

City of Raleigh,  
North Carolina

**Stormwater Utility  
Credit and Adjustment Manual**

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*Manual*

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# Section 1

## Introduction

The purpose of this manual is to describe policies set forth by the City of Raleigh concerning stormwater management service charge credits (Credits) and stormwater management service charge adjustments (Adjustments). The City of Raleigh Ordinance established a Stormwater Utility on November 5, 2003 with the passage of Ordinance No. (2003)-537 (Stormwater Utility Ordinance) and Resolution No. (2003)-888, revised by Resolution No. (2008) - 540. The Utility provides the City with the authorization to establish and collect rates, fees, and charges for the services and facilities provided by the City. Opportunities for Credits and Adjustments were also created in the Utility Ordinance and this manual provides technical and administrative assistance in applying for them.

The remainder of this section defines terms used throughout the manual and provides background on stormwater management. Section 2 details the process for Stormwater Fee Adjustments, while Section 3 describes the details of the Stormwater Fee Credit Policy. Appendices A through F contain applications, instructions, checklists, and relevant City Ordinances to assist Customers with Credits and Adjustments.

### 1.1 Definitions

All definitions as used in the credit manual, unless the context clearly indicates otherwise, shall have the meanings assigned in the following sections. Words not defined in this section will have the meaning given by common and ordinary use as defined in the latest edition of Webster's Dictionary.

**Adjustment** - An Adjustment is a change made to a Fee to correct an overcharge or an undercharge of a customer's stormwater management service charge.

**City Standards** - City Standards includes those standards for design, construction and maintenance of stormwater facilities. These standards include the City's Stormwater Management Design Manual ([http://www.raleigh-nc.org/portal/server.pt?space=Dir&spaceID=1&parentname=CommunityPage&parentid=0&in\\_hi\\_userid=2&control=OpenSubFolder&subfolderID=1788&DirMode=1](http://www.raleigh-nc.org/portal/server.pt?space=Dir&spaceID=1&parentname=CommunityPage&parentid=0&in_hi_userid=2&control=OpenSubFolder&subfolderID=1788&DirMode=1)), the City Code, <http://www.municode.com/resources/gateway.asp?pid=10312&sid=33>,

and all applicable City Ordinances.

**Credit** - A Credit is a Fee reduction a customer receives for implementing practices that mitigates the peak discharge or runoff pollution or decreases the City's cost of maintaining the system beyond City Code requirements.

**Credit Application** - Credit Applications are those applications for New or Existing Stormwater Facilities.

**Customer** - Customer is the person or entity to which a Fee is sent. Customers may include the owner, occupant, or tenant of property, a homeowner's association with responsibility for property or for common areas associated with property, or a person or entity who has requested in writing to be the recipient of the Fee for a property.

**Developed Land** - Developed Land is real property that contains impervious surfaces including improved land without structures and land on which improvements are under construction.

**Existing Stormwater Facility** - Existing Stormwater Facilities are Stormwater Facilities that were fully constructed and approved by the City before the inception of the fee (i.e. March 1, 2004).

**Fee** - Fee is the Stormwater Management Service Charge applied to developed property. The charge is based upon the single-family equivalent unit (SFEU) as calculated for the property.

**Impervious Area** - Any surface which because of its material composition or compacted nature impedes or prevents natural infiltration of stormwater into the soil. *Impervious surfaces* include, but are not limited to, roofs, roof extensions, patios, balconies, decks, *streets*, parking areas, driveways, sidewalks, and any concrete, stone, brick, asphalt, or compacted gravel surfaces. For the purposes of this Manual, the effective impervious covers for certain surfaces are listed below as follows:

- (1) Asphalt, concrete, crusher-run gravel, masonry, marl, wood, and other impermeable surfaces which prevent land area from infiltrating stormwater are one hundred (100) per cent impervious.
- (2) Porous surfaces which permit direct infiltration of unconcentrated stormwater into ground areas which are prepared in accordance with plans approved by the Stormwater Management Division of the City so that the first one-half (1/2) inch of stormwater infiltrates into the ground are seventy (70) per cent through ten (10) per cent impervious, depending on the following variables, each of which is considered to provide a maximum reduction of ten (10) percent for the contributing porous surface:
  - a. Compaction;
  - b. Condition of sub grade;
  - c. Extent of land disturbance;

- d. Extent of porous openings;
- e. Protection from siltation and clogging;
- f. Slope of ground area;
- g. Volume of stormwater stored.

(3) Slatted wood decks that allow the drainage of water through the slats to an unpaved surface below are fifty (50) per cent impervious. If the area covered by the deck is washed gravel, the deck is thirty (30) per cent impervious.

(4) Ungraveled natural footpaths, water surfaces of lakes, streams, swimming pools and drain fields are zero (0) percent impervious.

(5) All other determinations concerning *impervious surfaces* will be required to be based on hydrological tests of the existing sub grade soils and appropriate analyses of the slope, rainfall intensity, and rainfall duration. A report for such determinations is required to be submitted to the Stormwater Management Division for review and approval as to the per cent imperviousness of the porous surface.

***Maintain or Maintenance*** - This means any action necessary to keep stormwater control measures and devices in proper working condition, so that such facilities will continue to comply with State law and City Standards to prevent safety hazards, to prevent public nuisances, and to prevent the failure of stormwater control measures and devices and to function as credited. Maintenance includes activities identified on approved stormwater control plans , any applicable stormwater operations and maintenance manual, any applicable agreements or certifications to the City, and those activities outlined in the City's Stormwater Management Design Handbook or City approved pond operations and maintenance manuals located at:

[http://www.raleighnc.gov/portal/server.pt?space=Dir&spaceID=1&parentname=CommunityPage&parentid=0&in\\_hi\\_userid=2&control=OpenSubFolder&subfolderID=3511&DirMode=1](http://www.raleighnc.gov/portal/server.pt?space=Dir&spaceID=1&parentname=CommunityPage&parentid=0&in_hi_userid=2&control=OpenSubFolder&subfolderID=3511&DirMode=1).

***New Stormwater Facility*** - New Stormwater Facilities are Stormwater Facilities that were fully constructed and approved by the City after the inception of the fee (i.e. March 1, 2004).

***Other Residential and Nonresidential Developed Land*** - This means any individual lot or parcel of developed land that is not single-family developed land. It includes, but is not limited to, land upon which there are residential structures that contain more than one dwelling unit, such as multi-family dwellings (duplexes and greater), manufactured home parks, condominiums, apartments, boarding houses, rooming houses, fraternity houses, sorority houses, dormitories, churches; institutional buildings, whether public or private; hospitals, rest homes, public and private

schools, colleges, and universities, commercial, office, hotels and motels, industrial buildings, storage areas, parking lots and land containing improvements under construction or impervious surfaces.

***Pre-Developed Conditions*** - The condition of a property before development on the parcel occurs (i.e. forested or open space).

***Post-Developed Conditions*** - The condition of a property following any development activity on the parcel. For upstream areas, this refers to complete build-out conditions, as determined from current zoning and the City's Comprehensive Plan.

***Property Owner (Owner)*** - Owner means the owner of a property as shown on the Wake County or Durham County tax records.

***Single-Family Equivalent Unit (SFEU)*** - An SFEU is the median amount of Impervious Area on a single-family (detached home) developed land in the City as established by City Council resolution.

***Stormwater Facility (Facility)*** - A stormwater facility is any mechanism constructed to manage stormwater quantity and/or quality. Another term used for a Facility is Best Management Practice (BMP).

***Stormwater Management Design Manual*** - The Design Handbook is a manual provided by the City, which gives guidance in designing stormwater management facilities and may be downloaded from the City of Raleigh at the following web address:

[http://www.raleigh-nc.org/portal/server.pt?space=Dir&spaceID=1&parentname=CommunityPage&parentid=0&in\\_hi\\_userid=2&control=OpenSubFolder&subfolderID=1788&DirMode=1](http://www.raleigh-nc.org/portal/server.pt?space=Dir&spaceID=1&parentname=CommunityPage&parentid=0&in_hi_userid=2&control=OpenSubFolder&subfolderID=1788&DirMode=1)

***Stormwater Management Service Charge (Fee)*** - The fee charged to provide stormwater services to developed land. The fee is based upon the Single-Family Equivalent Unit (SFEU) as calculated for that property.

***Stormwater Management System (System)*** - System means the system of natural and constructed devices for collecting, storing, transporting and/or treating stormwater. It includes, but is not limited to, structural drainage systems such as catch basins, pipes, inlets, storm sewers, drains, culverts, junction boxes, open swales and ditches, and other stormwater management facilities that affect the quality and quantity of stormwater located within dedicated open public street rights-of-way and City of Raleigh permanent or public drainage easements accepted by the City.

***Stormwater Management Utility Fund*** - Stormwater Management Utility Fund means the Stormwater Management Service Charge and the interest generated by those charges.

**Stormwater Ordinance** - Stormwater Ordinance means Part 10, Chapter 9 of the Raleigh City Code which details the City's stormwater runoff and nitrogen policies. This ordinance is also known as the Stormwater Control and Watercourse Buffer Regulations.

**Stormwater Services** - Stormwater Services are City stormwater management programs designed to control hydrology and protect water quality by controlling the level of pollutants in, and the quantity and flow of, stormwater and City service of structural and natural stormwater and management systems of all types. Stormwater services include any cost necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and State laws, regulations and rules, and costs related to the construction, operation, maintenance, inspection, management and regulation of the stormwater management system.

**Stormwater Utility Ordinance** - Stormwater Utility Ordinance means the City of Raleigh Ordinance No. (2003)- 537, which establishes the stormwater management utility.

## 1.2 Responsibility

The Stormwater Management Division is a division of the City's Public Works Department. The Stormwater Program Manager has responsibility for the operation and maintenance of the Stormwater Utility. The Stormwater Program Manager also is responsible for the organization and operation and maintenance staff, the planning and assessment of the stormwater management system, enforcement of soil erosion and sedimentation control regulations, flood prone area regulations, the Stormwater Ordinance, and the management of capital improvement drainage programs. The responsibility for billing of stormwater management service charges will be that of Utility Billing, a division of the City's Public Utilities Department. The amount of the stormwater utility fee will be billed as determined by the Stormwater Program Manager or his designee.

## 1.3 Stormwater Management

Development covers land with impervious cover, allowing less stormwater to infiltrate than could under pre-development (natural) conditions. Increased impervious cover leads to larger volumes and higher rates of stormwater runoff, which pose a threat to the public health, safety, and welfare because, if unmanaged, the increased runoff may flood emergency vehicle routes and properties, erode watercourses and channels, and pollute streams and rivers.

Stormwater Management is the practice of managing stormwater runoff in order to avoid water quantity and water quality problems. By mapping, planning, constructing, operating, cleaning, regulating and maintaining natural and constructed

stormwater management facilities, the City reduces the adverse effects of stormwater and improves the quality of groundwater, streams, rivers, and lakes in and around the City.

## **1.4 Stormwater Utility**

In order to provide a stable source of funding for the City to provide Stormwater Services, which benefit owners and occupants of developed land in the City and other Raleigh citizens, the City has established a stormwater utility. It is administered similar to a water or wastewater utility. As a water utility fee is proportional to the demand for water by a Customer, the Stormwater Management Service Charge (Fee) is proportional to the demand for Stormwater Services as measured by the amount of Impervious Area on a property. Impervious Area is the single most important factor affecting the peak rate of runoff, the total volume discharged, and pollutant loadings of stormwater that flows from a property. The Stormwater Utility Ordinance, which establishes the stormwater utility, is attached as Appendix E.

## **1.5 Credits and Adjustments**

The City has established opportunities for Customers to receive Credits and Adjustments in the Stormwater Utility Ordinance. Credits are associated with the construction, operation, and maintenance of privately owned Stormwater Facilities beyond the City Code required standards and which benefit the City. Adjustments are Fee changes meant to correct discrepancies between the Fee paid by a Customer and the stormwater runoff generated by the property.

Customers may qualify for Credit when they can demonstrate that their Existing or New Stormwater Facility provides cost savings the City would otherwise incur as part of City stormwater management efforts. Credits may only be applied to the property where the Stormwater Facility is located. The Facility must comply with Section 3 *et seq.* of this manual and exceed the minimum City requirements for stormwater runoff control, which may be found in Section 10-9023 of the Stormwater Ordinance (a.k.a. Part 10, Chapter 9 of the City Code Development Regulations, Stormwater Control and Watercourse Buffer Regulations) and the Stormwater Design Manual. In lieu of a credit, the City may also, at its discretion, negotiate a separate contract with the Customer that would replace the “credit” for the facility.

The City has also established an appeals process that allows Customers to appeal for Adjustment if they determine their Fee is applied in error as discussed in Section 6-4008 of the Stormwater Utility Ordinance. Section 2 details the policy for Appeals for Adjustment while Section 3 details the Credit opportunities available to Customers.

## Section 2

# Appeals for Adjustment

Adjustments may be available to a Customer through the appeals process specified in the Stormwater Utility Ordinance (Section 6 - 4008 Appeal). An Adjustment is a change made to a fee to correct an overcharge or an undercharge of a customer's Stormwater Management Service Charge. Adjustments are not to be confused with Credits, which are intended reduce a fee by a percentage reflecting the System benefit from Customer implemented stormwater management practices. Adjustment opportunities are detailed below. The reader should not view this document as a sole source but as a guide to assist in interpreting policies set forth in the Stormwater Utility Ordinance and the Stormwater Ordinance. Customers must receive a Fee for Stormwater Services provided by the City to be eligible for an Adjustment.

### 2.1 Impervious Area Measurement Adjustment

The City has applied County Tax Records and GIS technology to determine the Impervious Area for all properties within the City Limits, using both direct measurement for non-single family residential properties and statistical analysis for single-family residential properties. If a Customer has reason to believe that the Impervious Area for a property as reported by the City is incorrect, the Customer may appeal to the City using the form in Appendix A of this manual.

### 2.2 Less than 400 Square Feet of Impervious Area Land Adjustment

A Fee will not be charged to Customers with less than 400 square feet of Impervious Area. A Customer receiving a Fee for property with less than 400 square feet of Impervious Area will be eligible for an Adjustment through the appeals process.

### 2.3 Partial Discharge Adjustment

Properties which partially or completely drain outside of the City limits will be eligible for an Adjustment through the appeals process. In order to qualify for this adjustment, runoff draining from the property outside the City limits must remain completely outside the City limits and not return at any point downstream. If the Impervious Area on the entire property drains outside the City limits, a Fee will not be assessed. If a portion of the Impervious Area on the property drains outside the City limits, a Fee will be assessed in proportion to the amount of Impervious Area draining within the City limits. This adjustment is subject to future annexations and future City limit boundary changes.

## **2.4 Process of Appealing for an Adjustment**

Adjustments are obtained by participating in the appeals process described above and in Section 6- 4008 of the Stormwater Utility Ordinance. Any Customer determining their Fee is not in proportion to the amount of impervious surface on their property may apply for Adjustment by submitting the appeals form in Appendix A to the Stormwater Program Manager. As part of the submission, the Customer must provide the City with evidence or justification for the correction of the fee in question. In some cases, the Customer may also be required to submit, at his or her expense, a survey prepared by a registered land surveyor or other information as discussed in Section 6- 4008 (1) of the Stormwater Utility Ordinance. The Stormwater Program Manager will issue a written determination on a particular matter. Once the Stormwater Program Manager has made a determination on the matter, the Customer is allowed 30 days (after service of the written decision) to file an appeal with the Public Works Director and City Manager. The ruling of the City Manager may be appealed to the City Council.

### **2.4.1 Eligibility of Adjustment**

Customers awarded an Adjustment by the City may be eligible to receive the Adjustment retroactive to Fee inception but in no case longer than 3 past years. Adjustments will not be awarded for any period preceding Fee inception or preceding the date at which the City judges the stormwater runoff generated from the property is inconsistent with the Fee paid. The three-year retroactive payment policy also applies to cases where the City determines that the Fee for a property is less than it should be based on the amount of impervious surface on the property.

## Section 3

# Stormwater Fee Credit Opportunities

As discussed in Section 1.5, the City Council approved a Stormwater Utility Ordinance and this ordinance establishes opportunities for Customers to receive Credits on their Fee for installing Stormwater Facilities to specified standards. Currently, single-family residential lots are not eligible for the Stormwater Fee Credits since Raleigh City Code prohibits detention on single-family lots. The only exception to this rule is where a facility was installed for use by multiple lots on commonly-owned or common area of a homeowner's association like a townhouse, cluster unit or condominium development. In such instances, each dwelling unit may be eligible for its equal pro-rata share of the credit unless other arrangements for billing the Stormwater Management Service Charge to the homeowner's association was made pursuant to 6-4006(e) of the Stormwater Utility Ordinance.

The reader should not view this document as a sole source but as a guide to assist in interpreting policies set forth in the Stormwater Utility Ordinance, the Stormwater Ordinance, and the Design Manual.

### 3.1 Stormwater Facility Credit

For installing Stormwater Facilities exceeding City requirements specified in the Stormwater Ordinance, Customers may be eligible for a Credit of up to 50%. To qualify, Customers must demonstrate that their Existing Stormwater or New Stormwater Facility manages stormwater generated from their immediate property and/or upstream tributary areas. In addition, the Facility must exceed design criteria outlined in the Stormwater Design Manual and Stormwater Ordinance, effectively reducing City stormwater management costs by lowering capital costs. The Stormwater Facility must also meet all North Carolina State Dam Safety standards. For each of the design storms discussed in the following sections, the stormwater facility must be designed to control the storm event from the Post-Developed conditions back to the Pre-Developed conditions, as defined in Section 1 of this manual. The structure of the Stormwater Facility Credit is explained below.

Table 1 shows the Credit opportunities for Customers with a Stormwater Facility that controls on-site stormwater runoff. A Customer that installs a Stormwater Facility to control on-site stormwater runoff may be eligible for a maximum credit of 20 percent. Credit may only be granted for facilities that exceed the existing City standard for controlling the runoff from the 2-year and 10-year, 24-hour design storm events.

**Table 1 - Stormwater Facility Credit Opportunities (Onsite Controls)**

Storm Event for which Onsite Stormwater is Controlled by Stormwater Facilities	Credit Opportunity
2- year and 10-year Storm Event (Required)	0%
2- and 10- and 25-year or Larger Storm Events	20%

Table 2 shows the Credit opportunities for Customers with a Stormwater Facility that controls runoff from an upstream tributary area, which means a customer is controlling runoff from offsite. A Customer controlling runoff from an upstream area is eligible for a maximum credit of 30 percent. Since the credits are additive, a Customer controlling both their onsite drainage area and an upstream tributary area greater than 100 acres for the 25-year, 24-hour or larger design storm event would be eligible for a maximum stormwater Fee credit of 50 percent. In the case of a facility controlling upstream drainage area, the Post-Developed Condition must be calculated based on complete build-out of the upstream drainage area as determined from current zoning and the City’s Comprehensive Plan.

**Table 2 - Stormwater Facility Credit Structure (Upstream Controls)**

Upstream Tributary Area for which Stormwater is Controlled by Stormwater Facilities	Controlling 2-yr Storm	Controlling 2-yr & 10-yr Storm	Controlling 2-yr, 10-yr, & 25-yr Storm
Less than 10 acres	0%	0%	0%
Between 10 and 100 acres	5%	10%	15%
Greater than 100 acres	10%	20%	30%

Note: Stormwater Facilities controlling stormwater runoff greater than the design storm event receive the same credit as the specified year storm event in the table. For example, a Stormwater Facility controlling greater than the 25-year design storm receives the same credit as the 25-year storm event.

### 3.2 NPDES Credit

Customers holding National Pollution Discharge Elimination System (NPDES) MS4 permits will be eligible for a Credit of an amount to be determined by the City on a case-by-case basis and not to exceed 35%. The Credit will be determined based on a comparison between the City’s NPDES program and the Customer’s NPDES

program. Credit will be given for elements of the programs that are similar to those offered by the City.

### **3.3 Eligibility for Credits**

Customers must receive a bill for Stormwater Services provided by the City and must meet requirements detailed in Section 3, et seq., and must apply the credit to Developed Lands containing the credited Stormwater Facility to be eligible for a Credit. For developments with credited stormwater facilities in common areas such as a townhouse development, cluster unit developments, or condominiums, each dwelling unit or condominium unit shall be eligible for its equal pro-rata share of the credit unless other arrangements for billing the Fee are made pursuant to Section 6-4006(e) of the Stormwater Utility Ordinance.

#### **3.3.1 Customers**

Section 6-4006 of the Stormwater Utility Ordinance details the manner in which Customers will be billed. As defined in Section 1.1, a Customer is the person or entity receiving a bill for Stormwater Services. Customers may include the owner, occupant, or tenant of property, or a person or entity who has requested in writing to receive a bill for Stormwater Services for a property. Any Customer receiving a bill for Stormwater Services is eligible to receive a Credit if they meet requirements for a particular Credit specified in Section 3, et seq.

#### **3.3.2 Maintenance Agreement**

An Owner of Stormwater Facilities must agree in writing to maintain the credited Stormwater Facility to City Standards and all other applicable standards (ex. North Carolina State Dam Safety standards) in order to be eligible for Credit. Maintenance activities to be performed are detailed in Section 3.4 et seq. Failure to maintain a Facility in strict compliance to City Standards will result in the loss of the Credit and possible surcharge to recapture improper credits. The owner of a credited Stormwater Facility is responsible for notifying the City if the facility is compromised or damaged in any way or is no longer complying with State law or City Standards. The owner of a credited Stormwater Facility must also notify the City if any repair work is performed that may alter the operation of the Facility.

#### **3.3.3 Right of Entry**

In order to be eligible for a Stormwater Facility Credit, an owner of a credited Stormwater Facility must first agree in writing that appropriate City staff have permission to inspect Stormwater Facilities on the owner's property at any time. Inspection procedures are detailed in Section 3.5.2. Failure to permit City inspection shall terminate the Credit.

### 3.3.4 Existing Stormwater Facilities

Existing Stormwater Facilities may be eligible for Credit if they meet requirements detailed in Sections 3 et seq. for a particular Credit. Similar to new facilities, Existing Stormwater Facilities must exceed City stormwater runoff control requirements and must be maintained to be eligible for a Credit.

### 3.3.5 Upgrades

Recognizing that the City's stormwater requirements have evolved over the past three decades, the City will not require current recipients of a Credit to upgrade their facilities immediately to conform to future changes in City stormwater requirements. However, once a City standard is changed, the City will only guarantee existing credits for a period of five years provided the Customer Maintains the Facility to City Standards and the Facility otherwise complies with State law. In the event that a Facility has not been upgraded to the new standard at the end of the five-year period, the Credit will be terminated.

## 3.4 Stormwater Facility Maintenance

In order to receive a Credit, a Stormwater Facility must be privately maintained in strict compliance to City Standards and North Carolina Dam safety standards where applicable to ensure that the Facility functions as credited at all times. Furthermore, Customers must document all operation and maintenance activities and provide the City with a report annually. Required maintenance activities are described in the following sections. More information concerning maintenance may be found in Sections 1.3.3 and 1.7 in the City's Stormwater Design Manual or in the maintenance manuals.

### 3.4.1 Required Stormwater Pond Maintenance

The following stormwater facility maintenance activities are required for a Customer to be eligible for a Stormwater Facility Credit. These activities are required to ensure that the Facility performs as credited, complies with City Standards and State law, meets safety standards, and is not a public nuisance. Maintenance activities are required on all drainage structures related to the facility, including the dam, inlets, headwalls, velocity dissipaters, spillways, pipes, feeder channels, discharge channels, etc. The owner of a credited Stormwater Facility must comply with all applicable maintenance practices below that are relevant to the credited facility.

- **Debris and Litter Removal** – This activity must be performed after storm events totaling approximately two inches over a 24-hour period or as needed in order to prevent the structure from clogging and failing and to prevent a public nuisance.

- **Erosion and Structural Repair** – Side slopes, emergency spillways, and embankments all may periodically suffer from slumping and erosion. Regrading, revegetating, compacting and/or installing or replenishing rip-rap may be required to correct erosion problems that develop.
- **Mowing** – Side slopes, embankments, emergency spillways, and other grassed areas of stormwater facilities should be periodically mowed to prohibit woody growth and to prevent grass from growing over eight inches in height (which is a public nuisance as set forth in the Raleigh City Code). More frequent mowing may be required in residential areas by adjacent homeowners or to meet State Dam Safety standards. Native grasses, which are water-tolerant, pest-tolerant, and slow growing, are recommended.
- **No Blockages** - Remove sediment or any blockage from pipes, channels, spillways, inlets and outlets as needed to keep the facility in proper working condition.
- **Nuisance Control** – Standing water or soggy conditions within a “dry” stormwater facility can create nuisance conditions for nearby residents. A public nuisance is defined in the Raleigh City Code. Common nuisance conditions may include odors, mosquitoes, litter and weeds. Regular maintenance to remove debris and ensure control structure functionality is required to control these potential problems. In addition, well-maintained and established wetland plants in wet detention ponds or bird nesting boxes around the pond can provide a habitat for birds and predacious insects and fish that can actively serve as a natural check on nuisance insects such as mosquitoes. Cyclical alteration of the water level in the pond or installation of aeration/agitation features will also disrupt most unwanted larval growth.
- **Outlet Control** – Maintain outlet control devices to ensure proper functioning in the control of stormwater velocities at the outlet of the stormwater facility. Re-vegetating and/or replenishing or installing rip-rap may be required to correct erosion problems at the outlet of stormwater facility pipes.
- **Removal of Log Jams and Debris** - All stream and ditches within the stormwater system should be inspected periodically for blockages. If identified, the blockages and debris should be removed as quickly as practicable.
- **Sediment Removal** – This activity is to be performed as needed or as required by the City to ensure proper working order of the facility and its related stormwater facility features (channels, pipes, etc.). Sediment removal is also required to maintain the required storage volume per the North Carolina design guidelines.
- **Structural Repairs and Replacement** – Eventually, stormwater control structures will deteriorate and must be replaced. Major structural damage to outlet structures (i.e. cracks, leaks, or failure) must be repaired as soon as possible.

## 3.5 Enforcement

Inspections and annual documentation are the primary methods employed to monitor Credits. Failure to Maintain and operate the Stormwater Facility in strict compliance with City Standards will result in the loss of the credit and possible surcharge to recapture improper credits. All credited Stormwater Facilities are subject to nuisance ordinances of the City as well.

### 3.5.1 Annual Documentation

Annual documentation (as measured from the date the Credit application was approved by the City) must be submitted to the City to continue receiving a Credit. The required documentation consists of the following:

- Annual certification report by the Property Owner or Chief Executive Officer that the Stormwater Facility is in place and in proper working order.
- Every three years, an inspection and certification report from an independent, professional engineer that conforms to Section 10-9028 of the Stormwater Ordinance.
- Recently dated photographs showing the condition (including any known damage or disrepair) of a Stormwater Facility. For stormwater ponds, these photos should include views of the outlet structure, all side slopes, vegetated littoral zones, a view from the downstream channel looking upstream at the dam and emergency spillway, a view from the dam showing the condition of the downstream channel, and a view of areas designed to catch sediment (if possible).
- Records demonstrating that required maintenance activities have been completed

### 3.5.2 Facility Inspections

Each Customer that has applied for and received a Credit for a Stormwater Facility has the private responsibility to inspect and repair their Facility to ensure that it is functioning as credited. In addition, the City reserves the right to inspect Stormwater Facilities receiving a Credit at any time. If the field inspection proves that any of the annual documentation submitted for continuation of the Credit is not accurate, or the Facility is not Maintained, or if the Facility is not operating as credited, the Credit will be forfeited, and the Customer must repay the City in the form of a surcharge the amount of Credit received during the period for which the City determines the Stormwater Facility was out of compliance.

Inspections will be performed at the discretion of the City to assure that a Facility is operating as credited (no blockage due to excessive silt, logs, or debris). Annual inspection is possible with additional inspections of problematic areas following large storm events (two inches of rainfall or more over a 24-hour period). Further

information concerning City inspections may be found in Section 10-9028 of the Stormwater Ordinance.

## **3.6 Applying for a Stormwater Facility Credit**

The following sections present the typical Credit application process for New and Existing Stormwater Facilities. The steps described in Section 3.6.1 are recommended to expedite the application process. Steps described in Sections 3.6.2 through 3.6.4 are required to be eligible for any Credit.

### **3.6.1 Preliminary Interaction with the City**

Since the calculations and hydrologic analyses involved in the design of a Stormwater Facility are complex, a professional engineer registered in the State of North Carolina must seal the design of a new Stormwater Facility, or must seal the review of any Existing Facilities or proposed Facility upgrades. Therefore, it is highly recommended that the applicant interact with City stormwater engineers first before an applicant hires an engineer to perform these services.

City stormwater engineers will evaluate how a property will fit into the drainage scheme of the City, allowing them to provide valuable insight to one designing a Facility or to one owning an Existing Facility to determine what Credit is available. For example, the City stormwater engineer might be able to tell a Customer what upstream drainage area a Stormwater Facility might control. This knowledge and the guidelines in Sections 3.1 through 3.3 allow one to determine the level of Credit for which they may be eligible. The City determines the final amount of Credit based on the policies of this manual.

### **3.6.2 Perform Hydrologic Analysis and Design Facility**

If a Customer decides to install a Stormwater Facility, a professional engineer licensed in the State of North Carolina must be hired to perform a hydrologic/hydraulic analysis and design a Stormwater Facility that will achieve the level of Credit desired by the Customer. Customers seeking Credit for an Existing Facility should refer to Section 3.7.

### **3.6.3 Complete Application**

Once an engineering analysis has been completed, the Customer should follow the instructions to fill out the application in Appendix B.1. This application along with an engineering report will be submitted to the City for final Credit determination. A checklist for submitting a complete application to the City is included in the application form. If approved by the City, any Credit awarded will appear on the

billing cycle following 90 days or less from when the Stormwater Facility was fully constructed and approved by the City.

### **3.6.4 Construction of a New Stormwater Facility**

If an application is successful, the Customer must construct the new Stormwater Facility before the Credit takes effect. The Customer must also provide an “as-built” certification to the City which must be sealed by an engineer for all new structures.

### **3.6.5 Inspection of a New or Existing Stormwater Facility**

The completed new Facility or an existing Facility may be subject to inspection by the City to ensure that it will perform as credited.

## **3.7 Applying for Credits for Existing Facilities**

Credit application procedures for Existing Stormwater Facilities are similar to those detailed in Section 3.6 for New Stormwater Facilities. The recommendation described in Section 3.6.1 to consult with a City stormwater engineer may still be useful for the owner of an Existing Stormwater Facility that is determining what Credit may be available to them. An engineering analysis as detailed in Section 3.6.2 must be performed for an Existing Stormwater Facility to prove that it exceeds current City runoff control standards and qualifies for Credit. The application in Appendix B.1 must be submitted along with an engineering report as discussed in Section 3.6.3 and the Facility may be subject to inspection as detailed in Section 3.5.2 and Section 3.6.5.

## **3.8 Credit Renewal**

Credits granted to a Customer for an Existing or New Stormwater Facility is in effect for one-year. In order to continue receiving Credit in future years, a Customer must renew their application annually. Documentation as discussed in Section 3.5.1 must be submitted along with the renewal application in Appendix B.3. In addition, an inspection of the Stormwater Facility by a licensed engineer must be performed in accordance with Section 10-9028 of the Stormwater Ordinance prior to renewing a Credit. If the annual documentation or inspection proves a Stormwater Facility is not in compliance with City requirements, Credit will be subject to termination and Credit received during any period of non-compliance must be repaid to the City. Appendix B.4 contains detailed instructions for completing the renewal application. A checklist is also included with the form to assist the Customer.

### **3.8.1 Implementation of the Credit**

Depending on when an application for a Credit is submitted, whether a Stormwater Facility is new or existing and/or when a new Stormwater Facility is fully constructed

and approved by the City, implementation may be handled differently as described in the following sections. Generally, it is estimated that applications will take three months to process. Successful applications will receive Credits as detailed below.

### **3.8.2 Credit Applications for New Stormwater Facilities**

Customers submitting a Credit Application for a New Stormwater Facility will be eligible to receive the Credit upon approval of the application by the City. However, no Credit will be awarded until the Stormwater Facility is fully constructed and approved by the City.

### **3.8.3 Credit Applications for Existing Stormwater Facilities**

Customers submitting Credit Applications for an Existing Stormwater Facility may be eligible to receive Credit retroactive to Fee inception or up to three years prior to approval of the application, whichever is shorter. Credit will not be awarded for applications for an Existing Stormwater Facility for any time period preceding Fee inception or for any time period proceeding the date at which the Stormwater Facility was fully constructed and approved by the City. However, Customers must be able to prove the Existing Stormwater Facility complies with North Carolina dam safety standards and other applicable State laws and has satisfied relevant Credit requirements detailed in Sections 3 et seq. for the time period(s) in question and has been maintained throughout that time period in order to receive the retroactive Credit.

# Appendix A

## Forms, Instructions and Checklists For Adjustments

## **A.1 Appeal for Adjustment Form**

*City of Raleigh, North Carolina*

**Stormwater Management**

P.O. Box 590 Raleigh, NC 27602-0590  
Telephone: (919) 996-3940 Fax: (919) 996-7633

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**Stormwater Fee Appeal for Adjustment Application**

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**Section A.**  
***APPLICANT INFORMATION***

Property Owner:

Primary Location/Street Address:

Telephone:

Fax:

Email Address:

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**Section B.**  
***APPLICANT'S ENGINEER or SURVEYOR (if applicable)***

Name:

Address:

Telephone:

Fax:

Email Address:

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**Section C.**  
***PROPERTY INFORMATION (attach a copy of your latest utility bill)***

Name of Property (e.g. Complex or Development):

City of Raleigh Water Billing Number:

Parcel Identification Number (PIN):

Property Address:

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**Section D.**  
***DETAILS OF THE APPEAL FOR ADJUSTMENT***

Type of Property (check one):  Single-Family  Townhouse  Multi-Family  Other Residential  Non-residential

PLEASE CHECK THE BOX NEXT TO THE TYPE OF ADJUSTMENT:

- Impervious Area Measurement Adjustment
- Less than 400 Square Feet of Impervious Area Land Adjustment
- Partial Discharge Adjustment

Currently Billed Impervious Area: \_\_\_\_\_ Square Feet

Proposed Impervious Area: \_\_\_\_\_ Square Feet

*Please include a detailed description of the reason for the adjustment as an attachment to this application. Also, please provide the City with any property maps or measurements that may be needed to determine your adjustment. A detailed topographic survey may be required in some cases at the expense of the Owner.*

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**Section E.**  
**APPLICANT CHECKLIST**

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PLEASE INCLUDE ALL OF THE FOLLOWING (CHECK OFF): If any information is missing from the request package, you will be asked to complete the request and re-submit. Please note that the City reserves the right to request additional information if necessary.

- A copy of your most recent City of Raleigh Utility Bill.
- Complete application form requesting an Appeal for Adjustment.
- Evidence supporting the basis for the adjustments including the opinion of a certified professional engineer or surveyor where applicable.
- Current City of Raleigh topographic map outlining the property and disputed impervious areas, where applicable.
- Correct parcel identification number (PIN) – See Section F for instructions on obtaining the PIN for your property.

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**Section F.**  
**iMAPS INSTRUCTIONS**

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iMAPS is the City of Raleigh and Wake County on-line property information and mapping system. You can access iMAPS from both the City and County GIS websites, the direct link is <http://maps.raleighnc.gov/>

Once you are at the iMAPS home page, click on the “Start iMAPS” button. This will bring up the map display.

You can search for property by owner, address, intersection, or parcel id number. These buttons are on the left side of the screen. Select the search method you would like to use. Empty search criteria boxes will display. For example, if “Address” is selected, several empty boxes are available. You can enter just the street name and click on “Search” or you can fill in the street number and name and select “Search.”

A list of parcels matching the criteria chosen will be displayed on the right side of the screen. Click the parcel number of the property you are interested in. A map of the property will be displayed with the property highlighted. The correct ~~parcel identification number (PIN) can be located here.~~

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**Section G.**  
**CERTIFICATION STATEMENTS**

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PLEASE INITIAL THE FOLLOWING STATEMENTS CERTIFYING THAT YOU HAVE READ AND UNDERSTAND EACH ONE:

\_\_\_\_\_ I hereby certify that the information in this packet is truthful and accurate.

\_\_\_\_\_ I hereby grant the City of Raleigh access to the property referenced in this document to confirm any of the information stated in this application to determine my adjustment.





## **A.2 Appeal for Adjustment Form Instructions**

Applicants must fill out the Appeal for Adjustment Form contained in Appendix A.1 and submit the items listed in the Checklist. Please note that the City reserves the right to request additional information if necessary to determine the adjustment.

Applicants should fill out the entire form as completely as possible. The following directions apply to each section of the form.

### **Section A**

Please submit the information requested by the Application including Property Owner, Physical Address, Contact Information and a copy of the most recent Utility Bill from the City of Raleigh.

### **Section B**

Please submit the information requested concerning the Applicant's Engineer or Surveyor (if applicable) including the Name, Physical Address, and Contact Information.

### **Section C**

Please submit the information requested concerning the Applicant's Property. The City of Raleigh Water Billing Account Number may be found on the latest statement of the Applicant's bi-monthly utility bill from the City. The Parcel Identification Number (PIN) may be found using the City of Raleigh & Wake County iMAPS system. Instructions for the iMAPS system are contained in Section F of the application. If the property address is different from the Owner address in Section A, please include in Section C.

### **Section D**

Please check the box next to the type of adjustment for which you are applying and list your requested change of impervious area in the appropriate spaces. In addition, please attach all documentation needed to justify your claim for an adjustment. Additional information may include:

- a map of the property
- property measurements
- City of Raleigh topographic data
- a complete site survey by a registered surveyor or engineer

### **Section E**

A checklist for completion of the application is included in Section E. Please check the boxes next to each item to signify that you have completed the entire form. If the form is

not complete, the City may request that you re-submit the form before making a determination on the adjustment.

## **Section F**

Section F includes instructions for the City of Raleigh & Wake County iMAPS system. The system can be used to obtain the property's parcel identification number (PIN). This number is VERY important for the City to track the adjustment of your fee. Please make sure to record your PIN accurately.

## **Section G**

Please place your initials in the appropriate spaces to signify that you will comply with the statements in this section. This section must be complete in order for your application to be processed.

## **Section H**

Please sign and date that you have completed the application for an adjustment. If multiple owners exist for the property, all owners must sign this form in order to grant the adjustment.

## **Section I**

Section I is for office use only by City of Raleigh staff.

Appendix B  
Forms, Instructions and Checklists  
For Credits

## **B.1 Initial Credit Application**

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## Stormwater Fee Initial Credit Application

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**Section A.**  
**APPLICANT INFORMATION**

Customer: \_\_\_\_\_

Primary Location/Street Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email Address: \_\_\_\_\_

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**Section B.**  
**APPLICANT'S ENGINEER**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email Address: \_\_\_\_\_

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**Section C.**  
**PROPERTY INFORMATION TO WHICH CREDIT WILL BE APPLIED (attach a copy of your latest utility bill)**

Name of Property (e.g. Complex or Development): \_\_\_\_\_

City of Raleigh Water Billing Number: \_\_\_\_\_

Parcel Identification Number (PIN): \_\_\_\_\_

Property Address: \_\_\_\_\_

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**Section D.**  
**STORMWATER FACILITY CREDIT INFORMATION AND ELIGIBILITY**

Drainage Area Controlled (acres)	Design Storms Controlled for Drainage Area Indicated to the Left (YES or NO)		
Onsite Drainage Area		2-, 10-, and 25-Year Storm	
		2-Year Storm	
Upstream Tributary Area		2- and 10-Year Storm	
		2-, 10-, and 25-Year Storm	

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**Section E.**  
**STORMWATER FACILITY CREDIT INFORMATION AND ELIGIBILITY**

Do you have a NPDES MS4 Stormwater Discharge Permit? (YES or NO)

If YES, please include a copy of your NPDES MS4 permit and application with this Credit Application.

If you answered YES to the previous question, please list briefly the activities performed by your program. Also, please include with your application any information the City would need to evaluate your program, including a copy of the NPDES permit and the latest annual report.

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**Section F.**  
**APPLICANT CHECKLIST**

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PLEASE INCLUDE ALL OF THE FOLLOWING (CHECK OFF): If any information is missing from the request package, you will be asked to complete the request and re-submit. Please note that the City reserves the right to request additional information if necessary.

- A copy of your most recent City of Raleigh Utility Bill.
- Site Plan as-built construction drawings (signed and sealed by a licensed surveyor or engineer) at an appropriate scale, showing the site, topographic details, overland flow paths, all stormwater facilities, and surrounding area.
- Detailed hydrologic and hydraulic calculations using the most current available information and methodology approved by the City that accurately describes the runoff through the site. For facilities located in the City drainage basin study areas, the hydrologic and hydraulic models (i.e. HEC-1 and HEC-RAS) used in the City's drainage basin studies should be used.
- Current City of Raleigh topographic map outlining the on-site drainage area, the drainage area upstream and the location of the credited Stormwater Facility.
- A detailed report that clearly describes how the stormwater facility functions for storm events the facility is designed to control for Credit.
- A proposed maintenance schedule submitted by the owner of the Stormwater Facility that describes in detail the maintenance activities for the Stormwater Facility.
- Correct parcel identification number (PIN) from the City of Raleigh & Wake County internet mapping system, iMAPS. See Section G for iMAPS instructions.

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**Section G.**  
**iMAPS INSTRUCTIONS**

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iMAPS is the City of Raleigh and Wake County on-line property information and mapping system. You can access iMAPS from both the City and County GIS websites, the direct link is <http://maps.raleighnc.gov>

Once you are at the iMAPS home page, click on the "Start iMAPS" button. This will bring up the map display.

You can search for property by owner, address, intersection, or parcel id number. These buttons are on the left side of the screen. Select the search method you would like to use. Empty search criteria boxes will display. For example, if "Address" is selected, several empty boxes are available. You can enter just the street name and click on "Search" or you can fill in the street number and name and select "Search."

A list of parcels matching the criteria chosen will be displayed on the right side of the screen. Click the parcel number of the property you are interested in. A map of the property will be displayed with the property highlighted. The correct parcel identification number (PIN) can be located here.

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**Section H.**  
**CERTIFICATION STATEMENTS**

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PLEASE INITIAL THE FOLLOWING STATEMENTS CERTIFYING THAT YOU HAVE READ AND UNDERSTAND EACH ONE:

- \_\_\_\_\_ I hereby certify that the information in this packet is truthful and accurate.
- \_\_\_\_\_ I hereby certify that I will maintain the Stormwater Facility referenced in this application and I will adhere to the approved maintenance schedule attached to this application.
- \_\_\_\_\_ I hereby certify that the credited Stormwater Facility will continuously meet all City standards.
- \_\_\_\_\_ I hereby grant the City of Raleigh access to the property referenced in this document to inspect the facility or facilities proposed for a stormwater fee credit.
- \_\_\_\_\_ I hereby certify that I will notify the City of Raleigh should any destruction or damage occur to the facility referenced in this credit application that prevents it from performing as credited.

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**Section I.**  
**SIGNATURE(S)**

*NOTE: For development with common area Stormwater Facilities like condominiums, townhomes, and cluster unit developments, where fees are pro-rated to the lot owners, the Association may sign and complete the application on behalf of its members.*

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by the owners of the property.

**OWNER'S SIGNATURE(S) – If multiple owners, all must sign.**

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**CUSTOMER'S SIGNATURE(S) – If not owner. If multiple customers, all must sign.**

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**PRINT OWNER NAME(S), ADDRESSES, PHONE NUMBER(S):**

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**PRINT CUSTOMER NAME(S), ADDRESSES, PHONE NUMBER(S) – If not owner:**

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**Section J.**  
**OFFICE USE ONLY**

Received by the City of Raleigh, North Carolina, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Application reviewed on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Application reviewed by: \_\_\_\_\_

Credit amount awarded to customer:

**Onsite Drainage Area Credit (%):** \_\_\_\_\_  
**Upstream Tributary Area Credit (%):** \_\_\_\_\_  
**NPDES MS4 Credit (%):** \_\_\_\_\_  
**TOTAL STORMWATER FEE CREDIT:** \_\_\_\_\_

## **B.2 Initial Credit Application Instructions**

Applicants applying for a Stormwater Facility Credit for the first time must fill out the Credit Application contained in Appendix B.1 and submit the items listed in the Credit Application Checklist. Please note also that the City reserves the right to request additional information if necessary to determine the Credit. Applicants or a professional Engineer hired by the Applicant should fill out the entire form as completely as possible. The following directions apply to each section of the form.

### **Section A**

Please submit the information requested by the Application including Customer Name, Physical Address, Contact Information and a copy of the most recent Utility Bill from the City of Raleigh.

### **Section B**

Please submit the information requested concerning the Applicant's Engineer including the Name, Physical Address, and Contact Information.

### **Section C**

Please submit the information requested concerning the Applicant's Property for which Credit will be applied. The City of Raleigh Water Billing Account Number may be found on the latest statement of the Applicant's bi-monthly utility bill from the City. The Parcel Identification Number (PIN) may be found using the City of Raleigh & Wake County iMAPS system. Instructions for the iMAPS system are contained in Section G of the application. If the property address is different from the Customer's address in Section A, please include in Section C.

### **Section D**

Please indicate the number of acres of onsite and upstream tributary drainage area (if applicable) controlled by the Applicant's Stormwater Facility by entering the correct amount in the boxes provided. The Applicant shall receive this information from the professional engineer that was hired to design the new facility or who has performed the study of an existing facility. The applicant shall submit to the City a detailed topographic map outlining the drainage areas. In addition, the engineer should signify the appropriate design storm events controlled by the Stormwater Facility.

### **Section E**

Please signify with a YES or NO in the appropriate box whether a NPDES MS4 stormwater discharge permit has been obtained for this property. If so, please describe the elements of the program in the given box and include a copy of your NPDES Permit and Application with your request for Credit to the City. In addition, please supply the City with any additional information needed to evaluate your program. This information may include documentation of the activities that you perform to stay in compliance with the permit, such as maintenance logs, monitoring information, etc.

## **Section F**

A checklist for completion of the application is included in Section F. Please check the boxes next to each item to signify that you have completed the entire form. If the form is not complete, the City may request that you re-submit the form before making a determination on the adjustment.

## **Section G**

Section G includes instructions for the City of Raleigh & Wake County iMAPS system. The system can be used to obtain the property's parcel identification number (PIN). This number is VERY important for the City to track the adjustment of your fee. Please make sure to record your PIN accurately.

## **Section H**

Please place your initials in the appropriate spaces to signify that you will comply with the statements in this section. This section must be complete in order for your application to be processed.

## **Section I**

Please sign and date that you have completed the application for an adjustment. If multiple customers exist for the property, all customers must sign this form in order to grant the adjustment. For development with common area Stormwater Facilities such as condominiums, townhomes or cluster unit developments, where fees are pro-rated to the lot owners, the Association may sign and complete the application on behalf of its members.

## **Section J**

Section J is for office use only by City of Raleigh staff.

## **B.3 Credit Renewal Application**

## Stormwater Fee Credit Renewal Application

**Section A.**  
**APPLICANT INFORMATION**

Customer:

Primary Location/Street Address:

Telephone:

Fax:

Email Address:

**Section B.**  
**APPLICANT'S ENGINEER**

Name:

Address:

Telephone:

Fax:

Email Address:

**Section C.**  
**PROPERTY INFORMATION TO WHICH CREDIT WILL BE APPLIED (attach a copy of your latest utility bill)**

Name of Property (e.g. Complex or Development):

City of Raleigh Water Billing Number:

Parcel Identification Number (PIN):

Property Address:

**Section D.**  
**STORMWATER FACILITY CREDIT INFORMATION AND ELIGIBILITY**

Drainage Area Controlled (acres)		Design Storms Controlled for Drainage Area Indicated to the Left (YES or NO)	
Onsite Drainage Area		2-, 10-, and 25-Year Storm	
		2-Year Storm	
Upstream Tributary Area		2- and 10-Year Storm	
		2-, 10-, and 25-Year Storm	

**Section E.**  
**STORMWATER FACILITY CREDIT INFORMATION AND ELIGIBILITY**

Are you receiving credit for an existing NPDES MS4 Stormwater Discharge Permit? (YES or NO)

If your permit has expired since your last credit renewal, please submit your new permit.

If any of your permit requirements have changed from your previous submission for a credit, please explain these changes below.

**Section F.**  
**APPLICANT CHECKLIST**

PLEASE INCLUDE ALL OF THE FOLLOWING (CHECK OFF): If any information is missing from the request package, you will be asked to complete the request and re-submit. Please note that the City reserves the right to request additional information if necessary.

- A copy of your most recent City of Raleigh Utility Bill.
- Records demonstrating that required maintenance activities have been completed.
- Certified inspection report complying with Section 10-9028 of the Stormwater Ordinance.
- Recently dated photographs showing the condition (including any known damage or disrepair) of a stormwater facility. For stormwater ponds, these photos should include views of the outlet structure, all side slopes, vegetated littoral zones, a view from the downstream channel looking upstream at the dam and emergency spillway, a view from the dam showing the condition of the downstream channel, and a view of areas designed to catch sediment (if possible).

**Section G.  
iMAPS INSTRUCTIONS**

iMAPS is the City of Raleigh and Wake County on-line property information and mapping system. You can access iMAPS from both the City and County GIS websites, the direct link is <http://maps.raleighnc.gov>

Once you are at the iMAPS home page, click on the “Start iMAPS” button. This will bring up the map display.

You can search for property by owner, address, intersection, or parcel id number. These buttons are on the left side of the screen. Select the search method you would like to use. Empty search criteria boxes will display. For example, if “Address” is selected, several empty boxes are available. You can enter just the street name and click on “Search” or you can fill in the street number and name and select “Search.”

A list of parcels matching the criteria chosen will be displayed on the right side of the screen. Click the parcel number of the property you are interested in. A map of the property will be displayed with the property highlighted. The correct parcel identification number (PIN) can be located here.

**Section H.  
CERTIFICATION STATEMENTS**

PLEASE INITIAL THE FOLLOWING STATEMENTS CERTIFYING THAT YOU HAVE READ AND UNDERSTAND EACH ONE:

- \_\_\_\_\_ I hereby certify that the information in this packet is truthful and accurate.
- \_\_\_\_\_ I hereby certify that the Stormwater Facilities and the conditions of the facilities have not been altered since the submittal of the initial application for credit.
- \_\_\_\_\_ I hereby certify that the credited Stormwater Facility or Facilities will continuously meet all City standards.
- \_\_\_\_\_ I hereby certify that I will notify the City of Raleigh should any destruction or damage occur to the facility referenced in this credit application that prevents it from performing as credited.
- \_\_\_\_\_ I hereby certify that I have maintained the Stormwater Facility referenced in this application and have adhered to the approved maintenance schedule contained in the initial credit application.
- \_\_\_\_\_ I hereby certify that I will continue to maintain the Stormwater Facility referenced in this application and will adhere to the approved maintenance schedule contained in the initial credit application.
- \_\_\_\_\_ I hereby certify the credited Stormwater Facility or Facilities meet all City Standards.
- \_\_\_\_\_ I hereby grant the City of Raleigh access to the property referenced in this document to inspect the credited Stormwater Facility or Facilities proposed for a stormwater fee credit.

**Section I.  
SIGNATURE(S)**

*NOTE: For development with common area Stormwater Facilities like condominiums, townhomes, and cluster unit developments, where fees are pro-rated to the lot owners, the Association may sign and complete the application on behalf of its members.*

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by the owners of the property.

**OWNER’S SIGNATURE(S) – If multiple owners, all must sign.**

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**CUSTOMER’S SIGNATURE(S) – If not owner. If multiple customers, all must sign.**

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**PRINT OWNER NAME(S), ADDRESSES, PHONE NUMBER(S):**

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**PRINT CUSTOMER NAME(S), ADDRESSES, PHONE NUMBER(S) – If not owner:**

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**Section J.  
OFFICE USE ONLY**

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Received by the City of Raleigh, North Carolina, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Application reviewed on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Application reviewed by: \_\_\_\_\_

Credit amount awarded to customer:

**Onsite Drainage Area Credit (%):** \_\_\_\_\_  
**Upstream Tributary Area Credit (%):** \_\_\_\_\_  
**NPDES MS4 Credit (%):** \_\_\_\_\_  
**TOTAL STORMWATER FEE CREDIT:** \_\_\_\_\_

## **B.4 Credit Renewal Application Instructions**

Applicants applying for a Renewal of an existing credit must complete the Stormwater Fee Credit Renewal Application in Section B.3 and submit the items listed in the Credit Renewal Checklist on the application form. Applicants do not need a professional engineer to complete the application form if no changes or upgrades have been made to the facility within the past year. However, a professional engineer does have to complete the certified inspection report which complies with Section 10-9028 of the Stormwater Ordinance. The following sections provide instructions for completing the Credit Renewal form. Most of this information can be copied by the applicant directly from the Initial Credit Application Form.

### **Section A**

Please submit the information requested by the Application including Customer Name, Physical Address, Contact Information and a copy of the most recent Utility Bill from the City of Raleigh.

### **Section B**

Please submit the information requested concerning the Applicant's Engineer including the Name, Physical Address, and Contact Information.

### **Section C**

Please submit the information requested concerning the Applicant's Property. The City of Raleigh Water Billing Account Number may be found on the latest statement of the Applicant's monthly utility bill from the City. The Parcel Identification Number (PIN) may be found using the City of Raleigh & Wake County iMAPS system. Instructions for the iMAPS system are contained in Section G of the application. If the property address is different from the Customer's address in Section A, please include in Section C.

### **Section D**

Please indicate the number of acres of onsite and upstream tributary drainage area (if applicable) controlled by the Applicant's Stormwater Facility by entering the correct amount in the boxes provided. The Applicant shall receive this information from the professional engineer that was hired to design the new facility or who has performed the study of an existing facility. The applicant shall submit to the City a detailed topographic map outlining the drainage areas. In addition, the engineer should signify the appropriate design storm events controlled by the Stormwater Facility.

### **Section E**

Please signify with a YES or NO in the appropriate box whether a NPDES MS4 stormwater discharge permit has been obtained for this property. If so, please describe the elements of the program in the given box and include a copy of your NPDES Permit and Application with your request for Credit to the City. In addition, please supply the

City with any additional information needed to evaluate your program. This information may include documentation of the activities that you perform to stay in compliance with the permit, such as maintenance logs, monitoring information, etc.

## **Section F**

A checklist for completion of the application is included in Section F. Please check the boxes next to each item to signify that you have completed the entire form. If the form is not complete, the City may request that you re-submit the form before making a determination on the adjustment. The items in the Renewal Application Form are intended to certify that the facility has been maintained properly throughout the past year and that that facility continues to operate as designed for the Credit.

## **Section G**

Section G includes instructions for the City of Raleigh & Wake County iMAPS system. The system can be used to obtain the property's parcel identification number (PIN). This number is VERY important for the City to track the adjustment of your fee. Please make sure to record your PIN accurately.

## **Section H**

Please place your initials in the appropriate spaces to signify that you will comply with the statements in this section. This section must be complete in order for your application to be processed.

## **Section I**

Please sign and date that you have completed the application for an adjustment. If multiple customers exist for the property, all customers must sign this form in order to grant the adjustment. For development with common area Stormwater Facilities such as condominiums, townhomes or cluster unit developments, where fees are pro-rated to the lot owners, the Association may sign and complete the application on behalf of its members.

## **Section J**

Section J is for office use only by City of Raleigh staff.

# Appendix C

## Example Credit Calculations

## Example Credit Calculations

The method for calculating a Credit will depend on many factors, such as upstream drainage area, the existence of a primary drainage system component on a property, and the extent to which a Facility provides runoff control during storm events. Examples contained in this section are intended to familiarize Customers with concepts governing the Credits and the manner in which they are calculated so that they might be able to determine the approximate amount of Credit that may be available to them. This particular example applies to Other Residential and Nonresidential Developed Land as defined in Section 1.1.

### C.1 Relevant Equations

**Equation 1** 
$$Fee = \left( \frac{IA}{SFEU} \right) * MR$$

Fee = Monthly Stormwater Management Service Charge

IA = Impervious Area

SFEU = Single Family Equivalent Unit (2,260 ft<sup>2</sup>)

MR = Monthly Billing Rate for an SFEU (\$4.00)

**Equation 2** 
$$AF = Fee * \left( 1 - \frac{C}{100\%} \right)$$

AF = Adjusted Fee

Fee = Monthly Stormwater Management Service Charge

C = Credit (%)

### C.2 Example 1

As detailed in the City Stormwater Ordinance, all new development is required to control onsite stormwater resulting from a 2-year and 10-year, 24-hour design storms to pre-developed conditions. If a property owner affected by this requirement chooses to implement a Facility that controls more than is required, they may be eligible for Credit as discussed in Section 3.1.

For example, assume that a property containing a shopping mall is to be built and has a total area of 6 acres, 5 of which are impervious cover. The property accepts stormwater

from an upstream drainage area of 12 acres. Using Equation 1, the Fee is computed as follows:

$$Fee = \left( \frac{5 \text{ acres} * 43,560 \frac{ft^2}{\text{acre}}}{2,260 ft^2} \right) * \$4$$

$$Fee = \$385.50 \text{ per month}$$

This amount is the Fee paid by an Owner that meets minimum requirements detailed in the Stormwater Ordinance. Currently, the City requires Owners to implement a Stormwater Facility that controls onsite stormwater runoff resulting from a 2-year and 10-year, 24-hour design storm events. A Facility designed to control onsite runoff for the 2-year, 24-hour design storm and the 10-year, 24-hour design storm is not eligible for Credit since it does not exceed City requirements. However, if the Owner decided to implement a pond that controls onsite stormwater runoff resulting for the 2-, 10-, and 25-year, 24-hour design storms, the Owner would be eligible to apply for a 20% Stormwater Facility Credit as detailed in Section 3.1. Assuming the Credit is approved by the City, Equation 2 yields the following adjusted fee:

$$AF = \$385.50 * \left( 1 - \frac{20\%}{100\%} \right)$$

$$AF = \$308.40 \text{ per month}$$

In this case, installing a pond that exceeds City requirements provides a savings of \$77 per month off the Owner's original Fee. Over a period of time, this savings would offset the difference in capital cost for installing the larger pond needed to control the additional stormwater.

### C.3 Example 2

Consider the pond from the previous example, which qualifies for a 20% Credit for controlling onsite stormwater runoff resulting from the 2-, 10-, and 25-year, 24-hour design storms. Now consider sizing the stormwater pond to control runoff resulting from 12 acres of upstream drainage area in addition to existing onsite stormwater runoff. According to Table 1 and Table 2 in Section 3.1, a property with a Stormwater Facility that controls more than 10 acres of upstream drainage area is eligible for an additional 5% Credit. Furthermore, the 5% Credit triples if the stormwater pond controls the 2, 10, and 25-year, 24-hour design storms. Since these Credits are additive, the total Credit (C) used in Equation 1.0 would be computed as follows:

$$C = 20\% + (3*5\%)$$

$$C = 35\%$$

Thus the owner would be eligible to apply for a 35% Credit off the Fee assigned to the property. This Credit results in a Fee of \$250.60, a savings of \$135 per month from the Fee required to satisfy minimum requirements. Again, over time this savings will off-set the cost of installing the larger pond needed to control the increased volume of stormwater.

# Appendix D

## Example Design Calculations

## Example Design Calculations

Stormwater Facility design calculations can be complex and are always site-specific. These calculations must be performed and certified by an engineer registered in the State of North Carolina. Guidance concerning equations and concepts has been provided in the Design Manual. This section provides an example of how these concepts are applied when designing a stormwater pond and of the types of calculations that might be submitted with an application for the Stormwater Facility Credit.

### D.1 Design Example

A property owner has decided that the additional cost of installing a stormwater pond that controls the 25-year design storm (in addition to the required two and ten-year design storms) is financially beneficial due to savings received from the Stormwater Facility Credit detailed in Section 3.1 of this manual. The property has a total area of 3.6 acres and contains a shopping mall. The following calculation is a simplified example of how an engineer might design the Facility.

The Design Manual specifies that Equation 2.12 (reproduced below) may be used to estimate the required storage volume of a stormwater pond. It also specifies that this volume should be verified by routing the design storm through the proposed Facility. Routing concepts and methods are discussed in Section 2.5.5 of the Design Manual.

$$S = (Q_p - \text{MPRR}) * T_p \quad (2.12)$$

Where:

S	=	Estimated Storage Volume (cf)
Q <sub>p</sub>	=	Peak Inflow (cfs)
MPRR	=	Maximum Permissible Release Rate (cfs)
T <sub>p</sub>	=	Time to Peak (seconds)

#### D.1.1 Determining Peak Inflow

The Design Manual specifies that the Rational Method may be used to compute peak inflow for properties less than 100 acres in area. Thus, the Rational Method was chosen to estimate the peak flow resulting from the 10- and 25-year design storms for Post-Developed and Pre-Developed conditions. As described in Section 2.2 of the Design Manual, Equation 2.1 (reproduced below) is the relevant equation for the Rational Method.

$$Q = CIA \quad (2.1)$$

Where:

Q = Peak flow from the drainage area (cfs)

C = Coefficient of runoff (dimensionless)

I = Rainfall intensity for a given time to peak (in/hr)

A = Drainage Area (acres)

In order to determine peak flow, one must obtain values for C, I, and A. The total area is known to be 3.6 acres and the values for C and I are computed with help from the Design Manual.

The Design Manual gives values for C in Table 2.2. In this case, the pre-development condition of the property most closely corresponds to woodland, which is assigned a runoff coefficient in the range of 0.025 to 0.2. For this study, 0.2 was selected. Post-development conditions are best described as shopping center, which is assigned a runoff coefficient in the range of 0.85 to 0.95. For this study, 0.90 was chosen.

Rainfall intensity values may be obtained by consulting Table 2.3 in the Design Manual if one knows the storm duration and design storm frequency. When using the rational method, it is commonly assumed that storm duration is equal to time of concentration (Tc), which is discussed in Section 2.2.4 of the Design Manual. Time of concentration may be computed with the Kirpich Equation discussed in Section 2.2.5 and reproduced below.

$$T_c = \frac{(L^3/H)^{0.385}}{128}$$

Where:

Tc = Time of Concentration (min)

H = Height of the most remote point on the watershed above the outlet (ft)

L = Length of flow from the most remote point on the watershed to the outlet (ft)

The parameters L (300 ft) and H (20 ft) can be measured using GIS technology or from topographic maps that are to scale and include elevation data. Using these parameters, the time of concentration was computed to be 1.8 minutes for this particular watershed as shown below. Though the time of concentration was computed to be 1.8 minutes, 5

minutes is the minimum time of concentration that is used in practice. Therefore, 5 minutes was chosen as the time of concentration.

$$T_c = \frac{(300^3/20)^{0.385}}{128}$$

$$T_c = 1.8 \text{ minutes}$$

With the time of concentration known, rainfall intensities are taken from Table 2.3 of the Design Manual for the appropriate design storm frequency. For 10- and 25-year storms, the values for rainfall intensity are 7.22 (in/hr) and 8.19 (in/hr) respectively.

Once C, I, and A are known, Equation 2.1 may be applied to compute peak flows for each design storm frequency for pre- and post-development conditions. These values are summarized in Table 1 below.

**Table 1 - Peak Flow Computation**

Design Storm Frequency	Pre-Development				Post-Development			
	C	I	A	Q	C	I	A	Q
	--	in/hr	acres	cfs	--	in/hr	acres	cfs
10 Years	0.25	7.22	3.6	6.5	0.9	7.22	3.6	23.4
25 Years	0.25	8.19	3.6	7.4	0.9	8.19	3.6	26.5

### D.1.2 Determining Required Storage Volume

The pre-development flows are important because, according to the Design Manual, stormwater facilities must reduce post-development flows to pre-development levels in order to receive any Credit. Therefore, the MPRR term in Equation 2.12 is the pre-development flow given in Table 1 for the given design frequencies.

The last term needed in Equation 2.12 to estimate the required storage volume is  $T_p$ , or time to peak. As stated on Page 48 of the Design Manual, "For most applications using the rational method, the time of concentration ( $T_c$ ) is equal to the time to peak ( $T_p$ ).” Therefore,  $T_c = T_p = 5$  minutes (300 seconds) and the required storage volumes are computed with Equation 2.12 as summarized in Table 2 below.

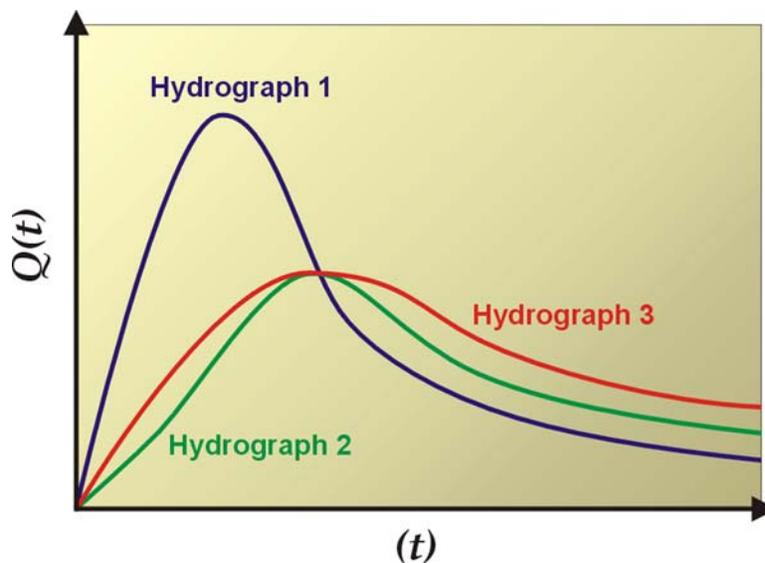
**Table 2 - Required Storage Volumes**

Design Storm Frequency	Qp	MPRR	Tp	S
yrs	cfs	cfs	seconds	ft <sup>3</sup>
10	23.4	6.5	300	5,070
25	26.5	7.4	300	5,730

Once the required storage volume estimate is computed, the engineer must verify the result by routing an inflow hydrograph through the reservoir. These calculations are long and complex and are not included here. Section 2.5.5 of the Design Manual discusses these methods in more detail and provides examples. For this discussion, it is assumed that the result has been verified.

### D.1.3 Designing the Pond

From this point an engineer may progress in any number of ways to complete the design of the pond. General design guidelines are provided in the Design Manual for stormwater ponds including requirements for side slopes, emergency spillways, and length to width ratios. Once the pond is designed, the engineer must submit results from any of the accepted hydrologic and hydraulic methods specified in the Design Manual that demonstrate the pond has been designed to meet control requirements. Figure 1 shows the type of result that might be submitted to demonstrate acceptable Facility design.



**Figure 1 - Demonstration of Peak Flow Control**

These curves, called hydrographs, are a plot of flow versus time. Hydrograph 1 is a hydrograph representing post development runoff inflow to a Stormwater Facility. Hydrograph 2 represents the pre-development runoff hydrograph, or what Hydrograph 1 would be if no development had occurred. Hydrograph 3 represents Hydrograph 1 after being routed through the Stormwater Facility. Notice that the peak of Hydrograph 3 is now the same as Hydrograph 2, suggesting this Facility has been properly designed to control the design storm that produced Hydrograph 1. The shape of the hydrograph will change with the volume of the pond and with changes to the outlet structure. An engineer will work with these variables until desired hydraulic results are achieved. Figure 1 is an example of the type of evidence that must be provided (for each design storm the Facility is designed to control) in support of a Credit Application.

# Appendix E

## Utility and Stormwater Ordinances

## E.1 Stormwater Ordinance

[http://www.raleighnc.gov/portal/server.pt/gateway/PTARGS\\_0\\_2\\_93851\\_0\\_0\\_18/Stormwater\\_Utility\\_Ordinance.pdf](http://www.raleighnc.gov/portal/server.pt/gateway/PTARGS_0_2_93851_0_0_18/Stormwater_Utility_Ordinance.pdf)

## E.2 Stormwater Ordinance Amendment

### ORDINANCE (2004) 571 TC 243A

#### TC-2-04

AN ORDINANCE TO AMEND THE STORMWATER CONTROL REGULATIONS BY LIMITING THE PEAK STORMWATER RUNOFF OF THE TEN-YEAR STORM TO BE NO GREATER FOR POST-DEVELOPMENT CONDITIONS THAN PRE-DEVELOPMENT CONDITIONS.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF RALEIGH, NORTH CAROLINA that:

**Section 1.** Amend Section 10-2072(b), for the conditional use **Office, agency, or studio of a professional, business, agent, or political, labor, or service association in the Office and Institutional -1 and -2 Districts – additional floor area ratio (F.A.R.) allowance**, subsection (2)a., by deleting from the beginning of the first sentence the following language:

“Stormwater runoff from a two-year and ten-year frequency storm is retained or detained that the off-site peak rates of discharge for the project do not exceed the predevelopment calculated rate of discharge (ten (10) points); or”;

**Section 2.** Amend Section 10-2072(b), for the conditional use **Residential institution in a residential zoning district**, the first sentence of the lead-in paragraph for subsection (2), by deleting the words “two-year storm” and substituting in lieu thereof “two-year and ten-year storms”.

**Section 3.** Amend Section 10-2072(b), **Residential institution in a residential zoning district**, subsection (2)a., by deleting the words “two-year storm” and substituting in lieu thereof “two-year and ten-year storms”.

Furthermore, delete the **Editor's Note** at the end of this conditional use listing in its entirety and substitute in lieu thereof the following:

**\*Editor's Note:** This regulation, including application of stormwater controls for the *two-year storm*, first became applicable on September 1, 1997. Ordinance No. (1997)-137-TC-18. This regulation for the *ten-year storm* first became applicable on 2/29/04, Ordinance No. (2004)-571 TC 243A".

**Section 4.** Amend Section 10-9023(a), first sentence, by deleting the words "*two-year storm*" and substituting in lieu thereof "*two-year and ten-year storms*".

**Section 5.** Amend Section 10-9023(b) (1) by deleting the words "*two-year storm*" and substituting in lieu thereof "*two-year and ten-year storms*".

**Section 6.** Amend Section 10-9023(b) by adding a new subsection (4) to read as follows:

"(4) Compliance with the ten-year storm runoff limitations in subsection (a) above results in no benefit to current and future downstream development, as determined by City-approved engineering studies."

**Section 7.** Amend Section 10-9023 by deleting the **Editor's Note** located at the end of this Section and substituting in lieu thereof the following:

**\*Editor's Note:** This regulation for the *two-year storm* first became applicable on May 1, 2001, Ordinance No. (2001)-991TC-206. This regulation for the *ten-year storm* first became applicable on 2/29/04, Ordinance No. (2004)-571 TC 243A".

**Section 8.** All laws and clauses of laws in conflict herewith are hereby repealed to the extent of said conflict.

**Section 9.** If this ordinance or application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the ordinance which can be given separate effect and to the end the provisions of this ordinance are declared to be severable.

**Section 10.** This ordinance has been adopted following a duly advertised joint public hearing of the Raleigh City Council and the City Planning Commission following a recommendation of the Planning Commission.

**Section 11.** This ordinance has been provided to the North Carolina Capital Commission as required by law.

**Section 12.** This ordinance shall be enforced by law as provided in G.S.N.C. 160A-75 or as provided in the Raleigh City Code. All criminal sanctions shall be the maximum allowed by law notwithstanding the fifty dollar limit in G.S. 14-4(a) or similar limitations.

**Section 13.** This ordinance shall become effective on February 29, 2004, but it shall not apply to any site plan, subdivision plan, plot plan, or building permit application submitted prior to that date.

**Adopted:** 2/17/04

**Effective:** 2/29/04

**Distribution:** All Dept. Heads  
Bowden, Teachey, Taylor

### E.3 Utility Ordinance

#### ORDINANCE NO. (2003) - 537

#### **AN ORDINANCE TO CREATE A STORMWATER SERVICES ADVISORY COMMISSION AND TO ESTABLISH A STORMWATER MANAGEMENT UTILITY.**

**Whereas**, Chapter 160A, Article 16 of the General Statutes authorizes the City of Raleigh to establish a stormwater management enterprise program, and

**Whereas**, State and Federal laws, regulations, and rules require the City of Raleigh to limit pollutants in stormwater discharged into receiving waterways through various controls and management practices of stormwater quality, flow, and quantity, and

**Whereas**, The North Carolina Department of Environment and Natural Resources has adopted, in NCAC title 15A Subchapter 2B, surface water and wetland standards for the Neuse River which requires the City of Raleigh to regulate stormwater runoff and reduce nitrogen loads from stormwater runoff, and

**Whereas**, The City of Raleigh has certain obligations and responsibilities for the planning, designing, construction, operation and maintenance of the stormwater management system within its municipal borders, and

**Whereas**, The Stormwater Utility Stakeholders Group established by the City Council recommended to the Council that annual funding for stormwater management programs be increased from 6 million dollars to 11.8 million dollars per year, and

**Whereas**, Based on various completed drainage basin studies conducted on behalf of the City of Raleigh, it is estimated that the City of Raleigh has a backlog of approximately 100 million dollars of stormwater capital improvements required to meet basic flood control, stream stabilization and water quality objectives.

**NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF RALEIGH, NORTH CAROLINA that:**

**Section 1.** Section 6-1002(b) of the Raleigh City Code is amended to replace the words “storm drainage system and structures” in subsection (5)

with the words “stormwater management system” and to delete subsection (6) in its entirety, and in lieu thereof insert the following:

“(6) Manage the stormwater services of the City.”

Said section is further amended to insert at the end of subsection (8) the following language: “, and the construction, reconstruction, extending and otherwise building or improving storm sewer and drainage systems.” Section 6-1002(b) is amended yet further to delete subsection (11) in its entirety and in lieu thereof insert the following:

“(11) Enforce the following: soil erosion and sedimentation control (Part 10 Chapter 5), flood prone area regulations (Part 10 Chapter 4), sidewalks, and driveways (Part 10 Chapter 7) and stormwater control and watercourse buffer regulations (Part 10 Chapter 9).”

**Section 2.** Chapter one of Part 6 of the Raleigh City Code is to create two articles. Article A shall appear before section 6-1001 and it shall read”

**“ARTICLE A.  
DEPARTMENT OF CENTRAL ENGINEERING”**

Article B shall follow section 6-1002 and it shall read:

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**Secs. 6-1003 – 6010.  
RESERVED.**

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**ARTICLE B.  
STORMWATER MANAGEMENT ADVISORY COMMISSION**

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**Sec. 6-6011.  
Establishment, Composition, Duties and Procedures.**

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**(a) Establishment and Composition:**

The Raleigh Stormwater Management Advisory Commission *shall* be composed of ten (10) members who *shall* reside within the *City* limits. The membership of the Commission *shall* be appointed by the *Council*. Each member *shall* be appointed for a period of two years except that the *Council* in appointing the original membership of the

Commission *may* prescribe terms of fewer years to the end that the terms of the various members of Stormwater Management Advisory Commission *shall* be staggered.

**(b) Duties:**

The Stormwater Management Advisory Commission *shall* have the following charge and duties:

- (1) The Commission *shall* review and recommend to the *Council* stormwater management policies, policy changes, long range plans and their budgetary and rate impacts.
- (2) The Commission *shall* review and comment to the *Council* on the annual stormwater management capital improvements program.
- (3) The Commission *shall* respond to the City Council and city staff requests for advice on matters related to stormwater services and the stormwater management utility.
- (4) The Commission *shall* present the *Council* with an annual report of key actions and issues and its annual work program.

**(c) Procedure:**

The Stormwater Management Advisory Commission is directed to adopt rules of procedure necessary to the conduct of its affairs and in keeping with the provision of this *Code*, all policies of the *City Council*, and applicable State laws. Such rules of procedure, and any modifications to same, *shall* be submitted to the *City Council* for review and approval. Except as provided in this *Code*, the rules of procedure adopted by the Commission *shall* at least provide for: selection of the *officers* of the Commission; the time and place of its regular meetings, which *shall* at least be held bi-annually, and the calling of special meetings; the procedures of the conduct of public hearings and voting. The Commission *shall* elect from its membership at least a chair *person* and vice chair *person*, who *shall* serve for terms of one (1) *year*, who *shall* be eligible for reelection, and who *shall* have the right to vote. The chair *person shall* preside over the Stormwater Management Advisory Commission. In the absence or disability of the chair *person*, the vice-chair *person shall* perform the duties of the chair *person*. All meetings of the Stormwater Management Advisory Commission *shall* be open to the public, in accordance with the North Carolina Open Meetings Law, G.S. 143-318.10 et seq., and a public record *shall* be kept of the Commission's resolutions, proceedings, and actions. The rules of procedure

and minutes of the Commission are maintained as separate documents in the nature of a public record at the City Clerk's Office. The Central Engineering Department shall provide such technical, administrative, and clerical assistance as required by the Commission.

**Section 3.** Part 6 of the Raleigh City Code is amended to add a new chapter related to stormwater water services, including provisions for a stormwater management utility, and the new chapter shall read as follows:

**“ CHAPTER 4.  
STORMWATER SERVICES**

Sec. 6-4001	Findings.
Sec. 6-4002	Definitions.
Sec. 6-4003	Creation of stormwater management account.
Sec. 6-4004	Stormwater management service charges.
Sec. 6-4005	Credits applicable to stormwater management service charges.
Sec. 6-4006	Billing method, responsible parties.
Sec. 6-4007	Payment provisions; utility termination.
Sec. 6-4008	Appeal.
Sec. 6-4009	Limitation of responsibility.

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**Sec. 6-4001.  
Findings.**

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- (a) Stormwater poses a threat to the public health, safety, and welfare because if unmanaged it floods properties, erodes watercourses and channels, and pollutes streams and rivers.
- (b) By mapping, planning, constructing, operating, cleaning, regulating and maintaining the natural and constructed stormwater management system, the City reduces the adverse effects of stormwater and improves the quality of groundwater, streams, rivers, and lakes in and around the City.
- (c) Providing a stable source of funding for stormwater services, as hereafter defined, can best be accomplished through storm water management utility funds. Such a utility will benefit owners and occupants of developed land in the City and other Raleigh citizens.

(d) The amount of impervious surface on a property is the single most important factor affecting the peak rate of runoff, the total volume discharged, and pollutant loadings of stormwater that flows from property.

**State law reference:** Authority to adopt a stormwater management utility, Chapter 160A, Article 16

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**Sec. 6-4002.**  
**Definitions.**

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All definitions as used in this Chapter, unless the context clearly indicates otherwise, shall have the meaning given herein:

**Customer or consumer** means the *person* or entity to which a bill for stormwater service charges is sent. This *may* include the owner, occupant, or tenant of property, a homeowner's association with responsibility for property or for common areas associated with property, or a person or entity who has requested in writing to be billed for stormwater management service charges for a property.

**Developed land** means real property that contains *impervious surfaces*, and includes improved land without structures and land on which improvements are under construction.

**Dwelling unit** means one or more rooms physically arranged to create a housekeeping establishment with separate facilities for cooking, sleeping and toilet for occupancy by one or more *persons*.

**Impervious surface** means any surface which because of its material composition or compacted nature impedes or prevents natural infiltration of stormwater into the soil. Impervious surfaces include, but are not limited to, roofs, roof extensions, patios, balconies, decks, including wooden slatted decks, athletic courts, swimming pools, excluding the water area of swimming pools, streets, parking areas, driveways, sidewalks, and any concrete, stone, brick, asphalt, or compacted gravel surfaces. Ungraveled natural footpaths, water surfaces of lakes streams and swimming pools and drain fields are not *impervious surfaces*.

**Other residential and nonresidential developed land** means any individual lot or parcel of *developed land* that is not *single-family developed land*. It includes, but is not limited to, land upon which there are residential structures that contain more than one dwelling unit, such as multi-family dwellings (duplexes and greater), manufactured home park, as defined in Part 10, §10-2002, condominiums, apartments, boarding houses, rooming houses, fraternity houses, sorority houses, dormitories, churches; institutional buildings, whether public or private; hospitals, rest homes, public and private schools, colleges, and universities, commercial, office, hotels and motels, industrial buildings, storage areas, parking lots and land containing improvements under construction or *impervious surfaces*.

**Property owner or owner** means the owner of a real property as shown on the tax records of Wake or Durham County.

**Single-family Equivalent Unit (SFEU)** is the median amount of impervious surface on a *single-family* (detached home) *developed land* in the *City* as established by City Council resolution.

**Single-family developed land** means an individual lot or parcel of *developed land* with only one single-family (attached [townhome] or detached) *dwelling unit*, one manufactured home, or one mobile home, and the ownership interest of the land and of the *dwelling unit* are united and identical. *Single-family developed land shall not include structures used primarily for nonresidential purposes or other residential and nonresidential developed property.*

**Stormwater management service charge** is the charge to provide *stormwater services to developed land*. The charge is based upon the *Single-family Equivalent Unit (SFEU)* as calculated for that property.

**Stormwater management system or system** means the system of natural and constructed devices for collecting and transporting or treating stormwater. It includes, but is not limited to, structural drainage systems such as open swales and ditches, catch basins, pipes, inlets, storm sewers, drains, culverts, junction boxes, and other stormwater management facilities that affect the quality and quantity of stormwater located within dedicated open public street rights-of-way and City of Raleigh permanent drainage easements accepted by the *City* and all natural stormwater drainage systems.

**Stormwater management utility funds** mean the stormwater management

service charges and the interest generated by those charges.

**Stormwater services** means *City* stormwater management programs designed to protect water quality by controlling the level of pollutants in, and the quantity and flow of, stormwater and *City* service of structural and natural stormwater and drainage systems of all types. Stormwater services include any cost necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and State laws, regulations and rules, and costs related to the construction, operation, maintenance, inspection, management and regulation of the *stormwater management system*.

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**Sec. 6-4003.**

**Creation of stormwater management account.**

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All *stormwater management service charges* and interest generated by such charges, the *stormwater management utility funds*, shall be placed in a separate *City* account and shall be used by the City of Raleigh solely for the operational costs, maintenance costs, and management costs, indirect costs, capital improvements, debt principal and debt service, and establishment of a reserve fund for *stormwater services*. The City may use funds that are not *stormwater management utility funds* to provide *stormwater services*.

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**Sec. 6-4004.**

**Stormwater management service charges.**

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(a) All *developed land* in the *City*, whether public or private, shall be subject to a *stormwater management service charge*. Exemptions shall not be allowed based on age, tax exemption, or other status of an individual or organization. *Stormwater management service charges* may be subject to a credit system as further provided herein.

(b) *Stormwater management service charges* on *developed land* shall be based on a schedule of rates, charges, tiers, and late fees fixed and established from time to time by the City Council and maintained on file in the offices of the Finance Director and Chief Engineer. *Stormwater management service charges* will be determined and modified from time to time by the City Council, so that the total revenues generated by said charges will be used to pay the principal and the

interest on the debt incurred for stormwater purposes, and such expenses as are reasonably necessary for providing *stormwater services* within the City of Raleigh.

**Cross reference: Cross reference:** The amount of *impervious surface* area for *single-family equivalent units*, the base rate, the tier structure for *single-family developed land* and late charges are set forth in Resolution No. (2003) - 888.

(c) Computation of *stormwater management service charges*.

For *Other residential and nonresidential land*, the monthly *stormwater management service charges* on *developed land* is calculated by dividing the total *impervious surface* area of the property divided by one *single-family equivalent unit*, rounded to the nearest tenth, multiplied by the established monthly single-family equivalent unit rate as fixed by City Council Resolution.

For developments with common property containing *impervious surfaces*, such as townhouse developments, cluster unit developments, or condominiums, each *dwelling unit* shall be responsible for its equal pro rata share of the total *impervious surfaces* area of the common areas of the development unless other arrangements are made pursuant to section 6-4006(e).

(d) The following exemptions from *stormwater management service charges* are allowed:

(1) Undeveloped land.

(2) Improved public streets, not including internal roads within public facilities which have been conveyed to the North Carolina Department of Transportation or City of Raleigh and which are used by the general public for motor vehicle transportation, and private streets constructed in accordance with the Raleigh City Code and City of Raleigh Streets Sidewalks and Driveway Access Handbook.

(3) *Developed land* with less than four-hundred (400) square feet of *impervious surface* area.

(4) Railroad tracks. However, railroad stations, maintenance buildings or other *developed land* shall not be exempted from *stormwater management service charges*.

(5) Portions of *developed land* that directly drain outside the city limits

No exemption authorized under subsections (3) through (5) *shall* be made until a written request to the Chief Engineer of the *City* documenting the application of the exemption is approved. The Chief Engineer *may* approve or reject the request in whole or in part.

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**Sec. 6-4005.**

**Credits applicable to stormwater management service charges.**

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(a) The *City may* provide a system of credits to reduce *stormwater management service charges* for properties on which stormwater control measures substantially mitigates the peak discharge or runoff pollution flowing from such properties or substantially decreases the *City's* cost of maintaining the *stormwater management system*. The Central Engineering Department will develop written policies to implement the credit system. 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 City Clerk. The *City's* policies *may* make credits retroactive to the date *stormwater management service charges* were initiated. Any bill charges requiring adjustments must be applied through the utility billing system. But no credit will be granted for more than three past years. Nothing *shall* prevent the City Council from modifying the adopted system of credits, and such modifications *may* apply to holders of existing credits.

(b) Each credit allowed against the *stormwater management service charge* is conditioned on the continuing operation and functioning of the stormwater control measure as designed; credited stormwater control measures must comply with all applicable laws, ordinances and regulations, and credits *may* be rescinded for noncompliance with these standards.

(c) Each credit for which a *customer* applies *shall* be subject to review and approval by the Chief Engineer or his designee. The Chief Engineer *may* approve or reject any application for a credit in whole or in part.

(d) Credits *shall* only be applied to *developed lands* containing the credited stormwater control measure. For developments with common property containing credited stormwater control measures such as townhouse developments, cluster unit developments, or condominiums, each *dwelling unit shall* be eligible for its equal pro rata share of the credit unless other arrangements for billing the

*stormwater management service charge* are made pursuant to section 6-4006(e).

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**Sec. 6-4006.**

**Billing method, responsible parties.**

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(a) Bills for *stormwater service* shall be sent at regular periodic intervals. *Stormwater management service charges* may be billed on a combined utility bill that also contains charges for sewer service or combined sewer and water service and/or solid/waste management service. *Stormwater management service charges* that are shown on a combined utility bill may be for a different service period than that used for sewer service or combined sewer and water service.

(b) *Stormwater management service charges* for a property that receives sewer service or combined sewer and water service will be sent to the *customer* receiving such service. However, where multiple water and sewer accounts exist for a single parcel, the bill for *stormwater management service charges* may for good cause shown at the discretion of the *City* be sent to the *property owner*. Additional policies concerning billing will be developed by the *City*.

(c) The *property owner* is ultimately responsible for payment of the *stormwater management service charge* for property for which the party billed has not paid the stormwater management service charge.

(d) *Owners* of property may, with the consent of the *City*, designate each occupant of the property as the party to receive the bill for *stormwater management service charge* by completing and properly executing a form provided by the *City*. Such designation shall fairly allocate the *impervious surfaces* actually used by the billed party, and it shall be binding for the period of time specified by the *City*. No occupant may be designated as the party to receive the bill for *stormwater management service charge* unless the occupant is also receiving a *City sewer service or combined sewer and water service* bill. Such transfer does not relieve either the *owner* or occupant from liability for *stormwater management service charges* if they are not paid by the party billed.

(e) The residents of townhouse, cluster unit, and condominium developments and other similar properties containing *impervious surface* in common areas may in accordance with this subsection charge the total impervious surface of all commonly-owned or common areas to the homeowners association.

The bill for *stormwater management service charge* will be sent to the homeowners' association upon official request of a majority of all lot or unit owners of the association; provided that (1) the current adopted budget of the association includes this additional charge to the homeowner's association, (2) the association is receiving a City sewer service bill or combined sewer and water service bill and (3) a payment bond in the amount of six months estimated bill in favor of the *City*. *Stormwater management service charges* applied to all individually-owned property within the development *may* likewise be billed to the homeowners association. Any request for homeowner association billing must contain all information required by the *City* and *shall* be binding for the period of time specified by the *City*.

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**Sec. 6-4007.**

**Payment provisions; utility termination.**

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(a) Where *stormwater management service charges* appear on a combined utility bill or a master summary bill, and a *customer* does not pay the service charges for all the utilities on the bill, the partial payment will be applied to the respective service charges in the following order: delinquent *stormwater management service charges*, delinquent recycling and/or solid waste management service charges, delinquent sewer service or combined sewer and water charges, current stormwater charges, current recycling and/or solid waste management service charges and current sewer service or combined sewer and water charges.

(b) *Stormwater management service charges* are due at the collection office in *City* hall within the time period stated on the bill. Bills not paid within this time *shall* be charged a late fee as set forth in the City Council adopted schedule of charges.

(c) Where a property receives sewer service or combined sewer and water service, if stormwater management service charges for that property are not paid, sewer service or combined sewer and water service to that property *may* be terminated, whether or not the *stormwater management service charges* were included on a combined utility bill. Termination will be handled in accordance with standard operation provisions of the *City*. At least twenty-one days prior to termination of service, the *City* will post a sign or signs either upon the subject property or at convenient locations as it deems appropriate. Such posting *shall* advise that *City* sewer service or combined sewer and water service *may* be terminated and direct further inquiry to a listed telephone number. All postings are for the convenience of the public.

and any defective posting *shall* not invalidate the termination of *City* utility services.

(d) No property for which *stormwater management service charges* are outstanding is entitled to receive sewer service or combined sewer and water service until the outstanding *stormwater management service charge* on that property is paid. No *customer* with a delinquent stormwater management service account is entitled to open a sewer service or a combined sewer and water account at the same or different location until the delinquency has been satisfied.

(e) If property is under billed, or not billed, or a bill is sent to the wrong party, the *City* may back bill up to a three-year period.

(f) *Customers* with complaints about the accuracy of *stormwater management service charges* are entitled to a review as provided in section 6-4008. No charge will be retroactively adjusted to resolve *customer* complaints for a period of more than three-year prior to the date the *City* received the complaint. Any bill charges requiring adjustment must be applied through the utility billing system.

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**Sec. 6-4008.**  
**Appeal.**

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Any *customer* who believes the provisions of this chapter have been applied in error *may* appeal in the following manner:

(1) An appeal must be filed in writing with the Chief Engineer. At the discretion of the Chief Engineer, the appeal *may* be required to include a survey prepared by a registered land surveyor and such other information that show the total property area, the *impervious surface* area, and any other features or conditions which influence the hydrologic response of the property to the stormwater events.

(2) Using the information provided, the Chief Engineer *shall* conduct a technical review pursuant to good engineering practices. The Chief Engineer *may* adjust the *stormwater service management charge* so long as the adjustment is in conformance with the general purpose and intent of this chapter. At the conclusion of the review, the Chief Engineer *shall* issue a written determination stating whether an adjustment to the *stormwater service management charge* is appropriate, and if so, the percentage of such adjustment. Any approved adjustments must be communicated in writing to the appropriate utility billing staff.

- (3) An appeal *may* be taken from any decision of the Chief Engineer which is adverse to the *customer* by giving notice of appeal to the City Manager within thirty (30) days after service of the Chief Engineer's written decision on the *customer*. Notice of appeal *shall* be given by the *customer* by delivery of a written statement to the City Manager stating the grounds for the appeal and providing the City Manager with a copy of the written decision of the Chief Engineer. The Chief Engineer *shall* transmit to the City Manager and the *customer* all documents constituting the record upon which the Chief Engineer's decision was made.
- (4) All decisions of the Chief Engineer and City Manager *shall* be served on the *customer* personally or by registered or certified mail. Mailing *shall* be based upon the billing address of the *customer*.
- (5) Following the decision of the City Manager, the *customer may* make an appeal to the City Council. The City Council *shall* fix a reasonable time for the hearing of an appeal, *shall* give due notice of such hearing to the *customer* and the manager, and *shall* render its decision within a reasonable time.
- (6) When an appeal is from a decision authorizing an adjustment to the *customer's* bill, the Chief Engineer's decision *shall* remain in effect until and unless reversed or otherwise modified.
- (7) No adjustment to a *customer's* bill *shall* be made which is for more than the three-year period immediately preceding the date that the *customer's* request is first received by the *City*.

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**Sec. 6-4009.**

**Limitations of responsibility.**

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(a) The *City shall* be responsible only for the portions of the drainage system which are in City maintained street rights-of-way and permanent storm drainage easements conveyed to and accepted by the City. Repairs and improvements to the drainage system *shall* be in accordance with established standards, policies, and schedules.

(b) The *City's* acquisition of permanent storm drainage easements and/or the construction or repair by the *City* of stormwater control measures and drainage facilities does not constitute a warranty against stormwater hazards, including, but not limited to, flooding, erosion, or standing water.”

**Section 4.** All laws and clauses of laws in conflict herewith are hereby repealed to the extent of said conflict.

**Section 5.** If this ordinance or application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the ordinance which can be given separate effect and to this end the provisions of this ordinance are declared to be severable.

**Section 6.** This ordinance shall become effective five days following its adoption.

**ADOPTED: November 5, 2003**

**EFFECTIVE: See Section 6**

**DISTRIBUTION:**

*This ordinance prepared by the Raleigh City Attorney's Office*

# Appendix F

## Utility Rate Resolution

**RESOLUTION NO. (2008) - 540**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF RALEIGH, NORTH CAROLINA, REVISING THE SCHEDULE OF RATE, CHARGES, TIERS AND CREDITS FOR CITY OF RALEIGH STORM WATER UTILITY BY REVISING RESOLUTION NO. (2003) - 888**

**WHEREAS**, the City Council of the City of Raleigh enacted Part 6, Chapter 3 of the City Code which places upon the City Council the obligation to establish by resolution the Single-family Equivalent Unit (SFEU), which means the median impervious surface area of single-family (detached home) on developed land located within the City, the SFEU Rate (base rate), which means the stormwater management service charge applied to other residential and nonresidential development land per SFEU, the Single-Family Tiers, which means the variable assignment of SFEUs for customers of single-family developed property, and late fees; and

**WHEREAS**, the City Manager has recommended rates as set forth herein based upon a study being the final report of stormwater management funding study, City of Raleigh, North Carolina, prepared by Camp Dresser & McKee, with additional input by city staff; and

**WHEREAS**, the City Council has evaluated the study and recommendations and has determined that the standards fees and charges set forth herein below are reasonably necessary and are in accordance with the provisions of Part 6 Chapter 3 of the City Code.

**WHEREAS**, the City Council has determined it to be appropriate to implement the rates set forth herein as of the effective date of this resolution,.

**NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF RALEIGH, NORTH CAROLINA** that:

Section 1. **SFEU Established.** The single-family equivalent unit (SFEU) is hereby established to be 2,260 square feet of impervious surface area.

Section 2. **SFEU Rate Established.** The single-family equivalent unit rate for stormwater management service charges applied to other residential and nonresidential development land is hereby established to be \$4.00 per month for each single-family equivalent unit (SFEU) or portion of a single-family equivalent unit on the parcel

Section 3. **SFEU Calculation Established.** The single-family equivalent unit for each customer is established for other residential and nonresidential development land by dividing the total impervious surface area of the property by the single-family equivalent

unit (SFEU) rounded to the nearest tenth. But the minimum value shall not be less than the percentage of single-family equivalent unit applied to the lowest tier es tabished for single-family developed land.

Section 3. **Single-family (SFU) Tiers Established.** The tier s tructure rate established for single-family developed land is as follows:

<u>Impervious Area On Property (Square Feet)</u>	<u>Percentage of SFEUs</u>
1,000 or less	40%
1,001 to 3,870	100%
3871 to 6620	170%
6621 to 9500	290%
9501 or more	Billed at the rates established in Section 2 above for each SFEU

Section 4. **Late Fee.** Stormwater management service charges are due at the collection office within the time period stated on the bill. Bills not paid within th is time period shall be charged a late fee of \$5.00.

Section 5. This Resolution shall apply to all storm water management service charges beginning July 1, 2008.

**ADOPTED:** May 6, 2008

**EFFECTIVE:** July 1, 2008

## **Council Approved Stormwater Credit and Adjustment Manual Revisions:**

- 1- Changed detention credit requirement to the 25 year design storm as a result of City Code change requiring 10 year design storm as a standard, in addition to the 2 year design storm. TC-2-04 was approved by City Council on February 17, 2004. (Pages 9-10)
- 2- Council approved change to the impervious surface definition at their November 2, 2004 meeting to be consistent with the definition used in the City Code for porous surfaces and slatted decks. (Pages 2-3)
- 3- Council approved increasing the maximum NPDES MS4 permit fee credit from 15 to 35 percent. (Page 10) Also, approved at the April 18, 2006 Council meeting were changes to the inspection requirement for facilities that qualify for a detention credit from an annual inspection certified by a professional engineer to an annual certification by the owner or Chief Executive Officer that the detention facility is in place and in proper working order and that an inspection and certification by a professional engineer will be required every 3 years. (Page 14)