

City of  
Davenport

# DAVENPORT STORMWATER MANUAL

July, 2014

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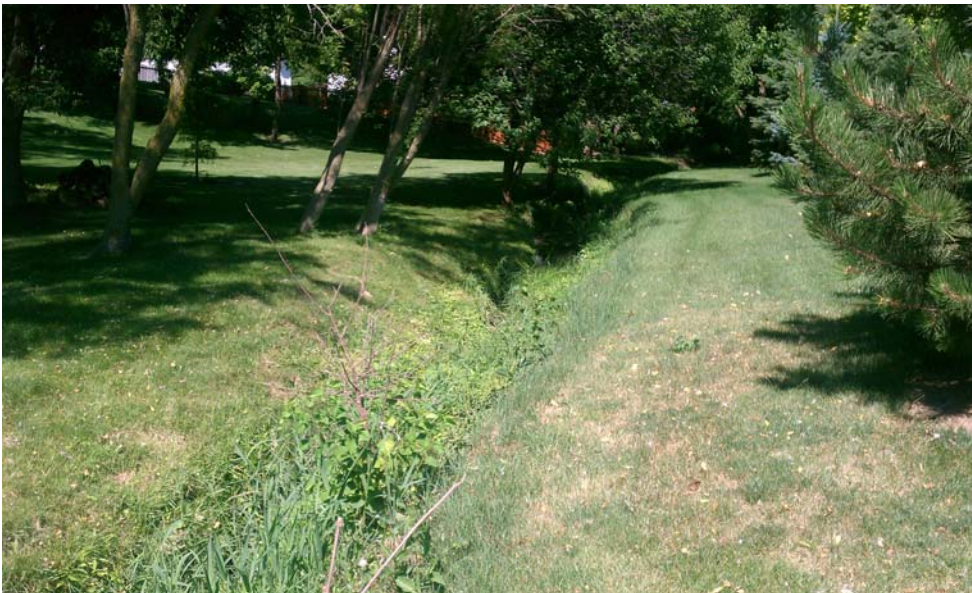
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## **Foreword**

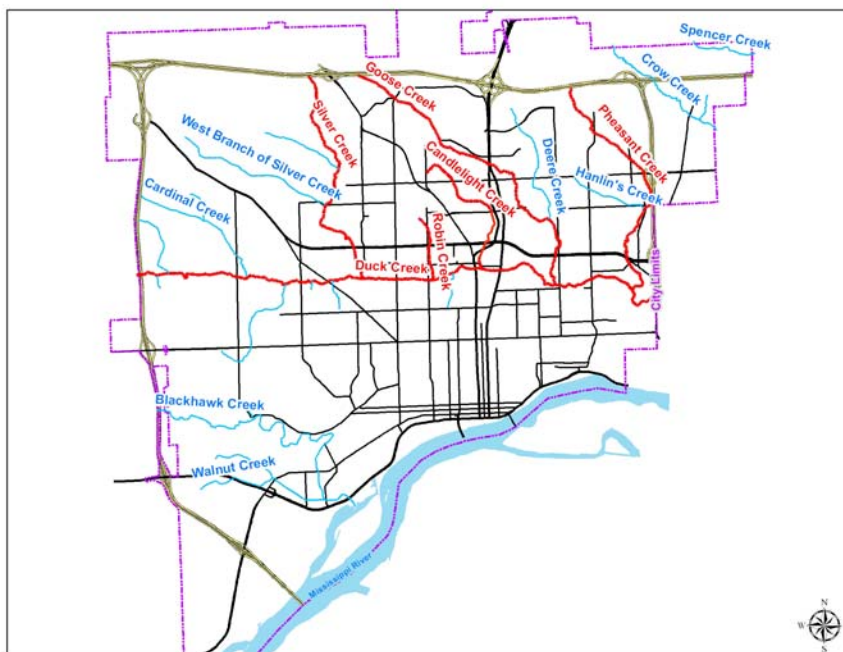
The purpose of this document is to provide a centralized location to find materials related to the City of Davenport stormwater management program. This document includes explanations of the goals of the program, procedures to assist design professionals with submittals for construction projects, application forms for design professionals, property owners, contractors, and residents and references to other documents that may assist the design professional and resident in questions and answers to stormwater issues.

It is the overall goal of the City of Davenport Natural Resources Division of Public Works to improve the quality of our city's creeks and streams. Over the years many of the streams in the city have become physically degraded, evolving from babbling brooks easily walked across to incised channels that consume back yard property and threaten city infrastructure.





In addition to stream degradation and erosion the quality of the water flowing in these streams has suffered as well. 75% of the streams within the City of Davenport are currently impaired for bacteria. This means that interaction with these waters is not recommended because of the possibility of illness. While the remedy to these situations may be costly and take many years, it is not impossible and can be achieved by utilizing the procedures set forth in this and other referenced documents, and by following the sections of city code that apply to stormwater.



## **1.0 INTRODUCTION**

### **1.1 Purpose**

The purpose of this section is to provide guidance on the development and submittal of a stormwater management plan to meet the requirements of Section 13.34 of the Davenport Municipal Code, which was passed to comply with the state-issued Municipal Separate Storm Sewer (MS4) permit. The intent of the program is to mandate the incorporation of stormwater management practices in new developments and re-developments for water quantity and quality control of stormwater runoff.

While the following sections focus on the development and submittal of post-construction plans and applications, it is important to note that this is only one component of the City's stormwater management program. In addition, developers, contractors, design consultants, and property owners must also meet the requirements of Sections 13.36 and 13.38 of the Davenport Municipal Code which cover illicit discharge and construction site erosion and sediment control respectively.

### **1.2 Applicability**

The stormwater management plan requirements apply to new land development and re-development projects that will create 10,000 square feet or more of impervious surface area. The goal of this requirement is to keep stormwater runoff from leaving a site during 90% of the rainfall events in this area. According to historical rainfall data, 90% of the rainfall events in Scott County, Iowa amount to 1.25 inches or less of rainfall in a twenty-four hour (24 hr.) period. Due to the fact that the majority of pollutants present on an impervious surface are carried away with the first amount of stormwater that runs off a site, this "first flush" becomes very important for controlling and maintaining water quality in receiving waters. Treatment of this water through water quality best management practices is the outcome being sought by this manual.

In addition to water quality practices, all areas within the city limits are required to provide stormwater detention to reduce the potential for flood damage to areas downstream. According to Section 13.34.210 this includes: "all residential development of five acres or more and all commercial and industrial developments in excess of one acre located within the Davenport city limits. In addition, Section 13.34.210 includes: "Any development which, in the opinion of the city engineer, lacks an adequate external or internal system for the passage of stormwaters."

This manual has been designed to assist applicants in submitting the necessary materials to receive approval to construct the management practices to meet these requirements.

## 2.0 POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN DEVELOPMENT

Chapter 2, Section 2A-2 of the Iowa Stormwater Management Manual contains planning and design principles that may further assist the designer in development of the stormwater management plan.

### 2.1 Site Evaluation

In developing a post-construction stormwater management plan it is important to evaluate the site. Information obtained during the site assessment enables the applicant and their consultant to assess site conditions that will contribute to an effective post construction stormwater management plan. A complete evaluation shall include consideration of limitation and advantages of each individual site. This process will enable the selection, sizing and location of practices that address the unique circumstances of a site.

The development of the post construction stormwater management plan must be initiated in the early stages of site planning and design. However, before a plan can be developed, defining site conditions must be determined by conducting a site assessment. The data collected during the site assessment will be used for describing site conditions, including vegetation, soils and drainage patterns. When this information is obtained, appropriate stormwater best management practices can be selected, located, sized, and designed.

The following data should be collected, to the extent practical, during the development of the post-construction stormwater management plan.

**Natural Resources:** The development site's natural resources, including vegetation, soils, and geology, and aquatic resources need to be determined to assist in plan development and is part of the permit application. Important data includes wetlands, riparian corridors, native prairie and/or woodland. Natural resources should be assessed by trained professionals.

**Site Topography:** Topography dictates how and where water will drain from a site. On steeper sites, stormwater will run off more rapidly, with less infiltration and greater volume. Stormwater management requirements are substantially different than for more gently rolling or flat sites.

**Soils:** Soil information is important for development of the stormwater management plan, and for optimal planning of the new project. Soil depth, texture (sand, silt, and clay content), pH, organic matter content and structure are important factors that will provide understanding of infiltration capacity (permeability), ability to support vegetation, and erodibility. Engineering qualities and limitations of the soil are important for determining where structures can be placed, how stormwater runoff can be managed, and possible limitations for underground utilities. If hydric soils are present, it is important to understand limitations of building in these areas. Much of the information can be obtained from a USDA County Soil Survey, but an on-site soil assessment is recommended.

**Aquatic Resources:** The identification of streams, ponds, and lakes as receiving waters and as an integral part of the stormwater management plan is critical. Understanding the function of these water bodies, their current condition, and potential impacts from proposed development may influence your choice of stormwater management practices. The identification of these resources may also be necessary to comply with local, State and Federal regulations.

### **3.0 STORMWATER MANAGEMENT PLAN SUBMITTAL REQUIREMENTS**

Approval of a Stormwater Management Plan will require the submittal of a Stormwater Management Concept Plan and a Final Stormwater Management Plan. The elements that make up these plans are detailed in the following sections.

Stormwater Management Plans shall be prepared by or under the supervision of a professional engineer licensed in the state of Iowa, a Certified Stormwater Manager (CSM), a Certified Professional in Storm Water Quality (CPSWQ) or other professional approved by the City of Davenport Natural Resources Division. The responsible professional shall be listed as the designer on the application and will be required to provide a seal on the Stormwater Management Plan sheets and calculations.

#### **3.1 Stormwater Management Plan Applications**

The Stormwater Management Plan Application provides the reviewer with critical information about the development and demonstrates responsibility for the site and an understanding of site conditions that will affect post construction stormwater management. Instructions are provided on the application form. The application form can be found on the following page:



City of Davenport  
Stormwater Management Plan Application

Public Works Department  
Natural Resources Division  
1200 E. 46<sup>th</sup> Street  
Davenport, IA 52807

For all projects that require a Storm Water Management Plan, complete this worksheet and include it with the preliminary Stormwater Management Concept Plan. Project phasing to decrease impervious surface area shall not exempt the project from requirements.

1. Date of Application: \_\_\_\_\_

2. Type of Application:  parcel/tentative/vesting/tract map  site development review  building permit

3. Project Location or Address : \_\_\_\_\_

4. Parcel/Tract No.: \_\_\_\_\_ Lot No.: \_\_\_\_\_

5. Project Name (if applicable): \_\_\_\_\_

6. Property Owner's Name: \_\_\_\_\_

7. Applicant's Name: \_\_\_\_\_

Owner  Contractor  Engineer/Architect  Developer

8. Applicant's Address: \_\_\_\_\_

9. Applicant's Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

10. Total Lot (or Parcel/Tract) Area in Sq. Ft.: \_\_\_\_\_

11. Existing Land Use

Commercial  Industrial  Residential  Public Agency  Agricultural  Vacant

12. Proposed Land Use

Commercial  Industrial  Residential  Public Agency

Detailed description (If residential, include number of single family or multifamily units. If commercial, include retail or office square footage. Include square footage proposed for industrial or public agency):

\_\_\_\_\_  
\_\_\_\_\_

13. Activities of concern which occur on the finished project site. (check all that apply):

- |   |  |
|---|--|
| <input type="checkbox"/> Vehicle cleaning for fleets or Commercial facilities | <input type="checkbox"/> Vehicle cleaning for multifamily residential developments   |
| <input type="checkbox"/> Vehicle repair/maintenance                           | <input type="checkbox"/> Outdoor process activities (examples of businesses that have outdoor process activities include machine shops, auto repair shops, and industries that have pretreatment facilities) |
| <input type="checkbox"/> Fuel dispensing areas                                |  |
| <input type="checkbox"/> Food service   | <input type="checkbox"/> Other: _____  |

14. Name the of water body(ies) that will receive storm water flows from the project (Include both the immediate Receiving water body, and water bodies farther downstream): \_\_\_\_\_

\_\_\_\_\_

15. Are any hydrologic features on or directly adjacent to project site? (Examples of hydrologic features include Wetlands, seeps, springs, natural waterways, modified natural waterways, constructed channels.)

No       Yes      Provide name or other identifier: \_\_\_\_\_

16. Will a new storm drain outfall be constructed as part of the project?

No       Yes      Identify outfall's receiving water: \_\_\_\_\_

17. Identify sensitive natural features located on site (check all that apply and indicate existing and proposed square footage.)

<u>Natural Feature</u>	<u>Existing square footage</u>	<u>Proposed square footage</u>
<input type="checkbox"/> Riparian area <sup>1</sup>		
<input type="checkbox"/> Wetland		
<input type="checkbox"/> Steep slopes (10% or greater)		
<input type="checkbox"/> Areas of native vegetation		
<input type="checkbox"/> Groves of trees		
<input type="checkbox"/> Other: _____		

18. Attach the project site plan to the completed Application. At a minimum, site plans are required to include:

- Date, Scale, Legend and North Arrow
- Lot lines
- Locations of existing buildings, structures and impervious surfaces
- Proposed buildings, structures and impervious surfaces
- Existing contours and proposed grades
- Locations of existing and proposed natural features (as identified in question 17)
- Locations of proposed landscaping
- Locations of proposed activities of concern (as identified in question 13)

1

Riparian area means the area between a stream or other body of water and the adjacent upland identified by soil characteristics and distinctive vegetation. It includes wetlands and those portions of floodplains and valley bottoms that support riparian vegetation. This vegetation is an association of plant species that grows adjacent to freshwater watercourses, including perennial and intermittent creeks, lakes and other bodies of fresh water. Riparian plant species either require or tolerate a higher level of soil moisture than drier areas with upland vegetation, and are therefore generally considered hydrophytic. However, riparian vegetation may be distinguished from wetland vegetation by the different kinds of plant species.

### 3.2 Stormwater Management Concept Plan

A stormwater management concept plan will be required with the submittal of a preliminary plat application.

The stormwater management concept plan shall include the following elements:

- Completed Application Form
- Vicinity map
- Existing and proposed mapping and plans (recommended scale of 1" = 50'.) which illustrate at a minimum:
  - Existing and proposed topography (minimum of 2-foot contours recommended)
  - Perennial and intermittent streams
  - Mapping of predominant soils from USDA soil surveys
  - Boundaries of existing predominant vegetation and proposed limits of clearing
  - Location and boundaries of resource protection areas such as wetlands, lakes, ponds, and other setbacks (e.g., stream buffers, drinking water well setbacks, septic setbacks)
  - Location of existing and proposed roads, buildings, and other structures
  - Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements
  - Location of existing and proposed conveyance systems such as grass channels, swales, and storm drains
  - Flow paths
  - Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainages
  - Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings
  - Preliminary location, size, and limits of disturbance of proposed stormwater treatment practices
- Hydrologic and hydraulic analysis including:
  - Existing condition analysis for runoff rates, volumes, and velocities presented showing methodologies used and supporting calculations
  - Proposed condition analysis for runoff rates, volumes, and velocities showing the methodologies used and supporting calculations
  - Preliminary analysis of potential downstream impact/effects of project, where necessary
  - Preliminary selection and rationale for structural stormwater management practices
  - Preliminary sizing calculations for stormwater treatment practices including contributing drainage area, storage, and outlet configuration
- Preliminary landscaping plans for stormwater treatment practices and any site reforestation or re-vegetation
- Preliminary soil management plan that indicates what steps will be followed to meet the requirements of Section 13.34.340.
- Preliminary erosion and sediment control plan that at a minimum meets the requirements outlined in Section 13.38 Construction Site Erosion and Sediment Control.
- Identification of preliminary waiver requests

In addition to submittal of the materials outlined above, applicants or designers are strongly encouraged to schedule a concept plan meeting with the Natural Resources Division of Public Works during the concept stage. This meeting will allow all parties to understand what is being proposed and provide an opportunity to develop acceptable solutions in a timely manner.

### 3.3 Stormwater Management Final Plan

A final Stormwater Management Plan will be required with the submittal of a Construction Site Erosion and Sediment Control (COSECO) application for grading, or submittal of a Building Permit Application for any project that will create 10,000 square feet or more of impervious area. The stormwater management final plan shall include the following elements:

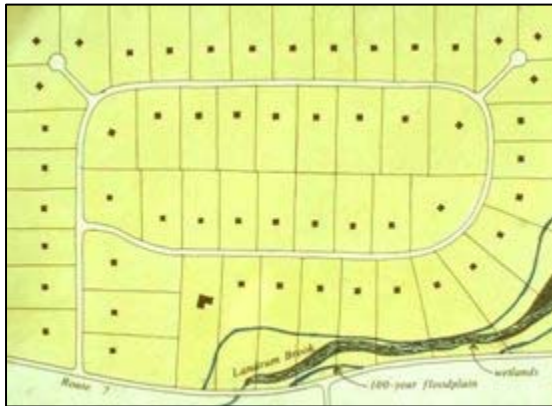
- Completed Application Form (if altered from the concept application)
- Signature and stamp of registered engineer/surveyor and design/owner certification
- Vicinity map
- Existing and proposed mapping and plans (recommended scale of 1" = 50' or greater detail) which illustrate at a minimum:
  - Existing and proposed topography (minimum of 2-foot contours recommended)
  - Perennial and intermittent streams
  - Mapping of predominant soils from USDA soil surveys as well as location of any site-specific borehole investigations that may have been performed.
  - Boundaries of existing predominant vegetation and proposed limits of clearing
  - Location and boundaries of resource protection areas such as wetlands, lakes, ponds, and other setbacks (e.g., stream buffers, drinking water well setbacks, septic setbacks)
  - Location of existing and proposed roads, buildings, and other structures
  - Location of existing and proposed utilities (e.g., water, sewer, gas, electric) and easements
  - Location of existing and proposed conveyance systems such as grass channels, swales, and storm drains
  - Flow paths
  - Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainages
  - Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
  - Location, size, maintenance access, and limits of disturbance of proposed structural stormwater Management practices
- Representative cross-section and profile drawings and details of structural stormwater Management practices and conveyances (i.e., storm drains, open channels, swales, etc.) which include:
  - Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)
  - Design water surface elevations
  - Structural details of outlet structures, embankments, spillways, stilling basins, grade control structures, conveyance channels, etc.
  - Logs of borehole investigations that may have been performed along with supporting geotechnical report.
- Hydrologic and hydraulic analysis for all structural components of stormwater system (e.g., storm drains, open channels, swales, management practices, etc.) for applicable design storms including:
  - Existing condition analysis for time of concentrations, runoff rates, volumes, velocities, and water surface elevations showing methodologies used and supporting calculations
  - Proposed condition analysis for time of concentrations, runoff rates, volumes, velocities, water surface elevations, and routing showing the methodologies used and supporting calculations
  - Final sizing calculations for structural stormwater management practices including, contributing drainage area, storage, and outlet configuration
  - Stage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities (e.g., stormwater ponds and wetlands)
  - Final analysis of potential downstream impact/effects of project, where necessary
  - Dam breach analysis, where necessary
- Final landscaping plans for structural stormwater management practices and any site reforestation or re-vegetation

- Final soil management plan that follows the design guidance provided in Section 9.6 which outlines practices and materials to be used to meet the requirements of Section 13.34.340.
- Structural calculations, where necessary
- Applicable construction specifications
- Erosion and sediment control plan that at a minimum meets the requirements of Section 13.38 of the Davenport Municipal Code.
- Sequence of construction
- Maintenance plan which meets the requirements of Section 6 of the Davenport Stormwater Manual
- Evidence of acquisition of all applicable local and non-local permits
- Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts)
- Waiver requests

It is acceptable to combine the components of the various plans provided all of the components are represented and clearly identified.

#### 4.0 STORMWATER MANAGEMENT PRACTICE SELECTION GUIDANCE

Many options are currently available to manage stormwater on a development rather than piping or allowing it to flow untreated to the nearest receiving stream. The City of Davenport encourages the use of Low-Impact Development (LID) techniques wherever possible. LID practices use strategies to integrate green space, native plants, natural waterways and wet areas, as well as other methods to reduce the amount of runoff from developed land. LID has been proven to be highly effective at controlling stormwater pollution and protecting waterways in both undeveloped and re-developing landscapes. The photos below compare a traditional subdivision with a conservation subdivision featuring low-impact development. The same number of lots are present in both configurations.



Traditional Subdivision Plat



Low-Impact Development Plan

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Source: Hill Country Alliance

#### **4.1 Selection**

Chapter 2, Sections 2-D through 2-K of the Iowa Stormwater Management Manual provide information about most management practices used for control and treatment of stormwater, including minimum control requirements, and other design criteria for stormwater quality. Allowable practices are not limited to what is included in the Iowa Stormwater Management Manual and can be selected from other acceptable design manuals.

The stormwater management practices listed in the Iowa Stormwater Management Manual emulate natural systems by integrating a variety of dispersed treatments at multiple scales, from backyard rain gardens to development-sized bio-retention basins. These treatments can be designed into new developments or retrofit into existing community open spaces, parks, road rights-of-way, side and rear yard areas of homes and commercial buildings, rooftops of structurally adequate buildings, below parking lots and in many other settings. All aspects of stormwater management can be integrated to contribute to positive community aesthetics and economics.

Typical stormwater management practices include:

- Infiltration (rain gardens, bio-retention cells, swales, soil quality restoration)
- Water Quality Detention (24-40 hour drawdown with forebays)
- Green Roof
- Pervious Pavement/Permeable Pavers
- Hydrodynamic Separators
- Subsurface Storage
- Inlet Filters

#### **4.2 Stormwater Management Practice Calculations**

Chapter 2, Section 2B-1 of the Iowa Stormwater Management Manual provides unified sizing criteria which can be used to determine the appropriate size of a practice necessary to achieve a selected water quality goal for a site.

For projects which discharge into the municipal separate storm sewer system (MS4), designers must verify that the system has appropriate capacity, and follow the “No Adverse Impact” approach. Documentation to support the final design volume and structural components shall be included in the submittal.

#### **4.3 Water Quality Volume**

For the purposes of this manual the water quality volume (WQv) is the volume that will be required to be treated on-site and is explained in Chapter 1, Part 2B of the Iowa Stormwater Management Manual which can be found in Appendix D.

#### 4.4 Detention Volume

For the purposes of this manual the detention volume is that as described in Sections 13.34.220 and 13.34.230 of the Davenport Municipal Code which for reference have been included here:

##### 13.34.220 Release rate.

A. The release rate of stormwater from any detention basin required under this chapter shall not exceed the stormwater runoff rate from the drainage area from a five-year frequency storm using a runoff coefficient "c" of 0.15, when using the rational method for areas under twenty acres or a curve number of sixty when using the S.C.S. TR-55.

B. The city may require a lesser release rate when the downstream outlet is insufficient to safely convey the release rate as determined in subsection A above.

##### 13.34.230 Detention requirements.

A. The required volume of stormwater detention shall be that necessary to handle the runoff of a one hundred-year rainfall, for the critical duration from the drainage area tributary to the stormwater storage area based on full development of said tributary area, less the volume discharged during the same duration at the approved release rate.

B. For sites less than twenty acres, the required detention storage (RDS) will be that found to be the most critical resulting from the inflow from the run-off of a fully developed tributary area from a one hundred-year storm and the outflow of the five-year storm with the same area as computed utilizing Section 13.34.230. This can be expressed by the following equation:

$$\text{RDS} = \left[ \begin{array}{c} \text{Inflow rate} \\ \text{from the} \\ \text{critical} \\ \text{100-year} \\ \text{Storm (cfs)} \end{array} \right] - \left[ \begin{array}{c} \text{Release rate} \\ \text{From 5-year} \\ \text{storm per} \\ \text{Section} \\ \text{13.34.220 (cfs)} \end{array} \right] \times \left[ \begin{array}{c} \text{Duration of} \\ \text{the critical} \\ \text{100-year} \\ \text{Storm (sec)} \end{array} \right]$$

C. For sites greater than twenty acres, the method of sizing of the detention storage volume must be approved by the city engineer.

D. Detention storage may be provided as a dry bottom or wet bottom storage area.

1. Dry bottom stormwater storage areas may be designed to serve a secondary purpose for recreation, open space, parking, or other types of uses that will not be adversely affected by intermittent flooding.

a. A method of carrying the low flow through these areas shall be provided in addition to a system of drains to prevent soggy areas.

b. Outlet control structures shall be designed as simply as possible and shall require little or no attention for proper operation. Each stormwater storage area shall be provided with a method of emergency overflow in the event that a storm in excess of the one hundred-year frequency storm occurs. This emergency overflow facility shall be designed to function without attention and shall become part of the excess stormwater passageway described in Section 13.34.240. Hydraulic calculations shall be submitted to substantiate all design features.

c. Both outlet control structures and emergency overflow facilities shall be designed and constructed to fully protect the public health, safety and welfare. Stormwater runoff velocities shall be kept at a minimum and turbulent conditions at an outlet control structure will not be permitted without complete protection for

the public safety. The use of fences shall be kept to a minimum and used only as a last resort when no other method of protection is feasible.

d. Paved surfaces that are to serve as stormwater storage areas and rooftop storage shall be designed with permanent-type control outlets. Emergency overflow areas shall be provided.

2. Wet bottom stormwater storage areas shall be designed with all of the items required for dry bottom stormwater storage areas, except that the provisions of subsection D, 1, a. of this section shall not be required. However, the following additional conditions shall be complied with:

a. Water surface areas shall not exceed one-fifteenth of the tributary drainage area.

b. a 10:1 sloped safety bench centered on the Normal Water Level shall be constructed

c. a skimming device to remove floatable material shall be included within or in series with the outlet structure.

d. Facilities shall be provided to lower the pond elevation by gravity flow for cleaning purposes and shoreline maintenance. Shoreline protection shall be provided to prevent erosion from wave action.

e. Minimum normal water depth shall be four feet. If fish are to be maintained, some portion of the pond area should be a minimum of nine feet deep.

f. Control structures for stormwater release shall be designed to operate with only a minor increase in the water surface level when the design storage capacity has been exceeded. Hydraulic calculations shall be submitted to substantiate all design features.

g. Only that portion of the detention area above the normal water level shall be used in calculating the storage capacity.

(Ord. 92-353 § 1 (part)).

## **5.0 STORMWATER MANAGEMENT PRACTICE INSPECTION AND CERTIFICATION**

### **5.1 Inspection**

Inspection of the stormwater management practices during installation is critical to ensure that they function as designed once completed. Receipt of a permit allows city inspectors the right to enter the property for the purpose of inspections of construction activities. Section 13.34.360 A of the Davenport Municipal Code refers to construction inspections and is included here for reference:

#### **13.34.360 Construction Inspections**

A. The applicant must notify the City of Davenport twenty-four (24) hours in advance of the commencement of construction of stormwater systems. Regular inspections of the stormwater management system construction shall be conducted by the Natural Resources Division of Public Works. If any construction is found to not comply with the plans, the contractor, and/or property owner shall be notified of the nature of the discrepancy and the actions required to correct the construction. No added work shall proceed until any corrective actions are completed and pass re-inspection.

## **5.2 Certification**

Upon construction completion, all stormwater management practices that are part of the Stormwater Management Final Plan shall be certified by a professional engineer licensed in the state of Iowa, or other professional approved by the City of Davenport Public Works Director, or his designee.

For certification, the professional approving the completion shall submit the following documents to the Natural Resources Division of Public Works:

- a. "As-built" drawings of the practice(s) completed.
- b. Stormwater Management Practice certification document.

The certification document can be found on the following page. This document also provides space for indicating the inspector and inspection report holder as part of the annual monitoring requirements for the stormwater management practice.



## Stormwater Management Practice Certification

Public Works Department  
 Natural Resources Division  
 1200 E. 46<sup>th</sup> Street  
 Davenport, IA 52807

This document ensures that a stormwater management practice has been installed as approved in the accepted Storm Water Management Plan and must be received before final acceptance of the project. Complete this worksheet and include it with the as-built survey of the stormwater management practice. Please submit separate forms and as-built surveys for each practice you wish to certify.

Project Name	
Project Address	
COSESCO Permit #	
Subdivision Name (if applicable)	
Stormwater Practice Identification	
Stormwater Practice Site Location	

**This certification must be executed by a professional civil engineer licensed in the State of Iowa, a Certified Stormwater Manager (CSM), a Certified Professional in Storm Water Quality (CPSWQ) or other professional approved by the City of Davenport Natural Resources Division.**

### CERTIFICATION STATEMENT

**Based upon my inspection of the constructed stormwater management practice for the above referenced project, I hereby certify that the stormwater management practice listed above is in general compliance with the intent of the original design plans and with the City of Davenport's stormwater management requirements.**

Name (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

Name (Printed): \_\_\_\_\_

Qualifications: \_\_\_\_\_

**Provide the following information regarding ANNUAL inspection of constructed stormwater management practices:**

INSPECTOR		INSPECTION REPORT HOLDER (if different from inspector)	
Company Name	Inspector's Name	Business Name	Holder's Name
Address	Inspector's Email Address	Address	Holder's Email Address
City, State, Zip		City, State, Zip	
Phone Number	Fax Number	Phone Number	Fax Number

**Annual review and inspection of stormwater management practices shall be performed by a professional qualified in stormwater management practice function and maintenance. Please provide inspector qualifications below (if not already on file):**

Qualifications: \_\_\_\_\_

## **6.0 MAINTENANCE**

This section explains the requirements to inspect and maintain stormwater management systems that are constructed to comply with Section 13.34 of the Davenport Municipal Code. Maintenance is essential for assuring that stormwater management systems continue to function effectively and that the systems do not become a nuisance.

### **6.1 Stormwater Management Practice Maintenance Requirements**

Section 13.34.250 of the Davenport Municipal Code states:

#### **13.34.250 Maintenance.**

A. All plans submitted for stormwater detention or water quality systems shall describe an adequate procedure of normal maintenance for the system in accordance with the requirements of the Davenport Stormwater Manual. Any failure of the stormwater system due to inadequate normal or capital maintenance shall be the responsibility of the owner of the property on which the system is located. It shall also be the property owner's responsibility to remedy any negligence in maintenance that resulted in the failure of the system. The submittal of plans for such a system or the purchase of property on which such system is located shall be deemed as acceptance of responsibility for normal and capital maintenance of the system. As part of the maintenance plan for the facility BMPs shall be inspected or reviewed as appropriate at least annually, and a written record of inspection results and any maintenance work shall be maintained and available for review by the City. An updated "as-built" survey plan must be submitted to the city every five (5) years to ensure that the facility continues to meet design requirements. A request for a waiver of the five (5) year "as-built" submittal may be granted provided the requirements of the waiver procedure are met per the Davenport Stormwater Manual. In the event that maintenance is not provided, the Public Works Director, or his representative, shall notify the party responsible for maintenance to perform the work and set a reasonable time for its completion. If said party refuses or is unable to comply with said order, said party may be in violation of Section 13.34.370 and subject to penalties including but not limited to the Public Works Director, or his representative, causing the maintenance to be completed at the expense of said party.

B. Owners of all existing detention basins constructed before July 1, 2014 will have until December 31, 2016 to complete any necessary maintenance on such basins and submit the required "as-built" survey. Failure to comply with this section will result in enforcement actions as outlined in Section 13.34.370.

### **6.2 Responsibility for Maintenance**

The responsibility for inspection and maintenance of stormwater management systems is the ultimate responsibility of the owner of the property on which such systems have been constructed unless other specific arrangements have been made.

It is preferred that inspections of all stormwater management systems and best management practices (BMPs) as detailed in the approved maintenance agreement, be conducted by a professional qualified in stormwater BMP function and maintenance as determined by acceptable credentials or documented experience submitted to the Public Works Director, or his designee. Proof of inspections should be maintained for a period of up to five years. Upon request, documentation of the inspections shall be provided to the Public Works Director, or his designee.

For residential properties where the stormwater management practices are located within a common area which will be maintained by a homeowner's association, language regarding the

responsibility for maintenance must be included in the project's conditions, covenants and restrictions (CC&Rs) or included on the plat. The property owner or developer shall be required to include printed educational materials with the first deed transfer to highlight the existence of the requirement and to provide information on what storm water management facilities are present, evidence that maintenance is needed, how the necessary maintenance can be performed, and assistance that the owner or developer can provide. The transfer of this information also shall be required with any subsequent sale of the property.

If stormwater management systems are proposed to be located in a public area for transfer to the City of Davenport, these systems must meet these design guidelines and shall remain the property owner's responsibility for maintenance until the controls are accepted for transfer.

The City of Davenport may conduct operation and maintenance verification inspections to ensure that stormwater management systems are being maintained.

### **6.3 Mechanisms to Assure Maintenance**

At the time that as-built plans are provided to the City of Davenport as described in Section 13.34.250B of the Davenport Municipal Code, and prior to final approval of a project for compliance with this ordinance, but in all cases prior to placing the practices in service, the applicant or owner of the site must execute an operation and maintenance agreement that shall be binding on all current and subsequent owners of the site, portions of the site, and lots or parcels served by the structural stormwater management practice. Failure to execute an operation and maintenance agreement within the time frame specified by the City of Davenport Public Works Director, or his designee may result in assessment of penalties as specified in Section 13.34.370, Enforcement. Until the transference of all property, sites, or lots served by the structural practice, the original owner or applicant shall have primary responsibility for carrying out the provisions of the maintenance agreement. At the discretion of the Public Works Director, or his designee, certificates of occupancy may be withheld pending receipt of an operation and maintenance agreement.

The City of Davenport will require one of the mechanisms described below to assure the ongoing maintenance of stormwater management systems or other BMPs located on each property on which stormwater management systems are constructed. Additional mechanisms may be considered provided that the requirements are as comprehensive as those listed below: Each of the mechanisms would include the provisions described in Sections 6.3.1 and 6.3.2.

**Public Entity's Signed Statement:** For cases in which the City of Davenport accepts responsibility for the maintenance of a stormwater management practice, the mechanism would be a signed statement from the Public Works Director, or his designee assuming responsibility for stormwater management system maintenance and that it meets all required design standards/criteria.

**Sales or Lease Agreement:** Consists of written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance and conduct a maintenance inspection as described in the approved maintenance plan.

**Conditions, Covenants and Restrictions (CC&Rs):** For properties on which the BMPs are located within a common area that will be maintained by an association, language regarding the responsibility for maintenance must be included in the project's CC&Rs.

**Maintenance Agreement:** An agreement assigning maintenance responsibility to the property owner may be executed between the City and a property owner. The agreement would be recorded among the deed records at the County Recorder's Office so that it would run with the title to the land.

### **6.3.1 Maintenance Requirements**

Each of the maintenance assurance mechanisms would include: a maintenance plan, inspection reports, access to property, and remediation of problems.

**1. Maintenance Plan.** Each stormwater management practice will require its own maintenance plan, the implementation of which will keep the proposed stormwater management system operating as originally designed and approved. At a minimum the Maintenance Plan shall include: contact information of the parties responsible for maintenance, the scope and frequency for inspection and scheduled maintenance, provisions for unscheduled maintenance, estimated design life, and costs associated with the design life including replacement.

**2. Inspection Reports.** The maintenance plan for each stormwater management practice will include the frequency and requirements of inspections. Each inspection must be documented in a report format acceptable to the Public Works Director, or his designee. Inspection reports shall be retained for a period of at least five years and made available upon request by the City of Davenport.

**3. Access to Property.** Permission is granted to the City of Davenport to enter the property upon which a stormwater management system is located to verify that maintenance is being conducted in accordance with the approved maintenance plan.

**4. Remediation of Problems.** In the event adequate maintenance is not conducted, city staff is allowed the option to enter the property and take necessary steps to restore the BMPs to good working order. The property owner will be responsible for reimbursing the city for expenditures associated with restoring the stormwater management practice to acceptable working order.

### **6.3.2 Required Exhibits**

Any of the above-described maintenance mechanisms will require the inclusion of the following exhibits:

**1. Letter-sized (8 ½ x 11 inches) Reduced-scale Site Plan** that shows the locations of the stormwater management systems that will be subject to the maintenance mechanism.

**2. Maintenance Plan**, that contains the schedule of activities needed to keep the proposed stormwater management systems operating as originally designed and approved. Each stormwater management practice will require its own maintenance plan, subject to the city's approval. Resources that may assist applicants in developing their maintenance plans include:

- Chapter 2, Section 2A-2 and Section 2D-2 of the Iowa Stormwater Management Manual.
- Page 14 of the Iowa Rain Garden Design and Installation Manual.
- The operation manual for any proprietary system purchased by the applicant.

#### **6.4 Waiver of Five-year "As-built" survey.**

In instances where a property owner wishes to avoid submittal of the as-built survey required every five years per Section 13.34.250 of the Davenport Municipal Code, the following procedure must be followed:

- A written request for a waiver must be submitted to the Natural Resources Division of Public Works a minimum of thirty (30) days in advance of the due date of the as-built survey.
- Upon receipt of the written request, Natural Resources personnel will schedule an inspection of the site requiring the survey. The inspection will be conducted in the presence of the property owner or representative with sufficient authority to implement any needed changes to the stormwater practice.
- If upon inspection it is determined that no significant changes have occurred to the stormwater practice and the system functions as originally designed, the Natural Resources Division will issue a waiver to the property owner for the survey period.
- If upon inspection it is determined that actions are needed to bring the stormwater practice into compliance with the most recent as-built survey, such actions shall be completed within the time given by the Natural Resources Division. If such actions are not completed as directed, the owner shall be considered in violation of section 13.34.370 of the Davenport Municipal Code and may be subject to enforcement actions.

## **7.0 TRANSFER OF STORMWATER MANAGEMENT SYSTEM MAINTENANCE TO THE CITY OF DAVENPORT**

### **7.1 Single Family Residential Stormwater Management Practices Accepted for Maintenance**

At his discretion, the Public Works Director, or his designee may accept maintenance responsibility of stormwater management practices that are installed pursuant to this ordinance following a warranty period of three (3) years from the date of as-built certification described in Section 13.34.250B, provided the stormwater management system:

1. Only serves a single family detached residential development or townhomes all of which have public street frontage;
2. Is satisfactorily maintained during the three (3) year warranty period by the owner or designee;
3. Meets all the requirements of Section 13.34 of the Davenport Municipal Code and the Davenport Stormwater Manual; and
4. Includes adequate and perpetual access and sufficient area, by easement or otherwise, for inspection, maintenance, repair or reconstruction; or
5. The ownership of the parcel upon which the stormwater management system is located is transferred to the City of Davenport.

The Natural Resources Manager must receive an application for transfer of maintenance responsibilities for the stormwater management practice, along with the storm water management permit application. The Transfer of Maintenance Application can be found at the end of Section 7.

In consideration of the transfer of property to the City of Davenport for the purpose of stormwater management, the City shall cover costs associated with title survey, transfer and recording.

## **7.2 Previously Constructed Single Family Residential Stormwater Management Practices Accepted for Maintenance**

In the case where a stormwater management system serving a residential development meeting the requirements of Section 7.1(1) above has been previously constructed, the Public Works Director, or his designee shall consider acceptance of ownership and maintenance responsibility of the stormwater management practices provided the following criteria are met:

1. If the property is owned by an association, a majority of the members must agree to transfer ownership of the parcel containing the stormwater system to the City.
2. The current ownership must pay for and supply to the City of Davenport a current “as-built” survey of the stormwater management system.
3. No major structural repairs must need to be completed to make the system functional at the time of transfer unless;
4. The current ownership will assist in payment for major structural repairs necessary to keep the system in operating condition.

The Natural Resources Manager must receive an application for transfer of maintenance responsibilities for the stormwater management practice, along with the storm water management permit application. The Transfer of Maintenance Application can be found at the end of Section 7.

In consideration of the transfer of property to the City of Davenport for the purpose of stormwater management, the City shall cover costs associated with title survey, transfer and recording.

### **7.3 Commercial or Private Property Stormwater Management Practices Accepted for Maintenance**

In the case where a stormwater management system serving a commercial or private development has been previously constructed, or is planned and there exists suitable benefit in the opinion of the Public Works Director, or his designee to provide stormwater management for multiple properties, the City shall consider acceptance of ownership and maintenance responsibility of the stormwater management practices provided the following criteria are met:

1. The owner of the property upon which the system currently exists or is planned, must agree to transfer ownership of the parcel containing the stormwater system to the City.
2. If the system is existing, the current ownership, or proposed group of owners, must pay for and supply to the City of Davenport a current “as-built” survey of the stormwater management system.
3. No major structural repairs must need to be completed to make the system functional at the time of transfer unless;
4. The current ownership will assist in payment for major structural repairs necessary to keep the system in operating condition.
5. Any modifications to the existing system to meet the water quantity or quality requirements of Section 13.34 of the Davenport Municipal Code, or other modifications deemed necessary by the City of Davenport must be funded by the owners of the property or those who will directly benefit from the modifications and city ownership of the stormwater management system.

The Natural Resources Manager must receive an application for transfer of maintenance responsibilities for the stormwater management practice, along with the storm water management permit application. The Transfer of Maintenance Application can be found at the end of Section 7.

In consideration of the transfer of property to the City of Davenport for the purpose of stormwater management, the City shall cover costs associated with title survey, transfer and recording.



City of Davenport  
Transfer of Maintenance Application

Public Works Department  
Natural Resources Division  
1200 E. 46<sup>th</sup> Street  
Davenport, IA 52807

Acceptance of this application is at the sole discretion of the Public Works Department of the City of Davenport.

12. Date of Application: \_\_\_\_\_

13. Type of Application:     New Residential             Existing Residential             Commercial/Industrial

14. Project Location or Address : \_\_\_\_\_

15. Parcel: \_\_\_\_\_ Lot No.: \_\_\_\_\_

16. Project Name (if applicable): \_\_\_\_\_

17. Property Owner's Name: \_\_\_\_\_

18. Applicant's Name: \_\_\_\_\_

Owner     Contractor     Engineer/Architect     Developer     Home Owner Association

19. Applicant's Address: \_\_\_\_\_

20. Applicant's Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

21. Total Lot (or Parcel/Tract) Area in Sq. Ft.: \_\_\_\_\_

22. Existing Land Use

Commercial     Industrial     Residential     Public Agency     Agricultural     Vacant

23. Proposed Land Use

Commercial     Industrial     Residential     Public Agency

24. Detailed description: (If residential, include number of single family or multifamily units. If commercial, include retail or office square footage. Include square footage for industrial or public agency):  
\_\_\_\_\_  
\_\_\_\_\_

25. Date of Stormwater Management Practice Construction: \_\_\_\_\_

26. The following documents must accompany this submittal:

- Site Map Showing Management Practice Location
- Recent Inspection Report (if a previously constructed practice)
- Construction Inspection Reports (if newly constructed practice)
- As-built Survey
- Completed Property Owner Agreement Sheet

FOR OFFICE USE ONLY

1. Has a site inspection been performed on this practice by the City of Davenport?

Date of Inspection: \_\_\_\_\_ Inspector Name: \_\_\_\_\_

2. Are there any erosion, structural, maintenance or other issues present that need to be addressed or considered before acceptance by the City?

Problem Description:	Location:

3. Has the as-built survey been submitted, reviewed, and approved?

Date of review: \_\_\_\_\_ Reviewer/Approver: \_\_\_\_\_



## **8.0 LANDSCAPING AND VEGETATION FOR STORM WATER BEST MANAGEMENT PRACTICES.**

This section should be used as guidance for design and installation of plantings as part of landscape-based treatment controls in Davenport, Iowa. Site-specific climate and soil conditions must be determined prior to final plant selection and control installation.

### **8.1 Plant Species for Landscape-Based Treatment Controls**

Landscaping plans and/or hydroseeding specification shall be provided for water quality systems using landscaped-based treatment controls such as cells or buffer strips. Landscaping plans shall be provided for water quality systems and shall include species lists, plant sizes (*e.g.*, seed, plug, 1gallon container, etc.), planting layout, planting techniques, plant spacing, soil amendments, and hydroseed specifications. After establishment, summertime irrigation is rarely required when using plants adapted to Scott County's climate. Establishment may take 1-3 years, depending on timing of planting, plant size, planting location, etc. Re-vegetation with native species and adaptable species that can tolerate varying zones of inundation and soil moisture is encouraged.

Planting with native aquatic and wetland species will also provide a medium for biological uptake of pollutants. Rushes and sedges are emergent species that have been noted for absorbing nitrogen and phosphorus. Bacteria present in the anaerobic conditions of saturated soils convert nitrates into a gaseous form that is then released into the atmosphere. Phosphorus can combine with various metal ions, including iron, manganese, copper, aluminum, and zinc in removing these pollutants from the water. Aquatic plants that are adapted for growth in permanently inundated conditions where the roots are continuously underwater provide significant water quality improvement capabilities. Herbaceous species and grasses are also useful for water quality improvement.

The use of trees along the borders and banks of a basin is beneficial. A diverse association of plant species that provide stratified growth forms should be used to recreate a more natural system, as well as provide aesthetic and wildlife habitat value.

### **8.2 Invasive Species**

To protect natural wetlands, stormwater management practices and agricultural areas, the use of invasive or undesirable species is specifically prohibited. A list of these species is included below. This list may not be all inclusive, the Public Works Director, or his representative, reserves the right to add species to this list.

## INVASIVE SPECIES PLANT LIST

Amur honeysuckle	Hairy cupgrass	Ribbon grass
Amur silvergrass	Horse nettle	Russian knapweed
Autumn olive	Japanese barberry	Russian olive
Bells' honeysuckle	Japanese honeysuckle	Shattercane
Bloodgrass	Japanese knotweed	Sheep sorrel
Common buckthorn	Leafy spurge	Siberian elm
Bull thistle	Morrow's honeysuckle	Smooth Brome
Burning bush	Multiflora rose	Smooth dock
Bush honeysuckle	Musk thistle	Sour dock
Butter print	Orange Daylily	Sweat Clover
Canada thistle	Oriental bittersweet	Tatarian honeysuckle
Chicory	Pampas Grass	Teasel
Cocklebur	Perennial pepper-grass	Tree of heaven
Common buckthorn	Perennial sowthistle	Velvet leaf
Crown Vetch	Periwinkle	Wild carrot
Dame's rocket	Phragmites	Wild mustard
Eurasian water milfoil	Plume Grass	Wild Parsnip
European morning glory	Puncture vine	Wild sunflower
Field bindweed	Purple loosestrife	Wintercreeper
Flowering rush	Quackgrass	Yellowwood
Garlic Mustard	Queen Anne's lace	Curly dock
Glossy buckthorn	Reed Canary Grass	Poison Hemlock

### 8.3 General Planting Specifications

Native plants shall be used for the vegetation of constructed water quality practices. A list of plant species native to Scott County is included at the end of this section. Landscape plans providing a planting layout shall be prepared on a site-specific basis by a qualified specialist. Specific planting zones for planting species shall be determined on a site-specific basis. The species composition and density shall be determined by a qualified specialist, utilizing the plant species recommended for each management practice condition, i.e., dry detention basin, wet detention basin, rain gardens, bio-retention cells, or ponds.

### 8.4 Maintenance

General maintenance actions shall be undertaken for each planting site. Non-native invasive plant species shall be controlled to reduce competition with the native plantings and to assure the success of the re-vegetation activities. Manual methods of weed removal shall be conducted on the bottom, edge and side of the practices when these areas are not inundated. Areas with hydroseeding on the banks of the practices shall be weeded carefully to avoid removal of the native species.

Weeding shall be conducted regularly the first two years to prevent the growth, flowering, and seed set of non-native weeds and invasive species. After the first two years, weeding frequency will be determined on a site-specific basis as determined by the type of weeds and seasonal growth cycle of the weed species.

Long-term maintenance tasks on the banks of the practices will include continued control of non-native weeds and invasive plants, and control of erosion. Erosion could include gullies, rills and sheet erosion. Actions to control erosion should include redirecting or dissipating the water source.

Re-contouring and subsequent mulching and/or reseeding with erosion control species may be required in bare areas. In the event of extensive die-off of the native plant species, the bare areas should be replanted. Where it is determined that the event that caused plant mortality was not a natural catastrophic occurrence, the site condition that resulted in the die-off should be investigated and remedial action to correct the problem should be undertaken prior to replanting.

### 8.5 Native Plants

To enhance natural wetlands, stormwater management practices and agricultural areas, the use of plants native to Scott County is encouraged. A list of these species is included below. This list may not be all inclusive. Care should be taken when deciding on species to plant. Not all species will thrive in all conditions. It is recommended that soil conditions, moisture levels, and sun and shade requirements be investigated before deciding on plant species to be installed.

#### PLANTS OF THE FORMER PINE HILL CEMETERY PRAIRIE

From the *Vascular Plants of Scott and Muscatine Counties*

By: Ludwig F. Guldner, Davenport Public Museum, Botanical Publication No. 1, 1960

#### Pine Hill Cemetery Forbs

<u>Scientific Name</u>	<u>Common Name</u>
Kuhnia eupatoriodes	False boneset
Liatris scariosa	Blazing star
Aster azureus	Azure aster
Aster sericeus	Silky aster
Aster laevis	Smooth aster
Aster ericoides	Wreath aster
Solidago rigida	Stiff goldenrod
Solidago missouriensis	Missouri Goldenrod
Echinacea pulchellus	Pale purple coneflower
Erigeron pulchellus	Robin's plantain
Coreopsis palmate	Finger coreopsis
Parthenium integrifolium	Wild quinine
Prenanthes asper	Rattlesnake root

### **Pine Hill Cemetery Forbs (continued)**

<u>Scientific Name</u>	<u>Common Name</u>
Hieracium longipilium	Hawkweed
Erigeron strigosus	Narrow leaf white top
Erigeron strigosus	Narrow leaf white top
Agoseris cuspidate	False dandelion
Amorpha canescens	Lead plant
Baptisia leucantha	White false indigo
Euphorbia corollata	Flowering spurge
Ceanothus americanus	New Jersey tea
Potentilla arguta	Prairie cinquefoil
Salix humilis	Prairie willow
Viola pedatifida	Prairie violet
Viola pedata	Bird's foot violet
Lithospermum canescens	Puccoon
Polygala sanguinea	Milkwort
Heuchera Richardsonii	Alumroot
Spriantes gracilis	Lady's tress
Gentian puberula	Gentian
Eryngium yuccifolium	Rattlesnake master
Comandra Richardsonii	Bastard toadflax
Hypoxis hirsute	Star grass
Sisyrinchium campestre	Blue eyed grass
Helianthus occidentale	Sunflower
Krigia biflora	Two flowered syntia
Petalostemon purpureum	Purple prairie clover
Desmodium illinoense	Illinois tick clover
Lespedeza capitata	Round-headed bush clover
Siphilium integrifolium	Rosinweed
Dodecatheon Meadii	Shooting star

### **Pine Hill Cemetery Grasses**

<u>Scientific Name</u>	<u>Common Name</u>
Andropogon gerardi	Big bluestem
Andropogon scoparius	Little bluestem
Sorghastrum nutans	Indian grass
Stipata spartea	Porcupine grass
Carex Bicknellii	Bicknell's Sedge
Carex Meadii	Mead's Sedge
Koeleria cristata	June grass
Panicum scribnerianum	Scribner's panic grass
Panicum praecocius	Early panic grass
Agrostis scabra	Tickle grass

## **9.0 SOIL QUALITY RESTORATION**

Healthy soil provides important stormwater management functions including efficient water infiltration and storage, adsorption of excess nutrients, filtration of sediments, biological decomposition of pollutants, and moderation of peak stream flows and temperatures. In addition, healthy soils support vigorous plant growth which intercepts rainfall, reducing runoff by increasing evaporation and transpiration. Urbanization and development severely diminish a soil's capacity to absorb, filter and store rainwater. Common development practices including clearing and removal of topsoil during grading, compaction of remaining soil, and planting into unimproved soil or poor quality imported topsoil, produce unhealthy plants and lawns that require excessive fertilizers and pesticides which can lead to polluted stormwater runoff.

### **9.1 Ordinance Requirements**

Section 13.34.340 requires soil quality restoration and is included for reference:

#### **13.34.340 Soil Quality Restoration**

Healthy soil provides important stormwater management functions including efficient water infiltration and storage, adsorption of excess nutrients, filtration of sediments, biological decomposition of pollutants, and moderation of peak stream flows and temperatures. In addition, healthy soils support vigorous plant growth which intercepts rainfall, reducing runoff by increasing evaporation and transpiration. Urbanization and development severely diminish a soil's capacity to absorb, filter and store rainwater. Common development practices including clearing and removal of topsoil during grading, compaction of remaining soil, and planting into unimproved soil or poor quality imported topsoil, produce unhealthy plants and lawns that require excessive fertilizers and pesticides which can lead to polluted stormwater runoff. All areas subject to clearing and grading that have not been covered by impervious surfaces, incorporated into a stormwater management practice, or engineered as structural fill or slopes shall, at project completion, use one or more of the following practices to improve soil structure and water quality.

A. Soil retention. Native topsoil should be retained in an undisturbed state to the maximum extent practicable. In any areas requiring grading, remove and stockpile the topsoil on-site in a designated controlled area where it will not be compacted, and not adjacent to stormwater management areas. Before stockpiled topsoil can be reapplied to other portions of the site it must be tested, and amended if needed, to meet the organic matter or depth requirements specified in the Davenport Stormwater Manual. When topsoil is replaced it shall be un-compacted to a depth of four inches. Subsoils below the topsoil layer should be scarified with some incorporation of the upper material to avoid stratified layers

B. Soil quality restoration. Amend existing site topsoil or subsoil to a minimum rate of 5% organic matter content and a pH from 6.0 to 8.0 or matching the pH of the original undisturbed soil using methods specified in the Davenport Stormwater Manual. Soil that already meets the depth and organic matter quality standards, and is not compacted, does not need to be amended. The waiver for amending soil can be found in the Davenport Stormwater Manual. Upon completion of the project the topsoil layer shall have a minimum depth of four inches except where tree roots limit the depth of incorporation of amendments needed to meet the criteria. Subsoils below the topsoil layer should be scarified at least four inches with some incorporation of the upper material to avoid stratified layers.

C. Maintenance. Soil quality and depth should be established toward the end of construction, and once established should be protected from compaction and erosion. The Davenport Stormwater Manual contains additional recommendations for maintenance of soil quality restoration areas.

D. Inspection. Areas where soil retention or soil quality restoration are implemented must meet the inspection requirements of Section 13.34.360 and the Davenport Stormwater Manual and be inspected prior to seeding or turf placement.

## **9.2 Methods to Amend Soil**

### **Universal soil quality restoration method for increasing organic matter**

This method can be used to improve stockpiled topsoil or remaining clay subsoil. When working with stockpiled topsoil, the subsurface ground at the site should be scarified to a depth of four inches (4") to avoid stratified layers. After scarifying the subsurface, the stockpiled topsoil should be added on top of the subsurface. Three inches of compost should then be added on top of the placed topsoil. A 6 inch till is required to mix the topsoil and compost blend. At this point, light final grading of the site can occur, being careful to protect against compaction. The final step is to call the Public Works Natural Resource Division for your soil quality inspection.

When improving subsoil without stockpiled topsoil, 3 inches of compost shall be incorporated into the subsoil through a 6 inch till. At this point, light final grading of the site can occur, being careful to protect against compaction. The final step is to call the Public Works Natural Resource Division for your soil quality inspection.

## **9.3 Soil Amendment Rates & Depths**

The universal soil quality restoration method for increasing organic matter requires the use of 3 inches of compost incorporated into topsoil or subsoil to result in no less than 5% organic matter content in the amended soil. In order to achieve this rate the compost used must have an organic matter content of 35-60% and a carbon to nitrogen ratio below 25:1. Amended soil should also have a pH range from 6.0 to 8.0 or match the pH of the original undisturbed soil as determined by the soil assessment conducted during the site evaluation.

## **9.4 Waiver for Soil Quality Restoration**

If a property owner, contractor, or design professional believes that existing site soils meet the requirements of the ordinance without requiring soil quality restoration they must provide documented proof to the city by one of the following methods.

### **9.4.1 Submit Test Results**

If the property owner, contractor or design professional believes that the existing organic matter rates are equal to or exceed 5%, said person must submit test results from a certified soil laboratory, approved by the City of Davenport, indicating the organic matter content.

### **9.4.2 Request the City to Test Soils**

If the property owner, contractor or design professional believes that the existing organic matter rates are equal to or exceed 5%, said person may request the City of Davenport to sample soils from the site and have them tested by a certified soil testing laboratory. Sample soil collection, arrangement and performance of this testing will be billed to the owner, contractor, or design professional at the current rate of the laboratory chosen, plus ten percent.

*If the organic matter content is determined to be less than 5% by the testing agency, the property owner, contractor or design professional will be required to amend the existing topsoil or subsoil at rates specified and by the methods provided in Sections 9.2 and 9.3.*

### **9.5 Recommendations for Maintenance of Soil Quality Restoration Areas**

After the installation of soil quality restoration, contractors must use care to avoid compacting restored areas. If areas become compacted, re-tilling will be necessary. Suitable ground cover or other erosion control methods should be placed as soon as possible after completion of the soil quality restoration to prevent erosion of the newly amended soils. Once soil quality restoration is performed through the universal soil quality restoration method, the organic matter in the soil will be self-sustaining. The organic matter in the soil profile will increase the soil microbe community and these organisms, along with earthworms, will help to maintain the organic matter content while creating macro pores in the soil profile. These macro pores help the soil to absorb and store water in the soil profile, reducing the need for irrigation and reducing the amount of water that runs off the property in a rain event.

### **9.6 Soil Management Plan Guidance**

The following section has been created to assist the design professional in meeting the requirements of the Soil Management Final Plan required as part of Section 4.3, Stormwater Management Final Plan, in the Davenport Stormwater Manual.

As paraphrased from Section 13.34.340 B of the Davenport Municipal Code, all areas subject to clearing and grading that are not covered by impervious surface, a stormwater management practice or engineered as a fill or slope shall, at project completion, use either soil retention or soil quality restoration techniques to improve soil structure and meet water quality goals. The Soil Management Plan should include the following items:

- Site map depicting the entire site showing the locations of all proposed impervious surfaces, open spaces, stormwater management practices and stockpile locations\*.
- For areas not to be covered with impervious surfaces or stormwater practices indicate the type of soil management practice that will be utilized in each location.
  - For areas to be left undisturbed indicate the type of protection measures to be used to preserve the areas.
  - For areas where soil quality restoration will be implemented include the application and incorporation techniques to be used.
  - For areas where a waiver for soil quality restoration is requested, submit test results of the soils.
  - If a waiver is granted, include the protection measures to be used to preserve the area.

\*Areas where soil has been stockpiled must be scarified and amended as necessary once the stockpile has been removed, unless the area will be covered by impervious material.

## **10.0 PRIVATE STREAM MANAGMENT**

At his discretion, the Public Works Director, or his designee may authorize construction to repair degraded streambanks located on private property. Fifty percent (50%) of such construction costs may be funded by the city. Construction will not commence until written permission is received from a majority of the property owner(s).

### **10.1 Background**

It is estimated that there are approximately 88 miles of flowing streams and waterways located on private property within the Davenport City Limits. Maintenance of these waterways has historically been the responsibility of the property owner or owners through which the water travels. Many of the streambanks in these areas have become eroded threatening private property and city infrastructure. The areas in need of repair often encompass more than one property and are cost prohibitive, making it difficult for a single owner to construct adequate corrections. The Duck and Blackhawk Creek Stream Assessment as prepared by Wenck Associates, Inc. in 2011 included the technical memorandum titled: *Maintenance of Private Streams in Davenport*. This memo included consideration of a cost-share program to assist residents in streambank stabilization projects.

### **10.2 Assessment**

Based on the estimated cost to repair all of the streambank erosion problems on private property it is economically infeasible for the City of Davenport to pay for the entire cost. In order for the city to perform, or contract for the work to be performed, individual properties will need to be assessed based on the linear feet of stream, or square feet of stream buffer required to be placed on their property. This assessment will help relieve the direct cost to the city and also ensure “buy-in” both literally and figuratively from the affected residents. The city will inspect private stream segments based on complaints received and perform or contract for the repairs and then educate the residents on proper streambank management including buffers, landscaping and illegal dumping. Once the improvements are completed the property owners will be responsible for the continued maintenance of streambank buffers in perpetuity. The assessment proposal has been outlined below:

- Private stream maintenance will be performed on a reach basis as opposed to property line to property line unless one property encompasses an entire reach.
- A reach shall consist of a suitable starting and stopping location as determined by the Department of Public Works. Examples could include bridges, culverts, or other road crossings that separate a stream into manageable sections.
- Projects will be constructed with the end goal of stabilizing the entire reach. Assessments will be spread among the affected property owners using the formula outlined below regardless of whether any physical changes are made to the streambanks or streambed on their parcel.
- In the event that a majority of the parcel owners do not wish to participate in a reach stabilization project, the project will not move forward to construction unless determined by the Department of Public Works to be imperative for the life, health or safety of the residents in the affected area.

- Assessable Items:
  - Earth excavation and grading
  - Crushed stone hauling and placement
  - Relocation of utilities
  - Relocation of sanitary or storm sewer
  - Remove or replace sanitary and storm sewer pipe
  - Remove or replace culverts or other pipe
  - Tree removal
  - Provide and install backfill material
  - Adjusting sanitary or storm manholes or catch basins
  - Remove or replace or install retaining walls
  - Remove private bridge crossings
  - Installation or removal of sediment and erosion control items
  - Installation of native plant material
  - Clearing and grubbing
  - Seeding
  - Sod Installation
  - Mulch or compost supply and installation
  - Permit fees
  - Construction supervision expenses
  - Engineering and design expenses
  - Survey
  - Easement acquisition
  - Tree or shrub installation costs
  - New concrete construction
  - Remove or replace existing concrete
  - Signage
  - Gabion basket remove or replace
  - Gabion basket new installation
  - Traffic control

### **10.3 Assessment Formula**

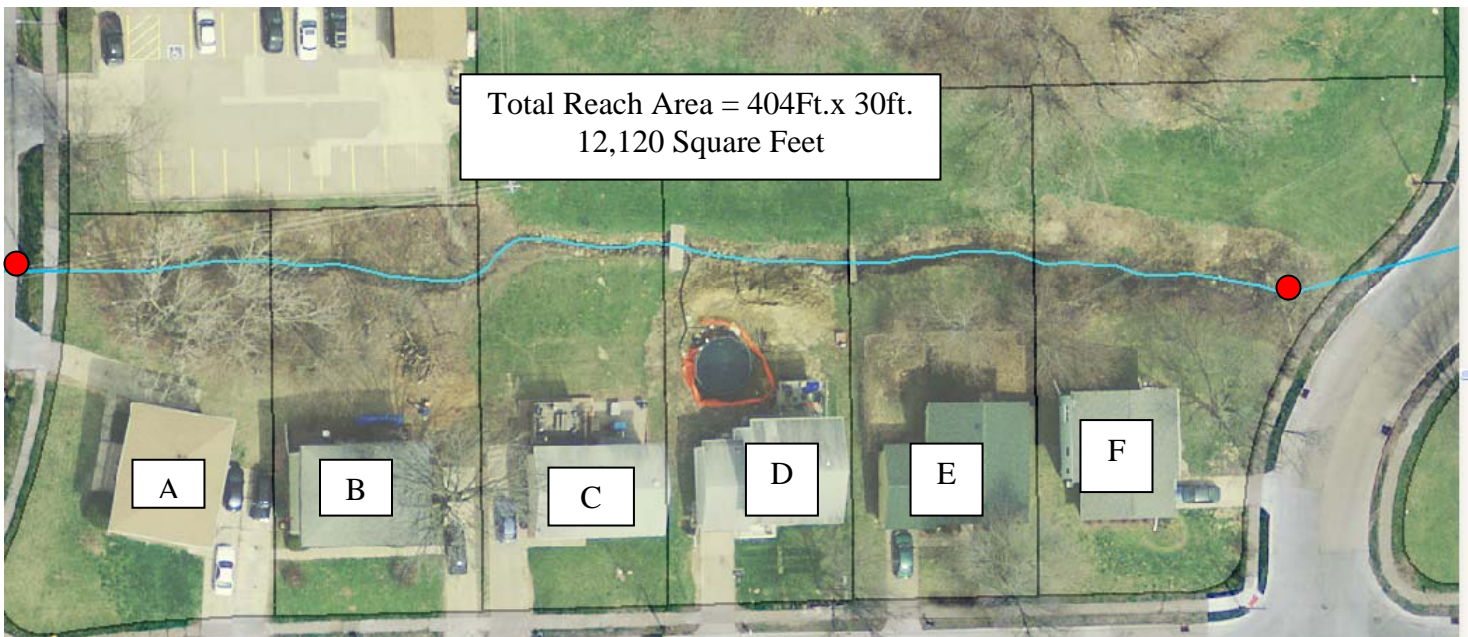
The formula for the assessment shall be as follows: The total cost of construction of the project shall be divided by the percentage of square feet of the project area on an individual parcel as determined by measuring the linear feet of the proposed stream project through each parcel by following the stream centerline using GIS or land survey and the width of the area required to perform the stabilization project, divided by the total square feet of stream project area as measured using the same method for the entire designated reach, multiplied by one hundred and rounded to the nearest tenth of a percent.

This percentage shall be reduced by a percentage amount as determined by city council, to be matched by the City of Davenport.

This cost will be spread among the properties based on the percentage formula presented above. If any amount assessed against a property exceeds \$100.00, such assessment may be in 3 annual installments; if amount assessed exceeds \$500.00, such assessment may be in 5 annual installments; if amount assessed exceeds \$2,500.00, such assessment may be in 7 annual installments; if amount assessed exceeds \$3,500.00, such assessment may be in 10 annual installments. All assessments bear interest at the current rate of 9%.

#### 10.4 Assessment Formula Example

##### Example Assessment Fee



GRAPHIC NOT TO SCALE, FOR EXAMPLE ONLY

- The formula for the assessment shall be as follows: The total cost of construction of the project shall be divided by the percentage of square feet of the project area on an individual parcel as determined by measuring the linear feet of the proposed stream project through each parcel by following the stream centerline using GIS or land survey and the width of the area required to perform the stabilization project divided by the total square feet of stream project area as measured using the same method for the entire designated reach, multiplied by one hundred and rounded to the nearest tenth of a percent.

- In the example above the total reach from the west storm sewer outfall to the east storm sewer inlet is 404 linear feet as measured using GIS. It is estimated that 15 feet on each side of the stream will be re-graded and planted as a native buffer strip. This gives a total reach area of 12,120 square feet of stream project area. Parcels A through F have been measured using the same GIS measurement method. Their percentage of the total stream project area are represented in table 1 below:

**Table 1: Percentage of Total Stream Project Area per Parcel**

Parcel ID	Stream Length (ft.)	Buffer Width (ft.)	Parcel Area (SF)	Percentage of Total
Property A	63.5	30	1905	<b>15.7</b>
Property B	65.8	30	1974	<b>16.3</b>
Property C	60.4	30	1812	<b>15.0</b>
Property D	58.3	30	1749	<b>14.4</b>
Property E	59.4	30	1782	<b>14.7</b>
Property F	96.6	30	2898	<b>23.9</b>
Total	404	30	12120	<b>100</b>

- The total cost of the project shall be reduced by a percentage amount as determined by city council. The remaining cost of the project shall be paid for by the City of Davenport.
- If the example project used above had an estimated construction cost of \$40,000 with a match of 50% by the city, the total assessed cost to the property owners would be \$20,000.
- This cost would be spread among the properties based on the percentage formula presented above and referenced in Table 3.

**Table 3: Cost Assessed to Individual Parcels**

Parcel ID	Percentage of Total	Initial Cost to Parcel	Adjusted based on 50% Match
Property A	15.7	\$6,280.00	\$3,140.00
Property B	16.3	\$6,520.00	\$3,260.00
Property C	15.0	\$6,000.00	\$3,000.00
Property D	14.4	\$5,760.00	\$2,880.00
Property E	14.7	\$5,880.00	\$2,940.00
Property F	23.9	\$9,560.00	\$4,780.00

- If any amount assessed against property herein exceeds \$100.00, such assessment may be in 3 annual installments; if amount assessed exceeds \$500.00, such assessment may be in 5 annual installments; if amount assessed exceeds \$2,500.00, such assessment may be in 7 annual installments; if amount assessed exceeds \$3,500.00, such assessment may be in 10 annual installments.
- The properties assessed in this example would have 7 or 10 years to repay the assessment to their property taxes at an interest rate and term length set by the City Council or Scott County Treasurer. The example used above done in 2014 with a county interest rate at 9% billed over a period of 7 or 10 years is represented in Table 4.

**Table 4: Yearly Payment Based on 7 or 10 Year Repayment Schedule at 9%**

Parcel ID	Percentage of Total	Cost Assessed to Parcel	With 9% Added to Cost	Yearly Payment	7 or 10 Yearly Payments
Property A	15.7	\$3,140.00	\$3,422.60	\$488.94	7 Years
Property B	16.3	\$3,260.00	\$3,553.40	\$355.34	10 Years
Property C	15.0	\$3,000.00	\$3,270.00	\$467.14	7 Years
Property D	14.4	\$2,880.00	\$3,139.20	\$448.46	7 Years
Property E	14.7	\$2,940.00	\$3,204.60	\$457.80	7 Years
Property F	23.9	\$4,780.00	\$5,210.20	\$521.02	10 Years

**Appendix A: Current NPDES MS4 Permit**

**IOWA DEPARTMENT OF NATURAL RESOURCES**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT**

**PERMITTEE**

City of Davenport  
1200 E. 46<sup>th</sup> St.  
Davenport, IA 52807

**IDENTITY AND LOCATION OF FACILITY**

City of Davenport

**IOWA NPDES PERMIT NUMBER:** 82-22-0-05

**RECEIVING WATERCOURSES**

Crow Creek, Duck Creek, Mississippi River  
and other, undesignated waters

**DATE OF ISSUANCE:** July 1, 2014

**DATE OF EXPIRATION:** June 30, 2019

**YOU ARE REQUIRED TO FILE  
FOR RENEWAL OF THIS PERMIT BY:** January 1, 2019


**EPA NUMBER –** IA0078808

This permit is issued pursuant to the authority of section 402(b) of the Clean Water Act (33 U.S.C. 1342(b)), Iowa Code section 455B.174, and rule 567--64.13, Iowa Administrative Code. You are authorized to operate the disposal system and to discharge the pollutants specified in this permit in accordance with the monitoring requirements and other terms set forth in this permit.

You may appeal any conditions of this permit by filing written notice of appeal and request for administrative hearing with the director of this department within 30 days of receipt of this permit.

Any existing, unexpired Iowa operation permit or Iowa NPDES permit previously issued by the department for the facility identified above is revoked by the issuance of this Iowa NPDES operation permit.

FOR THE DEPARTMENT OF NATURAL RESOURCES

By  \_\_\_\_\_  
Joe Griffin  
NPDES Section  
Environmental Protection Division

Facility Name: City of Davenport Municipal Separate Storm Sewer System  
Permit Number: 82-22-0-05 Final permit

## PART I. DISCHARGES AUTHORIZED UNDER THIS PERMIT

### A. Permit Area

This permit covers all areas within the boundaries of the City of Davenport totaling approximately 66 square miles which is drained by the city's Municipal Separate Storm Sewer System (MS4) and any other areas added while this permit is in effect.

### B. Authorized Discharges

This permit authorizes all existing or new storm water point source discharges to waters of the State from the MS4. This permit also authorizes the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater, or storm water associated with industrial activity provided such discharges are authorized under separate NPDES permits, as required by law. This permit does not authorize discharges to the MS4.

### C. Limitations on Coverage

The following discharges are not authorized or regulated by this permit:

Storm water discharges that are mixed with non-storm water and storm water associated with industrial activity except where such discharges are:

1. in compliance with a separate NPDES permit; or
2. identified by and in compliance with Part IV. of this permit.

## PART II. STORM WATER POLLUTION PREVENTION & MANAGEMENT

The permittee shall implement the Best Management Practices (BMPs), measurable goals and frequencies described in the following sections.

### A. Public Education and Outreach on Storm Water Impacts

The permittee shall continue implementing a public education and outreach program about the impacts of storm water discharges and measures which the residents of the permittee can implement to reduce pollutants in storm water runoff that includes the following:

1. **General Storm Water Education Articles –** Informational articles shall be published in the city newsletter and distributed to residents and businesses served by the MS4. The articles shall present information regarding storm water impacts on water quality and measures residents can implement to reduce water quality degradation from storm water.

At least four articles shall be published in the city newsletter by the permittee each year. The newsletters shall be mailed to all residents and businesses and placed on the website for the duration of the permit.

2. **Telephone Hotline Number –** The permittee shall continue to provide a telephone number for the reporting of storm water related problems. The telephone number shall be made available on the website and included in the city newsletter storm water articles.

The telephone number shall remain in effect for the duration of the permit.

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3. Storm Water Website – The permittee’s website shall contain information regarding storm water impacts on water quality, measures residents can implement to reduce pollutants in storm water, regulations, current local topics, information in the articles and links to other relevant websites. A form for reporting storm water complaints shall be provided on the website. The website shall be updated as needed.

The website shall be maintained by the permittee for the duration of the permit.

4. Storm Drain Marking – The permittee shall continue to stencil, imprint or otherwise mark storm water inlets to remind individuals that dumping non-storm water materials into the MS4 is prohibited.

All new or replaced storm water inlets shall have a cast or imprinted reminder that dumping non-storm water materials into the MS4 is prohibited. Stencils and other markings shall be re-applied as needed to maintain legibility.

5. Public School Education – The permittee shall make available to schools served by the MS4 and shall encourage the adoption of educational materials regarding storm water and its impact on water quality. Each school year the Public Works Department shall contact the appropriate school representatives to determine the status of the program, to ensure the material is still available for use in the classrooms and to determine if any changes should be made in the educational materials.

The educational materials shall be provided for the duration of the permit.

**B. Public Involvement and Participation**

The permittee shall continue implementing a public involvement and participation program that includes the following:

1. Public Meetings – Information and educational materials regarding storm water and its impact on water quality shall be made available to the City Council for presentation at ward meetings.

The information and educational materials shall be made available for the duration of the permit.

2. Citizen Utility Panel – The Public Works Department continue working with a citizen panel to allow those served by the MS4 to provide input concerning appropriate storm water management policies, best management practices and funding sources. Businessmen, developers, homeowners, members of environmental groups and members of the public at large shall be allowed to participate, if interested. However, the permittee may place reasonable limits on the total number of individuals participating in the group. The scope of an existing committee or panel may be expanded to address these issues if the composition of the existing group meets the above criteria.

The meetings shall be held at least once each calendar year and as needed for the duration of the permit.

3. The permittee shall continue to coordinate and work with water quality monitoring groups. The data from any analytical monitoring shall be made available to members of the public and to the Department upon request.

The permittee shall support water quality monitoring groups for the duration of the permit.

4. Public Notice Requirements - When implementing a public involvement and participation program, the permittee must comply with all state and local public notice requirements.

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C. Illicit Discharge Detection and Elimination

The permittee shall continue implementing and enforcing a discharge detection and elimination program that includes the following:

1. **Illicit Discharge Prohibition Ordinance** – An ordinance shall continue to be enforced and amended as necessary by the permittee that prohibits anything other than storm water, allowable non-storm water and pollutants for which an NPDES permit has been issued and when the discharge is in compliance with the permit from entering the MS4. The ordinance shall include language that enables the permittee to inspect private property if an illicit discharge is suspected and penalties for non-compliance.

The ordinance shall continue to be enforced by the permittee for the duration of the permit.

2. **Illicit Discharge Detection and Elimination Program** – A program shall continue to be implemented to identify and eliminate illicit discharge to the MS4. The program shall include annual dry weather flow inspections of all outfalls not already inspected since flows from newly developed or re-developed areas have been discharged from the outfalls, sampling and analyses of these dry weather flows, procedures to identify the sources of the dry weather flows and procedures for disconnecting illicit connections. Dry weather flow inspections may be made at manholes and other points prior to the flows joining larger portions of the MS4 to facilitate detection of illicit discharges. Records shall be kept of when inspections are performed, the results of the inspections and measures taken to identify and, when appropriate, eliminate the sources of any dry weather flows. The plan shall be evaluated annually to assess the effectiveness of the program and any necessary changes made. All illicit discharges found must be eliminated no more than 21 days after discovery. If it is not possible to eliminate an illicit discharge within 21 days of discovery, the permittee shall submit to the Department the reasons why the discharge cannot be eliminated within 21 days of discovery and a plan which contains a timeline of activities which will result in the elimination of the discharge. This statement and plan shall be submitted within 21 days of discovery of the illicit discharge. If the Department does not approve the plan, the permittee will then be required to eliminate the discharge no later than a date specified by the Department. All illicit discharges shall be reported to the Department no later than the end of the first business day after the day of the discovery.

The plan shall be implemented by the permittee for the duration of the permit.

3. **Employee Training** – The permittee shall continue to implement training programs as necessary for city employees to identify illicit discharges to the MS4 for the duration of the permit.

D. Construction Site Storm Water Runoff Control

The permittee shall continue implementing and enforcing a construction site storm water runoff control program to reduce pollutants in any storm water runoff from construction activities for which storm water permit coverage is required and that includes the following:

1. **Construction Site Runoff Control Ordinance** – An ordinance shall continue to be implemented and amended as needed and enforced on all sites for which NPDES permits are required that requires proper soil erosion and sediment control. This ordinance shall also address waste at construction sites that may cause adverse impacts to water quality such as building materials, concrete truck washout, chemicals, solid waste and sanitary waste. Authority to issue an order to terminate activities due to failure to implement or maintain pollution control BMPs, authority for the permittee to enter private property for the purposes of compliance inspections and penalties for non-compliance shall be included. The ordinance shall require site plan and pollution prevention plan review and approval by the permittee prior to issuance of any permits for the site by the permittee. The ordinance shall require compliance

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with the Department's Storm Water General Permit no. 2. City personnel shall ensure that all topsoil preservation requirements stipulated by General Permit no. 2 are implemented on those sites for which they are required.

The ordinance shall be enforced by the permittee for the duration of the permit.

2. Construction Site Review and Inspection Program - The permittee shall require site plan and pollution prevention plan review and approval by the permittee prior to issuance of any permits for the site by the permittee for construction activities for which an NPDES permit is required. The program shall require compliance with the Department's Storm Water General Permit no. 2 and inspections by the permittee of all sites for which coverage under General Permit no. 2 is required. The program shall require each of these sites be inspected by the permittee at least once each calendar quarter.

The program shall be implemented by the permittee for the duration of the permit.

E. Post-construction Storm Water Management

The permittee shall continue implementing and enforcing a program to address storm water runoff from new construction and re-construction projects for which storm water coverage is required. The program must ensure that controls are in place that will prevent or minimize water quality impacts and shall include the following:

1. Post - Construction Site Runoff Control Policy Ordinance - An ordinance shall continue to be implemented and amended as necessary which will address the control of runoff from building activities after construction has been completed. The ordinance shall require water quality and quantity components be considered in the design of new construction and implemented when practical. The ordinance shall promote the use of storm water detention, retention, infiltration, other Best Management Practices specific to each site which address water quality and quantity issues and proper operation and maintenance of these facilities.

The ordinance shall be implemented by the permittee for the duration of the permit.

2. Inspection of Runoff Control Devices - Storm water control devices and structures shall be inspected and reviewed for proper maintenance. Educational materials shall be developed and made available to landowners which outline proper maintenance procedures. The permittee shall properly maintain its own control devices and structures.

Inspections shall be conducted and educational materials shall be made available by the permittee for the duration of the permit.

3. Watershed Assessment Program - A watershed assessment program and comprehensive land use plan shall continue to be implemented which outlines measures to be implemented which reduce flooding, reduce erosion in ditches and streams, improve water quality and reduce degradation of habitat for fish and wildlife. The permittee shall then implement the program whenever possible to meet these goals.

The program shall be implemented by the permittee for the duration of the permit.

F. Pollution Prevention/Good Housekeeping

The permittee shall continue to implement an operation and maintenance program, including a training component, that shall prevent or reduce pollutant runoff from municipal operations and that shall include the following:

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1. Operation and Maintenance of MS4 - A program for inspecting, maintaining and cleaning all components of the MS4 including street sweeping shall continue to be implemented. All components of the MS4 shall be inspected at least once every five years and maintenance performed as appropriate

The program shall be implemented by the permittee for the duration of the permit.

2. Pesticide and Fertilizer Management Program – A pesticide and fertilizer management program shall continue to be implemented and enforced which shall reduce pollutant discharge associated with storage, application and disposal of pesticides and fertilizers for municipal operations. The program shall identify all entities that apply pesticides and fertilizers, require that application of these chemicals be applied by properly trained individuals, require training on management techniques addressing storage, application and disposal. Data regarding the application rates of pesticides and fertilizers shall be gathered and evaluated to determine if lower rates would be equally effective. Should it be determined that lower application rates would be equally or nearly as effective it shall be required that the lower rates be applied.

The program shall be implemented by the permittee for the duration of the permit.

3. Training Program for Municipal Employees – The permittee shall continue to implement a program for training municipal employees regarding practices to be implemented in city operations to reduce pollutants in storm water.

The program shall be implemented by the permittee for the duration of the permit.

4. City Facilities BMPs– A program shall continue to be implemented to assess BMPs at city facilities to be implemented that reduce pollutants in storm water from these facilities. These measures shall then be implemented whenever practical.

The program shall be implemented by the permittee for the duration of the permit.

### PART III. REPORTING REQUIREMENTS

#### Annual Report

The permittee shall prepare an annual report to be submitted to the Department no later than May 31 of each calendar year. The report shall be submitted to the appropriate Department field office and shall include the following:

1. The status of implementing the components of this permit. Any modifications developed by the permittee and approved by the Department or required by the Department shall also be addressed.
2. A summary of the data, including monitoring data, that is generated within the reporting period including a narrative description of storm water quality improvements or degradation.
3. An estimate of the previous fiscal year's expenditures for implementation of the requirements of this permit and the budget for the current fiscal year.
4. A summary describing the number and nature of inspections, enforcement actions, illicit discharges discovered, ordinances adopted, public education programs conducted, components of the MS4 cleaned, stream restoration activities, meetings held and any other actions taken by the permittee required by this permit during the reporting period.

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#### PART IV. SPECIAL CONDITIONS

Only storm water, allowable non-storm water, and pollutants for which an NPDES permit has been issued and when the discharge is in compliance with the permit, are allowed to be discharged to the MS4. The permittee shall not have nor allow any discharge of pollutants from a site, facility or source for which an NPDES permit is required unless an NPDES permit has been issued for the discharge. Upon discovery of any unpermitted discharge for which a permit is required or, if an NPDES permit has been issued for the discharge, a discharge not in compliance with the permit, the permittee shall report the discharge to the Department no later than the end of the next business day after the discharge is discovered. Floor drains and other potential sources of pollutants shall be considered discharges even if no actual pollutants have been observed entering the MS4 from such a source.

The permittee is prohibited from issuing any permit, authorization or license allowing any construction, excavating, clearing, grubbing, or any other soil disturbing activity and is prohibited from allowing a person, persons, company, political unit or other entity, public or private, from doing same for which, in whole or as part of another project, coverage under an NPDES permit is required without first ensuring that a storm water authorization from the Department has been issued for the activity.

A construction site inspection program shall continue to be implemented for construction projects owned or operated by the permittee that include areas of soil disturbance for which NPDES permits are required. The inspection program shall be used to ensure that contractors are correctly implementing BMPs which have been approved in the pollution prevention plan and any additional necessary measures. The program shall require inspections by the permittee at least every 7 days and include any other provisions necessary to ensure compliance by contractors with the storm water General Permit no. 2. Inspections made by the permittee that satisfy the requirements of General Permit no. 2 may be used to satisfy the requirements of this permit.

A map of all outfalls of the MS4 shall be maintained for the duration of this permit.

All salt storage shall be in a structure impervious to precipitation and any spillage due to handling activities in an area subject to runoff shall be immediately removed.

The permittee may directly place snow, free of trash, into or onto a Water of the State.

The manner in which actions required by this permit are accomplished by the permittee is subject to review and approval by the Department. Should the Department give notice to the permittee that the approach used by the permittee to comply with any permit provision is unacceptable, the permittee must modify its approach as required in order to be considered in compliance with the permit.

#### PART V. STANDARD CONDITIONS

##### A. Permittee's Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. Issuance of this permit does not relieve the permittee of the responsibility to comply with all local, state and federal laws, ordinances, regulations or other legal requirements applying to the operation of your facility (see 40 CFR 122.41(a) and 567-64.3(11) IAC).

##### B. Duty to Provide Information

The permittee shall furnish to the Department, within a time specified by the Department, any information that the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this

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permit or to determine compliance with this permit. The permittee must also furnish to the Department, upon request, copies of any records required to be kept by this permit.

C. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Signatory Requirements

Storm Water Pollution Prevention Plans, reports, certifications or information either submitted to the Department or that this permit requires be maintained by the permittee, shall be signed as follows:

For a municipality, State, Federal, or other public facility: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes 1) the chief executive officer of the agency, or 2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

Certification Any person signing documents shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

E. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

F. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

G. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

H. State/Environmental Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes, regulations or permits.

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I. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by the permittee only when necessary to achieve compliance with the conditions of the permit.

J. Inspection and Entry

The permittee shall allow the Department, an authorized representative or an authorized representative of the municipal operator of the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to: enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit; have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; inspect at reasonable times any facilities or equipment (including monitoring and control equipment); and to sample any discharge of pollutants.

K. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or discontinuance, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. This permit may be modified due to conditions or information on which this permit is based, including any new standard the Department may adopt that would change the required effluent limits.

L. Potential or Realized Impacts on Water Quality

If there is evidence indicating potential or realized impacts on water quality or on a listed endangered species due to any storm water discharge associated with industrial activity covered by this permit, the permit shall be modified to include different limitations and/or requirements of the Pollution Prevention Plan and its implementation.

M. Failure to submit fees

This permit may be revoked, in whole or in part, if the appropriate permit fees are not submitted within sixty (60) days of the date of notification that such fees are due.

N. Penalties For Violations of Permit Conditions

Section 309 of the CWA provides significant penalties for a person(s) who violates a permit condition implementing Section 301, 302, 306, 307, 318, or 405 of the CWA, or any permit condition or limitation implementing any such sections in a permit issued under Section 402. Any person(s) who violates any condition of this permit is subject to a civil penalty not to exceed \$25,000 per day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

PART VI. DEFINITIONS

1. Allowable Non-Storm Water means: discharges from fire fighting activities, fire hydrant flushings, potable water sources, waterline flushings, uncontaminated groundwater, foundation or footing drains where flows are not contaminated with process materials such as solvents, springs, riparian habitats, wetlands, irrigation water, air conditioning condensate, exterior building washwater when no detergents or other surfactants are used and

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pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred and when no detergents or other surfactants are used.

2. Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
3. Calendar Quarter means each of the following periods: December thru February, March thru May, June thru August and September thru November.
4. CWA means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972).
5. Department means the Iowa Department of Natural Resources (IDNR) or an authorized representative.
6. Discharge means the release of water and any elements, compounds and particles contained within or upon, from property owned or controlled by an individual, individuals, or entity.
7. Facility means any entity which discharges storm water.
8. Municipal separate storm sewer system means the conveyance or system of conveyances including storm sewers, roadways, roads with drainage systems, catch basins, curbs, gutters, ditches, constructed channels and storm drains owned or operated by the permittee.
9. Permittee means the City of Davenport.
10. Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.
11. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.
12. Storm water means storm water runoff, snow melt runoff, snow and surface runoff and drainage.
13. Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program. For the categories of industries identified in paragraphs (i) through (x) of this definition, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at 40 CFR Part 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph (xi) of this definition, the term includes only storm water discharges from all areas (except access roads and rail lines) listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate

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from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs (i) to (xi) of this definition) include those facilities designated under 122.26(a)(1)(v). The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection.

- (i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards that are exempted under category (xi) of this definition);
- (ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;
- (iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(l) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;
- (iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;
- (v) Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under Subtitle D of RCRA;
- (vi) Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;
- (vii) Steam electric power generating facilities, including coal handling sites;
- (viii) Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (i) to (vii) or (ix) to (xi) of this subsection are associated with industrial activity;
- (ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with 40 CFR Part 503;
- (x) Construction activity including clearing, grading and excavation activities that result in the disturbance of 1 acre or more of total land area or which result in the disturbance of less than 1 acre but are part of a larger common plan of development or sale of 1 acre or more;

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(xi) Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (i) to (x)).

14. Waters of the State means any river, stream, lake, pond, marsh, watercourse, waterway, well, spring, reservoir, aquifer, irrigation system, drainage system and any other body or accumulation of water, surface or underground, natural or artificial, public or private, which are contained within, flow through or border upon the state or any portion thereof.

**Appendix B: City of Davenport Stormwater Management and Drainage Utility  
Credit Manual for Non-Residential Customers**



**City of Davenport**  
**Stormwater Management and Drainage**  
**Utility**  
**Credit Manual**  
**For**  
**Non-Residential Customers**

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# **STORMWATER UTILITY FEE CREDIT POLICY**

## **For**

### **NON-RESIDENTIAL CUSTOMERS**

#### **1.0. Purpose**

The City has adopted a Stormwater Management and Drainage Systems Utility to provide stable and equitable funding for its stormwater management activities. The impact of individual properties on the stormwater system is based on the amount of impervious area on a parcel of property. The stormwater utility fee does not take into account the value provided by some property owners that independently implement and maintain Best Management Practices (BMPs) that offset, to some extent, the impacts of their developed property on the natural and constructed components of the City's stormwater management system. Using a credit process, the city may make an adjustment to the fee based on eligible non-residential value-added stormwater management services that support and complement the City's Stormwater management program.

The City recognizes the intrinsic value of a variety of significant stormwater management activities provided by non-residential customers. Viable credit applications will result in the reduction of an applicant's fee for as long as the approved activities accomplish their intended purposes. The per-parcel adjusted fee may not be reduced below the residential customer fee.

The manual establishes eligibility criteria and the application procedure which determines the amount of credit due to providers of these benefits. At a future date, the City may undertake the creation of an incentive program for residential customers who implement significant Stormwater management practices in support of the city's stormwater management goals.

#### **2.0. Stormwater Management Overview**

As Davenport grows and the amount of impervious surface increases, the ability of land to naturally absorb rain and snow melt decreases causing increases in the volume of stormwater and the discharge rate. Urban activities also increase the potential for surface and ground water pollution. Because of this, the City must thoughtfully and intentionally manage stormwater to:

- Reduce the potential for property damage by providing adequate conveyance of stormwater through constructed and natural pipes and channels,
- Address increases in the discharge rates and volumes of stormwater, and
- Reduce pollutant loading and protect the quality of our water resources through stormwater treatment and pollution prevention activities.

All city residents, businesses, and visitors benefit from the city's stormwater management activities that achieve these objectives.

In June, 2004, the City received NPDES MS4 permit number 82-22-0-05. The goal of the permit is to maintain and improve the chemical, biological, and physical health of the waters of the state. The permit was re-issued in July, 2009.

The City has adopted a Stormwater Utility to provide funding for its stormwater management activities. The city has taken into account the storm sewer system, past methods of recovering stormwater management facility costs, the geophysical setting of the city, NPDES MS4 permit requirements, and other relevant factors, to determine that the amount of impervious area a property has on the water quality, quantity, and conveyance impacts on the Davenport stormwater

management and drainage system. The city has decided that impervious area is the most equitable factor to determine an individual property owner's share should be for the availability, use, benefit and protection of the system.

Important stormwater management activities funded by the fee include:

- Planning and ordinance development
- Ordinance enforcement
- Response to citizen inquiries, violations reports, and complaints
- Education about pollution prevention techniques to improve stormwater quality
- Public participation opportunities
- Detection and elimination of illicit discharges to the stormwater system
- Storm sewer system mapping
- Grading and drainage plan review and approval
- Construction site inspection for stormwater pollution prevention and erosion control
- Water quality/quantity control structure design, construction, and as built functionality
- Stabilization of highly erodible creeks and other drainage-ways
- Storm sewer, catch basin, and outfall inspection, maintenance, and replacement
- Street sweeping and system cleaning
- Materials management to reduce exposure to stormwater, and IPM programs
- Record keeping and report preparation

All owners of developed property will contribute to the stormwater utility to fund these activities.

### 3.0. Definitions

Definitions only pertain to this credit manual. Ordinance definitions take precedence over definitions in this manual for stormwater issues.

**Credit** - a conditional reduction in the amount of the fee to an individual eligible non-residential property based on the provision of and continuing presence of an effectively maintained and operated structural best management practice or the continuing provision of a service or activity by a property owner, which system, facility, service, or activity reduces the City's cost of providing stormwater management services or facilities according to the provisions of the credit manual.

**Developed** - real property that has been altered from its natural state by the addition to or construction of impervious area on all or part thereof.

**Impervious Area** - a surface area that is compacted or covered with material that is resistant to the infiltration of water, including but not limited to, most conventionally surfaced roadways, roofs, sidewalks, patios, driveways, parking lots, and any other oiled, graveled, graded, compacted, or other surface which impedes the natural infiltration of water.

**Non-Residential Parcels** - all parcels other than undeveloped and residential parcels.

**Non-Structural Best Management Practices** - services or activities that help reduce the quantity and improve the quality of storm runoff.

**Property Owner** - any partnership, corporation or any person who (alone, jointly or severally with others) has:

- A. legal title to any tangible or intangible real, personal or mixed property, with or without accompanying actual possession thereof; or
- B. has charge, care or control of any dwelling as owner or agent of the owner, or as executor, administrator, trustee, or guardian of the estate of the owner.

Any such partnership, corporation or person representing the actual owner shall be bound to comply with the provisions of this chapter to the same extent as if they were the owner.

**Residential Parcels** - any parcel containing a single-family home or a duplex home.

**Site** – For the purposes of this Manual, a Site may be a single parcel or a combination of contiguous and adjacent parcels that are hydrologically connected. In the case of multi-parcel Sites, Fee Credits will be proportionally allocated to each affected parcel.

**Storm Sewer System or Stormwater Management Facilities** - a system of storm and surface water management facilities including, but not limited to: drains, inlets, catch basins, storm sewers, manholes, outfalls, channels, ditches, drainage easements, retention and detention basins and ponds, infiltration facilities, or any other constructed or natural features utilized to convey and/or treat surface water, stormwater or snowmelt.

**Stormwater Utility Fee (“Fee”)** - the monthly Fee applied to developed residential and non-residential parcels with impervious areas to assist in implementing the City’s Stormwater Program.

**Stormwater Utility Fund (“Fund”)** - the dedicated fund used solely to operate, maintain, and improve the City’s storm sewer system and to implement the Stormwater Management Program.

**Stormwater Management Program (“Program”)** - the planning, design, construction, inspection, regulation, improvement, repair, maintenance, and operation of Stormwater management facilities and the implementation of programs related to the management of Stormwater, such as, but not limited to: Stormwater education and public participation, water quality protection, drainage, grading and erosion control, pollution prevention, and illicit discharge detection and elimination. The Program incorporates the Davenport Comprehensive Stormwater Management Plan by reference.

**Structural Best Management Practices** - structural improvements that help reduce the quantity (rates and/or volumes) and improve the quality of Stormwater runoff.

**Undeveloped Parcels** - a parcel of real property is considered undeveloped for the purpose of charging a Fee if it has an inconsequential amount of impervious area and has established vegetative cover.

**Water** - for the purposes of Stormwater management, water means Stormwater, surface water or snowmelt.

## Common Structural Best Management Practices

<p><b>Infiltration systems</b> - capture a volume of runoff and infiltrate it into the ground.</p>
<p><b>Extended dry detention systems</b> - capture a volume of runoff and temporarily detain (withhold) that volume for subsequent release. Traditional detention systems do not retain a significant permanent pool of water between runoff events. Detention systems do not reduce the total volume of surface runoff from a storm event since the entire captured volume is eventually released after the period of detention. The main goal of traditional detention systems is to reduce the peak discharge rate to the downstream conveyance. A variant of the traditional dry detention basin is designed as an “extended dry detention pond” providing 24-48 hours of holding time for the runoff from the water quality design storm.</p>
<p><b>Wet-detention systems</b> - (stormwater ponds) capture a volume of runoff and retain that volume until it is displaced in part or in total by the next runoff event. These systems are better defined as “extended detention” or “wet pond” systems since the runoff volume is eventually released to the downstream conveyance after an extended period of storage (usually 24-48 hours). A true retention system would <i>permanently</i> retain all or part of the captured runoff volume and prevent its release to the downstream conveyance. The retained volume is either lost to evaporation, infiltrated into the soil profile and then to the water table, or is subsequently withdrawn for consumptive non-potable re-use. These systems typically maintain a significant permanent pool volume of water between runoff events.</p>
<p><b>Constructed wetland systems</b> - stormwater wetlands are similar to detention systems, except that a major portion of the BMP water surface area (in pond systems) or bottom (in shallow marsh-type systems) contains wetland vegetation. This group also includes wetland channels.</p>
<p><b>Filtration systems</b> - use some combination of a granular filtration media such as sand, soil, organic material, carbon, or a membrane to remove constituents found in runoff.</p>
<p><b>Vegetated systems (biofilters)</b> - such as swales and filter strips are designed to convey and treat either shallow flow (swales) or sheet flow (filter strips) runoff.</p>
<p><b>Minimizing directly connected impervious areas (DCIA)</b> - describes a variety of practices that can be used to reduce the amount of surface area directly connected to the storm drainage system by minimizing or eliminating traditional curb and gutter. This is considered by some to be a nonstructural practice, but it has been included under the structural heading due to the need to design and construct alternative conveyance and treatment options.</p>
<p><b>Miscellaneous and vendor-supplied systems</b> - include a variety of proprietary and miscellaneous systems that do not fit under any of the above categories. These include catch basin inserts, hydrodynamic devices, and filtration devices.</p>

## 4.0 Credit Structure

### 4.1 Restrictions

- a. No public or private property shall receive credit to offset fees for any condition or activity unrelated to the city’s cost of providing stormwater management services.
- b. No Credit will be applied that reduces the stormwater fee to an amount less than the residential fee.
- c. Credits will not be given for drainage easements.

## 4.2 Terms

- a. Once the credit application has been approved, a credit will be applied to the fee for the site parcel(s) retroactively to the date of approval if requirements outlined in this manual are met, including, but not limited to: completion of on-going maintenance, guaranteed right-of-entry for inspections and submittal of annual self-reports by January 31<sup>st</sup> of each year.
- b. Credits will be defined as reduction applied to the fee calculation equation.
- c. Credits are additive for each credit category described in Sections 4.3 – 4.6
- d. As long as the BMPs are functioning as approved and as demonstrated by the submitted self-reports and city inspections, the credit reduction will be applied to the stormwater fee. If the approved practice is not functioning as approved or is terminated, the credit reduction will be canceled and the fee will return to the baseline calculation. Once the credit reduction has been canceled, a customer may not reapply for credit for a twelve month period and only if the deficiency has been corrected, as determined by city inspection.

## 4.3 Integrated Non-Structural BMP Program Credit

Stormwater Best Management Practices (BMPs) are designed to remove pollutants from urban runoff, improve water quality, and control quantity before the water reaches our streams and drinking water supply reservoirs.

Non-structural BMPs may include such practices as minimizing impervious area for site development, providing vegetative buffers along all streams and waterways, promoting natural infiltration of runoff before it enters a receiving stream, pollution prevention practices such as regular sweeping of parking lots, and public environmental outreach programs.

Credits may be issued for a site with ongoing implementation of an integrated suite of fundamental non-structural BMPs that will help the city meet its permit objectives and prevent pollution. Documentation must be provided verifying that each of the following criteria have been met to receive up to 50 points toward a credit adjustment as applied to the Fee calculation equation:

- Criteria 4.3.1: Educational Program 10 points
- Criteria 4.3.2: Waste Reduction and Pollution Prevention Program 12 points
- Criteria 4.3.3: On-Site Stormwater System Maintenance & Cleaning Program 12 points
- Criteria 4.3.4: Sanitary Sewer/Storm Sewer Cross-Connection Inventory 1 point
- Criteria 4.3.5: Other Non-Structural Credits 15 points

If any criteria are not applicable to an applicant's property or land use, the applicant should use NA on the application. Upon completion of a Stormwater Credit Application, application approval, and satisfactory on-site, a credit may be applied. All requests will be reviewed on an individual basis with findings of the review transmitted back to the customer within sixty (60) days of receipt.

### 4.3.1 Educational Program

Non-residential customers who wish to receive credit for an education program in the area of water quality awareness and protection may find a list of qualifying educational materials on the city's stormwater resources web site: <http://www.cityofdavenportiowa.com/departments/index.php?fDD=49-0> specific to their audience. Applicants must agree to meet the following minimum standards for a maximum credit of 10 points:

- a. Employee training: Devote fifteen minutes per quarter (or an hour annually) to educating organizational personnel about water quality awareness and pollution prevention. Additionally, provide basic stormwater management information to new employees. Organizations will be required to submit descriptions of the environmental education sessions that will include information concerning number of attendees, time(s), place(s), and topic(s) covered during each session along with confirmation that a 50% employee participation goal was met. Pre-and post-session surveys will be required. Topics must rotate on at least an annual basis.
- b. Facility Postings: Post the stormwater and water quality-specific educational information in clearly visible, employee frequented areas. Topics must rotate on at least an annual basis. Provide copies of posted materials to Davenport Public Works.
- c. Alternatively, non-residential customers that wish to receive credit for water quality awareness and protection education must agree to meet one of the following minimum standards: Disseminate stormwater and water quality-specific information to customers on a quarterly basis using high traffic area kiosks, advertised special events, customer mailings, product label advertisements, public service announcements, ads, educational curricula, or other mass distribution techniques. Topics must rotate on an annual basis. Copies of disseminated materials must be provided to Davenport Public Works along with a count of customers reached.

#### **4.3.2 Waste Reduction & Pollution Prevention Program**

The following minimum criteria must be satisfied to receive credit for a waste reduction and pollution prevention program (maximum 12 points).

- a. Schedule a pollution prevention assessment with the Iowa Pollution Prevention Services [www.iowap2services.com](http://www.iowap2services.com) or 515-281-5353. Provide proof of implementation of recommendations. (3 points)
- b. Initiate and maintain a solid waste recycling program that meets the Waste Commission of Scott County's minimum recycling recommendations and provide a copy of the company's program to Davenport Public Works. (2 points)
- c. Keep refuse containers and other materials storage covered to eliminate exposure to wind, rain, and snow and where possible, place refuse containers in areas that do not drain to storm drains.(2 points)
- d. Provide documentation to confirm disposal of the generator's used oil at used oil recycling sites (i.e., waste oil generated on-site by the property owner) and display the Waste Commission of Scott County's current list of used oil recycling sites in clearly visible and publicly frequented locations. (2 points)
- e. Develop a landscape maintenance plan for properties with landscaped areas, utilizing lawn and garden practices that infiltrate Stormwater and prevent pollution. Provide a copy of the landscape management plan to the Natural Resources Division of Davenport Public Works including proof of implementation. For information contact Scott County Extension Services at 563-359-7577 or their website: <http://www.extension.iastate.edu/scott/news/> (3 points)

### **4.3.3 On-Site Stormwater System Maintenance & Cleaning Program**

In order to receive credit for the On-Site Stormwater System Maintenance and Cleaning Program, a detailed management plan for maintaining on-site (non-public right-of-way) stormwater drainage structures and/or a paved area sweeping program must be submitted along with documentation that the planned activities were completed to obtain a maximum of 12 points towards a credit. The management plan must address the following drainage structures and paved area sweeping, where applicable:

- a. Building rain gutters – must be directed to vegetated areas wherever possible and cleaned at least annually. (2 points)
- b. Catch basins – must be cleaned of litter, debris, and sediment at least twice per year. (2 points)
- c. Stormwater outfalls to private ditches, ravines, or creeks on private land – must be cleaned at least twice per year. (2 points)
- d. Curb and gutter – must be cleaned at least four times per year. (2 points)
- e. Paved areas – A detailed paved area sweeping plan must be submitted which includes definition of areas to be swept, frequency of sweeping (a minimum of twice per month from April through October), and type of sweeper used and documentation of employee timesheets and/or invoice from the company providing the service. (4 points)

### **4.3.4 Sanitary Sewer/Storm Cross-Connection Inventory Program**

The following minimum criteria must be satisfied to receive Credit for the Sanitary Sewer/Storm Sewer Cross-Connection Inventory Program for 1 point credit:

- a. Conduct a visual building and grounds survey to identify and inventory the locations of all sanitary and storm sewer connection points. Provide building and Site plans to Davenport Public Works that document the locations of all sanitary sewer and storm sewer connection points and sanitary and storm sewer line locations on a parcel of property.

**NOTE:** If instances are found where sanitary sewage plumbing is connected to a storm sewer, the cross connection must be eliminated within twenty (20) days per the City's NPDES permit and legal authority.

### **4.3.5 Other Non-Structural BMP Credit**

Non-residential customers may have unique opportunities or approaches to improving water quality. Up to 15 points of credit are available. For instance:

- a. The Iowa Department of Natural Resources, on behalf of the EPA, requires certain types of industry to obtain and comply with an NPDES Industrial Stormwater Permit to manage and monitor stormwater run-off from industrial sites. When an NPDES Stormwater Permit issued to a non-residential customer requires the specified industry to conduct water quality monitoring, they may be eligible for a maximum 5 point credit if documentation shows how the permitted discharges are providing a positive impact and value that complements the city's stormwater management system goals. At a minimum, water quality results, discharge volumes, rates, and frequency must be provided. The amount of Credit will be determined on a case-by-case basis. (5 points)

- b. Provide "Park and Ride" space or transit pullout lanes and transit shelters, to encourage use of the transit system, thereby minimizing the growth of impervious area by reducing the need for additional parking lots and travel lanes on roadways. (5 points)
- c. Provide sponsorship and/or in-kind services to the city or local organizations providing community watershed education or pollution prevention activities. The list of qualifying sponsorship opportunities is on the City of Davenport's Stormwater Resources web site which may be linked here: <http://www.cityofdavenportiowa.com/departments/division.php?fDD=49-470> (5 points)

#### **4.4 Post-Construction (Permanent) Stormwater Structural BMP Credit**

Stormwater BMPs are designed to remove pollutants from urban runoff, improve water quality, and control quantity before the water reaches our streams and drinking water supply reservoirs.

Stormwater BMPs offer both "non-structural" and "structural" approaches to water quality protection. Structural BMPs are permanent devices, which are designed, constructed, and maintained to remove pollutants from runoff. While it is important to note that structural BMPs are only one part of a comprehensive watershed management plan, they play a critical role in protecting water quality in our receiving streams and lakes by removing or filtering out pollutants in runoff. Without these constructed devices, pollutants in urban runoff would directly enter the closest stream or lake, possibly impair downstream water quality or aquatic life, and also degrade the quality of our drinking water reservoirs.

A fee credit of up to 70 points will be allowed if stormwater runoff generated on-site is directed through an engineered and constructed stormwater best management practice (BMP) that manages the stormwater at either the point of generation or the point of discharge to either the storm sewer system or to receiving waters. Credits for on-site stormwater facilities shall be generally proportional to the benefit that such systems have on complementing or enhancing the water quality benefit to the city's stormwater management system.

Property access, adequate and routine facility maintenance, and self-reporting must be provided by the property owner to the city to verify that the BMP structure is providing its intended benefit in order to receive the credit reduction as applied to the fee calculation equation. The actual percentage received will be determined through an evaluation of the system benefits provided at the time stormwater leaves the customer's property. BMPs may provide a single benefit or a combination of benefits, in which case credits will be additive.

Descriptions of commonly-used BMPs, along with important factors for design, advantages, disadvantages, and maintenance considerations for each BMP can be found at <http://www.iowadnr.gov/Environment/WaterQuality/WatershedImprovement/WatershedBasics/Stormwater.aspx> which is Part 2D of the Iowa Stormwater Management Manual. BMP structural controls must be designed in accordance with criteria as outlined in that manual or from the EPA's National Menu of BMPs website located at: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/>.

Any other water quality structural control system will be considered on a case-by-case basis. Plans and design calculations are required for consideration of credits for all water quality protection control systems, including those listed in Table 4.4. Plans shall be prepared by a

qualified, licensed professional. Design calculations shall include an estimate of pollutant removal capabilities based on The International Stormwater Best Management Practices (BMP) Database Analysis of Treatment Performance website located at: <http://www.bmpdatabase.org/Docs/Performance%20Summary%20June%202008.pdf> along with a schematic design of the proposed system. Innovative solutions addressing stormwater quality treatment are welcomed. As technologies emerge and are approved by the Iowa Stormwater Management Manual or other reputable design/regulatory agency, they will also be considered for credit.

The amount of Credit will be calculated using the equation shown in the Credit application (see Appendix A), with a maximum Credit of 70 points. The property owner must complete and submit for acceptance data that quantifies and demonstrates the achievement of water quality goals. This documentation must be prepared by a qualified, licensed professional and be accompanied by testing, modeling, design, and/or construction data that substantiates the amount and type of pollutant removal being claimed.

#### **4.4.1 Stormwater Run-Off Rate Reduction Structural Controls Credit**

When permanent stormwater detention facilities are constructed in accordance with Davenport Municipal Code Chapter 13.34 Stormwater Management Section III Stormwater Detention Facilities, they will be eligible for a Fee Credit up to 30 points.

Credits for run-off rate reduction controls will be based upon hydrologic data, design specifications, and other pertinent data supplied by qualified, licensed professionals on behalf of property owners. Credits for on-site stormwater facilities shall be generally proportional to the benefit that such systems have on complementing or enhancing the water quantity benefit to the city's stormwater management system. Property access, adequate and routine facility maintenance, and self-reporting must be provided by the property owner to the city to verify that the structure is providing its intended benefit in order to receive credit reduction as applied to the fee calculation equation. Structures may provide a single benefit or a combination of benefits, in which case credits will be additive.

The credit will be applied for detention basins constructed in accordance with Table 4.4.1. The property owner must complete and submit for acceptance data that quantifies and demonstrates the achievement of water rate run-off goals. This documentation must be prepared by a qualified, licensed professional.

**Table 4.4.1  
Run-Off Rate Criteria**

Properties subject to Section 13.34 Detention Requirements shall utilize a maximum allowable release rate from a 2-year storm to determine the required detention storage (RDS) for the critical storm to receive credit.
Properties not subject to Section 13.34 Detention Requirements shall utilize a maximum allowable release rate from a 5-year storm to determine the RDS for the critical storm to receive credit.

Partial credit can be given for older detention structures that are maintained in good working order. If the detention structure controls the discharge peak from the site such that at a minimum the post-development 10 year, 24-hour storm peak flow is equal to or less than the pre-development discharge at the outlet of the site, a ten (10) point credit may be given. Other designs will be considered on a case by case basis.

#### 4.4.2 Stormwater Runoff Quality Management Credits

Credits are available for properties addressing the key adverse water quality impacts of stormwater runoff from a developed site using an integrated design approach and the Unified Sizing Criteria found in the Iowa Stormwater Management Manual (see Table 4.4.2). When used as a set, the unified criteria control the entire range of hydrologic events, from the smallest runoff producing rainfalls ( $\geq 0.1$ -inches) to the 100 year storm.

**Table 4.4.2  
Unified Sizing Criteria**

<p><b>Water Quality Volume WQv (acre-feet)</b></p>	<p>Treat the runoff from 90% of the storms that occur in an average year. For Iowa, this equates to providing water quality treatment for the runoff resulting from a rainfall depth of 1.25 inches or less. Goal is to reduce average annual Post-development total suspended solids loadings by 80%.  <math>WQ_v = (R_v)(A)(P)/12</math>  <math>R_v</math> = site runoff volume coefficient  <math>A</math> = site drainage area (acres)  <math>P</math> = design rainfall depth (90% cumulative frequency depth) (~ 1.25 inches)</p>
<p><b>Channel Protection Storage Volume Cpv</b></p>	<p>Provide 24 hours of extended detention of the runoff from the 1-year 24-hr duration storm event to reduce bank-full flows and protect downstream channels from erosive velocities and unstable conditions.</p>
<p><b>Overbank Flood Protection Qp</b></p>	<p>Provide peak discharge control of the 5-year storm event such that the post-development peak rate does not exceed the downstream conveyance capacity and/or cause overbank flooding in local urban watersheds.</p>

**Water Quality Volume Credit** (up to 40 points for meeting design criteria)

Controls on the property must provide bacteria reduction of 80% and provide 100% retention, infiltration, or abstraction of the water quality volume ( $WQ_v$ ). No partial credit is given for lesser reductions. However, credit can be given for that part of the site that is adequately treated by stormwater quality structural controls meeting the requirement goals even if the whole site does not meet the goal. The credit will be prorated based on the proportion of the impervious area treated compared to the total site impervious area.

**Channel Protection Credit** (5 points for meeting design criteria)

Controls on the property must capture and meter out the discharge volume from the 1-year 24-hour storm ( $CP_v$ ) over a period of 24-hours. No partial credit is given for lesser reductions or for partial site reductions. If this design requirement is waived on a particular property no credit is available.

**Overbank Protection (Detention) Credit** (up to 5 points for meeting design criteria)

Controls on the property must reduce the peak flow discharge from the 25-year, 24-hour storm,  $Q_{p25}$ , (2- through 25-year storms if there is no channel protection controls) such that the post-development peak flow is equal to or less than the pre-development discharge at the outlet of the site and to the ten-percent point downstream.

#### 4.5 Example Fee Recalculation

The non-structural credit options listed in section 4.3 have a maximum additive credit capacity of 50 points. The structural credit options in section 4.4 have the maximum additive credit capacity of 70 points. The total additive credit is then multiplied by the eligible budget percent of .60 to determine the final credit applied to the eligible parcels. As an example of how a fee credit would be applied, imagine a parcel that receives the following Credits:

**Non-Structural Credits**

4.3.1 Educational Program	8pts. (max 10pts.)
4.3.2 Waste Reduction and Pollution Prevention Program	10pts. (max 12pts.)
4.3.3 On-Site Stormwater System Maintenance & Cleaning Program	12pts. (max 12pts.)
4.3.4 Sanitary Sewer/Storm Sewer Cross-Connection Inventory	0pts. (max 1pts.)
4.3.5 Other Non-Structural Credits	<u>10pts. (max 15pts.)</u>
<b>Total Non-Structural Credits</b>	<b>40pts. (max 50pts)</b>

**Structural Credits**

4.4.1 Stormwater Run-Off Rate Reduction Controls	30pts. (max 30pts.)
4.4.2 Stormwater Run-Off Quality Management BMP Credit	<u>15pts. (max 40pts.)</u>
<b>Total Structural Credits</b>	<b>45pts. (max 70pts)</b>

**TOTAL STORMWATER CREDIT**

**85 points**

To determine final credit  $85\text{pts.} \times .60 = 51\%$ . This determination is based on the current five year budget of which 60% of the budget can be positively impacted by the BMPs that are measured for credit.

To determine the example Fee, assume a parcel has 1,268,091 square feet of impervious area. The yearly fee would be calculated as follows:  $1,268,091 \div 2,600 = 488 \text{ ERU's} \times \$2.35 = \$1,146.80 \times 12 = \$13,761.60$  yearly fee.

Assuming documentation has been provided to prove that all the program criteria described in the manual have been and continue to be met, this example customer would receive a credit of 51%, changing the equation to:  $\text{fee} = \$1,146.80 \times (.51) = \$584.87$  savings per month which represents a total annual savings of \$7,018.44

**5.0 Application Procedures**

A property owner must comply with the procedures outlined in this manual when submitting a credit application. All information necessary for the Public Works Director to make a determination on a request for credit must be supplied, as outlined in the manual and the credit application. Failure to comply with the procedures outlined in the manual will result in a denial of the Credit application.

In cases requiring a hydrologic analysis, a qualified professional engineer registered in the State of Iowa must prepare and certify the documentation provided to verify the hydrologic benefit.

## **6.0 Review Process and Credit Implementation**

The Public Works Director or designated agent will review credit applications within sixty (60) days of receipt. Once the application is complete and contains all information necessary for review and determination of the credit, a determination of the credit will be simultaneously mailed to the applicant and to the Davenport Finance Department for account adjustment. Adjustments of fees shall be made retroactive for the time period that the service was in place; however an adjustment of no more than the previous six monthly billing cycles (based on the date the credit application is received by the city).

Appeals of credit decisions may be brought to the Davenport City Administrator by sending a formal written request for appeal of stormwater credit to the City Clerk. If the City Administrator awards an alternate credit determination, adjustments of fees shall be made retroactive for the time period that the service was in place; however, an adjustment of no more than the previous six monthly billing cycles (based on the date the credit application is first received by the city).

Questions on the credit policy may be directed to the City of Davenport Public Works Department Natural Resources Manager (563) 326-7923.

## **7.0 Enforcement Policy**

As long as the private property owner's structural and/or non-structural BMPs are functioning as approved, the credit reduction will be applied to the fee. The City reserves the right to inspect structural BMPs practices and review documentation confirming the provision of non-structural BMPs at any time. Self-reports will be required every January 31<sup>st</sup> to document service provision for the preceding calendar year. If the self-reports are incomplete or are not submitted to the city by the required date, the property shall be considered to be in non-compliance with the credit program requirements. Non-compliant properties will lose the credit benefit for all credit options and the property will be ineligible to reapply for any credit for a period of twelve (12) months. The first reporting year will be designated with the verification of the determined credits.

The city reserves the right at any time to review the credit application for accuracy and/or inspect the site for compliance. If, after its review or inspection, the city finds the application to be inaccurate or the projected level of service is not being achieved, the customer will be notified in writing and given 45 days to correct the issue. The property owner must provide written documentation to the Natural Resources Manager within forty-five (45) days of the original notice by the city that the structural BMP is now meeting its operational and design specifications or the non-structural BMP is being provided as agreed. The credit will be terminated on the following billing cycle if the discrepancy is not corrected.

All structural water quality control systems may require, at the request of the city and at no cost to the city, periodic certified laboratory water quality sampling and reporting to insure that water quality standards are being met.

If the approved BMP is not functioning as approved or is terminated, the corresponding credit reduction will be canceled and the fee will be increased accordingly. Once the credit reduction has been canceled, a customer may not reapply for that particular credit for a period of twelve (12) months and only if the deficiency has been corrected, as determined by city inspection. It will be the responsibility of the customer to prove the stormwater management goals are met prior to the credit being reissued.

## 8.0 Stormwater Credit Application

(Please Print or Type)

### PART I. GENERAL INFORMATION

1. City of Davenport Utility Billing Account Number: \_\_\_\_\_
2. Customer Contact Name/Title, Address, Phone #, and e-mail address:

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3. Property Parcel ID #(s):

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4. Property Address/Description:

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5. Authorized Representative (if applicable)  
Contact Name/Title, Address, Phone #, and e-mail address:

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**NOTE: Please provide specific responses to the following questions, using additional pages if necessary, to provide a complete and comprehensive application.**

APPLICATION

**PART II. INDIVIDUAL CREDIT OPPORTUNITIES**

**4.3. Integrated Non-Structural BMP Program Credit**

Please refer to Section 4.3 in the Credit Manual and provide the necessary background information and documentation to prove that the following programs are in place and functioning on a continuing basis. Documentation may include such things as contracts, invoices, operating procedures, plans, maps, etc. 1 – 15 points Fee Credit is allowed for Individual criteria in this category and all of the following criteria must be met to receive the additive 50 point fee credit for this category. If any of the criteria listed below do not pertain to your non-residential property, please write “does not apply” followed by a description explaining the exception. If a representative other than the one identified under Part I is overseeing this component of the credit program, please provide the following information:

Name/Title, Address, Phone #, and e-mail address of the person responsible for coordinating non-structural BMPs, along with the time of day the person may be reached:

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**4.3.1. Educational Program (10pts. max)**

a. Provide copies of materials and describe the audience(s) that will receive the water quality information, how the information will be selected and disseminated.

b. Describe where Stormwater and water quality-specific educational information will be posted.

c. Provide proof of other methods of educational materials.

## APPLICATION

### 4.3.2. On-Site Refuse and Pollution Prevention Control Program (12pts. max)

- a. Date of Pollution Prevention Assessment and narrative of implementation of recommendations. (3pts.)
  
- b. Describe your on-Site recycling program - number of collection site, types and volumes of materials recycled each year, collection frequency, recycling destination, etc. (2pts.)
  
- c. Describe how outdoor solid waste and recycling containers are protected from exposure to wind, rain, and snow and connection to storm sewers. (2pts.)
  
- d. Petroleum Products Use and Program Description if applicable (2pts.):
  1. Is used oil reprocessed on-Site?                      Yes [ ] No [ ]
  2. Is oil sold on the property?                              Yes [ ] No [ ]
  3. If it is not reprocessed on-Site, identify the name of the company that collects and/or recycles your used oil if applicable. (Provide company name, address, contact person, phone number, contract number, contract length, and contract expiration date.)
  
  4. Indicate the amount of used oil collected on-Site each month.
  
  5. Indicate where the Waste Commission of Scott County's current list of used oil recycling sites will be displayed.
  
- e. Provide a copy of a landscape maintenance plan that utilizes lawn and garden practices that protect water quality. Describe the employee landscape management training plan or provide contract and contact information for firms contracted to complete landscape maintenance using the provisions in the landscape maintenance plan. (3pts.)

## APPLICATION

### **4.3.3. On-Site Stormwater System Maintenance and Cleaning Program (12pts. max)**

Using a Site plan, identify the locations of Stormwater management structures and/or paved sweeping areas located on the property, but not in the public right-of-way.

Define the maintenance and cleaning schedule for each of the on-Site Stormwater structures (12pts. max):

a. Rain gutters (2pts.):

b. Catch basins (2pts.):

c. Curbs and gutters (2pts.):

d. Outfalls (2pts.):

e. Other structures (describe):

f. Paved Area Sweeping Program - Provide details of the program that includes the frequency (days and times) of paved area sweeping, and describe the type of equipment used to complete the sweeping. If using a contracted firm to conduct sweeping, please indicate the contract information (company name, address, contact person, telephone number, contract number, contract length, and contract expiration date). (4pts.)

### **4.3.4. Sanitary Sewer/Storm Sewer Cross-Connection Inventory Program (1pt. max)**

- a. Use a Site plan to identify the locations of all sanitary and storm sewer connection points and sanitary and storm sewer line locations on the property.

APPLICATION

**4.3.5. Other Non-Structural BMP Credit (15pts. max)**

Describe any additional non-structural approaches to improve water quality implemented by this customer, along with an assessment of its benefit to the City such as:

- a. Copy of Stormwater NPDES with documentation of permit compliance. (5pts.)
  
- b. Provide documentation of minimizing impervious area by reducing the need for additional parking lots and travel lanes on roadways or other beneficial non-structural approach. (5pts.)
  
- c. Provide proof of sponsorship and/or in-kind services to the City or local organizations providing community watershed education or pollution prevention activities. (5pts.)

**4.3. Integrated Non-Structural BMP Program Credit Awarded by City Staff**

\_\_\_\_\_  
(50pts. max)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Initials)

APPLICATION

**4.4. Stormwater Structural BMP Credit (70 pts. max)** Credits for on-site stormwater facilities shall be generally proportional to the benefit that such systems have on complementing or enhancing the run-off quality and/or quantity to the city's stormwater management system and ultimately to local waterways.

**4.4.1 Stormwater Runoff Rate Reduction Structural Controls Credit (30 pts. max)**

1. Please attach the following items to show that the property meets the credit criteria. If applying for credit for multiple BMPs, please attach additional required sheets.
  - Site Plan(s) showing:
    - Property location with parcel boundaries
    - Impervious areas (IA)
    - Description and location of BMP(s)
    - Topography and drainage boundaries for BMPs and their associated % discharges
    - Drainage discharge locations to off-Site properties (natural and constructed)
    - Criteria as required in the Davenport Municipal Code Title 13.34 Stormwater Management.
  - BMP plans and design calculations
    - Total Site Area = \_\_\_\_\_ acres
    - Drainage Area (D<sub>A</sub>) to BMP = \_\_\_\_\_ acres
2. For the flow generated on-Site that is routed through this structure, show your calculations for pre-development and post-development run-off rates based on City Ordinance 13.34.
3. Maximum Credit shall be awarded for constructing a detention basin in accordance with Title 13.34 when Title 13.34 does not otherwise require a detention basin.
4. Maximum Credit shall be awarded for constructing an enhanced detention basin with a maximum allowable release rate from a 2-year storm when Title 13.34 does require a detention basin.
5. No Credit shall be awarded for properties without a detention basin constructed.

**4.4.1. Stormwater Runoff Rate Reduction Structural Controls Credit Awarded by City Staff**

\_\_\_\_\_  
(Max 30 pts.)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Initials)

# APPLICATION

## 4.4.2 Stormwater Runoff Quality Management BMP Credit (40 pts. max)

1. Please attach the following items to show that the property meets the Fee Credit criteria. If applying for Credit for multiple BMPs, please attach additional required sheets.

- Site Plan(s) showing:
  - Property location with parcel boundaries
  - Impervious areas (IA)
  - Description and location of BMP(s)
  - Topography and drainage boundaries for BMPs or open spaces and their associated % discharges
  - Drainage discharge locations to off-Site properties (natural and constructed)
- BMP plans and design calculations
  - Total Site Area = \_\_\_\_\_ acres
  - Drainage Area (D<sub>A</sub>) to BMP = \_\_\_\_\_ acres

- a. Water Quality Volume Controls Credit (30 pts. for meeting design criteria) on the property must provide bacteria reduction of 80% and provide 100% retention, infiltration, or abstraction of the water quality volume (WQv). No partial credit is given for lesser reductions. However, credit can be given for that part of the site that is adequately treated by stormwater quality structural controls meeting the requirement goals even if the whole site does not meet the goal. The credit will be prorated based on the proportion of the impervious area treated compared to the total site impervious area.
- b. Channel Protection Credit (5 pts. for meeting design criteria)  
Controls on the property must capture and meter out the discharge volume from the 1-year 24-hour storm (CPv) over a period of 24-hours. No partial credit is given for lesser reductions or for partial site reductions. If this design requirement is waived on a particular property no credit is available.
- c. Overbank Protection (Detention) Credit (up to 5% for meeting design criteria)  
Controls on the property must reduce the peak flow discharge from the 25-year, 24-hour storm, Q<sub>p25</sub>, (2- through 25-year storms if there is no channel protection controls) such that the post-development peak flow is equal to or less than the pre-development discharge at the outlet of the site and to the ten-percent point downstream.

2. For the flow generated on-Site that is routed through this BMP, calculate the Credit using the following equation:

$$\text{Credit} = (\% \text{ Total Drainage Flow to BMP}/100) \times (\text{BMP \% bacteria reduction}) \times (0.30 \text{ Max Water Quality Credit})$$

### 4.4.2. Stormwater Runoff Quality Management BMP Credit Awarded by City Staff

\_\_\_\_\_  
(Max 40 pts.)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Initials)

APPLICATION

The packet should consist of the completed application form and a copy of all applicable documentation, including the site plans which allow for a complete review of the site and existing stormwater management BMPs. Incomplete applications will not be processed. Submit the application, plans, and calculations to:

Davenport Public Works  
ATTN: Natural Resources Division  
1200 East 46<sup>th</sup> Street  
Davenport, IA 52807

Signature of Owner

Date

Signature of Licensed Professional  
Providing Hydrologic Evaluation

Date

Summary Credit Calculation by City Staff

**OPTIONS 4.3.1- 4.3.5 NON-STRUCTURAL BMP**

**(MAXIMUM ADDITIVE CREDIT CAPACITY = 50 pts.)**

- 4.3.1 Education Program Credit \_\_\_\_\_ (max 10pts.)
- 4.3.2 Waste Reduction Pollution Prevention Program \_\_\_\_\_ (max 12pts.)
- 4.3.3 On-Site Stormwater System Maintenance/Cleaning Program \_\_\_\_\_ (max 12pts.)
- 4.3.4 Sanitary/Storm Sewer Cross Connection Inventory \_\_\_\_\_ (max 1pts.)
- 4.3.5 Other Non-Structural Programs \_\_\_\_\_ (max 15pts.)
- Subtotal \_\_\_\_\_ (max 50pts.)

**OPTION 4.4.1-4.4.2 STRUCTURAL BMP**

**(MAXIMUM ADDITIVE CREDIT CAPACITY = 70 pts.)**

- 4.4.1. Stormwater Run-off Rate Reduction Structural Controls \_\_\_\_\_ (max 30pts.)
- 4.4.2. Stormwater Run-off Quality/Quantity Structural BMP \_\_\_\_\_ (max 40pts.)
- Subtotal \_\_\_\_\_ (max 70pts.)

TOTAL STORMWATER CREDIT \_\_\_\_\_ Points  
(Options 4.3 through 4.4)

Fee Credit Adjustment Factor = total credit points x .60 = \_\_\_\_\_ %

\_\_\_\_\_  
(Date)

## Appendix C: Resource List

The following websites have been useful in the construction of the Davenport Stormwater Manual and may be of use to the reader:

RESOURCE NAME	WEB ADDRESS
303(d) Impaired Waters List	<a href="http://www.iowadnr.gov/Environment/WaterQuality/WaterMonitoring/ImpairedWaters/Previous303dListings.aspx">http://www.iowadnr.gov/Environment/WaterQuality/WaterMonitoring/ImpairedWaters/Previous303dListings.aspx</a>
City of Davenport, Natural Resources Website	<a href="http://www.cityofdavenportiowa.com/department/division.php?fDD=24-127">http://www.cityofdavenportiowa.com/department/division.php?fDD=24-127</a>
Iowa Department of Agriculture & Land Stewardship	<a href="http://www.iowaagriculture.gov/">http://www.iowaagriculture.gov/</a>
Iowa Living Roadway Trust Fund	<a href="http://www.iowaagriculture.gov/">http://www.iowaagriculture.gov/</a>
Scott County	<a href="http://www.iowaagriculture.gov/">http://www.iowaagriculture.gov/</a>
Iowa Storm Water Education Program	<a href="http://www.iowastormwater.org/">http://www.iowastormwater.org/</a>
Iowa DNR Wastewater	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater/NPDESWastewaterPermitting.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater/NPDESWastewaterPermitting.aspx</a>
Rainscaping Iowa	<a href="http://www.rainscapingiowa.org/">http://www.rainscapingiowa.org/</a>
University of Nebraska-Extension Rain Garden Webpage	<a href="http://water.unl.edu/c/document_library/get_file?uuid=bb3e4c0c-73bb-4295-b529-738f20609d0d&amp;groupId=468067&amp;.swf">http://water.unl.edu/c/document_library/get_file?uuid=bb3e4c0c-73bb-4295-b529-738f20609d0d&amp;groupId=468067&amp;.swf</a>
Iowa Department of Transportation Seeding Specifications	<a href="http://www.iowadot.gov/erl/current/US/content/9010.pdf">http://www.iowadot.gov/erl/current/US/content/9010.pdf</a>
Water Environment Federation	<a href="http://www.wef.org/default.aspx">http://www.wef.org/default.aspx</a>
Iowa DNR NPDES Permitting	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater/StormWater/PermittingRequirementsInfo.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater/StormWater/PermittingRequirementsInfo.aspx</a>
Iowa DOT Revetment	<a href="http://www.iowadot.gov/erl/current/GS/content/4130.pdf">http://www.iowadot.gov/erl/current/GS/content/4130.pdf</a>
Ion Exchange	<a href="http://ionxchange.com/">http://ionxchange.com/</a>
Prairie Frontier	<a href="http://www.prairiefrontier.com/">http://www.prairiefrontier.com/</a>
US EPA Stream Mechanics	<a href="http://water.epa.gov/lawsregs/guidance/wetlands/upload/A_Function-Based_Framework.pdf">http://water.epa.gov/lawsregs/guidance/wetlands/upload/A_Function-Based_Framework.pdf</a>
Trees Forever	<a href="http://www.treesforever.org/Default.aspx">http://www.treesforever.org/Default.aspx</a>
Iowa Economic Development Authority	<a href="http://www.iowaeconomicdevelopment.com/">http://www.iowaeconomicdevelopment.com/</a>
United States Geological Survey	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>
United States Environmental Protection Agency	<a href="http://www.epa.gov/">http://www.epa.gov/</a>
American Public Works Association	<a href="http://www.apwa.net/">http://www.apwa.net/</a>
Iowa Drainage Law Manual	<a href="http://www.ctre.iastate.edu/pubs/drainage_law/index.htm">http://www.ctre.iastate.edu/pubs/drainage_law/index.htm</a>

US Army Corps of Engineers	<a href="http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx">http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx</a>
Nahant Marsh	<a href="http://nahantmarsh.org/">http://nahantmarsh.org/</a>
River Action	<a href="http://www.riveraction.org/">http://www.riveraction.org/</a>
Partners of Scott County Watersheds	<a href="http://partnersofscottcountywatersheds.org/">http://partnersofscottcountywatersheds.org/</a>
Iowa Stormwater Manual	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater/StormWater/StormWaterManual.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater/StormWater/StormWaterManual.aspx</a>
Statewide Urban Design & Specifications	<a href="http://www.iowasudas.org/">http://www.iowasudas.org/</a>
Natural Resources Conservation Service	<a href="http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/">http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/</a>
EPA Region 7	<a href="http://www.epa.gov/aboutepa/region7.html">http://www.epa.gov/aboutepa/region7.html</a>
Natural Resources Defense Council	<a href="http://www.nrdc.org/water/pollution/storm/chap12.asp">http://www.nrdc.org/water/pollution/storm/chap12.asp</a>
Low Impact Development Center	<a href="http://www.lowimpactdevelopment.org/">http://www.lowimpactdevelopment.org/</a>
Urban Design Tools Low Impact Development	<a href="http://www.lid-stormwater.net/index.html">http://www.lid-stormwater.net/index.html</a>

The following documents were utilized during the development of the Davenport Stormwater Manual:

RESOURCE NAME	AUTHOR
<i>Duck &amp; Blackhawk Creek Stream Assessment, 2011</i>	Wenck Associates, Inc.
<i>Comprehensive Stormwater Management Plan for Pheasant, Goose, and Silver Creeks, 1991</i>	James M. Montgomery, Consulting Engineers, Inc.
<i>Iowa's Final 2010 Integrated Report</i>	Iowa Department of Natural Resources
<i>The Vascular Plants of Scott and Muscatine Counties</i>	Ludwig F. Guldner
<i>Iowa Rain Garden Design and Installation Manual</i>	ISWEP, NRCS, IDALS
<i>Iowa Stormwater Management Manual</i>	IDNR, SUDAS
<i>Soils for Salmon; <a href="http://www.soilsforsalmon.org/">http://www.soilsforsalmon.org/</a></i>	Washington Organic Recycling Council
<i>IAMU Model Post-Construction Stormwater Runoff Control Ordinance "Post Con" Ordinance, Draft 07-31-06</i>	IAMU, IDNR, URBAN, SUDAS, with legal review by Gordon Greta of Ahlers & Cooney, P.C.
<i>Guidelines for the Standard Urban Storm Water Mitigation Plan Storm Water Best Management Practices for New Development and Redevelopment For the Santa Rosa Area and Unincorporated Areas around Petaluma and Sonoma</i>	Sonoma County, City of Santa Rosa, Russian River Watershed Association, EOA, Inc. BKF Engineers

**Appendix D: Iowa Storm Water Manual: Chapter 1, Part 2B – Unified Sizing  
Criteria**