Roanoke County
Draft Five-Year Stormwater Management Program
December 12, 2013

The purpose of this paper is to present a draft proposed Five-Year Stormwater Management Program for discussion by the Stormwater Advisory Committee (RCSWAC) at the December 12, 2013 meeting. The draft program is based on stormwater program gaps and needs identified through a review of the County's existing programs, activities, and regulatory commitments. Program gaps were discussed by the RCSWAC at the October 10, 2013 meeting. The next step in the process was to examine these gaps and needs against the goals and priorities identified by the RCSWAC in order to make program recommendations for consideration by the County Board of Supervisors and the Vinton Town Council. To help facilitate this discussion, AMEC and County/Town staff developed "level of service" options for addressing these gaps and needs. The Program Level of Service Options Matrix was discussed by the RCSWAC on October 24, 2013 and November 7, 2013.

In most cases, three levels of service were identified for consideration – basic, medium, and high. The basic level of service is defined as the minimum level of effort required to address a particular gap or need and to meet minimum program expectations such as regulatory compliance. The high level of service represents an aggressive approach and typically represents a greater investment of resources. Ultimately, the RCSWAC's recommendations come down to priorities. Strategically addressing some gaps sooner than others is an inherent part of a resource limited environment.

Note that cost estimates should be considered as preliminary and subject to refinement as the process continues.

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At the RCSWAC meeting on November 7, 2013, committee members participated in an initial prioritization exercise on the level of service options presented for each program gap. Each committee member was given 10 stickers to place on program levels that they felt would best serve the County and Town of Vinton. The results of the exercise are shown in Table 1 below.

Table 1 – Level of Service Prioritization Results

Program Area	*Basic*	*Medium*	*High*	*Total*
Storm Sewer Maintenance	0.5	17.5	2	20
Mapping/GIS	2	15	0	17
Equipment Replacement	5	11	0	16
Stormwater Project Backlog	1	7	7	15
Public Education and Outreach	7	3	3	13
TMDL Action Plans	9	3	0	12
Stream Maintenance	1	10		11
BMP Inspection and Maintenance	0	5	6	11
Illicit Discharge Detection & Elimination	8.5	1.5	1	11
Stormwater Regulations - Construction Inspection	10	0		10
Stormwater Regulations - VSMP Permit Administration	6	1		7
Stormwater Pollution Prevention Plans	4	2	0	6

While the prioritization exercise resulted in considerable agreement on the priority ranking for most levels of service, two areas – **Stormwater Project Backlog** and **BMP Inspection and Maintenance** – resulted in a nearly even split between medium and high approaches. To illustrate the range of potential fiscal impact, AMEC developed two program options. The first option (Table 2) reflects choosing the medium level of service for both Stormwater Project Backlog and BMP Inspection and Maintenance. The second option (Table 3) reflects choosing the high level of service for both areas.

Table 2 – Draft Five-Year Stormwater Management Program – Additional Costs, Option 1 (Medium Options for Stormwater Project Backlog and BMP Inspection and Maintenance)

	PROGRAM NEED	LEVEL OF SERVICE OPTIONS			ANNUAL COST				
		BASIC	MEDIUM	HIGH	Year 1	Year 2	Year 3	Year 4	Year 5
1	**BMP Inspections, Maintenance, and Enforcement** - resources to comply with BMP inspection requirement per MS4 permit and deal with enforcement issues for residential facilities		Budget $120,000/year for County owned BMP maintenance and replacement. Add inspector to perform inspections once every five years with assistance to owners. ($50,000/year) Add time for attorney to enforce on 30 facilities per year. ($65,000/year)		$ 100,000	$ 150,000	$ 235,000	$ 235,000	$ 235,000
2	**Public Education and Outreach** - additional outreach to target audience for MS4 permit compliance	Additional outreach to target audiences ($21,250/year)			$ 21,250	$ 21,250	$ 21,250	$ 21,250	$ 21,250
3	**Illicit Discharges** - additional resources for proactive program	Maintain current program			$ -	$ -	$ -	$ -	$ -
4	**Stormwater Pollution Prevention Plans** - plans must be created for high priority facilities to comply with MS4 permit	Develop SWPPPs for high priority facilities (3-5 County facilities) ~ over 3 year period @ $7,000/each. Develop standard operating procedures with current staff. Conduct biennial training and implementation ~ $5,000/year + staff time.			$ 14,000	$ 14,000	$ 7,000	$ 5,000	$ 5,000
5	Staff Training - training for staff on illicit discharge identification and other water quality issues to comply with MS4 permit	Conduct biennial illicit discharge training (~420 employees every 2 years) Either purchase or prepare short 10 – 15 minute video to use for training. ~$3,500 + staff time			$ 3,500	$ 3,500	$ -	$ 3,500	$ -
6	Nutrient Management Plans - must prepare these plans for County facilities with more than 1 acre of property where fertilizers are applied to comply with MS4 permit.	Hire certified planner (consultant) to develop plans over 3 year period. ($10,000/year). Implement nutrient management plans – train current staff ~ $3,000.			$ 10,000	$ 10,000	$ 10,000	$ 13,000	$ 13,000
7	TMDL Action Plans - must develop plans for 13 waste load allocations by July 2015 to comply with MS4 permit.	Develop TMDL Action Plans ~ $20,000 each for bacteria and sediment TMDLs; assume that PCBs will be deferred; total for plans ~$140,000. Cost per year to implement BMPs is unknown; depends if time constraints are included in TMDL implementation plan.			$ 140,000	$ 200,000	$ 250,000	$ 300,000	$ 350,000

	PROGRAM NEED	LEVEL OF SERVICE OPTIONS			ANNUAL COST				
		BASIC	MEDIUM	HIGH	Year 1	Year 2	Year 3	Year 4	Year 5
8	VSMP Construction Permit Administration/Inspections - The County will be required to administer the state's VSMP construction permit starting in July 2014.	Use existing staff to perform review and processing and inspections. During peak periods, may need to extend plan review time/wait for construction inspections to allow current staff to cover VSMP plan review, permitting and inspections.			$ -	$ -	$ -	$ -	$ -
9	Information Technology - Community Development does not have staff to routinely update stormwater mapping, track inspection and enforcement data, maintain records, and to perform GIS analyses on pollutant loadings and reductions required for DEQ reporting.		Continue to obtain support as available from Communications and Information Technology. Periodically use interns to catch up with routine data entry. Add 1 FTE to allow mapping updates and analyses on a continuing basis.		$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000
10	Equipment Replacement: Much of the County's existing equipment for drainage system maintenance has exceeded its planned life expectancy. The County currently does not amortize the cost to replace this equipment; rather the County must pay the full cost all at once.		Amortize equipment costs for replacement over next 10 years ($120,000/year).		$ 120,000	$ 120,000	$ 120,000	$ 120,000	$ 120,000
11	Project Backlog: The County has a significant backlog of drainage projects that have been identified.		Detail project costs and prioritize – update the County's stormwater drainage plan. Provide two additional storm drain crews, ~ $500,000/year .		$ 250,000	$ 250,000	$ 500,000	$ 500,000	$ 500,000
12	Storm Sewer System Maintenance: System maintenance is currently conducted on a complaint basis rather than systematically planning for the rehabilitation based on age and condition.		Budget 1.0% of system replacement value annually for system assessment and repair/replacement of failing infrastructure ($1,000,000); minus cost overlap with Project Backlog $500,000) = $500,000/yr.		$ 250,000	$ 350,000	$ 500,000	$ 500,000	$ 500,000
13	Maintenance of Streams: The County conducts maintenance as needed of streams within the County right-of-way typically based on complaints.		Develop comprehensive watershed management plan to understand overall stream conditions and identify and prioritize restoration projects Cost depends on level and detail of analysis; can be performed in conjunction with the TMDL action plans. Estimated cost ±$500,000.		$ 50,000	$ 50,000	$100,000	$150,000	$150,000
				TOTAL	**$ 1,028,750**	**$ 1,238,750**	**$ 1,813,250**	**$ 1,917,750**	**$ 1,964,250**

Table 3 – Draft Five-Year Stormwater Management Program – Additional Costs, Option 2 (High Options for Stormwater Project Backlog and BMP Inspection and Maintenance)

	PROGRAM NEED	LEVEL OF SERVICE OPTIONS			ANNUAL COST				
		BASIC	MEDIUM	HIGH	Year 1	Year 2	Year 3	Year 4	Year 5
1	**BMP Inspections, Maintenance, and Enforcement** - resources to comply with BMP inspection requirement per MS4 permit and deal with enforcement issues for residential facilities			County take over maintenance of residential facilities serving more than 1 lot (425 facilities). Add time for attorney to enforce on 5 facilities per year. ($1,500,000/year - phased in over time)	$ 500,000	$ 750,000	$ 1,000,000	$ 1,250,000	$ 1,500,000
2	**Public Education and Outreach** - additional outreach to target audience for MS4 permit compliance	Additional outreach to target audiences ($21,250/year)			$ 21,250	$ 21,250	$ 21,250	$ 21,250	$ 21,250
3	**Illicit Discharges** - additional resources for proactive program	Maintain current program			$ -	$ -	$ -	$ -	$ -
4	**Stormwater Pollution Prevention Plans** - plans must be created for high priority facilities to comply with MS4 permit	Develop SWPPPs for high priority facilities (3-5 County facilities) ~ over 3 year period @ $7,000/each. Develop standard operating procedures with current staff. Conduct biennial training and implementation ~ $5,000/year + staff time.			$ 14,000	$ 14,000	$ 7,000	$ 5,000	$ 5,000
5	**Staff Training** - training for staff on illicit discharge identification and other water quality issues to comply with MS4 permit	Conduct biennial illicit discharge training (~420 employees every 2 years) Either purchase or prepare short 10 – 15 minute video to use for training. ~$3,500 + staff time			$ 3,500	$ 3,500	$ -	$ 3,500	$ -
6	**Nutrient Management Plans** - must prepare these plans for County facilities with more than 1 acre of property where fertilizers are applied to comply with MS4 permit.	Hire certified planner to develop plans over 3 year period. ($10,000/year). Implement nutrient management plans – train current staff ~ $3,000.			$ 10,000	$ 10,000	$ 10,000	$ 13,000	$ 13,000
7	**TMDL Action Plans** - must develop plans for 13 waste load allocations by July 2015 to comply with MS4 permit.	Develop TMDL Action Plans ~ $20,000 each for bacteria and sediment TMDLs; assume that PCBs will be deferred; total for plans ~$140,000. Cost per year to implement BMPs is unknown; depends if time constraints are included in TMDL implementation plan.			$ 140,000	$ 200,000	$ 250,000	$ 300,000	$ 350,000
8	**VSMP Construction Permit Administration/Inspections** - The County will be required to administer the state's VSMP construction permit starting in July 2014.	Use existing staff to perform review and processing and inspections. During peak periods, may need to extend plan review time/wait for construction inspections to allow current staff to cover VSMP plan review, permitting and inspections.			$ -	$ -	$ -	$ -	$ -

	PROGRAM NEED	LEVEL OF SERVICE OPTIONS			ANNUAL COST				
		BASIC	MEDIUM	HIGH	Year 1	Year 2	Year 3	Year 4	Year 5
9	**Information Technology** - Community Development does not have staff to routinely update stormwater mapping, track inspection and enforcement data, maintain records, and to perform GIS analyses on pollutant loadings and reductions required for DEQ reporting.		Continue to obtain support as available from Communications and Information Technology. Periodically use interns to catch up with routine data entry. Add 1 FTE to allow mapping updates and analyses on a continuing basis.		$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000
10	**Equipment Replacement:** Much of the County's existing equipment for drainage system maintenance has exceeded its planned life expectancy. The County currently does not amortize the cost to replace this equipment; rather the County must pay the full cost all at once.		Amortize equipment costs for replacement over next 10 years ($120,000/year).		$ 120,000	$ 120,000	$ 120,000	$ 120,000	$ 120,000
11	**Project Backlog:** The County has a significant backlog of drainage projects that have been identified.			Detail project costs and prioritize – update the County's stormwater drainage plan. Provide two additional storm drain crews, ~ $500,000/year . Use contractors to clear backlog in 5 years (approximate $400,000/year for 5 years).	$ 250,000	$ 750,000	$ 900,000	$ 900,000	$ 900,000
12	**Storm Sewer System Maintenance:** System maintenance is currently conducted on a complaint basis rather than systematically planning for the rehabilitation based on age and condition.		Budget 1.0% of system replacement value annually for system assessment and repair/replacement of failing infrastructure ($1,000,000); some cost overlap with Project Backlog.		$ 250,000	$ 350,000	$ 500,000	$ 500,000	$ 500,000
13	**Maintenance of Streams:** The County conducts maintenance as needed of streams within the County right-of-way typically based on complaints.		Develop comprehensive watershed management plan to understand overall stream conditions and identify and prioritize restoration projects Cost depends on level and detail of analysis; can be performed in conjunction with the TMDL action plans. Estimated cost ±$500,000.		$ 50,000	$ 50,000	$ 100,000	$150,000	$150,000
				TOTAL	**$ 1,428,750**	**$ 2,338,750**	**$ 2,978,250**	**$ 3,532,750**	**$ 3,629,250**

The program enhancements in Table 2 and Table 3 are in addition to the County's existing stormwater management program presented in Table 4 below. This results in a total program (existing and enhanced) of between $3.71 and $5.37 million, annually in Year 5 of the program, depending on the level of service considered for Stormwater Project Backlog and BMP Inspection and Maintenance.

Table 4 – Roanoke County Estimated Current Stormwater Program Costs (2013)

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

It should be noted that the costs for the enhanced program are order of magnitude and presented to provide the RCSWAC with a general understanding of the impact of specific policy decisions. These order of magnitude costs will be used as the basis to guide RCSWAC discussions about revenue generation methodologies and how these methodologies affect program cost distribution among County property owners. More detailed cost estimates will be generated once the RCSWAC has had an opportunity to review and discuss these revenue generation methodologies.

Decisions will also need to be made regarding timing and whether proposed levels of service will be supported by additional staff or the use of external resources. The right mix of new staff and external resources will ultimately depend on a number of factors, including whether there is enough work to justify a new employee and whether the nature of the work is long or short term. Often, a level of service can be met either way but for planning purposes the investment for additional resources needs to be recognized. These details, and how percentages of full time equivalents will be turned into actual people, are issues that will be addressed once County/Town staff have an better understanding of the RCSWAC's priorities and the Board of Supervisor's and Town Council's willingness to move forward with recommendations.

The RCSWAC will have an additional opportunity to engage in a prioritization exercise at the December 12, 2013 meeting to determine whether adjustments should be made to the preliminary program options presented in Table 2 and Table 3.

Per Capital Cost Comparisons

One of the questions asked by the RCSWAC was how any proposed program compares to other stormwater management programs in Virginia. This is a complex question since many communities without a stormwater fee do not track stormwater program costs separately, and many communities that have a stormwater fee supplement their program with additional funds from the general fund. Also, what is defined for the purpose of tracking a stormwater program varies considerably from community to community. For example, the stormwater review component of development plan review may not be tracked or covered by a stormwater fee.

Recognizing these limitations, the following tables present stormwater costs on a per capita basis based on 2012 population. It is important to note that this does not reflect the actual stormwater rate for property owners.

Table 5 presents the per capita cost of stormwater programs in other Virginia communities that have adopted a stormwater fee, but where not all stormwater program costs are covered by the fee. Rather some program elements continue to be funded through general fund appropriations. As a result, the per capita cost for these localities should be considered under-represented.

Table 5 – Annual Stormwater Fee per Capita

Community	Annual Revenue from Stormwater Fee ($)*	Population (2012 estimate)	Annual Stormwater Fee per Capita ($)
City of Lynchburg	3,200,000	77,113	41
City of Staunton	725,000	23,921	30
City of Richmond	7,793,881	210,309	37
Fairfax County (plan review and erosion and sediment control program not covered by the fee)	40,200,000	1,118,602	36
Arlington County	8,002,000	221,045	36
Prince William County	9,420,604	430,289	22

* Not all stormwater costs are covered by the stormwater fee revenue – some general fund revenue funds portions of the stormwater program.

Table 6 presents the per capita cost of stormwater programs in other Virginia communities that have adopted a stormwater fee and where most if not all of the stormwater program is covered by the fee, or where information is available on the amount of general fund support for the stormwater program. However, direct comparisons should still be made with caution.

Table 6 – Annual Stormwater Program Costs per Capita

Community	Annual Program Cost	Population (2012 estimate)	Annual Program Cost per Capita ($)
City of Charlottesville (Cost of program increases for TMDL compliance over 5 years)	2,606,200-4,081,200	43,956	59-93
City of Falls Church	1,643,000	13,229	124
City of Roanoke (Not yet final – Year 3 of proposed program)	6,400,000	97,469	66

Table 7 presents the per capita cost of Roanoke County's current estimated stormwater program and the additional program costs associated with program options presented in Table 2 (medium option) and Table 3 (high option).

Table 7 – Roanoke County Annual Stormwater Program Costs per Capita

	Annual Program Cost	Population (2012 estimate)[1]	Annual Program Cost per Capita ($)
Roanoke County			
Roanoke County, current cost	**1,700,000**	**84,000**	**20**
Roanoke County (medium option), additional cost in Year 5	**1,960,000**	**84,000**	**23**
Roanoke County (high option), additional cost in Year 5	**3,630,000**	**84,000**	**43**

[1] Does not include the Town of Vinton.