



*City of Lynchburg*

# Stormwater Management

## Stormwater Advisory Committee

*June 24, 2010*

*Meeting #2*



**CDM**

# Tonight's Agenda



- **Summary of Last Meeting**
- NPDES Phase II Stormwater Requirements
- Stormwater Services in Lynchburg
- Cost of Service Analysis
- Questions and Answer Session

# Purpose of the SWAC

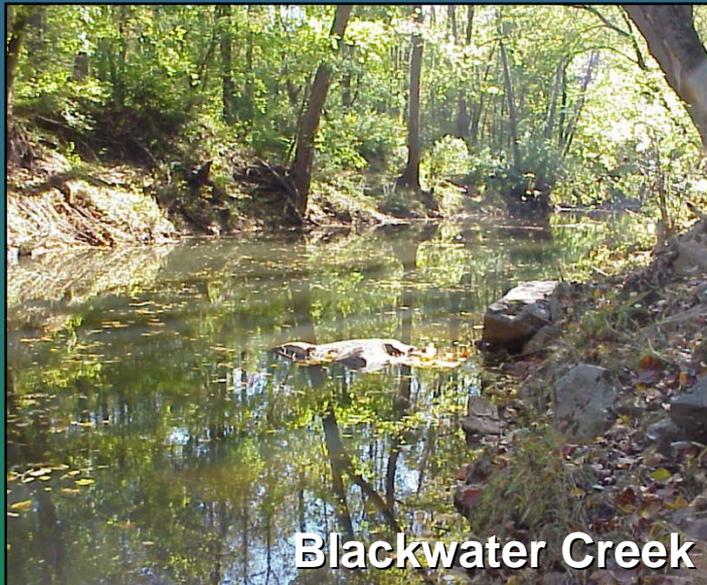


- **To represent a wide cross-section of interest groups.**
- **To engage public participation.**
- **To make recommendations on the following:**
  - Stormwater management priorities;
  - Appropriate and affordable level of service;
  - Level of interest in public participation in stormwater management program activities;
  - Recommendations of various stormwater management needs assessments, regulations and policies, financial requirements, and funding mechanisms.

# Natural vs. Unnatural



- Stormwater runoff is natural
- What urbanization does to runoff is not



**Blackwater Creek**

**Natural Systems**



**Falcon Hill Place**

**Urban Systems**

# Why Do We Care about Stormwater?



## Erosion/Flooding

- Public safety
- Insurance costs
- Development costs



## Water Quality

- Drinking water
- Recreation
- Regulations



## Stream Condition

- Public safety
- Habitat
- Aesthetics



# Why ELSE Do We Care About Stormwater?



## *Regulatory Drivers*

- National Pollutant Discharge Elimination System (NPDES)
- Chesapeake Bay Protection Rules
- National & State Stormwater Regulations
- Total Maximum Daily Loads (TMDLs)



# Current Chesapeake TMDL



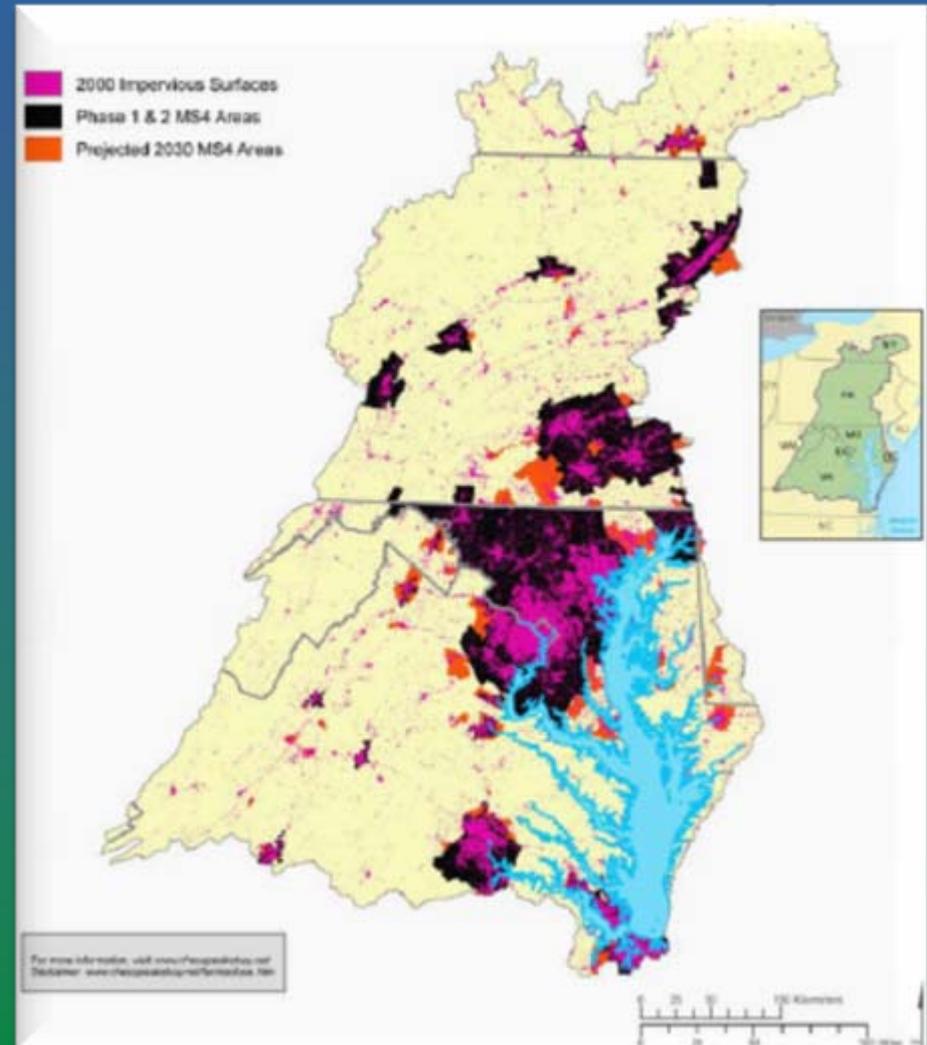
*The U.S. Environmental Protection Agency is leading a major initiative to establish and oversee achievement of a strict “pollution diet” to restore the Chesapeake Bay and its network of local rivers, streams and creeks.*

– US EPA Fact Sheet

# Chesapeake Bay TMDL



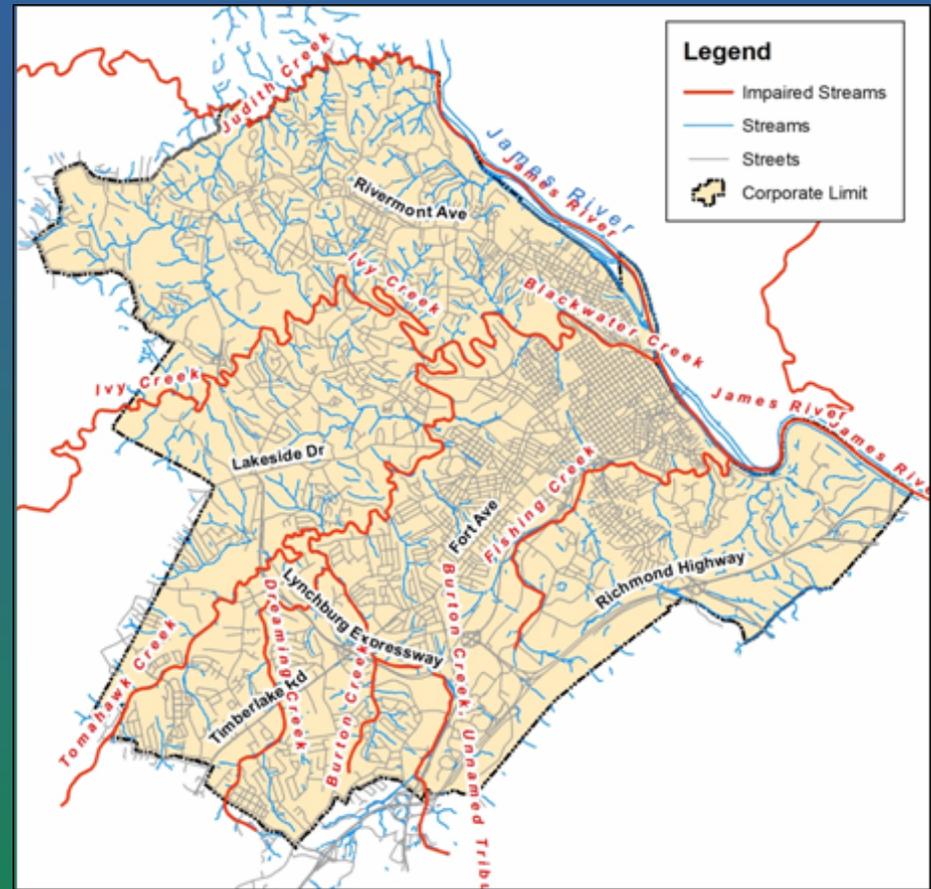
- Initiative resulting in additional regulations for nitrogen, phosphorus and sediment
- 64,000 mi<sup>2</sup> watershed
- Covers six states
- Approximately 17,000,000 people



# Lynchburg Impaired Streams



- 10 streams (45 miles in length) within City identified as impaired by the State
- Primary impairments
  - Nutrients
  - Bacteria



# Future Regulatory Impacts to Lynchburg



## Chesapeake Bay TMDL and other TMDLs and regulations:

- Chesapeake Bay- “pollution diet,” 2-yr milestones begin 2013, 2025 completion date
- Revised State stormwater regulations pending (2012)
- Bacterial TMDL for the James River and Lynchburg Creeks (2010)
- Chlorophyll A TMDL for the James River (pending)
- MS4 permit with focus on urban stormwater
- National stormwater regulations proposed (2012)

# SWAC Process and Schedule



**Program Components & Expenditures: June 24 - 6:00 p.m.**

**Level of Service Analysis & Alternatives: July 15 – 6:00 p.m.**

**Stormwater Funding Options: September 16 - 6:00 p.m.**

**Revenue Scenarios: October 21 - 6:00 p.m.**

**Review Recommendations: November 18 - 6:00 p.m.**

**Evaluate/Modify Recommendations for Council: December 16 - 6:00 p.m.**

**Finalize Recommendations for Council: January 20, 2011 - 6:00 p.m.**

# Tonight's Agenda



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# What is the Purpose of the Phase II NPDES Stormwater Regulation?



## Phase II Purpose

- Reduce the discharge of pollutants to the “maximum extent practicable” (MEP)
- Protect water quality and aquatic habitat
- Satisfy the appropriate water quality requirements of the Clean Water Act

# NPDES Phase II Program's "Six Minimum Measures"



1. Public Education and Outreach
2. Public Involvement and Participation
3. Illegal Discharge Detection and Elimination
4. Construction Site Runoff Controls
5. Post-Construction Site Runoff Controls
6. Pollution Prevention for Municipal Operations

*The Phase II Rules apply to @ 100 stormwater  
system operators in Virginia*

# Measure #1: Public Education and Outreach



- Develop content for newsletters to Citizens (*The City Source*) and City employees (*Changing Times*)
- Develop community workshops for developers
- Coordinate the *Living in Your Watershed* campaign for students
- Publicize Regional Household Hazardous Waste (HHW) events
- Publicize NPDES MS4 Permit and Reports



# www.lynchburgva.gov/stormwater





**THE CITY OF  
LYNCHBURG, VIRGINIA**

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## Government Services

- ▶ Backflow Prevention Program
- ▶ Brush & Bulk Collection
- ▶ Bus Service
- ▶ 2010 Census
- ▶ Citizens First Information Center
- ▶ Community Handbook
- ▶ Emergency Preparedness
- ▶ First To Know
- ▶ GIS Map Viewer
- ▶ Holidays - City Observed
- ▶ Leaf Collection
- ▶ Library
- ▶ Lynchburg City Schools
- ▶ 2009 Manual of Specifications
- ▶ Map Gallery
- ▶ Online Payments
- ▶ On-line Banking
- ▶ Parks and Recreation
- ▶ Parking Program
- ▶ Permits / Licenses / Decals
- ▶ Related Links
- ▶ Street Directory

### [Government Services](#)

## Stormwater Management

### Stormwater Management and You!

Mandated by Congress under the Clean Water Act (CWA), the National Pollutant Discharge Elimination System (NPDES) Stormwater Program is a comprehensive national program for addressing the urban sources of stormwater discharges that adversely affect the quality of our nation's waters. Lynchburg received its permit on March 27, 2003

Stormwater pollution is a challenging water quality problem. Unlike pollution from industry or sewage treatment facilities, which is caused by a discrete number of sources, stormwater pollution is caused by the daily activities of people everywhere. Rainwater and snowmelt run off streets, lawns, farms, and construction and industrial sites and pick up fertilizers, dirt, pesticides, oil and grease, and many other pollutants on the way to our rivers, lakes, and coastal waters.

Stormwater runoff is our most common cause of water pollution. Because stormwater pollution is caused by so many different activities, traditional regulatory controls will only go so far. Education and outreach are key components to any successful stormwater program. A plan for Lynchburg's program is currently being finalized for City Council approval.

### What is Stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the

## Measure #2:

# Public Involvement and Participation



- Meet with volunteer groups to recruit participants in stormwater management volunteer activities
- Sponsor local Environmental Group Activities
- Establish a hotline to direct Stormwater Management Issues

*Meetings  
Volunteers  
Stenciling  
Clean-ups  
"Adopt A Stream"*

# Measure #3: Illicit Discharge Detection and Elimination



**Illicit Discharges** are non-storm-water discharges to waters of the US or the MS4 as designated by local ordinance.

Atherholt Drive

## Measure #3:

# Illicit Discharge Detection and Elimination



- Develop, implement and enforce a program to detect and eliminate illicit discharges
- Develop a storm sewer system map, showing the location of all known outfalls
- Inspect regulated outfalls (36" diameter and larger) annually (approximately 150 outfalls city-wide)



## Measure #4:

# Construction Site Runoff Controls



- Establish a certified erosion and sediment control (ESC) program via ordinance
- Perform plan reviews and routine site inspections
- Maintain a Monthly Activity Report of disturbed areas and BMPs
- Participate in regional ES Committee



Parkland-Morrison

## Measure #5:

# Post Construction Site Runoff Controls



- Implement the requirements of the Virginia Stormwater Management Handbook
- Develop ordinances to address post-construction runoff from new development and redevelopment
- Develop a plan review and approval process
- Develop guidelines for developers (BMP Design Manual)



Filterra Bioretention System

## **Measure #5:**

### **Post Construction Site Runoff Controls (cont.)**



- **Require maintenance agreements for private stormwater BMPs**
- **Perform BMP inspections**
- **Enhance trail and buffer system along stream corridors**
- **Enforce the City's Stormwater Management Ordinance**

# Measure #6: Municipal Operations – Pollution Prevention & Good Housekeeping



- Develop and enforce good housekeeping procedures for all municipal facilities
- Perform training for operations personnel
- Perform street sweeping and document pollutant removal
- Use certified City employees for herbicide and pesticide applications



# Phase II Implementation Schedule



- **Lynchburg is in the second year of their second five-year permit implementation cycle**
  - Permit expires June 30, 2013
- **The distributed document provides a summary of the City's activities completed in the past year (2009 Annual Report)**

# Potential Fines for Non-Compliance



## MS4 CIVIL CHARGE WORKSHEET

1. Gravity-based Component	Serious	Moderate	Marginal	
Violations* and Frequency of Occurrence	\$\$ x occurrences	\$\$ x occurrences	\$\$ x occurrences	SUBTOTAL
Failure to apply for and obtain Permit	10,000 x ____	5,000 x ____	1,000 x ____	
Incomplete Permit applications (e.g., no map)	1,000 x ____	500 x ____	300 x ____	
Failure to submit Annual Report (each month late = 1 occurrence)	1,000 x ____	500 x ____	300 x ____	
Failure to comply with Permit reporting requirements* (e.g., monitoring)	2,500 x ____	1,500 x ____	750x ____	
Failure to comply with Permit conditions* (e.g., failure to develop, implement, or enforce Stormwater Management Plan)	5,000 x ____	3,000 x ____	1,500x ____	
Include multiplier of 0.5 for Phase I facilities			Subtotal #1	
2. Estimated Economic Benefit of Noncompliance (if applicable)			Subtotal #2	
3. Recommended Civil Charge			Total (#1 and #2)	

\* Each reporting requirement or Permit condition not met is a separate violation.

Source: Virginia Department of Conservation & Recreation Stormwater Management Enforcement Manual

# Tonight's Agenda:



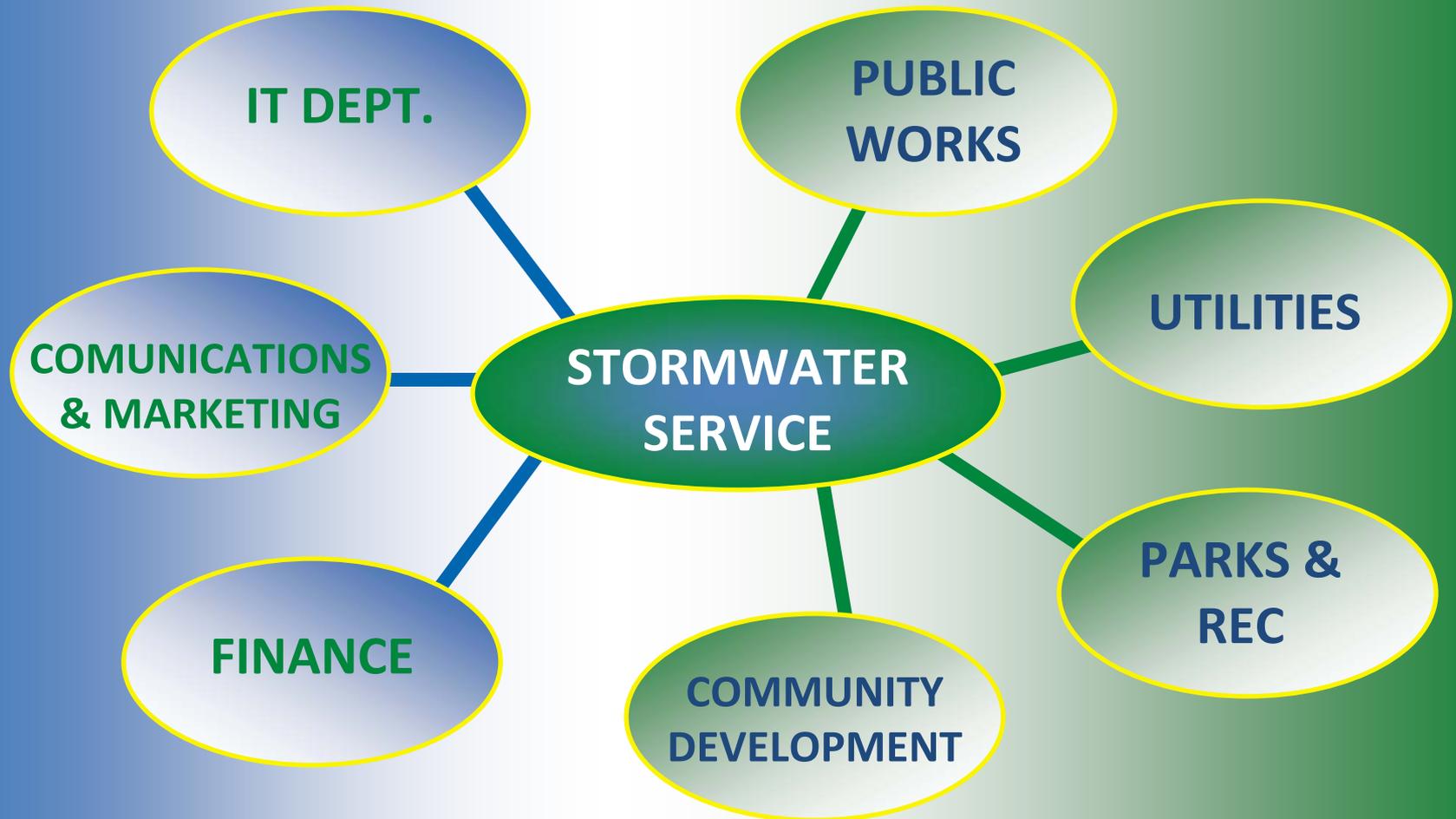
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# Stormwater Service - A City-wide Function



**SUPPORT**

**LEADING**



# Four Functional Service Areas of Stormwater Management



PROGRAM MANAGEMENT	REGULATORY COMPLIANCE
<ul style="list-style-type: none"><li>◆ Master planning</li><li>◆ Complaint response</li><li>◆ Development review</li></ul>	<ul style="list-style-type: none"><li>◆ Construction and post-construction controls</li><li>◆ Public education</li><li>◆ BMP Inspection/Maintenance</li></ul>
OPERATIONS AND MAINTENANCE	CAPITAL IMPROVEMENT PROJECTS (CIP)
<ul style="list-style-type: none"><li>◆ Storm sewer cleaning</li><li>◆ Culvert cleaning and repair</li></ul>	<ul style="list-style-type: none"><li>◆ Storm System Upgrades &amp; Replacement</li><li>◆ Stream restoration</li></ul>

# Current Program Management Services



- Management and oversight
- Complaint response
- Budget and CIP development
- Plan review and approval
- Surveying and inspection
- Design services
- Review of City projects
- Stormwater inventory maintenance

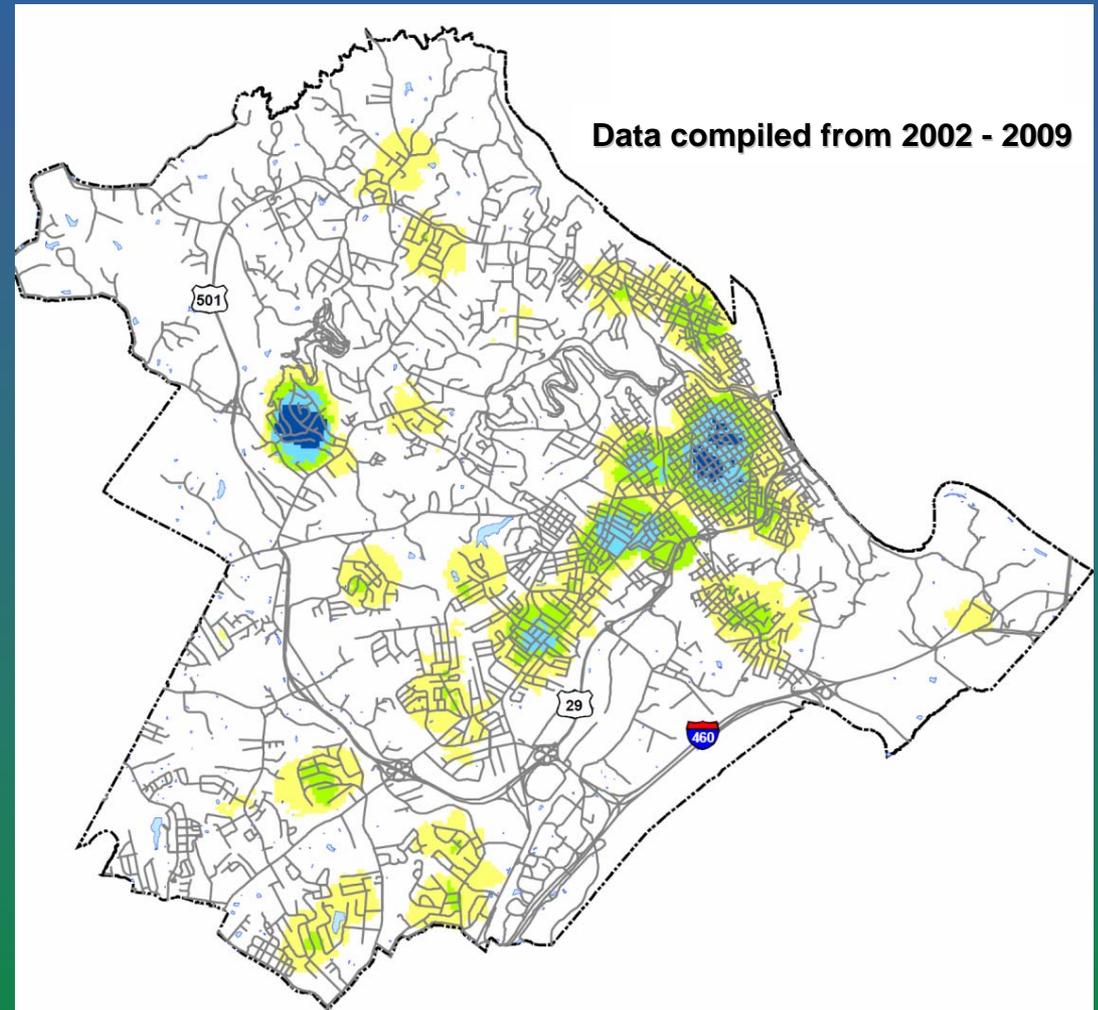


Stormwater-Related Activity	# Completed (3-yr Avg)
Plans Reviewed	46
Agreement in Lieu	72
Projects Implemented	119
Inspections Performed	2421

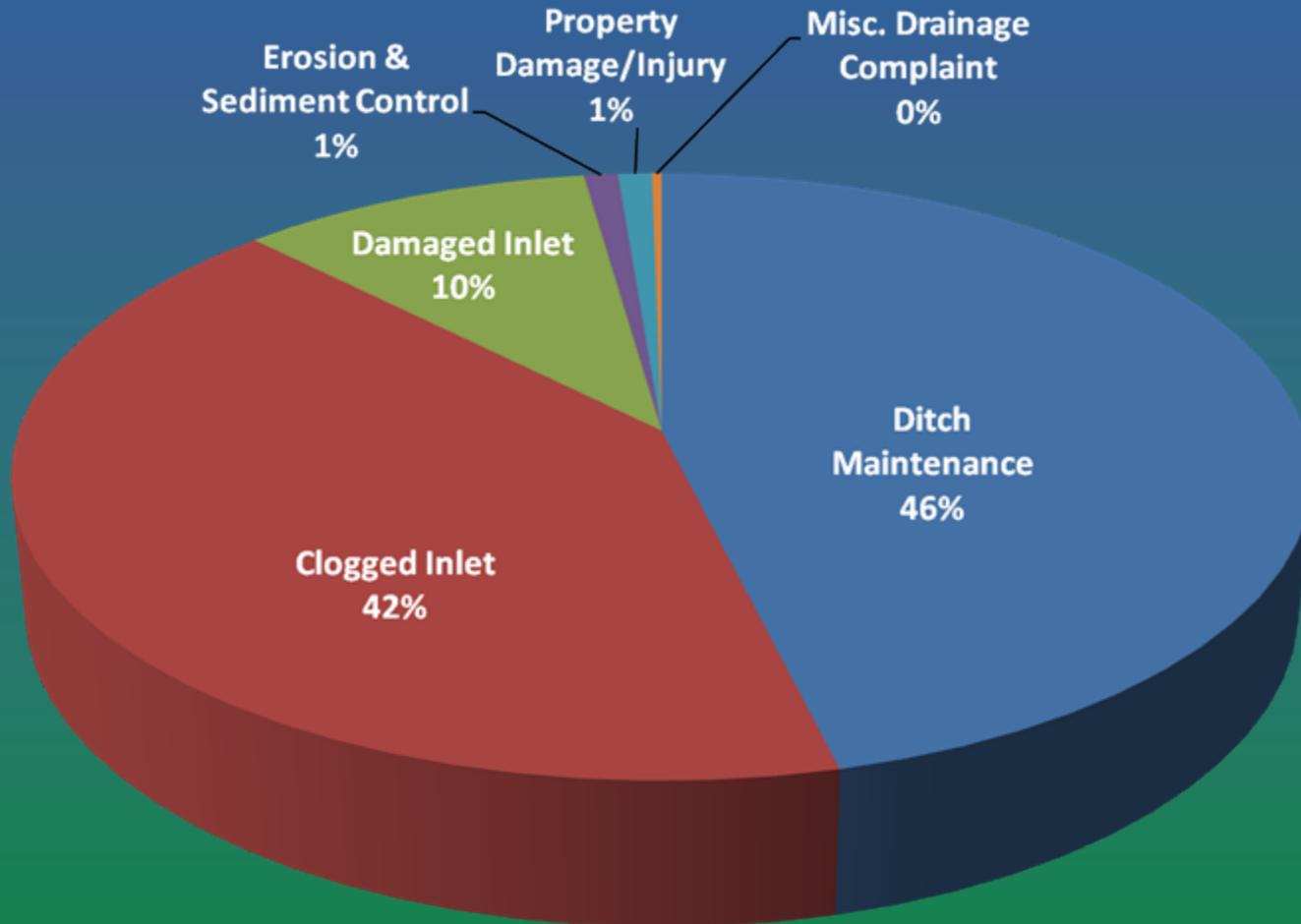
# Complaints



- Approximately 250 to 300 calls annually
- 80 percent of calls related to clogged inlets and ditch maintenance



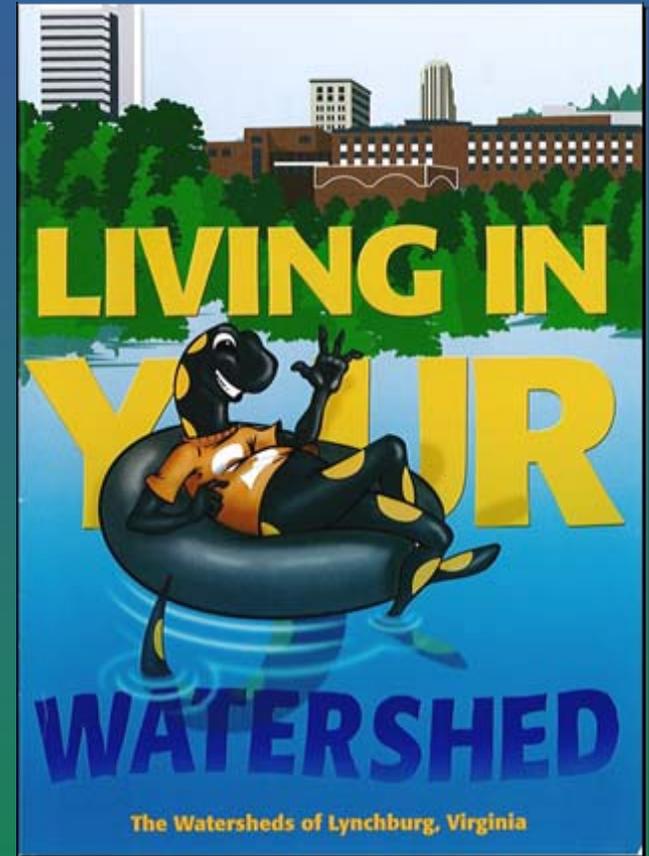
# Distribution of Customer Calls (2002 to 2009)



# Current Regulatory Services



- Erosion and sediment control plan review and inspections
- Post construction site runoff control plan review and inspections
- Public education and involvement
- Illicit discharge detection and elimination (IDDE)



# Current Regulatory Services (cont.)



- Pollution prevention/good housekeeping
- Public education
- Hazardous material spill control



**Note: Other Divisions within the City may have NPDES Industrial permits with their own requirements**

# Regulatory Services

(ex. Illicit Discharge Detection & Elimination)



- Identify and prioritize all stormwater outfalls
  - Approximately 150 city-wide (36" dia. and larger)
- Routinely screen and inspect outfalls
  - Annual schedule for inspection



# Regulatory Services

(ex. Post Construction Runoff Control)



- Requires design and implementation of runoff reduction measures
- City requires owners to ensure maintenance through annual self-reporting and routine audits
  - 124 documented BMPs city-wide
  - 75 inspection notices issued annually
  - 50% response rate to notices



Wards Road - Walmart

# Current Operation and Maintenance Srvs.



- Perform ditch cleaning
- Clean and repair stormwater pipes/inlets
- Maintain 37 city-owned BMPs
- Perform street sweeping
- Maintain open channels/streams
- Perform pipe and inlet flushing
- Provide emergency response
- Perform loose leaf collection



# Current Operation and Maintenance Srvs.



Service Area = 50 sq. mi.

900+ lane miles of roadway

30+ miles of storm sewer

4,200+ storm inlets

10+ miles of culverts



Pond Maintenance



Infrastructure  
Cleaning & Repair



Ditch Repair

# Operation and Maintenance Activities (continued)



- **Stormwater System Maintenance Performance**
  - Approximately 42 inlets/grates/screens/sump cleaned weekly and after any rainfall (366 tons of material removed in the past year)
  - 3 inlets for CDS units checked and cleaned every 6 months
  - 30 Driveway pipes installed per year
  - Cleaning of ditches; 20,000 Linear Feet per year
  - Pipe cleaning and other inlets cleaned/repaired as needed

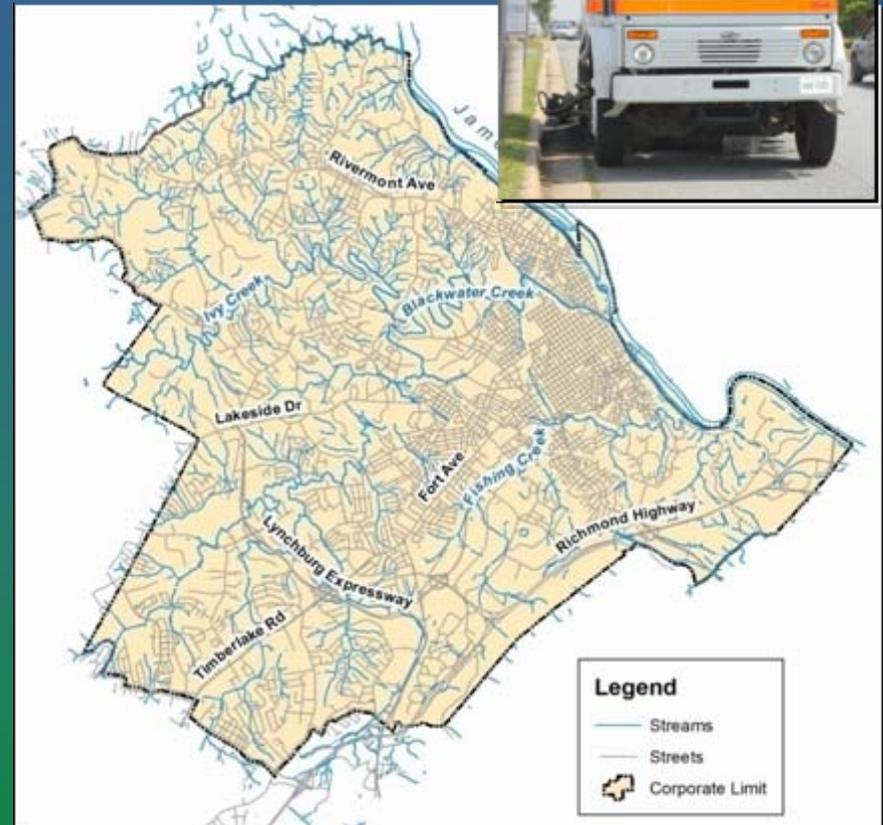
Maintenance Activity	2006	2007	2008	3-YR Average
Stormwater Inlet Repairs	261	101	84	150
Storm Sewer Pipe Repairs	166	156	157	160
Stormwater Inlet Cleaning	6,931	7,468	5,465	6,600

# Street Sweeping Program



- Downtown streets are swept weekly
- Remaining portions of the City are swept three times a year
- 1,800 miles of streets swept in 2009
- Approximately 400 tons of sediment and debris removed annually

1-man crew  
2 sweepers



# Current CIP Services



- CIP planning
- Project design
- Project construction management



# Planned Capital Project Expenditures



Project Name	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Avg. Annual Cost
<b>Annual Stormwater Infrastructure Costs</b>						
<i>Storm Drainage System Repairs/Replacement<sup>1</sup></i>	\$ 320,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 224,000
<i>Culvert Replacement Program<sup>1</sup></i>	\$ 550,000	\$ -	\$ 550,000	\$ -	\$ 550,000	\$ 330,000
<i>Annual Subtotal</i>	\$ 870,000	\$ 200,000	\$ 750,000	\$ 200,000	\$ 750,000	\$ 554,000
<b>Transportation and Non-Routine Capital Costs</b>						
<i>Greenview Drive Phase II</i>	\$ 1,000,000	\$ 500,000	\$ -	\$ -	\$ -	\$ 300,000
<i>Dam Safety College Lake<sup>2</sup></i>	\$ -	\$ -	\$ 1,050,000	\$ 1,050,000	\$ -	\$ 420,000
<i>Midtown Connector Phase II</i>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<i>Timberlake Road @ Logan's Lane</i>	\$ -	\$ -	\$ -	\$ 130,000	\$ 294,000	\$ 85,000
<i>Dearington Neighborhood Street Improvements</i>	\$ -	\$ -	\$ 143,000	\$ -	\$ -	\$ 29,000
<i>Kemper St. Bridge &amp; Interchange</i>	\$ 143,000	\$ 588,000	\$ 270,000	\$ -	\$ -	\$ 200,000
<i>Florida Avenue Bridge</i>	\$ 78,000	\$ -	\$ -	\$ -	\$ -	\$ 16,000
<i>Atherholt Road Extension</i>	\$ -	\$ -	\$ 46,000	\$ 466,000	\$ -	\$ 102,000
<i>General Street Improvements</i>	\$ 188,000	\$ 188,000	\$ 188,000	\$ 188,000	\$ 188,000	\$ 188,000
<i>Annual Subtotal</i>	\$ 1,409,000	\$ 1,276,000	\$ 1,697,000	\$ 1,834,000	\$ 482,000	\$ 1,340,000
<b>Totals</b>	<b>\$ 2,279,000</b>	<b>\$ 1,476,000</b>	<b>\$ 2,447,000</b>	<b>\$ 2,034,000</b>	<b>\$ 1,232,000</b>	<b>\$ 1,894,000</b>

- Note:**
1. Project is considered 100% stormwater
  2. Stormwater-related cost provided is 25% of total project cost as determined by City staff estimate of past projects

# Tonight's Agenda:



- Summary of Last Meeting
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# **Development of Estimated Annual Program Cost (FY 2010)**



- **Examined FY 2009-2010 budget documents**
- **Conducted department staff interviews**
- **Documented costs for each department's stormwater-related service cost**
- **Separated costs into four components of stormwater management**

# Summary of Estimated Annual Program Cost for Stormwater Management (based on FY11)

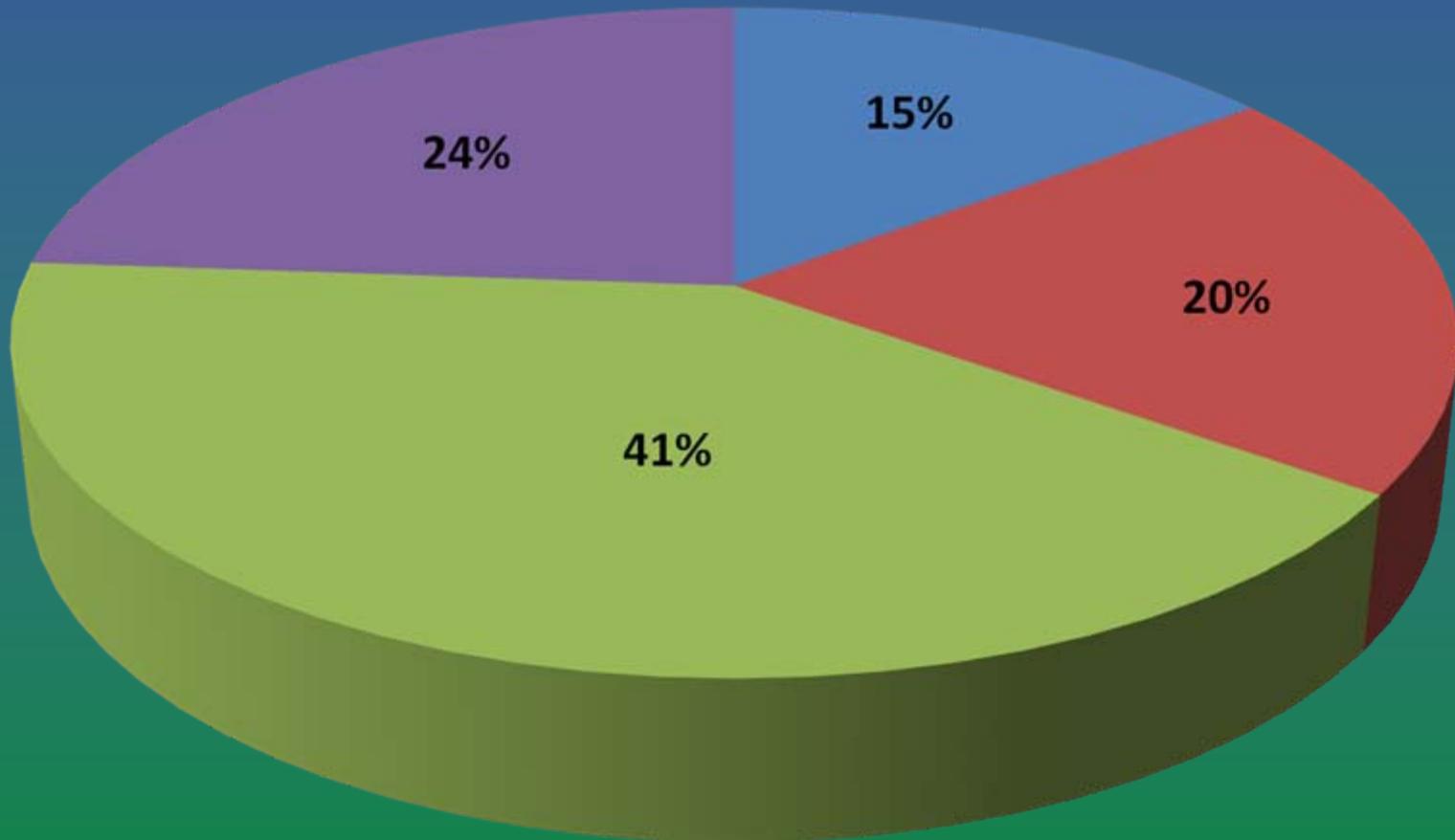


Primary Stormwater Program Costs	Program Management	Regulatory Services	Operation & Maintenance	Capital Improvements	Totals
<b>Utilities</b>					
<i>Non-Departmental</i>	\$19,000				\$19,000
<i>Stormwater System Maintenance</i>	\$162,000		\$234,000		\$396,000
<b>Public Works</b>					
<i>Streets</i>		\$30,000	\$483,000		\$513,000
<i>Engineering</i>	\$139,000	\$4,000			\$143,000
<i>Parks / Grounds</i>		\$4,000	\$71,000		\$75,000
<i>Refuse</i>		\$5,000	\$171,000		\$176,000
<b>Community Development</b>					
<i>Zoning and Natural Resources</i>		\$166,000			\$166,000
<i>Inspections/Code Enforcement</i>		\$26,000			\$26,000
<i>Planning</i>		\$177,000			\$177,000
<i>GIS</i>	\$22,000				\$22,000
<b>Parks &amp; Recreation</b>		\$45,000			\$45,000
<b>Soil and Water Conservation District</b>		\$10,000			\$10,000
<b>Capital Improvements</b>				\$554,000	\$554,000
<b>SUBTOTALS</b>	<b>\$342,000</b>	<b>\$467,000</b>	<b>\$959,000</b>	<b>\$554,000</b>	<b>\$2,322,000</b>
<b>Other Storm-Related Program Costs</b>					
<i>Loose Leaf Collection</i>			\$319,000		\$319,000
<i>Transportation Capital Projects</i>				\$1,340,000	\$1,340,000
<i>Vehicle Depreciation</i>			\$187,000		\$187,000
<b>SUBTOTALS</b>	<b>\$0</b>	<b>\$0</b>	<b>\$506,000</b>	<b>\$1,340,000</b>	<b>\$1,846,000</b>
<b>TOTALS</b>	<b>\$342,000</b>	<b>\$467,000</b>	<b>\$1,465,000</b>	<b>\$1,894,000</b>	<b>\$4,168,000</b>

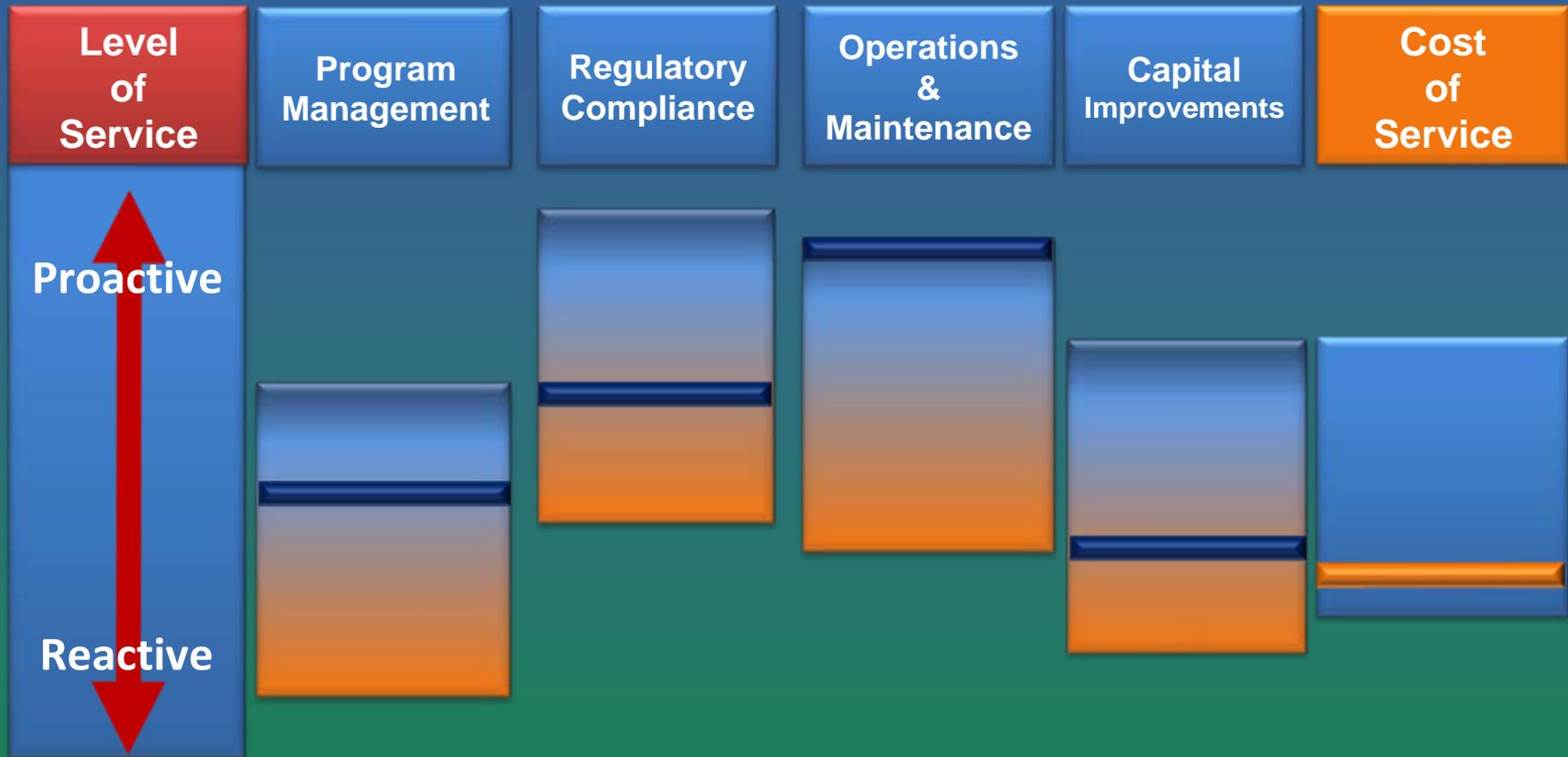
# Distribution of Program Costs



■ Program Management   ■ Regulatory Services   ■ Operation & Maintenance   ■ Capital Improvements



# Level of Service & Cost of Service Analysis



# Level of Service Matrix is Used to Evaluate City Services and to Perform Gap Analysis



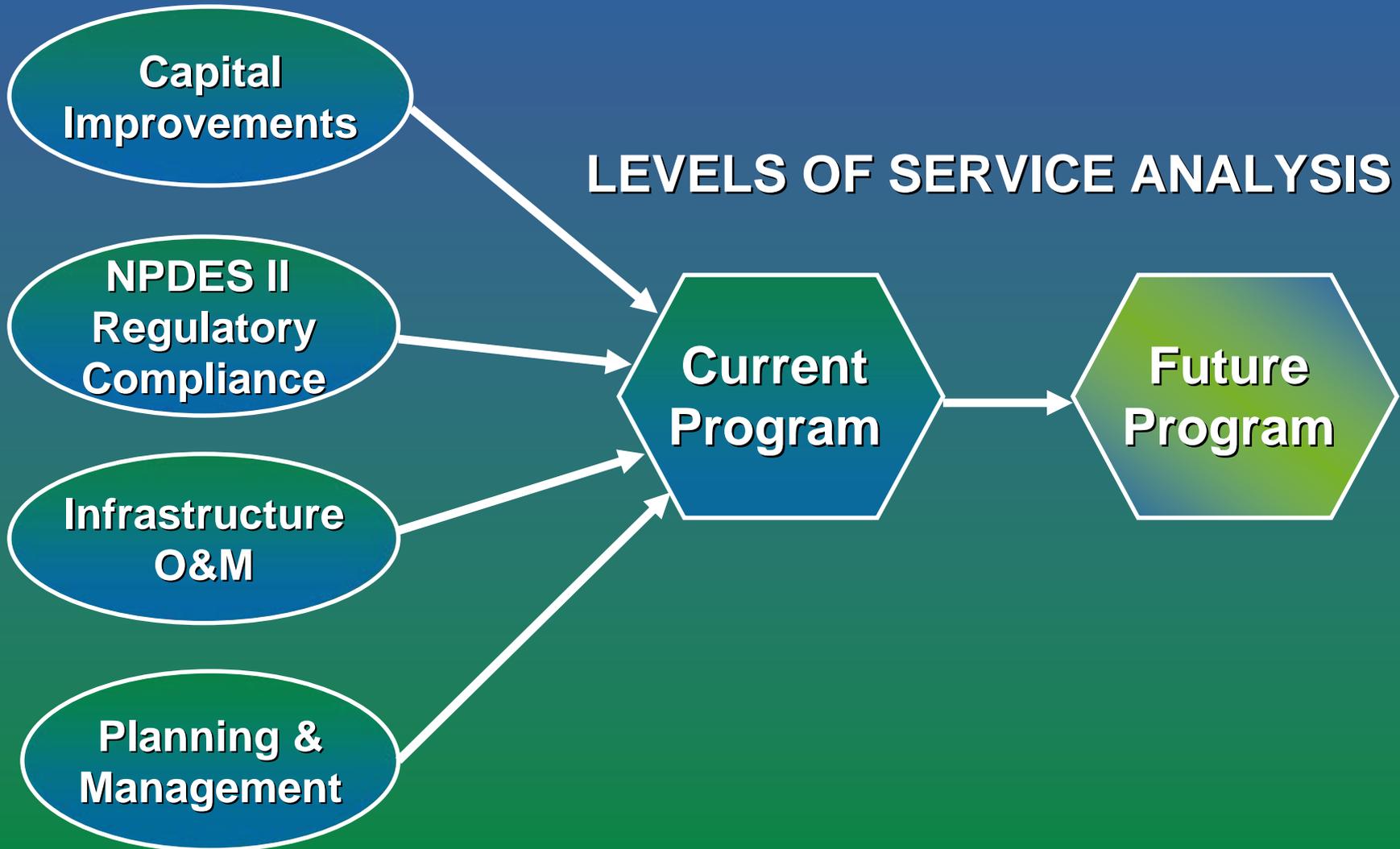
<i>Level of Service</i>	<i>Program Management</i>	<i>Regulatory Compliance</i>	<i>Operation and Maintenance</i>	<i>Capital Improvement Projects</i>
5	Comprehensive Planning & Full Implementation Capabilities	Exemplary Permit Compliance	Fully Preventative/ 100% Routine	Prioritized / Fully-Funded
4	Pro-Active Planning & Systematic CIP Implementation Capabilities	Pro-Active Permit Compliance	Mixture of Routine and Inspection Based	Phased Implementation / Allocated Budgets
3	Priority Planning & Partial CIP Implementation Capabilities	Minimal Permit Compliance	Mixture of Inspection and Responsive Based	Complaint, Inspection-Based / Moderate Budget
2	Reactionary Planning & Minimal CIP Implementation Capabilities	Below Minimum Permit Compliance	Responsive Only	Critical Needs Only / Minimum Budget
1	No Planning & No CIP Implementation Capabilities	Non-Compliance	Non-Responsive	No Planning / No Budget

# Future Levels of Service

*Driven by Gap Analysis*



## LEVELS OF SERVICE ANALYSIS



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# Next Meeting



- **Topics**
  - Level of Service Analysis
  - Alternative Levels of Service & Costs
- **Time and Location**
  - Thursday, July 15, 2010 (6pm to 8pm)
  - Location: James River Conference Center



*City of Lynchburg*

# Stormwater Management

**Stormwater Advisory Committee**

***QUESTIONS?***



**CDM**