CITY OF AURORA
GREEN INFRASTRUCTURE
IMPLEMENTATION PROJECT
The City of Aurora - Green Infrastructure Implementation Project is designed to help improve water quality in the Fox River by:

- Reducing nonpoint source (NPS) pollution that reaches the Fox River.
- Reducing the total amount of runoff and the peak discharge rate from the study area by increasing stormwater infiltration and detention capacity.
What is Green Infrastructure?

- According to the U.S. EPA - Green Infrastructure is an array of products, technologies, and practices that use natural systems – or engineered systems that mimic natural processes – to enhance overall environmental quality and provide utility services. As a general principal, Green Infrastructure techniques use soils and vegetation to infiltrate, evapotranspirate, and/or recycle stormwater runoff.

What is Green Infrastructure?

- Illinois Public Act 096-0026

AN ACT concerning safety. Be it enacted by the People of the State of Illinois, represented in the General Assembly:

Section 1. Short title. This Act may be cited as the Green Infrastructure for Clean Water Act.

Section 5. Definitions. As used in this Act:

"Green infrastructure" means any storm water management technique or practice employed with the primary goal of preserving, restoring, or mimicking natural hydrology.

Green infrastructure includes, but is not limited to, methods of using soil and vegetation to promote soil percolation, evapotranspiration, and filtration. Green infrastructure includes the preservation and restoration of natural landscape features, such as forests, floodplains, headwaters, and wetlands.

Green infrastructure also includes rain gardens, permeable pavements, green roofs, infiltration planters, trees and tree boxes, and rainwater harvesting for non-potable uses, such as toilet flushing and landscape irrigation.
What are the benefits of using Green Infrastructure?

The following information is from the U.S. EPA Website: “Managing Wet Weather with Green Infrastructure”

http://cfpub.epa.gov/npdes/home.cfm?program_id=298

Green Infrastructure is associated with a variety of environmental, economic, and human health benefits, many of which go hand-in-hand with one another.

The benefits of green infrastructure are particularly accentuated in urban and suburban areas where green space is limited and environmental damage is more extensive. Green infrastructure benefits include:
What are the benefits of using Green Infrastructure?

- **Reduced and Delayed Stormwater Runoff Volumes** –

  Green infrastructure reduces stormwater runoff volumes and reduces peak flows by utilizing the natural retention and absorption capabilities of vegetation and soils. By increasing the amount of pervious ground cover, green infrastructure techniques increase stormwater infiltration rates, thereby reducing the volume of runoff entering our combined or separate sewer systems, and ultimately our lakes, rivers, and streams.

- **Enhanced Groundwater Recharge** –

  The natural infiltration capabilities of green infrastructure technologies can improve the rate at which groundwater aquifers are 'recharged' or replenished. This is significant because groundwater provides about 40% of the water needed to maintain normal base flow rates in our rivers and streams. Enhanced groundwater recharge can also boost the supply of drinking water for private and public uses.

- **Stormwater Pollutant Reductions** –

  Green Infrastructure techniques infiltrate runoff close to its source and help prevent pollutants from being transported to nearby surface waters. Once runoff is infiltrated into soils, plants and microbes can naturally filter and break down many common pollutants found in stormwater.
What are the benefits of using Green Infrastructure?

- **Reduced Sewer Overflow Events** –
  Utilizing the natural retention and infiltration capabilities of plants and soils, green infrastructure limits the frequency of sewer overflow events by reducing runoff volumes and by delaying stormwater discharges.

- **Increased Carbon Sequestration** –
  The plants and soils that are part of the green infrastructure approach serve as sources of carbon sequestration, where carbon dioxide is captured and removed from the atmosphere via photosynthesis and other natural processes.

- **Urban Heat Island Mitigation and Reduced Energy Demands** –
  Urban heat islands form as cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. The displacement of trees and vegetation minimizes their natural cooling effects. Additionally, tall buildings and narrow streets trap and concentrate waste heat from vehicles, factories, and air conditioners. By providing increased amounts of urban green space and vegetation, green infrastructure can help mitigate the effects of urban heat islands and reduce energy demands. Trees, green roofs, and other green infrastructure can also lower the demand for air conditioning energy, thereby decreasing emissions from power plants.
What are the benefits of using Green Infrastructure?

- **Improved Air Quality** –
  Green infrastructure facilitates the incorporation of trees and vegetation in urban landscapes, which can contribute to improved air quality. Trees and vegetation absorb certain pollutants from the air through leaf uptake and contact removal. If widely planted throughout a community, trees and plants can even cool the air and slow the temperature-dependent reaction that forms ground-level ozone pollution (smog).

- **Additional Wildlife Habitat and Recreational Space** –
  Greenways, parks, urban forests, wetlands, and vegetated swales are all forms of green infrastructure that provide increased access to recreational space and wildlife habitat.

- **Increased Land Values** –
  A number of case studies suggest that green infrastructure can increase surrounding property values.

  In Philadelphia, a green retrofit program that converted unsightly abandoned lots into "clean & green" landscapes resulted in economic impacts that exceeded expectations.

  Vacant land improvements led to an increase in surrounding housing values by as much as 30%. This translated to a $4 million gain in property values through tree plantings and a $12 million gain through lot improvements.
What are the benefits of using Green Infrastructure?

- **Improved Human Health** –

An increasing number of studies suggest that vegetation and green space - two key components of green infrastructure - can have a positive impact on human health.

Recent research has linked the presence of trees, plants, and green space to:

- Reduced levels of inner-city crime and violence
- A stronger sense of community
- Improved academic performance
- And even reductions in the symptoms associated with attention deficit and hyperactivity disorders.

A number of research articles are available on the University of Illinois, Landscape and Human Health Laboratory web site at [http://lhhl.illinois.edu](http://lhhl.illinois.edu).
What is non-point source (NPS) stormwater pollution?

- Nonpoint source (NPS) pollution is pollution that comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. These pollutants include:

  - Oil, grease, and toxic chemicals from urban runoff and energy production;
  - Sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks;
  - Excess fertilizers, herbicides, and insecticides from residential areas and agricultural lands;
  - Salt from street de-icing and irrigation practices;
  - Bacteria and nutrients from pet wastes, livestock, and faulty septic systems.
NPS Pollution Examples and Consequences
The City of Aurora Green Infrastructure Implementation Project is located in the McCarty Burlington and Light of the Community neighborhood planning areas on the near northeast side of the city.

Total project area (study area) – 620 acres, roughly 1 sq. mi.
City of Aurora Green Infrastructure Implementation Project Description

- The project is part of an agreement between the Chicago Metropolitan Agency for Planning (CMAP) and the City of Aurora.

- Total project value - $517,000 (maximum grant amount - $300,000).

- Project costs are shared - 58% by the grant amount, 42% by the City of Aurora (expenses or in-kind services) up to the total project value.

The project is financed in part by an IEPA grant, through Section 319(h) of the Federal Clean Water Act, via Illinois’ Nonpoint Source Pollution Management Program (Grant Number: C9995200-06)
City of Aurora Green Infrastructure Implementation Project Components

- **Educating the public** about Green Infrastructure, NPS pollution, and BMP implementation to increase awareness and to provide encouragement for residents to help reduce NPS pollution.

- Development of a **Naturalized Stormwater Management Corridor Plan (NSMCP)** for a naturalized, dispersed, stormwater management system within the study area.

- Preparation of a **Stormwater Management Toolkit** to assist commercial and industrial redevelopment projects with BMP selection and planning.

- Construction of three (3) **best management practices (BMPs)** within the study area.
Education and Outreach Activities
2009 Fiesta de Luces
Education and Outreach Activities
2009 Fiesta de Luces
Education and Outreach Activities 
Project Brochure

BMP Construction Projects
Cont.

- Estimated Pollution Removal (per yr) - Total Suspended Solids 5,612 lbs; Chemical oxygen demand 1,342 lbs; Bio-chemical oxygen demand 94 lbs.
- Status - Under construction Fall 2009; completion Spring 2010.

3. Stormwater Wetland Bio-riparian (East Bank of the Fox River at 400 N. Broadway Ave.)
- Purpose - Divert stormwater runoff from an existing storm sewer to a stormwater wetland and then to the wetland Bio-riparian for treatment by filtering and contact with plants and soil. Discharge treated stormwater back to the existing storm sewer to the Fox River.
- BMP Design - Fully treated the first ¾ inch of runoff from 5.2 acres of Broadway Avenue right of way and industrial parking lots. The BMP area is 8,500 square feet (0.15 acres) and will be planted with landscaped native vegetation.
- BMP Design Impact - Decreases the peak discharge rate by 80%, extends the duration of discharge by 200%.
- Estimated Pollution Removal (per yr) - Total suspended solids 7,700 lbs Chemical oxygen demand 1,813 lbs; Bio-chemical oxygen demand 116 lbs.
- Status - Under construction - Fall 2009; completion Spring 2010.

What is Green Infrastructure?
According to the U.S. EPA - Green Infrastructure is an array of products, technologies, and practices that use natural systems - or engineered systems that mimic natural processes - to enhance overall environmental quality and provide utility services. As a general principal, Green Infrastructure techniques use soils and vegetation to infiltrate, evaporate, percolate, and/or recycle stormwater runoff.

What is non-point source (NPS) stormwater pollution?
As stormwater flows over parking lots, streets, driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Where does stormwater go? Stormwater and NPS pollution flow into storm sewers, streets or directly off of the land and into the Fox River. Polluted runoff is the nation’s greatest threat to clean water.

How can you help reduce NPS pollution and protect the Fox River?
- Plant a Rain Garden: Rain Gardens are landscaped depressions designed to capture and treat stormwater.
- Install Rain Barrels: Rain barrels capture and store rainwater from rooftops. The water that is collected helps reduce stormwater runoff and therefore decreases NPS pollution.

Green Infrastructure Implementation Project

City of Aurora - Engineering Division
44 East Downer Place
Aurora, Illinois 60507
Phone: (630) 844-3620
www.aurora-il.org

1/25/10 City of Aurora - Engineering Division
**Project Purpose**

The City of Aurora - Green Infrastructure Implementation Project is designed to help improve water quality in the Fox River by:

- Reducing nonpoint source (NPS) pollution that reaches the Fox River.
- Reducing the total amount of runoff and the peak discharge rate by increasing stormwater infiltration and detention capacity in the study area.
- Constructing three (3) best management practices (BMPs) within the study area.
- Developing a Naturalized Stormwater Management Corridor Plan for a naturalized, dispersed, stormwater management system within the study area.
- Assisting commercial and industrial redevelopments with BMP selection and planning by developing a “Stormwater Management Toolkit” document that establishes the benefit to stormwater quality from individual BMPs.
- Educating the public about NPS pollution and BMP implementation to increase resident awareness and to provide encouragement for residents to help reduce NPS pollution.


**Project Description**

The City of Aurora Green Infrastructure Implementation Project is located in the McCarty Burlington Neighborhood Planning Area on the near northeast side of the city.

- Total project area – 620 acres, roughly 1 square mile.
- Part of an agreement between the City of Aurora and the Chicago Metropolitan Agency for Planning (CMAP).

![Diagram of project area]

Funded in part by the Illinois Environmental Protection Agency through Section 319(h) of the Federal Clean Water Act, via Illinois’ Nonpoint Source Pollution Management Program (Grant Number: C-995200-06).

- Total project value = $517,000 (maximum grant amount = $300,000).
- Project costs are shared - 58% by the grant amount, 42% by the City of Aurora (expenses or leasehold services) up to the total project value.

**BMP Construction Projects**

1. **Decomposition BMP’s**
   - *(Spring St. Rain Gardens)*
   - **Purpose** – Intercept, treat and infiltrate runoff from Spring St. and adjacent property.
     - Curb cuts divert runoff from the street to a series of 5.5 foot long rain gardens.
     - Native sand and gravel beneath the BMP provide excellent infiltration rates.
   - **BMP Design** – Fully treats the first 0.3 inch of runoff from 1.3 acres of residential street and adjacent property. The BMP area is 2200 sf (0.002 acres).
   - **BMP Design Impact** – Decreases the total volume of runoff by 72%.
   - **Estimated Pollution Removal (per yr)**
     - Total suspended solids 288 lbs, Chemical oxygen demand 113 lbs.
   - **Status** – Under construction Fall 2009; completion Spring 2010.

2. **Bio-filtration Facility**
   - *(Lincoln Avenue Parking Lot)*
   - **Purpose** – Retrofit an existing detention basin to provide bio-filtration. Include a vegetated bio-swale; sand/gravel filter with an under drain and a liner to limit infiltration.
   - **BMP Design** – Fully treats the first 0.4 inch of runoff from 4.5 acres of commuter parking lot. The BMP area is 3900 square feet (0.07 acres) and will be planted with landscaped native vegetation.
   - **BMP Design Impact** – Decreases the peak discharge rate by 25%, increases the duration of discharge by 45%.
Education and Outreach Activities
Rain Barrel Program

2010
City of Aurora - Rain Barrel Program

Residents of the City of Aurora may purchase Rain Barrels on a first come / first served basis up to the program limit of 150 barrels. Pre-paid/pick-up only. Orders must be placed 1 week prior to pick-up date.

Rain Barrel Cost - $54 Call to verify availability.

A rain barrel collects water from roof downspouts and stores it for later use.

<table>
<thead>
<tr>
<th>Ordering</th>
<th>Pick Up Location / Dates / Time</th>
<th>Payment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-line: <a href="http://www.upcycle-products.com/staic-are?hyperlinks=3703">http://www.upcycle-products.com/staic-are?hyperlinks=3703</a></td>
<td>Aurora Transportation Center 233 N. Broadway Avenue (IL Rte. 25) Aurora, IL 60505 Saturday, April 10, 2010 Saturday, April 24, 2010 Saturday, May 8, 2010 8 AM – 12 PM</td>
<td>Check or Money Order mailed after on-line order confirmation is received, or after a phone in order. Payable to UpCycle Products, P.O. Box 759, Minooka IL, 60447. Credit card over the phone or after on-line order confirmation is received: (815) 735-9583</td>
</tr>
<tr>
<td>Phone: UpCycle Products: (815) 735-9583</td>
<td>For more information go to: <a href="http://www.aurora-il.org">www.aurora-il.org</a> or <a href="http://www.upcycle-products.com">www.upcycle-products.com</a> (click on “Where to Purchase”, then click on “Municipal”) or call the City of Aurora – Public Works Division - Engineering at 630-844-3620.</td>
<td></td>
</tr>
</tbody>
</table>

The City of Aurora 2010 Rain Barrel program is funded in part by the Illinois Environmental Protection Agency through Section 309(h) of the Federal Clean Water Act via Illinois’ Nonpoint Source Pollution Management Program (Grant Number: C8995200-06)
Naturalized Stormwater Management Corridor Plan

Figure 4: STUDY AREA EXISTING LAND USE - City of Aurora - Kane County, Illinois

Legend:
- Roads
- State Highway
- Rail Road
- River’s Edge Park
- Surface Drainage Features/Waterways

Study Area Land Use:
- Undefined Parcels
- Farm/Vacant Land
- Open Space - Public
- Open Space - Private
- Public
- Public (Channel)
- Utilities
- Dwellings - Single Family
- Office
- Retail
- Business
- Warehouse District/Light Industrial

Reference/Projection: NAD 1983 StatePlane Illinois East FIPS 1205 Feet
Naturalized Stormwater Management Corridor Plan
Naturalized Stormwater Management Corridor Plan

Land Use within the Study Area (Acres)

- Residential: 395 acres
- Commercial: 105 acres
- Institutional: 10 acres
- Industrial: 8 acres
- Railroad: 40 acres
- Park: 48 acres
- Open: 15 acres

(Area)
# Naturalized Stormwater Management Corridor Plan

## Table 4b - Distribution of Annual Nonpoint Source Pollution Loads by Land Use

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>TOTAL ACREAGE (ac)</th>
<th>TOTAL SOLIDS LOADS (lbs/yr)</th>
<th>TOTAL PHOSPHORUS LOADS (lbs/yr)</th>
<th>TOTAL ZINC LOADS (lbs/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>395</td>
<td>183,946</td>
<td>500.1</td>
<td>82.1</td>
</tr>
<tr>
<td>Commercial</td>
<td>105</td>
<td>89,186</td>
<td>148.2</td>
<td>104.9</td>
</tr>
<tr>
<td>Institutional</td>
<td>10</td>
<td>5,370</td>
<td>12.0</td>
<td>4.7</td>
</tr>
<tr>
<td>Industrial</td>
<td>8</td>
<td>10,692</td>
<td>11.9</td>
<td>9.0</td>
</tr>
<tr>
<td>Railroad</td>
<td>40</td>
<td>38,844</td>
<td>89.6</td>
<td>37.7</td>
</tr>
<tr>
<td>Park</td>
<td>48</td>
<td>16,052</td>
<td>48.1</td>
<td>8.6</td>
</tr>
<tr>
<td>Open</td>
<td>15</td>
<td>2,775</td>
<td>7.3</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>621</strong></td>
<td><strong>395</strong></td>
<td><strong>817.1</strong></td>
<td><strong>248</strong></td>
</tr>
</tbody>
</table>

The total distribution of annual nonpoint source pollution loads are as follows:

- **Total Acreage**: 621 acres (100%)
- **Total Solids Loads**: 395 lbs/yr (100%)
- **Total Phosphorus Loads**: 817.1 lbs/yr (100%)
- **Total Zinc Loads**: 248 lbs/yr (100%)
## Naturalized Stormwater Management Corridor Plan

<table>
<thead>
<tr>
<th>CORRIDOR</th>
<th>HOMES IN CORRIDOR</th>
<th>ONE RAIN BARREL PER HOME</th>
<th>FOUR RAIN BARRELS PER HOME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percent Volume Reduction</td>
<td>Percent Solid Reduction</td>
</tr>
<tr>
<td>Riverfront Corridor</td>
<td>3</td>
<td>0.7%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Indian Creek Corridor</td>
<td>17</td>
<td>0.7%</td>
<td>0.1%</td>
</tr>
<tr>
<td>North Inter-Corridor Area</td>
<td>1,043</td>
<td>12%</td>
<td>2%</td>
</tr>
<tr>
<td>Community Corridor</td>
<td>192</td>
<td>5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>South Inter-Corridor Area</td>
<td>430</td>
<td>13%</td>
<td>2%</td>
</tr>
<tr>
<td>Commercial Corridor</td>
<td>194</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1,879</strong></td>
<td><strong>8%</strong></td>
<td><strong>1%</strong></td>
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## Naturalized Stormwater Management Corridor Plan

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>10% HOMES WITH RAIN GARDENS</th>
<th>50% HOMES WITH RAIN GARDENS</th>
<th>100% HOMES WITH RAIN GARDENS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riverfront Corridor</td>
<td>0</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Indian Creek Corridor</td>
<td>2</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>North Inter-      Corridor Area</td>
<td>104</td>
<td>2%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Community          Corridor</td>
<td>19</td>
<td>0.7%</td>
<td>0.3%</td>
</tr>
<tr>
<td>South Inter-     Corridor Area</td>
<td>43</td>
<td>2%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Commercial         Corridor</td>
<td>19</td>
<td>1%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Totals</td>
<td>183</td>
<td>1%</td>
<td>0.4%</td>
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</table>
# Naturalized Stormwater Management Corridor Plan

<table>
<thead>
<tr>
<th>RIVERFRONT CORRIDOR</th>
<th>INDIAN CREEK CORRIDOR</th>
<th>COMMUNITY CORRIDOR</th>
<th>COMMERCIAL CORRIDOR</th>
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</thead>
<tbody>
<tr>
<td>Vegetated Riparian Buffers</td>
<td>Vegetated Riparian Buffers</td>
<td>On-Site BMPs for Residential Lots</td>
<td>On-Site BMPs for Residential Lots</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Downspout Disconnection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rain Barrels and Cisterns</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rain Gardens</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Native Landscaping</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sustainable Landscaping Practices</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Alternative Pavers</td>
<td></td>
</tr>
<tr>
<td>Green Parking</td>
<td>Urban Reforestation (Rain Trees)</td>
<td>BMPs for Residential Blocks</td>
<td>Green Streets</td>
</tr>
<tr>
<td>Green Roofs</td>
<td>BMPs in Solfsburg Park</td>
<td>BMPs in Private and Public Open Space</td>
<td>Green Parking and Green Roofs</td>
</tr>
<tr>
<td>Green Streets</td>
<td>Sustainable Landscaping</td>
<td>Urban Reforestation along Streets</td>
<td>Sustainable Redevelopment</td>
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<tr>
<td>Urban Reforestation</td>
<td>Sustainable Redevelopment of Solfsburg Park</td>
<td></td>
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</tr>
<tr>
<td>Detention Basin at the U.S. Post Office</td>
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</table>
## NATURALIZED STORMWATER MANAGEMENT CORRIDOR PLAN

### TABLE 3b - AVERAGE ANNUAL RUNOFF VOLUME and AVERAGE ANNUAL SOLIDS LOADS

<table>
<thead>
<tr>
<th>STUDY AREA CORRIDOR</th>
<th>TOTAL ACREAGE (ac)</th>
<th>AVERAGE ANNUAL RUNOFF VOLUME (cu.ft./yr)</th>
<th>ESTIMATED RUNOFF INFILTRATED (cu.ft./yr)</th>
<th>INFILTRATED VOLUME % BY CORRIDOR</th>
<th>AVERAGE ANNUAL SOLIDS LOADS (lbs/yr)</th>
<th>ESTIMATED SOLIDS REMOVED (lbs/yr)</th>
<th>SOLIDS REDUCTION % BY CORRIDOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riverfront Corridor</td>
<td>69</td>
<td>4,883,966</td>
<td>554,897</td>
<td>11%</td>
<td>55,178</td>
<td>13.775</td>
<td>25%</td>
</tr>
<tr>
<td>Indian Creek Corridor</td>
<td>52</td>
<td>2,604,334</td>
<td>959,564</td>
<td>25%</td>
<td>32,729</td>
<td>13.765</td>
<td>28%</td>
</tr>
<tr>
<td>North Inter-Corridor Area</td>
<td>257</td>
<td>9,591,953</td>
<td>85,127</td>
<td>9%</td>
<td>124,058</td>
<td>409</td>
<td>0.3%</td>
</tr>
<tr>
<td>Community Corridor</td>
<td>90</td>
<td>4,576,395</td>
<td>859,889</td>
<td>19%</td>
<td>56,605</td>
<td>33.289</td>
<td>59%</td>
</tr>
<tr>
<td>South Inter-Corridor Area</td>
<td>58</td>
<td>3,804,459</td>
<td>35,096</td>
<td>0.9%</td>
<td>48,136</td>
<td>169</td>
<td>0.4%</td>
</tr>
<tr>
<td>Commercial Corridor</td>
<td>55</td>
<td>2,548,117</td>
<td>240,013</td>
<td>9%</td>
<td>30,158</td>
<td>8,709</td>
<td>29%</td>
</tr>
<tr>
<td>Total Study Area</td>
<td>621</td>
<td>28,009,223</td>
<td>2,734,586</td>
<td>10%</td>
<td>346,865</td>
<td>70,115</td>
<td>20%</td>
</tr>
</tbody>
</table>
The purpose of the Toolkit is to educate and assist homeowners, businesses, and developers to comply with the City of Aurora’s stormwater management requirements.

The Toolkit was developed as a guidance document to specifically assist commercial or industrial redevelopment projects that opt to pay a fee-in-lieu of detention but still must demonstrate a “net benefit” in water quality.

Under Article 2 of the Kane County Stormwater Management Ordinance redevelopments and developments consisting of mass grading only have the option of paying a fee-in-lieu of site runoff storage (described in Article 13).
To qualify for fee-in-lieu of runoff storage, projects must meet two criteria:

1. Demonstrate that the project will not increase peak runoff discharges.
2. Provide BMPs that will result in a “net benefit” in water quality.

The City of Aurora interprets the implementation of one of the following two methods or a combination of both as sufficient means to result in a net benefit in water quality:

1. Retention Volume Practices: Retention of the first 0.75 inches of runoff from the hydraulically connected impervious area within the volume provided by the BMPs constructed on the site.

2. Filtration Practices: Installation of manufactured storm water quality units that provide a 40 percent reduction in total suspended solids for a maximum particle size of 80 microns for the 1 year storm event, critical duration peak discharge (regardless of the rainfall depth associated with the critical duration event).
BMP Construction Projects – Project Sign

Nonpoint Source Water Pollution Control Program

Fox River Watershed Protection, Restoration & Education ♦ City of Aurora – Green Infrastructure Implementation Project ♦

Best management practices have been installed at this site to improve water quality within the Fox River watershed.

Funded in part under Section 319 of the Federal Clean Water Act
Grant Number: C9995200-06

For more information, contact Illinois EPA at (217) 782-3362 or the City of Aurora at (630) 264-INFO ♦ FAA Number: 3190604
BMP Construction Projects
BMP Construction Projects

1. De-combination BMPs (Spring St. Rain Gardens)

- **Purpose** – Intercept, treat and infiltrate runoff from Spring St. and adjacent property. Curb cuts divert runoff from the street to a series of 5 - 50 feet long rain gardens. Native sand and gravel beneath the BMP provides excellent infiltration rates.

- **BMP Design**—Fully treats the first 3/4 inch of runoff from 1.3 acres of residential street and adjacent property. The BMP area is 2700 SF (0.062 acres).

- **BMP Design Impact** – Decreases the total volume of runoff by 72%.

- **Estimated Pollution Removal (per yr)** - Total suspended solids 288 lbs; Chemical oxygen demand 113 lbs.

- **Status** – Under construction Fall 2009; completion Spring 2010.
De-combination BMPs
Spring St. Rain Gardens
De-combination BMPs
Spring St. Rain Gardens

[Diagram of drainage system with detailed annotations and measurements]
De-combination BMPs
Spring St. Rain Gardens
De-combination BMPs
Spring St. Rain Gardens

10/16/2009
De-combination BMPs
Spring St. Rain Gardens

10/20/2009
De-combination BMPs
Spring St. Rain Gardens
De-combination BMPs
Spring St. Rain Gardens
De-combination BMPs
Spring St. Rain Gardens

Estimated Pollutant Loads
Decomposition BMPs
Spring St Rain Gardens
2. Bio-filtration Facility
   (Lincoln Avenue Parking Lot)

- **Purpose** – Retrofit an existing detention basin to provide bio-filtration. The retrofit includes a vegetated bio-swale; a sand/gravel filter trench with an under drain; and a liner to limit infiltration.

- **BMP Design** – Fully treats the first \( \frac{3}{4} \) inch of runoff from 4.5 acres of commuter parking lot. The BMP area is 3100 square feet (0.07 acres) and will be planted with landscaped native vegetation.

- **BMP Design Impact** – Decreases the peak discharge rate by 25%. Increases the duration of discharge by 45%.

- **Estimated Pollution Removal** (per yr) – Total Suspended Solids 5,612 lbs; Chemical oxygen demand 1,342 lbs; Bio-chemical oxygen demand 94 lbs.

- **Status** – Under construction Fall 2009; completion Spring 2010.
Bio-filtration Facility
Lincoln Avenue Parking Lot
Bio-filtration Facility
Lincoln Avenue Parking Lot
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Lincoln Avenue Parking Lot
Bio-filtration Facility
Lincoln Avenue Parking Lot
Bio-filtration Facility
Lincoln Avenue Parking Lot

10/29/2009
Bio-filtration Facility
Lincoln Avenue Parking Lot
Bio-filtration Facility
Lincoln Avenue Parking Lot
Bio-filtration Facility
Lincoln Avenue Parking Lot

![Bar chart showing estimated pollutant loads before and after bio-filtration]

- TSS: Pre BMP 6,802, Post BMP 1,190
- COD: Pre BMP 2,685, Post BMP 1,342
- BOD: Pre BMP 155, Post BMP 33
Stormwater Wetland Bio-swale
RiverEdge Park

3. Stormwater Wetland Bio-swale
(East Bank of the Fox River at 400 N. Broadway Ave.)

- **Purpose** – Stormwater runoff is diverted from an existing separate storm sewer to a stormwater quality unit then to the wetland bio-swale for treatment by settling and contact with plants and soil. Stormwater is then discharged back to the existing storm sewer to the Fox River.

- **BMP Design** – The BMP is designed to fully treat the first ¾ inch of runoff from 5.2 acres of Broadway Avenue right of way and industrial use parking lots. The BMP area is 6500 square feet (0.15 acres) and will be planted with landscaped native vegetation.

- **BMP Design Impact** - Decreases the peak discharge rate by 80%. Extends the duration of discharge by 250%.

- **Estimated Pollution Removal (per yr)** – Total suspended solids 7,700 lbs, Chemical oxygen demand 1,813 lbs, Bio-chemical oxygen demand 116 lbs.

- **Status** – Under construction Fall 2009, completion Spring 2010.
Stormwater Wetland Bio-swale
RiverEdge Park
Stormwater Wetland Bio-swale
RiverEdge Park
Stormwater Wetland Bio-swale
RiverEdge Park

08.13.2009
Stormwater Wetland Bio-swale RiverEdge Park
Stormwater Wetland Bio-swale RiverEdge Park

03/24/2010
Stormwater Wetland Bio-swale
RiverEdge Park

04/01/2010
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Stormwater Wetland Bio-swale
RiverEdge Park

03/26/2010
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RiverEdge Park

04/07/2010
Stormwater Wetland Bio-swale
RiverEdge Park

04/07/2010
Stormwater Wetland Bio-swale
RiverEdge Park

04/07/2010
Stormwater Wetland Bio-swale
RiverEdge Park

04/07/2010
Stormwater Wetland Bio-swale
RiverEdge Park

Estimated Pollutant Loads
Stormwater Wetland Bio-swale
RiverEdge Park

[Bar chart showing estimated pollutant loads for TSS, COD, and BOD with blue and red bars for Pre BMP and Post BMP]
City of Aurora Green Infrastructure Implementation Project

- Questions?
Thanks you.

CITY OF AURORA
GREEN INFRASTRUCTURE
IMPLEMENTATION PROJECT

WASHINGTON, DC
ENVIRONMENTAL PROTECTION AGENCY

AURORA
City of Lights
Mayor Thomas J. Weisner

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Chicago Metropolitan Agency for Planning

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