

Salem's Stormwater Utility Information Report



September 21, 2012



Acknowledgements

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Capital Kiwanis Club	Salem Association of Realtors
Central Area Neighborhood Association	Salem Area Chamber of Commerce
Croisan-Illahe Neighborhood Association	Salem Hospital
Downtown Advisory Board	Salem Kiwanis Club
Downtown Lions Club	Salem-Keizer School District
East Lancaster Neighborhood Association	Salem-Keizer Transit Board
Faye Wright Neighborhood Association	City of Salem Shade Tree Advisory Committee
Glenn-Gibson Watershed Council	Skyline Ford
Grant Neighborhood Association	South Central Area Neighborhood Association
Home Builders Association of Marion and Polk Counties	Southeast Salem Neighborhood Association
Housing and Urban Development Advisory Committee	South Gateway Neighborhood Association
Lansing Neighborhood Association	South Salem Lions Club
Marion County Public Works Staff	South Salem Neighborhood Association
Morningside Neighborhood Association	South Salem Rotary
Morningstar Community Church	Southeast Mill Creek Neighborhood Association
North Gateway Urban Renewal Advisory Board	Strategic Economic Development Corporation
North Lancaster Neighborhood Association	Sunnyslope Neighborhood Association
Northeast Neighbors Neighborhood Association	Truitt Brothers, Inc.
Northeast Salem Neighborhood Association	West Salem Lions Club
Northgate Neighborhood Association	West Salem Neighborhood Association
Oregon Cherry Growers	West Salem Redevelopment Advisory Board
Oregon Department of Administrative Services	Willamette University
Oregon Department of Corrections	Willamette Valley Commercial Realtors
Roth's Fresh Markets	Withnell Dodge
Salem Area Auto Dealers Association	

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Abbreviations

CIP	Capital Improvement Project
COSA	Cost of Service Analysis
DEQ	Oregon Department of Environmental Quality
EDU	Equivalent Dwelling Unit = 3,000 sq. ft. of Impervious Area
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information System
M	Million
NPDES	National Pollutant Discharge Elimination System
SFR	Single Family Residential
W/WWTF	Water/Wastewater Task Force

CHAPTER 1. OVERVIEW

When rain falls on surfaces where vegetation cover has been reduced and the amount of impervious surface area has been increased, stormwater runoff occurs. This runoff can cause flooding and damage the environment. To help manage stormwater runoff, Salem has conducted a suite of stormwater programs that address issues related to stormwater quality and stormwater quantity.

Salem's stormwater programs have been in place for more than 20 years. Historically, these programs have been funded by Salem's wastewater customers. For most wastewater ratepayers, rates are based on the volume of drinking water used during the winter months. However, there is no relationship between the drinking water a customer uses and the impacts of that customer's property on stormwater runoff flows or the pollutants contained in the stormwater runoff.

The primary purpose of instituting a stormwater utility and establishing a separate stormwater fee structure is to more fairly charge both our stormwater and our wastewater customers for the services they receive.

Recognizing the need for a more fair and equitable way of funding stormwater programs, the Salem City Council approved a recommendation from Public Works to create a stormwater utility on December 6, 2010. The primary purpose of instituting a stormwater utility and establishing a separate stormwater fee structure is to more fairly charge both our stormwater and our wastewater customers. The Council's decision will have the effect of separating funding for the City's stormwater programs from wastewater fees and will fund Salem's stormwater programs with a separate stormwater utility fee. The new stormwater fee will more closely align stormwater rates to the stormwater impacts of each customer's property. The stormwater utility will be initially implemented in January 2013 and phased in over time, with full separation of stormwater and wastewater rates occurring in January 2016.

The new stormwater fee will have two components:

- **Stormwater Base Fee:** The first component of the new stormwater fee is a base fee that will be paid by all stormwater ratepayers *regardless* of the amount of impervious surface. The base fee supports stormwater programs such as dispatch services, street sweeping, and account maintenance. The base fee also incorporates the impervious surface area of public streets and includes a factor that accounts for a portion of mandated public parking on private property. The monthly stormwater base fee is currently estimated to be between approximately \$10 and \$12 per account once the stormwater fee is fully implemented in January 2016.
- **Impervious Surface Charge:** The second component of the new stormwater fee is a rate that will be assessed based on the amount of impervious surface on each ratepayer's property. Impervious area is measured in equivalent dwelling units (EDU). One EDU is equal to 3,000 square feet of impervious area, which represents the average area of the roof, walkway, and driveway of a typical single family home in Salem. Based on current estimates, most single family residential (SFR) customers will pay approximately \$5 to

\$6 per month for one EDU. SFR properties that are significantly above or below 3,000 square feet will pay a rate that is slightly higher or lower than this value. For non-single family residential properties the impervious surface charge will be between approximately \$5 and \$6 for every EDU.

The City Council's approving vote at the end of 2010 was the culmination of more than a year of collaborative efforts involving City staff, business organizations, and our customers. Led by staff from Public Works, the City made it a priority to go into the community to provide information and gather feedback. More than 50 meetings were conducted with property owners, neighborhood associations, business groups, nonprofit organizations, state and school district staff, and others. There were two Council work sessions and the public hearing on the proposal spanned two Council meetings.

It is noteworthy that the final recommendation that went before the City Council in December had changed significantly from the one that was originally proposed at the beginning of the public outreach period in 2010. The changes were a direct result of feedback received while working in partnership with multiple stakeholders. The following are some of the key features of the approved stormwater utility:

- Implementation of the stormwater rate was delayed for two years, with initial implementation to take place in January 2013.
- The new stormwater fee will be phased in over four rate cycles beginning in January 2013 and ending with full separation of stormwater from wastewater rates in January 2016
- A base fee was incorporated into the stormwater rate structure to reduce the dollar cost for impervious surface.

In a December 12, 2010, Statesman Journal editorial on the approved stormwater utility, the newspaper noted that, "Overall, taxpayers are the winner because, in many ways, the City's handling of this issue has exemplified local government at its best."

This information report, prepared and submitted by Public Works staff, discusses the stormwater rate in detail. It begins by describing the nature of urban stormwater runoff, summarizing the components of Salem's stormwater programs, and reviewing historic and future funding strategies. A summary of the key principles of the stormwater rate setting and the general methodology used to establish the stormwater rate structure is presented, followed by a review of the way in which the stormwater rate will be implemented. This report concludes with a discussion of various options available for customers to reduce their stormwater fee by either an adjustment or a credit. Answers to frequently asked questions regarding stormwater runoff, Salem's stormwater programs, and the new stormwater rate are provided in a separate document.

CHAPTER 2. STORMWATER AND THE CITY OF SALEM

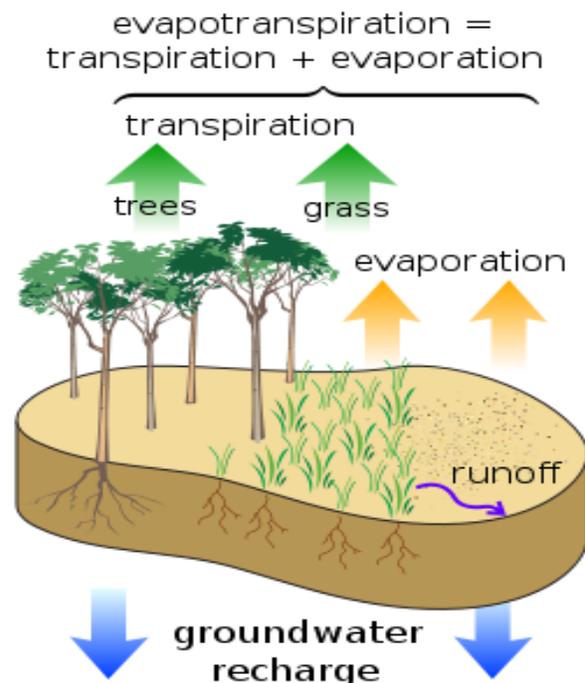
Urban Stormwater Runoff

When rain falls on natural landscapes, most of the rainfall is intercepted by trees and vegetation, where it evaporates or is transpired—a process known collectively as evapotranspiration—or it is absorbed into the ground through the process of infiltration (shown as “groundwater recharge” in Figure 1). As shown in Figure 1, only a relatively small portion of rainfall on natural landscapes becomes surface runoff.

As the natural landscape is developed and urbanized, the processes of evapotranspiration and infiltration are altered. Evapotranspiration is reduced as trees and other vegetation are removed. Additionally, infiltration of rainfall into the ground is impeded by new impervious surfaces such as rooftops, parking areas, and highly compacted soils.

When rain falls on urbanized landscapes, the runoff is significantly higher than runoff from natural landscapes. Not only is the runoff volume higher, but the rate of flow in pipes and streams increases. This increase in runoff rates can damage urban creeks and waterways by eroding stream banks, cutting into stream channels, and damaging aquatic habitats. During more extreme storm events, urban stormwater runoff can cause flooding that threatens public health, property, and safety.

High flows are only a part of the problem caused by increases in impervious surface areas and reductions in vegetative cover. Stormwater runoff can also pick up gasoline, oil, pesticides, fertilizers, pet wastes, and many other pollutants that have been deposited on impervious surfaces. Unlike wastewater from our homes and businesses, which is treated before being released into the Willamette River, stormwater runoff in Salem is discharged largely untreated directly into the receiving water bodies. As shown in Figure 2, pollutants in stormwater runoff are carried into our creeks, wetlands, groundwater, and the Willamette River.



Source: <http://en.wikipedia.org/wiki/Evapotranspiration>
(assessed: May 20, 2010)

Figure 1—Rainfall on Natural Landscapes
Most of the rain that falls on natural landscapes is intercepted by vegetation or absorbed into the ground. Very little becomes surface runoff.

In summary, when rain falls on surfaces where vegetative cover has been reduced and the amount of impervious surface area has been increased, stormwater runoff occurs. This runoff can cause flooding and damage the environment. Urban stormwater runoff also picks up and conveys pollutants deposited on the impervious surfaces, which can degrade aquatic environments. Thus, urban stormwater runoff creates problems related to both stormwater *quantity* and stormwater *quality*.



© Cate White, 2005. Source: WATERKEEPER Alliance
(www.waterkeeper.org)

Figure 2.—Rainfall on Urbanized Landscapes

Much of the rain falling on urbanized landscapes flows off of the impervious surfaces and becomes stormwater runoff, which can damage the environment and cause flooding.

Salem’s Stormwater Program

Throughout the country, urban areas like Salem have established stormwater programs to address stormwater quantity and stormwater quality. Salem’s stormwater programs include a suite of activities and projects, such as stormwater system operation and maintenance, stormwater quality monitoring, public education and involvement, street sweeping, stream cleaning, municipal regulations, stormwater complaint response, inspections, capital projects, and more. As Figure 3 shows, Salem invests approximately \$10 million each year toward its stormwater programs. Including street sweeping, approximately one-half of the \$10 million is directed toward programs that address issues related to stormwater *quantity* and *quality*. An additional

Stormwater Budget ≈ \$10M

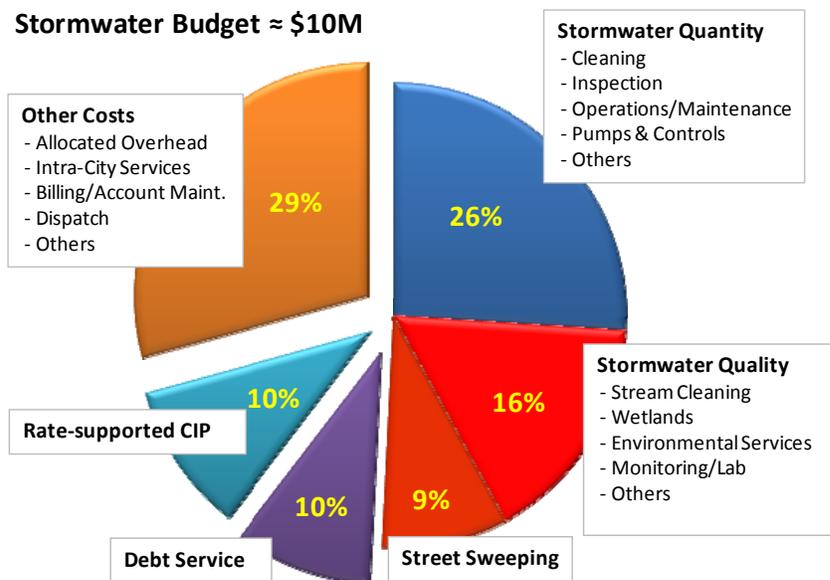


Figure 3—Overview of Salem Stormwater Program Budget

Approximately half of the \$10M Salem invests each year on stormwater programs is for stormwater *quality* and stormwater *quantity* programs.

10 percent goes toward stormwater quality and quantity capital improvement projects (CIP) and ten percent to debt service of past CIPs. The remaining amount is dedicated to shared operating costs such as contingency funds, insurance, billing, information technology, and others.

Many facets of our stormwater programs are mandated by the Federal Clean Water Act, which requires that cities like Salem be

issued a permit to discharge runoff from our municipal stormwater system. Known as a National Pollutant Discharge Elimination System (NPDES) permit, it is administered on behalf of the Federal Environmental Protection Agency (EPA) through the Oregon Department of Environmental Quality (DEQ). It is expected that the requirements contained in Salem’s NPDES Municipal Stormwater Discharge Permit will continue to grow over time, requiring an increase in investment to our Stormwater Program.

Historic Funding for Salem’s Stormwater Program—Wastewater Rates

For more than 20 years, Salem’s Stormwater Program costs have been paid for by the City’s wastewater rate payers. As shown in Figure 4, about \$10 million, or 22 percent of the total \$46 million in annual revenue from our wastewater customers is invested in Salem’s Stormwater Program. The rates paid by our wastewater customers are derived from a detailed Cost of Service Analysis (COSA), which is conducted periodically by the Salem Public Works and Administrative Services Departments. The purpose of the COSA is to establish water, wastewater, and stormwater rates that are based on the cost of delivering the services by the City and the level of services used by our ratepayers. Water and wastewater financial plans are updated every two years to establish utility rates and City Council approves adjustments to water and wastewater rates, which are made every year with the January billing cycle.

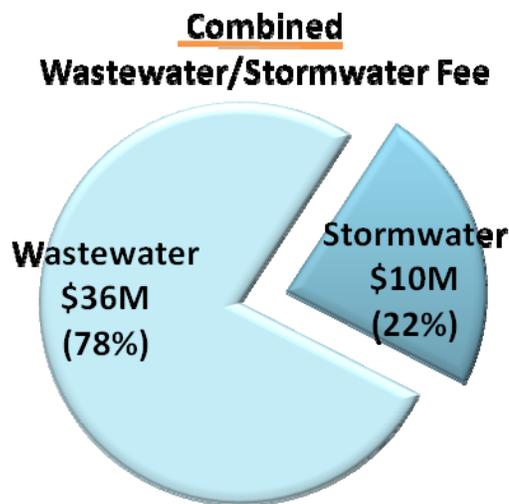


Figure 4—Combined Wastewater and Stormwater
Currently, more than 20 percent of all revenue from wastewater customers is invested on stormwater programs (2011/2012 values).

For most ratepayers, the wastewater rate is calculated using a combination of a small wastewater base fee and an added factor based on the volume of drinking water consumed during the winter months. The underlying premise of this method for setting wastewater rates is that there is little irrigation or lawn watering during the winter months and, therefore, all drinking water being brought into a property during the winter months of November through February eventually leaves by way of the wastewater system.

A small number of our wastewater ratepayers, industrial food processors for example, pay a significantly higher rate for their wastewater discharges.

This higher rate accounts for the fact that these ratepayers have pollutants in their wastewater that are not present in wastewater discharges from typical residential and commercial properties. Because these industrial ratepayers present a greater pollutant load to the wastewater treatment system, they pay a correspondingly higher wastewater rate. Also, in contrast to using only winter-based flow volumes, wastewater discharges from industrial ratepayers are also measured throughout the year.

Future Funding for Salem’s Stormwater Program—Stormwater Fee

On December 6, 2010, Salem City Council approved creation of a stormwater utility and implementation of a stormwater rate. As part of Council’s decision, the stormwater rate will be initially implemented in January 2013. The stormwater rate will then be phased in over four rate cycles (2013, 2014, 2015, and 2016). During the phasing-in period, the portion of each ratepayer’s wastewater fee that currently funds stormwater services will be removed as the new stormwater fee is incorporated into the bill.

At the completion of the phasing-in period in January 2016, all stormwater program costs will be supported by stormwater ratepayers and all wastewater services will be paid for by wastewater ratepayers, as shown in Figure 5.

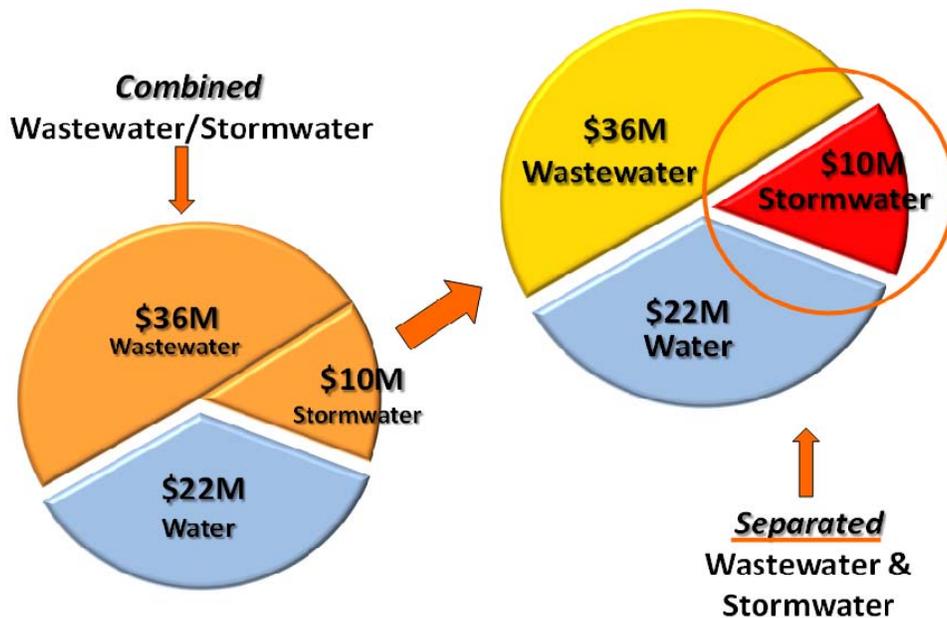


Figure 5—Separating Stormwater from Wastewater Rate Funding

Once stormwater and wastewater rates are completely separated, stormwater costs will be totally supported by stormwater ratepayers. Wastewater rates and water rates will continue to be determined, in general, based on the volume of drinking water used by each customer.

There are three key points regarding the stormwater utility:

- **This is not a new fee.** Creating a stormwater utility simply allows two currently existing, but unique fees (stormwater and wastewater) to be separated. Once it is fully implemented, the stormwater utility fee will allow our customers to pay for wastewater and stormwater in a way that more accurately reflects the services they receive.
- **The Stormwater Utility does not raise new revenue.** Once the stormwater utility is fully implemented in January 2016, stormwater ratepayers will be supporting the full cost of Salem’s stormwater services and the portion of each wastewater ratepayer’s fee that had previously been dedicated to stormwater services will be reduced to zero.

- **The Stormwater Utility will impact each ratepayer's bill differently.** Wastewater rates will still depend on winter drinking water usage, but stormwater rates will depend largely on the amount of impervious surface area. Some ratepayers will see an overall decrease, others an increase.

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CHAPTER 3. GENERAL STORMWATER RATE METHODOLOGY

This chapter describes the general methodology used to establish Salem's stormwater rate, which consists of two components.

1. **Stormwater Base Fee:** The first component in the stormwater rate is a base fee that every stormwater customer will pay regardless of the amount of impervious surface. This base fee will support street sweeping, Public Works 24/7 dispatch services, customer service, billing, account maintenance, and other selected services. The base fee also includes a factor that accounts for the impervious surface area of public streets and mandated public parking on private property.
2. **Impervious Surface Charge:** The second component is a variable rate that is based on each property's total impervious surface area. Impervious areas include rooftops, parking lots, driveways, and surfaces subjected to vehicular traffic. Impervious surfaces have been measured and calculated using equivalent dwelling units (EDU), where one EDU is equal to 3,000 square feet.

Foundational Principles

In developing the proposal to establish a stormwater rate, Public Works staff has held that the following four foundational principles should be followed:

Fair: The stormwater rates should be developed in a manner that links the rates paid by our ratepayers with the stormwater impacts of each ratepayer's property and the costs of the stormwater services that the ratepayer receives. This principle is consistent with the way water and wastewater services are currently billed.

Understandable: The manner in which the stormwater rate is developed and the rationale underlying its structure should be logical and easy to comprehend by our ratepayers.

Implementable: The stormwater rate should be implemented using information contained in our property and customer billing databases and established with protocols for correcting and updating the information so that the rates can be properly applied and adjusted.

Sustainable: The stormwater rate should be developed so that its underlying structure remains constant even as it is enhanced with incremental improvements over time.

Stormwater Base Fee

There are certain stormwater services that provide benefits to all stormwater ratepayers independent, or largely independent, of the amount of the impervious surface. These services have been incorporated into a stormwater base fee that will be applied equally to all stormwater customers. Incorporating a base fee into the overall stormwater rate structure helps spread the costs for some stormwater services across all ratepayers, thereby lowering the remaining program costs that must be supported by the impervious surface-based stormwater rate. The

resultant cost per EDU is lowered, while, at the same time, the relationship between stormwater rates paid and the services received is retained.

The primary beneficiaries of incorporating a base fee into a stormwater rate are customers that use relatively little drinking water (and therefore currently have low wastewater bills), but who have large buildings and parking lots. Although many of these ratepayers will still experience a significant increase in comparison to an impervious surface-based rate only approach, the size of this increase is reduced.

To determine the stormwater base fee, all stormwater program costs are first identified as direct or indirect costs. This reflects the standard cost allocation principle that both direct costs and indirect costs should be included when determining the full cost of a program.

The stormwater base fee is estimated to range between \$10 and \$12 per month once the stormwater rate is fully implemented in January 2016.

Direct Costs

There are two types of direct costs:

1. First, there are direct stormwater costs that are specifically related to stormwater quality and stormwater quantity. This would include laboratory services, pumps and controls, and environmental services. Laboratory services and environmental services, for example, can be assigned entirely to stormwater *quality*, whereas pumps and controls can be assigned to stormwater *quantity* functions.
2. Second, there are direct costs that are associated with providing specific program services to stormwater ratepayers, but which are not specific to stormwater quantity or stormwater quality. This would include such program services as account maintenance and billing. Because these costs cannot be directly rated to a stormwater quality or stormwater quantity program function, they are assigned equally to the base rate.

There is a strong basis for incorporating dispatch services and street sweeping into a per account charge. Our dispatch services receive queries and calls for assistance that result in actions benefitting multiple ratepayers. Street sweeping provides benefits for stormwater quality by removing pollutants before they are conveyed by stormwater runoff into our receiving water bodies. Street sweeping also benefits stormwater quantity by removing debris and floatable material that can compromise Salem's drainage system and create localized flooding. Note that under our current operating schedule, the street sweeping services provided by the Stormwater Program are evenly distributed between residential and non-residential streets.

Indirect Costs

Indirect costs are program expenses that provide general support to stormwater programs and are allocated proportionately between stormwater quality, stormwater quantity, and the per account base fee. As an example, consider "Allocated Overhead," which includes support services such as information technology, legal review and advice, and risk management.

The stormwater rate’s share of this indirect cost center is approximately \$500,000 per year. After identifying and calculating all direct costs, it can be shown that approximately 40 percent of the direct costs go to stormwater quality functions, 40 percent to stormwater quantity functions, and 20 percent on a per-account basis. The \$500,000 indirect cost for Intra-City Services would be allocated as follows:

Stormwater Quality (per EDU).....	40 percent of \$500,000 or \$200,000
Stormwater Quantity (per EDU).....	40 percent of \$500,000 or \$200,000
Account-based Charge (per account).....	20 percent of \$500,000 or \$100,000

Cost Allocations

Table 1 lists the key Stormwater Program cost centers, indicates whether the cost is considered a direct or an indirect cost (or in the case of “non-divisional” costs, both), and further indicates how each cost would be allocated between the stormwater quantity, stormwater quality, and per account base rates.

Additional Factors Incorporated into the Per Account Charge

In addition to the direct and indirect Stormwater Program costs being incorporated into the per account base fee, two additional costs have been added:

1. **Public Streets:** The base fee includes a factor to account for the impervious surface area of public streets. The impervious surface area of all public streets, estimated to account for approximately a quarter of the total impervious surface area of the community, has been converted into an EDU value. This equivalent EDU value for Salem’s roadways has been incorporated into the per account base fee to be shared by all customers equally.
2. **Mandated Public Parking on Private Property:** The base fee includes a factor to account for the impervious surface area of City-mandated parking. Many non-SFR stormwater customers have installed parking to meet minimum requirements contained in the Salem Revised Code. As a result of analysis conducted on a small sample size of commercial properties, a value of 30 percent has been assigned to represent the amount of code-required parking in relation to the total amount of impervious surface of a property. The estimated amount of impervious surface that represents mandated parking has been converted to an EDU equivalent. Because the mandated parking provides both public and private benefits, one-half of this equivalent EDU value for mandated parking has been incorporated into the per-account base fee to be shared by customers equally.

Table 1. Direct and Indirect Cost Allocations for Stormwater Program

Cost Center	Type of cost		Cost Allocation		
	Direct Cost	Indirect Cost	Stormwater Quality (per EDU)	Stormwater Quantity (per EDU)	Account Based Charge (per Account)
Account Maint./Billing	✓				✓
Administration		✓	✓	✓	✓
Allocated Overhead		✓	✓	✓	✓
Bad debt write off	✓				✓
Casualty insurance		✓	✓	✓	✓
Cleaning	✓			✓	
Contingency		✓	✓	✓	✓
Debt	✓		✓	✓	
Dispatch Services	✓				✓
Environmental Services	✓		✓		
Intra-City Services		✓	✓	✓	✓
Laboratory	✓		✓		
Non-divisional	✓	✓	✓	✓	✓
Operations Administration		✓	✓	✓	✓
Other Professional Services	✓		✓	✓	
Personal Services		✓	✓	✓	✓
Planning/Development		✓	✓	✓	✓
Pumps and Controls	✓			✓	
Stormwater Maintenance	✓			✓	
Stormwater Quality	✓		✓		
Street Sweeping	✓				✓
Support Services		✓	✓	✓	✓
Taxes		✓	✓	✓	✓
Technical Services	✓			✓	
Transfers		✓	✓	✓	✓
Transfers (CIP)	✓		✓	✓	
Transfers (Operations)		✓	✓	✓	✓
TV Inspection	✓			✓	

Impervious Surface Charge

The general methodology for establishing Salem's stormwater impervious surface rate is one commonly used by other municipalities and consists of the following three steps:

1. Determine the average impervious surface area for single family residential (SFR) properties in Salem and set this value equal to one Equivalent Dwelling Unit or EDU.
2. Determine the impervious surface area for all non-SFR properties and convert each area into corresponding EDU value.
3. Determine the dollar value per EDU by summing the total number of EDUs (i.e., SFR plus non-SFR properties) and dividing this value into the total cost for Salem's Stormwater Program that is not supported by the stormwater base fee.

The dollar per EDU value becomes the impervious surface-based stormwater rate that is applied to each property. These three steps are described in more detail below, with general values provided to illustrate Salem's proposed stormwater rate.

The stormwater impervious surface charge is estimated to range between \$5 and \$6 for each EDU per month once the stormwater rate is fully implemented in January 2016.

Determine One Equivalent Dwelling Unit or EDU

To determine the surface area value that would become equal to one EDU a sampling survey was conducted of 100 randomly selected SFR properties in Salem. The survey determined a statistically valid value of the total impervious surface area that included the footprint of the house and any additional outbuildings, driveway surfaces, patios, and walkways (sidewalks are not included in the SFR/EDU area determination). The results of this survey indicated that the average total amount of impervious surface for an SFR property in Salem is approximately 3,000 square feet. (See Figure 7 on Page 16 to see a graph showing the full SFR property areas in Salem.)

Determine Corresponding EDU Value for Non-SFR Properties

Aerial photos contained in the City's Geographic Information System (GIS) database were used to determine an EDU value for each non-SFR property in Salem. Buildings, rooftops, paved surfaces, and unpaved surface areas subject to vehicular traffic were all included in the impervious area determination. Trees, lawn, and other vegetated surfaces were not considered impervious.

In practice, the impacts that impervious and non-impervious surfaces have on downstream drainage systems and to receiving waters depend on a number of factors, including storm event (intensity, duration, volume), antecedent dry period, surface type, geography, and topography, to name a few. However, in the interest of simplicity and cost efficiency, runoff from all impervious surfaces is considered to have the same impacts on the receiving public drainage system regardless of actual flow characteristics or travel distances to a stormwater system or

receiving water. Similarly, runoff from non-impervious surfaces is considered to have no impact on the public drainage system or receiving waters.

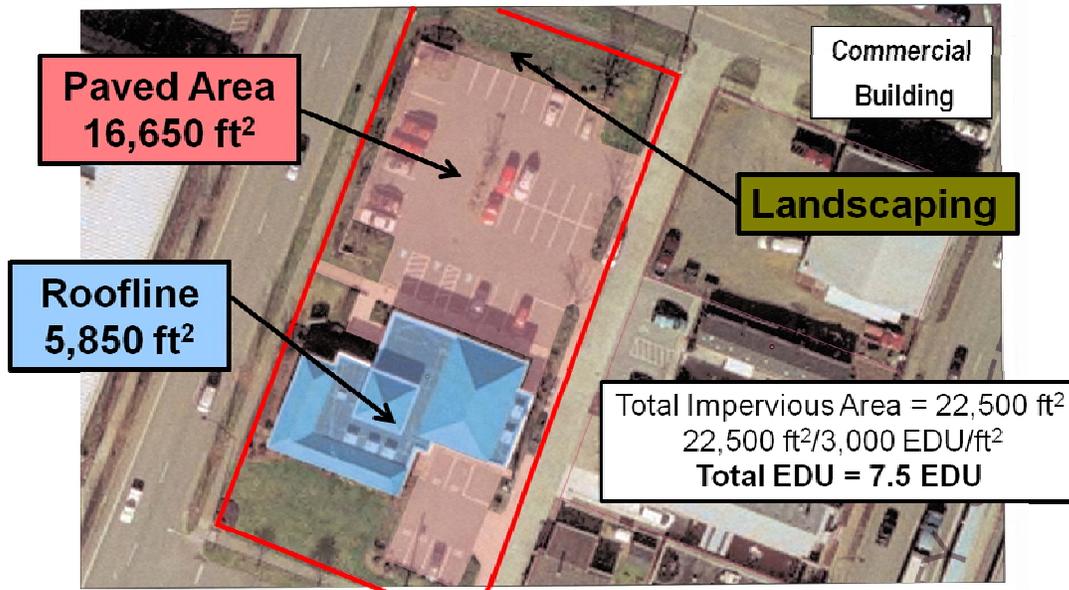


Figure 6—Example on How to Determine Equivalent Dwelling Units

To determine the number of EDUs for this commercial property, the roofline and parking areas were added together. All landscaping was determined to be non-impervious.

An example determination is provided in Figure 6, which shows a building area of approximately 16,650 square feet and a parking surface of 5,850 square feet (both of which are shaded in the figure), for a total of 22,500 square feet of impervious surface. Note that the landscaped portions of the property are not included in the impervious surface determination. For this example property the corresponding EDU value would be:

$$(22,500 \text{ square feet}) \div (3,000 \text{ square feet per EDU}) = 7.5 \text{ EDUs} \quad (\text{Equation 1})$$

Determine the Dollar Value per EDU

Determine the dollar value per EDU by dividing the total number of EDUs into the remaining annual cost for Salem’s Stormwater Program. For illustrative purposes of this report, a rounded annual program cost of \$5 million is used and divided by an estimated total number of EDUs of 100,000. The results are shown below:

$$\$5,000,000 \text{ program cost} / 100,000 \text{ EDUs} = \$50/\text{EDU per year} \quad (\text{Equation 2})$$

For the property described above with an equivalent impervious surface area of 7.5 EDUs the annual stormwater rate would be:

$$7.5 \text{ EDUs} \times \$50/\text{EDU} = \$375 \text{ per year or } \$375/12 = \$30 \text{ per month} \quad (\text{Equation 3})$$

It is currently estimated that there are approximately 100,000 total EDU’s in Salem. Based on this value and assuming \$6 million in annual program costs after removing the base fee

component, the annual stormwater rate would be approximately \$60 per EDU or roughly \$5 per month for each EDU.

Three-tiered SFR Stormwater Rate

All SFR customers will pay the same stormwater base fee. However, instead of a single impervious surface-based stormwater rate being applied to all SFR properties, three different rates have been established. This is to account for the wide distribution of impervious surface areas among the approximately 35,000 SFR accounts in Salem, as illustrated in the histogram in Figure 7. This figure, derived from the City’s GIS database, contains the impervious surface area of the house footprint of residential properties. Seven hundred square feet have been added to the GIS-based house footprint area. This value of 700 square feet is based on a field survey of residential properties conducted in 2010 in Salem and accounts for the average impervious surface areas of driveways, walkways, outbuildings, and patios (sidewalks are not included). Figure 7 indicates that the central tendency for SFR properties in Salem is between approximately 2,500 and 3,500 square feet, with a steeply rising leg beginning at about 1,700 to 1,800 square feet and a long trailing leg that extends to SFR properties having more than 6,000 square feet of total impervious surface area.

In the three-tiered rate for SFR properties, 75 percent of all SFR accounts will pay the same impervious surface charge, which is based on one EDU. Of the remaining SFR ratepayers, those with impervious surface area in the lower 12.5 percent will pay 12.5 percent less than the impervious surface charge of one EDU and those in the upper 12.5 percent will pay 12.5 percent more. Using this approach and assuming an impervious surface-based rate of \$5.50 per month and a stormwater base rate of \$11, the three-tiered EDU rate for SFR customers is shown below.

Tier 1

Lower 12.5 Percent SFR Impervious Surface Area.....	Less than 2,225 ft ²
Approximate monthly impervious surface stormwater charge	\$4.80
Estimated stormwater base fee.....	\$11.00
Total estimated monthly stormwater fee.....	\$15.80

Tier 2

Average SFR Impervious Surface Area.....	2,225 ft ² -3,675 ft ²
Approximate monthly impervious surface stormwater charge	\$5.50
Estimated stormwater base fee.....	\$11.00
Total estimated monthly stormwater fee.....	\$16.50

Tier 3

Upper 12.5 Percent SFR Impervious Surface Area	More than 3,675 ft ²
Approximate monthly impervious surface stormwater charge	\$6.20
Estimated stormwater base fee.....	\$11.00
Total estimated monthly stormwater fee.....	\$17.20

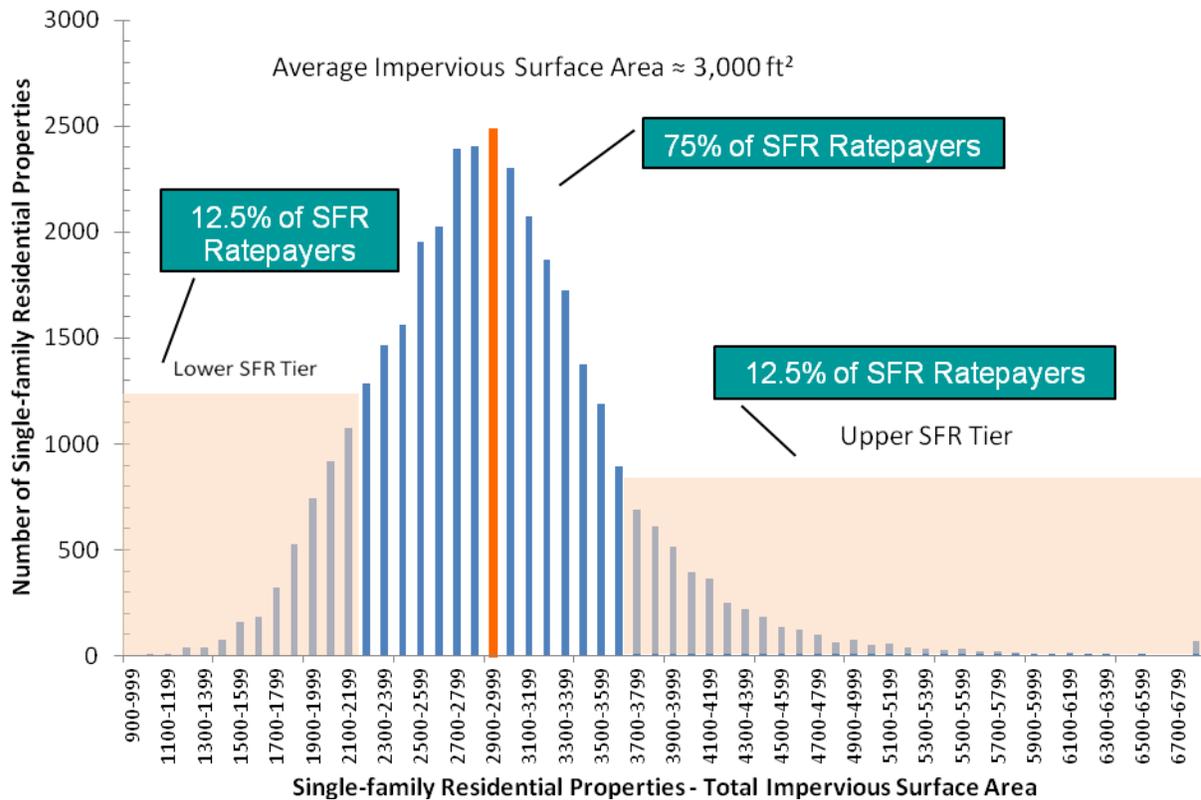


Figure 7—Distribution of Single Family Residential Building Impervious Area

In Salem, single family residential properties have an average area of 3,000 square feet, with 75 percent of properties falling within a range of approximately 2,225 square feet and 3,675 square feet.

Credits and Adjustments for Reducing Stormwater Rate

As described in this report, the stormwater rate will include a base fee that will be paid by each customer regardless of the amount of impervious surface and a variable rate that is based on the property’s impervious surface area. The variable rate can be reduced by decreasing the amount of impervious surface of the property, which will result in a rate *adjustment*, or by operating and maintaining one or more stormwater facilities on the property, which will result in a rate *credit*. Stormwater rate adjustments and credits are discussed in detail in Chapter 5.

CHAPTER 4. IMPLEMENTING THE STORMWATER RATE

Initial Implementation Date

When City Council voted on December 6, 2010, to approve creating a stormwater utility, the Councilors also established that the stormwater fee would be first implemented in January 2013.

The advantage of an initial implementation date of January 1, 2013, is that it provides ample time to incorporate necessary budgetary preparation for ratepayers, as well as additional time for preparations, notifications, and stakeholder engagement by Public Works staff. The two-year delay between approval and initial implementation also acknowledges the difficult economic conditions in the region and reflects feedback received from many customers during the public process leading up to final approval. The January date also coincides with other utility rate changes.

The stormwater rate will be initially implemented in January 2013 and phased in over time, with full implementation completed in January 2016.

Phasing Period

The City Councilors also directed that the stormwater fee would be phased in over time, beginning in January 2013 with full implementation occurring in January 2016.

The primary advantage of phasing in the stormwater rate over time is that this enables those ratepayers to make the adjustments to budgets and associated business practices to better accommodate changes to their utility bills. Incorporating some manner of phasing is also an affirmation of feedback received from commercial interests during the 12 months of public outreach. There is also a precedent for a phasing approach to utility services that dates from the period during the early 2000s when Public Works completed detailed Cost of Service Analyses (COSA) for water and wastewater. The results of the two COSAs required significant adjustments to customer water and wastewater rates, which were accomplished over a period of five years, beginning in 2001. The disadvantage of phasing a rate increase over time is that doing so is more complicated to administer from a billing and customer service perspective. Additionally, changes that the various ratepayer types will see during the phasing-in period may be difficult to recognize because the changes will occur in conjunction with other, independent rate-setting adjustments for water and wastewater.

Wastewater ratepayers would continue funding a portion of the stormwater program during the phasing-in period. The complete decoupling of stormwater from wastewater would occur at the completion of the phasing-in period, after which wastewater rates would only fund wastewater services and stormwater rates would fully fund stormwater services. Table 2 illustrates how phasing in will be accomplished, beginning with the stormwater rate initially implemented on January 1, 2013, and the rate being phased in using a total of four incremental rate adjustments, with final implementation of the stormwater rate completed January 1, 2016.

Table 2. Illustration of Phasing Stormwater Rate over Four Rate Cycles

Beginning Date	Funding for Stormwater Program	
	Stormwater Rate	Wastewater Rate
January 1, 2013*	25%	75%
January 1, 2014	50%	50%
January 1, 2015	75%	25%
January 1, 2016	100%	0%

* Initial implementation date is January 1, 2013.

CHAPTER 5. STORMWATER RATE ADJUSTMENTS AND CREDITS

As described in this report, the stormwater rate will include a base fee that will be paid by each customer regardless of the amount of impervious surface and a variable rate that is based on the property's impervious surface area. The variable rate may be reduced by decreasing the amount of impervious surface of the property, which will result in a rate *adjustment*, or by operating and maintaining one or more stormwater facilities on the property, which will result in a rate *credit*.

Stormwater Rate Adjustment

An adjustment will be made to a customer's stormwater fee if the area of impervious surface changes. If more impervious surface is added to a property by, for example, replacing vegetated or natural surfaces with a building or parking area, the impervious surface-based rate will be increased accordingly. Similarly, if the impervious surface area is removed, the impervious surface-based rate will be reduced. Impervious surface can be reduced on a property by, for example:

- Replacing an asphalt parking area with specially designed pavers placed over a base of bedding rock or sand, which allows stormwater to infiltrate into the ground;
- Placing a vegetated roof on a building, which may be accomplished by constructing a green roof during new construction or remodeling or by installing a modular green roof system to an existing rooftop (see example in Figure 8); or
- Removing the paved surface entirely and replacing it with vegetation planted in amended soils.

Non-SFR ratepayers who reduce the amount of impervious surface on their property may request an adjustment to their stormwater rate that will be calculated based on the revised number of EDUs on the property. SFR ratepayers who reduce the total impervious surface area on their property may be eligible for a rate adjustment if their revised impervious surface area places the property in a lower SFR rate tier (see Page 15).

A customer removing impervious surface is eligible for an adjustment that will result in a one-to-one reduction in the impervious surface charge.



Figure 8—Example of a Vegetated Roof

Reducing a property's impervious surface by, for example, installing a green roof will result in an adjustment to a customer's impervious surface-based stormwater rate.

Illustrative Example for Stormwater Rate Adjustment

A commercial stormwater user with 180,000 square feet of parking area removes 90,000 square feet of excess paved parking surface and replaces it with a combination of permeable paving and landscaping. Using a stormwater rate of \$5 per month for each EDU, the resulting adjustment will be:

$$90,000 \text{ ft}^2 \div 3,000 \text{ ft}^2/\text{EDU} = 30 \text{ EDU}$$

$$30 \text{ EDU} \times \$5/\text{EDU per month} = \$150 \text{ per month rate reduction}$$

Stormwater Rate Credit

Stormwater customers may be eligible to receive a reduction in their stormwater rate if there is a stormwater facility on their property that the customer operates and maintains. There are two types of stormwater facilities:

- Stormwater *flow control facilities* are designed to reduce the volume and/or the rate of runoff leaving a property.
- Stormwater *treatment facilities* remove pollutants from stormwater through mechanical, biological, or other means.

Rate credits are available to non-SFR customers who operate and maintain approved stormwater facilities on their property.

Some stormwater facilities mitigate both stormwater quantity and stormwater quality impacts. Non-SFR ratepayers who can document that there is a stormwater flow control or stormwater treatment facility on the property may be eligible for a stormwater rate credit, which will be based on the type of facility, the amount of stormwater that flows through the facility, and the portion of the variable stormwater rate that directly supports stormwater quality or stormwater quantity program costs. SFR ratepayers are not eligible for a rate credit.

Stormwater Rate Credit Policies

Salem's stormwater rate credit program will be established based on the following policies:

1. Rate credits will be available for non-SFR properties that have installed approved stormwater flow control and/or treatment facilities that meet or exceed existing City development requirements at the time of application.
2. The candidate stormwater facilities must have been designed, constructed, and maintained in accordance with City-approved regulations, standards, and requirements.
3. Rate credits will not be available for SFR properties.

4. The maximum allowable credit amount will be based on:
 - a. The type and size of the stormwater facility.
 - b. The amount of the property's impervious surface area that is routed to the facility.
 - c. A portion of the ratepayer's impervious surface charge that supports the stormwater quantity-related programs, stormwater quality-related programs, or both, depending on the facility.
5. A uniform rate credit factor will be assigned for each type of approved stormwater facility based on an assessment of the stormwater performance of the facility.
6. Customers determined to be eligible for a stormwater credit by November 1 of each year will have their rate adjusted beginning January 1 of the next year. Customers who are determined to be eligible for stormwater credits in 2014 will have the credit applied retroactively to rates paid during 2013.
7. Stormwater rate credits will remain on the account for as long as the drainage characteristics of the property remain unchanged and as long as the stormwater facility is property operated and maintained.
8. Salem Public Works staff may inspect the stormwater facility at any time to confirm application information and continued eligibility for the credit. Inspections may include confirmation of the property's drainage characteristics and determination that the facility meets the technical design requirements, is properly maintained, and is performing as designed.
9. Reducing impervious surface of a property does not qualify for a stormwater rate *credit*, but will result in a stormwater rate *adjustment* using the full impervious surface charge calculation.
10. A maximum stormwater rate credit will be established to ensure that the stormwater bill of non-SFR ratepayers will not fall below the average stormwater rate for SFR ratepayers.
11. The Public Works Director may require an engineering report, hydrologic analysis, or stormwater quality monitoring data be provided to confirm the reported performance of a stormwater facility.
12. At the discretion of the Public Works Director, the rate credit may be terminated if the ratepayer fails to maintain the facility in proper working order, the property changes ownership, the drainage characteristics of the property change, the property is redeveloped, or the property boundaries change.

These policies have been established to ensure there is equity and fairness among ratepayers while at the same time balancing administrative costs with ratepayer benefits.

Stormwater Facility Performance Values

A performance value has been assigned to different stormwater facilities based on an assessment of the ability of the facility to remove pollutants and/or lower peak stormwater discharge rates. The performance values are based on best professional judgment using information drawn from published literature and stormwater rate reduction programs used by other jurisdictions. The actual effectiveness of a facility depends on many factors, including targeted performance standards, design and construction standards, status of ongoing maintenance, size of the storm event, and influent pollutant concentrations during the event. Most facilities have been assigned performance variables as complete (100 percent), high (75 percent), medium (50 percent), low (25 percent), or none (0 percent) to reflect the facility's ability to mitigate high flows and/or reduce pollutant concentrations. Table 3 shows currently assigned performance values, which are subject to change as additional information becomes available.

Table 3. Assigned Performance Values for Stormwater Facilities

Type of Facility	Assigned Performance Value	
	Stormwater Quantity	Stormwater Quality
Rain Garden/Bioretenion, Infiltration	75%	75%
Wetland, Constructed Stormwater Treatment	50%	75%
Stormwater Planters, Infiltration	75%	75%
Willamette River discharge point via a private stormwater conveyance system (with treatment prior to discharge)	100%	0%
Ecoroof/Green Roof	25%	75%
Infiltration Trench without Underdrain	50%	50%
Dry Wells	50%	25%
Vegetated Swale	25%	50%
Rain Garden/Bioretenion, Filtration	25%	75%
Stormwater Planters, Filtration	25%	75%
Vegetated Filter Strip	25%	50%
Proprietary Treatment, such as media filter vaults	0%	75%
Detention Vault/Pipe	25%	0%
Detention Pond/Basin	25%	0%
Wet Pond	25%	25%
Infiltration Trench with Underdrain	25%	50%
Oil/Water Separator (Pretreatment)	0%	10%
Hydrodynamic Separator (Pretreatment)	0%	10%

Stormwater Rate Credit Allocations

When granted, credits are applied to the direct quality and quantity portions of the EDU charge, depending on the type of facility. A ratepayer's eligibility for a stormwater rate credit will be based on the portion of the ratepayer's impervious surface charge that directly supports the City's stormwater quantity-related or stormwater quality-related programs. Current estimates of the portions of each indicate that quantity direct charges make up 43 percent of the EDU charge and quality direct charges make up 31 percent. The remaining 26 percent of the EDU charge is for indirect costs such as planning and development, support services, administration, and some citywide costs such as flood prevention and response. Facilities can be combined in series to achieve higher performance values. To determine the performance value of a combination of facilities, the values are simply added together up to a maximum performance value of 95 percent.

To calculate the quantity credit, multiply the drainage area directed to the facility by the quantity performance value and 43 percent. To calculate the quality credit, multiply the number of EDUs directed to the facility by the quality performance value and 31 percent. Add the quantity and quality credits together to determine the total credit.

Illustrative Example for Stormwater Rate Credits

A commercial stormwater customer directs drainage from 90,000 square feet of impervious surface to a detention pipe. From Table 3 the performance value assigned to this type of stormwater facility is 50 percent for quantity and 0 percent for quality. The portion of the impervious surface charge that supports the direct costs of Salem's stormwater quantity-related programs is 43 percent. The portion of the impervious surface charge that supports the direct costs of Salem's stormwater quality-related programs is 31 percent. The stormwater rate credit for the facility is, therefore:

Quantity Credit:

$$90,000 \text{ ft}^2 \text{ (impervious surface)} \times 50 \text{ percent (performance value)} \times 43 \text{ percent (direct costs)} = 19,350 \text{ ft}^2$$

Quality Credit:

$$90,000 \text{ ft}^2 \text{ (impervious surface)} \times 0 \text{ percent (performance value)} \times 31 \text{ percent (direct costs)} = 0 \text{ ft}^2$$

Total Credit:

$$19,350 \text{ ft}^2 \text{ or}$$

$$19,350 \text{ ft}^2 \div 3,000 \text{ ft}^2 / \text{EDU} = 6.5 \text{ EDU}$$

Using a stormwater rate of \$5 per month for each EDU, the resulting rate credit would be:

$$6.5 \text{ EDU} \times \$5/\text{EDU per month} = \$32.50 \text{ per month } (\$390/\text{year}) \text{ rate reduction}$$

If the commercial stormwater customer constructs a vegetated bioswale (see example in Figure 9) in series with the detention pipe, the customer will be eligible for additional credits because of the combined treatment and flow control benefits. The performance value for the combined facilities is 50 percent (detention pipe) + 25 percent (bioswale) or 75 percent for quantity and 0 percent (detention pipe) + 50 percent (bioswale) or 50 percent for quality.

Quantity Credit:

$$90,000 \text{ ft}^2 \text{ (impervious surface)} \times 75 \text{ percent (performance value)} \times 43 \text{ percent (direct costs)} = 29,025 \text{ ft}^2$$

Quality Credit:

$$90,000 \text{ ft}^2 \text{ (impervious surface)} \times 50 \text{ percent (performance value)} \times 31 \text{ percent (direct costs)} = 13,950 \text{ ft}^2$$

Total Credit:

$$29,025 \text{ ft}^2 + 13,950 \text{ ft}^2 = 42,975 \text{ ft}^2 \text{ or}$$

$$42,975 \text{ ft}^2 \div 3,000\text{ft}^2/\text{EDU} = 14.3 \text{ EDU}$$

Using a stormwater rate of \$5 per month for each EDU, the resulting rate credit would be:

$$14.3 \text{ EDU} \times \$5/\text{EDU per month} = \$71.50 \text{ per month } (\$858/\text{year}) \text{ rate reduction}$$



Figure 9—Example of a Vegetated Bioswale

A vegetated bioswale that is operated and maintained on a customer’s property increases the available credit.