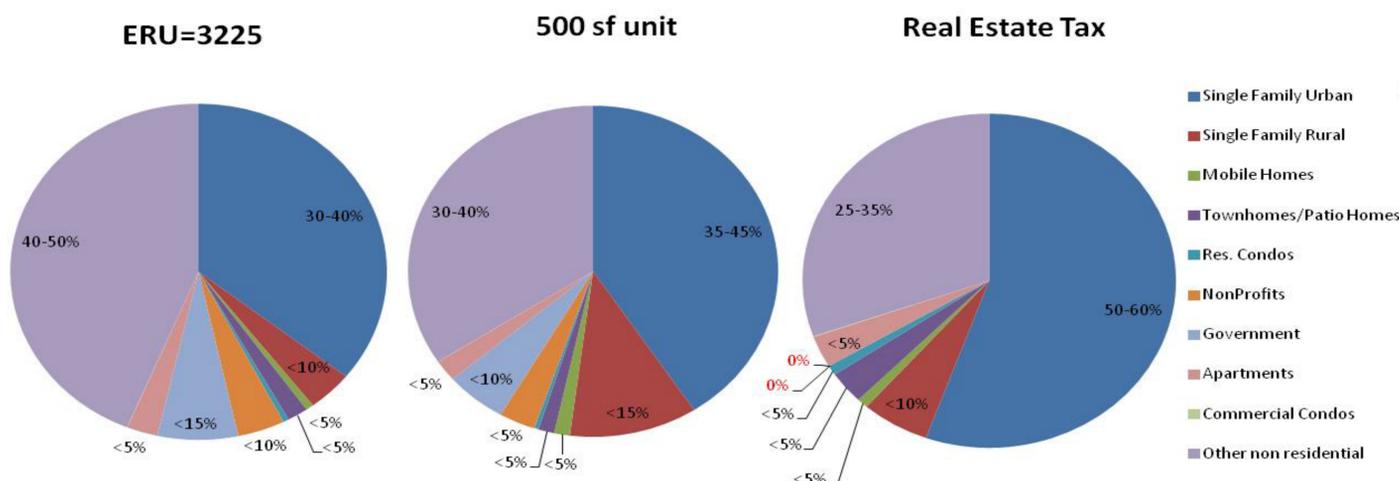
Water Authority Parcel:
Impervious area = 195,000 sq. ft.



Estimated Annual Rates (based on draft program and currently available data)

- New Program Costs Only
 - Year 1: \$15-\$20 per typical home
 - Year 5: \$20-\$25 per typical home
- Total Program Costs
 - Year 1: \$40-\$45 per typical home
 - Year 5: \$45-\$50 per typical home

ESTIMATED DISTRIBUTION AMONG LAND USE SECTORS



Charts based on best available data.

RCSWAC Draft Recommendations and Funding



Current Program Costs

■ Roanoke County - Estimated Cost

- Based on employee time spent on stormwater related tasks and operating expenses related to stormwater (supplies, equipment, materials, etc.).
- There is also a stormwater reserve fund for unanticipated expenses - \$200,000/year.

	Administration	Development Services	MS4 and TMDLs	Infrastructure Maintenance & Improvements	Total
Personnel	\$87,090	\$511,428	\$212,964	\$515,860	\$1,327,342
Operating		\$146,380	\$2,750	\$264,569	\$413,699
Total	\$87,090	\$657,808	\$215,714	\$780,429	\$1,741,041

Preliminary recommendations for the stormwater program for Roanoke County were discussed with the Advisory Committee and produced the following plan for potential investment over the next 5 years:

REVISED DRAFT FIVE-YEAR PROGRAM – ADDITIONAL COSTS

Program Area – Additional Costs*	Year 1	Year 2	Year 3	Year 4	Year 5
Storm Sewer System Maintenance	250,000	350,000	500,000	500,000	500,000
Information Technology	70,000	70,000	70,000	70,000	70,000
Equipment Replacement	120,000	120,000	120,000	120,000	120,000
Project Backlog	250,000	250,000	500,000	500,000	500,000
Public Education and Outreach	21,250	21,250	21,250	21,250	21,250
TMDL Action Plans	140,000	200,000	250,000	300,000	350,000
Maintenance of Streams	50,000	50,000	100,000	150,000	150,000
BMP Inspections, Maintenance and Enforcement	115,000	175,000	235,000	202,500	202,500
Illicit Discharges	-	-	-	-	-
VSMP Construction Permit Administration/Inspections	-	-	-	-	-
Stormwater Pollution Prevention Plans	14,000	14,000	7,000	5,000	5,000
Staff Training/Nutrient Management Plans	13,500	13,500	10,000	16,500	13,000
Total Draft Program – Additional Costs	1,043,750	1,263,750	1,813,250	1,885,250	1,931,750
Current Program Costs	1,741,041	1,741,041	1,741,041	1,741,041	1,741,041
Total Draft Program	2,784,791	3,004,791	3,554,291	3,626,291	3,672,791

* Does not account for inflation

Additional Services Provided for:

- Compliance with new MS4 requirements for Staff Training, Nutrient Management Planning, Stormwater Pollution Prevention Plans, Public Education and Outreach
- Systematic assessment and storm sewer maintenance to address problems proactively
- Additional storm drainage crews to address the \$3.5 million in stormwater project backlog
- GIS position in Community Development to provide storm system mapping and analysis
- Amortization of equipment for replacement over 10-year period
- Preparation and implementation of required TMDL action plans
- Preparation of watershed study to evaluate and prioritize stream maintenance problems
- Additional BMP inspector and support for County attorney to address stormwater facility maintenance issues
- Establishment of a special service district for HOA stormwater facility maintenance (voluntary opt-in for County maintenance)

Public Comments



- **Roanoke County's Stormwater Program Needs and Costs are Increasing due to:**
 - Federal and State Regulatory requirements
 - Maintenance and Repair needs of existing Stormwater infrastructure (pipes and channels)
 - Continuing development

- The **Board of Supervisors (BOS)** created a **Stormwater Advisory Committee**, consisting of 21 persons representing a broad spectrum of County stakeholders. The committee was formed to evaluate the County's Stormwater Programs and needs and to develop recommendations, for the BOS's consideration, on the levels of service required by regulation, or desired by Citizens, and levels and sources of funding.

- The Stormwater Advisory Committee's draft recommendations are presented at this public meeting.

- The **last scheduled meeting of the Stormwater Advisory Committee** will be held on **February 13th, at the Glenvar Library, from 6:00 to 8:00**, for the purpose of **finalizing recommendations to the BOS**. **The public is welcome to attend and observe the meeting.** After this meeting, the committee's recommendations will be presented to the Board of Supervisors in a regularly scheduled meeting.

- **This is your opportunity to provide comment on the Stormwater Advisory Committee's draft recommendations.** These comments will be shared with the committee during their February 13th meeting, and will become part of their records.

- **You may provide comments by:**
 - Completing a comment form and leaving it at this station, or
 - Visiting the Roanoke County Homepage (www.roanokecountyva.gov), clicking the Stormwater Advisory Committee button on the lower right side of the page, and leaving your comment on the online comment form before 10:00 a.m. on February 13th.

- **If you have further questions, you may:**
 - Visit the Stormwater Advisory Committee website by going to www.roanokecountyva.gov and clicking the Stormwater Advisory Committee button on the lower right side of the page, or
 - E-mail to stormwater@roanokecountyva.gov, or
 - Contact David Henderson, County Engineer, at (540) 772 – 2083.