CITY OF LAFAYETTE

WET WEATHER PROGRAM

City of Lafayette
Storm Water
Technical Advisory Committee

July 9, 2009

Welcome and Introductions

Today's Agenda

- Overview of Best Management Practices What exactly is a BMP, anyway?
- How BMPs Can Impact Storm Water User Fees
- BMPs and Public Education

What is a Best Management Practice ?

IT'S NOT JUST A POND!

Per the Indiana National Pollutant Discharge Elimination System (NPDES) General Rule, a BMP

"…is any structural or nonstructural control measure utilized to improve the quality and, as appropriate, reduce the quantity of storm water runoff. The term includes schedules of activities, prohibitions of practice, treatment requirements, operation and maintenance procedures, use of containment facilities, land use planning, policy techniques, and other management practices."

Best Management Practices

- **Structural:** Physical structure that reduces or eliminates storm water pollutants in runoff
- **Examples:**
  - Detention ponds/basins
  - Filter strips
  - Manufactured structures
  - Dry wells
  - Pervious pavement
  - Infiltration swales
  - Bio-Retention
  - Rain Gardens

- **Conservation BMPs**
  - Rain Barrels

Structural BMPs

Sand Filter

Pervious Pavement

Vegetated Swale

Construction Site BMPs

- Eliminate sediment and construction waste that can enter storm water runoff
- Examples: Silt fence, ditch checks
- Who regulates these?
  - MS4s: Ordinance & Permits (Rule 13)
  - Non-MS4s: Rule 5

Post-construction BMPs

- Continue to treat storm water once construction is complete and site is stabilized
- Examples: Rain gardens, sand filters
- Who regulates these?
  - MS4: Ordinance & Permits (Rule 13)
  - Non-MS4s: Rule 5

Post-construction BMP Guidelines

- Lafayette has adopted the Tippecanoe County Stormwater Standards and the following criteria…
  - Must meet 80 percent Total Suspended Solids (TSS) Removal Rate
  - Low to medium maintenance of BMP
  - A combination of preapproved BMPs is permitted to meet the 80% removal rate
  - "Innovative" BMPs must be certified by a Professional Engineer and approved by the Tippecanoe County Drainage Board

Table 8-1: Preapproved Post-Construction BMPs

BMP Description	Anticipated Average % TSS Removal Rate[E]
Bioretention[A]	75
Constructed Wetland	65
Underground detention	70
Extended Dry Detention[B]	72
Infiltration Basin[A]	87
Infiltration Trench[A]	87
Media Filtration – Underground Sand	80
Media Filtration – Surface Sand	83
Storm Drain Insert[D]	NA[C]
Filter Strip	48
Vegetated Swale	60
Wet Detention	72

A. Based on capture of 0.5-inch of runoff volume as best available data. Effectiveness directly related to captured runoff volume, increasing with larger capture volumes.

B. Test results are for three types of ponds: extended wet detention, wet pond and extended dry detention

C. NA may indicate that the BMP is not applicable for the pollutant, but may also indicate that the information is simply Not Available. Independent testing should be provided, rather than the manufacturer's testing data.

D. Must provide vendor data for removal rates.

E. Removal rates are dependent on proper installation and maintenance.

Non-structural BMPs

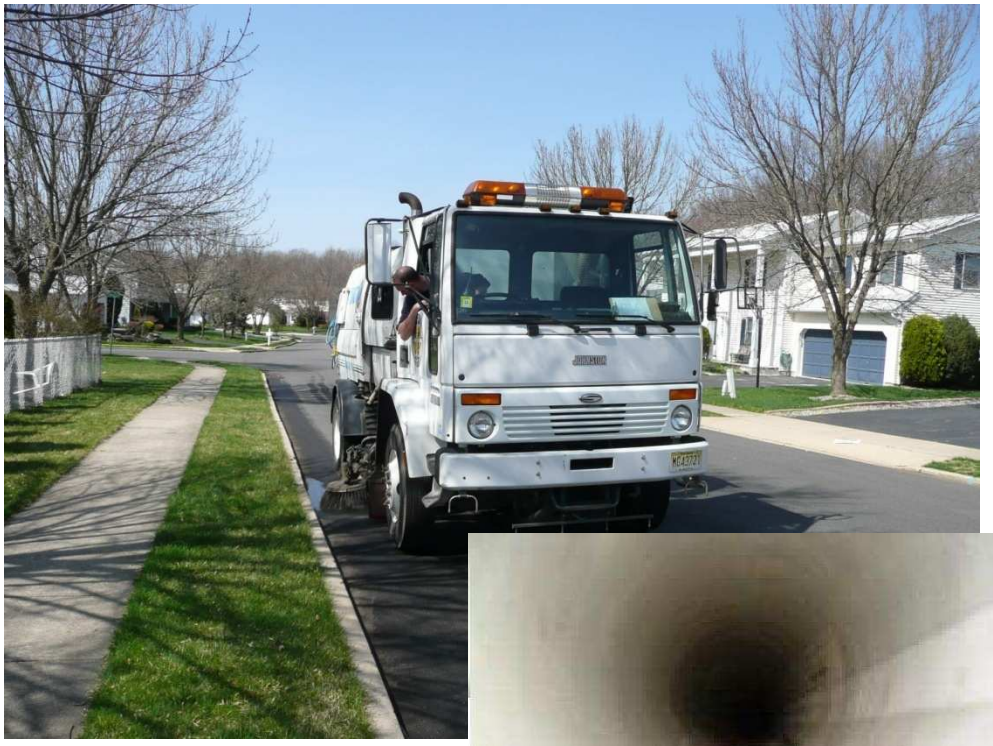
- **Non-structural:** Nonphysical BMPs that help to reduce or eliminate pollutants in storm water runoff

- **Examples:**
  - Storm water-related ordinances
  - Preventive maintenance to infrastructure
  - Routine cleaning (ie. Street Sweeping)
  - Public education and outreach
  - Facility Inspections

Non-structural BMP Guidelines

- Adapt BMPs to what will "work" in Lafayette. A BMP in New York may not be suitable for Lafayette.
- At a minimum, meet legal requirements for public notices.

Non-structural BMPs



Street sweeping

Sewer overflow notifications and reporting CSOs

Sewer televising

Summary

- Use structural and non-structural BMPs in combination for best results
- Monitor the results of the programs and make adjustments as necessary
- Publicize positive results to build community support

Questions or Comments?

BMP Impacts to Storm Water User Fees

User Fee Summary

- Initial user fee to be based on Equivalent Residential Unit and Tippecanoe County Unified Zoning Ordinance
- City to complete actual impervious surface measurements at a later date
  - Residential Customers: Continue paying user fee based one Equivalent Residential Unit (3,200 s.f.)
  - Non-Residential Customers: Opportunity to reduce storm water user fee with use of pervious surface area BMPs or minimization of impervious area

Example User Fee Calculation

Sample Calculation (non-residential parcel):

$$\frac{\text{Parcel Impervious Area}}{\text{Equivalent Residential Unit (ERU)}} \times \text{USER FEE}$$

$$\frac{\text{425,000 Square Feet Impervious Area}}{\text{3,200 Square Feet}} \times \text{USER FEE}$$

User Fee Reduction

- **Opportunities to reduce impervious surface**
  - Install structural BMPs: Pervious Pavements
  - Reduce impervious surface, such as excess parking – do not overbuild
- **Benefits**
  - Potential reduction in user fee due
  - Reduced storm water runoff impacting city drainage system
  - Improved storm water quality
  - Enhanced aesthetics of property

Questions or Comments?

BMPs and Public Education

Why Public Education and Outreach?

- An informed and knowledgeable community is crucial to the success of a storm water management program.
- Public education and outreach generates:
  - Greater support: Increased understanding of need for storm water program
  - Increased compliance: Awareness of personal and corporate responsibilities in the community

Public Outreach and Permit Requirements

- To satisfy this Minimum Control Measure, the operator of a regulated MS4 needs to:

  "Implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of storm water discharges on local water bodies and the steps that can be taken to reduce storm water pollution."

Forming Partnerships

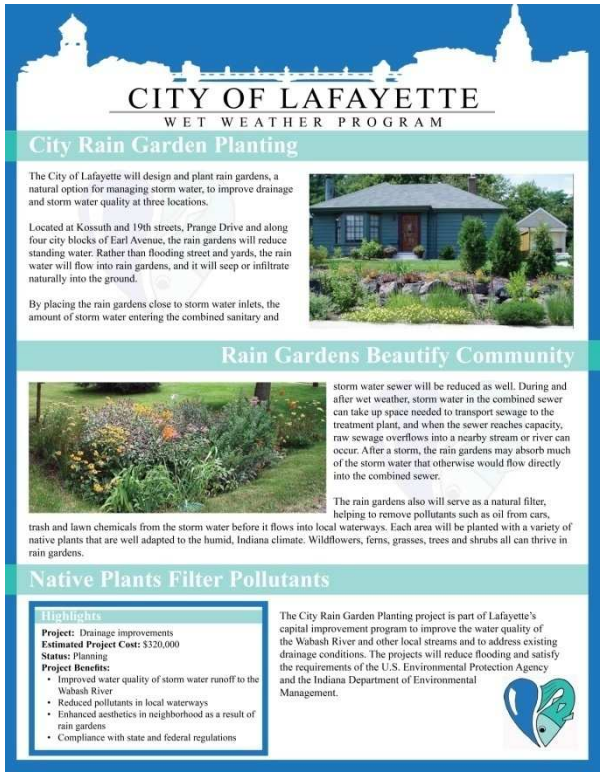
- Other government agencies
  - Code Compliance
  - Parks and Recreation
  - Soil and Water Conservation District
  - Committees and commissions

- Environmental and neighborhood groups
- Academia: Purdue University, Ivy Tech, public and private schools

Educational Materials and Strategies

- Materials may include:
  - Project signage
  - Fact sheets
  - News advisories/releases
  - Presentations
  - Web content
  - Informative brochures
- Strategies may include:
  - Top customers outreach
  - News conferences
- Strategies (continued):
  - Community workshops (Rain gardens, rain barrel program)
  - Programs: Storm drain marking; improper storm water connection program; fats, oils and grease disposal
  - Youth education
  - Event participation

Educational Materials and Strategies



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City Rain Garden Planting

The City of Lafayette will design and plant rain gardens, a natural option for managing storm water, to improve drainage and storm water quality at three locations.

Located at Kossuth and 19th streets, Prange Drive and along four city blocks of Earl Avenue, the rain gardens will reduce standing water. Rather than flooding street and yards, the rain water will flow into rain gardens, and it will seep or infiltrate naturally into the ground.

By placing the rain gardens close to storm water inlets, the amount of storm water entering the combined sanitary and storm water sewer will be reduced as well. During and after wet weather, storm water in the combined sewer can take up space needed to transport sewage to the treatment plant, and when the sewer reaches capacity, raw sewage overflows into a nearby stream or river can occur. After a storm, the rain gardens may absorb much of the storm water that otherwise would flow directly into the combined sewer.

Rain Gardens Beautify Community

The rain gardens also will serve as a natural filter, helping to remove pollutants such as oil from cars, trash and lawn chemicals from the storm water before it flows into local waterways. Each area will be planted with a variety of native plants that are well adapted to the humid, Indiana climate. Wildflowers, ferns, grasses, trees and shrubs all can thrive in rain gardens.

Native Plants Filter Pollutants

Highlights

Project: Drainage improvements
Estimated Project Cost: $320,000
Status: Planning
Project Benefits:

- Improved water quality of storm water runoff to the Wabash River
- Reduced pollutants in local waterways
- Enhanced aesthetics in neighborhood as a result of rain gardens
- Compliance with state and federal regulations

The City Rain Garden Planting project is part of Lafayette's capital improvement program to improve the water quality of the Wabash River and other local streams and to address existing drainage conditions. The projects will reduce flooding and satisfy the requirements of the U.S. Environmental Protection Agency and the Indiana Department of Environmental Management.

Branded outreach materials including fact sheets and brochures

Event Participation: Tippecanoe County fair, community health days, festivals, etc.

Reaching Diverse Audiences

- Goal: To use a mix of appropriate strategies to address the viewpoints and concerns of a variety of audiences
- Diverse audiences include:
  - Multicultural audiences
  - Senior citizens
  - Youth
  - Commercial/industrial customers
  - Low income residents

Strategies

- Use of Bilingual materials
- Age appropriate workshops and educational activities
- Emphasis of need for corporate social responsibility
- Participation at low or no cost community events

"Green" grassroots Initiatives

Education is a key to successful implementation

- Rain Barrel Program
  - Combined Sewer Areas
- Rain Garden Program
  - Within Capital Improvement Projects
  - Public – Private Cooperative
- Green Roofs
  - Provide "Fast Track" Permits as incentive

Summary

- Public education and outreach is a requirement of the NPDES Permit
- Also important to the continued success of the Lafayette Storm Water Program
  - Conduct outreach now: To demonstrate the need for the proposed storm water user fee
  - Conduct outreach in the future:
    - To develop awareness of and for capital improvements
    - To emphasize individual responsibility to protect our waterways for future generations

Questions or Comments?

Other Business

- Update on proposed storm water user fee
- Journal and Courier article
- Update on policy planning