City of Harrisonburg Stormwater Advisory Committee

Agenda: Meeting No. 08

September 3, 2014 5:00 – 7:00 p.m.

5:00 – 5:05	**1. Review and Adopt Minutes**
5:05 – 5:10	**2. Public Comment** (limited to 3 minutes per speaker)
5:10 – 5:25	**3. Stormwater Utility Ordinance –** finalize for recommendation to Council
5:25 – 5:50	**4. Stormwater Utility Fee Credit Options**
5:50 – 6:45	**5. Public Outreach** **a. Open House** – review draft presentation material **b. Community Groups –** updates and assignments for SWAC member outreach **c. Council Presentation –** September 23rd at 7:00 p.m. - SWAC members are welcome to attend.
6:45 – 6:55	**6. General Questions / Discussion**
6:55 – 7:00	**7. Next Steps / Assignments**

City of Harrisonburg Stormwater Advisory Committee

Minutes: Meeting No. 07

August 6, 2014 5:00 – 7:00 p.m.

Members in attendance: Kathy Holm, Bill Jones, William Latham, Daniel Michael, Ted Byrd, and J.M. Snell, and Eldon Kurtz.

Staff/Other in attendance: Thanh Dang, Carolyn Howard, Harsit Patel, Tom Hartman, Dan Ruble, John McGehee, and John Eckman.

Review and Adopt Minutes

Bill Jones called for a motion to adopt the July 2014 SWAC meeting minutes. J.M. motioned and Daniel seconded, the motion passed.

Public Comment

Bill Jones voiced a sanitation concern about refuse trucks leaving a trail of liquid behind in some areas of the city. Harsit acknowledged the concern and offered to do an audit of the areas and follow up to ensure that all drains and equipment on the trucks was operating properly.

Updated Stormwater Utility Fee Revenue Projections

Staff reviewed the Stormwater Utility Proposed Revenue spreadsheet, and the SWAC briefly discussed.

Stormwater Utility Ordinance

Committee and staff made suggestions referring to the draft Stormwater Utility Ordinance. Examples such as clarification of definitions and language, utility fee billing methodology, and to the decision to round billing units to the nearest whole number will all be added to the Word document through the track changes feature. Staff will meet with the City Attorney to review the ordinance.

The SWAC will receive an updated ordinance by August 27th for final review before the committee makes a recommendation to city council to take the ordinance and stormwater utility fee information to the public for input.

FAQ Review

The SWAC had been given the opportunity via email to make corrections, comments or revisions to the FAQ document. After a brief discussion, it was suggested staff add a question/answer about when pervious surfaces become saturated.

General Questions / Discussion

The committee discussed presenting an update to City Council on Tuesday, September 23rd, followed by two public input meetings. (Note: After this meeting, it was determined that to provide the SWAC and staff time to develop educational materials, the meetings will be held in November with dates and locations to be announced.) Some brief discussion on meeting format offered.

The committee is encouraged to make the recommendation at the September SWAC meeting to present the draft stormwater utility ordinance to City Council on Tuesday, September 23rd for approval to host the public input meetings in the Fall. The SWACs goal is to present the stormwater utility ordinance to City Council in February for their consideration to adopt.

Next Steps / Assignments

SWAC members were asked to send the dates they were NOT available by Friday, August 8th.

SWAC members were asked to send final comments on the Stormwater Utility Ordinance by Tuesday, August 12th.

The next SWAC meeting will be held on Wednesday, September 3rd.

The meeting adjourned at 6:30pm.

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ORDINANCE ENACTING TITLE 6, CHAPTER 5, "STORMWATER UTILITY" OF THE

CODE OF ORDINANCES

CITY OF HARRISONBURG, VIRGINIA

Be it ordained by the Council of the City of Harrisonburg, Virginia:

That Section Title 6, Chapter 5 "Stormwater Utility" be added as follows:

Sec. 6-5-1. Purpose.

The city council finds that an adequate, sustainable source of revenue for stormwater management activities i~~n~~s necessary to protect the general health, safety, and welfare of residents of the city, and to meet requirements of the city's Virginia Pollution Discharge Elimination System (VPDES) Municipal Separate Storm Sewer System permit and federal and state regulations to address identified water quality and flood event needs. The city council finds that property with higher amounts of impervious area contributes greater amounts of stormwater and pollutants to the stormwater management system and waters of the Commonwealth and should carry a proportionate burden of the cost of such activities. Therefore, the city council determines that it is in the best interest of the public to enact a stormwater utility fee.

Sec. 6-5-2. Authority.

The city is authorized by Virginia Code §15.2-2114 et seq. to establish a utility to enact a system of service charges to support a local stormwater management program consistent with Article 2.3 (§62.1-44.15:24 et seq.) of Chapter 3.1 of Title 62.1 or any other state or federal regulation governing stormwater management.

Section. 6-5-3. Definitions.

For the purposes of this article, the following words and phrases shall have the meanings respectively ascribed to them:

Billing unit means five hundred (500) square feet of impervious area.

Developed property means real property that has been altered from its "natural" state by the addition of any improvements such as buildings, structures and other impervious ~~surfaces~~area.

Impervious area means ~~area covered by hard surfaces and structures, paving, gravel, concrete, or other man-made features that prevent, restrict, or impede the downward passage of stormwater into~~

~~the underlying soil.~~ surface area composed or material that significantly impedes or prevents natural infiltration of water into soil.

Stormwater management facility means a control measure that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.

Unimproved parcel means any parcel regardless of zone or land use that has less than two hundred and fifty (250) square feet of impervious area.

Utility fees means any permit or local program fees ~~as~~ allowed by State Code.

Sec. 6-5-4. ~~Establishment of s~~Stormwater utility fee.

(a) A stormwater utility fee is hereby imposed on every parcel of real property in the city that appears on the real property assessment rolls as of July 1 of each year.

(b) When new properties or impervious areas are brought into the utility system, such as from new construction, fees will accrue or increase commencing on the next billing cycle as established in Section 6-5-7(a).

(c) The billing rate per billing unit to be used for calculating the stormwater utility fee shall be ~~established by City Council~~ $_____ per year.

(d) All stormwater utility fees and other income from the fees shall be deposited into the stormwater utility fund. The funds deposited shall be used exclusively to provide services and facilities related to the stormwater system pursuant to the provisions of the Virginia Code §15.2-2114.

(e) The stormwater utility shall be in effect starting July 1, 2015.

(f) The stormwater utility shall be under the administration of the director of public works.

(g) Consistent with Virginia Code §15.2-2114, the stormwater utility fee shall be waived in its entirety for the following:

1. A federal, state, or local government, or public entity that holds a permit to discharge stormwater from a municipal separate storm sewer system; except that the waiver of charges shall apply only to property covered by any such permit; and
2. Public roads and street rights-of-way that are owned and maintained by state or local agencies including property rights-of-way acquired through the acquisitions process.

Sec. 6-5-5. Stormwater utility fee calculations.

(a) Unless otherwise specified in this article, the annual stormwater utility fee for all property in the city shall be calculated in the following manner:

1. Determine the impervious area of each parcel of real property in square feet;
2. Divide the property's impervious area by the billing unit;
3. Round the resulting calculation ~~to the next highest~~to the nearest whole number to determine the billing units and multiple by the billing rate established to obtain the annual stormwater utility fee for the property.

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(b) The stormwater utility fee is applicable to condominium unit owners and to property held by a common interest community association, as defined in Virginia Code §55-528. The common area within the common interest community shall be evenly divided among the individually owned parcels, or as per an alternative methodology, as determined by the director of public works, including but not limited to directly charging the association based on the methodology described in subsection (a) above.

Sec. 6-5-6. Stormwater Program Fund.

(a) The stormwater program fund is hereby established as a dedicated enterprise fund. The fund shall consist of revenue generated by the stormwater utility fee as well as any other deposits that may be made from time to time by the city council.

(b) The stormwater program fund shall be dedicated special revenue used only to pay for or recover costs for the following:

1. The acquisition, as permitted in Virginia Code §15.2-1800, of real and personal property, and interest therein, necessary to construct, operate, and maintain stormwater control facilities;
2. The cost of administration of the stormwater program;
3. Planning, design, engineering, construction, and debt retirement for new facilities and enlargement or improvement of existing facilities, whether publicly or privately owned, that serve to control stormwater;
4. Facility operation and maintenance;
5. Monitoring of stormwater control devices and ambient water quality; and
6. Other activities consistent with the state or federal regulations or permits governing stormwater management, including, but not limited to, public education, watershed planning, inspection and enforcement activities, and pollution prevention planning and implementation.

Sec. 6-5-7. Billing, payment, and penalties.

(a) The stormwater utility fee shall be billed ~~twice annually~~so that half the fee is billed two times per year to the record owner of each parcel subject to the fee. Such bills or statements shall be included on and payable ~~combined~~ with the ~~property~~ parcel's real estate tax bill. For properties that do not receive a ~~property~~ real estate tax bill, a separate bill for stormwater services with be issued. Any fee not paid in full by the respective due date shall be considered delinquent~~.~~

(b) All payments received shall be first credited to stormwater charges, and then to property tax.

(c) A delinquent stormwater utility fee~~, in accordance with Virginia Code §15.2-2114.G,~~ shall accrue interest ~~be subject to~~ at the legal rate ~~of interest~~ provided in Virginia Code § 6.2-301(A). Such interest shall be applied to late payments overdue for more than thirty (30) days, and shall be calculated for the period commencing on the first day such fee is first due, until the date the fee is paid in full.

~~(d) Whenever the city utilizes the services of an attorney or a collection agency to collect any delinquent fees for the use and services of the city's stormwater system, reasonable attorney's fees or collection fees shall be added to the delinquent bill.~~ Any delinquent stormwater utilities

fee, together with all interest due, shall constitute a lien on the property on which assessed ranking on a parity with liens for unpaid taxes and shall be collected in the same manner as provided for the collection of unpaid taxes.

Sec. 6-5-8. Stormwater utility fee credits. --

(a) The director of public works shall administer a system of credits in accordance with Virginia Code § 15.2-2114.D that provide for partial waivers of charges to any person who installs, operates, and maintains a stormwater management facility that achieves a permanent reduction in stormwater flow or pollutant loadings. The credit policy shall ~~may~~ also, in accordance with Virginia Code § 15.2-2114.E provide for full or partial waivers of charges to public or private entities that implement or participate in strategies, techniques or programs that reduce stormwater flow or pollutant loadings, or decrease the cost of maintaining or operating the public stormwater management system.

(b) The director of public works will develop written policies to implement the credit system, which shall include a requirement for property owners to provide maintenance verification to the city or enter into a maintenance agreement. No credit will be authorized until the city council approves written policies to implement the system of credits; a copy of the approved policies shall be on file with the public works department.

~~(c) Nothing shall prevent city council from modifying the adopted system of credits, and such modification may apply to holders of existing credits.~~

(c) City Council may modify the adopted system of credits to apply to future stormwater management facilities. Previously granted credits shall be grandfathered so that existing credits cannot be modified as long as the property owner continues to provide maintenance verification or meets the requirements of the maintenance agreement.

Section 6-5-9. Petitions for adjustments.

~~(a) The director of public works shall adopt a petition process for customers who believe the provisions of this chapter have been applied in error. All appeals shall be in accordance with the process adopted by the director of public works. A copy of the petition process shall be made available on the city's website and shall be on file with the public works department.~~

(a) Any property owner may request an adjustment of the stormwater utility fee by submitting a request in writing to the director of public works or their designee within thirty (30) days after the date the bill is mailed or issued to the property owner. Grounds for adjustment of the stormwater utility fee are limited to the following:

1. An error was made regarding the square footage of the impervious area of the property;
2. The property is exempt under the provisions of 6-5-4(8)
3. There is a mathematical error in calculating the stormwater utility fee;
4. The identification of the property owner invoiced is in error; or,
5. An approved credit was incorrectly applied.

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(b) The property owner shall complete a stormwater utility fee adjustment application form available on the city's website or supplied by the director of public works.

(c) If the application alleges an error in the amount of the impervious area, a plan view of the property's impervious area will be provided by the city with labeled dimensions of all impervious areas with the properties boundaries, including buildings, patios, driveways, walkways, parking areas, compacted gravel areas, and any other separate impervious structures identified in the city's impervious area database.

(d) If the applicant is not satisfied with this assessment, the applicant may:

1. Request a meeting with the director of public works or his designee; and/or
2. Submit an appeal with a revised plan signed and sealed by a professional engineer or professional land surveyor licensed in the Commonwealth of Virginia attesting to the accuracy of the impervious area measurements.

(e) The requirement for a plan view of the property's impervious area required in subsection (c) above may be waived by the director of public works, if at the sole discretion of the director of public works the error is obvious and is the result of technical error or oversight by the city. In such case, the city shall be responsible for recalculating the impervious area of the property.

(f) The director or their designee shall make a determination within forty-five (45) days of receipt of a complete submittal for the request for adjustment. In the event that the director or their designee finds that the appeal is deficient or incomplete, the director or their designee shall offer the owner sixty (60) days to supply the missing information. The forty-five (45) day time for a decision will begin at such time as the requested information is provided. If the information requested is not provided to the director within sixty (60) days of the original request, the petition will be deemed withdrawn.

(g) The director of public works' decision on a stormwater utility fee adjustment petition is a final decision from which the aggrieved party may appeal to the Rockingham County Circuit Court within 30 days of such decision.

Sec. 6-5-10. Limitation on the city's liability for failure of supply of stormwater services.

Floods from runoff may occur that exceed the capacity of stormwater facilities constructed and maintained by the funds made available pursuant to this chapter. This chapter does not imply that property subject to the fees established herein will be free from stormwater flooding or flood damage. ~~The city shall not be liable to any person for any flood damage. Further, payment of a stormwater fee to the city for stormwater service does not relieve a property owner from obtaining flood insurance.~~

Draft dated: August 29, 2014

This ordinance shall be effective on the _____ day of-[INSERT MONTH]____, 2015.

ADOPTED and APPROVED this _____ day of _____, 2015.

_____

MAYOR

ATTEST:

_____

Clerk of the Council

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Draper Aden Associates
Engineering • Surveying • Environmental Services

Memorandum

To:	City of Harrisonburg Stormwater Advisory Committee, Tom Hartman, Thanh Dang, Harsit Patel
From:	Carolyn Howard
Date:	August 26, 2014
Project Name:	City of Harrisonburg Stormwater Utility Fee Development
Project Number:	C13126B-03
Subject:	Credit Systems: Regional Analysis and Recommendations
cc:	Julia Skare - Draper Aden Associates

REGULATORY FRAMEWORK

Virginia Stormwater Utility Law §15.2-2114 of the Code of Virginia includes the following provisions regarding 'full or partial waivers of charges' or credits.

> *C. A locality adopting such a system **shall** provide for full waivers of charges to the following:*
>
> 1. *A federal, state, or local government, or public entity, that holds a permit to discharge stormwater from a municipal separate storm sewer system; except that the waiver of charges shall apply only to property covered by any such permit; and*
> 2. *Public roads and street rights-of-way that are owned and maintained by state or local agencies including property rights-of-way acquired through the acquisitions process.*
>
> *D. A locality adopting such a system **shall** provide for full or partial waivers of charges to any person who installs, operates, and maintains a stormwater management facility that achieves a permanent reduction in stormwater flow or pollutant loadings. <u>The locality shall base the amount of the waiver in part on the percentage reduction in stormwater flow or pollutant loadings, or both, from pre-installation to post-installation of the facility.</u> No locality shall provide a waiver to any person who does not obtain a stormwater permit from the Department of Environmental Quality when such permit is required by statute or regulation.*

Note: Since VDOT and JMU have a MS4 permit, properties owned by these entities are exempt from the city's stormwater utility fee. JMU Foundation properties are <u>not</u> exempt from the city's stormwater utility fee.

*E. A locality adopting such a system **may** provide for full or partial waivers of charges to cemeteries, property owned or operated by the locality administering the program, and public or private entities that implement or participate in strategies, techniques, or programs that reduce stormwater flow or pollutant loadings, or decrease the cost of maintaining or operating the public stormwater management system.*

Note: City owned properties are not required by law to pay the stormwater utility fee. However, the current recommendation of the SWAC is to charge the fee to all parcels including cemeteries and city owned properties, including schools, but excluding public rights-of-way as noted in C.2 above.

CURRENT REGIONAL CREDIT SYSTEMS

Regional examples of credit systems are provided below; all are based on percentage reduction of the fee.

City of Charlottesville

The city's credit system for residential and non-residential parcels is based on three (3) factors:

1) The installation date,
2) Whether the stormwater facility was built voluntarily or as a 'condition of development' (i.e. required for permit approval), and
3) The amount of impervious area treated.

Installation Date	Condition of Development or Voluntary	Percent Credit for Impervious Area Treated
Pre-July 1, 2009	Either	20%
Post-July 1, 2009	Voluntary	40% to 100%[1] Depending on the Level of Pollutant Removal[2]
Post-July 1, 2009 & Pre-July 1, 2014	Condition of Development	30%
Post-July 1, 2014	Condition of Development	40%

1. The maximum credit that may be applied to a property's stormwater utility bill is 90% of the stormwater utility fee or 100% of the fee minus the amount of one billing unit, whichever results in the lower bill.
2. Refer to Appendix A for the credit calculator for this scenario.

Refer to Appendix A for the City of Charlottesville Stormwater Utility Credits Manual (pages 7 – 10) for examples of credit calculations.

The Stormwater Utility Law allows for credit reductions based on "…reduction in stormwater flow or pollutant loadings, or both…." Charlottesville's credit system references 'treatment' (i.e. pollutant loadings) of impervious areas, not specifically 'stormwater flow' (i.e. quantity control). However, quantity control is inherent to most BMPs that reduce pollutant loadings.

City of Lynchburg

Single-Family Residential Credit System (Refer to Appendix B.)

1. The maximum credit a homeowner can receive is 50% for installation of an approved BMP. For a description of the amount of credit, refer to page 4 of Single-Family Residential Credit Manual (Appendix B).

2. The credits are valid for three years.

3. Proper installation and maintenance is required to continue receiving the credit.

Approved BMPs
- Rain garden
- Vegetated filter strip
- Rain barrel
- Pervious pavement

Non-Residential / Multi-Family Credit System (Refer to Appendix C.)

1. For ***pollutant reducing*** BMPs –

Credit Earned = 20% x (Original Fee) x (% of impervious area treated)

2. For ***volume reducing*** BMPs -

Credit Earned = 50% x (Original Fee) x (% of impervious area treated)

3. For properties with a compliant VPDES Industrial Stormwater Permit and discharge either to a stream through a private facility or to the Lynchburg storm sewer or combined sewer system are eligible to receive a 20 % credit.

4. The maximum credit a property owner can receive is 50% for installation of an approved BMP.

In the City of Lynchburg, combined sewer overflows and flooding is a significant concern, so volume reducing BMPs are critical to their system – hence the greater credit earned.

City of Roanoke

Single-Family Residential Credit System (Refer to Appendix D.)

Definition of Single Family Residential Property – "*Property on which a dwelling exists which is occupied exclusively by one family for noncommercial purposes. Duplexes are included as a single family residential property for the purposes of this credit manual.*"

1. A homeowner can receive a 10% credit for installation, use, and maintenance of an approved Level 1 BMP.

2. A homeowner can receive a 25% credit for installation, use, and maintenance of an approved Level 2 BMP.

Approved **Level 1** BMPs

- Rain barrels
- Vegetated filter strip
- Grass Channel
- Roof Drain Disconnection
- Lawn Maintenance BMPS (3)
- Minimum Tree Canopy of 20% over lot
- Covered storage for waste, refuse, and recyclables
- Traditional septic & alternative onsite sewage system maintenance

Approved **Level 2** BMPs

- Pervious Pavements
- Rain Gardens
- Infiltration Practices (sand filter)
- Cisterns for water reuse
- Green Roofs

The City's credit system requires continued use and maintenance and provides a provision for BMPs owned by Homeowners Associations.

In cases where a property is served by a BMP owned by a separate entity or a Homeowners Association, the property owner may receive credit for the BMP if they provide documentation showing they share in the maintenance obligation and costs of the BMP.

Commercial, Industrial, Institutional, and Multi-Family Residential Properties Credit System
(Refer to Appendix E.)

1. A 10% water quality credit is allowed for installation and maintenance of water quality BMP(s).

   Credit Earned = 10% x (Original Fee) x (% of impervious area treated)

2. A 10% water quantity credit is allowed for installation and maintenance of BMP(s) providing both stream channel erosion control and flood control benefits.

   Credit Earned = 10% x (Original Fee) x (% of impervious area treated)

3. A 5% credit may be allowed, at the City Manager's discretion, for benefits achieved above the minimum required.

4. Credit for a voluntary BMP(s) shall be doubled, but not exceed 50%.

5. *The owner of an eligible BMP that treats off-site impervious surface, meaning the stormwater runoff that originates outside of the boundary of the subject property, may take a credit for treating the off-site impervious surface. The off-site credit amount shall be calculated in the same manner as if the BMP was located on the off-site parcel. However, in no case shall the total credit exceed the total amount of the annual stormwater utility fee charged to the parcel owner.*

6. For properties with a compliant VPDES Industrial Stormwater Permit are eligible to receive a 10 % credit.

7. *Credits may be provided to individual properties served by a Regional BMP. In circumstances where an applicant is attempting to claim credit for a BMP that is owned by a separate entity, proof that the Applicant shares in the maintenance obligations and costs will need to be submitted in order for credit to be applied.*

CREDIT SYSTEM RECOMMENDATION

Single-Family Residential Credit System

In considering the options for a residential credit system, the annual utility fee and the cost of BMPs must be considered to provide sufficient incentive to implement BMPs. The City of Lynchburg's system is simple and provides a larger credit to homeowners.

Approved BMPs
- *Roof drain disconnection across at least 40 feet of grass*
- Rain garden
- Vegetated filter strip
- Rain barrel
- Pervious pavement

Recommendation: Adopt the City of Lynchburg's system with the following additions.

1. Add credit for roof drain disconnection, where the water from the drain flows across at least 40 feet of vegetation or grass prior to flowing across an impervious surface or into storm drain.
2. Add a provision for BMPs owned by Homeowners Associations allowing homeowners a credit, if they provide documentation showing they share in the maintenance obligation and costs of the BMP.
3. This system should be applicable to any property on which a single-family, duplex, or townhome dwelling exists which is occupied exclusively by one family for noncommercial purposes.

Non-Residential / Multi-Family Credit System

The Charlottesville credit system is very complex, but has the advantage of providing information to help the city meet its TMDL pollutant removal requirements / MS4 permit compliance. The Lynchburg and Roanoke credit systems are very similar; however, the Roanoke credit system provides more flexibility with regards to offsite and regional stormwater management facilities.

Recommendation: Adopt the City of Roanoke's credit system; the percentage of credit may be adjusted to meet Harrisonburg's needs and a definition of 'voluntary BMP(s)' should be discussed and included in the final documentation.

CREDIT POLICIES RECOMMENDATIONS

Based on review of the regional credit policies, we offer the following recommendations for general policies for the credit system.

1. Effective date of credit: Credit will be granted the next fiscal year following approval of the credit. For example, if a homeowner installs a rain barrel on October 1, 2015, the credit will be applied to the fee on July 1, 2016.

2. Length of credit: Credits will be valid for five (5) years or until change of ownership, whichever is first. The owner will need to re-apply for the credit every five (5) years.

3. BMP installation: The stormwater BMP must be designed and installed as per Virginia DEQ standards, completed and functioning prior to application for credit, and actively maintained by the owner.

4. Maintenance agreement: Credit will be approved upon execution of a maintenance agreement with the city. As a general rule, maintenance agreements required for Virginia Stormwater Management Program (VSMP) permit approval for new construction projects will be recorded. Maintenance agreements for 'voluntary' BMP installation to obtain a credit will be filed by the city, but not recorded.

5. Transfer of credit: The stormwater credit applies only to the applicant. Credits do not transfer with ownership changes. A new application must be submitted by the new owners to receive the credit.

6. Loss of credit: An unsatisfactory inspection by city staff will result in the facility being ineligible for credit, unless corrective action is taken in the timeframe prescribed by the city. The city will complete spot inspections of BMPs to confirm the BMPs are functioning as designed and maintained.

7. Offsite treatment: Credit may also be taken for voluntarily treating off-site areas that are not currently controlled by another stormwater management facility. However, the credit will be adjusted if the off-site property owner decides to install their own facility that treats a portion or all of the impervious area treated by the facility receiving credit. It is recommended that a property owner coordinate with the city prior to considering any off-site treatment options.

8. Credit limits: For residential parcels, the minimum fee charged will be one billing unit. For multi-family / non-residential parcels, a maximum credit of 50% of the original fee is allowed.

City of Charlottesville
Water Resources Protection Program

Stormwater Utility Fee Credits Manual

Your guide to reducing stormwater utility fees and protecting our City's water resources.

City of Charlottesville, Virginia
605 E. Main St., Charlottesville, VA 22902
www.charlottesville.org/stormwater

City of Charlottesville
Water Resources Protection Program

Stormwater Utility Credits Manual

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- How much credit can I get?
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Forms

Credit Application Form
Credit Calculation Form
Stormwater Management Facility Inspection Form

Stormwater Overview

Everyone in Charlottesville is affected by stormwater! Stormwater is water that flows over our yards, streets, buildings, parking lots, and other surfaces when it rains or snows. When the land was covered by forests, most of this water soaked into the ground. Today, about one third of the City is covered with hard (impervious) surfaces. When rain falls on these surfaces, the water cannot infiltrate into the ground. Instead, it runs off as stormwater into a system of drains, ditches, and pipes. In all, the City is responsible for managing over 56 miles of stormwater pipe and 4,200 stormwater structures!

When stormwater flows over parking lots, lawns, and streets it picks up pollutants such as oil, grease, heavy metals, pesticides, fertilizers, sediment, trash, debris, and pet waste. These pollutants flow directly into our local creeks, streams, and the Rivanna River before ultimately reaching the Chesapeake Bay. As a result, many of our streams have been designated as "impaired" by the Virginia Department of Environmental Quality. State and federal law makes the City responsible for developing and implementing plans to restore these impaired waterways.

Stream bank erosion caused by increased stormwater flows. Uncontrolled stormwater can result in drainage issues and degraded water quality.

In addition, since less stormwater soaks into the ground, it can accumulate and lead to drainage issues. Increased stormwater flow also causes stream bank erosion, which threatens water quality and private property. Much of the City's stormwater infrastructure was installed in the 1950s and 1960s and is now old and in need of repair, which also contributes to these problems.

Water Resources Protection Program

Over the past few years the City has been working hard to develop solutions to local water resources challenges. A Water Resources Protection Program (WRPP) is being implemented to address these challenges in an economically and environmentally sustainable manner. The WRPP is designed to comply with federal and state water quality regulations, rehabilitate aging stormwater infrastructure, implement projects to address drainage and flooding problems, and restore degraded streams.

Stormwater Utility Fee

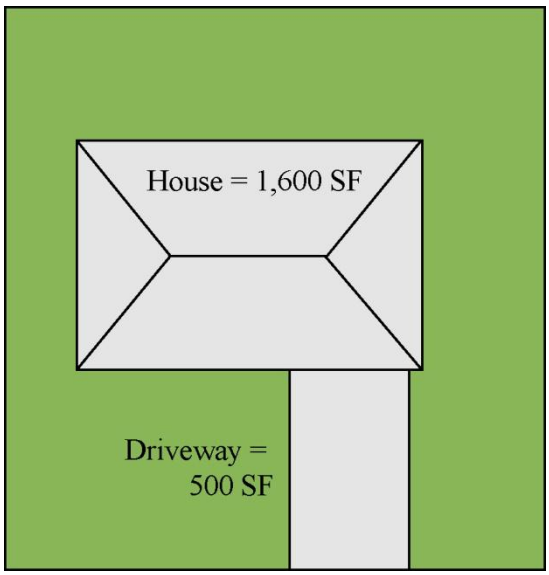
What is a stormwater utility fee?

The City of Charlottesville has adopted a stormwater utility fee to provide an adequate and stable source of funding for the WRPP. A stormwater utility fee is a fee for service based on the amount of impervious surface area on a property (roofs, parking areas, walkways, etc.). This is similar in concept to how the City distributes the cost for sanitary sewer and drinking water services. Per the stormwater utility ordinance passed by City Council, impervious surface is defined as "*area covered by hard surfaces such as structures, paving, compacted gravel, concrete, or other man-made features that prevent, restrict, or impede the downward passage of stormwater into the underlying soil*".

This approach has several advantages. First, it fairly distributes the cost of the City's stormwater services across all eligible properties based on the amount of impervious surface. Second, under State Law, the revenue from a stormwater utility must be placed in a special fund that can only be used for stormwater management; therefore establishing a dedicated funding source to accomplish the goals of the WRPP. Finally, State Law requires the City to provide "credits" to property owners who have implemented stormwater management facilities to reduce their stormwater utility fees.

How is the fee calculated?

Since a stormwater utility is a fee for service, all eligible properties are charged regardless of their tax status. **Each eligible property is charged in 500 square foot (SF) increments of impervious area.** These are called "billing units." Fractions are rounded up to the next whole unit. For example, a property that has 2,100 square feet of impervious cover has five billing units (2,100 / 500 = 4.2, rounded to 5 billing units). The number of billing units is then multiplied by the rate adopted by City Council ($1.20 per billing unit per month). Unimproved property (defined as a property with less than 300 square feet of impervious cover) is not assessed a fee.



Example Fee Calculation

- **Total impervious area = 2,100 SF**
- **Divide by 500 SF = 4.2**
- **Round to the next whole number = 5 billing units (BUs)**
- **Multiply the number of BUs (5) by the rate ($1.20) x 12 months for an annual fee of $72.00**

Is there anything I can do to reduce my bill?

Yes! There are two ways for you to impact the amount of your payment.

First, property owners can remove impervious surfaces from their property. This will result in a direct fee reduction if the removal of impervious surface results in fewer billing units.

Second, the City's Credit Program provides an opportunity for property owners to reduce their stormwater utility bill by operating and maintaining a stormwater management facility.

Examples of practices that can receive credit – bioretention facility (top); cistern (middle); permeable pavement (bottom).

Credit Program

A credit is a reduction to the stormwater fee that can be pursued by a property owner if they operate and maintain a stormwater management facility that reduces pollution, helps to control stormwater runoff, or both. Existing stormwater management facilities are eligible for a credit regardless of when the facility was built as long as they meet the applicable standards at the time of installation. There are a wide variety of practices that can be implemented in Charlottesville that qualify for credit, including bioretention facilities, permeable pavement, and green roofs, just to name a few.

The City has adopted two goals for the credit program. First, credits should recognize the avoided cost to the City that is provided by the ongoing operation and maintenance of a stormwater management facility. Second, credits should provide a mechanism for property owners to make investments to help the City achieve the goals of the WRPP.

What are the eligibility requirements?

To be eligible for credit, a stormwater management facility must meet the following criteria:

- ✓ A property owner must have installed the stormwater management facility prior to applying for the credit and the stormwater management facility must be functioning as designed.
- ✓ A property owner must own and physically maintain all components of the facility – a property owner who only provides aesthetic maintenance is not eligible for a credit.
- ✓ The facility must have been built in accordance with the City-recognized design standards in place at the time of installation.
- ✓ The facility must be actively maintained so that it is functioning as designed.
- ✓ The property owner must enter into a maintenance agreement with the City that includes the right of the City to conduct periodic inspections. The City may require that an existing agreement be modified in order for the facility to be eligible for credit.
- ✓ An unsatisfactory inspection by City staff will result in the facility being ineligible for credit unless corrective action is taken in the timeframe prescribed by the City.

Refer to "How do I apply?" and the Credit Application Form for additional details.

How much credit can I get?

The amount of credit depends on when the facility was built and whether it was implemented voluntarily or as a condition of development. **It is important to remember that only the impervious area treated by the facility, and not the entire impervious area of a site, is eligible for a credit.** Credit may also be taken for voluntarily treating off-site areas that are not currently controlled by another stormwater management facility. However, the credit will be adjusted if the off-site property owner decides to install their own facility that treats a portion or all of the impervious area treated by the facility receiving credit. It is recommended that a property owner coordinate with the City prior to considering any off-site treatment options.

The maximum credit that a property owner may receive for a stormwater management facility required as a condition of development is a 40% credit of the fee for the impervious area treated. The maximum credit is a 100% credit of the fee for the impervious area treated by a voluntary stormwater management facility. For voluntary treatment, the maximum credit that may be applied to a property's stormwater utility bill is 90% of the stormwater utility fee or 100% of the fee minus the amount of one billing unit, whichever results in the lower bill.

Credit Level Table

Installation Date	Condition of Development or Voluntary	Percent Credit for Impervious Area Treated
Pre-July 1, 2009	Either	20%
Post-July 1, 2009	Voluntary	40% to 100%[1] Depending on the Level of Pollutant Removal – See Credit Calculator for Post-July 1, 2009 Voluntary Facilities
Post-July 1, 2009 & Pre-July 1, 2014	Condition of Development	30%
Post-July 1, 2014	Condition of Development	40%

1. The maximum credit that may be applied to a property's stormwater utility bill is 90% of the stormwater utility fee or 100% of the fee minus the amount of one billing unit, whichever results in the lower bill.

Credit Calculator for Post-July 1, 2009 Voluntary Facilities

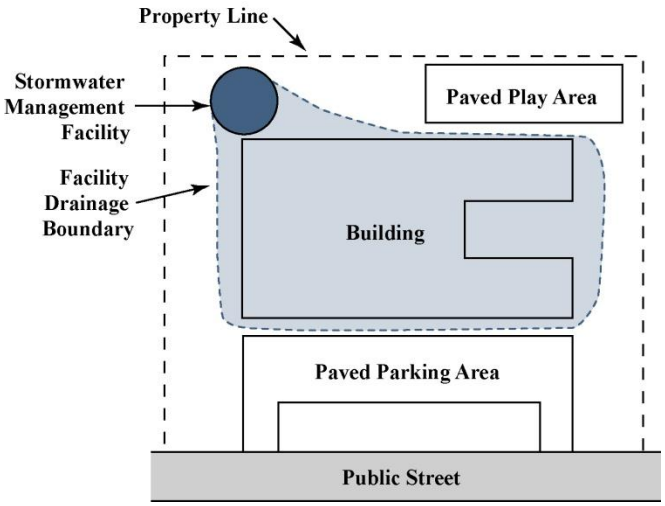
The following calculation is used to determine the credit to be given to a voluntary eligible facility installed post-July 1, 2009. The formula was developed as a sliding scale where a facility of minimum pollutant removal efficiency (15%) receives a 40% credit and a facility of 70% or greater efficiency receives the maximum credit. Facility efficiency is as documented in the Virginia Stormwater BMP Clearinghouse, the Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects, or other state-approved guidance documents.

(A) Facility Phosphorus Removal Efficiency Must be 15% or Greater
(B) Facility Phosphorus Removal Efficiency of ____% / 100 x 1.76[1] = _____
(C) (B) – (0.264[2]) = _____
(D) (C) / 0.016[3] = _____
(E) 40% + (D) = _____ Percent Total Facility Credit (up to maximum of 100%)

1. The phosphorus pollutant loading rate for the James River Basin from the City's municipal separate storm sewer system (MS4) permit issued by the Virginia Department of Environmental Quality.
2. 0.264 is the result of equation (B) for a 15% Facility Efficiency ensuring that equation (D) results in a value of zero for a 15% Facility Efficiency.
3. 0.016 is a "distribution factor" to ensure that Facility Efficiency values between 15% and 70% result in equation (D) between 0% and 60%.

Credit Example 1

Condition of Development (COD) Stormwater Management Facility



Total Impervious Area = 15,120 SF

15,120 SF / 500 SF = 30.24

Property Billing Units (BU) = 31

Pre-Credit Annual Fee = (31 x $1.20 per BU x 12 months) = $446.40

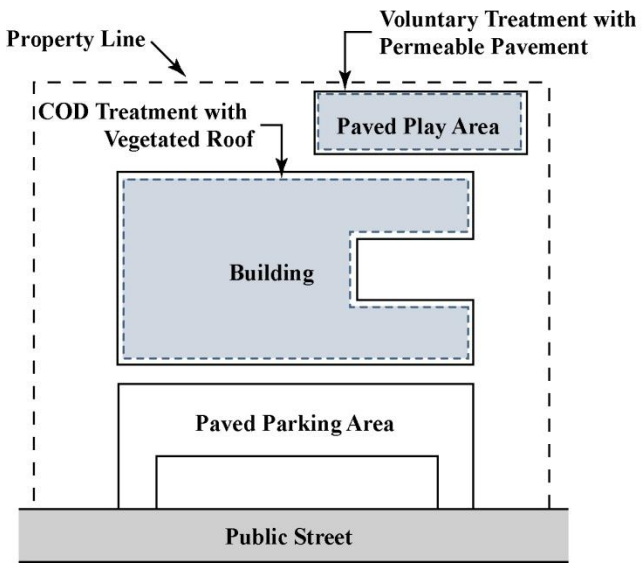
Impervious Area Treated (Building Rooftop Only) = 7,980 SF

Condition of Development Credit Examples

Facility Installation Date	Percent Credit	Percent Credit x Impervious Area (SF) Treated	Adjusted Impervious Area	Adjusted Billing Unit	Post-Credit Annual Fee
Pre-July 1, 2009	20%	7,980 x 20% = 1,596	15,120 – 1,596 = 13,524	13,524 / 500 = 27.05 = 28 BU	28 x $1.20 x 12 = $403.20 ($43.20 Fee Reduction)
Post-July 1, 2009 & Pre-July 1, 2014	30%	7,980 x 30% = 2,394	15,120 – 2,394 = 12,726	12,726 / 500 = 25.45 = 26 BU	26 x $1.20 x 12 = $374.40 ($72.20 Fee Reduction)
Post-July 1, 2014	40%	7,980 x 40% = 3,192	15,120 – 3,192 = 11,928	11,928 / 500 = 23.86 = 24 BU	24 x $1.20 x 12 = $345.60 ($100.80 Fee Reduction)

Credit Example 2

Voluntary and Condition of Development (COD) Stormwater Management Facility



Total Impervious Area = 15,120 SF

15,120 SF / 500 SF = 30.24

Property Billing Units (BU) = 31

Pre-Credit Annual Fee = (31 x $1.20 per BU x 12 months) = $446.40

Impervious Area Treated by Voluntary Facility (Paved Play Surface) = 2,800 SF

Impervious Area Treated by COD Facility (Building Rooftop) = 7,980 SF

Voluntary and Condition of Development Credit Example

Voluntary Facility Installation Date	Percent Credit	Percent Credit x Impervious Area (SF) Treated	Impervious Area Reduction (SF)
After July 1, 2009	88.4% (see calculation below)	2,800 x 88.4% = 2,475	2,475

Voluntary Credit Calculation (After 7/1/2009)

(A) Facility Efficiency for Level 1 Permeable Pavement (per Virginia BMP Clearinghouse) = **59%**
(B) Facility Efficiency of **59%** / 100 x 1.76 = **1.038**
(C) **1.038** – 0.264 = **0.774**
(D) **0.774** / 0.016 = **48.4**
(E) 40% + **48.4** = **88.4%** Total Facility Credit

COD Facility Installation Date	Percent Credit	Percent Credit x Impervious Area (SF) Treated	Impervious Area Reduction (SF)
After July 1, 2014	40%	7,980 * 40% = 3,192	3,192

Adjusted Stormwater Utility Fee Calculation for COD and Voluntary Facilities

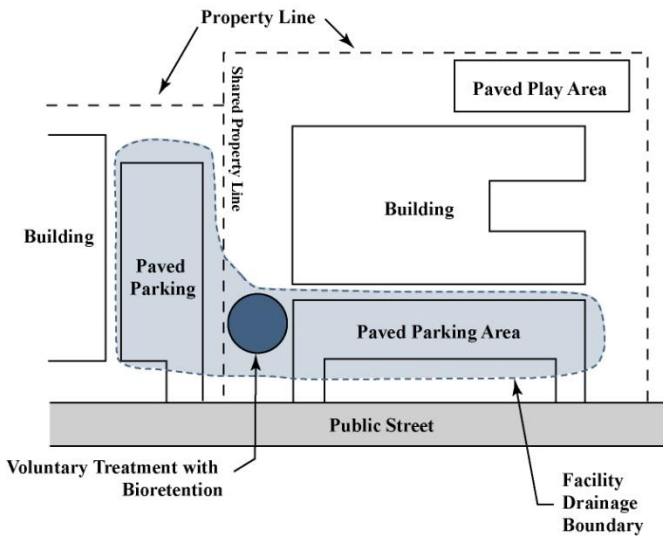
Adjusted Impervious Area (SF): 15,120 (pre credit) – 2,475 (voluntary reduction) – 3,192 (COD reduction) = 9,453

Adjusted Billing Units: 9,435 / 500 = 18.9 = 19 BUs

Adjusted Annual Stormwater Utility Fee: 19 BU x $1.20 x 12 = $273.60 ($172.80 Fee Reduction)

Credit Example 3

Voluntary Onsite and Offsite Stormwater Management Facility



Total Impervious Area = 15,120 SF

15,120 SF / 500 SF = 30.24

Property Billing Units (BU) = 31

Pre-Credit Annual Fee = (31 x $1.20 per BU x 12 months) = $446.40

Impervious Onsite Area Treated by Voluntary Facility (Parking Lot) = 4,340 SF

Impervious Offsite Area Treated by Voluntary Facility (Parking Lot) = 4,560 SF

Voluntary Onsite and Offsite Credit Example

Voluntary Facility Installation Date	Percent Credit	Percent Credit x Impervious Area (SF) Treated	Impervious Area Reduction (SF)
Onsite After July 1, 2009	100% (see calculation below)	4,340 x 100% = 4,340	4,340
Offsite After July 1, 2009	100% (see calculation below)	4,560 x 100% = 4,560	4,560

Voluntary Credit Calculation (After 7/1/2009)

(A) Facility Efficiency for Level 2 Bioretention (per Virginia BMP Clearinghouse) = **90%**
(B) Facility Efficiency of **90%** / 100 x 1.76 = **1.584**
(C) **1.584** – 0.264 = **1.32**
(D) **1.32** / 0.016 = **82.5**
(E) 40% + **82.5** = **122.5%** = **100%** Total Facility Credit

Adjusted Stormwater Utility Fee Calculation for COD and Voluntary Facilities

Adjusted Impervious Area (SF): 15,120 (pre credit) – 4,340 (voluntary onsite reduction) – 4,560 (voluntary offsite reduction) = 6,220

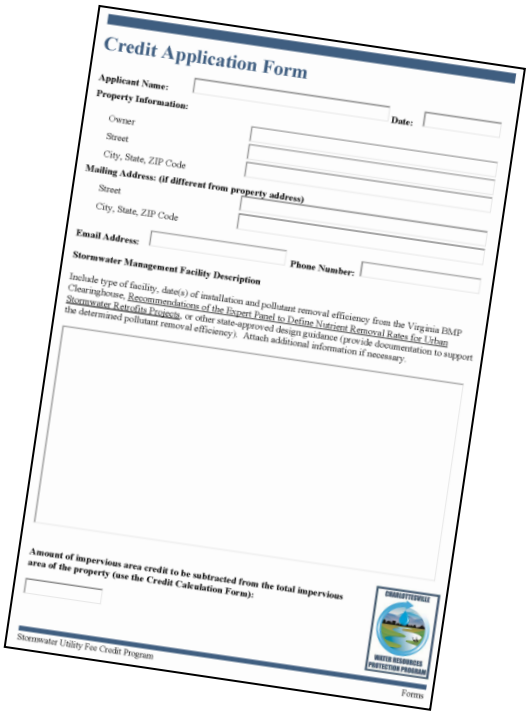
Adjusted Billing Units: 6,220 / 500 = 12.4 = 13 BUs

Adjusted Annual Stormwater Utility Fee: 13 BU x $1.20 x 12 = $187.20 ($259.20 Fee Reduction)

How do I apply?

A **Credit Application Form** must be submitted and approved by the City to receive a credit. To be eligible for a credit, a stormwater management facility must have an agreement in place that will allow the City access to inspect the stormwater management facility. The following documentation is required:

1. **Credit Application Form** – see back of this manual.
2. **Drainage Area Map** – show property lines, impervious areas, facility drainage area boundaries, and the total impervious cover served by the facility.
3. **Facility Description** – include the type of facility, date of installation, and the percent pollutant removal efficiency based on information from the Virginia Stormwater BMP Clearinghouse or other state approved guidance documents.
4. **Operation and Maintenance Plan** – provide a brief summary of how the facility will be operated and maintained to ensure it continues to function as designed. Include an annual routine maintenance schedule. Include any modifications or repairs that have occurred from installation to the time of application.
5. **Photos** – provide a date-stamped image or images showing the facility within one month of the application date.
6. **Stormwater Facility Maintenance Agreement** – provide a copy of the agreement that allows the City access to the site.
7. **Stormwater Management Facility Inspection Form** – see back of this manual; the form must be prepared by or under the guidance of a professional engineer, licensed landscape architect, or other professional acceptable to the City. The form must verify the drainage area map and state that the facility is functioning as designed and will be adequately maintained.



Credit Application Form

Applicant Name:

Property Information:

Owner

Date:

Street

City, State, ZIP Code

Mailing Address: (if different from property address)

Street

City, State, ZIP Code

Email Address:

Phone Number:

Stormwater Management Facility Description

Include type of facility, date(s) of installation and pollutant removal efficiency from the Virginia BMP Clearinghouse, Recommendations of the Expert Panel to Define Nutrient Removal Rates for Urban Stormwater Retrofits Projects, or other state-approved design guidance (provide documentation to support the determined pollutant removal efficiency). Attach additional information if necessary.

Amount of impervious area credit to be subtracted from the total impervious area of the property (use the Credit Calculation Form):

Stormwater Utility Fee Credit Program

Forms

Once a credit has been approved, the property owner will remain eligible for the credit as long as all conditions of the maintenance agreement are met and the facility passes periodic inspections by City staff. If the property owner fails to submit required documentation or correct deficiencies within the time specified by City staff, the facility will no longer be eligible for credit. If this occurs, the property owner will be required to reapply through the initial credit process.

Important Resources and Links

General Information and Assistance

- Charlottesville Water Resources Protection Program
  www.charlottesville.org/wrpp

- Virginia Department of Environmental Quality Stormwater Program
  www.deq.virginia.gov/Programs/Water/StormwaterManagement.aspx

Stormwater Management Facility Standards

- Virginia Stormwater BMP Clearinghouse
  http://vwrrc.vt.edu/swc

- Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects

  http://chesapeakestormwater.net/bay-stormwater/baywide-stormwater-policy/urban-stormwater-workgroup/retrofits/

Credit Application Form

Applicant Name: **Date:**

Property Information:

Owner

Street

City, State, ZIP Code

Mailing Address: (if different from property address)

Street

City, State, ZIP Code

Email Address: **Phone Number:**

Stormwater Management Facility Description

Include type of facility, date(s) of installation and pollutant removal efficiency from the Virginia BMP Clearinghouse, Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects, or other state-approved guidance documents (provide documentation to support the determined pollutant removal efficiency). Attach additional information if necessary.

Total amount of impervious area to be subtracted from the fee calculation for the property (provide the sum of all included Credit Calculation Forms):

CHARLOTTESVILLE
WATER RESOURCES PROTECTION PROGRAM

The following supporting documentation and materials must accompany this application

- ☐ **Drainage Area Map**
- ☐ **Operation and Maintenance Plan**
- ☐ **Copy of Stormwater Facility Maintenance Agreement**
- ☐ **Photograph of the Stormwater Management Facility –** The photo should be no more than one month old.
- ☐ **Stormwater Management Facility Inspection Form**

Owner Certification and Inspection Agreement

- ☐ I am the property owner or I am duly authorized to act on behalf of the property owner, I have reviewed the information contained in this application and the supporting documentation, and to the best of my knowledge believe that it is true and accurate.
- ☐ I commit to maintaining the stormwater management facility in good working condition.
- ☐ I authorize the City or its representative to enter on my property for the sole purpose of inspecting the stormwater management facility.
- ☐ I understand that if an inspection by the City indicates that the facility is not properly maintained, that the facility will no longer be eligible for credit if deficiencies are not corrected within the time-frame provided by City staff.

_____ _____

Signature Date

This form and all supporting documentation and materials should be submitted to:

City of Charlottesville
Water Resources Protection Program
305 4th St NW
Charlottesville, Virginia 22903

Internal Use Only:	
Facility ID#	*Review Date:*
Reviewer:	*Approval Date:*
Notes/Conditions:	

Credit Calculation Form

Stormwater Management Facility Description:

Property Information:

Owner

Street

City, State, ZIP Code

Complete one form for each stormwater facility on the property. A single facility may be built as a condition of development but voluntarily sized to treat additional on-site or off-site impervious area beyond minimum regulatory standards.

COD or Voluntary Credit *Fixed Percent*	**Voluntary Credit** *On-Site – Variable Percent*	**Voluntary Credit** *Off-Site – Variable Percent*
(A) Impervious Area Treated: SF	(A) Impervious Area Treated: SF	(A) Impervious Area Treated: SF
(B) Percent Credit from Credit Level Table: %	(B) Percent Credit from Credit Level Table or Voluntary Facilities Calculator: %	(B) Percent Credit from Credit Level Table or Voluntary Facilities Calculator: %
(C) Impervious Area Credit = (A) x (B) = SF	(C) Impervious Area Credit = (A) x (B) = SF	(C) Impervious Area Credit = (A) x (B) = SF
Add Columns 1, 2, and 3 for the Total Impervious Area Credit: SF		

Credit Calculator for Post-July 1, 2009 Voluntary Water Quality Facilities

(a) Facility Efficiency Must be 15% or Greater

(b) Facility Efficiency of / 100 * 1.76 =

(c) (b) – (0.264) =

(d) (c) / 0.016 =

(e) 40% + (d) = Percent Total Facility Credit

See the Virginia BMP Clearinghouse, Recommendations of the Expert Panel to Define Removal Rates for Urban Stormwater Retrofit Projects, or other state-approved guidance document for pollutant removal rates.

Stormwater Management Facility Inspection Form

Applicant Name: _____ **Date:** _____

Property Information:

Owner _____

Street _____

City, State, ZIP Code _____

Stormwater Management Facility Description:

_____

Impervious Area Draining to the Facility: _____ **SF**

Year Built: _____ **City ID (if known):** _____

General Condition:	Yes	No	N/A
Is the primary outfall pipe/ ditch clear and functioning?	☐	☐	☐
Are the inflow pipes/ ditches clear and functioning?	☐	☐	☐
Is the water quality pool at the correct height (if present)?	☐	☐	☐
Are water quality pool control weirs, pipes, etc. working properly (if present)?	☐	☐	☐
Are emergency overflow devices clear and functional (if present)?	☐	☐	☐
Is the structure clear of sediment?	☐	☐	☐
Is the structure clear of trash?	☐	☐	☐
Is vegetation being managed in a manner appropriate to the facility?	☐	☐	☐

Certification

This certification must be made by a licensed professional engineer, landscape architect, or other professional accepted by the City.

☐ Based on a visual survey of the above facility conducted on _____, I certify that the facility is currently functioning as designed.

☐ I certify that the total impervious cover served by the facility and the accompanying Drainage Area Map are true and accurate.

_____ _____
Printed Name Date

_____ _____
Signature Qualification

_____ _____
Address Phone

_____
Email

APPENDIX B

Single-Family Residential Credit Manual

Department of Water Resources
525 Taylor Street
Lynchburg, VA 24501

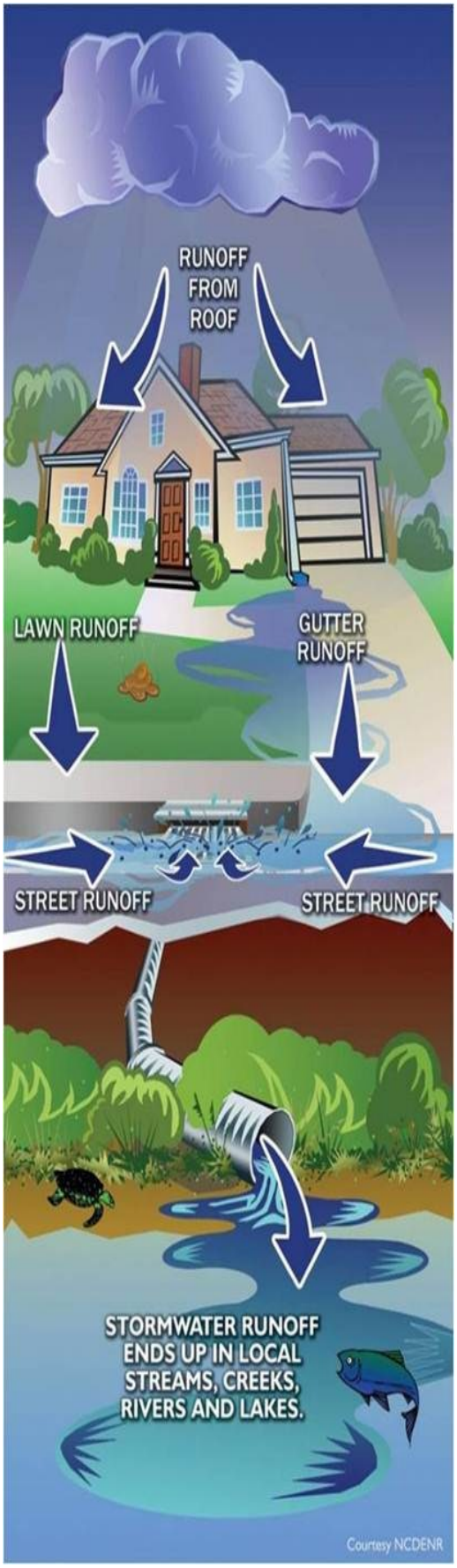
434.455.4250

www.lynchburgva.gov/stormwater

Why is stormwater important

Stormwater runoff is the water that flows off roofs, driveways, parking lots, streets and other hard surfaces during rain storms. Stormwater runoff is also the water that flows off grass surfaces and wooded areas that is not absorbed into the soil. Runoff that is not absorbed into the ground flows into ditches, culverts, catch basins and storm sewers and typically does not receive any treatment to remove pollutants before entering our local creeks and streams.

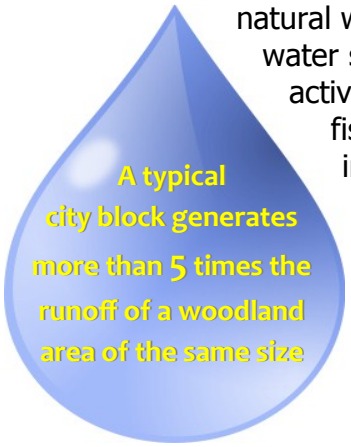
Water from rain or melting snow either seeps into the ground or flows across the ground, ultimately making its way into streams, creeks, and other water bodies. On its way, this runoff can pick up many natural and man-made substances that can pollute local water bodies. Examples of common pollutants include fertilizer, pesticide, pet waste, sediment, oil, salt, trace metals, grass clippings, leaves, and litter. Polluted runoff can be generated anywhere people use or alter the land, such as farms, yards, roofs, driveways, parking lots, construction sites, and roadways.



Benefits of a Stormwater utility

A stormwater utility is based on the premise that the urban drainage system is a public drainage system, similar to water or wastewater systems. When a demand is placed on these systems, the user pays. Stormwater runoff needs to be managed just as any other process in the City is managed, such as the water, sewer, roadway, or solid waste systems.

Management is essential to protect the quality of our natural watercourses as drinking water supplies and for recreational activities such as swimming, fishing and boating. Stormwater also needs to be managed to ensure that during storm events that stormwater runoff does not flood or erode private property or otherwise put public safety or private property at risk.



What is the cost to the customer

Parking lots, rooftops and driveways can't absorb water, so it moves quickly over these surfaces into nearby storm sewers and streams. A greater flow of water –i.e. a greater demand—is placed on the urban drainage system. So, the more paved – or "impervious"—surfaces there are on your property, the greater the demand on the system.
For single-family residential properties, the fee is based on square footage of impervious surface. These properties are placed in three categories based on total impervious area.

Tier	Impervious Area	Fee
Small	1,300 sq. ft. or less	$2
Medium	1,301 to 4,300 sq. ft.	$4
Large	4,301 sq. ft. or more	$6.40

How can I earn a credit?

Residents that implement stormwater best management practices (BMPs) to reduce the stormwater rate or volume flowing from their properties to the storm system or surrounding bodies of water, can qualify to receive a reduction in their stormwater fee.

If approved, each device will earn the property owner a credit of 20% of the stormwater utility fee, up to a maximum credit of 50% of the fee. No property owner shall receive a credit of greater than 50% of the fee.

The City shall affirm or deny credit applications and reapplications within 45 days of submittal. Any credit denial shall include comments from the City indicating what modification the applicant can make in order to achieve acceptance of the credit or shall include a statement that the credit application as submitted must be restructured significantly to achieve approval. Property owner can submit a BMP design for approval prior to construction. Credit will not be applied until the BMP has been constructed and the construction has been approved.

- The **maximum** credit a homeowner can receive is **50%.**
- Credits are valid for **three years**
- Proper installation and maintenance is required to continue receiving the credit.

Approved BMPs

Rain Garden

A rain garden is a landscaped area in a depression designed to capture and filter stormwater runoff from an impervious surface.

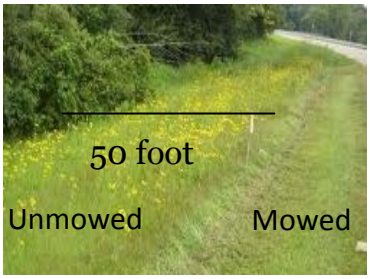
Design Requirements

At least 50% of a property's impervious surface area must drain to the rain garden. The rain garden must be designed according to either:

- Virginia Department of Conservation and Recreation - Stormwater Design Specification No. 9 – Bioretention
- Virginia Department of Conservation and Recreation - Minimum Standard 3.11 – Bioretention Basin Practices

If 90% of a property's impervious surface area drains to a rain garden, double credit may be given up to the maximum amount. Include mosquito prevention and overflow controls.

Vegetated Filter Strip



Vegetated filter strips are runoff flow paths of dense turf, meadow grasses, trees or other vegetation with a minimum slope to treat runoff from roof downspouts.

Design Requirements

- At least 50% of the property's roof area drains to vegetated filter strips.
- Downspout discharge must be dispersed using splash block.
- Filter strips are fully vegetated with no bare soil or mulch.
- Minimum flow length of 50 feet with slope of 5% or less.

Rain Barrel/Cistern

Temporary storage of stormwater runoff can reduce peak runoff volumes and can result in reduced overall stormwater volumes by discharging runoff over less saturated soil, thereby allowing greater infiltration and evaporation of runoff to occur. Other comparable configurations may be approved with appropriate detention time, volume, and release rate calculations.

In order to be effective, empty storage space must be available when rain falls. Therefore, the rain barrel or other storage device must empty itself within 4 to 48 hours of the end of rainfall. If the property owner wishes to save rainfall for use in gardening or other non-potable uses, additional storage for such uses may be installed. However, stormwater utility credit is granted only for storage that empties itself.

Design Requirements

- At least 50% of a property's roof area must drain to a rain barrel or other self-emptying storage device.
- At least one gallon of storage must be provided for every three square foot of roof area. (stores one half inch of rain)
- Must drain in no less than 24 hours and no more than 4 days after each rainfall event.
- Overflows from storage must be directed to appropriate outlets or areas and away from neighboring properties, sidewalks, steep slopes or retaining walls.

Pervious Pavement

Pervious pavements are designed to allow infiltration of stormwater through the surface into the soil below where water is naturally filtered and pollutants are removed. Pervious pavements may include paving blocks, grid pavers, pervious concrete, or pervious asphalt. Gravel is not considered pervious and is not eligible for a credit.

Design Requirements

- At least 1000 square feet of pervious pavement must be installed.
- Stone reservoir must be at least 10 inches deep at all points.

How do I apply?

All applicants must complete a Single-Family General Application and include a picture of the Best Management Practice. Applications must be submitted with all required documentation, including photos, to the address below.

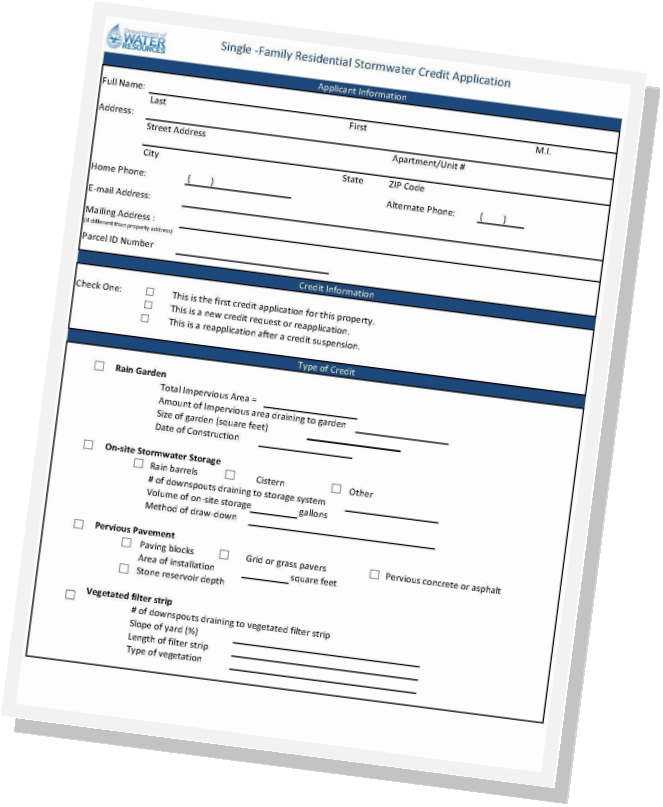
Once the Department of Water Resources has received your application, an administrative completeness review will be conducted. If the application is not complete, the Department will contact the applicant and may request additional information necessary to complete the application.

Once a complete application has been received the Department will review all documentation and the applicant will be notified in writing when an application is approved or denied. If an application is denied, the applicant can file appeal to the Department of Water Resources.

The appeals form, credit application and manual can be found at the website below:
http://www.lynchburgva.gov/stormwater

Application checklist:

1) Install your selected Best Management Practice.
2) Complete the Single-Family General Application.
3) Include pictures of each Best Management Practice installed.
4) Review your application.
5) Submit application to the address below.



Single -Family Residential Stormwater Credit Application

Applicant Information

Full Name: Last First M.I.

Address: Street Address Apartment/Unit #

City State ZIP Code

Home Phone: ( ) Alternate Phone: ( )

E-mail Address:

Mailing Address: (if different than property address)

Parcel ID Number

Credit Information

Check One:
- ☐ This is the first credit application for this property.
- ☐ This is a new credit request or reapplication.
- ☐ This is a reapplication after a credit suspension.

Type of Credit

☐ **Rain Garden**
- Total Impervious Area =
- Amount of Impervious area draining to garden
- Size of garden (square feet)
- Date of Construction

☐ **On-site Stormwater Storage**
- ☐ Rain barrels ☐ Cistern ☐ Other
- # of downspouts draining to storage system
- Volume of on-site storage gallons
- Method of draw-down

☐ **Pervious Pavement**
- ☐ Paving blocks ☐ Grid or grass pavers ☐ Pervious concrete or asphalt
- Area of installation square feet
- ☐ Stone reservoir depth

☐ **Vegetated filter strip**
- # of downspouts draining to vegetated filter strip
- Slope of yard (%)
- Length of filter strip
- Type of vegetation

City of Lynchburg
Department of Water Resources
Attn: Stormwater
525 Taylor Street
Lynchburg VA 24501

Rain garden — design requirements

RAIN GARDENS are landscaped areas built in a depression that are designed to capture and filter stormwater runoff from a roof or other impervious surface. The plants and soil in a rain garden provide an easy, natural way of reducing the amount of stormwater runoff.

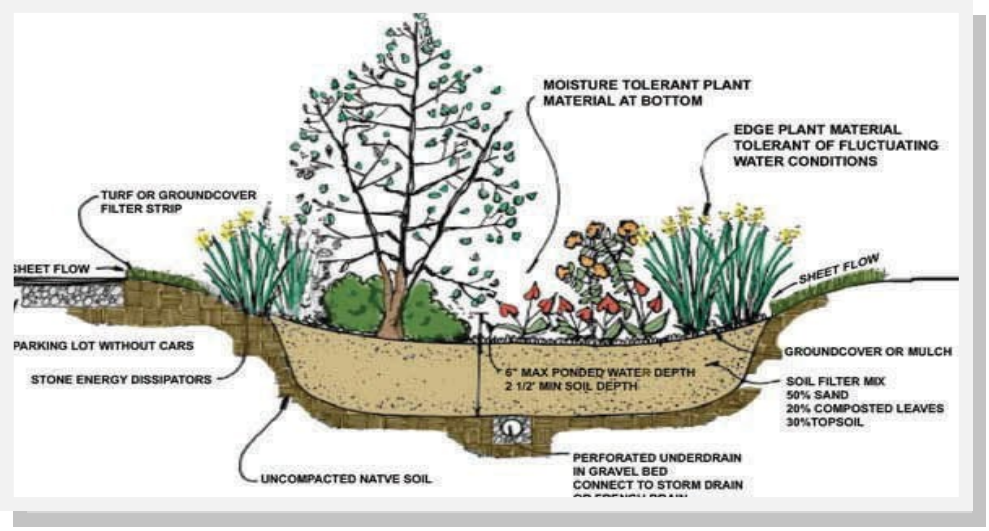
20% Credit

Installation standards

To obtain a single family residential property credit for a rain garden the following standards and requirements must be met:

- At least 25 % of the property's roof area or equivalent impervious surface must drain to the rain garden.
- The rain garden must be sized and constructed according to the Virginia Department of Forestry Rain Gardens Technical Guide. Any alternate design must be pre-approved.
- Overflows must be directed to appropriate outlets or areas and away from neighboring properties, sidewalks, steep slopes or retaining walls.

Rain garden cross section



Maintenance guidelines

1. Rain gardens must be maintained annually to ensure continued function. Maintenance includes weeding, checking for erosion and other tasks listed in the Rain Garden Technical Guide.
2. The property owner is responsible for maintaining the rain garden. The credit renewal process will require documentation that the rain garden continues to function as approved.

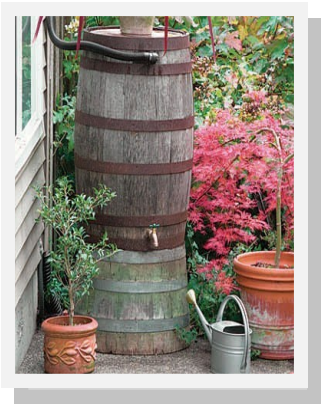
Include a photo of the rain garden with your application!

On Site stormwater storage

ON-SITE STORMWATER STORAGE STRUCTURES can include rain barrels, cisterns other devices as approved by the City of Lynchburg Stormwater Utility. These structures collect and capture rooftop rainwater that would otherwise drain directly to the stormwater system or streams. The collected rainwater can be used to water plants, trees or lawns during dry periods.

20% Credit

RAIN BARREL



A rain barrel is composed of a 40-55 gallon barrel or drum with some type of diverter or connection from a downspout, a spigot or hose to drain the barrel and some type of overflow mechanism. Any openings to the air should be screened to keep debris and insects out.

An overflow mechanism must be provided so that when the rain barrel is full, excess water can flow back into the downspout and then to a storm drain or onto a landscaped area.

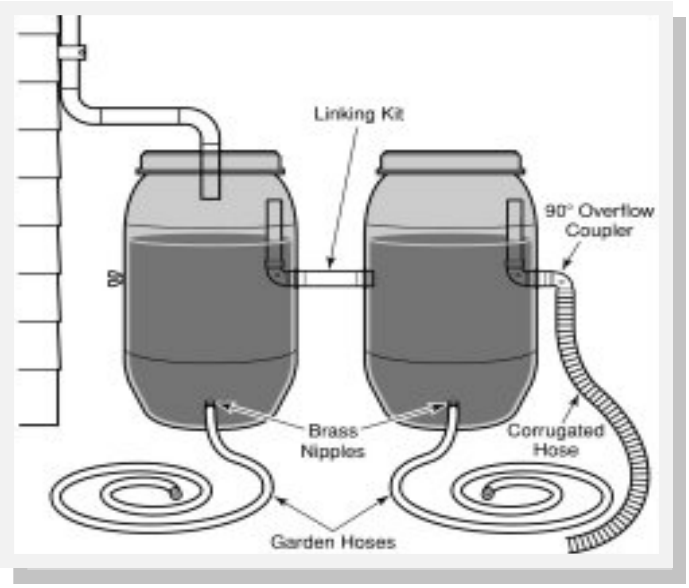
Saving water not only helps protect the environment, it saves money and energy because of the decreased demand for treated tap water. You can purchase a rain barrel or make your own. Ensure your rain barrel will meet the credit requirements on the next page.

You will need to create a plan for how you will use the water

CISTERN

Cisterns are similar to rain barrels in function but hold larger quantities of water. They can be installed under ground, at ground level, or elevated depending on the site and space constraints of the property.

A cistern should be constructed out of reinforced concrete, galvanized steel, or plastic, and should have smooth interior surfaces, be watertight, have enclosed lids and be sized according to the installation standards on the next page to manage the proper amount of runoff.



Certain design standards and guidelines must be met to obtain a SFR Credit…..

Keep reading to find out more on the next page

On site Stormwater Storage, cont...

Installation Standards

To obtain a single family residential property credit for on-site stormwater storage the following standards and requirements must be met:

1. 50% of the property's roof area is properly connected to rain barrels or other approved storage devices that provide at least 40 gallons of storage per downspout
2. On-site stormwater storage must be completed in such a way that does not provide mosquito breeding grounds; such as making sure rain barrels are covered with a lid or screen that prevents mosquitoes from entering the storage structure.
3. On-site stormwater storage must be equipped with an overflow or bypass mechanism to divert rainwater to the storm drainage systems when storage structure is full. These mechanisms must not cause erosion, property damage or overflow onto a neighboring property.
4. On-site stormwater storage must be completely drained in no less than 24 hours and no longer than 4 days after each rainfall event.
5. All on-site stormwater storage structures must meet the local codes for downspout disconnection, property setbacks and all other applicable codes.

Maintenance Guidelines

1. Clean your gutters regularly to reduce debris.
2. Clear off any screens as necessary.
3. Periodically check any hoses associated with the storage structure to clear any debris.
4. To winterize, disconnect and return the downspout to its original configuration. Remove the hoses and mesh screen and store them. Make sure to drain the container to prevent it from freezing and cracking. If possible, store it upside down, so no water or materials will be able to enter.
5. For cisterns, leave the outflow spigot fully open during frost/freezing periods and unhook the drain hose about twice a year to clean out any compacted sediment.

Where to get a rain barrel:

You can purchase a rain barrel at most major lawn and garden centers. Call your local center to see if they carry them or if they can order one for you. There are numerous online suppliers as well.

You can also make your own rain barrel using a large trashcan, agricultural supply container, or other large container and a little ingenuity.

For further recommendations, talk to your local Soil & Water Conservation District or watershed group (see back page for contact information).

Include a photo of the rain garden with your application!

Pervious Pavement

PERVIOUS PAVEMENTS are designed to allow percolation or infiltration of storm-water through the surface into the soil below where the water is naturally filtered and pollutants are removed. Pervious pavement may include paving blocks, grid pavers, pervious concrete, or pervious asphalt. Gravel driveways are not considered pervious and are not eligible for a credit.

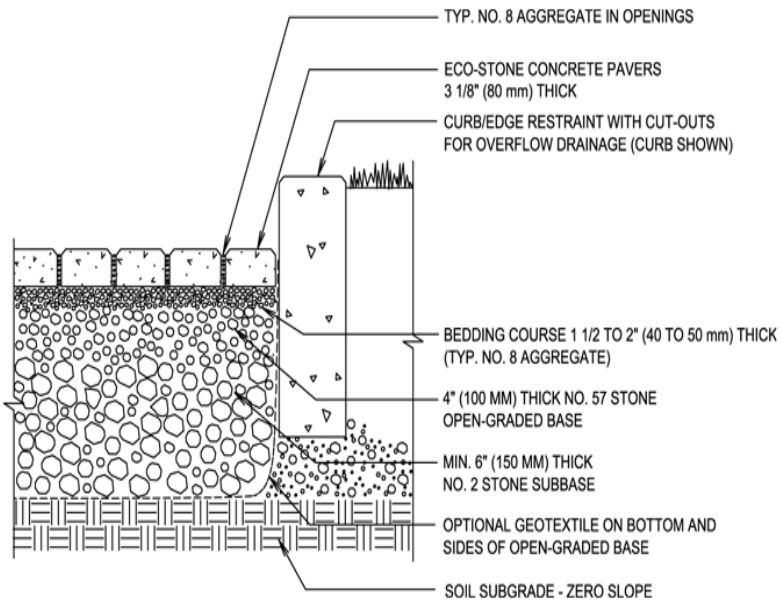
20% Credit

It is recommended that a qualified installer with knowledge of hydrology and hydraulics be consulted for applications using pervious pavement to ensure desired results. This fact sheet provides an overview of construction guidelines and research to date and is not meant to replace the services of experienced, professional installers.

Installation standards:

To obtain a credit for pervious pavement the following criteria must be met:

- Installed for the purpose of runoff filtration.
- Area of pervious pavement is at least 1000 sq. ft.
- Stone reservoir underneath the pavement type is at least 10 inches deep at all points.
- Installation meets all local building and zoning standards for driveway installations.



Maintenance Guidelines

1. Ensure pervious pavement system is draining and there are no visible signs of standing water on the surface.
2. Do not apply salt or sand during winter months.
3. Use a professional vacuum service annually to remove sediment accumulation and organic debris on the pavement surface.
4. Remove accumulated leaves and debris from pavement surface in the fall.

Remember to include a photo of the pervious pavement and a photo of the construction identifying the depth of stone reservoir with your application!

Vegetative Filter Strips

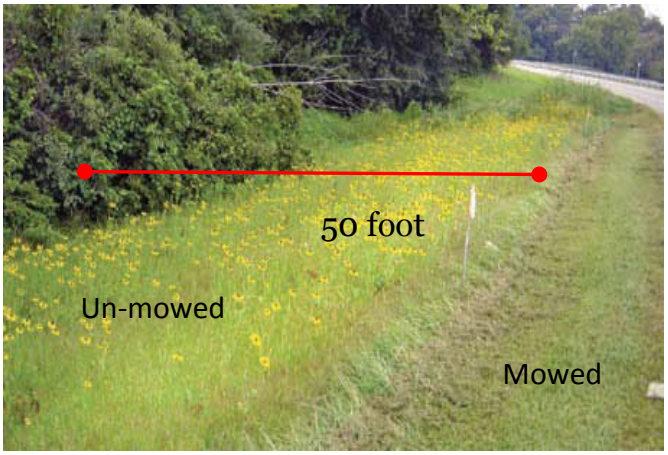
VEGETATED FILTER STRIPS are uniform strips of dense turf, meadow grasses, trees, or other vegetation with a minimum slope to treat runoff from roof downspouts.

20% Credit

Installation standards:

To obtain a credit for vegetated filter strips the following criteria must be met:

- 50% of the property's roof area drains to the vegetated filter strip.
- Filter strips are fully vegetated and there are no areas of bare soil or mulch.
- Filter strips must be at least 50 feet long with slopes less than 5%.
- Runoff from roof downspouts must be dispersed using splash block.



Maintenance guidelines:

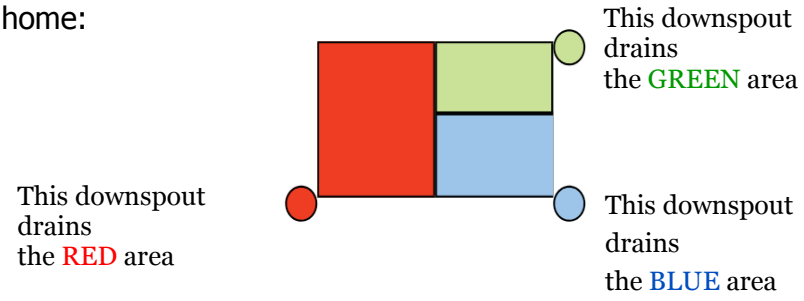
1. Clean gutters regularly to reduce debris.
2. Check the splash blocks twice a year to make sure they are not broken or damaged.
3. Maintain healthy vegetation along the filter strip.
4. Plant additional vegetation if bare soil or erosion is present.

Include a photo of the vegetated filter strip with your application!

EXAMPLE

The Smith's want to apply for a stormwater credit. Follow along as they decide which stormwater Best Management Practices (BMPs) will work for their property and fill out their application.

Let's look at their home:



For the Smith's to qualify for the credit either the red downspout or both the green and blue downspouts need to be connected to rain barrels. They decide to put a rain barrel on the red drain and goes to their neighborhood garden center and purchases a rain barrel kit. They attach the rain barrel to the red downspout and are now eligible for a **20% credit!**

But they are not finished! They like saving water and decide to add two more barrels and capture all the rain from their roof. They install two more rain barrels and applies for another credit. Their credit is **up to 40%!**

Lets review the Smith's situation. They have installed three rain barrels and have **qualified for 40% off their stormwater bill**. They can **earn up to 50% off** so they still have 10% more to save. What else can they do to get that last 10% credit? Their driveway and patio square footage equals 675 square feet so they don't meet the 1000 square foot installation requirement for pervious pavement.

The Smith's review their Credit Manual and discover another way to save. They like gardening, so they choose a rain garden for their next BMP. They download the *Rain Garden Technical Guide* on the Department of Forestry's website. They have already captured all of the rain from their roof, so they search for drainage from another impervious surface area where water can be captured. With a little reworking of the landscaping, they can capture the runoff from the small driveway into an appropriately sized rain garden. They fill out a third credit application for the **remaining 10% credit**.

With a little bit of research, sweat equity and planning, the Smith's have accomplished great things! They have saved water, reduced pollution and added a beautiful new garden.

Oh—and they **saved 50%** on their stormwater bill. Good job Smith family!!!

Resources

Department of Forestry
Information on Water Quality and rain gardens
Rain garden Technical Guide
http://www.dof.virginia.gov
434-977-6555

Virginia Soil & Water Conservation District
Watershed education, low impact development information, backyard conservation, lawn and tree care tips, rain garden and rain barrel information
http://www.vaswcd.org
804-559-0324

Virginia Department of Conservation and Recreation
Watershed education, lawn care and pet waste information, land conservation
http://www.dcr.virginia.gov
804-786-1712

James River Association
9 South 12th Street, 4th Floor
Richmond, VA 23219
www.jamesriverassociation.org
(804) 788-8811

Clean Virginia Waterways
Rain barrel workshops and supplies, watershed education
http://www.longwood.edu/cleanva
434-395-2602

Chesapeake Bay Foundation
Water Quality, Lawn care tips, Bay education, rain garden & rain barrel information
http://www.cbf.org
804-648-4011

Alliance for the Chesapeake Bay
Bay education, Clean Stream projects, rain barrel and native landscaping information
http://www.allianceforthebay.org
804-775-0951

Environmental Protection Agency (EPA)
Pollution Prevention
http://www.epa.gov/stormwater
800-438-2474

Stormwater BMPs help manage the quantity and quality of stormwater runoff

APPENDIX C

NON-RESIDENTIAL/MULTI-FAMILY CREDIT MANUAL

DEPARTMENT OF WATER RESOURCES

525 TAYLOR STREET

LYNCHBURG VA 24501

434.455.4250

www.lynchburgva.gov/stormwater

INTRODUTION

On December 13, 2011 the City of Lynchburg approved the implementation of a Stormwater Utility by adopting City Code Chapter 16.3 Stormwater Utility to fund the City's stormwater management program. The ordinance provided for a stormwater fee that was subsequently approved by City Council on April 24, 2012 at a rate of $4.00 per Single-Family Unit (SFU).

The Department of Water Resources is responsible for meeting permitting requirements of the city's Municipal Separate Storm Sewer System (MS4) permit which include erosion and stormwater controls for development and re-development, seeking out and eliminating illicit discharges and providing public education on water quality related issues. In addition the City is responsible for the operation and maintenance of the city owned storm drainage system. This drainage system is similar to the water or wastewater systems which provide a public benefit. The stormwater fee will provide a dedicated funding source to addressing stormwater related issues such as flooding, erosion and water quality problems.

WHAT IS A STORMWATER FEE?

A stormwater fee is directly proportional to the impervious surface on the account holder's property. When a forested or grassy area is paved or replaced with an impervious material, this results in less infiltration of runoff. A larger amount of surface runoff enters the stormwater system causing an increase in demand on the drainage system. Account holders are therefore charged a fee based on the amount of hard (impervious) surface on a property.

Lynchburg measures the amount of impervious surface using the number of Single-Family Units (SFUs) per property. One SFU is equal to 2,672 square feet of impervious surface and will be charged the stormwater rate per month established by the City. The non-residential and multi-family fee is then based on the calculated number of SFUs for the existing impervious area multiplied by the SFU rate.

WHAT IS A STORMWATER CREDIT?

Bio-retention BMP

Properties that install stormwater best management practices (BMPs) to reduce the stormwater volume flowing or pollutant loading from their property to the storm system or surrounding bodies of water, can qualify to receive a reduction in their stormwater fee. A BMP is an activity, measure or facility that prevents or reduces the transport of pollutants, controls stormwater volume or rate and/or limits the impacts to the storm drainage system. These measures can include on-site practices such as bio-retention, vegetated swales and ponds that manage stormwater at its source. The City encourages the use of low-impact design strategies in the planning of development projects.

The stormwater credit will be based on the reduction of stormwater volume flowing from a property and can be obtained through the installation and continuing use, operations and maintenance of the BMP which is not owned or maintained by the City.

What types of credits are available?

The table outlines the types of credits available to nonresidential and multi-family properties.

Credit Category	Commercial, Industrial	Multi-Family Residential
Stormwater Quality	✓	✓
Stormwater Quantity	✓	✓
VPDES Industrial Permit Compliance	✓	

The credit amount will be determined based on the type of BMP and percentage of the impervious area of the site that drains to the BMP. The maximum credit allowed is fifty percent (50%) of the stormwater fee for the property being served by the BMP.

The credit will be good for a period of one (1) year. The owner will be required to submit an annual renewal application and proof of inspection and maintenance pursuant to the Stormwater Management Maintenance Agreement to continue receiving the credit.

Continue reading to find out how which BMPs will earn a credit

STORMWATER QUALITY CREDIT

A Stormwater Quality credit of up to 20% is available to applicants who have installed an approved Best Management Practice (BMP) that provides for the permanent reduction of pollutants from the stormwater runoff leaving their property. The Stormwater Utility has adopted the Virginia Department of Conservation and Recreation's guidelines for which BMPs qualify for the Stormwater Quality Credit. Providing for the reduction of phosphorus pollution will qualify for a quality credit. Both standards and specifications are acceptable to the Stormwater Utility.

The amount of credit earned by a property is determined by the type of BMP installed, the number of BMPs installed and the percentage of the impervious area on the site that drains to the BMP. The credit will apply to the percentage of the impervious surface area that is treated by the BMP. The following formula will determine the amount of credit earned by a Quality BMP:

Credit Earned = (20% Credit) * (Stormwater Fee) * (% of impervious area treated)

All BMPs must be designed, constructed and maintained in accordance with the Virginia Stormwater Management Handbook which can be found at www.dcr.virginia.gov/soil_and_water.shtml. Another source for acceptable design criteria is the Virginia Stormwater BMP Clearinghouse Standards and Specifications. These can be found at www.vwrrc.vt.edu/swc/.

Approved BMPs for Quality credits:

Practice Number	Practice	Design Specification
3	Grass Channel	SW Handbook Min Std. 3.13, VA DCR Design Spec. No. 3
7	Permeable Paver	SW Handbook Min Std. 3.10D, VA DCR Design Spec. No. 7
8	Infiltration	SW Handbook Min Std. 3.10, VA DCR Design spec. No. 8
9	Bio-retention 1	SW Handbook Min Std. 3.11, VA DCR Design Spec. No. 9
	Bio-retention 2	
	Urban Bio-retention	
10	Dry Swale 1	VA DCR Design Spec. No. 10
	Dry Swale 2	
11	Wet Swale 1	VA DCR Design Spec. No. 11
	Wet Swale 2	
12	Filtering Practice 1	SW Handbook Min Std. 3.10, VA DCR Design Spec. No 12
	Filtering Practice 2	
13	Constructed Wetland 1	SW Handbook Min Std. 3.09 VA DCR Design Spec. No. 13
	Constructed Wetland 2	
14	Wet Pond 1	SW handbook Min Std. 3.06, VA DCR Design Spec. No. 14
	Wet Pond 2	
15	Extended Detention Pond 1& 2	SW Handbook Min Std. 3.07 VA DCR Design Spec. No. 15
NA	Manufactured BMP Systems	SW Handbook Min Std 3.15, SW Technical Bulletin #6

STORMWATER QUANTITY CREDIT

A Stormwater Quantity credit of up to 50% is available to applicants who have installed an approved Best Management Practice (BMP) that reduces stormwater volume. These practices reduce the demand or burden on Lynchburg's storm sewers, the combined sewer system and our streams and rivers. The Stormwater Utility has adopted the Virginia Department of Conservation and Recreation's guidelines for which BMPs qualify for the Stormwater Quantity Credit. Providing for the reduction of phosphorus pollution will qualify for a quality credit. Both standards and specifications are acceptable to the Stormwater Utility.

The amount of credit earned by a property is determined by the type of BMP installed, the number of BMPs installed and the percentage of the impervious area on the site that drains to the BMP. The credit will apply to the percentage of the impervious surface area that is treated by the BMP. The following formula will determine the amount of credit earned by a Quantity BMP:

Credit Earned = (50% Credit) * (Stormwater Fee) * (% of impervious area treated)

All BMPs must be designed, constructed and maintained in accordance with the Virginia Stormwater Management Handbook which can be found at www.dcr.virginia.gov/soil_and_water.shtml. Another source for acceptable design criteria is the Virginia Stormwater BMP Clearinghouse Standards and Specifications. These can be found at www.vwrrc.vt.edu/swc/.

Approved BMPs for Quantity Credit:

Practice Number	Practice	Design Specification
1	Rooftop Disconnection	VA DCR Design Spec. No 1
2	Vegetated Filter	SW Handbook Min Std 3.14 VA DCR Design Spec No 2
6	Rainwater Harvesting	VA DCR Design Spec No 6
9	Vegetated Roof 1 or 2	VA DCR Design Spec No 5

STORMWATER VPDES CREDIT

Some activities that take place at industrial facilities, such as material handling and storage, are often exposed to the elements. As runoff from rain or snowmelt comes into contact with these activities, it picks up pollutants and transfers them to the storm sewer system and ultimately into the creeks and rivers of Lynchburg. To minimize the impact of these discharges, the Virginia Department of Environmental Quality began requiring industrial facilities to register for a VPDES (Virginia Pollutant Discharge Elimination System) Stormwater General Permit.

Property owners who hold a valid and compliant VPDES Industrial Stormwater Permit and who discharge either to a stream through a private facility or to the Lynchburg storm sewer or combined sewer system are eligible to receive a 20 % credit. Documentation to receive a credit include the credit application, copy of the VPDES Industrial Stormwater Permit and copy of the Stormwater Pollution Prevention Plan (SWPPP).

MAKING A CREDIT APPLICATION

Non-Residential/Multi-Family Stormwater Credit Application

Applicant Information

Full Name: First Last

Address: Street Address Apt/Unit # M.I.

City State ZIP Code

Phone: Apartment/Unit #

E-mail Address: Alternate Phone:

Mailing Address:

Parcel ID Number

Check One:

Credit Information

☐ This is the first credit application for this property.
☐ This is a new credit request or reapplication.
☐ This is a reapplication after a credit suspension.

Type of Credit

☐ Stormwater Quality Credit
☐ Type of BMP utilized: _____
☐ Design Calculations included
☐ Construction plans/ as-built drawings included
☐ Signed Stormwater Man

☐ Stormwater Quantity Credit
☐ Type of BMP utilized: _____
☐ Design Calculations included
☐ Construction plans/ asBuilt drawings included
☐ Signed Stormwater Man

☐ Stormwater VPDES Credit
☐ Copy of VPDES Industrial Grid or gross pavers
☐ Copy of Stormwater Pollution Prevention Plan (SWPPP) included
☐ Documentation of permit compliance from regulating authority

Note: Include photograph of each Best Management Practice

Prior to receiving a stormwater credit the property owner must submit a completed Non-Residential/Multi-Family General Credit Application, along with supporting information (including pictures) on the design and installation of the practice(s). The property owner is responsible for making all appropriate applications prior to receiving a credit on their stormwater utility account. Application and documentation requirements include a complete application, signed Stormwater Maintenance Agreement and design calculations and construction plans.

When a credit application is received by the Department an administrative completeness review will be conducted. If the application is not complete, the Department will contact the applicant and may request additional information necessary to complete the application.

Once a complete application has been received the Department will review all documentation and the applicant will be notified in writing when an application is approved or denied within 30 days of submittal of a complete application. If an application is denied, the applicant can appeal based on the established appeals procedures.

A credit will not be applied to the Utility Billing Account until the BMP has been constructed and an inspection performed on the practice(s) implemented.

Credit Requirements:

* Submit all required documentation with the application;
* The BMP shall remain privately owned and maintained, with the owner having sole responsibility for maintenance and upkeep;
* The BMP shall not become part of the Stormwater Utility;
* Annual renewal is contingent on the property owner submitting a Annual Stormwater Report along with the BMP Inspection Checklist pursuant to the Stormwater Management Maintenance Agreement.

Submit Credit Application and supporting documentation to the following:

City of Lynchburg
Department of Water Resources
Attn: Stormwater
525 Taylor Street
Lynchburg VA 24501

Maintenance Requirements

In order for an applicant to continue receiving the stormwater credit each BMP(s) installed must be maintained to ensure continued function. In addition to the annual inspection and report, the applicant is responsible for having all ongoing maintenance work completed to keep the measure functional.

BMP Inspection checklist: Submit applicable Inspection check-list with Annual Report to receive the credit. Be sure to sign and date inspection form.

Stormwater Annual Report: Submit Annual Report with all supporting documentation annually to receive credit. Be sure to sign and date report.

Restrictions on credits

Transfer of credit: The stormwater credit applies only to the applicant. Credits do not transfer if ownership changes. A new application must be submitted for new account holders to receive the credit.

Local Community Requirements: The BMP must meet all applicable City of Lynchburg building, planning and zoning code requirements.

The credit is valid for one year. The property must submit the renewal application to continue to receive credit. The renewal application can be completed concurrently with the Stormwater Annual Report

Right to Inspection. The City may inspect the BMP at any time during the year. If the BMP is not functioning as approved or has not been maintained, the City reserves the right to cancel the stormwater credit until a new application is received and the property owner proves that all maintenance work has been performed to return the BMP to a fully functional condition.

HOAs or POAs

A Homeowners or Condominium Association can apply on behalf of its members for the Stormwater Credit. The Association must own and have legally-binding responsibility to maintain an approved BMP. The Association must document its legally binding agreement with the property owners who will be receiving the stormwater fee credit to provide funding necessary to maintain the BMP. If a credit application is approved, the credit will be applied to each account holder listed as a member of the Association whose property drains to the BMP.

RESOURCES

Virginia Stormwater BMP Clearing-house Design standards and calculations
http://www.vwrrc.vt.edu/swc/

Virginia Stormwater Management Handbook Design standards and calculations **http://www.dcr.virginia.gov/soil_and_water/stormwat.shtml#vswmhnbk**

The Center for Watershed Protection
Fact sheets, design guidance, and reference materials
http://www.cwp.org/

Low Impact Development Center
Fact sheets, design guidance, and reference materials
http://www.lowimpactdevelopment.org/

Chesapeake Bay Foundation
Rain garden, rain barrel, and native planting information.
http://www.cbf.org/

U.S. Green Building Council
Fact sheets, design guidance, and reference materials
http://www.usgbc.org/

Environmentally Sensitive Landscaping
Fact sheets, design guidance, and reference materials
www.epa.gov/GreenScapes

Alliance for the Chesapeake Bay
Rain barrel and native landscaping information.
https://www.allianceforthebay.org/

Interlocking Concrete Pavement Institute
Fact sheets, design guidance, and reference materials
http://www.icpi.org/

Pervious Concrete
Fact sheets, design guidance, and reference materials
http://www.perviouspavement.org/

Stormwater BMPs help manage the quantity and quality of stormwater runoff to local streams and waterways

Stormwater Utility Fee Credit Manual

Single Family Residential Properties

City of Roanoke, Virginia
Department of Planning, Building, and Development
215 Church Avenue, S.W., Noel C. Taylor Municipal Building, Room 166
Roanoke, VA 24011

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GLOSSARY

Adequate Channel: A ditch, pipe, or other stormwater conveyance that is properly sized and constructed to prevent flooding and erosion in the channel and on adjacent properties.

BMP or "Best Management Practice": A control measure, activity, or facility that prevents or reduces the transport of pollutants, controls stormwater volume or rate or otherwise limits adverse impacts to the storm drainage system and receiving waters.

Erosion: The process of water or wind moving soil and depositing it elsewhere. Erosion is increased when vegetation is removed or an area is denuded.

Groundwater: Water held in soil pore spaces below ground. Groundwater can eventually flow to a drinking water well or area waterways.

Impervious Surface: Surfaces that do not allow water to be absorbed. Impervious surfaces include paved areas, structures, bridges, decks, and gravel. *Note: The Virginia Stormwater Management Handbook defines gravel as impervious because once it is installed it is compacted and impedes the flow of water into the ground.

Infiltration: The process by which water on the ground surface is absorbed into the soil.

Non-Single Family Residential Property: Any property that is not a single family residential property. Types of non-single family residential or other properties include commercial, industrial, multi-family residential, and institutional properties to name a few. *Note: Properties applying for credits for a regional BMP that serves multiple properties (single family residential or otherwise) will need to follow the rules listed in the Commercial, Industrial, Institutional, and Multifamily Residential Properties (Non-Single Family Residential or Other Properties) Credit Manual.

Pervious Surface: A surface composed of material that allows water to be absorbed into the ground, reducing runoff and filtering pollutants.

Regional BMP: BMP that accepts and treats runoff from multiple separate properties. Regional BMPs are often owned by a Property Association or other entity responsible for regular maintenance and inspections.

Runoff: Precipitation that does not absorb into the ground but flows down-slope along the surface. Runoff volume, flow rate, and pollutant load increases with impervious areas.

Sediment: Soil and rock that is moved and deposited by water. Sediment is usually suspended in water until flow rates decrease enough that it can settle out.

Sheet Flow: An overland flow of water in the form of a thin, continuous film rather than concentrated into channels.

Single Family Residential Property: Property on which a dwelling exists which is occupied exclusively by one family for noncommercial purposes. Duplexes are included as a single family residential property for the purposes of this credit manual.

Stormwater: Water that originates during precipitation events. Stormwater that does not absorb into the ground becomes runoff which flows to the storm drainage system and then on to creeks and rivers.

Stormwater Ideabook: Guidance document prepared by the City of Roanoke to inform and encourage homeowners to implement BMPs on single family residential properties. This guide is not in full compliance with the Virginia BMP Clearinghouse and is not a design tool for projects on non-single family residential properties.

Water Quality: Refers to the chemical, physical, and/or biological characteristics of water.

Water Quantity: Refers to the flow rate or volume of runoff from a property.

Note: The definitions of terms that appear above are to facilitate your review of this Manual. Please note that these terms may also be defined by applicable laws, ordinances, rules, or regulations and are controlled by those definitions. For completed definitions of these terms under applicable laws, ordinances, rules, or regulations, please consult: The City of Roanoke Stormwater Management Ordinance, the City of Roanoke Stormwater Design Manual, the City of Roanoke Stormwater Ideabook, and the Virginia Stormwater Management Handbook.

I. INTRODUCTION

The City of Roanoke has 13 major rivers and streams within its boundaries and seven of these are listed as impaired for water quality by the Virginia Department of Environmental Quality (DEQ). Investment needs to be made in capital improvements, system maintenance, and regulatory compliance to ensure that environmental standards are met and our valuable natural resources are protected.

Trash and debris in a City storm drain.

Our stormwater system is aging with much of it having exceeded its useful design life of 50 years, and it has seen little investment in decades. At the same time, our impervious surface areas (paved driveways, rooftops, access roads) have increased many-fold as our city has developed into a regional center for commerce, healthcare, retail, entertainment and the arts. The City has a current backlog consisting of hundreds of stormwater projects estimated to cost tens of millions of dollars, which need to be implemented to effectively minimize flooding and control pollutants before they enter our local waterways. Combine these capital infrastructure demands with the need to provide on-going maintenance of hundreds of miles of existing stormwater pipes and the requirement to meet increasing Federal Clean Water Act stormwater permit requirements, and the City faces a significant financial challenge.

Storm drain surcharging after large storm.

City leaders recognize that stormwater management solutions range from individual citizen and business participation to large-scale stormwater projects, but any real solution will require an on-going dedicated level of funding and focused effort. To that end, in 2013, the City Council approved the

implementation of a Stormwater Utility Fee to fund the City's public stormwater management program. In May 2014, the City Council adopted the Stormwater Utility Fee Schedule.

II. STORMWATER UTILITY FEE

Stormwater runoff is proportional to the amount of impervious surface on developed property. When a wooded or grassy area is paved or replaced with impervious material, the result is less infiltration of stormwater. Hardened or impervious surfaces such as driveways, parking lots, streets and rooftops do not allow rainfall to soak into the soil, so more of the rainfall becomes stormwater runoff and increases the demand on the system. This stormwater runoff also accumulates pollutants such as oil and grease, chemicals, nutrients, metals, and bacteria as it travels across land and discharges into our rivers and streams. Both the quantity and the quality of runoff need to be managed before discharge into local rivers and streams.

Therefore the amount of the stormwater fee is based on the amount of impervious area on each developed property in the City. The City used aerial photography and Geographic Information System (GIS) technology to identify and measure the impervious area on all developed properties in the City. The green hatched areas in the photograph below demonstrate the capture of impervious features which include rooftops, driveways, and walkways.

For billing purposes, the fee is based on each 500 square feet of impervious area identified, rounded to the nearest whole number. So for the two examples shown above, the fee for the property on the left would be based on 5 billing units (2,477 square feet divided by 500 square feet or 4.95) and the property on the right, which has almost 800 square feet less, would be based on 3 billing units (1680 square feet divided by 500 square feet or 3.3).
The monthly fee per billing unit will be phased in over three years as shown in the list below:

2014: $0.30/Billing Unit/Month
2015: $0.60/Billing Unit/Month
2016: $0.90/Billing Unit/Month

The monthly fee for the two properties shown above will therefore be:

Year	Left Property Monthly Utility Fee	Right Property Monthly Utility Fee
2014	$1.50	$0.90
2015	$3.00	$1.80
2016	$4.50	$2.70

All developed properties, including City owned properties and properties owned by tax-exempt organizations, are subject to the fee unless such properties are expressly exempt from the fee under State Code or under the Stormwater Utility Ordinance.

The fee will go into effect in July 2014 and be billed using the City's real estate tax billing system. Any parcel owner may request a fee adjustment in accordance with § 11.5-9 of the Code of the City of Roanoke within 30 days of receiving the bill.

III. HOW DO I EARN A CREDIT?

The City Council acknowledged when establishing the Stormwater Utility that certain on-site stormwater management activities can reduce the impact on the public system by treating or reducing the stormwater runoff from a developed property. In order to recognize the positive impact these on-site activities can

have, single family residences that install, implement, and maintain stormwater best management practices (BMPs) that improve water quality or reduce runoff can qualify to receive a reduction in their stormwater fee. A BMP is an activity, measure or facility that prevents or reduces the transport of pollutants, controls stormwater volume or rate or otherwise limits the impacts to the storm drainage system. These measures can include on-site practices such as bioretention, vegetated swales, constructed wetlands, rain gardens and detention ponds that manage stormwater at its source.

The stormwater credit will be based on the reduction of stormwater volume and pollutants flowing from a property and can be obtained through the installation and continuing use, operation and maintenance of the BMP which is not owned or maintained by the City. The credit amount will be determined based on the type of BMP and its continued use and maintenance.

In cases where a property is served by a BMP owned by a separate entity or a Homeowners Association, the property owner may receive credit for the BMP if they provide documentation showing they share in the maintenance obligation and costs of the BMP. Please refer to the City of Roanoke, Virginia Utility Fee Credit Manual for Commercial, Industrial, Institutional, and Multifamily Residential properties for information regarding credits, applications, and requirements for these types of credit requests.

IV. WHAT BMPs ARE APPROVED FOR CREDIT?

The Level 1 and Level 2 BMPs described in the following section have all been approved for a credit to the stormwater utility fee. Selecting more than one BMP is encouraged; however, the maximum credit allowed per parcel is fifty percent (50%). Credits will not be increased for BMPs that were voluntarily installed or that accept stormwater from other properties.

For additional information on design, installation, and maintenance requirements of each of these BMPs, please refer to the City of Roanoke Stormwater Ideabook and other resources listed at the end of this manual.

The City of Roanoke also encourages the use of new and innovative stormwater management designs. The City may issue 10% credits for other BMPs not listed in this manual if the homeowner can show that the practice treats stormwater for priority pollutants including bacteria, sediment, PCBs (Poly-Chlorinated Biphenyls), Phosphorous, or Nitrogen.

A. Level 1 BMPs: 10% Credit

BMPs in the following list are considered "Level 1 BMPs" and will earn homeowners a 10% credit on their utility fee. These BMPs must be installed and maintained in accordance with the recommendations listed in the City of Roanoke Stormwater Ideabook.

Rain Barrels

A rain barrel collects and stores rainwater from roof drains that would otherwise flow to storm drains and streams. Once the rainwater is collected, it can be used to water lawns, gardens, trees, and for other non-irrigation purposes like washing your car. This collection and re-use of rainwater reduces the amount of runoff and pollutants that flow directly to the City storm drain system and eventually to our waterways.

A rain barrel is usually made of a clean, plastic 55 gallon drum with a spigot located at the bottom and an overflow mechanism to direct excess water to an appropriate area away from neighbors, sidewalks, steep slopes, and retaining walls. All rain barrel openings to the air are screened to keep insects and debris out.

Vegetated Filter Strip

A Vegetated Filter Strip is a vegetated buffer area that treats sheet flow from adjacent impervious surfaces by slowing down stormwater runoff and filtering out pollutants. Vegetated Filter Strips are normally composed of turfgrasses, meadow grasses, trees, and other native vegetation. Filter strips should have a relatively low slope to encourage sheet flow across the filter strip. Although these areas must be well vegetated to be effective, property owners are required to keep grass routinely maintained as specified in the Code of the City of Roanoke.

Grass channel that directs stormwater to the storm drain system. Rock check dams slow stormwater and allow for additional infiltration.

Grass Channel

A Grass Channel or grass swale refers to a shallow, vegetated ditch used to direct water from impervious areas to an adequate channel. Grass Channels filter and slow down runoff making it a better practice than pipes and concrete gutters for conveying stormwater runoff to storm drain

systems and creeks. When deciding if a grass channel is a good solution for stormwater treatment on your property, it is important to verify the practice is at least 10 feet down slope of your foundation and that it flows to a stabilized outlet and not toward a neighbor's property.

Roof Drain Disconnection

This BMP works by eliminating any direct connections between roof drains or downspouts and the storm drain system, ditches, or waterways. Instead, roof drains are routed to discharge at ground level onto flat or gently sloped vegetated areas where infiltration can occur. To avoid any potential damage to building foundations, the altered discharge point(s) should not be closer than 5 feet from any building.

Lawn Maintenance BMPs

Proper lawn maintenance can significantly improve water quality and decrease runoff from urban lawns. A few examples of ways you can improve water quality by altering your normal lawn maintenance routine include limiting fertilizer use, seeding bare areas to prevent erosion, adding soil compost amendments to improve infiltration, and picking up pet waste regularly to prevent bacteria from entering the storm drain system. To qualify for a stormwater utility fee credit, the property owner must commit to at least three of the following:

1. Grow turfgrasses adapted to the Roanoke climate.
2. Use less fertilizer.
3. Leave lawn clippings on the lawn after mowing.
4. Avoid fertilizing within 20 feet of a stream or ditch.
5. Reseed bare areas to prevent future erosion.
6. Mow grass at 3" or taller to reduce runoff.
7. Keep grass clippings and fertilizers off impervious surfaces.
8. Don't irrigate too much.
9. Till soils and amend with compost to increase infiltration.
10. Pick up pet waste regularly and dispose of appropriately.

Further information on how to implement each practice is available in the City of Roanoke Stormwater Ideabook.

Trees

Although most homeowners are well aware of the value of planting trees with respect to aesthetics, property values, and decreased energy costs, many do not know that planting and preserving trees can also improve water quality.

Trees intercept large amounts of rain on their surface areas (leaves, branches, and trunks) and slow down stormwater runoff on the ground. The root systems also help increase infiltration. To qualify for a stormwater utility fee credit by adding trees to your property or preserving existing trees, the homeowner must be sure to address the following:

1. Plant or preserve trees included in Table 642-1 of the City of Roanoke Zoning Ordinance and listed in the table in Appendix A.
2. A minimum tree canopy coverage of 20% is required to receive credit.
3. Trees should be placed a minimum of 10 feet from any above ground and underground utilities and structures. . Remember to call Miss Utility by dialing 811 a minimum of 3 days before starting your project to request utilities be marked. Care should also be taken in close proximity to septic drain fields
4. Trees located within the City Right of Way do not qualify for a utility fee credit.
5. Existing tree canopy on wooded lots may be determined by review of aerial photography.
6. Trees must be planted and preserved properly and in good, healthy condition to continue to receive credit.

Waste and Refuse Management:

Improper waste and refuse containment and the exposure of wastes to the weather, can lead to the pollution of stormwater. For those who go the extra mile to prevent that from happening, you are eligible for a credit if your usual and customary waste management practices ensure that all wastes and refuse, including recyclables, are fully contained and stored within a roofed structure so as not to expose them to rain or other precipitation.

Trash can enclosure photograph from www.homedepot.com

Traditional Septic & Alternative Onsite Sewage System Maintenance:

A properly maintained and functioning private sanitary sewage system reduces the risk of bacterial contamination of our waters, and otherwise controls the

related threats to public health. Such systems include a standard septic tank and drain field, but may also include other engineered onsite wastewater management systems approved for use by the VA Department of Health and otherwise compliant with the applicable state and federal regulations.

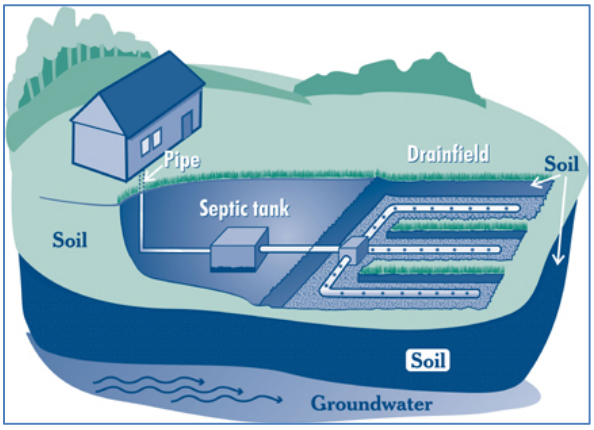


Diagram of a typical residential septic system. Graphic available at www.epa.gov

To qualify for this credit a homeowner shall provide documentation from a licensed or permitted septic service professional attesting that:

1. Your traditional septic or alternative sanitary sewage system has been inspected and is functioning properly and;

2. Your septic tank, or other sewage solids tank, has been pumped at the appropriate interval based on your household water use, but NOT LESS THAN ONCE EVERY 5 YEARS (typically every 3-5 years).

3. Suitable documentation must include the date of service, letterhead receipt clearly displaying the name and contact information of the permitted septic service company who has serviced your system, and the service professional's signature verifying that a system inspection and solids pump out was performed, and that the system was found to be in a satisfactory operating condition

NOTE: for all alternative onsite sewage systems (not a standard septic tank and drainfield), the service professional signing your documentation must also affix proof that they are certified in the State of VA as a Licensed Onsite Sewage System Professional.

B. Level 2 BMPs: 25% Credit

BMPs in the following list are considered "Level 2 BMPs" because they are more complicated to install and provide greater water quantity and quality benefits than the Level 1 BMPs. Therefore, homeowners that install and maintain Level 2 BMPs are issued a 25% credit on their monthly stormwater utility fee. These BMPs must be installed and maintained accordance with the recommendations listed in the City of Roanoke Stormwater Ideabook.

Pervious pavers in the City of Roanoke

Pervious Pavements

Traditional paving materials allow stormwater to runoff rapidly. Pervious Pavements, however, are alternatives to conventional paving materials that allow for infiltration of stormwater into the soil below while still proving a rugged and durable high traffic surface. Pervious Pavements include paving blocks, grid pavers, pervious concrete, and pervious asphalt and often include a stone reservoir under the pavement material to allow for water storage. Gravel driveways are not considered pervious and are not eligible for a credit.

Rain Gardens

A Rain Garden is a landscaped depression designed to capture and cleanse stormwater runoff. The plants and soil in the rain garden work together to reduce runoff and remove pollutants before the stormwater discharges from the rain garden or infiltrates into the underlying soils. Rain Gardens can be attractive landscaping features when designed and maintained properly.

Single Family Residential rain garden. Photo courtesy of Gay and Neel, Inc. .

Infiltration Practices

Infiltration Practices are typically trenches or a pit filled with specially selected and installed gravel and/or other porous media that stores stormwater in the spaces between the rocks and then allows that stored water to slowly infiltrate into the surrounding soils. Roanoke area soils are very high in clay, making it difficult and sometimes impossible to infiltrate water. In these circumstances, the infiltration practice will sometimes include a perforated drain installed at the bottom of the pit that will slowly collect the stored water and direct it to a storm drain system or creek.

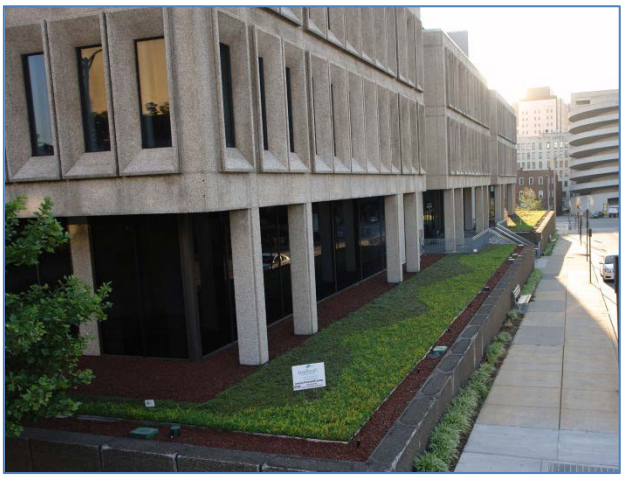
Underground cistern at Fire Station #3.

Cisterns

Cisterns are different from Rain Barrels in that they are designed to hold much larger quantities of water for re-use on the property. Cisterns reduce the amount of runoff and pollutants that flow directly to the City storm drain system and then to our waterways. Cisterns can be installed aboveground, underground, or elevated depending on the needs and constraints of your lot. Water collected in cisterns can be used for indoor and outdoor non-potable uses including irrigation, washing cars, flushing toilets, and laundry.

Green Roofs

A Green Roof, also known as living roof or vegetated roof cover, is a thin layer of living plants in a lightweight engineered soil medium on a roof. Precipitation is taken up by green roof plants and transpired into the air. As a result, Green Roofs direct less runoff to undersized storm drains and impaired creeks than traditional rooftops. The soil and vegetation layers also help to insulate the building and when properly maintained, can significantly increase the functional lifespan of the roof.



Green roof at City Municipal Building.

V. HOW DO I APPLY FOR CREDIT?

Prior to receiving a credit, the property owner must submit a completed Single Family Residential Stormwater Utility Fee Credit Application, included in this manual, to the City of Roanoke Department of Planning, Building, and Development located at 215 Church Avenue, S.W., Noel C. Taylor Municipal Building, Room 170, Roanoke, VA 24011

There is no fee for a credit application. Once a complete application is submitted and approved, the credit will go into effect the calendar year after

approval of the application. A certification statement is included on the application which says the owner is promising to implement and maintain the BMP(s) in accordance with the City of Roanoke Stormwater Ideabook and Design Manual.

If an application is denied, the applicant can appeal the decision to the Director of the Department of Planning, Building, and Development in writing within 30 days of the denial. The Director shall make a determination within thirty (30) days of receipt of an appeal and notify the Applicant in writing. If the Applicant is not satisfied with the response of the Director, a written appeal can be submitted to the City Manager who shall offer a final decision to the Applicant within 30 days of receipt of the written appeal.

The City may routinely inspect BMPs to verify all operation and maintenance is in compliance with City Standards. The credit will be revoked if violations are observed.

VI. MAINTENANCE REQUIREMENTS

In order for an applicant to continue to receive a stormwater credit, each BMP installed must be maintained to ensure continued function. The applicant is responsible for having all ongoing maintenance work completed to keep the facilities functional. The City may revoke the credit if an inspection determines it is no longer properly maintained or functioning as designed. This revocation will be effective thirty (30) days after the owner is notified in writing of the deficiencies and if the problems are not resolved

VII. RESTRICTIONS ON CREDITS

Transfer of Credit: The stormwater credit applies only to the applicant. Credits do not transfer if ownership changes. A new application must be submitted for new account holders to receive the credit.

Off-Site BMP Credit: In circumstances where an applicant is attempting to claim credit for a BMP owned by a separate entity, proof that the Applicant shares in the maintenance obligations and costs of the BMP will need to be submitted in order for credit to be applied.

Local Community Requirements: The BMP must meet all applicable City of

Roanoke building, planning, and other Code of the City of Roanoke requirements.

Right to Inspect. The City may inspect the BMP at any time during the year. If the BMP is not functioning as approved or has not been maintained, the City may revoke the stormwater credit until the property owner proves that all maintenance work has been performed to return the BMP to a fully functional condition.

See the Code of the City of Roanoke, Chapter 11.5 Stormwater Utility for more details on the stormwater utility fee and credit program.

By the authority granted to me by City of Roanoke Code Section 11.5-1, I hereby approve and adopt this Stormwater Utility Fee Credit Manual: Single Family Residential Properties) (February 1, 2014 Version), which shall be effective July 1, 2014.

This 3rd day of February, 2014.

Christopher P. Morrill
City Manager
City of Roanoke

APPENDIX A: CITY OF ROANOKE SINGLE FAMILY RESIDENITAL CREDIT APPLICATION FORM

Application For

Stormwater Utility Credit for a Single Family Residence

Date		Credit Application No.	

Planning Building & Development
215 Church Ave., SW, Room 170
Roanoke, VA 24011
Phone: **(540) 853-1090** Fax: **853-1594**
www.roanokeva.gov

NOTE: The City Council has authorized the City Manager to receive applications for stormwater utility fee credits prior to the effective date of the stormwater utility of July 1, 2014. Interested persons who make applications pursuant to these forms, please note that these forms may be modified in the future. Any such modification will be posted to the public.

Complete Form & Click Here To Print

Parcel Information:

Tax Map Number							
Parcel Address		City		State		Zip Code	

Owner Information:

Owner Name							
Owner Address		City		State		Zip Code	
Phone Number		email					

Type of BMP (check all that apply):

Please note the maximum credit possible per parcel is 50%.

Category: Level 1 (10% Credit per BMP)

- ◯ Rain Barrel
- ◯ Roof Drain Disconnection
- ◯ Waste and Refuse Management
- ◯ Vegetated Filter Strip *
- ◯ Sewage System Maintenance
- ◯ Grass Channel *
- ◯ Lawn Maintenance (list three practices to be implemented)
- ◯ Trees* (list percent of canopy provided)

Practice 1		Preserving Existing	
Practice 2		Establishing New	
Practice 3			

Category: Level 2 (25% Credit per BMP)

- ◯ Pervious Pavement *
- ◯ Cistern *
- ◯ Infiltration Practice *
- ◯ Rain Garden *
- ◯ Green Roof *

* Denotes that a site plan is required with the application.

I hereby affirm to the City of Roanoke that the BMPs as identified above has been installed or implemented on the property in conformance with the Stormwater Utility Fee Credit Manual for Single Family Residential Properties and the Roanoke Stormwater Ideabook. I further acknowledge that maintenance and implementation will be performed in accordance with the Roanoke Stormwater Ideabook. It is understood that lack of maintenance or proper installation will result in a revocation of the credit applied to the property.

Print Name		Signature	

APPENDIX B: CITY OF ROANOKE APPROVED TREE LIST

Table 642-1. Trees: Approved Plant List, Minimum Size at Planting, 20-Year Canopy, and Suitability

Common Name	Botanical Name	Minimum Height at Planting	Minimum Caliper at Planting	Canopy at 20 Years (sq. ft.)
Evergreen Trees				
Cedar, Deodar	Cedrus deodara	5'		177
Cedar, Eastern Red	Juniperus virginiana	5'		38
Cypress, Leyland	X Cupressocyparis leylandii	5'		113
Holly, American	Ilex opaca	5'		38
Magnolia, Southern	Magnolia grandiflora	5'		177
Pine, Eastern White	Pinus strobus	5'		177
Spruce, Colorado Blue	Picea pungens	5'		113
Spruce, Norway	Picea abies	5'		177
Spruce, White	Picea glauca	5'		113
Large Deciduous Trees				
Beech, American	Fagus grandifolia		2"	177
Beech, Copper	Fagus sylvatica cuprea		2"	177
Birch, River	Betula nigra		2"	254
Black Gum/Tupelo	Nyssa sylvatica		2"	177
Elm, Lacebark	Ulmus parvifolia		2"	254
Ginkgo (Male Variety Only)	Ginkgo biloba (Male Variety Only)		2"	133
Honey Locust, "Shademaster"	Gleditsia triacanthos, "Shademaster"		2"	314
Japanese Pagoda tree	Sophora japonica		2"	254
Japanese Zelkova	Zelkova serrata		2"	177

Linden, American	Tilia Americana		2"	314
Linden, Little Leaf	Tilia cordata		2"	177
London Planetree	Platanus acerfolia		2"	380
Maple, Red	Acer rubrum		2"	314
Maple, Sugar	Acer saccharum		2"	314
Oak, Chestnut	Quercus prinus		2"	254
Oak, Northern Red	Quercus rubra		2"	254
Oak, Pin	Quercus palustris		2"	254
Oak, White	Quercus alba		2"	254
Oak, Willow	Quercus phellos		2"	254
Redwood, Dawn	Metasequoia glyptostroboides		2"	177
Tuliptree	Liriodendron tulipifera		2"	254
Small Deciduous Trees				
Cherry, Comelian	Cornus mas	5'		113
Cherry, Kwanzan Flowering	Prunus serrulata 'Kwanzan'		2"	177
Cherry, Yoshino	Prunus yeodensis		2"	177
Dogwood, Flowering	Cornus florida	5'		177
Dogwood, Kousa	Comus kousa	5'		177
Goldenraintree	Koelreuteria paniculata		2"	177
Hawthorn, Washington	Crataegus phaenopyrum	5'		113
Hophombeam, American	Ostrya virginiana		2"	201
Hombeam, American	Carpinus caroliniana		2"	177
Maple, Amur	Acer ginnala		2"	113
Maple, Hedge	Acer campestre		2"	177
Maple, Japanese	Acer palmatum	5'		177
Maple, Trident	Acer buergerianum		2"	177
Myrtle, Crape	Lagerstroemia indica	5'		113
Redbud, Eastern	Cercis Canadensis	5'		177
Serviceberry	Amelanchier arborea	5'		201
Sourwood	Oxydendrum arboreum	5'		113

White Fringetree	Chionanthus virginicus	5'		113
Source for Tree Canopy Coverage at 20 Years: Virginia Nursery & Landscape Association, Inc.				
* Suitability Key for Table 642-1: P = Parking Areas or Street Yard Trees C = Tree Canopy for Overall Site B = Buffer Yards				

APPENDIX C: ADDITIONAL RESOURCES

CITY OF ROANOKE STORMWATER IDEABOOK FOR HOMEOWNERS: http://www.roanokeva.gov/85256A8D0062AF37/CurrentBaseLink/N29ALPE9085SSIAEN

DEPARTMENT OF CONSERVATION AND RECREATION (DCR) MAINTENANCE CALENDAR FOR COOL AND WARM SEASON TURFGRASSES IN VIRGINIA: http://www.pubs.ext.vt.edu/430/430-523/430-523_pdf.pdf AND http://www.pubs.ext.vt.edu/430/430-522/430-522_pdf.pdf

DCR TIPS ON KEEPING YOUR LAWN GREEN AND VIRGINIA'S WATERS CLEAN: http://www.dcr.virginia.gov/water_quality/documents/tipsstate.pdf

VIRGINIA BMP CLEARINGHOUSE: http://vwrrc.vt.edu/swc/

ALLIANCE FOR THE CHESAPEAKE BAY: http://stormwater.allianceforthebay.org/

VIRGINIA COOPERATIVE EXTENSION SERVICE VEGETATION PUBLICATIONS: http://www.pubs.ext.vt.edu/category/trees-shrubs-groundcovers.html

INTERNATIONAL SOCIETY OF ARBORICULTURE'S TREES ARE GOOD WEBSITE: http://www.treesaregood.org/

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (VDEQ): http://www.deq.virginia.gov/Programs/Water/StormwaterManagement.aspx

VIRGINIA DEPARTMENT OF FORESTRY: http://www.dof.virginia.gov/

ENVIRONMENTAL PROTECTION AGENCY (EPA): http://www.epa.gov/

Stormwater Utility Fee Credit Manual

Commercial, Industrial, Institutional, and Multifamily Residential Properties

City of Roanoke, Virginia
Department of Planning, Building, and Development
215 Church Avenue, S.W., Noel C. Taylor Municipal Building, Room 166
Roanoke, VA 24011

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GLOSSARY

BMP or "Best Management Practice": Schedules of activities, prohibitions of practices, including both structural and nonstructural practices, maintenance procedures, and other management practices to prevent or reduce the pollution of surface waters and groundwater systems from the impacts of land-disturbing activities.

Erosion: The process of water or wind moving soil and depositing it elsewhere. Erosion is increased when vegetation is removed or an area is denuded.

Groundwater: Water held in soil pore spaces below ground. Groundwater can eventually flow to a drinking water well or area waterways.

Impervious Surface: Any area improved, graded, and/or surfaced with impervious material or resulting in impervious conditions. An impervious material or condition is present when the natural infiltration of water into the soil is significantly impeded or prevented. An impervious surface includes that portion of the land surface covered by an elevated structure, such as a bridge or deck, regardless of whether the surface itself remains pervious or impervious. *Note: The Virginia Stormwater Management Handbook defines gravel as impervious because once it is installed it is compacted and impedes the flow of water into the ground.

Infiltration: The process by which water on the ground surface is absorbed into the soil.

Non-Single Family Residential or Other Properties: Any property that is not a single family residential property. Types of non-single family residential or other properties include commercial, industrial, multi-family residential, and institutional properties to name a few. *Note: Properties applying for credits for a regional BMP that serves multiple properties (single family residential or otherwise) will need to follow the rules listed in the Commercial, Industrial, Institutional, and Multifamily Residential Properties (Non-Single Family Residential or Other Properties) Credit Manual.

Pervious Surface: A surface composed of material that allows water to be absorbed into the ground, reducing runoff and filtering pollutants.

Regional BMP: BMP that accepts and treats runoff from multiple separate properties. Regional BMPs are often owned by a Property Association or other entity responsible for regular maintenance and inspections.

Runoff: Precipitation that does not absorb into the ground but flows down-slope along the surface. Runoff volume, flow rate, and pollutant load increases with impervious areas.

Sediment: Soil and rock that is moved and deposited by water. Sediment is usually suspended in water until flow rates decrease enough that it can settle out.

Sheet Flow: An overland flow of water in the form of a thin, continuous film rather than concentrated into channels.

Single Family Residential Property: Property on which a dwelling exists which is occupied exclusively by one family for noncommercial purposes. Duplexes are included as a single family residential property for the purposes of this credit manual.

Stormwater: Precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff drainage.

Water Quality: Refers to the chemical, physical, and/or biological characteristics of water.

Water Quantity: Refers to the flow rate or volume of runoff from a property.

Note: The definitions of terms that appear above are to facilitate your review of this Manual. Please note that these terms may also be defined by applicable laws, ordinances, rules, or regulations and are controlled by those definitions. For completed definitions of these terms under applicable laws, ordinances, rules, or regulations, please consult: the City of Roanoke Stormwater Management Ordinance, the City of Roanoke Stormwater Design Manual, and the Virginia Stormwater Management Handbook.

I. INTRODUCTION

The City of Roanoke has 13 major rivers and within its boundaries and seven of these are listed as impaired for water quality by the Virginia Department of Environmental Quality (DEQ). Investment needs to be made in capital improvements, system maintenance, and regulatory compliance to ensure that environmental standards are met and our valuable natural resources are protected.

Failing outlet pipe.

Our stormwater system is aging with much of it having exceeded its useful design life of 50 years, and it has seen little investment in decades. At the same time, our impervious surface areas (paved driveways, rooftops, access roads) have increased many-fold as our city has developed into a regional center for commerce, healthcare, retail, entertainment and the arts. The City has a current backlog consisting of hundreds of stormwater projects, estimated to cost tens of millions of dollars, which need to be implemented to effectively minimize flooding and control pollutants before they enter our local waterways. Combine these capital infrastructure demands with the need to provide on-going maintenance of hundreds of miles of existing stormwater pipes and the requirement to meet increasing Federal Clean Water Act stormwater permit requirements, and the City faces a significant financial challenge.

City leaders recognize that stormwater management solutions range from individual citizen and business participation to large-scale stormwater projects, but any real solution will require an on-going dedicated level of funding and focused effort. To that end, in 2013, the City Council approved the implementation of a Stormwater Utility Fee to fund the City's public stormwater management program. In May 2014, the City Council adopted the Stormwater Utility Fee Schedule.

II. STORMWATER UTILITY FEE

Stormwater runoff is proportional to the amount of impervious surface on developed property. When a wooded or grassy area is paved or replaced with impervious material, the result is less infiltration of stormwater. Hardened or "impervious" surfaces such as driveways, parking lots, streets and rooftops do not allow rainfall to soak into the soil, so more of the rainfall becomes stormwater runoff and increases the demand on the system. This stormwater runoff also accumulates pollutants such as oil and grease, chemicals, nutrients, metals, and bacteria as it travels across land and discharges into our rivers and streams. Both the quantity and the quality of runoff need to be managed before discharge into local rivers and streams.

Therefore the amount of the stormwater fee is based on the amount of impervious area on each developed property in the City. The City used aerial photography and Geographic Information System (GIS) technology to identify and measure the impervious area on all developed properties in the City. The green hatched areas in the photograph below demonstrate the capture of impervious features which include rooftops, driveways, and walkways.

For billing purposes, the fee is based on each 500 square feet of impervious area identified, rounded to the nearest whole number. So for the two examples shown above, the fee for the property on the left would be based on 5 billing units (2,477 square feet divided by 500 square feet or 4.95) and the property on the right, which has almost 800 square feet less, would be based on 3 billing units (1680 square feet divided by 500 square feet or 3.3). The monthly fee per billing unit will be phased in over three years as shown in the list below:

2014: $0.30/Billing Unit/Month
2015: $0.60/Billing Unit/Month
2016: $0.90/Billing Unit/Month

The monthly fee for the two properties shown above will therefore be:

Year	Left Property Monthly Utility Fee	Right Property Monthly Utility Fee
2014	$1.50	$0.90
2015	$3.00	$1.80
2016	$4.50	$2.70

All developed properties, including City owned properties and properties owned by tax-exempt organizations, are subject to the fee unless such properties are expressly exempt from the fee under State Code or under the Stormwater Utility Ordinance.

The fee will go into effect in July 2014 and be billed using the City's real estate tax billing system. Any parcel owner may request a fee adjustment in accordance with § 11.5-9 of the Code of the City of Roanoke within 30 days of receiving the bill.

III. STORMWATER UTILITY CREDIT AMOUNTS

When establishing the Stormwater Utility, the City Council acknowledged that certain on-site stormwater management activities can reduce the impact on the storm drain system by treating or reducing the stormwater runoff from a developed property. In order to recognize the positive impact that these on-

site activities can have, properties that install and maintain stormwater best management practices (BMPs) that reduce the stormwater flow rate, flow volume or pollutant load of runoff from their property can qualify to receive a reduction in their stormwater fee. A BMP is an activity, measure or facility that prevents or reduces the transport of pollutants, controls stormwater volume or rate or otherwise limits the impacts to the storm drainage system. These measures can include on-site practices such as bioretention, vegetated swales, constructed wetlands, rain gardens and detention ponds that manage stormwater at its source.

Pervious concrete installed at City of Roanoke Fire Station #3.

The amount of stormwater utility fee credit will be based on the reduction of stormwater volume and pollutants flowing from a property and obtained through the installation and continued use, operation and maintenance of the BMP(s) which is not owned or maintained by the City. The credit amount is determined based on the type of BMP and the percentage of the site's impervious area that drains to the BMP. The maximum credit allowed is fifty percent (50%) of the stormwater fee for the property being served by the BMP(s).

1. Credits for on-site stormwater management facilities are determined as follows:
   - A ten percent (10%) water quality credit is allowed if the BMP(s) provide water quality benefits in accordance with § 11.4-16 of the Code of the City of Roanoke.
   - A ten percent (10%) water quantity credit is allowed if the BMP(s) provide both stream channel erosion control benefits in accordance with § 11.4-17 of the Code of the City of Roanoke and flood control benefits in accordance with § 11.4-18 of the Code of the City of Roanoke.
   - At the City Manager's discretion, a credit of up to five percent (5%)

may be granted in addition to that provided for standard water quality or water quantity credits, if a BMP achieves benefits above the minimum required by the Code of the City of Roanoke. The stormwater criteria used for comparison is based on the standards that were applicable when the property was improved. It shall be the Applicant's responsibility to provide calculations illustrating how the facility exceeds the applicable stormwater management requirements.

- BMPs that do not meet the minimum criteria listed above may still be considered on a case-by-case basis if the Applicant can demonstrate the BMP achieves permanent reductions in stormwater runoff volumes, velocity, and/or pollutant loads.
- If an on-site stormwater management BMP is part of a voluntary retrofit, meaning it was installed voluntarily and not as a requirement of the City or another governmental agency, the amount of credit the facility is eligible to receive shall be doubled, but in no case can it exceed 50% of the applicable fee.

2. The owner of an eligible BMP that treats off-site impervious surface, meaning the stormwater runoff that originates outside of the boundary of the subject property, may take a credit for treating the off-site impervious surface. The off-site credit amount shall be calculated in the same manner as if the BMP was located on the off-site parcel. However, in no case shall the total credit exceed the total amount of the annual stormwater utility fee charged to the parcel owner.

3. Credits may also be provided if a property owner has an eligible Virginia Pollutant Discharge Elimination System (VPDES) Stormwater Permit. Subject to the maximum credits as described above, a ten percent (10%) credit may be allowed for any parcel, or portion of a parcel, that is subject to, and in compliance with, an individual or general VPDES stormwater permit.

4. Regional BMPs: Credits may be provided to individual properties served by a Regional BMP. In circumstances where an applicant is attempting to claim credit for a BMP that is owned by a separate entity,

proof that the Applicant shares in the maintenance obligations and costs will need to be submitted in order for credit to be applied.

IV. STORMWATER UTILITY CREDIT ELIGIBILITY

In order to be eligible for a stormwater fee credit, the property owner must:

- submit a completed Commercial, Industrial, Institutional, and Multi-family Residential Credit Application Form, as provided by the City, to the Department of Planning, Building, and Development;
- have a properly executed maintenance agreement with the City in place or execute a new maintenance agreement;
- demonstrate to the City's satisfaction that the BMP is functioning as originally designed and constructed based on guidance from the Virginia Stormwater Management Handbook or from the Virginia Stormwater BMP Clearinghouse Standards and Specifications (documentation must include pictures of the exterior of the BMP);
- demonstrate with calculations and as-built drawings that the BMP met the criteria in existence at the time of construction in at least one of the following sections of the Code of the City of Roanoke:

  (i) § 11.4-16, Water Quality; or

  (ii) Both § 11.4-17, Stream Channel Erosion, and § 11.4-18, Flooding.

  If the facility meets the criteria for both (i) and (ii) above, the applicant can qualify for up to 20% credit.

BMPs that are not listed in the Virginia Stormwater Management Handbook or the Virginia Stormwater BMP Clearinghouse may still be considered on a case-by-case basis at the discretion of the City Manager if it is demonstrated by a Professional Engineer that the facility achieves a permanent reduction in post-development stormwater flow and/or pollutant loading. The credit may be prorated based on an analysis of the benefits of the reduction.

V. STORMWATER QUALITY CREDIT CALCULATION

Bioretention basin located in Christiansburg, VA.

A Stormwater Quality credit of up to 10% is available to applicants who have installed an approved Best Management Practice (BMP) that provides for the permanent reduction of pollutants from the stormwater runoff leaving their property. The City references the Virginia Stormwater BMP Clearinghouse Standards and Specifications for which BMPs qualify for the Stormwater Quality Credit. Please recall that stormwater quality credits may be given when BMP(s) provide for a reduction in the amount of stormwater pollution.

As noted above, the amount of credit earned for a property is determined by the number and type of BMP(s) installed and the percentage of the impervious area on the site that drains to the BMP(s). The credit is applied to the percentage of the impervious surface area that is treated by the BMP, not the total amount of impervious area on the site. The following formula will determine the amount of credit earned by a Stormwater Quality BMP:

*Credit Earned = (10% Credit) * (% of impervious area treated) * (Stormwater Fee)*

All BMPs must be designed, constructed and maintained in accordance with the Code of the City of Roanoke, the Virginia Stormwater Management Handbook, or the Virginia Stormwater BMP Clearinghouse Standards and Specifications Prior approval of other BMPs by the City of Roanoke may also be acceptable; however, property owners wishing to access such approval must first coordinate with the Department of Planning, Building and Development by calling 540-853-1730 or via email at planning@roanokeva.gov.

VI. STORMWATER QUANTITY CREDIT CALCULATION

Green roof installed at City of Roanoke Municipal Building.

A Stormwater Quantity credit of up to 10% is available to applicants who have installed an approved Best Management Practice (BMP) that reduces stormwater flow rate and/or volume. These practices reduce the demand or burden on the City's storm sewers and reduce erosion of our rivers and streams. The City will reference the Virginia Department of Environmental Quality's guidelines for which BMPs qualify for the Stormwater Quantity Credit. Please recall that stormwater quantity credits may be given when BMP(s) provided for a reduction in the volume or rate of stormwater flow.

The amount of credit earned by a property is determined by the type of BMP installed, the number of BMPs installed and the percentage of the impervious area on the site that drains to the BMP. The credit will apply to the percentage of the impervious surface area that is treated by the BMP. The following formula will determine the amount of credit earned by a Stormwater Quantity BMP:

*Credit Earned = (10% Credit) * (% of impervious area treated) * (Stormwater Fee)*

All BMPs must be designed, constructed and maintained in accordance with the Code of the City of Roanoke, the Virginia Stormwater Management Handbook, or the Virginia Stormwater BMP Clearinghouse Standards and Specifications.

VII. VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM STORMWATER PERMIT CREDIT

Some activities that take place at industrial or commercial facilities, such as

material handling and storage, are often exposed to the elements. As runoff from rain or snowmelt comes into contact with these activities, it picks up pollutants and transports them to the storm sewer system and ultimately into the creeks and rivers in the Roanoke area. To minimize the impact of these discharges, the Virginia Department of Environmental Quality requires such facilities to register for a VPDES (Virginia Pollutant Discharge Elimination System) Stormwater Permit.

Property owners who hold a valid and compliant VPDES Stormwater Permit and who discharge either to a stream through a private facility or to the City's storm sewer system are eligible to receive a 10 % credit. In addition to submitting a credit application, documentation to receive a credit for a VPDES Permit includes a copy of the VPDES Stormwater Permit and a copy of the facility's Stormwater Pollution Prevention Plan (SWPPP).

VIII. APPLYING FOR A STORMWATER UTILITY CREDIT

Prior to receiving a stormwater credit the property owner must submit a completed Commercial, Industrial, Institutional, and Multi-family Residential, Stormwater Utility Fee Credit Application, included in this manual, along with applicable supporting information on the design and installation of the BMP(s). The property owner is responsible for making all appropriate applications prior to receiving a credit on their stormwater utility account. Application and documentation requirements include a complete application, executed Stormwater Maintenance Agreement, inspection photographs, as-builts, design calculations, and construction plans. There is no fee for a credit application.

When a credit application is received by the City an administrative completeness review will be conducted. If the application is not complete, the City will contact the applicant and may request additional information necessary to complete the application.

Once a complete application has been received, the City will review all documentation and the applicant will be notified in writing when an application is approved or denied within 30 calendar days of submittal of a complete application. Once the credit is approved, it will go into effect the calendar year after approval of the application.

If an application is denied, the applicant can appeal the decision to the Director of the Department of Planning, Building, and Development in writing within 30 days of the denial. The Director shall make a determination within thirty (30) days of receipt of an appeal and notify the Applicant in writing. If the Applicant is not satisfied with the response of the Director, a written appeal can be submitted to the City Manager who shall offer a final decision to the Applicant within 30 days of receipt of the written appeal.

Applications for newly constructed BMPs shall not be accepted until the BMP has been constructed, inspected, and as-builts approved by the City of Roanoke.

IX. MAINTENANCE REQUIREMENTS

In order for an applicant to continue to receive a stormwater credit, each BMP installed must be maintained to ensure continued function. The applicant is responsible for having all ongoing maintenance work completed to keep the facilities functional. The City may revoke the credit if an inspection determines it is no longer properly maintained or functioning as designed. This revocation will be effective thirty (30) days after the owner is notified in writing of the deficiencies and if the problems are not resolved.

X. RESTRICTIONS ON CREDITS

Transfer of Credit: The stormwater credit applies only to the applicant. Credits do not transfer if ownership changes. A new application must be submitted for new account holders to receive the credit.

Off-Site BMP Credit: In circumstances where an applicant is attempting to claim credit for a BMP owned by a separate entity, proof that the Applicant shares in the maintenance obligations and costs of the BMP will need to be submitted in order for credit to be applied.

Local Community Requirements: The BMP must meet all applicable City of Roanoke building, planning, and other Code of the City of Roanoke requirements.

Right to Inspect. The City may inspect the BMP at any time during the year. If the BMP is not functioning as approved or has not been maintained, the City may revoke the stormwater credit until the property owner proves that all maintenance work has been performed to return the BMP to a fully functional condition.

See the Code of the City of Roanoke, Chapter 11.5 Stormwater Utility for more details on the stormwater utility fee and credit program.

By the authority granted to me by City of Roanoke Code Section 11.5-1, I hereby approve and adopt this Stormwater Utility Fee Credit Manual: Commercial, Industrial, Institutional, and Multifamily Residential Properties (Non-Single Family Residential or Other Properties) (February 1, 2014 Version), which shall be effective July 1, 2014.

This 3rd day of February, 2014.

Christopher P. Morrill
City Manager
City of Roanoke

APPENDIX A: STORMWATER UTILITY FEE CREDIT APPLICATION FOR COMMERCIAL, INDUSTRIAL, INSTITUTIONAL, AND MULTI-FAMILY RESIDENTIAL PROPERTIES

Application For

Stormwater Utility Credit for Commercial, Industrial, Institutional and Multifamily Residential Properties

Date		Credit Application No.	

Planning Building & Development
215 Church Ave., SW, Room 170
Roanoke, VA 24011
Phone: **(540) 853-1090** Fax: **853-1594**
www.roanokeva.gov

NOTE: The City Council has authorized the City Manager to receive applications for stormwater utility fee credits prior to the effective date of the stormwater utility of July 1, 2014. Interested persons who make applications pursuant to these forms, please note that these forms may be modified in the future. Any such modification will be posted to the public.

Complete Form & Click Here To Print

Parcel Information:

Tax Map Number					
Parcel Address					
City		State		Zip Code	

Credit Submittal Checklist

- ☐ Completed Application
- ☐ Stomwater Calculations
- ☐ As-Built Drawings
- ☐ Maintenance Agreement
- ☐ Pictures of each BMP
- ☐ VPDES Permit (if applicable)
- ☐ Maintenance Cost Sharing (if applicable)
- ☐ SWPPP (if applicable)

Owner Information:

Owner Name							
Owner Address		City		State		Zip Code	
Phone Number		email					

Type of BMP (list all that apply and attach additional sheets as needed):

Water Quality BMP

BMP 1		Impervious Surface Treated (sf)	
BMP 2		Impervious Surface Treated (sf)	
BMP 3		Impervious Surface Treated (sf)	

Water Quantity BMP

BMP 1		Impervious Surface Treated (sf)	
BMP 2		Impervious Surface Treated (sf)	
BMP 3		Impervious Surface Treated (sf)	

VPDES Stormwater Permit

VPDES Permit Number	
List any BMP(s) from above that qualifies as "Regional"	
List any BMP(s) from above that qualifies as "Voluntary"	
List any BMP(s) from above that qualifies as "Above and Beyond"	

Print Name		Signature	

Authorized by City of Roanoke Code Section 11.5-7

Form Jan. 2014

APPENDIX B: TYPICAL BEST MANAGEMENT PRACTICES

A. Water Quality Best Management Practices

Water Quality BMPs – See Code of the City of Roanoke Section 11.4-16 for more details	
Vegetated Filter Strip	Constructed Wetlands
Grassed Swale	Bioretention Filter
Bioretention Basin	Retention Basin
Water Quality Swales	Rain Gardens

B. Stormwater Quantity Best Management Practices

Water Quantity BMPs – See Code of the City of Roanoke Section 11.4-17 and 18 for more details	
Dry Detention Ponds	Infiltration Trenches
Bioretention Basin	Sand Filters
Dry Wells	Wet Detention Ponds
Vegetated Buffers	Permeable Pavement

Other BMPs approved by the VA BMP Clearinghouse, including manufactured and proprietary BMPs, may be approved if they meet the Code of the City of Roanoke requirements.

APPENDIX C: PROCEDURE FOR CALCULATION OF CREDITS

For the following examples, assume a commercial property with 10,000 square feet of impervious area. To calculate the monthly utility fee, divide 10,000 square feet by 500 square feet per billing unit. This results in 20 billing units. If the rate is $0.90/billing unit, this utility fee will be $18.00 per month.

A. **Calculate Stormwater Quality Credit (10% credit)** – if the BMP provides water quality benefits in accordance with §11.4-16 of the Code of the City of Roanoke.
   - Determine the total impervious area of the property in square feet.
   - Determine the impervious area treated by the BMP in square feet.
   - Divide the impervious area treated by the BMP by the total impervious area on the property - this is the proportion of the total impervious area treated by the BMP.
   - Multiply the proportion of impervious area treated by 0.1 (10%) and by the Stormwater Fee to determine the monthly credit amount.

Example: A rain garden treats runoff from 8,500 square feet of impervious area on the property described above. Credit is calculated by dividing 8,500 square feet by 10,000 square feet, which results in 0.85 (85% Impervious Area treated). This value is multiplied by 0.1 (10%), and $18.00 (the monthly Utility Fee) for a total credit amount of $1.53 per month. This means the monthly bill with a 10% credit applied will be $16.47.

B. **Calculate Stormwater Quantity Credit (10% credit)** – if the BMP provides both stream channel erosion control benefits in accordance with §11.4-17 of the Code of the City of Roanoke and flood control benefits in accordance with §11.4-18 of the Code of the City of Roanoke.
   - Determine the total impervious area of the property in square feet.
   - Determine the impervious area treated by the BMP in square feet.
   - Divide the impervious area treated by the BMP by the total impervious area on the property - this is the proportion of impervious area treated by the BMP.
   - Multiply the proportion of impervious area treated by 0.1 (10%) and by the Stormwater Fee to determine the monthly credit amount.

Example: A Dry detention pond treats runoff from 7,000square feet of impervious area on the property described above. Credit is calculated by

dividing 7,000 square feet by 10,000 square feet, which results in 0.70 (70% Impervious Area treated). This value is multiplied by 0.1 (10%), and $18.00 (the monthly Utility Fee) for a total credit amount of $1.26 per month. This means the monthly bill with a 10% credit applied will be $16.74.

C. **Calculate credit for BMP that achieves benefits above those required by the Code of the City of Roanoke** – this credit is granted at the discretion of the City Manager. If the owner can demonstrate the installed BMPs were designed and are achieving benefits above that required in the Code of the City of Roanoke, than the credit for that facility will be increased by 5% above that calculated for applicable credits under Items A, and B above.

D. **Calculated credit for BMPs that are part of a voluntary retrofit** – this credit is targeted at property owners that install stormwater BMPs that are not required by City or State stormwater codes or regulations. If BMPs were installed voluntarily, then the credit as calculated under Items A, B, and C would be doubled.

E. **Calculate credit for parcel, or portion of a parcel, that is subject to, and in compliance with, a Virginia Pollutant Discharge Elimination System (VPDES) stormwater permit, if applicable** – this credit is granted for properties that have an approved VPDES Permit and can show proof of compliance with existing permit conditions.
   - Determine the total impervious area of the property in square feet.
   - Determine area subject to the VPDES permit in square feet. Determine total impervious area within the applicable permitted area.
   - Divide the impervious area covered by the VPDES permit by the total impervious area on the property - this is the proportion of impervious area covered by the VPDES permit.
   - Multiply the percent of impervious area covered by the VPDES permit by 0.1 (10%) and by the Stormwater Fee to determine the monthly credit amount.

Example: The commercial property described above has a valid and compliant VPDES Stormwater Permit for 5,000 square feet of the facility. All of this permitted area is impervious. Credit is calculated by dividing 5,000 square feet by 10,000 square feet, which results in 0.50 (50% of the Impervious Area covered by a VPDES permit). This value is multiplied by 0.1 (10%), and $18.00 (the monthly Utility Fee) for a total credit amount of $0.90 per month. This means the monthly bill with a 10% credit applied will be $17.10.

F. **Calculate credit for parcel, or portion of a parcel, that is served by a Regional BMP**– this credit is granted for properties that flow to an off-site

BMP(s). The Applicant must show they share in the cost and responsibility for maintenance of the BMP in question prior to receiving credit.

- Determine the total impervious area of the Applicant's property which flows to the off-site BMP in square feet.
- Determine the total overall impervious area treated by the off-site BMP in square feet.
- Divide the Applicant's impervious area flowing to the off-site BMP by the total impervious area flowing to the off-site BMP - this is the proportion of Applicant's impervious area treated by the BMP.
- Multiply the proportion of impervious area treated by 0.1 (10%) and by the Applicant's Stormwater Fee to determine the monthly credit amount.

Example: A Regional Dry detention pond treats a total of 50,000 square feet of runoff from impervious areas in a business park. 5,000 square feet of impervious area comes from the Applicant's property described above. The Applicant is a valid member of the Property Association that owns and maintains the Regional Detention pond. Credit for the Applicant is calculated by dividing 5,000 square feet by 50,000 square feet, which results in 0.01. This value is multiplied by 0.1 (10%), and $18.00 (the monthly Utility Fee) for a total credit amount of $0.18 per month. This means the monthly bill with a 10% Regional BMP credit applied will be $17.82.

Note: Off-site areas may be included in your credit only if not otherwise served by a BMP. An off-site credit may result in greater than a 50% fee reduction but in no case shall result in a credit of more than 100%. In circumstances where an applicant is attempting to claim credit for a BMP that is owned by a separate entity, proof that the Applicant shares in the maintenance obligations and costs will need to be submitted in order for credit to be applied.

APPENDIX D: ADDITIONAL RESOURCES

VIRGINIA BMP CLEARINGHOUSE: http://vwrrc.vt.edu/swc/

ALLIANCE FOR THE CHESAPEAKE BAY: http://stormwater.allianceforthebay.org/

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (VDEQ): http://www.deq.virginia.gov/Programs/Water/StormwaterManagement.aspx

VIRGINIA DEPARTMENT OF FORESTRY: http://www.dof.virginia.gov/

ENVIRONMENTAL PROTECTION AGENCY (EPA): http://www.epa.gov/