

CITY OF TOLEDO, OHIO

# Stormwater Credit Manual

---

**Division of Engineering Services**

**March 2015**



## Table of Contents

<b>SECTION I: INTRODUCTION AND PROGRAM BACKGROUND.....</b>	<b>4</b>
Stormwater Credit .....	4
Credit Program Background .....	4
Use of Manual .....	5
General Credit Description .....	5
<b>SECTION II: DEFINITIONS/ACRONYMS .....</b>	<b>6</b>
<b>SECTION III: GENERAL CREDITING POLICIES.....</b>	<b>8</b>
Eligible Management Practices.....	8
Residential Customers .....	8
Current Stormwater Utility Customers .....	9
Grandfathering Current Credit Holders .....	9
References/Design Requirements.....	9
Professional Engineer Certification.....	9
Priority Zones .....	10
Partial Credit Award .....	10
Inspection of Stormwater Management Practices .....	10
Timing of Application Review.....	11
Appeals .....	11
Maintaining Credit.....	11
Termination of Credit.....	12
<b>SECTION IV: APPLICATION PROCEDURE .....</b>	<b>13</b>
Step 1: Getting Started .....	13
Step 2: Assemble Data.....	13
Step 3: Calculate Estimated Credit .....	13
Step 4: Complete the Stormwater Credit Application Form .....	14
Step 5: Submit application, all attachments and fee to: .....	15
<b>SECTION V: CREDIT REQUIREMENTS .....</b>	<b>16</b>
Introduction .....	16
Detention/Retention Credit .....	16
Swales/Bioswales/Bioretenention Cells Credit .....	17

<b>Wetpond and Extended Detention Credit.....</b>	<b>17</b>
<b>Riparian Setback/Forested Buffer Credit.....</b>	<b>18</b>
<b>Grass Filter Strip Credit.....</b>	<b>18</b>
<b>Direct Discharge Credit .....</b>	<b>19</b>
<b>Industrial National Pollutant Discharge Elimination System (NPDES) Permit Credit ...</b>	<b>19</b>
<b>Open-Channel Maintenance Credit .....</b>	<b>19</b>
<b>SECTION VI: CREDIT CALCULATION EXAMPLES .....</b>	<b>21</b>
<b>Appendix A Stormwater Credit Application .....</b>	<b>23</b>
<b>Appendix B. Sample Maintenance Management Plan .....</b>	<b>25</b>
<b>Appendix C. Sample Maintenance and Management Report .....</b>	<b>28</b>
<b>Appendix D. Sample Open Channel Maintenance Agreement .....</b>	<b>31</b>
<b>Appendix E. Bibliography.....</b>	<b>34</b>

## **SECTION I: INTRODUCTION AND PROGRAM BACKGROUND**

### **Stormwater Credit**

The stormwater credit program provides an opportunity for nonresidential property owner's to reduce their stormwater service fee. The credits are available if the property owner performs specific actions that reduce the impact of stormwater generated from their property or reduce the City's cost to maintain the public stormwater system through your property. The stormwater credit is an application procedure offered to all **non-residential customers only**. By completing an application, non-residential customers can reduce their stormwater credit charges by performing activities that improve the drainage system. Authority for the stormwater credit is found in the City of Toledo Municipal Code 943.09.

Nothing in this manual alters the City's stormwater management requirements for new development or redevelopment or relieves a property owner or developer from complying with those requirements.

For questions regarding this manual or the credit program in general, please contact Toledo's Senior Stormwater Engineer by emailing [lorie.haslinger@toledo.oh.gov](mailto:lorie.haslinger@toledo.oh.gov) or calling (419) 245-3221.

### **Credit Program Background**

***“Better Drainage and cleaner water through a quality stormwater management program.”***

The stormwater credit program was established in 2001, shortly after the formation of the City's Stormwater Utility. The above mission statement provided a guide to a “Credits Advisory Committee (CAC)” made up of community leaders, citizens, and City political leaders and staff to develop and implement a stormwater credits program. The CAC met over the course of several months with the goal to develop a program which would encourage positive stormwater management practices on private property through a credit incentive program, would not harm the financial integrity of the Stormwater Utility, would have a sound technical basis, and would be simple to administer and maintain.

Stormwater credits are offered as an incentive to non-residential properties for being good stewards of the City of Toledo stormwater resources. The benefit to the property owner is a reduction in the stormwater utility bill as a result of a “hands-on” involvement in the Toledo stormwater program. Then the entire community benefits from these enhancements or improvements to the stormwater system through the reduction in flooding, and a cleaner water system.

This revised manual addresses some revisions which are being made to the stormwater credit program as a result of 13 years of experience. The City has recognized some shortcomings of the original program including: poor participation (only 93 current participants), lack of incentive for property owners to implement innovative and “green” stormwater management

practices, several underutilized practices in the original program, and inadequate follow-up on maintenance of credit practices.

Students from the Taubman College of Architecture and Urban Planning in Michigan selected Toledo's stormwater credit program as their senior design project. They performed an extensive study of the program and produced a comprehensive report in December 2013. Many of their recommendations are incorporated herein.

## **Use of Manual**

The credits manual has been created to provide technical guidance on credit mechanisms (management practices) to the commercial and industrial property owners, land development, engineering, and contracting communities of the City. It is designed to provide information on:

- The types of credits available;
- How to obtain a stormwater credit;
- References on the design and construction of stormwater credits; and
- The maintenance of stormwater credits; and

## **General Credit Description**

Credits are offered for any one or a combination of the following stormwater practices:

- Detention/Retention
- Swales/Bioswales/Bioretenion Cells
- Wetpond & Extended Detention
- Riparian Setback/Forested Buffer
- Grass Filter Strip
- Direct Discharge
- Industrial NPDES
- Open-Channel Maintenance

Details on these practices are contained in Section V. The original program also offered credits for brownfield reuse and sedimentation ponds. These practices were underutilized in the credits program and did not appear to further the goals of improving drainage and improving the quality of stormwater discharges.

## **SECTION II: DEFINITIONS/ACRONYMS**

**Bioswale**-is a vegetated swale designed to filter pollutants from stormwater.

**Buffer**- is a designated area adjacent to or a part of a stream or wetland that is an integral part of the stream or wetland ecosystem. The critical function of riparian buffers (those associated with an aquatic system) including shading, input of organic debris and coarse sediments, stabilization of banks, overflow during high water events, and for maintenance of wildlife habitat.

**Conveyance**- means a mechanism for transporting water from one point to another, including pipes, ditches and channels.

**Credit**-means a reduction in a customer's stormwater service fee given for certain qualifying activities which reduce either the impact of increased stormwater runoff or reduces the City's costs of providing stormwater management.

**Detention**- means the release of surface and stormwater runoff from the site at a slower rate than is collected by the drainage facility system, the difference being held in temporary storage.

**Detention Facility**-means a facility, by means of a single control point, which provides temporary storage of stormwater runoff in ponds, parking lots, depressed areas, rooftops, buried underground vaults or tanks, etc., for future release, and is used to delay and attenuate flow.

**Direct Discharge**- means discharge from a property, facility, or proposed project to a major receiving water. The conveyance system of a Direct Discharge property is not owned or maintained by the City of Toledo. Major rivers include: Maumee River, Ottawa River and Swan Creek.

**Easement**- means a legal right to use a parcel of land for a particular purpose. It does not include fee ownership but it may restrict the owner's use of the land.

**Equivalent Residential Unit (ERU)**-is a unit of measurement of impervious surface area used in stormwater utility billing, representing the impervious surface areas of a typical residential property. In the City of Toledo Stormwater Utility system it is equal to 2,500 square feet of impervious surface area. Property owners are charged a fee for each ERU on their property. Single family and duplex residential properties are charged one ERU regardless of the actual number of ERUs on their property. Non-residential property owners are charged for the measured number of ERUs on their property.

**Impervious Surface**-means areas that have been paved and/or covered with buildings or materials that do not allow infiltration of stormwater into the ground, which include, but are not limited to, concrete, asphalt, rooftop, and blacktop. By definition, the City of Toledo Stormwater Utility does not consider gravel or packed earthen materials to be impervious surfaces.

**Municipal Separate Stormwater System (MS4)** - means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs,

gutters, ditches, man-made channels, or storm drains) owned by the City, designed or used for collecting or conveying storm water, which is not a combined sewer.

**NPDES**-means the National Pollutant Discharge Elimination System. A provision of the Clean water Act which prohibits the discharge of pollutants into waters of the United States unless a special permit is issued by the U. S. Environmental Protection Agency (EPA), or, in Ohio, the Ohio EPA.

**Priority Zones**-are special areas defined within the City of Toledo stormwater utility credit program in which stormwater management practices are especially encouraged and may receive extra credit under the stormwater credit program.

**Rain Garden**-means landscaping feature that provides stormwater runoff treatment, which typically includes a shallow depression with native vegetation specially selected for its ability to withstand submergence, drought, and to promote the infiltration and filtering of stormwater.

**Retention**- is the holding of storm water runoff in a constructed basin or pond or in a natural body of water without release except by means of evaporation, infiltration, or high level overflow.

**Retention Facility**- means a facility, which provides storage of stormwater runoff and is designed to subsequently hold a portion of it in a permanent impoundment.

**Stormwater**- means stormwater runoff, snow melt runoff, and surface runoff and drainage.

**Stormwater Management Practice**-means structural facilities or non-structural activities which are designed to mitigate the quantity and quality of stormwater, typically through storage, conveyance, and/or treatment.

**Swale**- means a shallow drainage conveyance with relatively gentle side slopes, generally with flow depths less than one foot.

### **SECTION III: GENERAL CREDITING POLICIES**

This chapter presents some of the general policies of the City of Toledo stormwater credit program.

#### **Eligible Management Practices**

Outlined below are the management practices that are eligible for credit under the program and the maximum credit offered. These credits offer nonresidential property owners an opportunity to recoup a portion of their investment in reducing the stormwater impact to Toledo waterways.

<u>Management Practice</u>	<u>Maximum Credit</u>
Detention/Retention	30%
Swales/Bioswales/Bioretenion Cells	30%
Wetpond & Extended Detention	30%
Riparian Setback/Forested Buffer	30%
Grass Filter Strip	20%
Direct Discharge	10%
Industrial NPDES	10%
Open-Channel Maintenance	30%

A Swale/Bioswale/Bioretenion Cell, Wetpond, or Extended Detention Facility which also meets the design requirements for Detention/Retention will be eligible for a maximum credit of 60 percent (30 percent plus 30 percent) for the impervious area tributary to the practice. The maximum total credit available to any property or stormwater account is 50 percent of the stormwater service charge.

#### **Residential Customers**

The credit program has been developed for non-residential customers only. These are properties that fall into the land use categories of commercial, industrial, institutional, government, apartments, and condominiums. Residential customers are not eligible for credit. The stormwater utility program for Toledo has defined residential customers as single family homes and duplexes. Any structure outside of that definition is considered non-residential.

Residential customers are not a part of the credits program because they represent a small impervious area and as a result are charged a minimal rate (\$3.80 per month). Non-residential customers typically have much larger impervious areas (hard surfaces, buildings, parking lots, etc). As a result, there is a much greater opportunity to use management practices to positively impact the stormwater system.

## **Current Stormwater Utility Customers**

No credit will be allowed for any property that is not currently paying a stormwater service charge to the City of Toledo or that is more than six months delinquent on their stormwater bill.

## **Grandfathering Current Credit Holders**

Existing credit holders at the time of adoption of this revised manual will continue to receive their stormwater credit for the subsequent three years from the date of adoption of this revised manual, at which time they will need to submit a Maintenance and Management Report in conformance with the requirements of this manual to continue their credit. Credit amounts will remain the same during that three-year period. The Division of Engineering Services reserves the right to inspect management practices of grandfathered credit holders to ensure that they are functioning properly. At the end of the three-year grandfathering period, credit holders will be subject to all requirements of the revised credit manual.

Existing credit holders can reapply under the revised credit program at any point before the three-year grandfathering period expires, if they so choose.

## **References/Design Requirements**

Stormwater management practices shall be designed and sized according to the following references:

- [Infrastructure Design and Construction Requirements](http://toledo.oh.gov/services/public-utilities/div-engineering-services/plan-review-process/), City of Toledo, available here:
- [Rainwater and Land Development](http://www2.ohiodnr.com/portals/soilwater/pdf/stormwater/3-3-14RLD_All.pdf), ODNR available here:

## **Professional Engineer Certification**

Applications for stormwater credits for the following stormwater management practices require the certification of a professional engineer registered in the State of Ohio.

- Detention/Retention
- Swales/Bioswales/Bioretenion Cells
- Wetpond & Extended Detention
- Grass Filter Strip

These practices require specialized design considerations and hydraulic and hydrological calculations.

## **Priority Zones**

Two areas of Toledo are identified as priority zones in which stormwater management practices are particularly encouraged. Stormwater management practices within a priority zone will have a greater impact on the quantity or quality of stormwater runoff than in other areas of Toledo.

As a result, applicable stormwater management practices applied in the following areas will receive an additional 10 percent credit. However, the maximum credit available to a property is still capped at 50 percent.

- Silver and Shantee Creek drainage basins – An additional 10 percent credit for the following practices only: Detention/Retention, Swales/Bioswales/Bioretention Cells, Wetpond & Extended Detention, Riparian Setback/Forested Buffer, Grass Filter Strip.
- Combined Sewer Area (not including areas which have been separated) - An additional 10 percent credit for the following practice only: Detention/Retention

If you are unsure about whether your property fits within a priority zone, contact Toledo's Senior Stormwater Engineer at the number listed in Section 1.

## **Partial Credit Award**

Partial credit will be awarded for practices which apply to only a portion of a property. The partial credit is prorated based on the percentage of impervious area tributary to that practice divided by the total impervious area of the property. For instance, if 25 percent of a property direct discharges to the Maumee River, but the other 75 percent is tributary to an extended detention pond which discharges to the City MS4, the credit would be  $0.25 \times 0.10$  (direct discharge credit) +  $0.75 \times 0.30$  (extended detention credit) = 0.25, or 25 percent.

Credit will also only be awarded to fully constructed, functioning management practices, designed in accordance with the standards listed herein. Partial credit may be granted at the discretion of the City for practices which fall short of the minimum standards and sizing required herein if the practice can be shown to further the goals of the stormwater utility. Special consideration for partial credit will be given to retrofitting of existing stormwater management practices to conform to one or more of the management practices eligible for a stormwater credit (e.g. converting an offline detention basin to an inline extended detention basin). Special consideration for partial credit will also be given where a property owner is limited by available space in sizing a practice but is maximizing the stormwater quantity and quality benefits with the space available.

## **Inspection of Stormwater Management Practices**

The City reserves the right to inspect any management practice prior to the awarding of credit. The City also reserves the right to inspect the ongoing operation and maintenance of any practice which has been granted a credit. Such inspections may occur either on a random or regular

basis. Refusal of a property owner to allow such inspections will result in the credit being removed from the stormwater billing account.

### **Timing of Application Review**

The City of Toledo intends that most applications will be reviewed and responses made within two weeks (14 calendar days) of receipt of the application. However, if the analysis requires significant review time, the review period may be extended beyond the fourteen days. The credit will become effective at the next billing cycle following approval of the application. For applications involving facilities or practices which have not yet been constructed, the credit will become effective following inspection and approval of the construction by the City of Toledo, Division of Engineering Services.

### **Appeals**

Appeals of credit decisions shall be made to the Commissioner of Engineering Service, Department of Public Utilities, 600 Jefferson Ave., Toledo, Oh 43604.

### **Maintaining Credit**

Once awarded, the credit will remain valid for a period of three years. To maintain the credit beyond the initial three years the property owner is required to submit a "Maintenance and Management Report" on each practice to the Division of Engineering Services two months prior to the expiration of the credit. The City will attempt to provide a courtesy reminder to property owners approximately 6 months before their credit expires, but failure to provide this reminder will not excuse property owners from submitting their Maintenance and Management Report on time. The Maintenance and Management Report shall contain:

- Confirmation statement certifying that the facility is still in service and is being maintained according to the Maintenance Management Plan (see Section IV)
- Recent photographs of the facility
- Records of any modifications made to the facility or to the area of impervious surface tributary to the facility
- Maintenance records of the facility

A sample Maintenance and Management Report is contained in Appendix C. Upon approval of the Maintenance and Management Report by the Division of Engineering Services, the credit will be extended for another three years. Another Maintenance and Management Report will be due three years hence in order to maintain the credit. Failure to submit a Maintenance and Management Report within two months of the expiration of the credit will result in the credit being removed from the property's stormwater billing account. The credit may be re-established by submitting and obtaining approval of a Maintenance and Management Report.

At the discretion of the City of Toledo staff, inspections may be performed at any time in order to confirm the operation and maintenance of the applied management practice.

The Maintenance and Management Report shall be submitted to the same location as the application, as noted in Section IV

### **Termination of Credit**

If at any time a property owner who has been granted a credit decides to remove their stormwater facility or discontinue a practice which the credit was based upon, they shall notify the Division of Engineering Services within 30 days of removing the facility or discontinuing the practice. The City will remove the credit from their stormwater billing account. If at any time the City determines through inspection that a stormwater facility or practice which has been granted a credit is no longer functioning as designed or no longer being performed they will notify the property owner and remove the credit 30 days after that notice, providing the property owner does not demonstrate that the facility or practice is in fact still functioning as designed or being performed.

Property owners who are delinquent on their stormwater bill by more than six months will have their credit removed and will be required to re-apply according to the requirements in this manual to have it re-instated.

## SECTION IV: APPLICATION PROCEDURE

### Step 1: Getting Started

- ✓ Obtain a credit application form from:
  - Appendix A to the this credit manual, or
  - Online at <http://toledo.oh.gov/media/35517/Storm-Water-Credit-Application.pdf>
- ✓ If you are not familiar with City of Toledo's management standards it is suggested that you obtain a copy of Infrastructure Design and Construction Requirements and Rain Water and Land Development as noted in Section III.

### Step 2: Assemble Data

- ✓ Vicinity map that illustrates site drainage features including streams, ditches, or other major drainage ways, existing and proposed contours, impervious delineation and labels (buildings, driveways, etc.), off-site areas draining through the site, and size and location of all storm sewers and drainage structures.
- ✓ Construction details of the stormwater management practice, including construction drawing and details of proposed controls.
- ✓ Hydrologic and hydraulic calculations necessary to verify sizing of stormwater management practices (Detention/Retention, Swales/Bioswales/Bioretenion Cells, Wetpond & Extended Detention, Grass Filter Strip).
- ✓ Maintenance Management Plan - Maintenance schedule of all operations that affect the efficiency of the structural practice including mowing, sediment removal, cleaning, planting, monitoring, watering, and channel restoration (example in Appendix B).

### Step 3: Calculate Estimated Credit

- ✓ Measure the estimated impervious area of property ( $I_t$ ). Note that this should equal the number of ERUs being charged to the property on the stormwater billing statement multiplied by 2,500 square feet. The number of ERUs being charged to the property is the total monthly stormwater billing divided by the current rate which is \$3.80 as of December 2014.
- ✓ Determine impervious area tributary to or controlled by the stormwater management practice ( $I_p$ )
- ✓ Calculate the percentage impervious area tributary to the stormwater management practice ( $P_t$ ):

$$P_t = I_{tp} / I_t$$

- ✓ Calculate the total credit percentage ( $C_t$ ) for the practice as:

$$C_t = P_t * \text{maximum credit percentage for that practice, from Section III}$$

- ✓ If multiple practices are being proposed, add the total credit percentage from each practice to determine the total credit percentage for the property. Round to the nearest 5 percent increment using standard rounding methods. The maximum credit per property is 50 percent.
- ✓ To determine monthly savings, multiply the total credit percentage for the property by the monthly stormwater billing.

#### **Step 4: Complete the Stormwater Credit Application Form**

- ✓ **Applicant**
  - Name, address, e-mail and phone number
  - Account Number from stormwater billing statement.
- ✓ **Site Information**
  - Location where credit is to be applied.
  - Current ERUs and impervious area.
- ✓ **Engineer of Record (as required per Section III)**
  - Name, address, e-mail and phone number of the certifying engineer.
  - PE number and engineers stamp.
- ✓ **Certification**
  - Signed by the applicant/property owner
- ✓ **Credit Summary**
  - Applicant lists credits being applied for in unshaded boxes.
- ✓ **Data Submittal Check List**
  - Vicinity map
  - Construction drawings of practice (if applicable)
  - Hydraulic/hydrologic sizing calculations (if applicable)
  - Maintenance Management Plan (if applicable)
  - NPDES Permit (if applicable)
  - Riparian setback easement or conservation easement (if applicable)
  - Open Channel Maintenance Agreement (if applicable)

**Step 5: Submit application, all attachments and fee to:**

Stormwater Engineer  
Department of Public Utilities  
Division of Engineering Services  
600 Jefferson Ave., Suite 300  
Toledo, Ohio 43604

Or, online to:

[lori.haslinger@toledo.oh.gov](mailto:lori.haslinger@toledo.oh.gov)

**Application Fee: \$100.00**

## **SECTION V: CREDIT REQUIREMENTS**

### **Introduction**

This section specifies the minimum design criteria and credit application requirements for each of the eligible credit practices. The maximum credit in each category assumes the entire property's impervious area drains to the practice. If the entire site's impervious area does not drain to the practice, then the credit will be prorated based on the percentage of the total impervious area on the site which drains to the practice.

Although separate credit categories have not been provided for them, green roofs and permeable pavement can receive a de facto credit in that these areas can be excluded from the site's impervious area measurement. These areas will not be included in the site's impervious area measurement when new development plans are reviewed by the Division of Engineering Services. If a property owner currently has a green roof or permeable pavement that they are being charged for on their stormwater bill, they may contact the Division of Engineering Services, who will investigate and make the appropriate adjustment to the stormwater bill.

### **Detention/Retention Credit**

The principle of detention/retention is to reduce the peak stormwater flow from the property through the construction of small impoundments or ponds that fill during rainstorms. Detention facilities drain dry between storms. Retention facilities retain a permanent pool of water between storms.

Property owners with detention/retention management practices that reduce stormwater peak flows to the City's MS4 can apply for a 30 percent reduction in their stormwater service fee. This is provided that the management practices are: built according to City requirements; regularly maintained; and documented with appropriate support information.

A Swale/Bioswale/Bioretenion Cell, Wetpond, or Extended Detention Facility which also meets the design requirements for Detention/Retention will be eligible for an additional 30 percent reduction in their stormwater service fee. However, the maximum credit for any property or stormwater utility account is 50 percent.

### **Minimum Design Criteria for the Detention/Retention Management Practice**

1. The finished management practice must be sized to accommodate City of Toledo design storm requirements (see Infrastructure Design and Construction Requirements).
2. The outlet structure must reduce (meter) flow in accordance with Infrastructure Design and Construction Requirements.

### **Swales/Bioswales/Bioretention Cells Credit**

The goal of this credit is to recognize the efforts of nonresidential property owners that have built swales, bioswales, bioretention cells, or rain gardens designed to improve water quality in accordance with design guidelines in Rainwater and Land Development. This practice is eligible for a credit of up to 30 percent. This is provided that the management practice is: built according to City requirements; regularly maintained; and documented with appropriate support information.

#### **Minimum Criteria for the Swales/Bioswales/Bioretention Cells Management Practice**

1. Must be sized to Toledo design requirements which incorporate design requirements listed in Rainwater and Land Development.
2. May not be applicable in areas with high water tables.
3. May require underdrains in areas where underlying soils do not have adequate infiltration capacity.
4. Grass swales must detain and treat the water quality volume for a minimum of 24 hours. Flow velocity must be less than 5 fps to insure shear stress does not erode channel.
5. Bioswales, bioretention, or rain gardens shall be sized in accordance with the Bioretention Area section of Rainwater and Land Development.

### **Wetpond and Extended Detention Credit**

Wetponds and extended detention, including wetland extended detention, are stormwater ponds that are designed to perform two functions: treat (filter out pollutants) runoff to improve water quality, and detain peak flows or extend detention time to control downstream runoff flow. Some additional benefit may be experienced by incorporating specific design features, to remove pollutants by settling and biological uptake in addition to protecting downstream areas from erosion and flooding. These structures typically capture at least the first flush or three quarter inches of rainfall and hold it for twenty-four hours.

This credit recognizes the efforts of Toledo area nonresidential landowners that have committed to building wetponds and extended detention management practices that conform to City standards. Property owners with wetponds and extended detention management practices that improve stormwater management and water quality can apply for a 30% reduction in their stormwater service fee. This is provided that the management practices are: built according to City requirements; regularly maintained; and documented with appropriate support information.

#### **Minimum Design Criteria for the Wetpond and Extended Detention Management Practice**

1. The finished management practice must be sized to accommodate City of Toledo design storm requirements and water quality volume (see Rainwater and Land Development).
2. Design must incorporate forebay
3. Generally the length dimension should be three times the width.

4. Outlet designed to drain water over Minimum detention time.

### **Riparian Setback/Forested Buffer Credit**

A riparian setback is a buffer strip of native vegetation or forest adjacent to a stream, river, wetland, or other water body. They provide stormwater benefits by slowing runoff, storing flood flows, removing pollutants associated with urban stormwater runoff, reducing water temperatures by shading, providing wildlife habitat, protecting and creating aquatic habitat, and reducing stream bank erosion.

This credit recognizes efforts by those nonresidential land owners that have constructed or otherwise protected stream resources with riparian setback. Riparian setbacks must be maintained in natural vegetation such as a forested buffer (see Rainwater and Land Development regarding Wetland Setback, Stream Setback, and Tree and Natural Area Preservation). If the management practice meets City requirements, then a 30 percent reduction in their stormwater service fee may be possible. This is provided that: the management practice is properly constructed and functions appropriately; the practice is regularly maintained; the practice is protected by easement or conservation easement; and appropriate support information is submitted.

Riparian setbacks shall be sized in accordance with Rainwater and Land Development. This practice is only applicable to properties where a ditch or stream traverses the property or a wetland is delineated on the property in accordance with U.S. Army Corps of Engineers regulations. Riparian setbacks must be protected by easement, or conservation easement, with appropriate land use restrictions, including restrictions on impervious surfaces, and maintenance of native vegetation.

### **Minimum Criteria for the Riparian Setback/Forested Buffer Credit Management Practice**

1. Buffer strip/riparian setback width sized according to Rainwater and Land Development.
2. Setback planted in native plants or forested.
3. Setback protected by easement or conservation easement.
4. Credit only applies to impervious area which drains to the practice.

### **Grass Filter Strip Credit**

Grass Filter Strips are uniform areas of dense turf or meadow grasses with minimum slope, designed to accept diffuse flows from parking lots or other impervious surfaces. This type of management practice will slow velocities, store small volumes of runoff, and filter pollutants from stormwater. Dense turf creates a thick porous mat that dissipates small flows causing deposition and filtration of particulate matter.

This credit recognizes efforts by those nonresidential land owners that have constructed or otherwise protected stream resources with grass filter strips. If the management practice meets

City requirements, then a 20 percent reduction in their stormwater service fee may be possible. This is provided that: the management practice is properly constructed and functions appropriately; the practice is regularly maintained; and appropriate support information is submitted.

### **Minimum Criteria for the Grass Filter Strip Management Practice**

1. Grass filter strip width sized according to Rainwater and Land Development.
2. Grass filter strip tributary impervious width shall not exceed criteria in Rainwater and Land Development and shall only receive shallow, dispersed flow. Provide level spreader if needed.
3. Located as close as possible to runoff source.
4. Minimize compaction of underlying soil.

### **Direct Discharge Credit**

Direct Discharge Credit will be given to properties (nonresidential) that discharge directly into a major natural stream and do not receive any city maintenance or other services to their stormwater system. Credit will be reviewed on a case by case basis.

The goal of this credit is to allow nonresidential property owners to reduce their service charge if they maintain a private stormwater drainage system and it drains directly to a major stream. Nonresidential property owners that can demonstrate that stormwater discharges directly to the Maumee River, Ottawa River or Swan Creek may be able to reduce their service charge by 10 percent.

### **Industrial National Pollutant Discharge Elimination System (NPDES) Permit Credit**

Industrial NPDES credit is provided for property that is classified as industrial and is covered by either an individual or general Industrial NPDES Stormwater Discharge Permit.

The goal of this credit is to recognize the stormwater management and water quality improvement efforts that Toledo area industries have implemented under the Industrial NPDES permit program. Toledo area industries that have an appropriate NPDES Stormwater Permit can apply for a 10 percent reduction in their stormwater service fee. This is provided that: their permit has definable stormwater management and water quality improvement practices; they have implemented all of the proposed management practices; regularly maintain those practices; and submit appropriate support information.

### **Open-Channel Maintenance Credit**

The goal of the open-channel maintenance credit is to allow nonresidential property owners to reduce their service charge if they regularly maintain portions of the City's MS4 which traverse their property. Nonresidential property owners that can demonstrate that they regularly maintain

portions of the City's MS4 may be able to reduce their service charge by 30 percent. This is provided that they submit appropriate support documentation.

The open-channel maintenance credit only applies to maintenance of open channel ditches or streams which traverse the property and receive runoff from upstream areas. A maintenance agreement between the property owner and the City which stipulates the maintenance activities and frequency of maintenance and establishes liability for failure to perform maintenance is required in order to receive this credit (see sample agreement in Appendix D).

### **Minimum Criteria for the Open-Channel Maintenance Credit**

1. Open channel which is a part of the City's MS4 and receives runoff from areas upstream of the property traverses the property.
2. Property owner performs all required maintenance of the open channel, including cleaning of debris, clearing of logjams, mowing and trimming of vegetation, and clearing of any other obstructions which could impede flow capacity.
3. Property owner agrees to accept liability for flooding of upstream properties for failure to perform required maintenance of the open channel.
4. Property owner enters into a maintenance agreement with the City (see sample maintenance agreement in the Appendix D).
5. Credit only applies to impervious area which drains to the affected open channel.

## SECTION VI: CREDIT CALCULATION EXAMPLES

### Example 1

A movie theatre has been constructed on a 10-acre site in the City of Toledo. It includes a building and parking lot with a total impervious area of 3 acres. The building downspouts flow directly to the City storm sewer. The parking lot drains through bioswales with overflow and underdrains draining to the City storm sewer. The parking lot makes up 50 percent of the total impervious area of the site.

Given:

- Total site impervious area (It): 10-acre site with 3 acres of impervious area
- Percent of impervious area tributary to stormwater management practice (Ptp): 50% of the total impervious area.
- Percent credit available for practice (Cp): 30% credit is available for impervious area that drains through bioswales

Step 1: Calculate estimated impervious area of property

User fee: \$198.63

ERU = User Fee / \$3.80

ERU:  $\$198.63 / (\$3.80/\text{ERU}) = 52.27$

Total Impervious Area (It):  $\text{It} = \text{ERU} * 2500 \text{ sf} = 52.27 * 2500 \text{ sf} = 130,680 \text{ sf} = 3 \text{ acres}$

Step 2: Determine available credit for the site

Available credit =  $\text{Cp} * \text{Ptp} = 30\% * 50 = 15\%$

Step 3: Determine estimated credit and modified stormwater service fee

Estimated credit = Available credit \* User Fee =  $15\% * \$198.63 = \$29.80/\text{month}$

Estimated stormwater bill =  $\$198.63 - \$29.80 = \$168.84$

### Example 2

A manufacturer has a factory on a 5 acre site on the Ottawa River, of which 4 acres is made up of impervious surfaces of roof and paved areas. Half of the impervious surface drains across a grass filter strip into the Ottawa River. The other half drains to an extended detention basin which drains to the City's storm sewer. The extended detention basin meets the City's requirements for detention and extended detention.

Given:

- 5 acre site with 4 acres of impervious area
- 2 acres of impervious flow across grass filter strip to Ottawa River
- 2 acres of impervious area flow to extended detention basin to City storm sewer
- 20% credit available for grass filter strip

- 10% credit available for direct discharge to Ottawa River
- 30% credit available for the extended detention basin

Step 1: Calculate estimated impervious area of property

User fee: \$264.84

ERU = User Fee / \$3.80

ERU:  $\$264.84 / (\$3.80/\text{ERU}) = 69.70$

Impervious Area (It):  $\text{It} = \text{ERU} * 2500 \text{ sf} = 69.70 * 2500 \text{ sf} = 174,240 \text{ sf} = 4 \text{ acres}$

Step 2: Determine the credit for each practice:

Practice 1 (Grass Filter Strip)

Credit (gfs) = percent impervious area tributary to practice \* max credit for practice  
 $= 50\% * 20\% = 10\%$

Practice 2 (Direct Discharge)

Credit (dd) = percent impervious area tributary to practice \* max credit for practice  
 $= 50\% * 10\% = 5\%$

Practice 3 (Extended Detention + Detention)

Credit (ed) = percent impervious area tributary to practice \* max credit for practice  
 $= 50\% * (30\% + 30\%) = 30\%$

Step 3: Determine total credit for site

Total Credit = Practice 1 credit + Practice 2 credit + Practice 3 credit  
 $= 10\% + 5\% + 30\% = 45\%$

Step 4: Determine estimated credit and modified stormwater service fee

Estimated credit = Available credit \* User Fee =  $45\% * \$264.84 = \$119.18/\text{month}$

Estimated stormwater bill =  $\$264.84 - \$119.18 = \$145.66$

**Appendix A Stormwater Credit Application**

City of Toledo <b>STORMWATER CREDIT APPLICATION</b>		
APPLICANT INFORMATION		
Date of Application:		
Company Name:		
Contact Name:		
Email:	Phone:	
Mailing address:		
City:	State:	ZIP Code:
Stormwater/Water Account Number:		
SITE INFORMATION		
Name:		
Property address:		
City:	State:	ZIP Code:
Current ERUs:	Total Area of Property (Square Fee):	Total Impervious Area of Property (Square Feet):
ENGINEER OF RECORD		
Name of Firm:		
Name of Engineer:		
Email:	Phone:	
Address:		
City:	State:	ZIP Code:
Ohio P.E. Registration Number:		
CERTIFICATION		
I hereby certify that the information contained in this application and its attachments is true and accurate to the best of my knowledge.		
Signature of applicant		Date
Signature of engineer, if required		Date

City of Toledo, Stormwater Credit Manual

Credit Option Practices	Available Credit	Impervious Area Tributary to Practice (Square Feet)	Percent of Property Impervious Area Tributary to Practice (%)	Total Credit for Practice (%)
1. Detention/Retention	30%			
2. Swales/Bioswales/Bioretenention Cells	30%			
3. Wetpond & Extended Detention	30%			
4. Riparian Setback/Forested Buffer	30%			
5. Grass Filter Strip	20%			
6. Direct Discharge	10%			
7. Industrial NPDES	10%			
8. Open-Channel Maintenance	30%			
Additional Credit for Priority Area	10%			
9. Total Credit for Property	50%			

Check Items That Are Included	Item	Practices Applicable To
	Vicinity Map	All
	Construction Drawings of Practice	1, 2, 3, 5
	Hydraulic/Hydrologic Sizing Calculations	1, 2, 3, 5
	Maintenance Management Plan	1, 2, 3, 5, 8
	NPDES Permit	7
	Riparian Setback Easement	4
	Open Channel Maintenance Agreement	8

**Appendix B. Sample Maintenance Management Plan**

City of Toledo Stormwater Credit Program Maintenance Management Plan		
OWNER INFORMATION		
Date: <i>1/1/2015</i>		
Company Name: <i>ABC Company</i>		
Contact Name:		
Email:	Phone:	
Mailing address:		
City:	State:	ZIP Code:
Stormwater/Water Account Number:		
SITE INFORMATION		
Name: <i>ABC Building</i>		
Property address: <i>10 Elm St.</i>		
City:	State:	ZIP Code:
Current ERUs: <i>5</i>	Current Credit (%): <i>50%</i>	
Total Area of Property (Square Fee): <i>20,000</i>	Total Impervious Area of Property (Square Feet): <i>12,500</i>	

**Description and operation of stormwater management practice currently receiving credit (attach photographs and diagrams):**

*Extended detention stormwater basin, with permanent pool forebay, grass sides and bottom, 12" inlet pipe, 6" perforated underdrain, outlet manhole with 4" orifice and overflow grate, and 12" outlet pipe.*

*All stormwater runoff from site, including rooftop and parking lot flows to basin, either overland or through 12" storm sewer from parking lot catch basin. Flow from the 12" inlet enters the forebay where debris and silt is supposed to be trapped before overflowing into the larger basin. The first flush (3/4" of rain) will fill the bottom of the basin before reaching the 4" orifice into the outlet manhole. The basin will continue to fill to the 25-year level before overflowing into the outlet catch basin. Flow from the outlet catch basin is through a 12" sewer to the City main sewer.*

Credit Option Practices	Available Credit	Impervious Area Tributary to Practice (Square Feet)	Percent of Property Impervious Area Tributary to Practice (%)	Total Credit for Practice (%)
10. Detention/Retention	30%	12,500	100%	30%
11. Swales/Bioswales/Bioretenention Cells	30%			
12. Wetpond & Extended Detention	30%	12,500	100%	30%
13. Riparian Setback/Forested Buffer	30%			
14. Grass Filter Strip	20%			
15. Direct Discharge	10%			
16. Industrial NPDES	10%			
17. Open-Channel Maintenance	30%			
Additional Credit for Priority Area	10%			
18. Total Credit for Property	50%	-----	-----	50%

**Required Maintenance Activities:**

*Debris removal – clean litter and debris from basin on a monthly basis.*

*Mowing – mow sides and bottom of basin as needed in growing season to keep grass below 6” long. Forebay area may be mowed less frequently when conditions allow.*

*Check and clean outlet structure – at least twice a year, and after storms exceeding 1.0” check the outlet manhole for debris and remove any debris. Pay particular attention to the orifice in the outlet structure which will be prone to plugging.*

*Sediment removal – every two years remove built up sediment from forebay area and bottom of basin.*



**Appendix C. Sample Maintenance and Management Report**

City of Toledo Stormwater Credit Program Maintenance and Management Report		
OWNER INFORMATION		
Date: <i>1/1/2018</i>		
Company Name: <i>ABC Company</i>		
Contact Name:		
Email:	Phone:	
Mailing address:		
City:	State:	ZIP Code:
Stormwater/Water Account Number:		
SITE INFORMATION		
Name: <i>ABC Building</i>		
Property address: <i>10 Elm St.</i>		
City:	State:	ZIP Code:
Current ERUs: <i>5</i>	Current Credit (%): <i>50%</i>	
Total Area of Property (Square Fee): <i>20,000</i>	Total Impervious Area of Property (Square Feet): <i>12,500</i>	
CERTIFICATION		
I hereby certify that the stormwater management practice described herein is in service at the above address and is being maintained according to the Maintenance Management Plan submitted with the original credit application.		
Signature of owner:		Date:

City of Toledo, Stormwater Credit Manual

Description of stormwater management practice currently receiving credit (attach recent photographs):

*Extended detention stormwater basin, with permanent pool forebay, grass sides and bottom, 12” inlet pipe, 6” perforated underdrain, outlet manhole with 4” orifice and overflow grate, and 12” outlet pipe.*

Credit Option Practices	Available Credit	Impervious Area Tributary to Practice (Square Feet)	Percent of Property Impervious Area Tributary to Practice (%)	Total Credit for Practice (%)
19. Detention/Retention	30%	12,500	100%	30%
20. Swales/Bioswales/Bioretenion Cells	30%			
21. Wetpond & Extended Detention	30%	12,500	100%	30%
22. Riparian Setback/Forested Buffer	30%			
23. Grass Filter Strip	20%			
24. Direct Discharge	10%			
25. Industrial NPDES	10%			
26. Open-Channel Maintenance	30%			
Additional Credit for Priority Area	10%			
27. Total Credit for Property	50%	-----	-----	50%

Modifications to the practice or the property impervious areas since the previous Maintenance and Management Report (attach drawings or sketches):

*Downward facing elbow was placed on orifice inlet to outlet manhole to prevent floatables from plugging the orifice.*

*2000 square foot building addition into parking lot with no change in impervious surface.*

Required Maintenance Activities:

*Debris removal – clean litter and debris from basin on a monthly basis.*

*Mowing – mow sides and bottom of basin as needed in growing season to keep grass below 6” long. Forebay area may be mowed less frequently when conditions allow.*

*Check and clean outlet structure – at least twice a year, and after storms exceeding 1.0” check the outlet manhole for debris and remove any debris. Pay particular attention to the orifice in the outlet structure which will be prone to plugging.*

*Sediment removal – every two years remove built up sediment from forebay area and bottom of basin. None was noted.*

Maintenance Records:

Enter Date of Maintenance Activity and Initial Below Each Activity		
<i>Remove debris from basin (monthly)</i>	<i>Mow basin (as needed in growing season)</i>	<i>Check and clean outlet structure and orifice plate (twice per year and after each storm over 1.0")</i>
2/15/15 AC	5/1/15 AC	2/15/15 AC
3/15/15 AC	5/20/15 AC	4/22/15 AC
4/15/15 AC	6/10/15 AC	8/16/15 AC
5/15/15 AC	6/30/15 AC	11/15/15 AC
6/15/15 AC	7/30/15 AC	
7/15/15 AC	8/30/15 AC	
8/15/15 AC	9/20/15 AC	
9/15/15 AC	10/10/15 AC	
10/15/15 AC		
11/15/15 AC		
12/15/15 AC		

SAMPLE

## Appendix D. Sample Open Channel Maintenance Agreement

### OPEN-CHANNEL MAINTENANCE AGREEMENT (Rev. 3/4/2015)

**THIS OPEN-CHANNEL MAINTENANCE AGREEMENT** (“Agreement”) is hereby made by and between \_\_\_\_\_, an Ohio corporation, with a mailing address of \_\_\_\_\_ (the “Customer”), and the CITY OF TOLEDO, by its DPU Division of Engineering Services, with a mailing address of One Lake Erie Center, 600 Jefferson Ave., Ste. 300, Toledo, Ohio 43604, a municipal corporation duly organized and existing under and by virtue of the Constitution and laws of the State of Ohio and duly adopted Charter (the “City”), effective as of \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_ (the “Effective Date”).

#### WITNESSETH:

**WHEREAS**, Customer is the owner of non-residential property with a service address of \_\_\_\_\_ (the “Service Address”) and located within the City’s Stormwater Utility Service Area which is subject to Stormwater Utility charges under the City’s Stormwater Utility, and Customer is charged for such utility on Account Number(s) \_\_\_\_\_; and

**WHEREAS**, Customer desires to take actions that reduce the impact of stormwater runoff to the City’s Stormwater System by maintaining \_\_\_\_\_ (name of Ditch), an open-channel that is part of the City’s Municipal Separate Storm Sewer System and traverses the Service Address and which conveys, in whole or in part, stormwater runoff from areas upstream and outside of the Service Address (the “Open-Channel”); and

**WHEREAS**, Customer applied for an Open-Channel Maintenance Stormwater Credit pursuant to Toledo Municipal Code §943.09(b)(6); and

**WHEREAS**, the City agrees to apply the Open-Channel Maintenance Stormwater Credit of thirty percent (30%) at the Service Address as long as Customer performs the Open-Channel responsibilities outlined herein and Toledo Municipal Code Chapter 943.

**NOW, THEREFORE**, in consideration of the covenants contained herein and other good and valuable considerations, the receipt and sufficiency of which is hereby acknowledged, Customer and City agree as follows:

1. Customer agrees to perform regular, substantive maintenance, at its sole expense, to the Open-Channel, including, without limitation, cleaning of debris, clearing of logjams, mowing and trimming of vegetation, and clearing of any other obstructions which could impede flow capacity. Frequency of these activities to the Open-Channel performed by Customer shall be regular, at least twice per year, and as necessary to insure uninterrupted and unimpeded conveyance of stormwater flow.
2. In the event of any blockage, cave-in, compromise or structural damage to the Open-Channel, Customer shall, at its sole expense, promptly act to clean and clear said blockage or repair said damage so that conveyance of stormwater flow remains uninterrupted.
3. Customer agrees to maintain records and logs of the maintenance and repair activities and to provide same to the City every three years from the Effective Date and at any time upon reasonable request by the City. Customer agrees to provide the City unimpeded access to the Open-Channel for inspection, monitoring and in furtherance of this Agreement's purposes.
4. Customer agrees, at its sole expense, to take any remedial maintenance action to the Open-Channel determined by the City reasonably necessary to achieve the purpose of this Agreement and Toledo Municipal Code Chapter 943.
5. Customer agrees to indemnify, defend and hold the City harmless from any damage claims from any person that is caused by Customer's actions taken or inaction pursuant to this Agreement.
6. The City agrees to apply the Open-Channel Maintenance Stormwater Credit of thirty percent (30%) at the Service Address as long as Customer satisfactorily performs the Open-Channel responsibilities outlined in this Agreement and Toledo Municipal Code Chapter 943.
7. In the event Customer fails to perform its responsibilities pursuant to this Agreement, the City may, in its sole judgment, enter the Service Address property to perform such tasks. The Customer agrees that the Open-Channel Maintenance Stormwater Credit shall not apply to the Service Address for the relevant period of Customer's failure to perform its responsibilities pursuant to this Agreement. The City may terminate this agreement in the event the Customer fails to perform its responsibilities pursuant to this Agreement.
8. This Agreement shall commence on the Effective Date and continue for so long as the Customer owns the Service Address or upon thirty (30) days notice by either party, whichever is earlier. Upon termination of this Agreement, among other remedies available to the City, the Open-Channel Maintenance Stormwater Credit applied to the Service Address shall cease.
9. Any amendments or modifications, including assignment, of this Agreement shall occur only upon written documentation signed by both parties.

**IN WITNESS WHEREOF**, the parties have executed this Agreement as of the Effective Date.

**CUSTOMER:**

By: \_\_\_\_\_, duly authorized  
Print Name:  
Title

**CITY OF TOLEDO:**

By: \_\_\_\_\_  
Edward A. Moore  
Public Utilities Director  
Approved as to Content:

\_\_\_\_\_  
Division of Engineering Services

Approved as to Form:

\_\_\_\_\_  
Law

SAMPLE

## **Appendix E. Bibliography**

1. Toledo Stormwater Credit Manual, ERC/FMSM, November 2000
2. Stormwater Solutions, Revising Toledo's Stormwater Credit Program, Taubman College of Architecture and Urban Planning, Yohan Chang et al, December 2013
3. Rainwater and Land Development, ODNR, March 2014
4. Infrastructure Design and Construction Requirements, City of Toledo Division of Engineering Services, May 2014